



2019

Harkin On Wellness Report

 The Harkin Institute

 Drake
UNIVERSITY

Foreword

The health of our nation is not solely defined as the health of our population. In today's world, we must also address what effect our habits have on the health of our food system.

Although the U.S. food system provides plentiful, inexpensive food, much of it is non-nutritive, energy-dense, unhealthy food. What's more, the agricultural system that underlies it is resource-intensive and not sustainable. One solution is substantial reform of our current food systems. Agriculture and farm policies need to be aligned with national health and nutrition goals. Communities, organizations, and individuals need to facilitate the change and serve as the leaders in bridging the disconnect between healthy people and a sustainable food system.

Fortunately, programs already exist in communities and cities across the United States that are doing just that; however, often times the most innovative and adoptable wellness and nutrition initiatives go unshared with other communities and community leaders.

It is the goal of the Harkin on Wellness (HOW) Report, to highlight top wellness and nutrition initiatives that are examples of healthy, sustainable food systems. We encourage others to use this as a tool to build partnerships and create sustainable, cross-sector coalitions within their own community and beyond.

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Section I: Introduction

Although we all eat, we live in a society that largely does not understand the food system and how it affects our health. At The Harkin Institute, we do not think it is enough to concentrate all of our efforts at the end of the system improving the diet and food habits of individuals. We know it is necessary to focus our energy on the food system and the environmental context in which food exists.

To create a resilient and healthy society, we need to consider the connection between our health and the environment (built and natural). Creating a more sustainable approach to our food system as a whole would not only ensure better health outcomes for people but would reduce the growing chronic disease burden, minimize the impact on the environment, and distribute healthy, nutritious food in an equitable and fair manner to communities across the nation.

We believe innovative and progressive wellness and nutrition initiatives that use a food systems approach are able to have a larger impact on issues, specifically as they relate to food, health, and the environment. This can include but is not limited to work that connects nutrition and health with agriculture, family wellness, community development, policy, research, and education.

The solution is not simple, but it is clear. We must develop programs, policies, and individual practices that make our current food system more sustainable. Food systems include all elements and activities related to the production, processing, distribution, preparation, and consumption of food, the market and institutional networks for their governance, and the socio-economic and environmental outcomes of these activities.^{1,2} A sustainable food system is defined as one that provides healthy food to meet current food needs while maintaining healthy ecosystems that can also provide food for generations to come, with minimal negative impact to the environment. It encourages local production and distribution infrastructures, makes nutritious food available, accessible, and affordable to all, and is humane and just, protecting farmers and other workers, consumers, and communities.

Fortunately, examples of successful sustainable food systems exist throughout the United States. One key factor for receiving a 2019 HOW designation was that each local or regional program recognized has the capability to effect change on a larger scale. And although the food system as a whole cannot be contained within one community or organization, there are valuable lessons to learn from small system change. Unlike the global food system, small scale systems are more nimble and adaptive to change, two characteristics that are increasingly

important to a system that interacts with the economy, human health, right to wellbeing, and the environment.

Climate change is one of the defining issues of this time, and we are at a turning point.³ Our average global temperature increased by 33°F since 1880⁴; warming has caused snow and ice to melt, expanding the oceans and causing the global sea level to rise by 3 inches;⁴ global emissions of carbon dioxide have increased by almost 50% since 1990⁵. These changes have substantial implications for our economy, our health, and our society as a whole. Rising sea levels threaten community infrastructure necessary for local jobs and regional industries. Carbon dioxide emissions effect the nutrient quality of the food we grow.⁶ Shifting temperatures are associated with worsening mental health.⁷ Food insecurity, malnutrition, and obesity are all linked to the changing climate.^{8,9}

Extreme weather conditions, drought, invasive species, and crop diseases resulting from climate change are virtually affecting all agricultural lands and farmers in the world; however, the climate change that threatens our collective livelihood is made by the food system itself. Food is the largest contributor to the loss of biodiversity.¹⁰ Food production alone requires use of large areas of land, water, and energy, and is responsible for up to 30% of human-generated greenhouse gas emissions (GHGE).¹¹

Urgent action is necessary. We know large climate change policies are necessary at the international level and require large industries, governments and global NGOs to collaborate; however, the bulk of the impact will be felt at the regional and local levels. Individuals, local, and regional groups should not overlook the importance of small-scale innovation. Initiatives that start at a local or regional level have the power to affect “big problems” including climate change. Evolution and development of food systems on the global, national, or local level are often driven by the desire to develop new markets or support existing markets that economically benefit the producers and community members. This is important, and tools exist to support those efforts.¹²

Cross-sectional collaboration is still under development. It supports economic development, is socially and culturally appropriate, environmentally sustainable, and has a strong connection to health. It is a concept that appeals to an extensive group of people from different professions and backgrounds.

Thus, the aim of the 2019 Harkin On Wellness (HOW) Report is to showcase leading local and regional organizations that can inform citizens of small, sustainable, healthy food system innovations. The report highlights various wellness and nutrition initiatives and programs throughout the country that exemplify sustainable, health-focused food systems. These initiatives, which have been recognized as HOW designees, can be used as models and tools to encourage partnerships and build sustainable, cross-sector coalitions in communities across the U.S. We believe it is important for showcase small, community and organizational health-focused interventions that have made the effort to make system-level change locally. The socioecological model concept is widely used to design health interventions because it's effective at sustaining behavior change by targeting multiple sectors (individual, interpersonal, community, and societal).

The systems-outcomes framework outlined in the recent Lancet Commissions report on obesity, undernutrition, and climate change emphasizes the value of the socioecological model in a new and different way.⁹ The systems outcomes framework proposes that the individual level has the greatest potential for meaningful action. Humans are part of a complex network and our influence permeates all the larger

levels— as individuals (family and social circles), members of a community (workplaces, schools, universities, etc.), consumers (purchasing habits, food retail, etc.), and voters (voice in governance). According to the report, as individuals, our ability to share knowledge, “an understanding about the nature of the problems and how to apply actions”, and engagement, “the energy, enthusiasm, and commitment for change”, is a powerful tool for reorienting existing systems, especially at the community level.⁹

The following individuals and groups are driving the change in their region. This is of critical importance for our future global food system. They are sharing their knowledge with their communities and asking others to get engaged, two key components that theoretically can lead to global change. In order for the system to truly transform, individuals must change how they view and engage with food systems. We need to build an understanding of the beneficial link between human health and environmental sustainability and bond the two ideas into a common agenda in order to achieve equitable access to healthy, affordable food and build a sustainable food system for the next generation.



Section II: Harkin On Wellness Methodology

In the Fall of 2018, we began the search for top wellness and nutrition initiatives from across the United States. The call for submissions was distributed nationwide through professional organizations, public agencies, and publishing resources. We asked that all submissions highlight how their initiative or program strategically connects food systems with health and wellness because we believe that a food-systems approach can lead to a larger impact on issues related to food, health, and the environment. A total of 51 submissions were reviewed internally at The Harkin Institute to narrow down the applicant field. The review process included an analysis of each program that helped identify a series of elements necessary to enhance the quality, acceptability, and impact of health programming.

Submissions were rated on relevancy, adaptability, acceptance, implementation, reach, and cost (modified RE-AIM framework).¹³ For this report, we took special care to consider the following questions when selecting the top initiatives:

1. *Is this a relevant wellness or nutrition program for community health?*
2. *Can it be easily adopted by the community?*
3. *Will members of any community accept the program?*
4. *How well will the program be utilized and/or implemented?*
5. *Can it reach a wide population of people within the community?*
6. *What is the cost to the community (fiscal, time, leadership, and infrastructure)?*

We used three additional criteria to determine what impact the program has on healthy food systems.

1. *Food supply chain impact: Does the program change the way food is processed, distributed and marketed to make healthy, safe food more accessible, affordable, and available?*
2. *Food environment change: Does the program change the surrounding/physical environment that in turn leads to improvements that allow consumers to purchase and consume more nutritious and healthy foods?*
3. *Consumer orientation: Does the program provide information and education that help lead consumers towards healthier and more sustainable food choices?*

Following the internal review, an external group of reviewers were asked to select the top programs based on the same criteria used for the internal review. Based on the responses from the external committee, a total of 10 programs were selected as the best examples of wellness programs and initiatives in the United States.

External Review Committee Members

Ellen Yee, Professor of Law, Director of International Programs, Drake Law School

Michael Roberts, Founding Executive Director, Resnick Program for Food Law and Policy, UCLA School of Law

Suzanne Mineck, President, Mid Iowa Health Foundation

Peter Reinecke, Reinecke Strategic Solutions, Inc.

Andy McGuire, MD

Section III: Case Studies: Harkin On Wellness Designees

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Main Street Project

A healthy community and healthy food system are no longer just defined by the ability to grow healthy food. A healthy, sustainable food system is multi-dimensional in the scope of work and the systematic level of inclusion. Main Street Project (MSP) is a prime example of multi-dimensional, systems level work that addresses the social, economic, health, and environmental aspects of a program at the individual, interpersonal, community, and regional level.

In the small town of Northfield, Minnesota, the Main Street Project has been developing a poultry- and perennial-crop-based regenerative agriculture model to improve local access to affordable, nutritious and culturally appropriate foods. Main Street Project is taking the system on in another way, offering opportunity to the small famers, at-risk consumers, and ill-treated land in Minnesota. Socially disadvantaged populations are more likely to experience the increasing challenges associated with changing climate (e.g., higher exposure to greenhouse gases, increased risk of chronic disease related to pollution, suppression of economic activity, and diminishing access to nutrient dense foods)¹⁴; furthermore, the people who contribute the most to climate change are largely those that feel the least impact (economic, societal, health and environmental) of the changing climate.¹⁵

The Main Street Project is actively working to fight the economic, health, and environmental hardship that disproportionately affect low-income, rural, minority populations. A 100-acre Central Farm is the hub of the organization's food system model, providing training programs for aspiring Latino immigrants and other limited-resources farmers, as well as for established farmers looking to diversify their operations. By 2020, a regional cluster of 30 poultry production units will be a driving force in economic development, agricultural employment, and improved access to food. Working closely with University of Minnesota, to inform and evaluate the basic and applied research of both groups, Main Street Project established the baseline economic and ecological modeling necessary to improve the sustainability and scalability of the system over time.

The Central Farm is a gateway for new farmers to develop skills, engage in local economic development resources, and contribute to the variety of healthy, local produce. Main Street Project offers the unique opportunity for established famers to test innovative new farming practices at a low risk to their current operations.

Aside from the research and training efforts, Main Street Project offers "Sharing Our Roots", a community engagement program to improve local access to affordable, nutritious and culturally appropriate foods. This is a high

priority for multi-generational families in underserved populations, and is a double-duty solution, working to renew connection to the land. The farm provides social and education opportunities, providing a friendly, relaxing, and safe environment to share food, knowledge, and stories. The farm has workshops, farm tours and community harvest days, further connecting the farm, food, and knowledge to the community.

Altering the way food is produced at any scale and in any region requires change from all players in the food system—producers, distributors, consumers, supporters, and everyone in between. MSP created the Ladder of Engagement to help people navigate through the complex system. The Ladder of Engagement begins with Sharing our Roots which funnels people into several other MSP opportunities depending on individual interests: Vegetable Production Training, Community LandShare, and Agripreneur Training (Basic and Advanced).

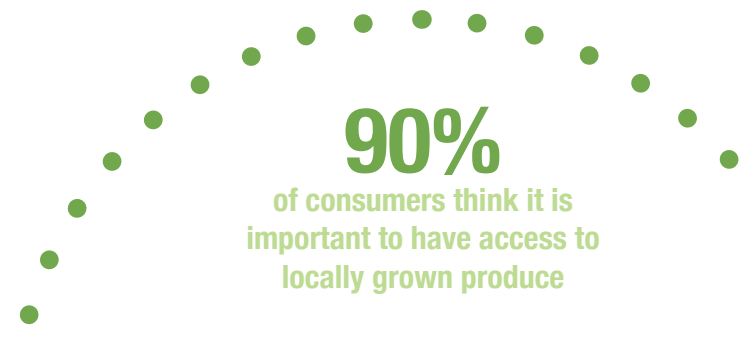
Altering the way food is produced at any scale and in any region requires change from all players in the food system

Growth of local economic and local food production are mutually beneficial.¹⁶ Linking local production to local consumption means greater revenue for producers, with some research suggesting a seven-fold revenue gain compared to conventional national or global supply chains.¹⁷ The Vegetable Production Training Workshops support local food production and economic growth, training aspiring farmers in cultivating healthy and culturally appropriate foods. Trainees participate in a full production cycle learning experience on the farm and receive supplemental income through the selling of food produced. Meanwhile, community members gain access to affordable, locally grown, fresh vegetables.

Access to land is a larger barrier to working at the start of the food system. MSP addresses that barrier head on with the Community Landshare Program. Members are allotted plots within a 100-acre farm for a small association fee. Producers manage their parcels using the skills and knowledge gained from the training workshops, while MSP staff provide on-going technical assistance to members.

Contact: Rocky Casillas, Community Outreach & Extension Education Coordinator

Website: <https://mainstreetproject.org/sharing-our-roots>



90%
of consumers think it is
important to have access to
locally grown produce

Food Commons

In Fresno, one of the country's most impoverished and food-insecure regions, an entirely new infrastructure is challenging the current national food system. In the past, only 7.8% of United States farms were growing and marketing crops locally even though local production is important to a majority of people when making grocery shopping decisions.¹⁸ Close to 90% of consumers believe it is important to have locally grown produce available and accessible; however, making local food available and affordable will take a complete change in infrastructure. Realizing this, Food Commons co-founders Larry Yee and James Cochran created a system that brings healthy and sustainably produced foods to communities surrounding the area, while creating a system of small businesses and an abundance of jobs and workforce opportunities for low-income communities.

Food Commons created a model that challenges the current food system by taking a holistic approach to health and well-being, through transformation of local and regional food, economic, and social systems. To invest in sustainable nutrition security and best outcomes of food systems, a combination of metrics must be considered including: food nutrient adequacy, ecosystem stability, food affordability and availability, sociocultural wellbeing, resilience, food safety, and waste and loss reduction.¹⁹

The Food Commons approach recognizes the relationships between food, environment and health, economics, and social justice. In enabling independent food and farming enterprises, they offer an alternative to the current system. By creating a community-owned food system, citizens with limited funds greatly benefit from a model that brings high quality local food from farm to fork, while providing livable wages and benefits to employees. The communities impacted are brought together through learning about organic agriculture and healthy eating. Today, there is a movement to produce, access, and secure healthy foods, and Food Commons has entered it.

The Food Commons model consists of three components: Food Commons Trust, Food Commons Financing Arm, and Regional Food Hub. The Food Commons Trust works to fulfill the needs of small, independent, sustainable, and social-balance-oriented entrepreneurs, by providing access to land, facilities, and infrastructure. The Food Commons Trust is an example of a community land trust (CLT), an emerging idea that support small-scale organizational practices for community-based development, stewardship

of local land, and economic development opportunities for citizens.²⁰ A successful CLT is a solution to a myriad of systemic problems including all the majority of the sustainable nutrition security metrics. The Food Commons Trust allows ownership and development of the land necessary to produce, process, and market local food products. The land is leased to participating farms and businesses at affordable rates, creating dozens of small food enterprise ownership opportunities for those who might not otherwise gain access to the needed land and infrastructure.

The Food Commons Financing Arm recognizes that small-scale food businesses and their communities may not have access to local lending institutions often needed when forming a small business. The Financing Arm serves communities with specific needs with its understanding of small-scale food business and 'triple bottom line' accounting model, in addition to being a not-for-profit organization. The Regional Food-Hub serves in facilitating the logistics of aggregation and distribution of Food Commons Trust grown food and locally grown food. The Regional Hubs also provide technical assistance as well as training in certain vocational areas. The training and technical assistance are key to limit common barriers to local food systems including issues related to risk management, postharvest practice to maintain food safety and quality, and limited knowledge of local and state regulations.^{21,22}

The Food Commons model started its journey as a Prototype in Fresno, impacting thousands. Today, their staff consists of almost all people of color, who live in the low-income communities they serve. Their current weekly food box program feeds roughly three thousand people, and Fresno residents can invest just \$25 to be an owner of their food system. The Food Commons efficiently produces goods that meet high standards and demonstrates the benefits of scale in infrastructure, information systems, marketing and learning while preserving local identity and ownership. Their model truly is making healthy and sustainably produced food accessible for all. They have created an entirely new food system of small businesses, jobs, and a workforce with opportunities for low-income communities so that all may have the chance to become involved in the process of providing the healthy food their families need.

Contact: Jamie Harvie, Coordinating Director, harvie@is-fusa.org
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can be adopted throughout the nation. made up of hospital staff, community members and--through grant funding--38 food-insecure families who receive free produce. This enables them to provide a diverse array of produce while supporting the local economy and ecology of our county, changing the way people are buying produce by favoring local over conventional sources. In addition, The Farm at St. Joe's is the first in the nation to enable Traumatic Brain Injury patients to work in the farm as an integral part of their therapy.

The Farm at St. Joe's serves our community by improving access to fresh food, nutrition education, and therapy. Within the last year St. Joe's has: hosted 6000 visitors and 951 Ypsilanti students through field trips, harvested 5600 pounds of produce, distributed 2611 CSA bags, and facilitated 2,025 volunteer hours. St. Joe's is a model of micro level engagement that influences change at the individual level by encouraging participation, sharing resources, and educating a wide network of diverse individuals.

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Website: <http://www.stjoesannarbor.org/thefarm>

Children's Hospital Colorado

In 1908, Children's Hospital Colorado (CHCO) was established to provide quality healthcare for Colorado children. Today, their mission is to promote children's health through integrated programs of patient care, education, research, and advocacy. As the world of health and medicine changes, CHCO takes on the challenge by building partnerships, interventions and policies that address interrelated conditions and factors (social, environmental, economic) that influence the health of patient, visitor,

and employee populations. In an effort to extend beyond the traditional mission of hospitals and clinics, CHCO is developing an environment (natural and built) that positively supports the whole health (nutrition, food access, physical activity, resiliency, sustainability, employee wellness) of individuals.

Since 2012, the Healthy Hospital committee has focused their efforts on changing the food environment. The begin, they focused on institutional policies to support healthy behaviors. In the past, health care facilities, a setting that is associated with healing and health, were not the pillar of a healthy food environment.²⁵⁻²⁷ The Healthy Hospital committee started by decreasing the amount of unhealthy foods available for consumption at the hospital and increasing access to healthier foods. In 2017, all CHCO sites eliminated sugar-sweetened beverages (SSBs) and subsequently increased access to healthier beverages for all patients, families, and staff. In 2017, CHCO went one step further, in response to growing rates of food insecurity in their patient population and community, they partnered with the Food Security Council (FSC) to coordinate an effective strategy to address food insecurity for families who seek care at the hospital as well as in the community, and CHCOs employee population. The purpose of the FSC is to increase access to timely, quality, and affordable foods for kids who are food insecure, through hospital-based programming, external partnerships, and advocacy. The FSC is made up of team members from the Child Health Advocacy Institute, Government Affairs, Human Resources, Nutrition, Lifestyle Medicine and General Pediatrics. The group's strategy is laid out in the detailed Children's Hospital Colorado Roadmap to End Hunger, based on the Theory of Change model.

Within one year, the partnership coordinated the conversion of a terrace flower garden into an herb garden frequented by their chefs in effort to further improve the nutritional quality of the food served in the hospital cafeteria. CHCO now grows some of our most-used herbs in over 700 square feet of prominent garden space, and in doing so, contributes to their local food procurement goals. At the same time, the Healthy Roots Garden was launched, using its 3,000 square feet of growing space to help source the on-site cafeteria, provide clinics and departments with garden-based programming, and provide fresh produce to patients as part of the Healthy Roots Farm Carts initiative to help source the on-site cafeteria, provide clinics and departments with garden-based programming, and provide fresh produce to patients as part of the Healthy Roots Farm Carts initiative.

A growing body of evidence supports the positive impact gardens can have on physical and mental health, food security, education, and fruit and vegetable consumption.²⁸⁻³⁰ Increasing food access and food security is widely recognized as an effective strategy



2,827 pounds of food were rescued



2,400 meals were provided for food insecure families



1 million gallons of water being saved



12.4 thousand pounds of CO₂ removed from the atmosphere



for improving health outcomes and lifting families out of poverty. Through this garden, CHCO can continue efforts to help the families and children that come to their hospital adopt and maintain healthy behaviors while helping them to lead happier, healthier, and more abundant lives.

The Healthy Roots mobile-market carts are another access point to healthy food that is on-site, easily accessible, and affordable for all. The carts accept Supplemental Nutrition Assistance Program benefits as well as the state-wide matching program, Double-Up Food Bucks. In 2019, the first cart will debut near the entrance of the hospital, offering local fruits and vegetables to patients, families, staff, and community members alike in a neighborhood that has historically been classified as a food desert. Next year, CHCO plans to open a Food Pharmacy, further expanding the opportunity for home-grown garden produce to make its way to patients and their families. The newest site for CHCO will feature this innovative program, where they plan to increase access to healthy and fresh food, with prescribed groceries tailored to individual diets per provider prescriptions.

If that wasn't enough, in 2018 CHCO partnered with Copia and Denver Food Rescue, two local entities leaders in the food recovery sector to reduce food waste. In just four months, 2,827 pounds of food were rescued through the partnership benefiting various local nonprofits with over 2,400 meals from this partnership. The (food) waste-stream diversion efforts have also resulted in over one million gallons of water saved and 12.4K pounds of CO₂ having been removed from the atmosphere in the first six months.

Moving into the new year, CHCO will continue working on the phasing out of meat and poultry treated with antibiotics by moving into Phase II (inpatient menu) after completing Phase I (cafeteria deli). This work has been a collaborative effort between the Healthy Hospital team and a vital clinical champion: The Medical Director of the Antimicrobial Stewardship Program. Further efforts to increase, promote, and educate on the importance of more plant-based meals in the cafeteria is a goal for the coming year and has thus far been well-received by customers. All the progress CHCO has made to improve access to healthy, local, and sustainable food at the hospital and in the community, has been made possible because of multidisciplinary collaboration, innovative partnerships, and tireless, coordination.

Contact: Reuben Gregory, Food Security Specialist, reuben.gregory@childrenscolorado.org
Website: <https://www.childrenscolorado.org/>

Green Bronx Machine

Green Bronx Machine (GBM) is truly a machine- a student and vegetable growing venture that empowers and transforms local food systems and communities. Located in the South Bronx, GBM works in communities with limited means and access to fresh food; this whole-school, year-round, academic program specializes in growing food indoors. From a humble beginning as an after-school, alternative program for high school students, GBM now serves K-12+ through a school-based model using urban agriculture aligned to key school performance indicators. The locally grown model has expanded to schools across America, Canada, and throughout Europe and United Arab Emirates.

Educator Stephen Ritz, the creator of GBM, was inspired to teach students in a different way. He saw a growing problem in today's education: as people's body weights increased, engagement and opportunities in school decreased, school performance suffered, and hope and ambition became minimized. To rectify this problem, Ritz helped create the Green Bronx Machine Classroom Curriculum, a standards-based learning curriculum that is now used by the State University of New York to train teachers. An edible curriculum, such as the one used at GBM, is one way to make science-based content relevant and connect students to agricultural, food, and health.³¹ According to the National Institute of Food and Agriculture, people need to understand agriculture and nutrition in order to make informed food choices about diet and health.³²

The multi-subject, technology-enabled lesson plans use food and plant life cycles to teach critical thinking and problem solving skills as they explore, discover and create their own ecosystem. According to Ritz, in order to fix the food system, we must fix the way students view food and identify where food comes from, how it is made, and what it can do for our bodies. GBM believes that engaging students in the food system process actively empowers and engages them in their physical lives and the lives of the living things around them.

The GBM has a permanent residence, the National Health, Wellness, and Learning Center at Community School 55 (CS55), in a 100+ year old school building in one of the poorest Congressional districts in America. The location of GBM is not random. An urban, low-income environment is associated with poor dietary habits, obesity, and elevated risk of chronic disease.^{33,34} Urban settings are more likely to have limited access to healthy food, a contributor to the poor health outcomes³⁵, and have limited access to land and agriculture. An education and environment that integrates science, social, agricultural, and nutrition literacy in addition to increasing access to fresh produce (grown by the students) is one solution to a multitude of complex problems.

The building has a traditional grow light system, an indoor teaching farm, electricity-generated bicycles, a media and resource center, an outdoor garden, and the GBM mobile classroom kitchen.

In addition to the GBM Classroom Curriculum, GBM has a variety of programs at CS55 including: Green Bronx Machine Summer Culinary Garden Camp, a Workforce Development Camp that involves cooking from scratch, exercise, vocational awareness, and farming on a daily basis; Food for Others Garden, a long-standing student project located on a decommissioned city street growing fresh food for 'Part of the Solution', is 'a one stop shop' helping low- income individuals and families move from crisis to stability, and ultimately self-sufficiency; and an after-school program at the GBM National Health Wellness & Learning Center that serves the most at-risk kids in the school from 2:30-5:00 pm every day. Students complete math problems, analyze reading assignments, and maybe best of all, cook meals from scratch. Students even had the opportunity to FaceTime with Spaniards to learn about paella.

The multi-subject, technology-enabled lesson plans use food and plant life cycles to teach critical thinking and problem solving skills as they explore, discover and create their own ecosystem

The success of and from GBM can be measured in the number of pounds of produce grown, students reached, and behaviors that have since changed. GBM is in hundreds of schools, clubs, organizations in 22 cities across 19 states in America and reached over 30,000 students in Canada including six First Nations Tribes. To date, the learning garden at CS55 has grown over 65,000 pounds of vegetables, 100% of which are donated to local residents and/or used in school programming. The change in student behavior proved Ritz theory correct- a student becomes actively empowered and engaged when they learn how to think critically, problem solve, and better understand the intricacies of the food system. Teachers of students involved in GBM reported a 50% reduction in behavior incidents and out-of-class time in 2014-2015 and in 2016, GBM reported a 45% increase in passing rates school-wide on NYS Science Exams.

GBM is a movement- one that uses a food system, educational approach to tackle food security. Students are active participants in the food system-- inputs, processing, distributing, preparation, consumption, and metabolism³⁶ and, whether they know it or not, are fighting against food security in their community. GBM is one example of how we can use local, small-scale food system innovation to affect large scale, national and even global, change.

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Contact: Stephen Ritz, Founder, stephen.ritz@greenbronx-machine.org

Website: <https://greenbronxmachine.org>

Detroit Food Academy

In Detroit, local educators, chefs, and business owners work with Detroit Food Academy (DFA) to instill the entrepreneurial spirit in young Detroiters through food. You might say that more than 300 young Detroiters benefit from the work done by DFA; but Detroit might tell you that it is the community that reaps the rewards of the programming. By developing food-based solutions in and for their communities, students learn how to identify problems and implement solutions as creators of their own food business projects.

The Detroit Food Academy breaks the cycle of hunger and increases both food knowledge and access by engaging young people in the lifelong skills of culinary arts, entrepreneurship, financial literacy, and food business management. The after-school leadership program, summer leadership program, and advanced leadership cohort offer DFA student's the unique opportunity to learn about the culinary arts, health and wellness, food systems, and business essentials.

The Detroit Food Academy breaks the cycle of hunger and increases both food knowledge and access by engaging young people

The after-school leadership program takes place during the school-year with young Detroiters. The program helps students design and launch their own triple-bottom-line food business. A triple-bottom-line food business (Figure 1) asks the question how does business effect the planet, people, and profit? All elements (planet, people, and profit) overlap to address the larger concept of sustainability. In the Fall, students learn the basic of the culinary arts, nutrition fundamentals, smart grocery shopping, meal budgeting, and event planning, all with the goal to organize a community dinner for their friends and family. Learning is done outside the classroom as well. DFA students are exposed to the farm to fork idea with fieldtrips to local food communities and participate in workshops from local chefs, community leaders, and food professionals and have one-on-one mentoring with a Detroit chef. They also practice

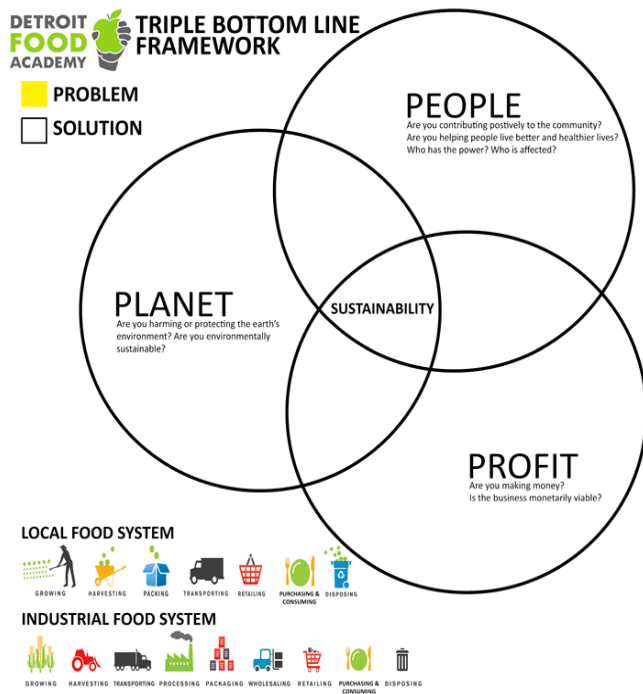


Figure 1: Triple Bottom Line Framework
(credit:detroitfoodacademy.org)

what they preach; students have the opportunity to take, then lead, a smart shopping tour of a local grocery store.

In the Spring, their entrepreneurial skills are tested when they craft their own healthy, local food recipe and pilot their product and introduce their business at a ‘Market Day’ at their high school. The Summer Leadership Program is an extension of the work done during the school year for graduates of the after school program. These are all examples of how DFA programs give students the opportunity to learn from experience all while facilitating community conversations and developing food-based solutions in and for their communities.

Hands-on and application-based lessons use the kitchen, classroom, and community to teach real-life examples of math and reading skills, through kitchen math, financial literacy, and business development. Students convert unit measurements in the kitchen in order to follow recipes, calculate ingredient costs, set a retail price, and analyze the cost-benefit of bulk buying. Beyond, the DFA program supports the ability of young Detroiters to become leaders and entrepreneurial thinkers, learning to work together and use design thinking to problem solve 360 degrees around an issue. Students become personally invested in their project, reflecting on the mission and values of their product, building and testing systems, learning from failures and embracing successes. These real-world experiences build lifelong skills that lend themselves to both high school graduation and post-secondary success.

By embedding these young people in networks of support and instilling life skills, leadership ability, and hands-on career experience, DFA provides young people with a bright future through a food-based path. Along that path, students develop nutrition knowledge and skills, and not in the traditional classroom way. DFA treats obesity and diet-related disease as symptoms of deeper disaffection and disengagement. While they focus on the tradition aspects of cooking, health literacy, and nutrition, DFA contextualizes them with real-world relevance that inspires and empowers students to care. Rather than rely on traditional ‘student-teacher’ knowledge transfer, DFA uses application-based, practical lessons to promote project ownership, peer acceptance, community connectivity, and earned wages. Students’ ownership of their food project connects them to and teaches them how a food system works and allows students to grasp the importance of food, nutrition, and networks as an exciting and powerful way to change the world. In this way, DFA is able to frame health with real world relevance, engaging students as co-creators of their understanding of wellness, beyond just nutrition.

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Boulder Valley School District School Food Project

Serving nearly 14,000 fresh and nutritious meals every day, the Boulder Valley School District (BVSD) School Food Program (SFP) is a prime example of how a program can introduce flavorful, nutritious food made with local ingredients to students in Boulder, Colorado. School food systems are major players in the larger food system, specifically the food supply chain. School food districts and programs serve multiple roles in the traditional food supply chain. They source, prepare, dispose of food products, as well as act as the connection between food, nutrition, and education for the consumers, in this case, BVSD students. The passage of the Healthy Hunger Free Kids Act in 2010 created national nutrition standards for school meals to align with our national standards for healthy eating, facilitated more nutrition education, and promoted a healthy food environment to an important and impressionable audience, children.³⁷

In 2018, the National School Lunch Program provided lunch to 29.8 million children on a daily basis³⁸, costing \$13.8 billion, 1.24 billion spent on commodity costs³⁹. As a significant buyer in world of food purchasing, school food systems have the ability to be major players and use their buying power to influence the way food is grown and processed. However, it will take the combined efforts of a collective group of school food directors to leverage the full extent of the combined buying power. Federal policy could play a large role in facilitating the collaboration and consolidation of school purchasing to leverage more power

that would make it easier to secure contracts for healthy, affordable food items such as fresh fruit and vegetables.⁴⁰

According to Ann Cooper, director of food services for BVSD, the connection with health outcomes is fairly obvious. Healthier meal standards mean a better diet for kids. Big picture thinkers view this as a means to change our food system. When possible BVSD provides students with local food and also tries to avoid highly processed

14,000

fresh and nutritious meals

foods in their meal program. To give their students a hands-on connection to where their food comes from, BVSD SFP conducts field trips and meetings with the local farmers who grow their food. The combination of locally sourced, farm to school food, and integration of nutrition education has dual benefits— students improve their nutrition knowledge and eat more fruits and vegetables^{41,42} that, in turn, support the local economy and regional food system.^{43,44}

SFP not only feeds their students, they host over 200 lunchroom education events each year to support food literacy and help children make informed decisions about the types and amounts of food they put in their bodies

SFP not only feeds their students, they host over 200 lunchroom education events each year to support food literacy and help children make informed decisions about the types and amounts of food they put in their bodies. The nutrition education emphasizes seasonal, fresh menu items using Harvest of the Month (HOTM) cards and bracelets to encourage students to celebrate the seasonality of local foods. HOTM is just one way SFP engages students in the intricate processes of food, nutrition, and agriculture. SFP hosts Iron Chef Competitions, Farmer Visits, Farm Field Trips, BVSD Day at the Farmers' Market, and a Plant & Seed Sale. With 52 schools and more than 31,000 students in the District, SFP is able to engage students in the flow of food from seed to table, a learning experience that they can carry with them for the rest of their lives.

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Des Moines Area Religious Council

The Des Moines Area Religious Council (DMARC) Food Pantry Network is a health-based food pantry network that supplies food to 13 neighborhood pantries in the Des Moines Metro Area. Historically, food banks and pantries have focused their mission and energy on one effort: food security. A recent systematic review on the experiences and perceptions of food banks found that food banks are adequately equipped to deal with feeding people (in the traditional sense), but posited that most cannot appropriately address or respond to people facing food insecurity.⁴⁵ Many do not offer high quality food or offer only limited food options.

At DMARC, the mission has not changed but they no longer think “feeding calories” is enough to ensure food security; they believe food security is defined by the amount and type of food they provide. For people who are not getting enough food, specifically healthy food, the list of contributing factors to food insecurity is long: food is expensive; there is not a food retailer nearby; no transportation to get to the store; living in a home that does not have a kitchen or working fridge to store or prepare food; lack of nutrition or health knowledge; and so on. All of those factors are reasons DMARC believes it is up to the food banks and pantries to support access to nutritious food that removes some of the barriers individuals have when it comes to healthy food access.

DMARC created their own system to combat the increasing rate of diet-related chronic conditions that their food pantry clients' report. Food Pantry 2.0 is an innovative food pantry program in Iowa that focuses on providing low-income individuals with fresh produce and healthier choices. Utilizing behavioral economics, including a signature point system and unlimited visits, individuals are incentivized and externally motivated to select healthier food options in their monthly assistance allotments. The same model of adding incentives and changing policies to reinforce healthier options has been successful at helping to improve the quality of food donated, sourced, and thus offered at food banks.⁴⁶ Analysis of consumption behaviors through the pilot phase of the program determined that clients are making healthier choices.

The foundation of Food Pantry 2.0 is a custom point system that assigns values to food items according to nutritional content. The healthier the food, the lower the assigned point value. The system includes listings of more than 1,300 bar codes that correlate to a multitude of food types, nutrition values, and brand names. These bar codes are categorized according to a point system developed in collaboration with the Partnership for a Healthier America that incentivizes nutritious selections and serves as the tracking mechanism for client consumption. Clients who select healthier choices are able to expand and extend

their monthly food supply. In addition, clients are allotted monthly point values and allowed to select their food supply over the course of multiple visits rather than taking one, monthly bulk supply.

Clients who select healthier choices are able to expand and extend their monthly food supply

DMARC is a perfect example of how one organization can act a change maker at multiple points in the traditional food supply chain. The success of Food Pantry 2.0 has increased demand for healthy food, working back along the food supply chain to increased procurement of nutritious food.

Food Pantry 2.0 is the only known initiative in the State of Iowa that has successfully and significantly resulted in increased fruit and vegetable consumption among low-income individuals. A survey conducted of pantry clients at the pilot location found that nearly all clients reported an appreciation for increased access to healthier foods like fruits and vegetables that are otherwise inaccessible and unaffordable. Most clients also believe the new pantry system will help them pursue healthier diets. Analysis of client consumption behaviors also uncovered the following positive outcomes:

- During the first year of pilot program implementation, selection of fruits and vegetables in monthly food allotments increased by approximately 20%.
- The average nutrition score for shelf-stable food selected by clients has decreased from 2.21 in June 2017 to 1.88 in May 2018, meaning that Food Pantry 2.0 clients are choosing healthier foods.
- The total number of overall points that clients are using has decreased even while selection of fruits and vegetables has increased, leading to the conclusion that clients have a greater interest in fresh foods versus shelf-stable items.

What started as a pilot project in one food pantry has now expanded to two additional pantries in their network. With the support of the local United Way, DMARC plans to incorporate additional elements into the Food Pantry 2.0 design, including medical tracking, health coaching, nutrition education, physical recreation opportunities, and more.

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DC Central Kitchen

DC Central Kitchen (DCK) is the nation's first community kitchen, opened in the 1980s, was created to combat the cycle of hunger and poverty. Like the traditional form of food pantries, community kitchens are focused on community food relief; however, community kitchens are much more than an emergency food relief system. The longevity of the program stems from its mission to develop participant resilience to food insecurity by fostering an environment in which participants can develop food skills and expand their health and nutrition knowledge. Truly, the sustainability and longevity of DC Central Kitchen has contributed to their ability to say yes to the "crazy, big" ideas and move quickly on those ideas even if it is the hard or unpopular thing to do.

Fighting hunger differently

In typical DCK fashion, they have been on the forefront of food recovery. Although the concept was considered "rare" in 2013⁴⁷, DCK has been rescuing food for more than thirty years. The wasted food from multiple sources is aggregated at a centralized kitchen facility, and the "wasted" ingredients are used to prepare balanced meals that could be delivered to homeless shelters and other front-line agencies.

Recovery of unwanted food is just one part of the way in which DCK boldly and unapologetically sets the standards for food justice and, in turn, sustainable food systems. As a community kitchen, DC Central Kitchen works within their own small food system- sourcing the food, preparing the food, and providing nutritious meals for homeless shelters, schools, and nonprofit centers. The chain starts with the collection of local farm produce and food from wholesalers and restaurants that they would otherwise throw away as food waste.

DCK takes into consideration all aspects of a sustainable, healthy food systems:

Environmental sustainability: DCK aggregates nutritious food from farms and other vendors. "Food recovery" is an important component of modern environmental sustainability. As our population will grow to over 9 billion people by 2050, we have to solve the inevitable problem of how to feed the world.⁴⁸ One possible solution is diverting the 1.3 billion tonnes of food lost to food waste each year. There are a number of opportunities⁴⁹ to use wasted, "imperfect" food (e.g., gleaning), specifically produce or food that aligns with a more sustainable, healthy diet.⁵⁰

Economic development: They employ at-risk adults to prepare 3 million healthy meals, and snacks. They developed an approach designed to shorten the city's



Section IV: Framework for Drivers of Local and Regional Sustainable Food System Change

Food systems are complex, with multiple inputs and outputs that influence diet and health. There are different approaches and conceptual frameworks that organize how food systems influence individual diets and health. The frameworks offer a system in which we can analyze how programs, such as those highlighted in this report, are successful at linking food systems and health outcomes. We also see how they play a central role in creating a healthy and sustainable food environment and account for the different dimensions of the larger agriculture and food systems as they relate to sustainability (economic, social, health, and environmental).

Using multiple frameworks of food system change⁵²⁻⁵⁴ we identified specific examples, separated into the larger frameworks, main categories, and subcategories, in which each designee acts as a driver of food system change.

Drivers of Change	Definition	Subcategories
Food Infrastructure	<p>Growing, processing, and distributing safe, healthy food.</p> <p>Food infrastructure is the underlying physical, policy, and organizational structures needed for our food supply's operation, services, and facilities.</p> <p>Change in the way food is processed, distributed, and marketed to make healthy, safe food more accessible, affordable, and available.</p> <p>Point of leverage for agriculture to improve nutrition, particularly through traditional production systems focused on micronutrient-rich foods.</p> <p><i>Question to consider:</i> Does the program change the way food is processed, distributed, and marketed to make healthy, safe food more accessible, affordable, and available?</p>	<p>Food production: growing, processing, and packaging of food.</p> <p>Food transportation: distribution and retail sale of food.</p> <p>Food procurement: purchasing, making, and eating of food.</p> <p>Food recovery/wasted food</p>
Food environment (Socio-cultural drivers)	<p>Food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The four pillars of food security are availability, stability of supply, access, and utilization.</p> <p>Changing surrounding/physical environment that leads to improvements that allow consumers to purchase and consume more nutritious and healthy foods (e.g., improve access to nutritious and healthy foods in food deserts; provide healthy options in public establishments; and promote healthier diets through regulations and standards, taxes, subsidies, trade policies, labelling, and advertising).</p>	<p>Food access: Sources for healthy food are easy to get to at a manageable distance from home or work, using affordable and convenient personal or public transportation.</p> <p>Food affordability (enough money for enough healthy food): People can buy most or all of the healthy foods they want with the money they have available.</p>

Drivers of Change	Definition	Subcategories
	<p><i>Questions to consider:</i> In our current food system, is it possible to meet the four pillars of food security AND adhere to the definition of food security that includes access to “nutritious food to meet dietary needs and food preferences for an active and healthy life”?</p> <p>Does the program change the surrounding/physical environment that in turn leads to improvements that allow consumers to purchase and consume more nutritious and healthy foods?</p>	<p>Food stability of supply: Consistent access to food helps ensure access to food at all times regardless of date, time, or location. e.g., Adverse weather conditions, political instability, or economic factors (unemployment, rising food prices) may have an impact on your food security status.</p> <p>Food utilization: Food that will be used by the consumer; culturally relevant food selections.</p>
Consumer orientation and education	<p>Regulation, information, and education that helps lead consumers towards healthier and more sustainable food choices (e.g., Mass media campaigns, social and behavior change communication, social protection programs, and food-based dietary guidelines all serve to increase awareness and influence consumer behavior).</p> <p><i>Question to consider:</i> Does the program provide information and education that help lead consumers toward healthier and more sustainable food choices?</p>	<p>Food skills: “Foundation of healthy eating”; growing food; planning, selecting, and budgeting for healthy food; preparing safe, healthy food from scratch; trying new foods; understanding the food system (including agriculture and cultural dimensions of food).</p> <p>Nutrition education: any combination of educational strategies, accompanied by environmental supports (educators, marketing, etc.), designed to facilitate voluntary adoption of food choices and other food- and nutrition-related behaviors conducive to health and well-being.</p> <p>Consumer marketing: Mass media campaigns, social and behavior change communication, social protection programs, and food-based dietary guidelines all serve to increase awareness and influence consumer behavior.</p>

Section V: Harkin On Wellness Drivers of Change

Drivers of Change	Subcategories	Examples
Food Infrastructure	Food Production	The Main Street Project has a community land share program in which individuals who have or would like to have career in farming or would like to be educated more about agriculture have the opportunity to manage their own plot of land on the program’s research and development farm.
		The Food Commons Trust acquires and provides land and facilities for individuals to produce and process food products in the area. The Trust would then lease out the physical infrastructure to small farms and businesses at reasonable rates, creating ownership opportunities for people who would otherwise not have a chance to do so.
		Students who are part of the Green Bronx Machine grow massive amounts of vegetables, about 65,000 lb. per year.
		New Haven Farms creates community gardens in abandoned urban lots throughout the city.
		The Colorado Children’s Hospital has a community garden on site that provides healthy food to low-income children.
	Food Transportation	Trainees from Main Street Project receive supplemental income from selling the crops that they grew on the farm, allowing for immigrant and low-income families in the program to sustain themselves.
		The Food Commons Hub is a cooperative enterprise that builds and maintains the program’s infrastructure and provides logistical assistance for these new small businesses.
		Students of the National Health, Wellness, and Learning Center at CS 55, the community school that is home to the Green Bronx Machine , deliver over 100 bags of vegetables per week to students and families, and they deliver over 400 bags of leafy greens per month to senior citizens who are recovering from cancer and are food insecure.
	Food Procurement	DC Central Kitchen takes wasted food from the community and creates healthy, balanced meals.
		The Food Commons Financing Arm is a community-owned financial institution providing various financial needs and capital to individuals looking to be a part of the industry.
		Most of the cash donations received by DMARC go directly into purchasing bulk supplies of healthy foods which is cheaper than individual food donations.
	Food Recovery/ Wasted Food	Children’s Hospital Colorado diverted 2,827 lbs. of food from landfills over four months with the help of two local food recovery groups. The food provided over 2,400 meals and the (food) waste-stream diversion efforts resulted in over one million gallons of water saved and 12.4K lbs. of CO2 removed from the atmosphere in the first six months.
		DMARC collects unused, edible food for their depository from donations by community members, stores, and distributors. The food must meet stringent health-and-safety-based requirements to uphold high standards.

Food Environment (Socio-cultural Drivers)	Food Access	DC Central Kitchen delivers 12,000 healthy meals to more than 80 partner agencies around D.C., including school meals, after-school programs, and homeless shelters.
		The Food for Others Garden, part of Green Bronx Machine , is a garden on a decommissioned street in The Bronx that provides low-income people in the neighborhood access to fresh produce in a convenient location.
		The Farm at St. Joe's hosts a farmers' market in the lobby to provide food to hospital providers that serve low-income communities that have chronic health issues such as diabetes and heart disease.
		DMARC has a mobile food pantry that provides greater access to quality food in areas where resources are scarce, or where there is a lack of convenience. For example, DMARC set up their mobile food pantry at the primary transit station in Des Moines to provide convenience to people transferring buses.
		Families are able to take home a week's worth of produce after participating in New Haven Farm's 18-week gardening program.
	Food Affordability	Nutritious food is being put into corner stores in food deserts in Washington, D.C. through DC Central Kitchen's Healthy Corners venture. The food is offered at below-market rates to compete with less-healthy options.
		Children's Hospital Colorado hosts a group of experts, dubbed the Food Security Council, which has created a goal of providing 90% of Colorado's food insecure children with nutritious, reasonably-priced food to meet health needs by 2023.
	Food Stability of Supply	Boulder Valley School District provides 14,000 fresh and healthy meals every day, ensuring that all children within the school system have constant access to healthy meals.
		Children's Hospital Colorado serves as a site of the Summer Food Service Program which provides meals to low-income children while school is not in session.
		DMARC offers a three-day supply of healthy, nutritional food per family per month.
	Food Utilization	Tastings and chef demonstrations at Boulder Valley School District School help ensure that the meals they serve include the foods students prefer, while using fresh and healthy ingredients.
		The Main Street Project's Vegetable Production Training Workshops supports local food production and economic growth, training aspiring farmers in cultivating healthy and culturally appropriate foods.
		The Farm at St. Joe's, Saint Joseph Mercy Health System employees, community members, and low-income, food-insecure families participate in a "veggie participation service" in which individuals receive free produce that is collected through the hospital and by local farmers.
The Farm at St. Joe's supports a food prescription, giving food that helps patients follow the dietary recommendations for their specific disease.		

Consumer Orientation and Education	Food Skills	Boulder Valley School District promotes Harvest of the Month (HOTM) cards and bracelets to better understand the seasonal differences of produce. It informs children about the cycles of the food system.
		The Main Street Project provides an “Agripreneur Training” program, which gives on-site agricultural and agribusiness education in the field and in the classroom. The training allows for families of diverse backgrounds to be empowered in their own decision-making concerning agriculture.
		Green Bronx Machine teaches students in the program the science behind plants and how to make use of their benefits, including preparing and cooking meals from scratch using a standards-based learning curriculum.
		New Haven Farm has a Farm-Based Wellness Program to which health care providers can refer low-income people with diet-related health complications. The program provides education on how to maintain a balanced diet, how to cook, and nutrition.
	Nutrition Education	Boulder Valley School District conducts over 200 educational programs in the lunchroom every year to support food literacy and inform healthy decision-making. Programs include visits by farmers, chef demonstrations, and tastings of different foods.
		DC Central Kitchen has a culinary job training program that has launched more than 1,700 people into culinary careers. These people are from low-income or disadvantaged families in the D.C. area. Many go on to work as chef at DCCK, but they also cook for themselves and make healthier choices.
		The Green Bronx Machine has classes for skill development and nutritional awareness. Activities include cooking classes and health and wellness programming.
		New Haven Farms hosts educational programs that provide cooking and nutrition classes to the public. Some of the classes are focused on informing the public about the medicinal qualities and overall benefits of certain foods.
		DMARC has a custom point system that assigns values to food items according to nutritional content to encourage clients to select nutritious food. The values also help clients understand what food is part of a nutritious diet.
	Consumer Marketing	The Food Commons program actively engages the communities in its activities. Fresno residents can invest as little as \$25 to be a part of the program.
DMARC 's custom point system is a method of using marketing and behavior economic methods to increase awareness and influence client behaviors.		

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