



Published in final edited form as:

Am J Health Promot. 2023 March ; 37(3): 300–312. doi:10.1177/08901171221123311.

Advancing Healthy Food Service in the United States: State Food Service Guidelines Policy Adoption and Implementation Supports, 2015–2019

Amy Lowry-Warnock, MPA¹, Nicole Strombom, MPH, JD², Kristy Mugavero, RN, MPH¹, Diane Harris, PhD MPH¹, Heidi M. Blanck, PhD^{1,3}, Stephen Onufrak, PhD¹

¹Division of Nutrition, Physical Activity, and Obesity, Centers for Disease Control and Prevention, Atlanta, GA, USA

²Public Health Law Program Host-Site Intern, Applied Research and Translation, Division for Heart Disease and Stroke Prevention, Centers for Disease Control and Prevention, Atlanta, GA, USA

³United States Public Health Service, Rockville, MD, USA

Abstract

Purpose: Food service guidelines (FSG) policies can impact the nutritional quality of millions of meals sold or served to government employees, citizens in public places, or institutionalized persons. This study examines state FSG policies adopted January 1, 2015 to April 1, 2019, and uses a FSG Classification Tool (FSG Tool) to quantify alignment with nutrition recommendations for public health impact.

Design: Quantitative Content Analysis

Setting: State Government Worksites and Facilities

Participants: 50 states and District of Columbia (D.C.) in the United States.

Measures: Frequency of policies and percent alignment to FSG tool.

Analysis: FSG policies were identified using legal databases to assess state statutes, regulations, and executive orders. Content analysis and coding determined attributes of policies across 4 FSG Tool domains, (1) nutrition standards referenced; (2) behavioral design strategies encouraging selection of healthier offerings; (3) facility efficiency and environmental sustainability; and (4) FSG implementation supports.

Results: From 2015–2019, 5 FSG policies met study inclusion criteria. Four out of 5 policies earned a perfect nutrition score (100%) by referencing nutrition standards that align with the

Corresponding Author: Amy Lowry-Warnock, Division of Nutrition, Physical Activity, and Obesity, Centers for Disease Control and Prevention, 4770 Buford Hwy, Atlanta, GA 30341, USA. awarnock@cdc.gov.

Author Contributions

All authors contributed to the concept and design of the study. A.L.W., N.S. and S.O. analyzed the data. A.L.W. K.M. and S.O. drafted the primary manuscript. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Dietary Guidelines for Americans (DGA) and are operationalized for use in food service venues. Four out of 5 policies included at least 1 implementation supports provision, such as naming an implementing agency, and 2 included provisions that encourage local food sourcing.

Conclusion: From 2015–2019, overall FSG policy comprehensiveness scores ranged from 24% to 73%, with most policies referencing food and nutrition standards that align to national nutrition recommendations. Public health practitioners can educate decision makers on the potential impact of FSG policies on diet-related health outcomes and associated cost savings, as well as other important co-benefits that support locally grown products and environmental sustainability practices.

Keywords

nutrition; health policy; food systems; health disparities; food service; sustainability

Each day, millions of Americans buy or are served foods and beverages in community anchor institutions, such as worksites, hospitals, universities, or parks and recreation centers. Adopting food service and/or procurement practices that align with a healthy diet, as defined by the U.S. Department of Agriculture (USDA) and the U.S. Department of Health and Human Services (HHS)'s Dietary Guidelines for Americans (DGA), has been promoted by leading public health organizations as a promising strategy for population health.^{1,2} The term “healthier food procurement practices” refers to the process of buying and distributing food to facilitate healthier dietary choices, while “healthier food service” refers to the use of nutrition standards to help determine the availability and type of foods that are prepared, served, or sold in food venues.³ Generally, nutrition standards seek to minimize foods high in added sugar, sodium, and saturated fats, while promoting nutrient-dense options, such as fruits and vegetables, whole grains, and lean proteins. These standards are consistent with nutrition science and when implemented, may prevent costly diet-related chronic disease, including obesity, diabetes, and heart disease, while also increasing demand for healthier options.⁴

In 2011, through a collaboration between HHS and the General Services Administration (GSA), the Centers for Disease Control and Prevention (CDC) released the U.S. government's first set of voluntary best business practices to increase healthy and safe food options at federal facilities and worksites. The 2011 food and nutrition standards were updated in 2017 and released as a multi-department initiative.⁵ The full set of standards are referred to as *healthy food service guidelines* (herein FSG) and are designed to achieve 4 primary goals, (1) increasing the availability of healthier food and beverage options; (2) promoting healthier options through behavioral design strategies such as pricing, placement, and promotion; (3) adhering to food safety protocols that minimize foodborne illness; and (4) fostering use of food service practices that promote facility efficiency, reduce environmental impacts, and support the local food system. Examples of facility efficiency practices include installation of energy efficient kitchen equipment or use of recyclable, compostable, or biobased packaging.⁵

Some states and municipalities are embedding FSG standards into formal policy mechanisms in government-controlled food venues (e.g., cafeterias, snack shops, vending

state law. Regulations are administrative rules issued by government agencies that have the force of law because they are adopted under authority granted by the state. A state executive order is a Governor's declaration that has the force of law and typically requires no action by the state legislature.

Authors used a multi-pronged search strategy to identify FSG policies enacted between January 1, 2015 and April 1, 2019. Like the previous study, the commercial legal research database, Westlaw Edge (Thomson Reuters, Toronto, Canada), was used as the primary source to apply search strings and identify potential FSG policies for inclusion.⁷ Two enhanced search strings² were run to ensure authors captured FSG policies dealing with healthier food procurement and healthier foods being served in state run prisons. A secondary legal database, CDC's Policy Tracking Surveillance System,¹⁶ was searched to ensure no state FSG policies that met study inclusion criteria were missed.

Sample

The lead author and 1 legal researcher managed application of the FSG search strings in the policy research databases and made final determinations on inclusion or exclusion of policies. To meet inclusion criteria, all FSG policies had to specify the development of, or refer to, nutrition standards that apply to foods and beverages served, sold, or procured for adult populations in government-owned or -controlled facilities and programs, including where conferences and on-site or off-site events are held. Alternately, policies could specify the development of a task force or other government committee to recommend FSG standards for government-run programs. Policies were excluded if they primarily focused on individuals aged 18 or younger, or food-insecure populations utilizing the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). These national feeding programs already follow existing nutrition standards set by federal authorities. Policies focusing on meals served to medically vulnerable populations were also excluded, such as those in nursing homes, in-patient hospitals, or rehabilitation centers. These populations have nutritional needs that differ from the general population, and application of FSG standards may not be medically appropriate.¹

Measures

Once all FSG policies meeting inclusion criteria were identified, authors began the content analysis and coding phase of the study. Two trained coders with public health law expertise, and a third coder with nutrition expertise, analyzed the full text of each policy to assess the presence or absence of key attributes using an updated FSG Tool (Appendix 1). Independent coders utilized a traditional present (1) and absent (0) schema to code policies, consistent with policy coding best practices.¹⁷ First, each of the 3 trained coders

².The first string: adv: (nutrition! or dietary or "food service" or ((snack or drink or beverage or food)/10 (healthy or nutrit!)))3 (standard! or criteri! or guideline or policy or procure! or purchas! or choose or choice)/20(vending or cafeteria or grill or "snack bar" or concession or meeting or event or employee or ((government or state or department or agency or "task force" or committee or council or coordinator)/10 (follow or comply or develop or "set forth" or establish or require or promulgate or meet or create or authorize or purchas! or procure! or sell or sold or property))). The second string: adv: (nutrition! or dietary or healthy or "food service guidelines" or fruit or vegetable or meat or protein or dairy or bread or grain)/10 (guideline or standard or serving or cup or calori! or sodium or sugar or fat)/50 (prison! or detention or corrections or correctional or jail or inmate or homeless!).

¹.Food Service Guidelines for Federal Facilities, U.S. Department of Health and Human Services (2017), https://www.cdc.gov/obesity/downloads/guidelines_for_federal_concessions_and_vending_operations.pdf.

independently reviewed and classified FSG policies in 1 or more of the FSG Tool's food service setting categories: (1) vending machines on government-owned or -leased property ("vending machines"); (2) meals on government-owned or -leased property ("meals"); (3) food or beverages made available at government events or meetings ("events or meetings"); (4) food service guideline task force ("task force"); or (5) government food procurement ("food procurement"). FSG policies impacting foods and beverages across multiple setting categories (e.g., vending machines, cafeterias, meetings) were coded as "all foods." Next, FSG policies were coded based on how well they align to variables in 4 key FSG domains: (1) nutrition standards referenced; (2) behavioral design strategies and selection of healthier choices, (3) supports for FSG implementation; and (4) facility efficiency practices that encourage environmentally responsible practices.

Once all FSG policies were initially coded, inter-rater reliability was determined among the 2 primary policy coders (96%), with the third reviewer's codes acting as a tie breaker in instances of discrepancy. Each policy was awarded an average score in each of the 4 FSG policy domains. This score was calculated by taking the overall proportion of FSG variables coded as present (numerator), divided by the total number possible in each domain (denominator). For example, if a policy included language consistent with only 1 variable in the behavioral design domain, the numerator would be 1 and the denominator would be the total number of behavioral design variables, or 4 in this example. The policy would be awarded a score of 25% in the behavioral design domain. Finally, the 4 FSG Tool domain scores for each FSG policy were used to calculate an overall comprehensiveness score (average of the 4 sub-domain scores). This FSG comprehensiveness score represents an adopted FSG policy's overall strength and quality as it relates to potential public health impact.

FSG Policy Classification Tool (FSG Tool)

The FSG Tool was originally developed in 2015 and was adapted from the National Cancer Institute's validated instrument, the Classification of Laws Associated with School Students (CLASS) system, which is used to score state laws for physical education and nutrition in schools.¹⁸ A complete description of the FSG Tool and its development can be found elsewhere.⁷ In 2019, the FSG Tool underwent 2 modifications to capture more nuanced FSG policy attributes. First, the tool was modified to award minimum credit to any policy that includes language encouraging or requiring adherence to DGA nutrient requirements, even if failing to name standards operationalized for use in food service venues. Alternatively, FSG policies referencing standards that (a) align to current DGA nutrition science and (b) are tailored for use in food service venues received an additional code, thereby, earning a higher score in the FSG nutrition domain. This change allows researchers to quantify shifts over time in states awareness of published guidelines that both align to current nutrition science, DGA, and are specifically for use in food service operations.

A second modification to the FSG tool included pulling out facility efficiency and environmental sustainability policy attributes into a standalone domain score called "Facility Efficiency". This was done to acknowledge an increasing emphasis on food service operations and the impact on environmental sustainability and the local food system. In

the previous study period (2007–2014), these attributes were still calculated in the overall FSG comprehensiveness score; however, they were not easily identifiable as they were embedded in the FSG Tool's implementation supports domain. By creating a standalone domain, authors hope to provide states with data to assess progress and educate policy makers on the interconnectedness of efficient food service operations, resilient local food systems, and human health.

Results

As shown in Figure 1 978 search results were identified for potential inclusion. Upon review, 973 (over 99%) of these policies were excluded for failure to meet at least 1 inclusion criteria. The exclusion rationale most often cited were duplicative hits; topically irrelevant; focused on children or teenagers; or meal service for medically vulnerable populations.

Overall, FSG comprehensiveness scores for the 5 adopted policies (2015–2019) ranged from 24% to 73% (Table 1), with 3 out of 5 of these policies meeting a majority (greater than 51%) of our FSG Tool criteria. The 5 FSG policies identified for inclusion were a California regulation requiring minimum healthy food requirements for meals in detention facilities and local prisons; a 2017 Louisiana Executive Order requiring the establishment of food and beverage vending standards in state government worksites; a 2018 D.C. law requiring nutrition standards be applied to all vending and concession venues in public parks; a 2017 Oregon regulation offering financial incentives to licensed blind vendors willing to sell healthier options on government property; and a 2016 Vermont statute requiring the development of nutrition standards for healthier food procurement and food service in state government facilities.

Below, study results are organized according to (1) general FSG policy characteristics across both time periods and (2) domain-specific policy attributes of FSG policies adopted during this study period (2015–2019).

General FSG Policy Characteristics (2007–2014 to 2015–2019)

Since 2007, there have been a total of 20 FSG policies adopted by 11 states and D.C. (Figure 2). Across the 2 study periods, FSG policy adoption occurred most often in the southern and western regions of the U.S., with California adopting the greatest number ($n = 4$) of FSG policies to date. Since 2007, state Agency or Departmental rules and regulations were the most utilized legislative mechanism for adopting FSG policies, compared to state executive orders or state statutes (data not shown).

Nutrition Domain (FSG policies adopted 2015–2019)

As shown in Table 1, nutrition domain scores ranged from 80% to 100%, with 4 out of 5 FSG policies receiving a score of 100% as they explicitly reference DGA-aligned nutrition standards that are also translated for use in food service venues. The 1 policy that did not reference such standards—a California prisons meals law—still earned a nutrition score of 80% because it referenced the 2008 California Food Guide, which encourages alignment to the DGA, but fails to name standards operationalized for use in food service. As shown in Table 2, the most common set of nutrition standards referenced in adopted FSG policies

were *Food Service Guidelines for Federal Facilities* published by CDC in 2017 (originally known as the HHS/GSA Health and Sustainability Guidelines).⁵

Behavioral Design Domain (FSG policies adopted 2015–2019)

Behavioral design scores were the lowest among all FSG Tool domains, ranging from 0% to 25% (Table 1). Behavioral design strategies were least often included in adopted FSG policies, with California and Oregon incorporating none. The D.C., Vermont, and Louisiana FSG policies each included 1 of the 4 behavioral design domain attributes. Specifically, Louisiana and Vermont’s FSG policy required nutrition labeling on foods sold; D.C.’s policy required that healthier foods and beverages be the only options advertised in the park concessions and vending venues, including on recreational sports scoreboards.

Implementation Supports Domain (FSG policies adopted 2015–2019)

As shown in Table 3, adopted FSG policies included zero to 4 of the FSG Tool’s 6 implementation supports: (1) naming a government body to oversee implementation, (2) routine compliance checks, (3) conduct vendor training on healthy food service, (4) review of standards after a period to ensure alignment with current nutrition science (5) requirement that a specific percentage of products meet nutrition standards, and (6) authorization of funding to support FSG implementation. Four of the 5 FSG policies named a government body to oversee implementation, but only Oregon and Vermont specifically authorized regular compliance checks to assess on-going FSG implementation (Table 3). No policies addressed vendor training on healthy food service or nutrition standards, and no state expressly dedicated funds for FSG implementation efforts. Both Washington D.C and Vermont required a percentage of offerings that must meet nutrition standards in policy language, while Oregon took a more innovative approach, and included policy provisions that financially incentivized vendors to adhere to a tiered percentage of required healthier offerings. Vermont was the only state to authorize post-implementation review of required nutrition standards to ensure alignment with current nutrition science in the DGA.

Facility Efficiency Domain (2015–2019)

Facility efficiency scores among the 5 adopted FSG policies ranged from 0% to 100% (see Table 1). To earn credit in this domain, adopted FSG policies had to expressly require, authorize, or encourage products that are locally sourced, certified organic, or use of another environmentally friendly practice, e.g., increasing plant-based food offerings. For the first time in CDC’s tracking of adopted FSG policies, authors observed 2 states (Oregon and Vermont) that included policy provisions that explicitly require or incentivize procurement of locally sourced foods in state-run food service operations.

Discussion

Nationally, there are nearly 20 million state and local public employees, presenting a significant opportunity to support health by improving the food environment in government worksites.¹⁹ Thus, adoption of a statewide FSG policy can help promote the health of government workers and the millions of citizens who consume foods and beverages in state-run programs or facilities. A recent microsimulation study shows significant cost

savings and improvements in health outcomes associated with successful implementation of FSG standards. For example, changes in workplace intake of 6 FSG dietary targets showed lifetime reductions of heart attacks (−107/million), strokes (−30/million), diabetes (−134/million), ischemic heart disease deaths (−56/million), and stroke deaths (−8/million), with a total savings in discounted healthcare costs ranging from \$4,611,026 (5years) to \$539,809,707 (lifetime).¹⁰ Although the specific context of policy adoption is not always known, it is notable that promulgation of statewide administrative regulations was the most utilized legislative vehicle for adopting state-level FSG policies. State agency rules and regulations may require less time and partisan input from decision makers and interest groups, making it a more expedient pathway for FSG policy adoption and subsequent implementation by the department or agency.

To improve diet-quality, state decision-makers may consider adopting FSG policies that require food and nutrition standards that (a) align to current nutrition science reflected in DGA and (b) are tailored for use in food service operations. During this study period, 4 out of the 5 FSG policies required state food vendors to adhere to such standards, with 3 policies citing the HHS/GSA Health and Sustainability Guidelines (renamed to the Food Service Guidelines for Federal Facilities in 2017). In comparison, just 2 of the 15 FSG policies adopted 2007–2014 referenced the HHS/GSA Health and Sustainability Guidelines in policy language. The practice of referencing science-based food and nutrition standards in policy language suggests that state law makers are increasingly aware of such guidelines, which is encouraging and may lead to greater gains in population health outcomes related to diet-quality.

Inclusion of FSG implementation supports in policy language was another positive finding, with 2 of the 5 adopted policies specifying criteria by which to measure FSG compliance, and 4 of the 5 policies naming an entity responsible for overseeing implementation. Including FSG implementation best practices in policy language may lead to financial sustainability of the food vendor and increased health impact over time. Case studies and qualitative research identified effective implementation strategies for FSG application.^{20–23} It is notable that none of the adopted policies (2015–2019) mentioned staff training or allocated funds for implementation expenses, such as new equipment, which are identified as important factors in FSG implementation.²⁰ Only 2 FSG policies referenced behavioral design supports such as pricing, promotion, or labeling to encourage the selection of healthier menu items. Including these industry-tested strategies in policy language may help increase sales of healthier food options and support financial sustainability of the vendor. Previous qualitative surveys of vendors identified ‘*increased financial risks*’ as a top area of concern.^{20–22} If food vendors cannot remain financially viable during implementation of an FSG initiative, public health impact may be negatively affected.

Finally, additional research may illuminate how FSG policies can be leveraged as part of a broader public health strategy to address upstream social determinants of health. For example, inclusion of facility efficiency provisions may help to, (1) support the local economy through dedicated market opportunities for local farmers; (2) promote energy-savings and environmentally friendly food service practices; and (3) enhance statewide food- and agricultural-sector job growth. Our study found that just 2 states (Oregon and Vermont)

embedded local sourcing and procurement provisions into their statewide FSG policy, thereby benefitting the state's regional agricultural economy. Incentivizing the purchase of foods from regional growers and environmentally friendly food service practices can lessen the impact on the environment and increase operational efficiencies of any food service operation.⁵ Beyond this, Oregon's FSG policy financially incentivized hiring from historically underemployed populations (e.g., people with disabilities and veterans). These non-health "co-benefits" of FSG policy adoption may help advance broad-based support for FSG policies by appealing to diverse constituent groups and garnering needed political or partner support.

Study Limitations

Tracking and analyzing state-level adoption of FSG policies can help researchers better describe the policies public health impact over time. However, there are some limitations of the present study. First, we did not verify FSG implementation post-policy adoption, or assess associated outcomes. Policy adoption is an important first step, but further research is needed to determine which supports correlate with higher levels of implementation and impact. In addition, due to the evolving nature of adopted FSG policies, authors made minor modifications to the policy search strings, inclusion criteria, and scoring criteria during this study period. This was done to ensure recent FSG policy innovations were captured, limiting authors ability to compare all FSG classification domain scores over time. Finally, it is possible that facility efficiency and food safety standards were missed because they are sometimes included in a state's non-FSG-related policies or regulations.

Conclusion

States adopting FSG policies can potentially impact sales, intake, and availability of healthier food options across all government worksites and state-run programs. Study findings show that most adopted FSG policies (2015–2019) align with national nutrition recommendations and are operationalized for use in food service venues. To increase uptake of comprehensive FSG policies, public health practitioners can educate decision makers on the potential benefits of including facility efficiency and environmental sustainability standards in FSG policy language, as well as behavioral design strategies that encourage selection of healthy offerings and aid in financial sustainability of healthy food service operations.

Acknowledgments

Manuscript authors wish to acknowledge Maria Mercedes Carruthers Ferrero and Arielle Sloan for their thoughtful review and input.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Appendix

Table A1.

FSG Policy Classification Tool (FSG Tool).

Attribute	Definition
Vending Machine Snacks: Applies to any self-service device for public use which, upon insertion of currency dispenses food or beverage, grab-and-go areas, and/or micro markets - food/snacks only, excludes beverages	
	N = 19
Nutrition	Vending machine (snacks) - applies if law specifies existing nutrition standards or guidelines that have been operationalized for food vendors or vending machine operators (e.g., Federal Food Service Guidelines for Federal Facilities, AHA Guidelines, Smart Snacks etc.). Standards should not be based on industry standards.
Nutrition	Applies if the law specifies that products offered for sale must align with the US Dietary Guidelines for Americans.
Nutrition	Vending machine (snacks) - applies if policy addresses total calories, calorie caps, and/or portion sizes
Nutrition	Vending machine (snacks) - applies if policy addresses sugar content
Nutrition	Vending machine (snacks) - applies if policy addresses sodium content
Nutrition	Vending machine (snacks) - applies if policy addresses saturated fat content
Nutrition	Vending machine (snacks) - applies if policy requires 0 grams <i>trans</i> fat in policy
Nutrition	Vending machine (snacks) - applies if policy offers fruits and vegetables and whole grains and/or indicates a fruit, a vegetable, a dairy product, or protein food are listed as the first ingredient, and/or offers a combination foods that contains at least ¼ cup of fruit and/or vegetable
Behavior	Vending machine (snacks) - applies if policy is consistent with FDA’s Vending Machine Final Rule: Food Labeling; Calorie Labeling of Articles of Food in Vending Machines
Behavior	Vending machine (snacks) - applies if policy addresses the pricing of healthier items
Behavior	Vending machine (snacks) - applies if policy addresses the promotion of healthier items
Behavior	Vending machine (snacks) - applies if policy addresses the placement of healthier items
Implementation	Vending machine (snacks) - applies if policy addresses what agency shall supervise the implementation of the policy
Implementation	Vending machine (snacks) - applies if policy addresses compliance
Implementation	Vending machine (snacks) - applies if policy indicates that training and/or education will be provided to staff and/or vendors
Implementation	Vending machine (snacks) - applies if policy indicates a review of the guidelines after an extended period of time will occur to be revised to reflect changes in nutritional science or data
Implementation	Vending machine (snacks) - applies if policy requires that a certain percentage of foods offered are healthier
Implementation	Vending machine (snacks) - applies if policy addresses that funding will be available to help with implementation, training, enforcement, or similar activities.
Facility efficiency	Applies if law expressly requires, authorizes, or encourages obtaining products that are locally sourced, certified organic, or produced with another environmentally friendly practice, e.g., increasing plant-based products.
Vending Machine Beverages (excludes	
	N = 18

Attribute	Definition
non-entrée, prepackaged snacks)	
Nutrition	Vending machine beverages- applies if law specifies existing nutrition standards or guidelines that have been operationalized for food vendors or vending machine operators (e.g., Federal Food Service Guidelines for Federal Facilities, AHA Guidelines, Smart Snacks etc.). Standards should not be based on industry standards.
Nutrition	Applies if the law specifies that products offered for sale must align with the US Dietary Guidelines for Americans.
Nutrition	Vending machine (beverages) - applies if policy addresses total calories, calorie caps, and/or portion sizes
Nutrition	Vending machine (beverages) - applies if policy addresses the inclusion of water
Nutrition	Vending machine (beverages) - applies if policy addresses sugar content
Nutrition	Vending machine (beverages) - applies if policy provides language to include low-fat milk (1% or fat free) products and/or provides milk alternatives when available
Nutrition	Vending machine (beverages) - applies if policy provides language to include 100% fruit and/or vegetable juice when available
Behavior	Vending machine (beverages) - applies if policy is consistent with FDA’s Vending Machine Final Rule: Food Labeling; Calorie Labeling of Articles of Food in Vending Machines
Behavior	Vending machine (beverages) - applies if policy addresses the pricing of healthier items
Behavior	Vending machine (beverages) - applies if policy addresses the promotion of healthier items
Behavior	Vending machine (beverages) - applies if policy addresses the placement of healthier items
Implementation	Vending machine (beverages) - applies if policy addresses what agency shall supervise the implementation of the policy
Implementation	Vending machine (beverages) - applies if policy addresses compliance
Implementation	Vending machine (beverages) - applies if policy indicates that training and/or education will be provided to staff and/or vendors
Implementation	Vending machine (beverages) - applies if policy indicates a review of the standards/ guidelines will occur after an extended period of time to be revised to reflect changes in nutritional science or data
Implementation	Vending machine (beverages) - applies if policy requires that a certain percentage of beverages offered are healthier
Implementation	Vending machine (beverages) - applies if policy addresses that funding will be available to help with implementation, training, enforcement, or similar activities.
Facility efficiency	Applies if law expressly requires, authorizes, or encourages obtaining products that are locally sourced, certified organic, or produced with another environmentally friendly practice, e.g., increasing plant-based products.
MEAL - applies to prepared foods in venues such as cafeterias, grills, snack bars, and/or concessions that serve/sell foods and beverages that standards apply to	N = 22
Nutrition	Meal - applies if law specifies existing nutrition standards or guidelines that have been operationalized for meal providers (e.g., Federal Food Service Guidelines for Federal Facilities, AHA Guidelines, Smart Snacks etc.). Standards should not be based on industry standards.
Nutrition	Meal-applies if the law specifies that meals or menus must align with the US Dietary Guidelines for Americans.
Nutrition	Meal – applies if policy addresses total calories, calorie caps, and/or portion sizes
Nutrition	Meal - applies if policy indicates whole grains to be offered

Attribute	Definition
Nutrition	Meal - applies if policy indicates that fruits and vegetables be offered
Nutrition	Meal - applies if policy addresses sodium content
Nutrition	Meal - applies if policy requires 0 grams <i>trans</i> fat
Nutrition	Meal - applies if policy indicates that offered dairy products include low-fat options and/or addresses saturated fats
Nutrition	Meal - applies if policy indicates that offered protein products include non-fried lean options and/or addresses saturated fats
Nutrition	Meal - applies if policy specifies healthier beverages ^a are made available and/or specifies what beverages are allowable
Nutrition	Meal - applies if policy indicates that drinking water be made available during meals
Behavior	Meal - applies if policy indicates the posting of calorie information (at a minimum) for each meal be available at point of purchase/near where the meal is served or on the menu
Behavior	Meal - applies if policy addresses the pricing of healthier items
Behavior	Meal - applies if policy addresses the promotion of healthier items
Behavior	Meal - applies if policy addresses the placement of healthier items
Implementation	Meal - applies if policy indicates what agency shall supervise the implementation of the policy
Implementation	Meal - applies if policy addresses compliance
Implementation	Meal - applies if policy specifies that training and/or education will be provided to staff and/or vendors to ensure compliance
Implementation	Meal - applies if policy indicates a review of the standards/guidelines will occur after an extended period to be revised to reflect changes in nutritional science or data
Implementation	Meal - applies if policy requires that a certain percentage of offerings are healthier
Implementation	Meal - applies if policy addresses that funding will be available to help with implementation, training, enforcement, or similar activities.
Facility efficiency	Meal- meal- applies if law expressly requires, authorizes, or encourages foods that are locally sourced, certified organic, or produced with another environmentally friendly practice, e.g., increasing plant-based products.
ALL - applies to all foods and/or beverages served and sold on government property	
N = 22	
Nutrition	All - applies if law specifies existing nutrition standards or guidelines that have been operationalized for food purchasers or providers (e.g., Federal Food Service Guidelines for Federal Facilities, AHA Guidelines, Smart Snacks etc.). Standards should not be based on industry standards.
Nutrition	All-applies if the law specifies that products offered for sale must align with the US Dietary Guidelines for Americans.
Nutrition	All - (only applicable for policies based on nutrient-based guidelines e.g., AHA Guidelines) applies if policy addresses total calories, calorie caps, and/or portion sizes
Nutrition	All - applies if policy indicates whole grains to be offered
Nutrition	All - applies if policy indicates that fruits and vegetables be offered
Nutrition	All - applies if policy addresses sodium content
Nutrition	All - applies if policy requires 0 grams <i>trans</i> fat
Nutrition	All - applies if policy indicates that offered dairy products include low-fat options and/or addresses saturated fats
Nutrition	All - applies if policy indicates that offered protein products include non-fried lean options and/or addresses saturated fats
Nutrition	All - applies if policy specifies healthier beverages are made available and/or specifies what beverages are allowable

Attribute	Definition
Nutrition	All - applies if policy indicates that drinking water be made available for free
Behavior	All - applies if policy indicates the posting of calorie information (at a minimum) be available at point of purchase/ near where the meal is served or on the menu
Behavior	All - applies if policy addresses the pricing of healthier items
Behavior	All - applies if policy addresses the promotion of healthier items
Behavior	All - applies if policy addresses the placement of healthier items
Implementation	All - applies if policy indicates what agency shall supervise the implementation of the policy
Implementation	All - applies if policy addresses compliance
Implementation	All - applies if policy specifies that training and/or education will be provided to staff and/or vendors to ensure compliance
Implementation	All - applies if policy indicates a review of the standards/guidelines will occur after an extended period to be revised to reflect changes in nutritional science or data
Implementation	All - applies if policy requires that a certain percentage of offerings are healthier
Implementation	All - applies if policy addresses that funding will be available to help with implementation, training, enforcement, or similar activities.
Facility efficiency	All - applies if law expressly requires, authorizes, or encourages foods that are locally sourced, certified organic, or produced with another environmentally friendly practice, e.g., increasing plant-based products.
N = 22	
TF - specifies a task force/committee be developed for food standards	
Nutrition	TF - applies if law specifies the task force, special committee, or other government body to develop nutrition standards or guidelines based on existing standards that are operationalized (e.g., Federal Food Service Guidelines for Federal Facilities, AHA Guidelines, Smart Snacks etc.). Standards should not be based on industry standards.
Nutrition	TF - applies if law specifies the task force, special committee, or other government body to develop nutrition standards aligned with the US Dietary Guidelines for Americans.
Nutrition	TF - applies if policy indicates that the task force will address total calories, calorie caps, and/or portion sizes
Nutrition	TF - applies if policy indicates that the task force will address offering of whole grains
Nutrition	TF - applies if policy indicates that the task force will address offering of fruits and vegetables
Nutrition	TF - applies if policy indicates that the task force will address sodium content
Nutrition	TF - applies if policy indicates that the task force will require 0 grams <i>trans</i> fat in standards/guidelines developed
Nutrition	TF - applies if policy indicates that the task force will address allowable dairy products
Nutrition	TF - applies if policy indicates that the task force will address inclusion of non-fried lean options and/or addresses saturated fats
Nutrition	TF - applies if policy indicates that the task force will address healthier beverage ^a offerings
Behavior	TF - applies if policy indicates that the task force will address the provision of nutritional information being made available at point of purchase/near where the meal is served or on the menu; aligns with current vending FDA rule if applicable
Behavior	TF - applies if policy indicates that the task force addresses the pricing of healthier items
Behavior	TF - applies if policy indicates that the task force will address the promotion of healthier items
Behavior	TF - applies if policy indicates that the task force addresses placement of healthier items
Implementation	TF - applies if policy indicates that the task force indicate what agency shall supervise the implementation of the policy

Attribute	Definition
Implementation	TF - applies if policy specifies compliance will be addressed once standards/guidelines are developed
Implementation	TF - applies if policy indicates that the task force indicates that training and/or education will be provided to staff and/or vendors
Implementation	TF - applies if policy indicates a review of the standards/guidelines implemented will occur after an extended period of time to be revised to reflect changes in nutritional science or data
Implementation	TF - applies if policy indicates that task force will address what percentage of offerings be healthier
Implementation	TF - applies if policy indicates the task force address what venues policy will address
Implementation	TF - applies if policy indicates what members the task force will include
Facility efficiency	TF - applies if policy indicates that the task force, special committee, or other government body address locally sourced, organic, or another environmentally friendly practice, e.g., increasing plant-based products.
MEET - applies to all foods and/or beverages on sold/served at meetings, events, and/or similar functions	
N = 21	
Nutrition	Meet - applies if law specifies existing nutrition standards or guidelines that have been operationalized (e.g., Federal Food Service Guidelines for Federal Facilities, AHA Guidelines, Smart Snacks etc.). Standards should not be based on industry standards.
Nutrition	Meet- applies if the law only specifies that products offered for sale must align with the US Dietary Guidelines for Americans.
Nutrition	Meet - applies if policy addresses total calories, calorie caps, and/or portion sizes
Nutrition	Meet - applies if policy indicates whole grains to be offered
Nutrition	Meet - applies if policy indicates that fruits and vegetables be offered
Nutrition	Meet - applies if policy addresses sodium content
Nutrition	Meet - applies if policy requires 0 grams <i>trans</i> fat
Nutrition	Meet - applies if policy indicates that offered dairy products include low-fat options and/or addresses saturated fats
Nutrition	Meet - applies if policy indicates that offered protein options include non-fried lean options and/or addresses saturated fats
Nutrition	Meet - applies if policy specifies healthier beverages ^a are made available and/or specifies what beverages are allowable
Nutrition	Meet - applies if policy indicates that drinking water be made available for free
Behavior	Meet - applies if policy indicates the posting of calorie information (at a minimum) for each meal be available at point of purchase/near where the meal is served or on the menu if applicable
Behavior	Meet - applies if policy addresses the pricing of healthier items if applicable
Behavior	Meet - applies if policy addresses the promotion of healthier items if applicable
Behavior	Meet - applies if policy addresses the placement of healthier items if applicable
Implementation	Meet - applies if policy indicates what agency shall supervise the implementation of the policy
Implementation	Meet - applies if policy addresses compliance
Implementation	Meet - applies if policy specifies that training and/or education will be provided to staff and/or vendors to ensure compliance
Implementation	Meet - applies if policy indicates a review of the standards/guidelines will occur after an extended period of time to be revised to reflect changes in nutritional science or data
Implementation	Meet - applies if policy addresses that funding will be available to help with implementation, training, enforcement, or similar activities

Attribute	Definition
Facility efficiency	Meet – Applies if law expressly requires, authorizes, or encourages foods that are locally sourced, certified organic, or produced with another environmentally friendly practice, e.g., increasing plant-based products.

^aHealthier beverages constitute milk and milk alternatives with no added sugars, 100% juice with no added sugars, or beverages that contain 40 calories per 8 fluid ounces (excluding 100% juice and unsweetened fat-free or low-fat [1% milk]).

References

- Niebylski ML, Lu T, Campbell NR, et al. Healthy food procurement policies and their impact. *Int J Environ Res Publ Health*. 2014;11(3):2608–2627. Published 2014 Mar 3. doi:10.3390/ijerph110302608.
- Robles B, Wood M, Kimmons J, Kuo T. Comparison of nutrition standards and other recommended procurement practices for improving institutional food offerings in Los Angeles County, 2010–2012. *Adv Nutr*. 2013;4(2):191–202. doi:10.3945/an.112.003285. [PubMed: 23493535]
- ChangeLab Solutions. Understanding Healthy Procurement: Using Government’s Purchasing Power to Increase Access to Healthy Food. http://www.changelabsolutions.org/sites/default/files/Understanding%20Healthy%20Procurement%202011_20120717.pdf. Published 2011. Accessed November 11, 2021.
- Raine KD, Atkey K, Olstad DL, et al. Healthy food procurement and nutrition standards in public facilities: Evidence synthesis and consensus policy recommendations. *Health Promotion and Chronic Disease Prevention in Canada*. 2018;38(1):6–17. doi:10.24095/hpcdp.38.1.03. [PubMed: 29323862]
- Food Service Guidelines Federal Workgroup. *Food Service Guidelines for Federal Facilities*. Washington, DC: U.S. Department of Health and Human Services; 2017
- Zaganjor H, Bishop Kendrick K, Onufrak S, Ralston Aoki J, Whitsel LP, Kimmons J. Food Service Guideline Policies on Local Government–Controlled Properties. *Am J Health Promot*. 2019;33(8):1166–1173. doi:10.1177/0890117119865146. [PubMed: 31370672]
- Zaganjor H, Bishop Kendrick K, Warnock AL, et al. Food Service Guideline Policies on State Government–Controlled Properties. *Am J Health Promot*. 2018;32(6):1340–1352. doi:10.1177/0890117116667117. [PubMed: 27630113]
- Wang YC, McPherson K, Marsh T, Gortmaker SL, Brown M. Health and Economic Burden of the Projected Obesity Trends in the USA and the UK [published correction appears in *Lancet*. 2011;378–825. doi:10.1016/S0140-6736(11)60814-3
- Novak NL, Brownell KD. Role of Policy and Government in the Obesity Epidemic. *Circulation*. 2012;126(19):2345–2352. doi:10.1161/circulationaha.111.037929. [PubMed: 23129701]
- Abrahams-Gessel S, Wilde P, Zhang FF, et al. Implementing Federal Food Service Guidelines in Federal and Private Worksite Cafeterias in the United States Leads to Improved Health Outcomes and is Cost Saving. *J Publ Health Pol*. 2022;43:1–15.
- Khan LK, Sobush K, Keener D, et al. Recommended Community Strategies and Measurements to Prevent Obesity in the United States. *MMWR Recomm Rep (Morb Mortal Wkly Rep)*. 2009;58(7):1–26.
- Koplan JP. *Progress in Preventing Childhood Obesity: How Do We Measure up?* Washington, DC: National Academies Press; 2007.
- Lederer A, Curtis CJ, Silver LD, Angell SY. Toward a Healthier City: Nutrition Standards for New York City Government. *Am J Prev Med* 2014;46(4):423–428. doi:10.1016/j.amepre.2013.11.011. [PubMed: 24650846]
- Centers for Disease Control & Prevention. *Success Story: Using Contracts to Reduce Sodium in Government Food Environments*. Published May 2016. *Using Contracts to Reduce Sodium in Government Food Environments (cdc.gov)*. Available at: <https://www.cdc.gov/salt/pdfs/Success-Story-LACounty.pdf>

15. Rice L, Benson C, Podrabsky M, Otten JJ. The Development and Adoption of the First Statewide Comprehensive Policy on Food Service Guidelines (Washington State Executive Order 13–06) for Improving the Health and Productivity of State Employees and Institutionalized Populations. *Translational Behavioral Medicine* 2018;9(1):48–57. doi:10.1093/tbm/ibx069.
16. Centers for Disease Control & Prevention. Division of Nutrition, Physical Activity, and Obesity - Legislation. Centers for Disease Control and Prevention. <https://chronicdata.cdc.gov/Nutrition-Physical-Activity-and-Obesity/CDC-Nutrition-Physical-Activity-and-Obesity-Legisl/nxst-x9p4> (2018).
17. Mersky RM, Dunn DJ. *Fundamentals of Legal Research*, 8. New York, NY: Foundation Press; 2002.
18. Mâsse LC, Frosh MM, Chiqui JF, et al. Development of a School Nutrition–Environment State Policy Classification System (SNESPCS). *Am J Prev Med* 2007;33(4):S277–S291. [PubMed: 17884576]
19. United States Census Bureau. State and Local Government Employment and Payroll Data: US & States: 2017–2020. Census - Table Results June 2021. Accessed January 20, 2021.
20. Pitts-Jilcott S, et al. Best Practices for Financial Sustainability of Healthy Food Service Guidelines in Hospital Cafeterias. *Prev Chronic Dis* 2018;15(E58). doi:10.5888/pcd15.170477.
21. U.S. Government Accountability Office (GAO)-15-262R Federal Food Service Operations: Federal Food Service Operations: Implementation of the HHS/GSA Health and Sustainability Guidelines. GAO-15-262R, Federal Food Service Operations: Implementation of the HHS/GSA Health and Sustainability Guidelines (dtic.Mil). Accessed online June 1, 2021.
22. Bayne AI, Hair E, Harris Brewer K, Garg A. The HHS Hubert H. Humphrey Building Cafeteria Experience: Incorporation of the Dietary Guidelines for Americans, 2010 into Federal Food Service Guidelines. Washington, DC: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation; May 2012. Prepared by NORC at the University of Chicago.
23. Silverman J, Amico A. A Roadmap for Comprehensive Food Service Guidelines: Best Practices and Opportunities to Advance Nutrition through Food Service Guideline Policies in Diverse Public Settings. Center for Science in the Public Interest. https://www.cspinet.org/sites/default/files/media/documents/resource/Roadmap_for_Comprehensive_FSG_5-6-21.pdf (2019).

So What

What is already known about this topic?

FSG policies can positively impact diet-quality wherever foods are sold or served. Since 2007, 11 states and Washington D.C. have adopted a food service guidelines (FSG) policy.

What does this article add?

This study reports FSG policy adoption (2015–2019) and quantifies policy attributes that promote public health impact. Four states and D.C. adopted a FSG policy, increasing availability of healthier options in government worksites; parks and recreation centers; and state-run prisons. Most policies specified nutrition standards that align with the Dietary Guidelines for Americans and had at least 1 implementation support provision.

What are the implications for health promotion and practice?

Public health educators can help accelerate adoption of science-based FSG policies, promoting population health and other important co-benefits, such as environmental sustainability, community development, and strong regional food systems.

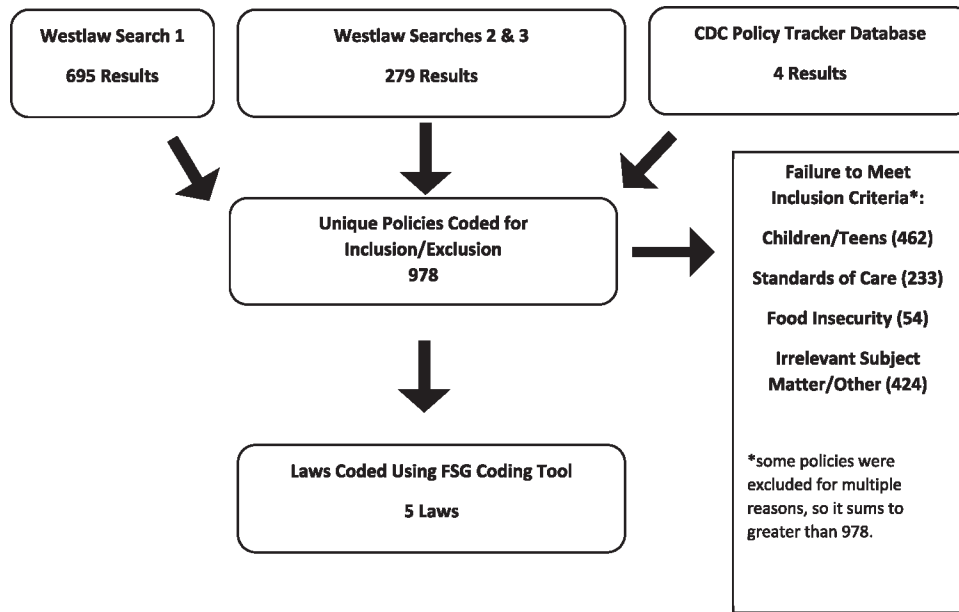


Figure 1. Flowchart of food service guidelines state policy identification and study inclusion.

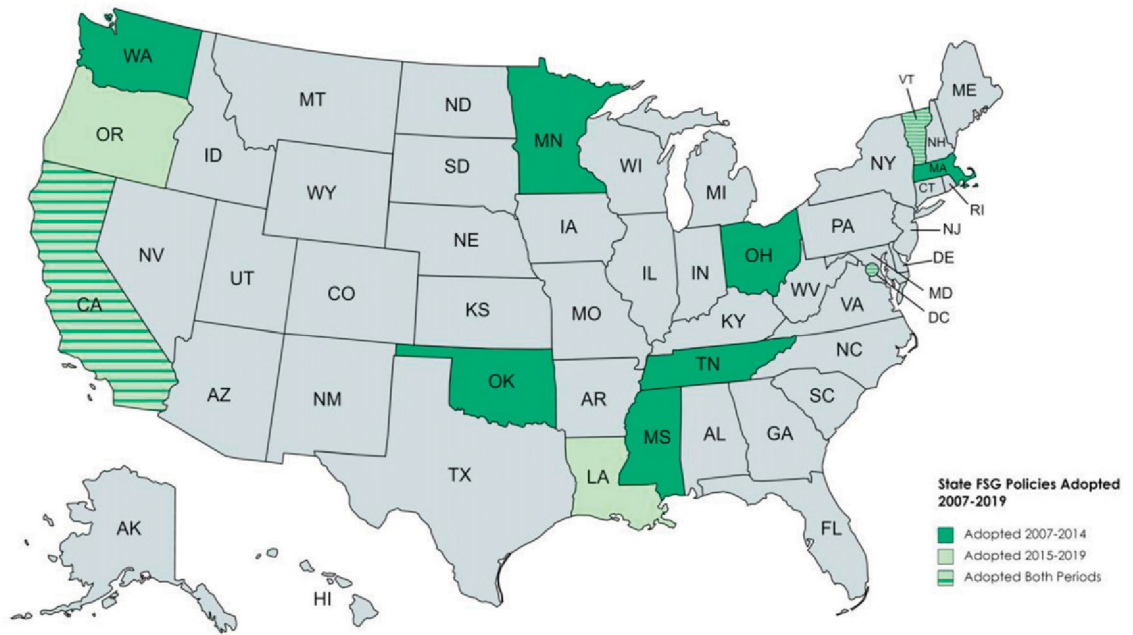


Figure 2. State FSG Policies Adopted 2007–2019. *Number of Adopted FSG Policies By State: [2007–2014: Minnesota-1, Mississippi-1, Ohio-3, Oklahoma-1, Massachusetts-1, Tennessee-1, Washington-1]; [2015–2019: Louisiana-1, Oregon-1]; [Both time periods: California-4, Vermont-2, Washington D.C.-3].

Table 1. Adopted FSG Policies (2015–2019) and Percent Alignment to FSG Classification Tool Domains.

Policy citation	Policy description	Nutrition score, %	Behavioral design score, %	Implementation supports score, %	Facility efficiency score, %	Comprehensiveness (overall) score
Admin. Code § 1241	CA Sets nutrition standards for meal services in local prisons/detention facilities	80	0	0	17	24
Exec order JBE 17–15	LA Requires nutrition standards for vending machines on state-owned or -leased property	100	25	17	0	36
Code § 10–302.02	DC Sets nutrition standards for all snacks sold in vending machines and concession stands at government operated parks and recreation facilities.	100	25	33	0	40
Admin. Code 585–015–0020	OR Provides financial incentive for blind vendors operating vending machines, cafeterias, or snack bars on government property to offer healthier options and/or locally sourced products.	100	0	33	100	58
Stat. T. 29 § 160c	VT Requires commissioner of health to develop nutrition procurement standards for foods purchased, sold, or served by the state.	100	25	67	100	73
Mean FSG tool score by domain		96	15	33	40	46

Table 2.

Nutrition Standards Referenced in Adopted FSG Policies 2015–2019.

Policy citation	State	Setting	Food venue type	Nutrition standards referenced in policy
Admin. Code § 1241	CA	State corrections	Meals (served)	Dietary Guidelines for Americans 2015–2019 and 2008 CA Food Guide
Reg. Text 463 393 (NS)	LA	State government facilities	Vending	HHS/GSA Health and Sustainability Guidelines, AHA, or NANA vending standards
Code § 10–302.02	DC	Parks and recreation	Vending	Federal High School Competitive Food Standards
Admin. Code 585–015–0020	OR	State government facilities	All foods	Food Service Guidelines for Federal Facilities ^F
Stat. T. 29 § 160c	VT	State government facilities	All foods ^a	HHS/GSA Health and Sustainability Guidelines, AHA, or NANA Vending Standards

^FOriginally known as the HHS/GSA Health and Sustainability Guidelines, prior to being updated and re-released in 2017.

^aThis policy applies to both state *food procurement* and to *foods sold, served, or provided* by the state.

Table 3.

Policy Implementation Supports Included in Adopted FSG Policies 2015–2019.

Implementation supports	No. of FSG policies (N=5)
Names an agency that shall supervise the implementation of the policy	4 (OR, VT, D.C., LA)
Addresses compliance check requirements in the policy	2 (VT, OR)
Specifies that training and/or education will be provided to staff and/or vendors to ensure implementation success	0
Requires that a review of nutrition standards or guidelines occurs on a regular interval to reflect updates in nutritional science	1 (VT)
Requires a percentage of total food and/or beverage offerings that must meet referenced nutrition standards ^a	2 (VT, D.C.)
Stipulates dedicated funding to help with implementation, training, enforcement, or similar activities	0

^aIf policy language explicitly indicated that “all foods” must adhere to the referenced nutrition standards, the policy was coded as requiring 100% of total food and/or beverage offerings to be healthier options.