Current State of School Meals & Snacks:
School Nutrition Dietary Assessment Study IV

Wednesday March 13, 2013
2-3 p.m. EDT
Current State of School Meals & Snacks: School Nutrition Dietary Assessment Study IV

Tracy Fox, MPH, RD
Food, Nutrition & Policy Consultants, LLC

Jay Hirschman, MPH, CNS
Office of Research & Analysis, USDA Food & Nutrition Service

Mary Kay Fox, MEd
Mathematica Policy Research

Mary Kay Crepinsek, MS, RD
Mathematica Policy Research
Background on the USDA Food and Nutrition Service-Sponsored School Nutrition Dietary Assessment (SNDA) Report Series

Jay Hirschman, M.P.H., C.N.S.
Director, Special Nutrition Staff
Office of Research and Analysis
USDA Food and Nutrition Service

NANA Webinar
Wednesday, March 13, 2013
Participation in NSLP is much greater than SBP

Total FY2010 Federal Investment of $13 Billion

- National School Lunch Program (NSLP)
  - Available
    ♦ 96,000 schools
    ♦ 50 million students enrolled
  - 63% participate (averages about 32 million per school day)

- School Breakfast Program (SBP)
  - Available
    ♦ 84,000 schools
    ♦ 44 million students enrolled
  - 26% participate (averages about 12 million per school day)

Both programs are available about 180 days per year

In FY2010, a total of 7 Billion NSLP+SBP meals were served
Long Tradition of Monitoring School Meals

National Evaluation of the School Nutrition Programs (1980-81) first national FNS study to assess the effects of school meals in the U.S.

SNDA-I (SY 1991-92) highlighted high fat content of school meals and helped motivate the 1995 “School Meals Initiative for Healthy Children” (SMI).

SNDA-II (SY 1998-99) provided an early look at SMI implementation

SNDA-III (SY 2004-05) provided updated data to assess SMI and directions for the future

SNDA-IV (SY 2009-10) provides baseline information before the January 2012 rule changes
## SNDA Study Designs

**Final sample available for analysis**

<table>
<thead>
<tr>
<th>SNDA-I</th>
<th>SNDA-II</th>
<th>SNDA-III</th>
<th>SNDA-IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>340 SFAs</td>
<td>430 SFAs</td>
<td>129 SFAs</td>
<td>578 SFAs</td>
</tr>
<tr>
<td>544 Schools</td>
<td>1,075 Schools</td>
<td>397 Schools</td>
<td>882 Schools</td>
</tr>
<tr>
<td>3,349 Students</td>
<td>No Students</td>
<td>2,314 Students</td>
<td>No Students</td>
</tr>
</tbody>
</table>

- ✔ Offered
- ✔ Served
- ✔ Eaten
Monitoring School Meals in the US

- Routine Administrative Monitoring – States monitor local school food authorities (5-year cycle)
  - Coordinated Review Effort (CRE): All meal components offered
  - SMI Reviews: Meals must meet all meal pattern and nutrition standards

- Periodic nationally representative studies - *School Nutrition Dietary Assessment (SNDA)* series (every 5 to 7 years)
  - Meals offered
  - Meals selected by students (“served”)
  - Dietary intake at school and over 24 hours (SNDA-1 and III)
School Nutrition Dietary Assessment Study - IV

- Sponsored by USDA Food and Nutrition Service
- Conducted under contract by Mathematica Policy Research
- Collected data on national sample of public schools in SY 2009-2010
- Authors: MK Fox, E Condon, MK Crepinsek, et al

On the web at: http://www.fns.usda.gov/Ora/menu/Published/CNP/cnp.htm
SNDA-IV: approx. 1,000 pages; many topics

- Student participation
- Meal prices
- Menu planning & meal production
- Meal service practices
- Food safety & sanitation
- Staff Education, Experience & Credentials
- School Wellness Policies & Practices (includes Classroom-based nutrition education)
- Meal Scheduling
- Competitive foods
- Foods offered in NSLP, SBP & Afterschool Snacks
- Calorie & nutrient content of school meals & afterschool snacks
- Availability of meals that meet standards *(the old standards in place at the time of the data collection!)*
- Potential contribution of meals to USDA Food Patterns
- Changes in school meals since implementation of SMI
- Schools participating in HUSSC
Office of Research and Analysis (ORA)

The SNDA reports are available for free download on the FNS web site

General: www.fns.usda.gov
Research/Studies: http://www.fns.usda.gov/research-and-analysis
Highlights from the Fourth School Nutrition Dietary Assessment Study (SNDA-IV)

Mary Kay Fox and Mary Kay Crepinsek
March 13, 2012
Study Design

- Representative of all public NSLP schools in the 48 contiguous states and the District of Columbia

- Samples
  - 578 School Food Authorities (SFAs)
  - 895 Schools (884 completed detailed menu survey)

- Data collected January–June 2010

- Instruments
  - Menu Survey
  - Surveys of SFA directors, foodservice managers, and principals
  - Competitive foods checklists
Key Findings Presented Today

- Calorie and nutrient content of school lunches
- Contribution of school lunches to USDA Food Patterns
- School food and physical activity environments
  - Nutrition education
  - Physical education
  - Opportunities for physical activity during the school day
  - Availability of competitive foods
SNDA-IV Did Not Assess Compliance With New Nutrition Standards and Meal Pattern Requirements

- New requirements were not in effect at the time SNDA-IV data were collected
- New requirements were not finalized until January 2012, after SNDA-IV analyses were completed
- Where possible, we comment on potential implications of SNDA-IV findings
Assessing Calorie and Nutrient Content
Assessed Lunches as *Offered* and as *Served*  

- **Lunches Offered**  
  - Assumes all offered meal components are present  
  - Equal weight given to choices within a meal component group

- **Lunches Served**  
  - Reflects students’ food selection patterns  
  - Greater weight given to frequently selected items

- Estimates reflect *weekly averages*
School Meals Initiative (SMI) Nutrition Standards

- Based on 1989 Recommended Dietary Allowances and 1995 Dietary Guidelines for Americans

- Calories, protein, vitamins A and C, calcium and iron
  - At least 1/3 of daily needs

- Total fat
  - No more than 30 percent of calories

- Saturated fat
  - Less than 10 percent of calories
2010 Dietary Guidelines Recommendations

- **Total fat**
  - 25 to 35 percent of calories

- **Cholesterol and Sodium**
  - Less than 1/3 of daily limits

- **Dietary fiber**
  - At least 14 gm per 1,000 calories

- **Research purposes only—schools were not required to meet these standards**
Nutrient and Calorie Content of NSLP Lunches
Lunches Served in Most Schools Met or Came Close to SMI Standards for Calories and Nutrients

- Calories: 39% met, 60% came within 10%.
- Protein: >97% met.
- Vitamin A: 76% met, 8% came within 10%.
- Vitamin C: 68% met, 8% came within 10%.
- Calcium: 94% met, 3% came within 10%.
- Iron: 75% met, 14% came within 10%.

New Calorie Requirements Substantially Different From SMI Calorie Standards

<table>
<thead>
<tr>
<th></th>
<th>Elementary Schools</th>
<th>Middle Schools</th>
<th>High Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMI Calorie Standards</td>
<td>664</td>
<td>825</td>
<td></td>
</tr>
<tr>
<td>(minimums; K-6 and 7-12)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Calorie Requirements</td>
<td>550-650</td>
<td>600-700</td>
<td>750-850</td>
</tr>
<tr>
<td>(ranges)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Lunches Served in Many Schools in SY 2009-2010 Would Not Meet New Calorie Requirements**

<table>
<thead>
<tr>
<th></th>
<th>Elementary Schools</th>
<th>Middle Schools</th>
<th>High Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Calorie Requirements</td>
<td>550-650</td>
<td>600-700</td>
<td>750-850</td>
</tr>
<tr>
<td></td>
<td>SNDA-IV Percentiles for Calories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5th</td>
<td>505</td>
<td>486</td>
<td>517</td>
</tr>
<tr>
<td>10th</td>
<td>533</td>
<td>529</td>
<td>557</td>
</tr>
<tr>
<td>25th</td>
<td>587</td>
<td>607</td>
<td>654</td>
</tr>
<tr>
<td>50th</td>
<td>654</td>
<td>681</td>
<td>712</td>
</tr>
<tr>
<td>75th</td>
<td>721</td>
<td>750</td>
<td>825</td>
</tr>
<tr>
<td>90th</td>
<td>793</td>
<td>841</td>
<td>923</td>
</tr>
<tr>
<td>95th</td>
<td>846</td>
<td>892</td>
<td>963</td>
</tr>
</tbody>
</table>
Most Schools Served Lunches that Met the 2010 Dietary Guidelines Recommendation for Total Fat, but Not the SMI Standard for Total Fat

The Percentage of Schools Serving Lunches that Met the SMI Standard for Total Fat and Saturated Fat Has Increased Over Time


* Proportion is significantly different from SY 2009–2010 at the .05 level.
Nutrition Standards Based on the 2010 Dietary Guidelines

- **Cholesterol**
  - Essentially all schools served average lunches that met the standard

- **Dietary fiber**
  - Very few schools served average lunches that met the standard
  - In most schools, average dietary fiber content of lunches was 25 percent below the standard

- **Sodium**
  - Very few schools served average lunches that met the standard
  - In most schools, average sodium content of lunches exceeded the standard by more than 50 percent

New Nutrition Standards Require a Gradual Reduction in Sodium Content

<table>
<thead>
<tr>
<th></th>
<th>Elementary Schools</th>
<th>Middle Schools</th>
<th>High Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Sodium Content</td>
<td>1,324</td>
<td>1,392</td>
<td>1,515</td>
</tr>
<tr>
<td>of Lunches Served in SY 2009-2010 (mg)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goals for Maximum Sodium Content</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SY 2014-2015 (mg)</td>
<td>1,230</td>
<td>1,360</td>
<td>1,420</td>
</tr>
<tr>
<td>% Reduction, Relative to SY 2009-2010</td>
<td>7.1%</td>
<td>2.2%</td>
<td>6.3%</td>
</tr>
<tr>
<td>SY 2017-2018 (mg)</td>
<td>935</td>
<td>1,035</td>
<td>1,080</td>
</tr>
<tr>
<td>% Reduction, Relative to SY 2009-2010</td>
<td>29.4%</td>
<td>25.6%</td>
<td>28.7%</td>
</tr>
<tr>
<td>SY 2022-2023 (mg)</td>
<td>640</td>
<td>710</td>
<td>740</td>
</tr>
<tr>
<td>% Reduction, Relative to SY 2009-2010</td>
<td>51.2%</td>
<td>49.0%</td>
<td>51.2%</td>
</tr>
</tbody>
</table>
Potential Contributions of NSLP Lunches to USDA Food Patterns
Methods Used to Assess Contributions of School Meals to USDA Food Patterns

- Used MyPyramid Equivalents Database to estimate food group content

- Compared food group content of average meals to USDA Food Patterns
  - 1,800 calories for elementary schools
  - 2,000 calories for middle schools
  - 2,400 calories for high schools

- Applied SMI benchmarks to USDA Food Patterns
  - 1/3 for lunches
Lunches *Offered* and *Served* Were Low in Whole Grains and High in Calories from Solid Fats and Added Sugars, Relative to USDA Food Pattern Recommendations

Calories from Solid Fats and Added Sugars in NSLP Lunches

- **Percentage contribution of average lunches to maximum limit**
  - 115 percent for elementary schools
    - Maximum limit = 160 calories
  - 59 to 74 percent for middle and high schools
    - Maximum limit = 260 and 330 calories, respectively

- **Leading contributors**
  - Flavored 1% milk (10%)
  - Cookies, cakes, and brownies (8%)
  - Pizza and pizza products (6%)
  - Condiments, toppings, and spreads (6%)
  - Flavored skim/nonfat milk (5%)

Food and Physical Activity Environments
Nutrition Education

- 64 percent of schools require nutrition education
- 89 percent of these schools require nutrition education in every grade
- Wide range in required hours
  - <5 to more than 100 hours per year
  - Missing data was an issue, especially in middle and high schools

Physical Education and Physical Activity

- **Physical Education**
  - 95 percent of schools require physical education
  - Few schools meet National Association for Sport and Physical Education (NASPE) guidelines
    - 15 percent of elementary schools (goal=150 min/week)
    - 20 percent of middle schools and 26 percent of high schools (goal=225 min/week)

- **Opportunities for Physical Activity**
  - Varied widely by school type
    - 86 percent of elementary schools
    - 45 percent of middle schools
    - 28 percent of high schools

Competitive Foods Were Widely Available, Especially Among Middle and High Schools

Vending Machines May Have Been Less Available in SY 2009-2010 than in SY 2004-2005, but Findings Varied by Respondent

* Proportion is significantly different from SY 2009–2010 at the .05 level.

Most Districts Had Bans or Restrictions on Availability of Sweetened Beverages and Snack Foods

Acknowledgements

- SFA and school respondents—Thank You!

- FNS
  - Fred Lesnett, Jay Hirschman, Melissa Abelev (ORA), Margaret Applebaum, Laura Walter, Eileen Ferruggiaro, Gabrielle Serra, and other Child Nutrition staff

- Mathematica
  - Liz Condon, Katie Niland, Denise Mercury, Sarah Forrestal, Charlotte Cabili, Vanessa Oddo, Anne Gordon, Nathan Wozny, Alexandra Killewald, Nora Paxton, Will Crumbley, Jessica Galin and others
School Nutrition and Meal Cost Study

- Contract just awarded by FNS
- Fully integrated study will assess nutritional quality and cost of meals, student participation and satisfaction, and students’ dietary intakes
- First-time opportunity to address many important questions, such as:
  - Do healthy meals cost more?
  - What is the relationship between nutritional quality of meals and student participation?
- Data will be collected in SY 2014-2015
For More Information

- SNDA-IV reports available on the FNS website (www.fns.usda.gov/ora):
  - Summary Report
  - Volume I—School Foodservice Operations, School Environments, and Meals Offered and Served
  - Volume II—Sampling and Data Collection Methods

- Public Use data files available upon request:
  - Contact FNS, Office of Research and Analysis
Questions?

Please use the chat function to the right to submit your questions.

For more information, email nana@cspinet.org.
- Additional slides
In Both SY 2009-2010 and SY 2004-2005, Virtually All Schools Offered Students the Opportunity to Select a Lunch that Met the SMI Standard for Saturated Fat

Healthy, Hunger-Free Kids Act of 2010 required schools to gradually increase prices until revenue for full-price meals matches Federal reimbursement for free meals.

We estimated price elasticity of paid meal participation, controlling for key factors that could affect participation decision.

Modest impacts associated with 10 percent increase in price:
- Overall decrease in participation rate of 1.5 percentage points
- Range from 0.5 percentage points in high schools to 2.1 percentage points in middle schools
NSLP/SBP: Reimbursable Meals

- Key issue is defining the food and nutrient requirements for a **reimbursable meal**

- Reimbursable meals
  - meals served through NSLP and SBP that meet the **food and nutrient** requirements outlined in regulation are eligible for federal reimbursements;

  - foods served outside of NSLP/SBP (e.g. a la carte, vending) are not reimbursable.
Since 1995, USDA has had regulatory nutrition standards for NSLP/SBP

**Nutrients**

- **Nutrients** in meals are averaged over a school week; weekly averages must meet regulatory standards
  - 1/3 of 1989 RDA for protein, calcium, iron, vitamin A and vitamin C at lunch; 1/4 of RDA for these nutrients at breakfast
  - Appropriate level of calories for age/grade groups
  - Consistent with the 1995 DGA
    - Limit the percent of calories from total fat to 30% of the actual number of calories offered
    - Limit the percent of calories from saturated fat to less than 10% of the actual number of calories offered
    - Reduce sodium and cholesterol levels (no current quantitative standard)
    - Increase the level of dietary **fiber**
NSLP/SBP: 
Current Requirements for Reimbursable Meals 
Adopted in 1995 
Foods

- Four menu planning options
  - Two food-based systems
    ♦ schools must *offer* at least five food items
    ♦ specified quantities of milk, meat/meat alternates, fruits/vegetables, and grains
  - Two nutrient-based systems
    ♦ reimbursable meals must contain a minimum of three menu items
    ♦ specific food requirements include an entrée and fluid milk

- Offer vs. Serve (OVS)
  - Students may refuse certain menu items, as long as they accept the minimum number of components