



WORKING PAPER

School Meals Case Study: United States of America

Prepared by the Research Consortium for School Health and Nutrition, an initiative of the School Meals Coalition

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June 2023

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Table of Contents

Introduction	1
A Brief History of the School Meal Programs	1
Country Profile	1
Design and implementation of school Feeding programmes.....	3
Monitoring and evaluation	7
Lessons learned and best practices	7
Challenges	7
References and related resources	9
Corresponding authors	10

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Introduction

The United States Department of Agriculture (USDA) administers several child nutrition programs to support food security and diet quality in the U.S. The two largest are the National School Lunch Program (NSLP) and the School Breakfast Program (SBP), which serve free or low-cost nutritious meals to tens of millions of children and adolescents each day (hereafter “children” for brevity).¹ Smaller programs include the Special Milk Program, which provides milk to children in schools and childcare institutions that do not participate in other Federal meal programs; the Fresh Fruit and Vegetable Program, which provides fresh fruits and vegetables to children in eligible elementary schools (typically kindergarten through grade 5); the Child and Adult Care Food Program, which primarily provides meals to children in childcare centers, family day care homes, emergency shelters, and after-school programs; and the Summer Food Service Program and NSLP and SBP’s Seamless Summer Option, which serve children in the summer months when most schools are not in session.

In Federal fiscal year (FY) 2019 (October 1, 2018 through September 30, 2019), before the Coronavirus (COVID-19) pandemic, the NSLP and SBP together accounted for about 79 percent of USDA expenditures on its child nutrition programs.² This case study provides a brief overview of the history, rules, and implementation of these two programs, summarizes research on their effectiveness, and documents ongoing implementation challenges.

A Brief History of the School Meal Programs

Private charities and local school boards began providing funding for school lunches in some locations beginning in the early 20th century. In the 1930s, the U.S. government began issuing loans and providing agricultural surpluses to locally organized school lunch programs. The Works Progress Administration, a Great Depression-era program, also began providing the labor needed for schools to cook and serve meals. In 1946, Congress passed the National School Lunch Act, which established the NSLP. Two decades later, the Child Nutrition Act established the SBP as a two-year pilot program. The breakfast program was permanently authorized in 1975.³

Country Profile

Population and economics, 2021

Table 1

Total U.S. population	Total number of U.S. population aged 5-17	Total number of U.S. population employed in agriculture sector	Gross Domestic Product (GDP) per capita
331,893,745 ⁴	54,814,033 ⁵	2,559,162 ⁶	70,248 USD ⁷

¹ Toossi, Jones, & Hodges (2021)

² Tiehen (2020)

³ Ralston et al. (2008)

⁴ American Community Survey (ACS): <https://data.census.gov/table?tid=ACSST1Y2021.S0101>

⁵ ACS: <https://data.census.gov/table?tid=ACSST1Y2021.S0101>

⁶ ACS: <https://data.census.gov/table?t=Industry&g=010XX00US&y=2021&d=ACS+5-Year+Estimates+Detailed+Tables>

⁷ World Bank: <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=US>

K-12 Education by type of school, select years

Table 2

School type	Total number of pupils	Total number of schools	Average pupil to teacher ratio
Public	49,452,864 (Fall 2021) ⁸	98,577 (2020-2021 school year) ⁹	15.7 (Fall 2021) ¹⁰
Private	4,652,904 (2019-2020 school year) ¹¹	30,492 (2019-2020 school year) ¹²	12.3 (Fall 2021) ¹³

Food security, nutrition and health

➤ Stunting

3.4% of children under age 5 experience growth stunting.¹⁴

➤ Obesity¹⁵

Based on National Health and Nutrition Examination Survey (NHANES) 2017-2020 data.¹⁶

- Among children ages 6-11, 22.8% have obesity;
- Among adolescents ages 12-19, 25.6% have obesity

➤ Micronutrient deficiency

Broadly, evidence shows low levels of micronutrient deficiency derived from food, with the following exceptions: Vitamin D, Potassium, Iron, and Calcium.¹⁷

Table 3 Micronutrient Consumption in school-age children in the United States

Micronutrients	Average nutrient intake ¹⁸	
	Children aged 6-11	Children aged 12-19
Vitamin D	7.6 µg	8.5 µg
Potassium	2089mg	2185mg
Iron	14.4 mg	15.7 mg
Calcium	1009mg	1008mg

Recommended daily amounts for these micronutrients vary by age and gender.

- Vitamin D: 15 µg for children ages 6-19¹⁹

⁸ National Center for Education Statistics (NCES):

https://nces.ed.gov/programs/digest/d22/tables/dt22_203.20.asp<https://nces.ed.gov/fastfacts/display.asp?id=372#:~:text=In%20fall%202021%2C%20about%2049.5,estimates%20are%20subject%20to%20change>

⁹ NCES: <https://nces.ed.gov/fastfacts/display.asp?id=84>

¹⁰ NCES: https://nces.ed.gov/programs/digest/d21/tables/dt21_208.20.asp

¹¹ NCES: <https://nces.ed.gov/surveys/pss/tables/TABLE01f11920.asp>

¹² NCES: <https://nces.ed.gov/fastfacts/display.asp?id=84>

¹³ NCES: https://nces.ed.gov/programs/digest/d21/tables/dt21_208.20.asp

¹⁴ World Bank: <https://data.worldbank.org/indicator/SH.STA.STNT.ZS?locations=US>

¹⁵ For a definition of obesity, see: <https://www.cdc.gov/obesity/basics/childhood-defining.html>

¹⁶ Hu & Staiano (2022)

¹⁷ U.S. Department of Agriculture and U.S. Department of Health and Human Services (2020)

¹⁸ What We Eat in America: https://www.ars.usda.gov/ARSUserFiles/80400530/pdf/1516/Table_37_SUP_GEN_15.pdf

¹⁹ National Institutes of Health (NIH): <https://ods.od.nih.gov/factsheets/VitaminD-Consumer/>

- Potassium: 2,300mg for children ages 6-8; 2,300mg for girls ages 9-18; 2,500mg for boys ages 9-13; 3,000mg for boys ages 14-18²⁰
- Iron: 10mg for children ages 6-8; 8mg for children ages 9-13; 11mg for girls ages 14-18; 15 mg for boys ages 14-18²¹
- Calcium: 1000mg for children ages 6-8 years; 1,300mg for children ages 9-18²²

➤ Food insecurity

In the United States, households in which there is limited or uncertain access to adequate food because of a lack of money or other resources are considered food insecure. In 2021, 10.2% of the U.S. population reported being food insecure, and children were food insecure at times in 6.2% of households.²³

Design and implementation of school Feeding programmes

Programme objectives

NSLP²⁴ and SBP²⁵ aim to provide nutritionally balanced low- or no-cost school meals to children each school day.

Targeting and coverage

Meals served through the NSLP and SBP are available to all children in schools that operate the programs, and schools receive reimbursements from the federal government for each meal served. Meals are available at no cost to children from households with incomes at or below 130 percent of the Federal poverty level for their household size and at a reduced-price to those from households with incomes between 130 and 185 percent of the Federal poverty level for their household size. Otherwise, children must pay what is considered full price. Children can also qualify for no cost or reduced-price meals if their household participates in select means-tested Federal programs or if the child is a migrant, homeless, or in foster care. In some States, children can qualify if household income used for Medicaid²⁶ purposes meet income limits for no cost or reduced-price meals.

There are about 100,000 public and nonprofit private schools that participate in the school meal programs.²⁷ Based on data published in March, 2023:²⁸

- 30.1 million children participated in the NSLP in Federal fiscal year (FY) 2022 and over 4.95 billion school lunches were served. Nearly all, 95.4 percent, of these lunches were served for free or at a reduced-price due to special circumstances related to the COVID-19 pandemic. Prior to the pandemic, in FY 2019, 29.6 million children participated and 4.87 billion lunches were served. About 75 percent of these lunches were served for free or at a reduced-price.
- 15.64 million children participated in the SBP in FY 2022 and over 2.59 billion school breakfasts were served. Nearly all, 96.9 percent of these breakfasts were served for free or at a reduced-

²⁰ NIH: <https://ods.od.nih.gov/factsheets/Potassium-Consumer/>

²¹ NIH: <https://ods.od.nih.gov/factsheets/Iron-Consumer/>

²² NIH: <https://ods.od.nih.gov/factsheets/Calcium-Consumer/>

²³ Coleman-Jensen, Rabbitt, Gregory, and Singh (2022)

²⁴ Richard B. Russell National School Lunch Act (P.L. 79-396 as amended by P.L. 117-328 December 29, 2022 and codified at 7 CFR 210).

²⁵ Child Nutrition Act of 1966 (P.L. 89-642 as amended by P.L. 111-296 December 13, 2010 and codified at 7 CFR 220).

²⁶ Medicaid is a U.S. government health insurance program for low-income people.

²⁷ USDA, Economic Research Service: [Available here](#).

²⁸ USDA, Food and Nutrition Service: <https://www.fns.usda.gov/pd/child-nutrition-tables>

price. Prior to the pandemic, in FY 2019, 14.77 million children participated and 2.45 billion breakfasts were served. About 85 percent of these breakfasts were served for free or at a reduced-price.

While the USDA gave schools the option to provide NSLP and SBP meals for free to all students regardless of their household's income as a special circumstance during the COVID-19 pandemic (2020-2022), it typically does not. However, a policy known as universal free school meals (UFSM) has been adopted by some states. As of March 2023, five states (California, Colorado, Maine, Minnesota, and New Mexico) have elected to subsidize the provision of free school meals to all students in NSLP and SBP participating schools on a permanent basis, while four (Connecticut, Massachusetts, Nevada, and Vermont) have elected to do so for the 2022-2023 school year. Other states are also considering adopting UFSM. Additionally, schools and school districts can elect to adopt UFSM through several provisions in federal school meals legislation, most notably the Community Eligibility Provision. Through this provision, schools and school districts can serve meals at no cost to all students if at least 40 percent of their students are certified to receive free school meals through participation in select means-tested programs or because they are a migrant, homeless, or in foster care.²⁹

Meal preparation

School meals, which typically consist of hot and cold options, are often served in a cafeteria setting. Schools may offer other options outside of a cafeteria style setting. Some schools prepare meals on-site from scratch using fresh ingredients. Other schools provide meals that are ready to heat and served from a district central kitchen, outside vendor, or other source. Some school districts oversee their own food service operations while others contract with larger food service management companies.

Nutritional norms

Meals served in schools that participate in the NSLP or SBP are required to meet Federal nutrition requirements, which are required to be updated periodically to be consistent with the most current Dietary Guidelines for Americans.³⁰ Current meal standards for school breakfasts³¹ and lunches³² set minimum amounts of food per week based on grade levels (K-5, 6-8, and 9-12) as well as average weekly maximum amounts (based on a 5-day week) of specific components like calories, sodium, and saturated fat. All foods must have zero grams of trans fat per serving. Setting minimum amounts of food per week as well as setting average weekly limits provides schools with flexibility to offer different foods while still meeting federal nutrition standards. Milk, either fat-free (skim) or low-fat (1 percent fat or less), must be served at each school meal.^{33,34} Flavored milk may be provided if unflavored milk is also available.^{35,36}

For the NSLP, schools must offer four food components in addition to milk: fruits, vegetables, meat/meat alternates, and grains. Students must take a fruit or vegetable, and at least two other components in order for their lunch to qualify as a reimbursable meal.^{37,38} For the SBP, schools must offer three food components in addition to milk: fruits, vegetables, and grains. Although there is not

²⁹ Billings & Carter (2020)

³⁰ Dietary Guidelines for Americans: <https://www.dietaryguidelines.gov/>

³¹ 7 CFR 220.8

³² 7 CFR 210.10(c)

³³ 7 CFR 210.10(c)

³⁴ 7 CFR 220.8(c)

³⁵ 7 CFR 210.10(c)

³⁶ 7 CFR 220.8(c)

³⁷ 7 CFR 210.10(k)

³⁸ 7 CFR 220.8(k)

a required meat/meat alternate component, one may be substituted for the required grains component as long as the weekly grains requirement is met.³⁹ Other breakfast meal pattern options include substituting vegetables for fruit⁴⁰ and allowing nuts/seeds and nut/seed butters to count as a meat/meat alternative.⁴¹

Schools are required to make reasonable accommodations for students with dietary restrictions. Schools may also seek approval to serve unique food items to meet Federal nutrition requirements. For example, to accommodate cultural food preferences and cost and product availability concerns, schools in the U.S. territories of American Samoa, Puerto Rico, and U.S. Virgin Island have approval to use yams, plantains, or sweet potatoes to meet grain requirements.⁴² There are also special meal options for American Indian and Alaska Native students which include traditional foods such as meat from domesticated and wild game.^{43,44}

Food procurement

School food authorities (SFAs)—which administer NSLP and SBP at the local level—are responsible for developing menus and procuring the required foods, goods, and services to administer their area school meal programs. SFAs use a variety of contract mechanisms to procure foods, goods, and services from vendors and manufacturers, such as fixed-price and sealed competitive bid proposals. The USDA encourages schools to purchase locally grown and raised products to the maximum extent practicable. Federal regulations also require SFAs to purchase domestically produced agricultural commodities and food products to the extent practicable. About half of SFAs also participate in purchasing cooperatives where SFAs can submit joint bids to receive better prices for foods and supplies.⁴⁵ Schools participating in the school lunch program can also use USDA Foods, which are foods produced by U.S. farmers and purchased by the federal government. Schools are provided with a list of available USDA Foods each school year and the foods are available for direct delivery, bulk processing, or through the USDA/Department of Defense Fresh Fruit and Vegetable Program.⁴⁶

Legal framework and policy evaluation

The NSLP and SBP have undergone several changes since their establishment. This section covers some of these changes. At the NSLP's inception, costs for school lunch programs were shared by the federal and state governments via federal grants to states. Legislation passed in the 1960s introduced federal reimbursement for school meals in lieu of grant aid to states and provided additional funding to schools with high percentages of low-income children. Eligibility criteria for free and reduced-price meals were also made nationally uniform in the 1960s.⁴⁷ Residential childcare institutions became eligible to participate in the NSLP in 1975 and the first provision allowing schools to provide all meals free of charge to children was introduced in 1977. Legislation passed in the early 1980s reduced reimbursement rates for free and reduced-price school meals, raised the eligibility threshold for free meals from 125 to 130 percent of the federal poverty level, and lowered the eligibility threshold for reduced-price meals from 195 to 185 percent of the federal poverty level. In 1983, the prohibition on the sale of foods of minimal nutrition value in schools during the school day was lifted.⁴⁸

³⁹ 7 CFR 220.8(c)

⁴⁰ 7 CFR 220.8(c) and (c)(2)(ii)

⁴¹ 7 CFR 210.10

⁴² 7 CFR 210.10(c)(3)

⁴³ 7 CFR 210.10(m)(3)

⁴⁴ USDA, Food and Nutrition Service: <https://www.fns.usda.gov/f2s/tribal-foods>

⁴⁵ Kim et al. (2021)

⁴⁶ USDA, Food and Nutrition Service: <https://www.fns.usda.gov/usda-fis/factsheet-2022>

⁴⁷ Gunderson (1971)

⁴⁸ Ralston et al. (2008)

Changes to the programs became less frequent in the 1990s and 2000s. Nutrition standards for school meals were revised in 1994, and more stringent food safety requirements were instituted in 2004.⁴⁹ Nutrition standards and food safety requirements were updated again in 2010 with the passage of the Healthy, Hunger-Free Kids Act. This act also introduced an additional provision—the Community Eligibility Provision—allowing schools, groups of schools, or school districts to offer meals at no charge to all students if at least 40 percent of their students are directly certified for free school meals through their households participation in select other means-tested programs.⁵⁰ Beginning in March 2020, in response to the COVID-19 pandemic, legislation authorized USDA to waive many program requirements to facilitate the continued provision of meals to children. Most of these waivers expired in June 2022. Legislation passed in that same month increased reimbursement rates for school meals for the 2022-2023 school year to help schools as they continued to struggle with the economic consequences of the pandemic, such as inflation.⁵¹

Federal expenditures on the school meal programs, select years

Table 4 Federal expenditures

Food intervention ²³	FY 2019 ⁵²	FY 2022 ⁵³
National School Lunch Program	\$14.1 billion	\$22.6 billion
School Breakfast Program	\$4.5 billion	\$6.4 billion

Note: “FY” denotes Federal fiscal year (October 1st through September 30th)

Meal production costs

The total cost of producing a reimbursable school meal is borne by SFAs and their associated school districts. Costs to SFAs include food, foodservice labor, equipment purchases, and utilities, among others. Costs to school districts include expenses not borne by the SFA that contribute to the production of reimbursable meals, such as non-foodservice personnel and facility costs. In the 2014-2015 school year, the average total cost to produce a reimbursable NSLP lunch across SFAs was \$6.02 while the average federal reimbursement per free lunch was \$3.32. In that school year, the average total cost to produce a reimbursable SBP breakfast across SFAs was \$4.19 while the average federal reimbursement per free breakfast was \$1.88.

The average composition of the total cost per NSLP lunch across SFAs was: 29.3% food; 54.0% labor; 7.8% Other direct costs (e.g., non-food supplies, foodservice management company charges, equipment purchases, depreciation, utilities, and other costs not classified as food, labor, or indirect costs); 8.9% indirect costs (e.g., charges for the use of facilities or administrative support, or other services provided by school districts to their school food authorities). Similarly, the average composition of the total cost per SBP breakfast across SFAs was: 30.5% food; 52.9% labor; 7.7% other direct costs; 9.0% indirect costs.

SFAs received 56.7% of their revenues from federal reimbursements. The remainder of revenues came from USDA Foods (5.9%), student payments for reduced and full price reimbursable meals (20.0%), competitive food (meals and snacks sold at schools outside of the NSLP and SBP) sales (10.9%), state and local funds (5.9%) and other sources (0.6%).⁵⁴

⁴⁹ Ralston et al. (2008)

⁵⁰ Billings & Carter (2020)

⁵¹ Toossi, Jones, & Hodges (2021); Jones, Toossi, & Hodges (2022); Toossi & Jones (2023)

⁵² Tiehen (2020)

⁵³ Toossi & Jones (2023)

⁵⁴ Fox et al., (2019)

Monitoring and evaluation

The NSLP and SBP are administered by USDA, Food and Nutrition Service (FNS) at the Federal level, State agencies at the state level, and school food authorities at the local level. USDA, FNS monitors the programs through information reported by State agencies, its reviews of State agencies, and State agency reviews of SFAs. In turn, State agencies monitor school food authorities for compliance with the program's rules. USDA, FNS also sponsors national surveys to evaluate compliance with NSLP and SBP's rules.⁵⁵

Studies have found that the implementation of the Healthy, Hunger Free Kids Act improved the nutritional quality of school meals. Average compliance with federal school lunch standards for fruits, vegetables, whole grains, meat/meat alternatives, and milk is typically high (ranging from about 80-95%), although some variation by grade level and by region across the U.S. has been observed. School lunches tend to be of higher nutritional value than lunches children bring from home, and are more likely to provide vegetables, whole grains, and dairy.⁵⁶ There is also evidence that the foods students eat at school are the healthiest foods they eat all day.⁵⁷

Research examining the effect of school meals on student BMI is emerging. Chandran and colleagues estimated that there was a significant decrease in the annual change in children's BMI z-scores after the HHFKA was implemented compared with prior to this policy.⁵⁸ Other research examining the relationship between the HHFKA and child obesity trends found no overall association, but substantial declines in the risk of obesity among children from low-income households.⁵⁹ Research examining UFSM policies for school breakfast and/or lunch have found no population-level association with BMI or the prevalence of overweight.⁶⁰

Lessons learned and best practices

The Healthy, Hunger Free Kids Act had three primary goals:⁶¹

- Improve the nutrition of school meals with a focus on reducing childhood obesity
- Increase access to free school meals
- Increase program monitoring and integrity

These stronger school meal standards and the concurrent expansion of UFSM policies in high-poverty school districts, has been associated with an increase in school meal consumption in the U.S.⁶² Additional research examining best practices in the U.S. has found that the most effective methods to further increase school meal participation and/or consumption include providing alternative breakfast models (e.g., breakfast in the classroom); limiting access to competitive foods (i.e., snacks and beverages available in vending machines, on lunch lines, in school stores, at classroom parties, and/or through fundraisers during the school day); ensuring students have sufficient time to eat with longer lunch periods; providing more menu choices; offering recess before lunch; and adapting recipes to enhance the palatability and cultural appropriateness of foods.⁶³

Challenges

Among schools that do not provide UFSM, there are many families with limited resources who are

⁵⁵ For example, see Fox et al., (2019) and Milfort et al. (2021)

⁵⁶ Fox et al. (2019)

⁵⁷ Liu, Micha, Li, and Mozaffarian (2021)

⁵⁸ Chandran et al. (2023)

⁵⁹ Kenney et al. (2020).

⁶⁰ Cohen et al. (2021a)

⁶¹ https://obamawhitehouse.archives.gov/sites/default/files/Child_Nutrition_Fact_Sheet_12_10_10.pdf

⁶² Cohen et al. (2014); Fox et al. (2019)

⁶³ Cohen et al. (2021b); Hecht et al. (2023)

near eligible for free meals (using the traditional mean-tested approach) and at risk for food insecurity but do not qualify for free meals.⁶⁴ Many schools are ineligible to adopt UFSM through the Community Eligibility Provision because fewer than 40 percent of their students can be directly certified for free school meals. Among eligible schools, nearly a third have opted not to participate in free school meal provisions due to financial concerns (for example, federal reimbursements may not cover the cost of providing free meals to all students in schools or school districts with lower shares students certified for free meals).^{65,66} Additionally, many students who are eligible for free or reduced-price meals do not eat school meals due to barriers such as stigma (e.g., due to students' perceived shame of receiving a school meal and/or due to parents' reluctance to complete the required paperwork) or other factors (e.g., insufficient time to eat).⁶⁷ Many schools also face challenges to provide healthier school meals, in part due to food costs and staffing shortages, especially in rural areas; these issues further increased during COVID-19 pandemic.⁶⁸

⁶⁴ Fleischhacker & Campbell (2020); Potamites & Gordon (2010)

⁶⁵ Billings & Carter (2020)

⁶⁶ USDA's Community Eligibility Provision Characteristics Study, School Year 2016-2017 available at <https://www.fns.usda.gov/cn/usda-cep-characteristics-study-sy-2016-17>

⁶⁷ Mirtcheva & Powell (2009); Moore, Hulsey, & Ponza (2009)

⁶⁸ Cohen et al. (2022); Zuercher et al. (2022)

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Required citation

Toossi, Saied; Cohen, Juliana; Clift, Joseph; Turner, Lindsey; Gosliner, Wendi; Schwartz, Marlene; (2023) School Meals Case Study: United States of America. Working Paper of the Research Consortium for School Health and Nutrition. London School of Hygiene & Tropical Medicine, London. DOI: <https://doi.org/10.17037/PUBS.04671116>



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