Circulation

AHA POLICY STATEMENT

Strengthening US Food Policies and Programs to Promote Equity in Nutrition Security: A Policy Statement From the American Heart Association

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Abstract: Nutritionally inadequate dietary intake is a leading contributor to chronic cardiometabolic diseases. Differences in dietary quality contribute to socioeconomic and racial and ethnic health disparities. Food insecurity, a household-level social or economic condition of limited access to sufficient food, is a common cause of inadequate dietary intake. Although US food assistance policies and programs are designed to improve food security, there is growing consensus that they should have a broader focus on nutrition security. In this policy statement, we define nutrition security as an individual or household condition of having equitable and stable availability, access, affordability, and utilization of foods and beverages that promote well-being and prevent and treat disease. Despite existing policies and programs, significant gaps remain for achieving equity in nutrition security across the life span. We provide recommendations for expanding and improving current food assistance policies and programs to achieve nutrition security. These recommendations are guided by several overarching principles: emphasizing nutritional quality, improving reach, ensuring optimal utilization, improving coordination across programs, ensuring stability of access to programs across the life course, and ensuring equity and dignity for access and utilization. We suggest a critical next step will be to develop and implement national measures of nutrition security that can be added to the current US food security measures. Achieving equity in nutrition security will require coordinated and sustained efforts at the federal, state, and local levels. Future advocacy, innovation, and research will be needed to expand existing food assistance policies and programs and to develop and implement new policies and programs that will improve cardiovascular health and reduce disparities in chronic disease.

Key Words: AHA Scientific Statements ■ diet, healthy ■ food assistance ■ food security ■ health equity ■ health policy ■ risk factors for cardiovascular disease ■ social determinants of health.

Nutritionally inadequate dietary intake is a leading contributor to the development of chronic cardiometabolic diseases.[1,2] Food insecurity, a common cause of inadequate nutrition, is defined by the US Department of Agriculture (USDA) as a "household-level economic and social condition of limited or uncertain access to adequate food,"[3] and it contributes to disparities in chronic disease outcomes, especially for cardiovascular diseases.[4,5] Food insecurity has affected at least 1 in 10 US households since the 1990s.[6] Although national data showed that the overall prevalence of food insecurity was stable during the COVID-19 (coronavirus disease 2019) pandemic in 2020 (10.5%) compared with 2019 (10.5%), households with children and Black households experienced statistically significant increases in food insecurity during 2020.[7] In the United States, food security is measured using the USDA food security survey modules that assess a household's ability to afford and access sufficient calories, but these measures do not robustly assess a household's ability to afford and access sufficient nutritious food and consume a diet consistent with the US Dietary Guidelines for Americans.[8–10] There is growing consensus that US food policies and programs should transition away from the current, somewhat narrow, term "food security" and toward the broader term "nutrition security" that includes having equitable and stable availability, access, affordability, and utilization of foods and beverages that promote well-being and prevent and treat disease.[10]

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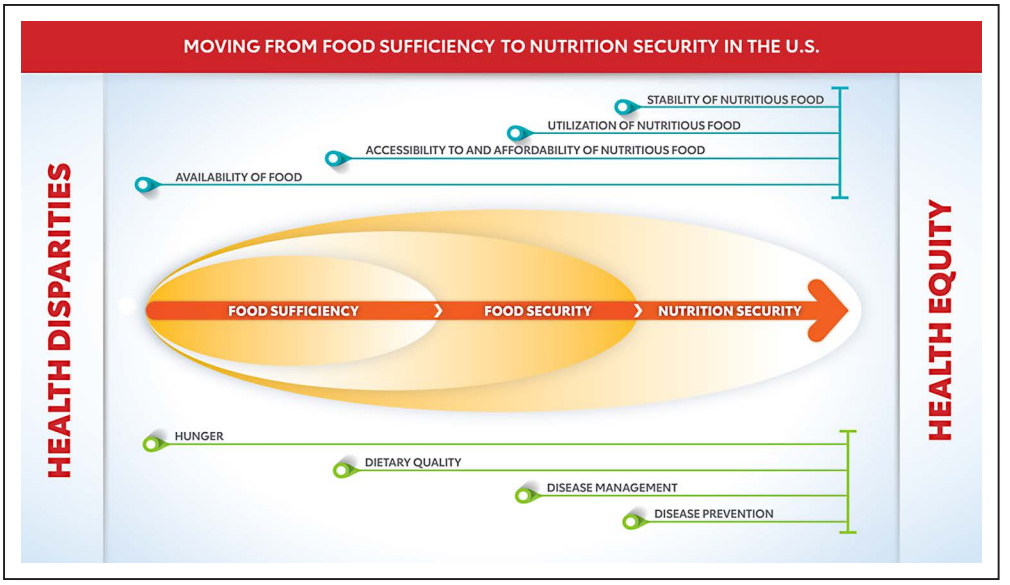

Figure. Moving from food sufficiency to nutrition security in the United States.

A focus on nutrition security is critical for addressing socioeconomic and racial and ethnic disparities in nutrition and chronic disease.[4,5] There is strong evidence that food insecurity is associated with obesity, diabetes, cardiovascular disease, and cancer.[11–15] Worsening socioeconomic disparities in diet quality are increasingly recognized as drivers of chronic disease disparities.[4,16] These associations are potentially mediated by chronic stress that results from experiencing food insecurity or other adverse social determinants of health and by poor dietary quality related to low consumption of nutritious food and overconsumption of energy-dense, nutrient-poor food.[17]

US national data on the prevalence of food insecurity fail to capture the number of Americans who are lacking in adequate nutrition because of low resources or who are nutrition insecure and at risk for nutrition-related chronic disease.[18–20] Shifting from using the term food security to the term nutrition security would emphasize factors beyond availability, access, and affordability of food. Specifically, the United Nations Committee on Food Security identified 4 pillars of food security and nutrition to include not only availability and access (including affordability), but also utilization and stability of nutritious food over time.[21]

In this policy statement, we provide the scientific rationale for strengthening US food policies and programs to promote equity in nutrition security and reduce nutrition-related chronic disease disparities. We advocate for equitable and stable availability, access, affordability, and utilization of nutritious food for Americans who are at risk for or who are experiencing food insecurity. The Figure demonstrates the components needed to advance from food sufficiency and security to nutrition security that can help reduce disparities in chronic disease. Table 1 defines the food and nutrition terms used frequently throughout the policy statement. In this policy statement, we summarize and review the scientific evidence for current policies and programs designed to improve food security, and we conclude by proposing new or expanded policies and programs that will not only improve food security but will increase equity in nutrition security in the United States. Last, we recommend expanding the USDA measure of food security to include the metrics of nutrition security: availability, access, affordability, utilization, and stability of nutritious food.

COMPONENTS OF NUTRITION SECURITY

Availability, Accessibility, and Affordability

The foundation of nutrition security is ensuring that nutritious foods are consistently available, accessible, and affordable (Figure).[1,9,23] Availability means that every community must have sufficient quantity (calories) and appropriate quality (nutrients) of food. Accessibility means that nutritious foods are obtainable by individuals of all physical and mental conditions and in all geographic locations and that nutritious foods are acceptable and align with individuals' cultural, social, or other dietary preferences.[9,24] Affordability means that individuals have sufficient resources to acquire nutritious foods and that nutritious foods are available at a cost that can be purchased by all individuals.

The availability, accessibility, and affordability of nutritious foods is inequitable in the United States. Compared with those with a higher income, Americans with a lower income tend to have lower dietary quality and consume fewer vegetables, fruit, and whole grains and more refined grains, saturated fats, and added sugars.[4,25] These differences are related to several individual, socioeconomic, environmental, and structural barriers, including individual

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Table 1. Definitions of Food and Nutrition Terms

Term	Definition
Dietary quality	A healthy overall dietary pattern of total foods and beverages consumed, including both adequacy and moderation, as outlined in the US Dietary Guidelines for Americans.[9] Several metrics have been developed and validated to assess the overall quality of a dietary pattern in terms of nutritious food consumed (eg, Healthy Eating Index, Alternative Healthy Eating Index).
Food insecurity[3]	A household-level economic and social condition of limited or uncertain access to adequate food. Food insecurity includes the US Department of Agriculture definitions of low food security (report of reduced quality, variety, or desirability of diet with little or no reduced food intake) and very low food security (report of disrupted eating patterns and reduced food intake).
Food security[3]	Access by all members of a household at all times to enough food for an active, healthy life, which, at a minimum, includes availability of nutritionally adequate and safe foods. Food security includes the US Department of Agriculture definitions of high food security (no reported indications of food access problems or limitations) and marginal food security (anxiety over food sufficiency or shortage of food in the household but little or no indication of changes in diets or food intake).
Food sufficiency	The minimum level of energy and nutrient intake necessary to support the basic functions of human life in the immediate time frame.
Hunger[3]	Individual-level physiological discomfort that may result from food insecurity.
Nutrient	Nutrients include macronutrients (carbohydrates, fats, proteins, and their subtypes), micronutrients (vitamins and minerals), and dietary fiber.
Nutrition	The interaction of nutrients and other components in food and beverages as they relate to growth, maintenance, reproduction, health, and disease; includes consumption, absorption, assimilation, metabolism, and excretion.
Nutrition security[10]	Having equitable and stable availability, access, affordability, and utilization of foods and beverages that promote well-being and prevent and treat disease.
Nutritious food	Food and beverages that provide adequate amounts of beneficial nutrients and minimal potentially harmful dietary components, in the context of avoiding excessive energy (calorie) intake.[9] Nutritious foods include fruits, vegetables, whole grains, legumes and nuts, seafood, liquid plant-based oils, and low-fat dairy products. Foods should be minimally processed and low in added sugars, saturated fat, and sodium.[9,22]

knowledge, preferences, and skills; the higher cost of eating a nutritious diet;[26] and variation in the built environment between communities.[25–28] In 2015, 12.8% of the US population had both lower income and limited access to a grocery store, supermarket, or supercenter.[27] Furthermore, individuals who lack access to nutritious foods tend to be from underrepresented racial and ethnic groups (eg, Black and Hispanic) and to be geographically centralized in specific parts of the United States (eg, the South).[28–31] Communities of color are more likely than predominantly White communities to have a higher number of fast-food outlets and convenience stores and fewer grocery stores and supermarkets,[32] and this is a strong predictor of obesity.[33] Last, lack of transportation contributes to low access to grocery stores and supermarkets among people with low food security.[34]

Many current US policies and programs are designed to improve the availability of and access to affordable nutritious food. For example, the National School Lunch Program, School Breakfast Program, and Summer Food Service Program provide meals at low or no cost to millions of school-aged children throughout the year. However, other US policies impede the availability and access to affordable nutritious food, such as agricultural subsidies that contribute to a system of production, distribution, marketing, and demand that leads to lower cost of less nutritious food relative to more nutritious food.[35,36] Changes to agricultural subsidies alone will be unlikely to produce significant changes in US population food availability or dietary intake. A sustained future effort to implement subsidies combined with other economic incentives and to expand commodity food programs will be needed to increase production, marketing, and delivery of nutritious foods and have a positive long-term effect on nutrition security.[35,37]

Utilization

To achieve nutrition security, food must not only be available, accessible, and affordable, but people must also be able to utilize the food. Utilization includes all steps that occur between the time of access to food to the time when the nutrients from food are available to be used by the body. One of the common domains is physiological utilization. Maximizing physiological utilization of nutrients consumed requires adequate health for chewing, digesting, absorbing, and distributing nutrients.[38–42] However, there are many steps that occur before consumption that affect successful utilization. These include proper food storage, preparation, and distribution within the household. Regarding food storage, many perishable foods require refrigeration, but others require dry spaces and containers for preventing exposure to moisture, contaminants, or pests. Regarding preparation, individuals who do not have access to proper food preparation tools and kitchen equipment, who have low nutrition knowledge or culinary literacy and skills, or who have limited time because of work or other responsibilities, are more likely to have compromised utilization and lower nutrition security.[38,39,41,43–46] Although there is an abundance of pre-prepared foods available in the United States that offer time-saving convenience, many are ultra-processed and provide little nutrition. Many foods with high nutritional value, such as vegetables, grains, and legumes, usually require some preparation by using basic kitchen

tools (eg, cutting knives and boards, pots and pans, measuring cups and spoons, can opener) and kitchen equipment (eg, stove, oven)[47]; pre-preparation of healthy foods (eg, precut vegetables) could improve utilization if access to basic tools and equipment is limited, but this would further increase their price. Other important factors affecting food utilization are differences in intrahousehold distribution that can result in inadequate utilization of food by one or more members of the household.[39,40] Among older adults, social isolation, lack of social support, and decreased mobility can have an adverse effect on the utilization and intake of healthy food.[48–50] Social stigma related to poverty, race, and ethnicity can also affect the utilization of food assistance programs and consumption of a nutritious diet by influencing individual and structural factors, such as program participation, discrimination, and targeted marketing practices.[51,52]

Stability

Nutrition security requires stability of a nutritious diet across the life course, ensuring that all people have availability, accessibility, affordability, and utilization of nutritious food at all ages. The 2020 to 2025 US Dietary Guidelines recognizes the importance of stability by emphasizing continuity in healthy eating patterns at every stage of life.[9] Although current US food policies and programs help to ensure stable access to nutritious food for many individuals, numerous gaps exist within and between these programs that create barriers to nutrition stability. For example, access to federal nutrition assistance programs can vary by time (eg, month, season) and eligibility limitations. In the Supplemental Nutrition Assistance Program (SNAP), the largest US federal food assistance program, states are required to issue benefits to eligible households once a month. There is evidence that many families spend most of their benefits in the first week of receipt, running out of SNAP benefits at the end of the month.[53] Other research has shown that losing access to SNAP benefits in the past year was associated with higher odds of having very low food security, suggesting that many families are not able to access the longer-term SNAP benefits they need.[54]

There are also gaps in children's access to food assistance programs that reduce their nutrition stability. Rates of food insecurity among children are higher in the summer, a time when children do not have access to the National School Lunch Program and School Breakfast Program.[55] Although the Summer Food Service Program and Seamless Summer Option aim to close this nutrition gap, lack of transportation and complex program rules can be barriers to participation.[56] Last, age-eligibility rules for the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) create a gap in food and nutrition programs for some children when they turn 5 years old and become age-ineligible for WIC but have not yet entered kindergarten and gained access to free or reduced-priced school meals.[57] Although immigrant families are eligible for WIC,[58] they are often ineligible for SNAP,[59] thus creating a larger gap in access to food and nutrition programs for these families. Hence, achieving nutrition stability for all Americans will require more coordinated efforts across federal, state, community, and private sector programs.[53]

Nutrition stability also depends on maximizing the utilization of nutritious foods across the life course, which can be supported by nutrition education, and policy, systems, and environmental approaches, as well.[60] Although nutrition is important at every stage of life, early childhood is especially important because it provides an opportunity for developing long-term healthy eating habits that track into adulthood.[61] Two of the leading federally funded programs focusing on nutrition education among families, WIC and Head Start, provide health education to families with young children, but families are no longer eligible for these programs when children turn 5 years old.[62,63] For older children, the proportion of schools providing education on nutrition and dietary behaviors decreased from 84.6% to 74.1% between 2000 and 2014.[64] The Expanded Food and Nutrition Education Program and the SNAP Education program are federally funded, community-based programs that provide education about nutrition topics, including dietary practice and management, food resource management, and food security. SNAP Education funding can also be used to implement policy, systems, and environmental approaches.[60] A systematic review of the effect of these programs on nutrition-related outcomes found that they were effective for improving immediate behavior change to improve consumption of nutritious food but that maintenance of these behaviors over time was poor.[65] Population-based educational approaches, such as nutrition labeling and media campaigns, are effective for improving healthy food choices and could potentially expand the reach of nutrition education beyond intensive individual-based programs.[35]

POLICIES AND PROGRAMS TO ACHIEVE NUTRITION SECURITY IN THE UNITED STATES

US nutrition-related policies and programs are critical to ensuring nutrition security in the United States, but gaps remain. Future efforts are needed to improve the reach and sustainability of federal, state, and community policies and programs, while maintaining equity and dignity of participants. Table 2 provides descriptions of some of the US nutrition policies and programs with the largest reach, their potential effect on nutrition security, and recommendations based on existing evidence and expert consensus of the authors for strategies that could increase their impact on nutrition security.

Table 2. US Nutrition Policies and Programs and Recommendations to Increase Impact on Nutrition Security

Nutrition program	Funding source and administration[66]	Population	Program description and effect on nutrition security	Recommendations to increase effect on nutrition security
Adults, families, and children				
SNAP	Federal funding through the Farm Bill Administered by USDA FNS	Households with low income without substantial assets (eg, monthly cash income <130% of the FPL) Puerto Rico, American Samoa, and the Commonwealth of the Northern Mariana Islands receive block grant programs to operate programs similar to SNAP.	Program description: Monthly cash value on EBT card that can be exchanged for any food (except prepared foods intended for on-site consumption) at SNAP-authorized retailers. Impact on nutrition security: Expansion of household food budget increases quality of food purchases overall.	Incentivize nutritious food purchases (eg, subsidize fruit and vegetable purchases) and disincentivize sugary beverages and other foods, such as junk food and processed meats.[67–71] Strengthen requirements for SNAP-authorized retailers to stock and market healthy foods.[53] Maintain benefit levels to help cover the cost of a nutritious diet, such as the October 2021 changes to the Thrifty Food Plan.[72] Make permanent the recent expansion during the COVID-19 pandemic of online SNAP purchasing.
SNAP-Ed	Federal funding through the Farm Bill Administered by USDA FNS	Households participating in the SNAP program Low-income communities Low-income individuals eligible for SNAP benefits or other federal programs, such as Medicaid or Temporary Assistance for Needy Families	Program description: Offers SNAP participants support in shopping and cooking healthy food on a budget. Provides some communities with the opportunity to implement policy, systems, and environmental approaches for healthier food choices and consumption.[73] Impact on nutrition security: Provides SNAP participants and communities with tools to improve nutritional knowledge and skills that contribute to increased use and stability of healthy food.[74]	Expand opportunities for communities to implement policy, systems, and environmental approaches to support healthier shopping and cooking. Increase funding to improve reach.
FDPIR	Federal funding legislated through the Farm Bill Administered by USDA FNS and Tribal governments	Households with low income living on American Indian reservations and Tribal households living near reservations; eligibility restricted to households not enrolled in SNAP Eligibility requirements are similar to SNAP.	Program description: Monthly food package with both fresh and frozen meat, fruits and vegetables, grains, and other foods, including some selected traditional foods; includes perishable and nonperishable items. Impact on nutrition security: Continued efforts to improve the quality of included foods will better support nutrition security.[75]	Expand inclusion of more traditional foods and Native-produced foods. Expand opportunities for Tribal self-government administration and decisions about procurement, especially from Native food producers.[75] Allow Native households to use both FDPIR and SNAP in the same month.
TEFAP	Federal funding legislated through the Farm Bill Administered by USDA FNS and food banks	Households with low income that meet state eligibility criteria	Program description: Provides commodity foods for distribution through the state and local charitable food systems. Impact on nutrition security: Recent efforts to increase the nutritious foods provided by TEFAP may increase nutrition security.	Assess and communicate the nutritional value of TEFAP foods to charitable food partners using appropriate standards, such as the HER Nutrition Guidelines for the Charitable Food System.[76] Expand options to include more culturally appropriate foods.
Charitable Food System	Federal, state, and local funding. Federal resources provided through TEFAP and the CSFP Administered by community-based nonprofit organizations Private monetary and food donations and grant funding administered by food banks and other community-based organizations	Adults and children experiencing food insecurity	Program description: Food banks and community agencies (eg, food pantries, meal programs) obtain and distribute food to people experiencing food insecurity. Impact on nutrition security: Efforts to improve the nutritional quality of the food that moves throughout the system may increase nutrition security.	Provide federal support to assess and communicate the nutritional value of food as it travels from donor to client using appropriate standards, such as the HER Nutrition Guidelines for the Charitable Food System.[76] Provide federal support to implement programs to treat chronic disease (eg, type 2 diabetes), such as medically tailored food boxes.[77]

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Table 2. Continued

Nutrition program	Funding source and administration[66]	Population	Program description and effect on nutrition security	Recommendations to increase effect on nutrition security
CACFP	Federal funding through CNR provided by grants to states Administered by USDA FNS and state agencies; operated by childcare, afterschool, adult care, and emergency shelters	Children participating in childcare and afterschool programs; adults ≥60 y of age, or persons living with chronic disabilities	Program description: Provides reimbursement for meals and snacks in early care and education facilities (centers and homes), afterschool programs, adult care, and emergency shelters. In 2017, the USDA updated CACFP meal pattern standards.[78] Impact on nutrition security: Participation in CACFP may improve the dietary quality of meals and snacks served.[79–82]	Simplify the application process and reduce the administrative burden for sponsors and sites. Increase the value of reimbursements. Incentivize regulatory authorities and state agencies to identify and reduce barriers to sites' participation in the program. Provide technical assistance, additional funding, and ongoing assessment to ensure that the implementation of the CACFP nutrition standards results in meals aligned with the DGA for children and adults.[83]
EFNEP	Federal funding through the Farm Bill Administered by USDA NIFA to land grant institutions	Low-income adults and children	Program description: Nutrition education provided to adults through a series of lessons or to children as part of afterschool, camp, or community-based programs.[84] Impact on nutrition security: Improvement in dietary intake and knowledge of food preparation, resource management, and safety.[85,86]	Expand the program to increase reach of nutrition education to more adults and children. Provide longer-term programs to improve stability of nutrition behaviors over time.[65]
GusNIP (Formerly known as FINI)	Federal grants legislated through the Farm Bill Administered by NIFA to nonprofit organizations	Low-income adults and their families Nutrition incentive programs are for SNAP participants Produce prescription programs are for individuals with low income and food insecurity and often for those with diet-related chronic disease (type 2 diabetes)	Program description: Provides competitive grants for programs that incentivize purchase of fruits and vegetables at the point of purchase. Impact on nutrition security: Funded projects aim to increase purchases and intake of fruits and vegetables.[87–90]	Provide sustained funding for the program in the next Farm Bill. Decrease or eliminate match requirement for Nutrition Incentive grants in next Farm Bill. Augment and coordinate federal funding with state, local, or private funding. Adapt program rules based on research findings.
Medicaid	Federal regulatory processes and state 1115 waivers Administered by state Medicaid programs	Medicaid participants	Program description: Some states with waivers have used Medicaid funding for programs to reduce food insecurity. Impact on nutrition security: Medically tailored meals could improve nutrition security of specific patient populations.[91,92]	Provide CMS funding to improve nutrition through specific interventions (eg, medically tailored meals or groceries, produce prescriptions) to prevent and treat chronic disease.[77,92,93] Expand reach by integrating funding into standard Medicaid services rather than requiring a waiver.
Children and pregnant or postpartum women				
WIC	Federal funding through CNR Administered by states through block grants from USDA FNS	Pregnant, postpartum, and breastfeeding women, infants, and children up to 5 y of age living in a household with income at or below 185% of the FPL	Program description: EBT card allows for purchases of specific food items in specific quantities that align with the DGA (eg, cereal with ≤6 g sugar per dry ounce). The program also provides nutrition education, breastfeeding support, and health care referrals. Impact on nutrition security: Benefits can only be used to purchase nutritious foods, and nutrition education and breastfeeding support may also improve nutrition security.[62]	Extend eligibility for children through 6 y of age to address the gap in nutrition assistance before entering kindergarten.[57] Permit states the option to certify infants for 2 y instead of 1 y.[94] Extend eligibility for postpartum women to 2 y.[94] Make permanent the increase in cash value voucher for fruits and vegetables from $9 per mo for kids and $11 per mo for adults to $35 per mo for each child and adult.[94] Include more options for traditional and first foods for Native American participants.[95]
Head Start program	Many programs supported by federal funding through the US Department of Health and Human Services Administered by the Office of Administration for Children and Families	Children from birth to 5 y of age living in a household at or below 100% of the FPL Program offered in American Indian and Alaska Native communities and to migrant families engaged in agricultural labor	Program description: Comprehensive program to support children's early learning and development and health and families' well-being. Impact on nutrition security: Provides nutrition assessments, education, and counseling to children and their families; provides meals and snacks to Head Start classes.[96,97]	Increase funding so that Head Start is available to all eligible children.

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Table 2. Continued

Nutrition program	Funding source and administration[66]	Population	Program description and effect on nutrition security	Recommendations to increase effect on nutrition security
NSLP	Federal funding through CNR; some states provide additional funding Administered by USDA FNS, state agencies, and local school food authorities	All students in participating schools who meet eligibility thresholds can participate in NSLP Children with household income <130% of the FPL are eligible for free lunch Children with household income between 130% and 185% of the FPL are eligible for reduced-priced lunch Schools with ≥40% of students eligible for free meals can offer free meals to all students	Program description: Provides fully or partially subsidized lunch for children at school (kindergarten through 12th grade, including preschool children if the program is offered in a school). Impact on nutrition security: Because school lunches must meet federal nutrition standards and the average school meal is more nutritious and less caloric than the average meal packed from home,[98] the NSLP likely improves nutrition security.[99,100]	Protect and strengthen nutrition standards for foods sold as part of the school lunch (eg, return to the 100% whole-grain rich standard for grains; establish a sodium reduction schedule and add a new sodium target to align with the DRI; remove 1% flavored milk; and establish added sugars standards). Strengthen the nutrition standards for Smart Snacks (ie, foods and beverages sold outside the school meal programs), including the addition of an added sugars standard. Increase federal reimbursement rates. Provide technical assistance, additional funding, and ongoing assessment to ensure that the implementation of the NSLP nutrition standards results in meals aligned with the DGA for children. Expand access to all children through universal free meals (ie, as passed in California and Maine).[101,102]
SBP	Federal funding through CNR Administered by the USDA FNS, state agencies, and local school food authorities	Similar to NSLP	Program description: Provides fully or partially subsidized breakfast for children at school (kindergarten through 12th grade, including preschool children if the program is offered in a school). Impact on nutrition security: Because school breakfasts must meet federal nutrition standards, SBP likely improves nutrition security.[103]	Increase federal reimbursement rates. Protect and strengthen the nutrition standards, including the addition of an added sugars standard. Provide technical assistance, additional funding, and ongoing assessment to ensure that the implementation of the SBP nutrition standards results in meals aligned with the DGA for children. Expand access to all children through universal free meals (ie, as passed in California and Maine).[101,102] Support strategies to increase participation (eg, breakfast after the bell, grab and go).[104]
SFSP	Federal funding through CNR Administered by USDA FNS, states, local food service authorities, and local private and nonprofit service institutions	Children ≤18 y of age and certain individuals with disabilities >18 y of age in communities, activities, or camps where at least half of children are from households with incomes <185% of the FPL	Program description: Provides free meals and snacks to low-income children and some adults with disabilities when school is closed. Impact on nutrition security: SFSP likely improves nutrition stability because it is offered to children who rely on the NSLP and SBP during the school year.[105–107]	Simplify the application process to reduce the administrative burden for sponsors and sites. Align nutrition standards with the DGA to be consistent with the SBP and NSLP. Supplement the SFSP by expanding the Summer-EBT pilot and making the program permanent. Expand access to all children through universal free meals. Study whether the pandemic waivers should be maintained to improve participation (eg, noncongregate meals, distributing multiple meals at once).
SSO	Federal funding through CNR. Some states provide additional funding Administered by USDA FNS, state agencies, and local school food authorities	Same as NSLP/SBP	Program description: Provides free meals and snacks to low-income children when school is closed. Allows schools that offer NSLP and SBP to continue meal service over the summer without a gap. Impact on nutrition security: SSO offers stability to children who rely on school meals during the school year, and it uses the same nutrition standards as NSLP and SBP with additional flexibility granted in some circumstances.[106,107]	Increase reimbursement rate to align with SFSP.

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Table 2. Continued

Nutrition program	Funding source and administration[66]	Population	Program description and effect on nutrition security	Recommendations to increase effect on nutrition security
FFVP	Federal funding through CNR. Some states provide additional funding Administered by USDA FNS, state agencies, and local school food authorities	Elementary school children attending schools with the highest percentage of students with free and reduced-priced benefits, participate in the NSLP, and complete an application for the FFVP.	Program description: Provides children with access to free fresh fruits and vegetables outside of meals. Impact on nutrition security: Increases consumption of fruits and vegetables by children in participating schools.[108]	Expand funding for the program to support serving fruits and vegetables more frequently. Expand the program to more schools and age groups.
Older adults				
CSFP	Federal funding legislated through the Farm Bill Administered by the charitable food system	Adults ≥60 y of age with incomes <130% of the FPL	Program description: Provides monthly box of commodity foods for pickup at a local food bank (or food bank distribution site), or sometimes for home delivery. Impact on nutrition security: Because of recent efforts to increase the nutrient quality of CSFP foods, this program likely improves nutrition security.	Assess and communicate the nutritional value of CSFP foods to partners using appropriate standards such as the HER Nutrition Guidelines for the Charitable Food System.[67] Expand options to include more culturally appropriate foods. Expand access to the program to reduce lengthy waitlists.
Meals on Wheels	Federal funding through the OAA and state and local sources, private donations from foundations, corporations and individuals, and federal block grants Administered through state and local agencies	Adults ≥60 y of age, their spouses and caregivers, and adults <60 y of age who are homebound; recipients are unable to prepare or afford nutritious meals Eligibility may vary by county or program	Program description: Home delivery of daily nutritious meals Impact on nutrition security: Provides stable and affordable access to nutritious meals.[109]	Increase federal funding for the program through OAA to expand access to all eligible older adults by reducing lengthy waitlists and eliminating meal costs. Expand options to include more culturally appropriate food.
SFMNP	Federal funding legislated through the Farm Bill Administered through USDA FNS and state and Indian Tribal Organization agencies	Older adults who are at least 60 y of age and have household incomes ≤185% of the FPL In some states, older adults ≥60 y of age who participate in CSFP or SNAP	Program description: Monthly coupons that can be exchanged for eligible foods at farmers' markets, roadside stands, and community-supported agriculture programs. Impact on nutrition security: Increases access to and consumption of fruits and vegetables among older adults.[110]	Expand funding for the program in the next Farm Bill Simplify the application and authorization process to reduce administrative burden on state agencies.

CACFP indicates Child and Adult Care Food Program; CMS, Centers for Medicare & Medicaid Services; CMS CMMI, Centers for Medicare & Medicaid Services Center for Medicare and Medicaid Innovation; CNR, Child Nutrition Reauthorization; COVID-19, coronavirus disease 2019; CSFP, Commodity Supplemental Food Program; DGA, Dietary Guidelines for Americans; DRI, Dietary Reference Intake; EBT, Electronic Benefit Transfer; EFNEP, Expanded Food and Nutrition Education Program; FDPIR, Food Distribution Program on Indian Reservations; FFVP, Fresh Fruit and Vegetable Program; FINI, Food Insecurity Nutrition Incentive; FPL, Federal Poverty Level; GusNIP, Gus Schumacher Nutrition Incentive Program; HER, Healthy Eating Research; NIFA, USDA National Institute of Food and Agriculture; NSLP, National School Lunch Program; OAA, Older Americans Act; SBP, School Breakfast Program; SFMNP, Senior Farmers' Market Nutrition Program; SFSP, Summer Food Service Program; SNAP, Supplemental Nutrition Assistance Program; SNAP-Ed, SNAP-Education; SSO, Seamless Summer Option; TEFAP, The Emergency Food Assistance Program; USDA FNS, US Department of Agriculture, Food and Nutrition Service; and WIC, Special Supplemental Nutrition Program for Women, Infants and Children.

FEDERAL FOOD ASSISTANCE AND COMPETITIVE FUNDING

The Agricultural Improvement Act of 2018 (known colloquially as the Farm Bill) included $428 billion in federal funding over 5 years.[111] About three-quarters of this money was targeted for federal food and nutrition assistance programs. SNAP, WIC, and the Food Distribution Program on Indian Reservations provide essential financial resources to assist households with the quantity of food purchased but, with the exception of WIC, do not focus on the nutritional quality of food purchased. Federal school-based programs (eg, National School Lunch Program and School Breakfast Program) provide free or low-cost meals for children from lower-income families. Approximately 30 million school-aged children participated in National School Lunch Program and >14 million participated in School Breakfast Program in 2019.[112,113] The Child and Acute Care Food Program provides reimbursement for meals and snacks in early care and education facilities (centers and homes), afterschool programs, adult care, and emergency shelters.[78] Improved nutrition standards in recent years, such as the Healthy Hunger Free Kids Act, have contributed to better nutrition security for

children.[99,100,114] Programs for older adults include the Commodity Supplemental Food Program, Meals on Wheels, and the Senior Farmers' Market Nutrition Program. Nutrition education programs supported by federal funding, such as WIC, SNAP Education, and Head Start, provide important resources for developing nutrition knowledge and skills, but the reach of these programs is limited by age restrictions and low participation rates.[115] Thus, food assistance programs vary in their capacity to meet the nutritional needs of the people who rely on them. Each of them, however, provides an important opportunity to support nutrition security for a large number of Americans at all stages throughout the life course.

In 2008, federal legislation through the Farm Bill began authorizing funds for projects to explore the use of financial incentives to increase the purchase and consumption of nutritious food. The most common are SNAP incentive programs that provide financial incentives for choosing fruits and vegetables at the point of purchase (eg, farmers markets, grocery stores). The first incentive program to be evaluated was the USDA-funded Healthy Incentives Pilot (HIP), a randomized controlled trial conducted in Hamden County, Massachusetts, that compared SNAP participants receiving HIP incentives with those not receiving incentives. Participants who received HIP incentives purchased and consumed more fruits and vegetables than the participants who did not receive HIP incentives.[67] Other studies enrolling low-income adults have demonstrated the effectiveness of supermarket fruit and vegetable incentives,[69,70] and one demonstrated the benefit of adding a sugar-sweetened beverage disincentive.[68]

The success of the HIP program led to the Food Insecurity Nutrition Incentive, authorized through the 2014 Farm Bill, which included $100 million over 5 years for competitive grants for SNAP incentives, but required 1:1 nonfederal match funding. In the 2018 Farm Bill, Food Insecurity Nutrition Incentive was renamed the Gus Schumacher Nutrition Incentive Program and allocated $250 million over 5 years for 2 incentive types of programs: nutrition incentives (requiring 1:1 nonfederal match) for SNAP participants and produce prescriptions (which do not require match) and are not specific to SNAP participants. Preliminary research suggests that these programs increase consumption of fruit and vegetables and improve food security in both children and adults.[88–90]

CHARITABLE FOOD SYSTEM

The charitable food system in the United States comprises food banks (organizations with large warehouses that source and distribute food to community agencies), food pantries (community sites where clients acquire groceries at no cost to prepare meals at home), and meal programs (dining rooms that provide prepared meals at no cost).[116] More than 200 food banks and 60 000 partnering community agencies are affiliated with the nationwide network Feeding America.[117] The food distributed through this network comes from several sources. Approximately 25% of food is purchased with federal funding and given to states to distribute through The Emergency Food Assistance Program and the Commodity Supplemental Food Program. More than 60% of food is donated by food growers, distributors, retailers, and community food drives, and the remaining food is purchased by food banks with donated funds or grants.

Until recently, incentives for food banks and food pantries to address nutrition have been limited by their primary metric of success: number of pounds of food distributed.[118] This system rewards the distribution of inexpensive, energy-dense, nutrient-poor calories. However, with evidence that the charitable food system has become a regular source of food for chronically food-insecure households,[119] and with feedback from clients that they prefer healthier foods,[120] some organizations have shifted from exclusive metrics of food quantity to include metrics of food quality.[121] In response, many stakeholders, including Feeding America, have engaged in efforts to realign incentives to support nutrition security and promote nutrition-focused food banking.[122]

Recently, Robert Wood Johnson Foundation's Healthy Eating Research Program convened an expert panel and released a nutrition-ranking system tailored to the unique context of the charitable food network.[76] This system categorizes foods as green (choose often), yellow (choose sometimes), and red (choose rarely), and there are multiple opportunities to use this information to support nutrition security. For example, the USDA could incorporate these standards when establishing the specifications for the foods they purchase for The Emergency Food Assistance Program and the Commodity Supplemental Food Program, and retail food donors could use them to select which foods to donate. Food banks can use nutrition ranking to guide purchasing decisions and may choose to formalize this process through a nutrition policy. Research suggests that when food pantry directors see the nutrition rankings at the food bank, they select healthier options[123]; when food pantries implement nutrition ranking, their inventory improves over time[124]; and when food pantry clients see nutrition rankings, they select healthier foods.[125] A range of behavioral economic interventions in food pantries can promote nutritious food choices,[126,127] and for specific high-risk populations, such as people with type 2 diabetes, food boxes in pantries can be tailored to meet their nutritional needs.[128]

HEALTH CARE INTEGRATION

It is widely recognized that the United States, compared with other developed nations, spends more money on health care and relatively less money on social services.[129] There are opportunities, however, to incentivize and support health care systems and insurers to engage in efforts to address the social determinants of health

with the goals of more effective primary prevention (prevention of chronic disease among those at high risk) and secondary prevention (prevention of complications among those with chronic disease). Nutrition security is a key social determinant of health for cardiovascular disease risk and chronic disease prevention.[4,15]

Conceptually, health care integration is based on the supposition that patients experiencing food insecurity can be identified in the clinical setting by using a screening test (eg, the Hunger Vital Sign) and then referred to a program supporting improved access to nutritious food, and that the resulting improvements in dietary intake and food security will have the downstream effect of improved clinical satisfaction and improved health outcomes.[130] In response, numerous new programs, policies, and initiatives seeking to engage the health care system in efforts to bring more nutritious foods to specific patient populations, often referred to as food as medicine, have been implemented.[131] For example, the Gus Schumacher Nutrition Incentive Program produce prescription projects allow clinicians to write prescriptions for fresh fruits and vegetables (or benefits redeemable for fresh fruits and vegetables).[87] The patient populations targeted in these interventions are heterogeneous, spanning primary prevention (eg, patients at high risk of developing type 2 diabetes) to secondary prevention (eg, patients with diabetes). In all cases, these interventions give clinicians in the health care system tools to advance nutrition security, in addition to more traditional approaches using medications and behavioral counseling.

The Centers for Medicaid & Medicare Services and many health care organizations have started piloting programs to integrate the provision of food assistance and medically tailored meals into clinical care. Medicaid has supported state innovation and experimentation in addressing food insecurity through regulatory processes and waivers based on Section 1115 of the Social Security Act that allow states to implement pilot and demonstration projects designed to promote the goals of Medicaid.[132] For example, in some states, health systems can support Medicaid participants experiencing food insecurity to connect with community-based organizations (such as home-delivered medically tailored meals) or federal programs (such as SNAP). The Accountable Health Communities model also sought to connect Medicare and Medicaid patients experiencing unmet social needs, including food insecurity, to community and federal resources.[133,134] Since implementation of the Affordable Care Act, community nutrition programs have been eligible for community benefit grants from local nonprofit hospitals that seek federal tax–exempt status. To the extent that these programs increase access to nutritious foods, not just access to calories, they can simultaneously support nutrition security.

Community-based organizations, including medically tailored meal providers, food banks, and fruits and vegetable voucher programs, have sought to demonstrate the positive impact of their programs on dietary intake, health outcomes, and health care costs.[135] These efforts have been driven by a desire for increased financial support from the health care sector and recognition of the potential financial benefits of a healthier and more nutrition-secure population. There is a limited body of evidence demonstrating that targeted health care interventions to address food insecurity improve dietary quality and some health outcomes,[77,91,92,136] but more research is needed to understand the long-term effect of these programs on health and medical spending.

NUTRITION POLICIES AND THE COVID-19 PANDEMIC

The sharp rise in food insecurity during the first several months of the COVID-19 pandemic exposed both strengths and weaknesses in existing US nutrition-related policies and programs. Starting in April 2020, many families experienced food insecurity for the first time, joining the millions of other households that had been food insecure before the pandemic, and these effects were largest in underrepresented racial and ethnic groups.[137] In response to the crisis, the federal government quickly pivoted to increase benefits and reduce barriers to the SNAP and WIC programs and to implement the Pandemic Electronic Benefits program for states to provide additional funds to families with children to compensate for the loss of school meals.[138,139] USDA also authorized waivers and flexibilities to make sure school meals were safe and available, including allowing schools to serve free meals to respond to the changing nature of the COVID pandemic. The charitable food system mobilized emergency food distribution sites, working with communities and schools to meet the needs of families.[137]

During a crisis such as a pandemic, equitable access to any food (ie, food sufficiency) is prioritized. However, as the crisis abates and emergency programs may be discontinued, it remains important to continue focusing on expansion and innovation of current and new policies and programs that will provide consistent and equitable availability, access, affordability, and utilization of nutritious food. In October 2021, the Thrifty Food Plan, which is used to determine the amount of SNAP benefits, was changed to more realistically estimate the cost of a nutritious meal.[140] This resulted in an ≈20% change in benefit levels for SNAP recipients, an important step toward achieving equity in nutrition security. Furthermore, 46 states and the District of Columbia were approved to participate in the SNAP Online Purchasing Pilot expansion in October 2020 to improve access to online grocery shopping and delivery among SNAP participants.[141]

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Table 3. Overarching Principles for US Food Assistance Policies and Programs to Achieve Nutrition Security for All Americans

Principles for food assistance programs to achieve nutrition security
Ensure nutritional quality by emphasizing nutrition standards.
Improve reach by increasing outreach and simplifying enrollment and certification procedures.
Ensure optimal utilization by all participants.
Improve coordination across different programs.[53,118]
Ensure stability of access to programs across the life course, avoiding gaps in coverage for age groups.
Ensure equity for stable availability, access, affordability, and utilization, including the provision of acceptable foods aligned with cultural, social, and dietary preferences.
Ensure dignity by reducing stigma associated with participation.[51]
Develop and implement a national measure of nutrition security, expanding the USDA food security screening tool.

USDA indicates US Department of Agriculture.

OVERARCHING PRINCIPLES AND SPECIFIC POLICY RECOMMENDATIONS TO IMPROVE NUTRITION SECURITY

Our recommendations for improving nutrition security in the United States were guided by several overarching principles for food assistance programs and policies (Table 3). These principles focus on emphasizing nutritional quality, improving reach, ensuring optimal utilization, improving coordination across different programs,[53] ensuring stability of access to food assistance programs across the life course, and ensuring equity and dignity for access and utilization. For example, these principles could be applied in the charitable food system to improve nutrition security by having food pantries coordinate with job-training programs and other social services, providing healthy food choices, and allowing clients to select their own food to create a more dignified and equitable experience.[118]

A critical next step to guide future US food policies and programs will be to develop and implement national measures of nutrition security. New modules could be added to the USDA food security screening tool to include questions about a household's ability to utilize and consistently access nutritious food, such as fruits and vegetables, among all age groups. No standard measures of nutrition security currently exist, but a combined assessment of food insecurity and dietary quality appears to be a straightforward approach. However, assessing dietary quality has a myriad of challenges. For instance, gold standard measures (eg, 24-hour dietary recalls, food frequency questionnaires) tend to be burdensome and expensive, whereas briefer measures (eg, dietary screeners) are less specific and tend to be less rigorous, especially regarding validity and reliability.[142] Research to develop and validate questions to assess nutrition security is needed. In the future, these questions could be integrated into national surveys, such as the Centers for Disease Control and Prevention's National Health and Nutrition Survey, to monitor progress in achieving equity in nutrition security.

CONCLUSION

This policy statement highlights opportunities in current and future food assistance policies and programs to improve equity in nutrition security in the United States. Shifting from a narrower focus on providing food with sufficient calories to a broader focus on providing equitable and stable availability, access, affordability, and utilization of food with sufficient nutritional quality, consistent with the US Dietary Guidelines for Americans, over the life course, will ensure that all Americans have the opportunity to consume food that will prevent chronic disease. Moving in this direction will require coordinated and sustained efforts at the federal, state, and local levels. Future advocacy, innovation, and research will be needed to expand and strengthen existing policies and programs and to develop and implement new policies and programs that improve nutrition and health and reduce socioeconomic and racial and ethnic disparities in chronic disease.

ARTICLE INFORMATION

The American Heart Association makes every effort to avoid any actual or potential conflicts of interest that may arise as a result of an outside relationship or a personal, professional, or business interest of a member of the writing panel. Specifically, all members of the writing group are required to complete and submit a Disclosure Questionnaire showing all such relationships that might be perceived as real or potential conflicts of interest.

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Hilary K. Seligman	University of California San Francisco	NIH†; CDC†; USDA through Gretchen Swanson Center for Nutrition†; multiple other grants†	None	None	None	None	None	Feeding America†
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This table represents the relationships of writing group members that may be perceived as actual or reasonably perceived conflicts of interest as reported on the Disclosure Questionnaire, which all members of the writing group are required to complete and submit. A relationship is considered to be "significant" if (a) the person receives $10 000 or more during any 12-month period, or 5% or more of the person's gross income; or (b) the person owns 5% or more of the voting stock or share of the entity or owns $10 000 or more of the fair market value of the entity. A relationship is considered to be "modest" if it is less than "significant" under the preceding definition.

*Modest.

†Significant.

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Shufa Du	The University of North Carolina at Chapel Hill	None	None	None	None	None	None	None
Kim Gans	University of Connecticut	None	None	None	None	None	None	None

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Reviewer	Employment	Research grant	Other research support	Speakers' bureau/ honoraria	Expert witness	Ownership interest	Consultant/ advisory board	Other
Lorrene D. Ritchie	University of California, Division of Agriculture and Natural Resources	Child and Adult Care Food Program Roundtable (Purpose of project is to evaluate barriers to CACFP participation by independent childcare centers and inform the CDSS as CACFP administration transitions from the CA Dept. of Education)*; David and Lucile Packard Foundation (Purpose of the project is to evaluate participant perceptions of WIC services in 12 states during the COVID-19 pandemic to support efforts to increase participation and support retention on WIC)†; Westat/USDA (Purpose of the project is to determine prospectively the ongoing impact of WIC participation early in life on subsequent child nutrition and weight status)*; PHFE-WIC/CA Dept of Public Health (Conduct a qualitative study of WIC participants in Central and Northern California to inform improvements to WIC during and after COVID)*	None	None	None	None	None	None
Maurizio Trevisan	The City College of New York	None	None	None	None	None	None	None

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REFERENCES

1. Micha R, Peñalvo JL, Cudhea F, Imamura F, Rehm CD, Mozaffarian D. Association between dietary factors and mortality from heart disease, stroke, and type 2 diabetes in the United States. *JAMA.* 2017;317:912–924. doi: 10.1001/jama.2017.0947
2. US Burden of Disease Collaborators; Mokdad AH, Ballestros K, Echko M, Glenn S, Olsen HE, Mullany E, Lee A, Khan AR, Ahmadi A, Ferrari AJ, et al. The state of US health, 1990–2016: burden of diseases, injuries, and risk factors among US states. *JAMA.* 2018;319:1444–1472. doi: 10.1001/jama.2018.0158
3. US Department of Agriculture; Economic Research Service. Definitions of food security. Accessed July 7, 2021. https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security.aspx
4. Mensah GA, Brown AGM, Pratt CA. Nutrition disparities and cardiovascular health. *Curr Atheroscler Rep.* 2020;22:15. doi: 10.1007/s11883-020-0833-3
5. Havranek EP, Mujahid MS, Barr DA, Blair IV, Cohen MS, Cruz-Flores S, Davey-Smith G, Dennison-Himmelfarb CR, Lauer MS, Lockwood DW, et al; on behalf of the American Heart Association Council on Quality of Care and Outcomes Research, Council on Epidemiology and Prevention, Council on Cardiovascular and Stroke Nursing, Council on Lifestyle and Cardiometabolic Health, and Stroke Council. Social determinants of risk and outcomes for cardiovascular disease: a scientific statement from the American Heart Association. *Circulation.* 2015;132:873–898. doi: 10.1161/CIR.0000000000000228
6. Coleman-Jensen A, Rabbit MP, Gregory CA, Singh A. Household food security in the United States in 2019. ERR-275. September 2020. US Department of Agriculture, Economic Research Service. https://www.ers.usda.gov/webdocs/publications/99282/err-275.pdf
7. Coleman-Jensen A, Rabbitt MP, Gregory CA, Singh A. Household food security in the United States in 2020. ERR-298. September 2021. US Department of Agriculture, Economic Research Service. https://www.ers.usda.gov/publications/pub-details/?pubid=102075
8. US Department of Agriculture, Economic Research Service. Food security in the U.S. survey tools. Accessed July 30, 2021. https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools/
9. US Department of Agriculture and US Department of Health and Human Services. Dietary Guidelines for Americans, 2020–2025. 9th ed. December 2020. https://www.dietaryguidelines.gov/
10. Mozaffarian D, Fleischhacker S, Andrés JR. Prioritizing nutrition security in the US. *JAMA.* 2021;325:1605–1606. doi: 10.1001/jama.2021.1915
11. Seligman HK, Laraia BA, Kushel MB. Food insecurity is associated with chronic disease among low-income NHANES participants. *J Nutr.* 2010;140:304–310. doi: 10.3945/jn.109.112573
12. Seligman HK, Bindman AB, Vittinghoff E, Kanaya AM, Kushel MB. Food insecurity is associated with diabetes mellitus: results from the National Health Examination and Nutrition Examination Survey (NHANES) 1999–2002. *J Gen Intern Med.* 2007;22:1018–1023. doi: 10.1007/s11606-007-0192-6
13. O'Connor JM, Sedghi T, Dhodapkar M, Kane MJ, Gross CP. Factors associated with cancer disparities among low-, medium-, and high-income US counties. *JAMA Netw Open.* 2018;1:e183146. doi: 10.1001/jamanetworkopen.2018.3146
14. Morales ME, Berkowitz SA. The relationship between food insecurity, dietary patterns, and obesity. *Curr Nutr Rep.* 2016;5:54–60. doi: 10.1007/s13668-016-0153-y
15. Liu Y, Eicher-Miller HA. Food insecurity and cardiovascular disease risk. *Curr Atheroscler Rep.* 2021;23:24. doi: 10.1007/s11883-021-00923-6
16. Harrison CA, Taren D. How poverty affects diet to shape the microbiota and chronic disease. *Nat Rev Immunol.* 2018;18:279–287. doi: 10.1038/nri.2017.121
17. Seligman HK, Schillinger D. Hunger and socioeconomic disparities in chronic disease. *N Engl J Med.* 2010;363:6–9. doi: 10.1056/NEJMp1000072
18. Nguyen BT, Shuval K, Bertmann F, Yaroch AL. The Supplemental Nutrition Assistance Program, food insecurity, dietary quality, and obesity among U.S. adults. *Am J Public Health.* 2015;105:1453–1459. doi: 10.2105/AJPH.2015.302580
19. Andreyeva T, Tripp AS, Schwartz MB. Dietary quality of Americans by Supplemental Nutrition Assistance Program participation status: a systematic review. *Am J Prev Med.* 2015;49:594–604. doi: 10.1016/j.amepre.2015.04.035
20. Vadiveloo MK, Parker HW, Juul F, Parekh N. Sociodemographic differences in the dietary quality of food-at-home acquisitions and purchases among participants in the U.S. nationally representative Food Acquisition and Purchase Survey (FoodAPS). *Nutrients.* 2020;12:E2354. doi: 10.3390/nu12082354
21. Committee on World Food Security. *Global Strategic Framework for Food Security & Nutrition (GSF).* 2014. Accessed April 16, 2021. http://www.fao.org/fileadmin/templates/cfs/Docs1314/GSF/GSF_Version_3_EN.pdf
22. Lichtenstein AH, Appel LJ, Vadiveloo M, Hu FB, Kris-Etherton PM, Rebholz CM, Sacks FM, Thorndike AN, Van Horn L, Wylie-Rosett J; on behalf of the American Heart Association Council on Lifestyle and Cardiometabolic Health; Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Cardiovascular Radiology and Intervention; Council on Clinical

Cardiology; and Stroke Council. 2021 dietary guidance to improve cardiovascular health: a scientific statement from the American Heart Association. *Circulation.* 2021;144:e472–e487. doi: 10.1161/CIR.0000000000001031
23. Van Horn L, Carson JA, Appel LJ, Burke LE, Economos C, Karmally W, Lancaster K, Lichtenstein AH, Johnson RK, Thomas RJ, et al; on behalf of the American Heart Association Nutrition Committee of the Council on Lifestyle and Cardiometabolic Health; Council on Cardiovascular Disease in the Young; Council on Cardiovascular and Stroke Nursing; Council on Clinical Cardiology; and Stroke Council. Recommended dietary pattern to achieve adherence to the American Heart Association/American College of Cardiology (AHA/ACC) guidelines: a scientific statement from the American Heart Association. *Circulation.* 2016;134:e505–e529. doi: 10.1161/CIR.0000000000000462
24. Caspi CE, Sorensen G, Subramanian SV, Kawachi I. The local food environment and diet: a systematic review. *Health Place.* 2012;18:1172–1187. doi: 10.1016/j.healthplace.2012.05.006
25. Kris-Etherton PM, Petersen KS, Velarde G, Barnard ND, Miller M, Ros E, O'Keefe JH, Williams K Sr, Horn LV, Na M, et al. Barriers, opportunities, and challenges in addressing disparities in diet-related cardiovascular disease in the United States. *J Am Heart Assoc.* 2020;9:e014433. doi: 10.1161/JAHA.119.014433
26. Rao M, Afshin A, Singh G, Mozaffarian D. Do healthier foods and diet patterns cost more than less healthy options? A systematic review and meta-analysis. *BMJ Open.* 2013;3:e004277. doi: 10.1136/bmjopen-2013-004277
27. Rhone A, Ver Ploeg M, Dickens C, Williams R, Breneman V. Low-income and low-supermarket-access census tracts, 2010–2015. EIB-165. January 2017. US Department of Agriculture, Economic Research Service. Accessed April 13, 2021. https://www.ers.usda.gov/publications/pub-details/?pubid=82100
28. Zenk SN, Powell LM, Rimkus L, Isgor Z, Barker DC, Ohri-Vachaspati P, Chaloupka F. Relative and absolute availability of healthier food and beverage alternatives across communities in the United States. *Am J Public Health.* 2014;104:2170–2178. doi: 10.2105/AJPH.2014.302113
29. Rhone A, Ver Ploeg M, WIlliams R, Breneman V. Understanding low-income and low-access census tracts across the nation: subnational and subpopulation estimates of access to healthy food. EIB-209. 2019. US Department of Agriculture, Economic Research Service. Accessed April 13, 2021. https://www.ers.usda.gov/publications/pub-details/?pubid=93140
30. Singleton CR, Li Y, Duran AC, Zenk SN, Odoms-Young A, Powell LM. Food and beverage availability in small food stores located in healthy food financing initiative eligible communities. *Int J Environ Res Public Health.* 2017;14:E1242. doi: 10.3390/ijerph14101242
31. Mancino L, Guthrie J, Ver Ploeg M, Lin B-H. Nutritional quality of foods acquired by Americans: findings from USDA's National Household Food Acquisition and Purchase Survey. EIB-188. 2018. US Department of Agriculture, Economic Research Service. Accessed April 13, 2021. https://www.ers.usda.gov/publications/pub-details/?pubid=87530
32. Fleischhacker SE, Evenson KR, Rodriguez DA, Ammerman AS. A systematic review of fast food access studies. *Obes Rev.* 2011;12:e460–e471. doi: 10.1111/j.1467-789X.2010.00715.x
33. Cooksey-Stowers K, Schwartz MB, Brownell KD. Food swamps predict obesity rates better than food deserts in the United States. *Int J Environ Res Public Health.* 2017;14:E1366. doi: 10.3390/ijerph14111366
34. Ma X, Liese AD, Hibbert J, Bell BA, Wilcox S, Sharpe PA. The association between food security and store-specific and overall food shopping behaviors. *J Acad Nutr Diet.* 2017;117:1931–1940. doi: 10.1016/j.jand.2017.02.007
35. Mozaffarian D, Afshin A, Benowitz NL, Bittner V, Daniels SR, Franch HA, Jacobs DR Jr, Kraus WE, Kris-Etherton PM, Krummel DA, et al; on behalf of the American Heart Association Council on Epidemiology and Prevention, Council on Nutrition, Physical Activity and Metabolism, Council on Clinical Cardiology, Council on Cardiovascular Disease in the Young, Council on the Kidney in Cardiovascular Disease, and the Advocacy Coordinating Committee. Population approaches to improve diet, physical activity, and smoking habits: a scientific statement from the American Heart Association. *Circulation.* 2012;126:1514–1563. doi: 10.1161/CIR.0b013e318260a20b
36. Siegel KR, McKeever Bullard K, Imperatore G, Kahn HS, Stein AD, Ali MK, Narayan KM. Association of higher consumption of foods derived from subsidized commodities with adverse cardiometabolic risk among US adults. *JAMA Intern Med.* 2016;176:1124–1132. doi: 10.1001/jamainternmed.2016.2410
37. Dulin-Keita A, Quintilliani LM, Buscemi J, Bell BM, Gans KM, Yaroch AL. Society of Behavioral Medicine position statement: increase funding for fruits and vegetables production in The Farm Bill reauthorization. *Transl Behav Med.* 2019;9:391–394. doi: 10.1093/tbm/iby041
38. UN Food and Agriculture Organization. Food Security. 2003. Accessed April 14, 2021. http://www.fao.org/3/y5061e/y5061e08.htm
39. UN Food and Agriculture Organization. An Introduction to the Basic Concepts of Food Security. 2008. Accessed April 14, 2021. http://www.fao.org/3/al936e/al936e.pdf
40. Fisher MR. Food security. Environmental Biology. 2019. Accessed April 14, 2021. https://openoregon.pressbooks.pub/envirobiology/chapter/8-1-food-security/
41. Wagle K. Food security: pillars, determinants and factors affecting it. 2018. Public Health Notes. Accessed April 14, 2021. https://www.publichealthnotes.com/food-security-determinants-and-urbanization/
42. Charlton KE. Food security, food systems and food sovereignty in the 21st century: a new paradigm required to meet Sustainable Development Goals. *Nutr Diet.* 2016;73:3–12. doi: 10.1111/1747-0080.12264
43. USAID. Policy Determination: Definition of Food Security. 1992. Accessed May 5, 2021. https://www.marketlinks.org/sites/default/files/resource/files/USAID%20Food%20Security%20Definition%201992.pdf
44. Lam MCL, Adams J. Association between home food preparation skills and behaviour, and consumption of ultra-processed foods: cross-sectional analysis of the UK National Diet and Nutrition Survey (2008–2009). *Int J Behav Nutr Phys Act.* 2017;14:68. doi: 10.1186/s12966-017-0524-9
45. Escoto KH, Laska MN, Larson N, Neumark-Sztainer D, Hannan PJ. Work hours and perceived time barriers to healthful eating among young adults. *Am J Health Behav.* 2012;36:786–796. doi: 10.5993/AJHB.36.6.6
46. Oakley AR, Nikolaus CJ, Ellison B, Nickols-Richardson SM. Food insecurity and food preparation equipment in US households: exploratory results from a cross-sectional questionnaire. *J Hum Nutr Diet.* 2019;32:143–151. doi: 10.1111/jhn.12615
47. Dave JM, Thompson DI, Svendsen-Sanchez A, Cullen KW. Perspectives on barriers to eating healthy among food pantry clients. *Health Equity.* 2017;1:28–34. doi: 10.1089/heq.2016.0009
48. Bloom I, Lawrence W, Barker M, Baird J, Dennison E, Sayer AA, Cooper C, Robinson S. What influences diet quality in older people? A qualitative study among community-dwelling older adults from the Hertfordshire Cohort Study, UK. *Public Health Nutr.* 2017;20:2685–2693. doi: 10.1017/S1368980017001203
49. Bloom I, Edwards M, Jameson KA, Syddall HE, Dennison E, Gale CR, Baird J, Cooper C, Aihie Sayer A, Robinson S. Influences on diet quality in older age: the importance of social factors. *Age Ageing.* 2017;46:277–283. doi: 10.1093/ageing/afw180
50. Tucher EL, Keeney T, Cohen AJ, Thomas KS. Conceptualizing food insecurity among older adults: development of a summary indicator in the National Health and Aging Trends Study. *J Gerontol B Psychol Sci Soc Sci.* 2021;76:2063–2072. doi: 10.1093/geronb/gbaa147
51. Earnshaw VA, Karpyn A. Understanding stigma and food inequity: a conceptual framework to inform research, intervention, and policy. *Transl Behav Med.* 2020;10:1350–1357. doi: 10.1093/tbm/ibaa087
52. Nguyen KH, Glantz SA, Palmer CN, Schmidt LA. Transferring racial/ethnic marketing strategies from tobacco to food corporations: Philip Morris and Kraft General Foods. *Am J Public Health.* 2020;110:329–336. doi: 10.2105/AJPH.2019.305482
53. Bleich SN, Moran AJ, Vercammen KA, Frelier JM, Dunn CG, Zhong A, Fleischhacker SE. Strengthening the public health impacts of the Supplemental Nutrition Assistance Program through policy. *Annu Rev Public Health.* 2020;41:453–480. doi: 10.1146/annurev-publhealth-040119-094143
54. Sanjeevi N, Freeland-Graves JH, Sachdev PK. Association of loss of Supplemental Nutrition Assistance Program benefits with food insecurity and dietary intake of adults and children. *Am J Clin Nutr.* 2021;114:683–689. doi: 10.1093/ajcn/nqab082
55. Huang J, Barnidge E, Kim Y. Children receiving free or reduced-price school lunch have higher food insufficiency rates in summer. *J Nutr.* 2015;145:2161–2168. doi: 10.3945/jn.115.214486
56. Food Research & Action Center. Rethinking summer food: a new vision to reduce summer hunger. 2019. Accessed April 22, 2021. https://frac.org/wp-content/uploads/rethinking-summer-food-new-vision-to-reduce-summer-hunger.pdf
57. Arteaga I, Heflin C, Gable S. The impact of aging out of WIC on food security in households with children. *Child Youth Serv Rev.* 2016;69:82–96. doi: 10.1016/j.childyouth.2016.07.015
58. US Department of Agriculture; Food and Nutrition Service. WIC eligibility requirements. 2020. Accessed November 29, 2021. https://www.fns.usda.gov/wic/wic-eligibility-requirements

59. US Department of Agriculture, Food and Nutrition Service. SNAP eligibility. Accessed November 29, 2021. https://www.fns.usda.gov/snap/recipient/eligibility
60. US Department of Agriculture, SNAP-Ed Connection. Policy, systems, and environmental change. Accessed July 30, 2021. https://snaped.fns.usda.gov/snap-ed-works/policy-systems-and-environmental-change
61. Healthy Eating Research. Feeding guidelines for infants and young toddlers: a responsive parenting approach. Guidelines for health professionals. 2017. Accessed July 30, 2021. http://healthyeatingresearch.org/wp-content/uploads/2017/02/her_feeding_guidelines_brief_021416.pdf
62. Borger C, Zimmerman T, Vericker T, DeMatteis J, Gollapudi B, Whaley S, Ritchie L, Au L, Sallack L, May L. WIC Infant and Toddler Feeding Practices Study-2: fourth year report. 2020. US Department of Agriculture. Accessed November 11, 2021. https://fns-prod.azureedge.us/sites/default/files/resource-files/WIC-ITFPS2-Year4Report.pdf
63. Dev DA, McBride BA; STRONG Kids Research Team. Academy of Nutrition and Dietetics benchmarks for nutrition in child care 2011: are child-care providers across contexts meeting recommendations? *J Acad Nutr Diet.* 2013;113:1346–1353. doi: 10.1016/j.jand.2013.05.023
64. Centers for Disease Control and Prevention. *Results from the School Health Policies and Practices Study 2014.* 2015. Accessed June 24, 2021. https://www.cdc.gov/healthyyouth/data/shpps/pdf/shpps-508-final_101315.pdf
65. Atoloye AT, Savoie-Roskos MR, Guenther PM, Durward CM. Effectiveness of expanded food and nutrition education program in changing nutrition-related outcomes among adults with low income: a systematic review. *J Nutr Educ Behav.* 2021;53:691–705. doi: 10.1016/j.jneb.2021.03.006
66. Congressional Research Service. Domestic food assistance: summary of programs. 2019. Accessed June 4, 2021. https://fas.org/sgp/crs/misc/R42353.pdf
67. Olsho LE, Klerman JA, Wilde PE, Bartlett S. Financial incentives increase fruit and vegetable intake among Supplemental Nutrition Assistance Program participants: a randomized controlled trial of the USDA Healthy Incentives Pilot. *Am J Clin Nutr.* 2016;104:423–435. doi: 10.3945/ajcn.115.129320
68. Harnack L, Oakes JM, Elbel B, Beatty T, Rydell S, French S. Effects of subsidies and prohibitions on nutrition in a food benefit program: a randomized clinical trial. *JAMA Intern Med.* 2016;176:1610–1618. doi: 10.1001/jamainternmed.2016.5633
69. Polacsek M, Moran A, Thorndike AN, Boulos R, Franckle RL, Greene JC, Blue DJ, Block JP, Rimm EB. A supermarket double-dollar incentive program increases purchases of fresh fruits and vegetables among low-income families with children: The Healthy Double Study. *J Nutr Educ Behav.* 2018;50:217–228.e1. doi: 10.1016/j.jneb.2017.09.013
70. Moran A, Thorndike A, Franckle R, Boulos R, Doran H, Fulay A, Greene J, Blue D, Block JP, Rimm EB, et al. Financial incentives increase purchases of fruit and vegetables among lower-income households with children. *Health Aff (Millwood).* 2019;38:1557–1566. doi: 10.1377/hlthaff.2018.05420
71. Mozaffarian D, Liu J, Sy S, Huang Y, Rehm C, Lee Y, Wilde P, Abrahams-Gessel S, de Souza Veiga Jardim T, Gaziano T, et al. Cost-effectiveness of financial incentives and disincentives for improving food purchases and health through the US Supplemental Nutrition Assistance Program (SNAP): a microsimulation study. *PLoS Med.* 2018;15:e1002661. doi: 10.1371/journal.pmed.1002661
72. US Department of Agriculture. USDA increases SNAP benefits 15% with funding from American Rescue Plan. March 22, 2021. Accessed July 7, 2021. https://www.usda.gov/media/press-releases/2021/03/22/usda-increases-snap-benefits-15-funding-american-rescue-plan#:~:text=The%2015%20percent%20increase%20in%20SNAP%20benefits%20will,the%20United%20States%2C%E2%80%9D%20said%20Agriculture%20Secretary%20Tom%20Vilsack
73. US Department of Agriculture, National Institute of Food and Agriculture. Supplemental Nutrition Education Program – Education (SNAP-Ed). Accessed November 29, 2021. https://nifa.usda.gov/grants/programs/supplemental-nutrition-education-program-education-snap-ed
74. Rivera RL, Maulding MK, Eicher-Miller HA. Effect of Supplemental Nutrition Assistance Program-Education (SNAP-Ed) on food security and dietary outcomes. *Nutr Rev.* 2019;77:903–921. doi: 10.1093/nutrit/nuz013
75. Pindus N, Hafford C. Food security and access to healthy foods in Indian country: learning from the Food Distribution Program on Indian Reservations. *J Public Aff.* 2019;19:e1876. doi: 10.1002/pa.1876
76. Schwartz M, Levi R, Lott M, Arm K, Seligman H. *Healthy Eating Research Nutrition Guidelines for the Charitable Food System.* 2020. Accessed April 12, 2021. https://healthyeatingresearch.org/wp-content/uploads/2020/02/her-food-bank_FINAL.pdf
77. Oronce CIA, Miake-Lye IM, Begashaw MM, Booth M, Shrank WH, Shekelle PG. Interventions to address food insecurity among adults in Canada and the US: a systematic review and meta-analysis. *JAMA Health Forum.* 2021;2:e212001. doi: 10.1001/jamahealthforum.2021.2001
78. US Department of Agriculture, Food and Nutrition Service. Nutrition Standards for CACFP Meals and Snacks. Accessed November 29, 2021. https://www.fns.usda.gov/cacfp/meals-and-snacks
79. Gurzo K, Lee DL, Ritchie K, Yoshida S, Homel Vitale E, Hecht K, Ritchie LD. Child care sites participating in the Federal Child and Adult Care Food Program provide more nutritious foods and beverages. *J Nutr Educ Behav.* 2020;52:697–704. doi: 10.1016/j.jneb.2020.02.009
80. Zaltz DA, Hecht AA, Pate RR, Neelon B, O'Neill JR, Benjamin-Neelon SE. Participation in the Child and Adult Care Food Program is associated with fewer barriers to serving healthier foods in early care and education. *BMC Public Health.* 2020;20:856. doi: 10.1186/s12889-020-08712-7
81. Lee DL, Gurzo K, Yoshida S, Homel Vitale E, Hecht K, Ritchie LD. Compliance with the new 2017 Child and Adult Care Food Program Standards for Infants and Children before implementation. *Child Obes.* 2018;14:393–402. doi: 10.1089/chi.2018.0092
82. Erinosho T, Vaughn A, Hales D, Mazzucca S, Gizlice Z, Ward D. Participation in the Child and Adult Care Food Program is associated with healthier nutrition environments at family child care homes in Mississippi. *J Nutr Educ Behav.* 2018;50:441–450. doi: 10.1016/j.jneb.2017.11.004
83. Chriqui JF, Leider J, Schermbeck RM, Sanghera A, Pugach O. Changes in Child and Adult Care Food Program (CACFP) practices at participating childcare and education centers in the United States following updated national standards, 2017–2019. *Nutrients.* 2020;12:2818. doi: 10.3390/nu12092818
84. US Department of Agriculture, National Institute of Food and Agriculture. Expanded Food and Nutrition Education Program (EFNEP). Accessed November 29, 2021. https://nifa.usda.gov/program/expanded-food-and-nutrition-education-program-efnep
85. Perkins S, Daley A, Yerxa K, Therrien M. The effectiveness of the Expanded Food and Nutrition Education Program (EFNEP) on diet quality as measured by the Healthy Eating Index. *Am J Lifestyle Med.* 2020;14:316–325. doi: 10.1177/1559827619872733
86. Guenther PM, Luick BR. Improved overall quality of diets reported by Expanded Food and Nutrition Education Program participants in the Mountain region. *J Nutr Educ Behav.* 2015;47:421–6.e1. doi: 10.1016/j.jneb.2015.05.001
87. Gretchen Swanson Center for Nutrition. Gus Schumacher Nutrition Incentive Program Training, Technical Assistance, Evaluation, and Information Center (GUSNIP NTAE): Summary of Impact Findings, Year 1: September 1, 2019 to August 31, 2020. 2021. Accessed November 29, 2021. https://www.nutritionincentivehub.org/media/swvfnmn4/gusnip-ntae-summary-of-impact-findings_year-1.pdf
88. Gans KM, Risica PM, Keita AD, Dionne L, Mello J, Stowers KC, Papandonatos G, Whittaker S, Gorham G. Multilevel approaches to increase fruit and vegetable intake in low-income housing communities: final results of the 'Live Well, Viva Bien' cluster-randomized trial. *Int J Behav Nutr Phys Act.* 2018;15:80. doi: 10.1186/s12966-018-0704-2
89. Durward CM, Savoie-Roskos M, Atoloye A, Isabella P, Jewkes MD, Ralls B, Riggs K, LeBlanc H. Double Up Food Bucks participation is associated with increased fruit and vegetable consumption and food security among low-income adults. *J Nutr Educ Behav.* 2019;51:342–347. doi: 10.1016/j.jneb.2018.08.011
90. Ridberg RA, Bell JF, Merritt KE, Harris DM, Young HM, Tancredi DJ. Effect of a fruit and vegetable prescription program on children's fruit and vegetable consumption. *Prev Chronic Dis.* 2019;16:E73. doi: 10.5888/pcd16.180555
91. Berkowitz SA, Delahanty LM, Terranova J, Steiner B, Ruazol MP, Singh R, Shahid NN, Wexler DJ. Medically tailored meal delivery for diabetes patients with food insecurity: a randomized cross-over trial. *J Gen Intern Med.* 2019;34:396–404. doi: 10.1007/s11606-018-4716-z
92. Berkowitz SA, Terranova J, Hill C, Ajayi T, Linsky T, Tishler LW, DeWalt DA. Meal delivery programs reduce the use of costly health care in dually eligible Medicare and Medicaid beneficiaries. *Health Aff (Millwood).* 2018;37:535–542. doi: 10.1377/hlthaff.2017.0999
93. MassHealth. Massachusetts Delivery System Reform Incentive Payment Program. 2019. Accessed April 12, 2022. https://www.mass.gov/info-details/massachusetts-delivery-system-reform-incentive-payment-program
94. Dunn C, Kenney E, Bleich S, Fleischhacker S. Strengthening WIC's Impact During and After the COVID-19 Pandemic. 2020. Accessed April 12, 2022. https://healthyeatingresearch.org/wp-content/uploads/2020/07/HER-WIC-Brief-072220_final.pdf

95. National WIC Association. Prioritizing health equity to protect native lives. 2020. Accessed November 29, 2021. https://www.nwica.org/blog/indigenous-native-american-health-equity-WIC-november-heritage-month#.YkxWvdvMKUk
96. Head Start Early Childhood Learning & Knowledge Center. 1302.44 Child nutrition. Accessed November 29, 2021. https://eclkc.ohs.acf.hhs.gov/policy/45-cfr-chap-xiii/1302-44-child-nutrition
97. Fox T, Corbett A, Duffey K. Early care and education policies and programs to support healthy eating and physical activity: best practices and changes over time. research review: 2010–2016. Healthy Eating Research; 2017. Accessed November 29, 2021. https://healthyeatingresearch.org/wp-content/uploads/2018/01/her_ece_011718-1.pdf
98. US Department of Agriculture, Food and Nutrition Service. School Nutrition and Meal Cost Study. 2019. Accessed June 3, 2021. https://www.fns.usda.gov/school-nutrition-and-meal-cost-study
99. Kinderknecht K, Harris C, Jones-Smith J. Association of the Healthy, Hunger-Free Kids Act with dietary quality among children in the US National School Lunch Program. *JAMA*. 2020;324:359–368. doi: 10.1001/jama.2020.9517
100. Jia J, Moore LL, Cabral H, Hanchate A, LaRochelle MR. Changes to dietary and health outcomes following implementation of the 2012 updated US Department of Agriculture school nutrition standards: analysis using National Health and Nutrition Examination Survey, 2005–2016. *Public Health Nutr*. 2020;23:3016–3024. doi: 10.1017/S1368980020001986
101. California Legislative Information. AB-130 Education finance: education omnibus budget trailer bill. 2021. Accessed July 30, 2021. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB130
102. State of Maine Legislature. LD 1679 (SP 540). An act to address student hunger through expanding access to free school meals. 2021. Accessed July 30, 2021. http://legislature.maine.gov/LawMakerWeb/summary.asp?ID=280080767
103. Forrestal S, Potamites E, Guthrie J, Paxton N. Associations among food security, school meal participation, and students' diet quality in the first school nutrition and meal cost study. *Nutrients*. 2021;13:307. doi: 10.3390/nu13020307
104. Anzman-Frasca S, Djang HC, Halmo MM, Dolan PR, Economos CD. Estimating impacts of a breakfast in the classroom program on school outcomes. *JAMA Pediatr*. 2015;169:71–77. doi: 10.1001/jamapediatrics.2014.2042
105. Ralston K, Treen K, Coleman-Jensen A, Guthrie J. Children's food security and USDA child nutrition programs. US Department of Agriculture, Economic Research Service; 2017. Accessed April 8, 2021. https://www.ers.usda.gov/webdocs/publications/84003/eib-174_summary.pdf?v=9264.8
106. Hayes C, Rosso R, FitzSimons C. Hunger doesn't take a vacation: summer nutrition status report. FRAC Food Research and Action Center; 2019. Accessed November 29, 2021. https://frac.org/wp-content/uploads/frac-summer-nutrition-report-2019.pdf
107. Turner L, Calvert HG. The academic, behavioral, and health influence of summer child nutrition programs: a narrative review and proposed research and policy agenda. *J Acad Nutr Diet*. 2019;119:972–983. doi: 10.1016/j.jand.2019.02.006
108. Bartlett S, Olsho L, Klerman J, Patlan KL, Blocklin M, Connor P, Webb K, Ritchie L, Wakimoto P, Crawford P. Evaluation of the Fresh Fruit and Vegetable Program (FFVP): final evaluation report. 2015. Accessed November 29, 2021. https://www.abtassociates.com/insights/publications/report/evaluation-of-the-fresh-fruit-and-vegetable-program-ffvp-final
109. Meals on Wheels America. What you can expect. Accessed November 19, 2021. https://www.mealsonwheelsamerica.org/find-meals
110. US Department of Agriculture, Food and Nutrition Service. Seniors farmers' market nutrition program. 2021. Accessed November 19, 2021. https://www.fns.usda.gov/sfmnp/senior-farmers-market-nutrition-program
111. Economic Research Service, US Department of Agriculture. Farm bill spending. 2021. Accessed April 14, 2021. https://www.ers.usda.gov/topics/farm-economy/farm-commodity-policy/farm-bill-spending/
112. Economic Research Service, US Department of Agriculture. National school lunch program. 2020. Accessed April 16, 2021. https://www.ers.usda.gov/topics/food-nutrition-assistance/child-nutrition-programs/national-school-lunch-program
113. US Department of Agriculture, Economic Research Service. School Breakfast Program. 2021. Accessed April 12, 2022. https://www.ers.usda.gov/topics/food-nutrition-assistance/child-nutrition-programs/school-breakfast-program/#:~:text=On%20average%2C%20SBP%20provided%20low,program%20amounted%20to%20%243.6%20billion
114. Mansfield JL, Savaiano DA. Effect of school wellness policies and the Healthy, Hunger-Free Kids Act on food-consumption behaviors of students, 2006–2016: a systematic review. *Nutr Rev*. 2017;75:533–552. doi: 10.1093/nutrit/nux020
115. Gleason S, Wolford B, Wilkin M, Hofer B, Woloshin D, Sallack L and Gabor V. Analysis of Supplemental Nutrition Assistance Program Education (SNAP-Ed) data for all states study: final report. 2018. Accessed July 7, 2021. https://www.fns.usda.gov/snap/analysis-supplemental-nutrition-assistance-program-education-snap-ed-data-all-states
116. Feeding America. What is a food bank? Accessed April 12, 2022. https://www.feedingamerica.org/our-work/food-bank-network
117. Weinfield N, Mills G, Borger C, Gearing M, Mascaluso T, Montaquila J, Zedlewski S. *Hunger in America*. 2014. Accessed April 13, 2021. https://www.feedingamerica.org/sites/default/files/2020-02/hunger-in-america-2014-full-report.pdf
118. Martin KS. *Reinventing Food Banks and Pantries: New Tools to End Hunger*. Washington, DC: Island Press; 2021.
119. Cooksey-Stowers K, Martin KS, Schwartz M. Client Preferences for nutrition interventions in food pantries. *J Hunger Environ Nutr*. 2019;14:18–34. doi: 10.1080/19320248.2018.1512929
120. Campbell E, Hudson H, Webb K, Crawford PB. Food preferences of users of the emergency food system. *J Hunger Environ Nutr*. 2011;6:179–187. doi: 10.1080/19320248.2011.576589
121. Feldman M, Schwartz MB. A tipping point: leveraging opportunities to improve the nutritional quality of food bank inventory. 2018. Accessed April 15, 2021. https://mazon.org/wp-content/uploads/MAZON-Report-TippingPoint.pdf
122. Campbell E, Webb K, Ross M, Hudson H, Hecht K. Nutrition-focused food banking. April 2, 2015. National Academy of Medicine. Accessed April 13, 2021. https://nam.edu/perspectives-2015-nutrition-focused-food-banking/
123. Martin K, Xu R, Schwartz MB. Food pantries select healthier foods after nutrition information is available on their food bank's ordering platform. *Public Health Nutr*. 2021;24:5066–5073. doi: 10.1017/S1368980020004814
124. Stowers KC, Martin KS, Read M, McCabe M, Cornelius T, Wolff M, Xu R, Schwartz MB. Supporting Wellness at Pantries (SWAP): changes to inventory in six food pantries over one year. *J Public Health (Berl)*. 2022;30:1001–1009. doi: 10.1007/s10389-020-01350-8
125. McKee SL, Gurganus EA, Atoloye AT, Xu R, Martin K, Schwartz MB. Pilot testing an intervention to educate and promote nutritious choices at food pantries. *J Public Health (Berl)*. 2021. doi: 10.1007/s10389-021-01570-6
126. Byker Shanks C. Promoting food pantry environments that encourage nutritious eating behaviors. *J Acad Nutr Diet*. 2017;117:523–525. doi: 10.1016/j.jand.2016.12.020
127. Caspi C, Schwartz MB. Giving food pantry clients choices – and gently nudging them toward nutritious foods – can lead to healthier diets. The Conversation. May 25, 2021. Accessed June 24, 2021. https://theconversation.com/giving-food-pantry-clients-choices-and-gently-nudging-them-toward-nutritious-foods-can-lead-to-healthier-diets-160585
128. Seligman HK, Smith M, Rosenmoss S, Marshall MB, Waxman E. Comprehensive diabetes self-management support from food banks: a randomized controlled trial. *Am J Public Health*. 2018;108:1227–1234. doi: 10.2105/AJPH.2018.304528
129. Papanicolas I, Woskie LR, Orlander D, Orav EJ, Jha AK. The Relationship between health spending and social spending in high-income countries: how does the US compare? *Health Aff (Millwood)*. 2019;38:1567–1575. doi: 10.1377/hlthaff.2018.05187
130. Seligman HK, Berkowitz SA. Aligning programs and policies to support food security and public health goals in the United States. *Annu Rev Public Health*. 2019;40:319–337. doi: 10.1146/annurev-publhealth-040218-044132
131. Barnidge EK, Stenmark SH, DeBor M, Seligman HK. The right to food: building upon "food is medicine." *Am J Prev Med*. 2020;59:611–614. doi: 10.1016/j.amepre.2020.04.011
132. Hinton E, Musumeci M, Rudowitz R, Antonisse L, Hall C. Section 1115 Medicaid demonstration waivers: the current landscape of approved and pending waivers. 2019. Accessed April 14, 2021. http://174.143.136.165/Uploads/Public/Documents/2018%20Hurst/Issue-Brief-Section-1115-Medicaid-Demonstration-Waivers-The-Current-Landscape-of-Approved-and-Pending-Waivers.pdf
133. Alley DE, Asomugha CN, Conway PH, Sanghavi DM. Accountable health communities–addressing social needs through Medicare and Medicaid. *N Engl J Med*. 2016;374:8–11. doi: 10.1056/NEJMp1512532

134. Bultema S, Morrow H, Wenzl S. Accountable communities of health, health and social service systems alignment, and population health: Eastern Washington State, 2017–2019. *Am J Public Health.* 2020;110(S2):S235–S241. doi: 10.2105/AJPH.2020.305773
135. De Marchis E, Fichtenberg C, Gottlieb LM. Food insecurity intervention in health care settings: a review of the evidence. 2020. Social Interventions Research & Evaluation Network. Accessed April 14, 2021. https://sirenetwork.ucsf.edu/sites/default/files/2021-02/SIREN_FI_brief_2020_final.pdf
136. Berkowitz SA, Hulberg AC, Standish S, Reznor G, Atlas SJ. Addressing unmet basic resource needs as part of chronic cardiometabolic disease management. *JAMA Intern Med.* 2017;177:244–252. doi: 10.1001/jamainternmed.2016.7691
137. Feeding America. The impact of the coronavirus on food insecurity in 2020 & 2021. 2021. Accessed July 14, 2021. https://www.feedingamerica.org/sites/default/files/2021-03/National%20Projections%20Brief_3.9.2021_0.pdf
138. Balasuriya L, Berkowitz SA, Seligman HK. Federal nutrition programs after the pandemic: learning from P-EBT and SNAP to create the next generation of food safety net programs. *Inquiry.* 2021;58:469580211005190. doi: 10.1177/00469580211005190
139. US Department of Agriculture, Food and Nutrition Service. State guidance on coronavirus P-EBT. 2021. Accessed July 7, 2021. https://www.fns.usda.gov/snap/state-guidance-coronavirus-pandemic-ebt-pebt
140. US Department of Agriculture, Food and Nutrition Service. Thrifty food plan, 2021. 2021. Accessed November 29, 2021. https://FNS.usda.gov/TFP
141. Dunn CG, Bianchi C, Fleischhacker S, Bleich SN. Nationwide assessment of SNAP online purchasing pilot state communication efforts during the COVID-19 pandemic. *J Nutr Educ Behav.* 2021;53:931–937. doi: 10.1016/j.jneb.2021.07.004
142. Thompson FE. Subar AF. Dietary assessment methodology. In: Coulston AM, Boushey CJ, Ferruzzi M, Delahanty L, eds. *Nutrition in the Prevention and Treatment of Disease.* 4th ed. Academic Press; 2017:5–48.