

# School food and nutrition policy, monitoring and evaluation in the USA

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## Abstract

*Objective:* To provide an overview of school food and nutrition monitoring from 1980 to the Healthy Hunger-Free Kids Act of 2010 and data on school food availability in the USA.

*Design:* A review of the history of school food and nutrition policy, monitoring and evaluation efforts in the USA over the past three decades.

*Setting:* USA.

*Subjects:* School food service, school districts and schools nationwide.

*Results:* The school food environment in the USA is governed by a patchwork of federal, state and local laws and policies. The federal government has primary authority over the school meal programmes and has recently issued updated regulations governing the food and nutrient requirements for meals sold or served through the National School Lunch and School Breakfast Programs. Competitive foods (i.e. foods and beverages sold/served outside the meal programmes) are governed primarily by state and district laws and policies, although new federal regulations are expected to set minimum standards in this area. The USA has a long history of data monitoring and evaluation funded by government and private foundations which has enabled decision makers to monitor progress and opportunities to improve the foods and beverages made available to students in school.

*Conclusions:* School food-related monitoring and evaluation research has been highly influential in influencing legislation and policy, leading to improvements in the foods and beverages available to children at school as part of planned meals and individual items sold outside the meal programmes. The lessons learned from the US experience provide insights that may be valuable for implementation, monitoring and evaluation of school food programmes in other countries.

**Keywords**  
School food  
Public policy  
Monitoring and evaluation  
School nutrition

Subsidized school meals and other foods sold at schools are major components of the school food environment in the USA. The present article provides a brief overview of school food and nutrition-related policy and monitoring efforts in the USA and how such efforts have informed and/or can be used to inform policy making in this area.

## National School Lunch and School Breakfast Programs in the USA: overview and use of data to inform policy

In the USA, the National School Lunch Program (NSLP) was authorized as a permanent programme in 1946 by public law<sup>(1)</sup>. Today, all qualifying lunch meals served to primary- and secondary-level students are subsidized with federal reimbursements by the US Department of Agriculture (USDA) through states to local School Food Authorities on a per-meal basis. Students are certified each school year

based on gross household income into one of two reimbursement categories, referred to as 'free' or 'reduced price', and those not certified constitute a category called 'paid'. Established reimbursement rates for each certification category are applied to the meal counts to determine the payments to the local School Food Authorities. Over 95 000 schools, including almost all public schools and many private schools in the USA, participate in the NSLP. Approximately 62% of the fifty-one million students enrolled in these schools receive an NSLP meal on an average school day, about 180 d/year<sup>(2)</sup>. Participation varies by state from less than 50% to over 70%, and also varies by certification category<sup>(3)</sup>. On an average school day in 2011 about 82% of free-certified children, 72% of reduced-price children and 43% of children in the paid category received an NSLP meal<sup>(2,4)</sup>. The NSLP per-meal reimbursement rates are shown in Table 1. Since 1966, the USA has also had a similarly structured and entitlement-funded School Breakfast Program (SBP). Most schools offering NSLP lunches

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**Table 1** US National School Lunch Program (NSLP) meal reimbursement rates

Student certification category	NSLP meal reimbursement rates (1 July 2011–30 June 2012)*
Paid	\$US 0.26
Reduced price	\$US 2.37
Free	\$US 2.77

\*School food authorities in which 60% or more of the lunches served during the second preceding school year were served free or at a reduced price receive an additional \$US 0.02/NSLP meal. In addition, School Food Authorities receive donated foods from the US Department of Agriculture. For 1 July 2011–30 June 2012, the value of food donations was set at \$US 0.2225/reimbursable NSLP meal. Reimbursement rates shown are for the contiguous states; Alaska and Hawaii receive higher reimbursements.

also offer SBP breakfasts, although SBP student participation rates are much lower. On an average school day in 2011, about 45% of free-certified children, 29% of reduced-price children and 9% of children in the paid category received an SBP meal, for an overall SBP average daily participation rate of about 26%<sup>(2,4)</sup>.

The USDA conducted a National Evaluation of the School Nutrition Programs in 1980, which included food-service data from over 1000 schools and 24 h recalls from over 6000 students<sup>(5)</sup>. It found that, compared with non-participants, NSLP participants consumed more of most nutrients for which there was an RDA, but also consumed more energy (calories)<sup>(6)</sup>. Participation in the SBP was associated with higher consumption of some nutrients, but lower consumption of others, including iron<sup>(6,7)</sup>. The meal requirements for the SBP were subsequently revised by the USDA specifically to increase the iron content in the breakfast meal by providing higher levels of either grains or meat<sup>(8)</sup>.

The third edition of the US Dietary Guidelines for Americans, published in 1990, for the first time recommended quantitative limits on the percentage of energy from total fat (no more than 30%) and saturated fat (less than 10%) in the diet<sup>(9)</sup>. In 1991–1992, the first School Nutrition Dietary Assessment Study (SNDA-I) collected nationally representative data on school meals offered and 24 h dietary intake on school days. SNDA-I found that while still rich in RDA nutrients, NSLP meals contained, on average, 38% of energy from total fat and 15% of energy from saturated fat, and less than 1% of schools met the new Dietary Guidelines for Americans targets for percentage of energy from fat or saturated fat<sup>(10)</sup>. In only 44% of the NSLP schools would an expert dietitian have been able to select a complete reimbursable lunch meal that provided no more than 30% of energy from fat. The SBP meals offered averaged 31% of energy from total fat and 14% of energy from saturated fat<sup>(10)</sup>. The SNDA-I findings were published in 1993, and in 1995 the USDA promulgated a final regulation implementing sweeping changes in the school meals. This 'School Meals Initiative for Healthy Children' created both food component and nutrient standards for reimbursable meals, and required

states to monitor compliance of School Food Authorities at least once every 5 years with a special School Meals Initiative review<sup>(10,11)</sup>. Implementation was accompanied by extensive training and technical assistance for the states on conducting School Meals Initiative reviews and assisting School Food Authorities in developing corrective action plans when needed<sup>(12)</sup>.

The USDA sponsored the second School Nutrition Dietary Assessment Study (SNDA-II) to collect data in school year 1998–1999 on the food and nutrient content of the school meals offered to and selected by (served to) students to assess progress on meal improvement<sup>(13)</sup>. SNDA-II found a meaningful and statistically significant trend towards lower levels of total and saturated fat, and an increase in the percentage of schools offering lunches consistent with the recommended fat and saturated fat limits. The percentage of schools where an expert dietitian could select a reimbursable meal meeting the Dietary Guidelines for Americans fat and saturated fat recommendations increased from 44% overall to 82% of elementary schools and 91% of secondary schools. These improvements were made without reduction in the RDA nutrients provided<sup>(13)</sup>. Despite these improvements, the average levels of total and saturated fat offered at NSLP meals still exceeded recommended levels, and few schools (13–21%) offered meals that, on average, met the regulatory standards for fat or saturated fat<sup>(13)</sup>. The SBP breakfasts showed similar improvements, but a higher percentage of schools (46–75%) met the fat or saturated fat standards<sup>(13)</sup>.

In school year 2004–2005, the third School Nutrition Dietary Assessment Study (SNDA-III) collected nationally representative data on meals offered and served, and on dietary intake at school and over 24 h on school days<sup>(14)</sup>. School meals continued to provide significant contributions towards the RDA nutrients, and NSLP lunches averaged 34% of energy from total fat and 11% of energy from saturated fat. The percentage of schools meeting the regulatory standard for total fat did not improve from SNDA-II; however, compliance with the saturated fat limit almost doubled. In school year 2004–2005, 34% of elementary schools and 26% of secondary schools served NSLP meals that provided less than 10% of energy from saturated fat and SBP meals showed improvement in both total fat and saturated fat<sup>(15)</sup>. The dietary intake findings showed that, compared with non-participants, NSLP participants consumed more milk and milk-related nutrients at lunch. Comparing the usual daily intake of participants and non-participants on school days showed no significant differences in adequacy for elementary-school children and a higher percentage of adequate intakes for a number of nutrients for secondary-school children<sup>(16)</sup>. However, NSLP participants had a higher intake of energy at lunch and over 24 h, in part due to lunch skipping by non-participants at the level of 4% in elementary school and 8–9% in secondary school<sup>(14)</sup>.

**Table 2** Nutrition standards from the final rule for the National School Lunch Program (NSLP) and School Breakfast Program (SBP), 2012<sup>(20)</sup>

	Breakfast meal pattern			Lunch meal pattern		
	Grades	Grades	Grades	Grades	Grades	Grades
	K–5*	6–8*	9–12*	K–5	6–8	9–12
Meal pattern	Amount of food***per week (minimum per d)					
Fruits (cups)†,‡	5 (1)†††	5 (1)†††	5 (1)†††	2½ (½)	2½ (½)	5 (1)
Vegetables (cups)†,‡	0	0	0	3¼ (¾)	3¼ (¾)	5 (1)
Dark green§	0	0	0	½	½	½
Red/orange§	0	0	0	¾	¾	1¼
Beans/peas (legumes)§	0	0	0	½	½	½
Starchy§	0	0	0	½	½	½
Other§,	0	0	0	½	¾	¾
Additional vegetables to reach total¶	0	0	0	1	1	1½
Grains (oz eq.)**	7–10 (1)†††	8–10 (1)†††	9–10 (1)†††	8–9 (1)	8–10 (1)	10–12 (2)
Meats/meat alternates (oz eq.)	0§§§	0§§§	0§§§	8–10 (1)	9–10 (1)	10–12 (2)
Fluid milk (cups)††	5 (1)	5 (1)	5 (1)	5 (1)	5 (1)	5 (1)
Other specifications: daily amount based on the average for a 5-d week						
Min–max energy (kJ)‡‡,§§,	1464–2092	1674–2301	1883–2510	2301–2720	2510–2929	3138–3556
Saturated fat (% of total energy) §§,	<10	<10	<10	<10	<10	<10
Sodium (mg)§§,¶¶	≤430	≤470	≤500	≤640	≤710	≤740
Trans fat§§,	Nutrition label or manufacturer specifications must indicate zero grams of trans fat per serving					

K, kindergarten; oz eq., ounce equivalent.  
 \*In the SBP, the above age–grade groups are required beginning 1 July 2013 (school year 2013–2014). In school year 2012–2013 only, schools may continue to use the meal pattern for grades K–12 (see Section 220.23).  
 †One-quarter cup of dried fruit counts as ½ cup of fruit; 1 cup of leafy greens counts as ½ cup of vegetables. No more than half of the fruit or vegetable offerings may be in the form of juice. All juice must be 100% full-strength.  
 ‡For breakfast, vegetables may be substituted for fruits, but the first 2 cups/week of any such substitution must be from the dark green, red/orange, beans/peas (legumes) or ‘Other vegetables’ subgroups as defined in Section 210.10(c)(2)(iii).  
 §Larger amounts of these vegetables may be served.  
 ||This category consists of ‘Other vegetables’ as defined in Section 210.10(c)(2)(iii)(E). For the purposes of the NSLP, ‘Other vegetables’ requirement may be met with any additional amounts from the dark green, red/orange and beans/peas (legumes) vegetable subgroups as defined in Section 210.10(c)(2)(iii).  
 ¶Any vegetable subgroup may be offered to meet the total weekly vegetable requirement.  
 \*\*At least half of the grains offered must be whole grain-rich in the NSLP beginning 1 July 2012 (school year 2012–2013), and in the SBP beginning 1 July 2013 (school year 2013–2014). All grains must be whole grain-rich in both the NSLP and the SBP beginning 1 July 2014 (school year 2014–2015).  
 ††Fluid milk must be low-fat (1% milk fat or less, unflavoured) or fat-free (unflavoured or flavoured).  
 †††The average daily amount of energy for a 5-d school week must be within the range (at least the minimum and no more than the maximum values).  
 §§Discretionary sources of energy (solid fats and added sugars) may be added to the meal pattern if within the specifications for energy, saturated fat, trans fat and sodium. Foods of minimal nutritional value and fluid milk with fat content greater than 1% milk fat are not allowed.  
 |||In the SBP, energy and trans fat specifications take effect beginning 1 July 2013 (school year 2013–2014).  
 ¶¶Final sodium specifications are to be reached by school year 2022–2023 or 1 July 2022. Intermediate sodium specifications are established for school years 2014–2015 and 2017–2018. See required intermediate specifications in Section 210.10(f)(3) for lunches and Section 220.8(f)(3) for breakfasts.  
 \*\*\*Food items included in each food group and subgroup and amount equivalents. Minimum creditable serving is ½ cup.  
 ††††The fruit quantity requirement for the SBP (5 cups/week and a minimum of 1 cup/d) is effective 1 July 2014 (school year 2014–2015).  
 †††††In the SBP, the grain ranges must be offered beginning 1 July 2013 (school year 2013–2014).  
 §§§§There is no separate meat/meat alternate component in the SBP. Beginning 1 July 2013 (school year 2013–2014), schools may substitute 1 oz eq. of meat/meat alternate for 1 oz eq. of grains after the minimum daily grains requirement is met.

In conjunction with Health Canada, the US National Academies, Institute of Medicine updated the RDA to the Dietary Reference Intakes in a series of reports published between 1997 and 2005<sup>(17)</sup>. In 2008, the USDA contracted with the Institute of Medicine, Food and Nutrition Board to review the nutrition literature on school-aged children and the school meal programmes and provide recommendations for updating the requirements for school meals. The resulting report, *School Meals: Building Blocks for Health*, published in 2010, made extensive use of SNDA-III and became the scientific foundation for the latest revision to the school meal patterns and nutrition standards<sup>(18)</sup>. In January 2011, the USDA published a proposed regulation and regulatory impact analysis describing the potential changes, and allowed 90 d for public comment<sup>(19)</sup>. Over 130 000 public comments were received and considered by

USDA in developing the final rule, which was published on 26 January 2012. The new nutrition standards for NSLP and SBP will provide for meals with more fruits and vegetables, more whole grains, only fat-free or low-fat milk, less sodium (salt), and will limit energy to within a range appropriate for each of three grade groupings<sup>(20)</sup>. Table 2 displays a summary of the final meal pattern and nutrition standards. Clearly, the SNDA studies were instrumental in achieving this policy improvement.

**Snacks and beverages sold in school – ‘competitive foods’: how data reveal the need for policy**

The Healthy Hunger-Free Kids Act (HHFKA, Public Law 111–296) reauthorized and updated the legislation for the

**Table 3** Prevalence (%) of state\* law and district† policy competitive food nutrient limits and competitive beverage limits by grade level of applicability, USA (school year 2009–2010): data from the Bridging the Gap Program, University of Illinois at Chicago, 2012

	Grade level of applicability					
	Elementary		Middle		High	
	State (%)	District (%)	State (%)	District (%)	State (%)	District (%)
<b>Foods</b>						
Sugar limits	24	21	18	20	14	13
Fat limits	27	35	20	31	25	30
Sodium limits	10	10	6	11	4	9
Energy (calorie) limits	12	14	8	11	6	6
<b>Beverages</b>						
Sugar-sweetened beverage ban	20	14	8	5	4	2
Only 1%/skim milk (no 2%/whole-fat milk)	18	9	16	7	14	8
Energy (calorie) limits	10	6	6	2	6	2

Example of how to read this table: At the elementary school level, 24 % of states and 21 % of school districts have laws or policies, respectively, limiting sugar content in foods.

\*State includes the fifty states and the District of Columbia.

†District policies are weighted to reflect the percentage of districts nationwide.

child nutrition programmes. Until passage of the HHFKA in December 2010, no federal agency had the legal authority to regulate the types of foods sold in schools outside the NSLP and SBP meals unless those foods were sold in the NSLP/SBP food-service area during meal times. Those federal regulations were quite minimal; they prohibited the sale of ‘foods of minimal nutritional value’ (FMNV) which only included sodas and certain types of candies that competed with the school meal programmes in places where meals were sold. Other than the FMNV requirement, and general regulation on foods sold at any outlet in the USA (e.g. labelling, food safety, etc.), no other federal regulation governed the sale of ‘competitive foods’ (i.e. foods and beverages sold at school outside the school meal programme) prior to HHFKA<sup>(21)</sup>. Thus, the only policies governing the appropriateness of selling competitive foods at school (other than FMNV) have been at the state and district levels<sup>(22–24)</sup>. While a number of state laws in this area have been in place for several years, district policies governing competitive foods were precipitated by the Child Nutrition and WIC Reauthorization Act of 2004 (Public Law 108–296, Section 204) which required all school districts participating in federal child nutrition programmes to adopt and implement a local school wellness policy by the beginning of the 2006–2007 school year. Among other things, the wellness policies were required to include nutrition guidelines for all foods sold on campus during the school day (i.e. competitive foods)<sup>(25)</sup>. Analyses conducted by researchers at the University of Illinois at Chicago’s Bridging the Gap Program, as part of the largest ongoing nationwide evaluation of the district policies and related state laws, indicated that the existing policies are weak overall (i.e. not addressing all locations of sale, only addressing certain types of foods and/or beverages, not applying throughout the school campus or throughout the school day, etc.) and significantly stronger at the elementary school as compared with the secondary school level<sup>(24,26)</sup>. Table 3 briefly summarizes state and district

policy limits on the sale of high-fat, energy-dense (caloric) and/or sugary foods and/or beverages in competitive food venues in place at the beginning of the 2009–2010 school year. As the data illustrate, few states and/or districts place specific and required limits on foods and/or beverages that are high in fats, energy and/or sugars.

Given the inconsistent and weak approach to competitive food policy making in the USA prior to HHFKA, it is not surprising then that students have wide access to competitive foods and beverages on a daily basis. Recent data from the Bridging the Gap Program reveal that elementary- and secondary-school students have wide access to competitive foods and beverages in schools<sup>(26–31)</sup>. These data, as well as historical data from the US Centers for Disease Control and Prevention’s state School Health Profiles<sup>(32)</sup> study, the School Health Policies and Programs Study<sup>(33,34)</sup> and USDA’s SNDA-III<sup>(14)</sup>, support the view that the inconsistent approach to regulating competitive foods in schools needs improvement. The inconsistent approach to restricting competitive foods in schools has not led to universal changes in the availability of such foods nationwide, although several studies have demonstrated that state laws do affect student consumption and access to less healthful foods and beverages such as whole milk, sugar-sweetened beverages and high-fat/salty snacks<sup>(35–39)</sup>. And there is emerging, albeit mixed, evidence of the impact of state and/or district competitive food policies on BMI<sup>(40–45)</sup>. Given that a number of studies<sup>(35–39,45–51)</sup> have demonstrated strong competitive food and/or beverage policies can effectuate changes at the school level, it is expected that the availability of high-fat, high-energy, high-sugar foods and beverages in competitive venues will decline with nationwide standards governing competitive foods and beverages.

**Monitoring meal production cost: how data can affect programme funding**

In 1992–1993 and again in 2005–2006, the USDA sponsored data collection from a nationally representative sample of

School Food Authorities to determine the cost of producing reimbursable NSLP and SBP meals<sup>(52,53)</sup>. In each of these studies, approximately 45% of the production cost, on average, was for food, 45% for the cost of labour and 10% for other direct costs. For the average School Food Authority, total revenues from all reimbursable meals exceeded the reported cost of producing those meals, but some costs go unreported and the total revenues are less than the full costs<sup>(52,53)</sup>. Sensitive to both federal cost and meal production cost issues, the HHFKA increased NSLP meal reimbursements by \$US 0.06/meal and included a number of provisions other than direct increase in reimbursements to provide added revenues to the school food-service account to allow for nutritional improvements in the NSLP and SBP meals. Section 205 addresses equity in school lunch pricing for meals in the 'paid' category, and Section 206 addresses revenue from non-programme foods sold in schools<sup>(54,55)</sup>. These legislative changes are a good example of how research findings on the operational aspects of the school meal programmes are translated into public policy. Specifically, the meal cost studies documented the need for increased funding for the school food-service account, and the HHFKA legislation addressed this need.

## Conclusion

The discussion above summarizes the school food policy progress in the USA over the past several decades and highlights how data have been used or may be used to inform policy in this area. Findings from research and evaluation studies funded by government and private foundations have been influential in shaping national legislation and/or regulations which has led to improvements in the foods and beverages available to children at school, particularly as part of planned meals. Research and evaluation studies also have been useful in informing state and local policy change related to competitive foods and beverages and the impact of such policies is emerging as noted herein. At the same time, surveillance data indicating the wide variability in competitive food and beverage availability nationwide point to the need for forthcoming federal regulations in this area to provide, at a minimum, some uniformity as well as a 'floor' in states and districts where no or weak policies currently exist. Lessons learned from the US experience in this area also could inform school food policy-related efforts in other countries.

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