Poor nutrition is the leading driver of death and disability in the United States, including heart disease, stroke, type 2 diabetes, obesity, hypertension, and some cancers, and has staggering costs to society.[1] Diet-related deaths outrank deaths from smoking, and about half of U.S. deaths from heart disease - or nearly 900 deaths each day - are linked to poor diet.[2] 8 in 10 young Americans are ineligible for military service, with "overweight" and "obesity" being the top medical disqualifiers.[3] Research from the Rockefeller Foundation purports that the economic costs of suboptimal diets due to health care spending and lost productivity are estimated at $1.1 trillion each year - equaling the economic output of the entire food sector.[4]

Today, rates of diet-related chronic disease in the United States are high as a whole, but disparities exist by education, income, race/ethnicity, and geography.[5] Of all adults (38 million) with diabetes in the United States, people of color - American Indians/Alaskan Natives (14.5%), non-Hispanic blacks (12.1%), and Hispanics (11.8%) - were disproportionately diagnosed.[6] Hypertension prevalence is highest among non-Hispanic Black adults and those with lower incomes and educational attainment.[7] An individual being "low income" could explain a 21 to 54% increased risk of developing or dying from cardiovascular disease.[8]

Simultaneously, millions of Americans are food insecure - or experiencing limited or uncertain access to adequate food. In 2022, 17 million households in the United States (12.8%),[9] 13% of Missourians and 12% of Kansans are food insecure.[10] Public food assistance programs, like the Supplemental Nutrition Assistance Program (SNAP), seek to soften the food insecurity crisis, but "food security" is not interchangeable with "nutrition security," or having consistent access, availability, and affordability of food that promotes well-being and prevents or treats disease if necessary.[11] SNAP participants are more likely to die due to diet-related illnesses than those who do not participate in the program[12] and incredibly, SNAP participants are three times more likely to die from diabetes than the general population.[13]

While poor nutrition and food insecurity remain stubborn drivers of poor health outcomes and excess healthcare spending, few strategies have been deployed to address these risks until now. The rapid ascent of the "Food Is Medicine" movement demonstrates tremendous promise for improving nutrition, reducing food insecurity, improving health outcomes and increasing health equity.[14] This intervention places a stronger emphasis on providing healthy food as a tool for treating chronic disease and, importantly, the framework extends beyond the concept of food security as a social determinant of health, recognizing that poor nutrition is a foundational determinant of health.[15]

The Food Is Medicine Framework can be conceptualized as a continuum from preventive, least intensive (population-level healthy food policies and programs) to treatment, most intensive (medically tailored meals) interventions.[16] Centered in that continuum are produce prescription programs, which can include discounted or free produce, which can include fruits, vegetables, nuts, seeds, whole grains, dairy, and eggs, that are provided by electronic benefit cards of vouchers that are redeemable at grocery stores or other local markets.[17]

There is promising evidence that suggests the efficacy of produce prescription programs in improving health. In a groundbreaking study by the American Heart Association of 3,881 participants across 12 states from 2014 to 2020, the impact of "produce prescriptions," which provided free fruits and vegetables to people with diet-related diseases, including diabetes, obesity, and hypertension, was conducted. Participants received vouchers, averaging $63 per month for up to 10 months, which were redeemed locally. Healthcare providers tracked changes in weight, blood pressure, and blood sugar among the participants. Among adults with hypertension, a meaningful decrease in diastolic blood pressure was observed. For those with uncontrolled diabetes, a statistically significant decline in their A1c levels was demonstrated. Approximately 94% of the participants reported that taking part in the program improved their life.

---

[1] Burdens of Food and Nutrition Insecurity, Diet-Related Diseases, and Health Disparities in the United States. https://tuftsfoodismedicine.org/wp-content/uploads/2023/09/Tufts_True_Cost_of_FIM_Case-Study_Report_Sep_2023.pdf
[2]The U.S. diet is deadly. Here are 7 ideas to get Americans eating healthier. Retrieved from https://www.npr.org/sections/health-shots/2022/08/31/1120004717/the-u-s-diet-is-deadly-here-are-7-ideas-to-get-americans-eating-healthier
[3]Mission: Readiness, Council for a Strong America. 77 Percent of American Youth Can't Qualify for Military Service: Better Nutrition and Physical Activity Can Yield Healthier Outcomes for Youth and Bolster National Security.
[4]True Cost of Food: Measuring What Matters to Transform the U.S. Food System. July 2021. https://www. rockefellerfoundation.org/wp-content/uploads/2021/07/True-Cost-ofFood-Full-Report-Final.pdf
[5]Burdens of Food and Nutrition Insecurity, Diet-Related Diseases, and Health Disparities in the United States. https://tuftsfoodismedicine.org/wp-content/uploads/2023/09/Tufts_True_Cost_of_FIM_Case-Study_Report_Sep_2023.pdf
[6]Statistics about diabetes. https://diabetes.org/about-diabetes/statistics
[7]Stierman B, Afful J, Carroll MD, et al. National Health and Nutrition Examination Survey 2017–March 2020. National Center for Health Statistics; 2021.
[8]Low income and work stress contribute to link between education, heart disease, and stroke. European Society of Cardiology. December 2019.
[9]Food Security Status of U.S. Households in 2022. https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-u-s/key-statistics-graphics/
[10]Food Fight: How Kansas City Struggles to Feed Its Families. https://flatlandkc.org/news-issues/food-fight-how-kansas-city-struggles-to-feed-its-families/
[11]Prioritizing Nutrition Security in the US, JAMA April 27, 2021 Volume 325, Number 16, Dariush Mozaffarian, MD, DrPH, Sheila Fleischhacker, PhD, JD,RDN, José R. Andrés
[12]Food Is Medicine: Key Facts. Retrieved from https://nutrition.tufts.edu/sites/default/files/documents/FIM%20Infographic-Web.pdf
[13]Cardiometabolic Mortality by Supplemental Nutrition Assistance Program Participation and Eligibility in the United States. March 2017. National Center for Biotechnology Information.
[14]Burdens of Food and Nutrition Insecurity, Diet-Related Diseases, and Health Disparities in the United States. https://tuftsfoodismedicine.org/wp-content/uploads/2023/09/Tufts_True_Cost_of_FIM_Case-Study_Report_Sep_2023.pdf
[15]Burdens of Food and Nutrition Insecurity, Diet-Related Diseases, and Health Disparities in the United States. https://tuftsfoodismedicine.org/wp-content/uploads/2023/09/Tufts_True_Cost_of_FIM_Case-Study_Report_Sep_2023.pdf
[16]Food is Medicine Massachusetts. https://foodismedicinema.org/ food-is-medicine-interventions
[17]Mozaffarian D, Blanck HM, Garfield, KM, et al. A Food is Medicine approach to achieve nutrition security and improve health. Nat Med. 2022;28(11):2238-2240

The Rockefeller Foundation conducted a health and economic evaluation of the true cost of expanding implementation of produce prescriptions nationally for 6.5 million adults with diabetes and food insecurity, *Produce Prescription Programs: Health and Economic Impacts.*[18] The study acknowledged that the consequence of implementing a program like this could be 292,000 averted cardiovascular events, 260,000 quality-adjusted life years gained, $39.6 billion in healthcare cost savings, and $4.8 billion in productivity savings. The program was highly cost effective from a health care perspective and cost saving from a societal perspective.[19] However, while the strong links between diet quality and chronic disease are well-established, very few Food Is Medicine interventions, like produce prescription programs, are covered benefits or considered a mainstream standard of care, limiting their access for the majority of Americans.

Since 2014, Food Equality Initiative (FEI) has enjoined tackling food insecurity with the food is medicine movement, or the belief that food plays a role in sustaining health, preventing disease, and as a therapy for those with conditions responsive to changes in diet.[20] This belief is twofold. First, food is an important tool used to address medical conditions such as food allergies, celiac disease, diabetes, and other cardiometabolic diseases. Secondly, food can also prevent illness and improve overall health through the regular consumption of nutritious food (nutrition security). Since inception, more than 400 households have been nourished by FEI and permitted access to health and the dignity of choice.

Food Equality Initiative focuses its efforts in three main ways. First, by improving *access* to nourishing food through its Food Is Medicine Access Home (FIMH) program direct-to-door delivery model. Secondly, *educational* resources, like a culinary platform, fortify individuals' understandings of how to engage in nutritious eating, leading to sustained behavioral change. Finally, by *advocating* for traditionally under-represented populations in healthcare by supporting projects and legislation that expand access to Food Is Medicine programs, like through Section 1115 waivers that provide states an avenue to test new approaches in Medicaid, such as those that authorize evidence-based human related social needs (HRSN) services to address food insecurity for specific high-need populations.

In 2024, Food Equality Initiative will expand its Food Is Medicine Access Home (FIMH) program, seeking to reduce health inequity by increasing access to food as medicine for those at the intersection of food/nutrition insecurity and a diet-treated disease in Kansas City. While improved access to nutritious produce and other food is a cornerstone of the program, supplemental education and supportive resources (for example, culinary education), will lead to sustained behavioral change - or modified actions, attitudes, and habits.

Through the program, qualified households can receive up to $250 per month for 6 months to subsidize the direct-to-door delivery of nutritious food as medicine to address their diet-treated condition. To qualify, an individual must (1) be diagnosed with a diet-treated illness / condition, (2) screen positively for food insecurity, and (3) reside in Jackson County (MO), Wyandotte County (KS), or Johnson County (KS). As a consequence of participation in the program, individuals will agree that (1) nutritious food is more accessible and (2) their diet-treated health condition is improved, measured through improved biometric data (such as decreased A1c, weight, hypertension, and/or other biometric factors).

In Kansas City, too few can access evidence based Food Is Medicine interventions. Braided private and public funding is necessary to expand opportunities for those at the intersection of food insecurity and a diet-treated disease, and optimize health outcomes in the future.

[18]Burdens of Food and Nutrition Insecurity, Diet-Related Diseases, and Health Disparities in the United States. https://tuftsfoodismedicine.org/wp-content/uploads/2023/09/Tufts_True_Cost_of_FIM_Case-Study_Report_Sep_2023.pdf
[19]Wang L, Lauren BN, Hager K, et al. Health and economic impacts of implementing produce prescription programs for diabetes in the United States: A microsimulation study. J Am Heart Assoc. 2023;e029215.
[20]American Society for Nutrition (2022). Food as Medicine. Retrieved from nutrition.org/food-as-medicine