BlueCross BlueShield of North Carolina Foundation

APRIL 2022

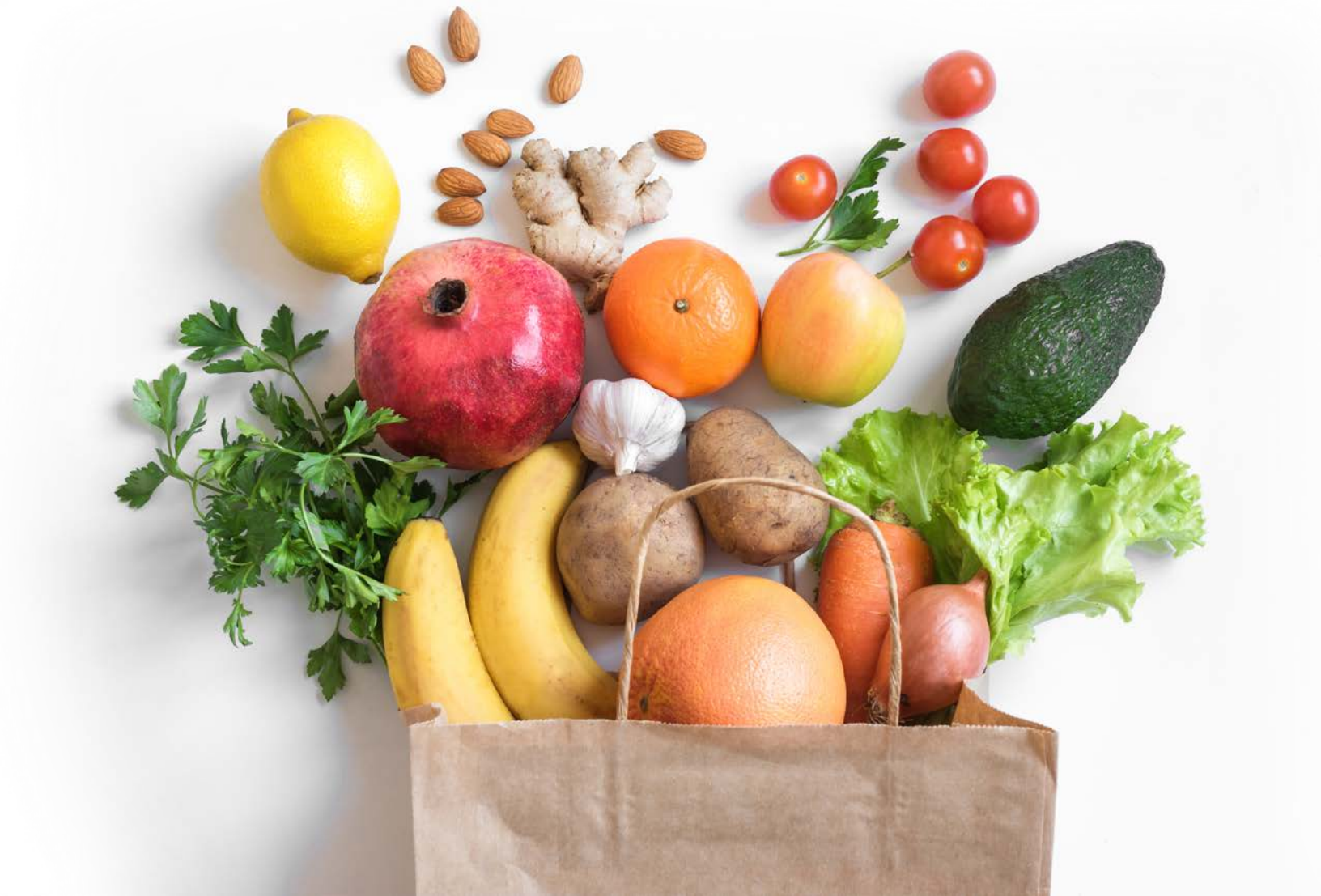
Research conducted by:

FIG FOOD INSIGHT GROUP

SEEDS of CHANGE CONSULTING

Food is Medicine in North Carolina:

Healthy Food Prescriptions Now, and in the Future



About the Authors

Dr. Linden Thayer is Director of Research & Innovation at Food Insight Group (FIG), a B Corporation dedicated to building just, equitable, and resilient food systems. FIG supports regional food systems redesign through evaluation, research, technical assistance, program implementation, and policy work. Dr. Thayer specializes in the role that institutions – such schools, hospitals, and local governments – play in nurturing thriving people, communities, and environments.

LaShauna Austria is the founder of Seeds of Change Consulting (SOC). She is a community organizer, farmer, and ordained faith leader. SOC has deep experience working with rural communities, including community-led organizations and leaders. Primary areas of focus include offering support, expertise, lived experience, racial equity consulting, and collective organizing with food practitioners, Black farmers, and other land stewards. SOC is rooted in liberation and dismantling white supremacy.

About the Foundation

The Blue Cross and Blue Shield of North Carolina Foundation is a private, charitable foundation established as an independent entity by Blue Cross and Blue Shield of North Carolina in 2000. Over the past two decades, the organization has worked with - and supported - nonprofit organizations, government entities, and community partnerships across the state, investing $178 million into North Carolina through more than 1,200 grants. Within its focus areas of early childhood, healthy communities, healthy food, and oral health, the Foundation strives to address the key drivers of health, taking a flexible approach designed to meet identified needs in partnership with the community. Learn more at bcbsncfoundation.org.

CONTENTS

Introduction

How we collectively approach health and health care in North Carolina is changing. Health care payers are increasingly entering into value-based arrangements where providers are paid for patient outcomes, not just for interactions and services provided. Social determinants of health (SDOH), such as food, housing, transportation, violence, racism, and income have become increasingly salient as providers seek to achieve better patient outcomes. Community-based organizations (CBOs) have a vital part to play in these efforts, due to their deep roots and long history of action to address social determinants of health (albeit by different names). CBOs can help health care design upstream interventions to achieve several goals, including:

- Centering participants in planning, programs, and policy.
- Connecting participants to a range of wrap-around services.
- Streamlining identification and enrollment into beneficial health care and safety net programs.
- Adapting programs to the communities' needs and assets.
- Connecting to local service providers to maximize positive community benefit.

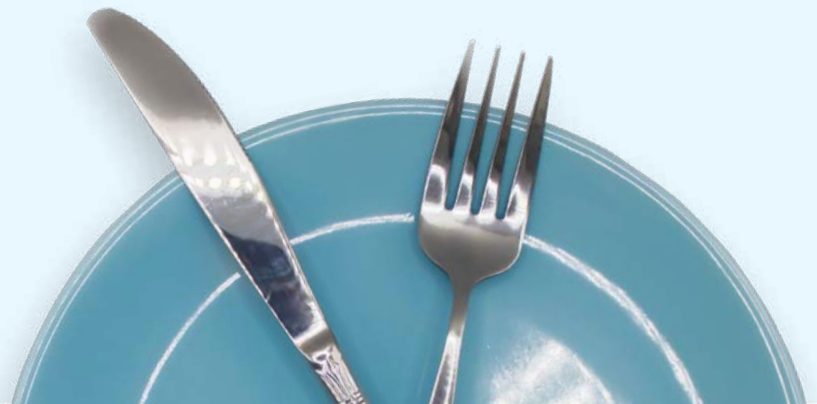
CBOs can help health care navigate a wide range of opportunities related to social determinants of health; in this report we highlight current (as of 2021) CBO and health care interventions focused specifically on food.

Food is many things: it is sustenance, culture, divisive, uniting, livelihoods, sensory, and much more. Access to nourishing food is a human right, but nourishing food is not universally accessible. One in seven North Carolina households were food insecure prior to the COVID-19 pandemic; that number is rising as the pandemic stretches on.[1,2,3] Food insecurity is defined by the USDA as either, "reports of reduced quality, variety, or desirability of diet; little or no indication of reduced food intake" (low food security) or, "reports of multiple indications of disrupted eating patterns and reduced food intake" (very low food security).[4] Food insecurity can also be defined as a lack of consistent access to enough healthy food for an active, healthy lifestyle.[5] And research confirms food insecurity is linked to decreased healthy food consumption, increased risk for diet-related chronic disease, and increased health care costs.[6,7,8]

Food is Medicine (FiM) in practice has been around for thousands of years; the earliest humans used foods to treat acute and chronic illness. Instinctively, we understand that foods have a broad range of effects on our physical and mental well-being. Community-based organizations, foundations, thought leaders, health care providers, and insurers are now paying more attention to FiM because food and food security are recognized as social determinants of health.

For the purposes of this report, we define Food is Medicine as: *"An individual patient is assessed by a health professional for diet-related disease and/or food insecurity, and then prescribed a food-based intervention (not just nutrition education) paid for by a health care provider."*

FiM can take many forms, but at its core a FiM program engages health care professionals to screen and prescribe food for a patient identified as high risk. The risk could be food insecurity itself, a diet-related health condition, such as diabetes or hypertension, or both. The food prescribed can take a variety of forms, including produce-only; a fresh food box including items such as produce, proteins, and grains; a shelf-stable food box; a combination fresh and stable food box; a medically tailored food box; or medically tailored meals. Notably, in this report FiM is not what happens when an individual or family self-identifies as food insecure to a food pantry and receives a box or bag of food.



The Centers for Medicare & Medicaid Services (CMS) have been studying the impact of a variety of programs that address social determinants of health.[9] Likewise, the Harvard Center for Health Law & Policy Innovation, the Rockefeller Foundation, and ChangeLab Solutions, among others, have all published recent reports exploring the known and potential impacts of FiM programs.[10,11,12,13,14,15] Positive outcomes for patients have been documented in a wide variety of FiM programs, including reductions in household food insecurity, increased fruit and vegetable consumption, and decreased hemoglobin A1C levels.[16,17,18,19,20] However, sustainable funding for these programs remains a challenge.

In North Carolina, some CBOs and health care providers have been collaborating for several years to develop, implement, and evaluate FiM programs in a variety of settings. This report reviews those known programs in further detail, acknowledging that this is not an exhaustive list. North Carolina FiM work is also happening in the context of the Healthy Opportunities Pilots (HOPs), a statewide Medicaid-funded initiative "to test evidence-based, non-medical interventions designed to reduce costs and improve the health of Medicaid beneficiaries."[21] HOPs are managed by the North Carolina Department of Health and Human Services, and are being implemented in three regions across the state beginning in 2022. Priority programs within the HOPs rollout include housing, transportation, interpersonal violence, and food, meaning that FiM-style programs will feature prominently in these pilot projects. The work done in preparation for this report, and in the lead up to HOPs, represents the first efforts in North Carolina to foster collective engagement around the topic of Food is Medicine.

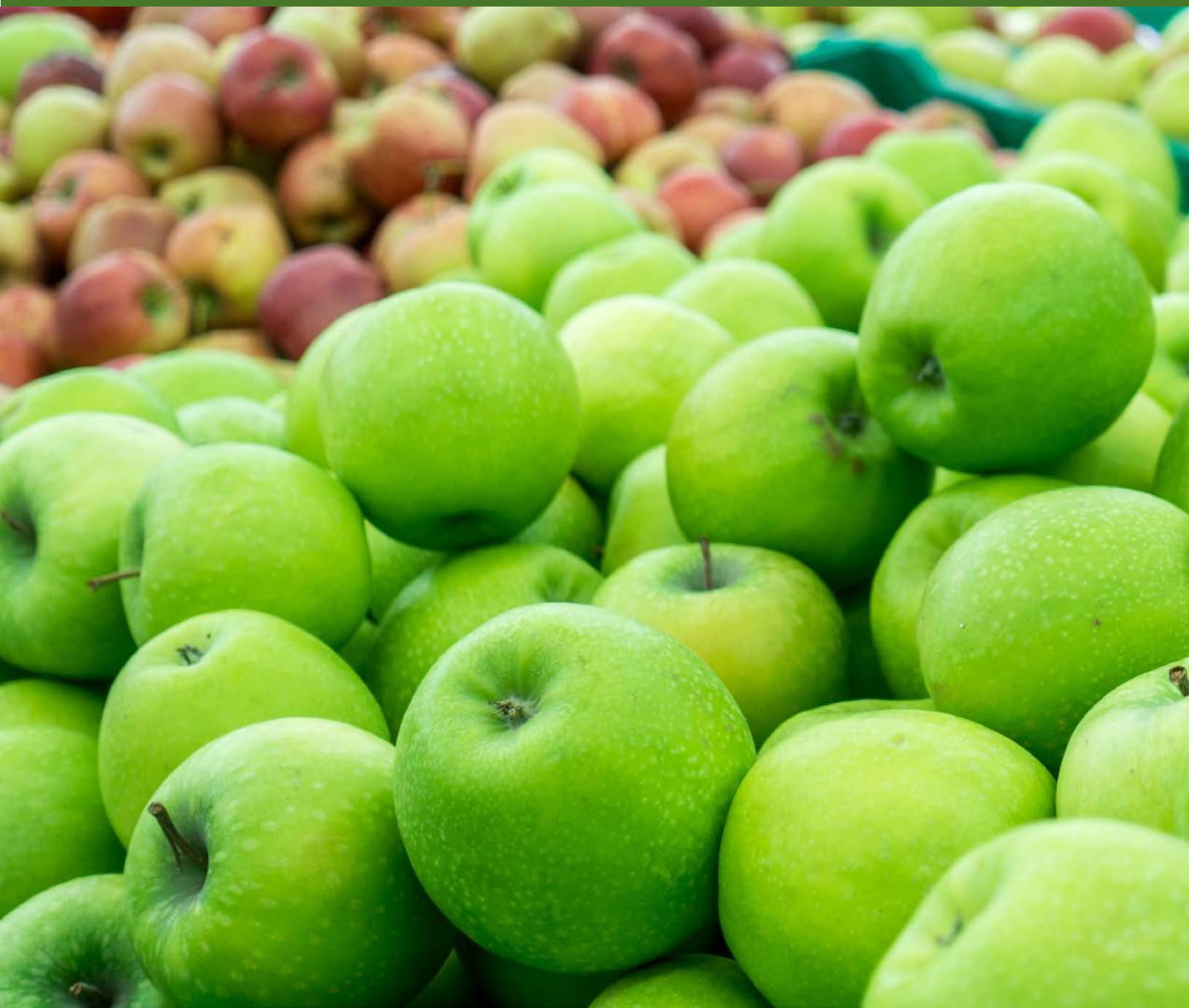
Social determinants of health are defined by the US Department of Health and Human Services as the "conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, function, and quality-of-life outcomes and risks." Examples of social determinants of health include safe housing, transportation, and neighborhoods; racism, discrimination, and violence; education, job opportunities, and income; access to nutritious foods and physical activity opportunities; polluted air and water; and language and literacy skills.

The purpose of this report is to lift up the FiM programs and partnerships between community-based organizations and health care providers that are already being implemented in North Carolina including:

- Describing the research methods
- Identifying current North Carolina FiM models and the state of FiM in North Carolina
- Identifying opportunities and challenges in the current North Carolina FiM landscape
- Reporting on what current practitioners feel is needed to sustain, grow, and spread FiM in North Carolina

Health care payers, providers, and community organizations may benefit from reviewing this document and supporting materials to understand what is happening – as well as barriers and opportunities – to help catalyze and support CBOs in becoming the preferred choice for partnership with health care entities to address food insecurity and diet-related illness.

Food Insight Group and Seeds of Change Consulting developed this report, based on research conducted in the Fall of 2021, with the support of funding provided by the Blue Cross and Blue Shield of North Carolina Foundation.



Research Methods

The research team developed and piloted surveys, as well as interview guides for CBOs, health care practitioners, and key informants, in June and July, 2021. All surveys and interview guides were tested internally with the research team, and then with representative FiM practitioners prior to use. CBO and health care providers engaging in FiM were identified first through the research teams' contacts, and then via snowball sampling as the team connected with current FIM practitioners and their allies.

Surveys were distributed August – October 2021, and participants who self-identified as interested in further engagement were invited to participate in an interview to round out the picture of their FiM program(s). Key informants with knowledge of the FiM space in North Carolina, but who are not delivering programs themselves, were also invited to complete an interview to provide additional context and perspective for the report.

Data cleaning, summary, and analysis was conducted October – November 2021, alongside the creation of case study reports to highlight a variety of approaches to FiM work in North Carolina. A summary outline of the data and report was provided to all CBO and health care participants for review in November 2021, followed by a virtual focus group and additional survey in December 2021 to groundtruth the findings. This provided additional practitioner insight prior to finalizing and publishing the report. The first version of the final report was published in April 2022.

Findings

Overarching finding: ***There is not one model of FiM in North Carolina. Each program is working to meet the needs of its participants, and using the resources available, in a highly localized context. Community-based organizations are integral partners for health care systems seeking to maximize health benefits for individual patients and the broader community.***

The research for this report includes findings from 18 completed initial surveys (11 CBOs, 7 health care), 22 completed interviews (10 CBOs, 6 health care, 6 key informants), 12 focus group participants (9 CBOs, 3 health care), and 8 follow-up surveys (6 CBOs, 2 health care). Together these data represent perspectives from 12 CBOs and 8 health care providers, and 14 different FIM partnerships. Each FiM program outlined here includes a partnership between at least one CBO and one health care organization, with prescriptions written by a health care provider for patients identified as food insecure, with a diet-related chronic disease, or both. Programs are noted by their CBO partner in the text; additional information about the CBO and health care partners can be found in the Appendix.

The partnerships detailed in this report represent a range of programs and wealth of approaches for FiM in North Carolina. Despite their differences, and their tailored approaches to unique settings, the most common characteristics of FiM programs in North Carolina include:

- The delivery of combination fresh/stable food boxes or produce-only prescriptions.
- Access to food through a community pick-up site or home delivery.
- Funding through grants and donations.
- A procurement partnership with local farmers, particularly for fresh produce.
- Some accommodation for client food needs and preferences (allergies, taste, religious restrictions, etc.).

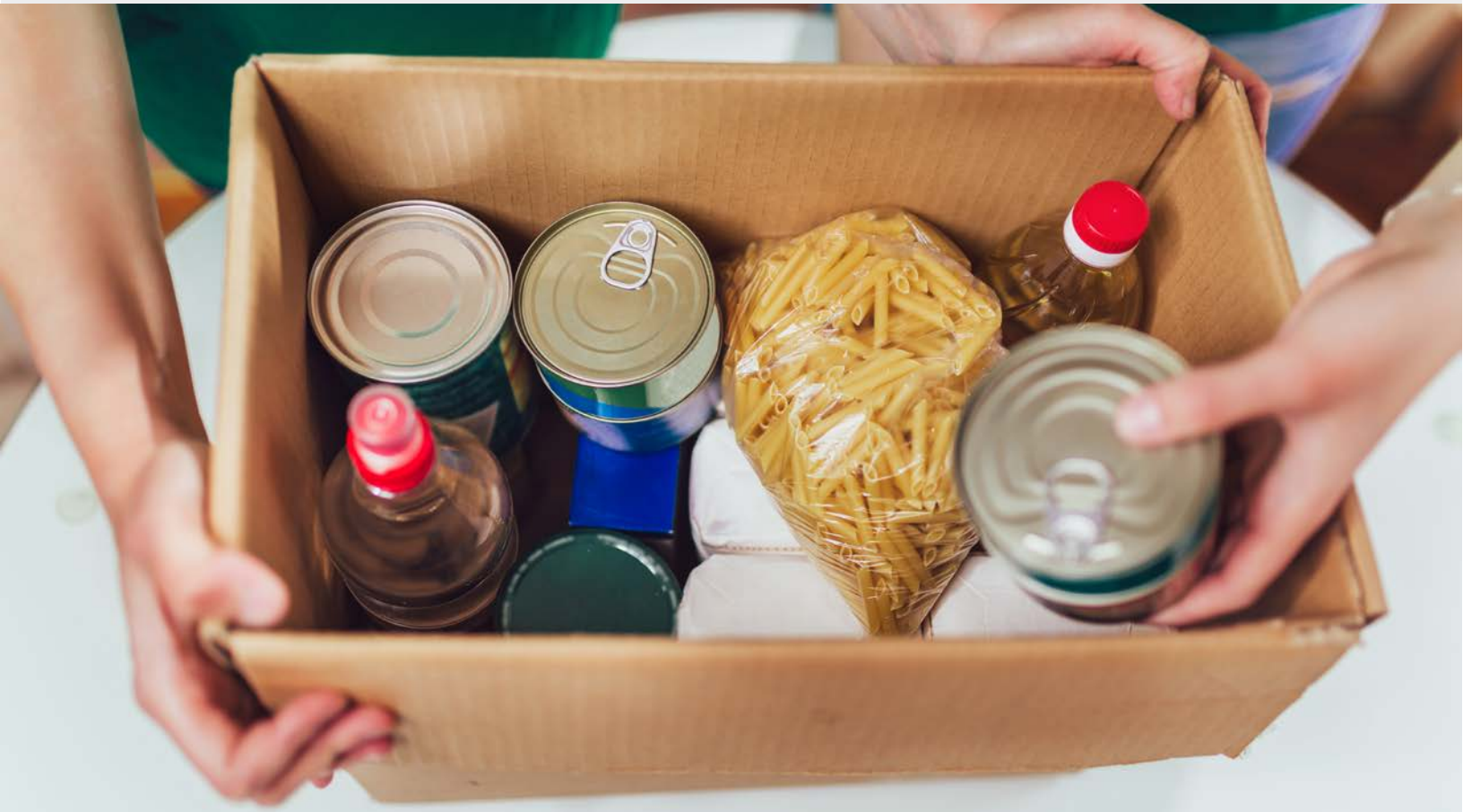
TYPES OF FOOD PROVIDED

FiM programs come in many shapes and sizes. The Harvard Chan School of Public Health identifies six broad categories of FiM programs :[24]

- Combination fresh and stable food box (Four interviewed for this report).
- Produce only: minimally processed fruits and vegetables (Four interviewed for this report).
- Fresh food box: minimally processed items such as grains, fruits, vegetables, legumes, dairy, meats, seafood, etc. (Two interviewed for this report).
- Shelf stable food box: shelf-stable items such as canned goods, dry goods, and other non-perishable items (Three interviewed for this report).
- Medically tailored food box: combination of fresh, frozen, and/or shelf-stable single-ingredient items selected to fit particular dietary needs of the client, such as high fiber, low added sugar, high protein, etc. (Two interviewed for this report).
- Medically tailored meals: hot, cold, or frozen meals prepared to fit particular dietary needs of the client, such as high fiber, low added sugar, high protein, etc. (Two interviewed for this report).

Type of Food Provided

Types of foods being offered	Combination fresh/stable food box	Produce only	Fresh food box	Shelf stable food box	Medically tailored food box	Medically tailored meals (hot/cold/ frozen)
Number of FIM Programs (N=13)	4	4	2	3	2	2



FOOD ACCESS POINTS

Food prescribed by a health care provider in a FiM program can be accessed by the client in a variety of ways. The most common way for clients to access food in North Carolina is through a community pick up site, such as a food pantry, church, or other community-based organization. Home delivery of foods is the next most common way to connect clients to food, followed by vouchers used at food retail locations (grocery or farmers market) where clients shop for approved food items themselves. A few North Carolina FiM programs have a pantry or other program onsite at the health care facility where clients can fill the food prescription before leaving the health care appointment.

Food Access Points

Where clients get the food	Community pick-up site	Delivery	Clinic/health care center	Voucher for food retail location	Automatic electronic benefit for food retail location
Number of FIM Programs (N=12)	9	8	4	3	1

ELIGIBILITY CRITERIA

All FiM programs that participated in our surveys or interviews indicated the health care provider was, at a minimum, screening for food insecurity among a subset of patients. Most programs rely on a brief food security screening tool used by the provider during a health care visit. The most popular food security screening tool is the Hunger Vital Sign™.[25] About a quarter of programs required the health care provider to identify a patient as both food insecure and managing a diet-related chronic disease (such as renal disease, diabetes, or hypertension) to qualify for FiM services. One current FiM program also serves clients that are identified as managing a diet-related chronic disease, regardless of food security status; the health care provider offers medically tailored meals to that specific population. Several FiM programs have a provider prescription program, and also provide food to clients who self-identify without a health care provider referral.

Eligibility Criteria

Eligibility criteria	Food insecure	Diet-related disease
Number of FIM Programs (N=12)	11	6

FUNDING

Current North Carolina-based FiM practitioners are paying for FiM programs in a variety of ways, including:

- Foundation grants
- Federal grants
- State legislative support
- Charitable hospital foundation dollars
- Non-charitable health care dollars
- Business donations
- Individual donations

The most common funding sources include foundation grants, business donations, and individual donations. There is great interest in federal, state, and insurer policy changes that would cover FiM as a benefit. At the time of publication, one FIM program included in this study is providing FIM though a vendor arrangement with a North Carolina health insurer to a particular segment as a supplemental service.

Funding

Current funding sources	Foundation grant	Individual donation	Business donation	Charitable hospital foundation	Non-charitable health care dollars	Federal grant	State legislative support
Number of FIM Programs (N=13)	13	8	8	6	4	2	1

FOOD SOURCING

Food in North Carolina FiM programs is most commonly sourced directly from local farms and food donations. Other sources of food include local food aggregators, food banks, local caterers/restaurants, and national frozen meal producers, as well as national and regional broadline distributors, which offer a mix of food, paper goods, cleaning agents, office supplies, and other items to a wide variety of customers (as opposed to, for example, produce distributors that only handle fresh produce). Within the context of local procurement, some organizations specifically source products (in descending order) from small farms, BIPOC-owned (Black, Indigenous, and People of Color) farms, and women-owned farms. A few CBOs produce meals in-house using some combination of local and non-local items.

Sourcing

Sources of food	Direct from local farms	Food donation	Local aggregator/ food hub	National broadline distributor	Food bank	Regional broadline distributor	Local caterer/ restaurant	National frozen meal co.
Number of FIM Programs (N=11)	8	6	4	4	4	3	3	2

Sourcing spotlight: Local aggregation

Sources of local product	Direct from local farmers	Local aggregator/ food hub	Direct from local BIPOC farmers	Direct from small farms	Direct from local women farmers
Number of FIM Programs (N=11)	8	4	6	6	3

ACCOMMODATIONS FOR INDIVIDUAL FOOD NEEDS AND PREFERENCES

Nine of 11 responding partnerships indicated their FiM program does accommodate client needs and preferences in some way. This includes programs that modify food offerings based on allergies, medical needs, dietary preferences, religious preferences, or taste preferences. FiM programs that do offer choice point to the need to honor client dignity and be inclusive through cultural competency (providing food and using ingredients that reflect clients' own food cultures). Choice is offered through a menu of available options for food that is picked up or delivered, providing a shopping experience where clients select items within the CBO's space, and through voucher programs that allow clients to make choices in the context of a retail location (grocery, farmers market). Those programs that do not accommodate client choice report being limited by funding mechanisms or current infrastructure.

Accommodations for individual food needs and preferences

Program accommodations	Dietary preferences (e.g., vegan)	Medical need	Taste preference (e.g., dislikes)	Allergies	Religious preference (e.g., Kosher)
Number of FIM Programs (N=11)	12	11	10	9	7

TRACKING AND EVALUATION

Six out of 13 FiM programs track what and how much clients are eating during their participation in FiM programming (e.g., how many servings of fruits and vegetables per day); this is more than tracking what is prescribed or purchased by the client. Without consistent and shared measures across FiM programs it is difficult to compare client impact and comparative return on investment. No long-term health information was gathered from North Carolina FiM programs interviewed for this report, although researchers are working in partnership with several participating organizations to better understand program costs, implementation, and client impact. And four programs did indicate that they track client health impacts and health care utilization during FiM program participation, following participation, or both.

STRENGTHS AND OPPORTUNITIES

With a variety of FiM models in North Carolina, we can begin to understand promising practices and opportunities to increase impact for individuals, for health care, and for local communities.

We asked FiM practitioners what they saw as the strengths of FiM and the opportunities for FiM in North Carolina. Responses included:

Build community

- FiM collaborations between CBOs and health care break down silos between institutions, community, and local economies, opening opportunities for collaboration with more community partners, including local agricultural producers.
- FiM programs can be community-driven, designed by participants in collaboration with trusted CBO partners, who will keep community at the core of FiM efforts, and their health care allies.
- FiM offers revenue-generating opportunities for food-focused CBOs, which could reduce reliance on grant and donation-based operations in the future.
- FiM can be a model of collaboration between CBOs and health care organizations, not just for addressing food insecurity, but other programs related to social determinants of health as well (e.g., transportation, housing).

Improve health

- FiM can be a model (or models) for addressing food insecurity and health disparities by providing access to quality healthy foods to those who do not have access.
- FiM can make healthy, culturally appropriate foods available to a wider audience.
- Evidence suggests addressing upstream factors of poor health will (a) more likely result in positive outcomes for the patient, and (b) reduce the need for expensive and invasive health services, ultimately reducing health care costs. These positive outcomes for patients are documented in the literature, although we are waiting on direct evidence from these models.
- The provider screening tool is easy and successful at identifying potential clients.

Support local economies

- FiM offers opportunities to support local agriculture and local economies through sustainable, reliable markets; FiM can provide fair market outlets for local producers, especially small farms, BIPOC-owned farms, and women-owned farms; ripple effects will support community-based resilience. Many respondents see FiM as a natural evolution of health care, mimicking current partnerships between health care and pharmaceuticals, except the pharmaceuticals/pharmaceutical companies are replaced by food/farmers.

Alternative ways to address food security

- FiM is an alternative/supplement to SNAP and WIC benefits that can be inaccessible to some (because they do not quite qualify, because they are undocumented, etc.), restrictive to others (WIC benefits come with specific size, weight, and quality mandates), and generally do not provide enough funds to support a healthy, well-balanced diet.
- Data from FiM programs can influence policy at organizational, local, state, and federal levels.

CHALLENGES

We asked FiM practitioners what they saw as the challenges and areas for growth for FiM in North Carolina.

The primary concern voiced by CBOs, health care providers, and key informants was secure and stable funding for FiM programs. Every program described in this report relies on a combination of funding sources that are not sustainable (e.g., grants, donations). Additional challenges for CBO and health care partners include:

Funding and policy support

- Lack of funding specifically for transportation of food to people (drivers, gas, benefits, etc.) because home delivery is a necessity for many individual clients and programs that want to reach the most vulnerable populations. Transportation to access health care is also a concern, especially in rural communities.
- Limited support from statewide organizations, state and federal agencies, state and federal policies, and health care providers to implement FiM programs.
- Some programs felt their offerings were limited because they do not currently accommodate client choice or preferences, making the program feel more like a handout than a supportive, client-driven service. Accommodations were not offered because of CBO's limited funding and staffing capacity.
- Although North Carolina is an agricultural state, there are not yet many supports or incentives offered to farmers to engage in conversations about FiM.

Reach

- From an equity perspective, FiM programming only reaches individuals seeking health care services.
- Ongoing silos (between different CBOs, and between health care organizations and CBOs) limit their ability to increase efficiency, effectiveness, and reach.
- Some CBOs find it challenging to identify and connect with health care partners to expand the reach of FiM programs.
- Four of 13 respondents confirmed they could only provide services for the individual seen by the health care provider, not the whole family, even though food insecurity inevitably impacts every individual in a household. Funding and program design currently prevents some FiM programs from reaching all family members through one patient referral – likely perpetuating negative outcomes for some or all family members in the home.

Marketing support

- There needs to be a more coordinated approach to outreach (to clients and to health care entities) with science-based healthy food choice information; respondents also want better ways to disseminate information to potential partners and clients.

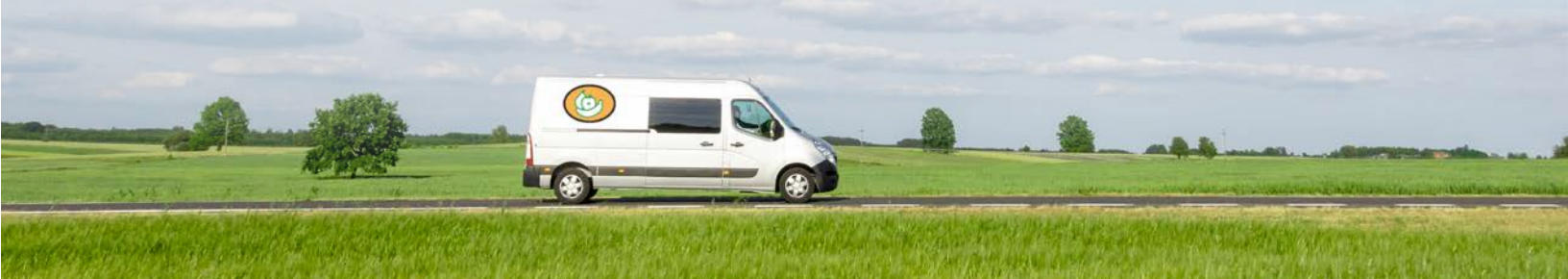
Addressing root causes of poor health

- Some believe FiM does address root causes of poor health, some did not, and some think FiM addressed the tip of the iceberg but did not go deeper. As health care becomes more involved in addressing the social drivers of health, interest and focus on the root causes of poor health – including poverty, racism, sexism, and other forms of oppression that result in inequities – could grow. There are certainly examples of this in other states where value-based payment for care is more prevalent.
- Although health care plays a critical role in the FiM process, the community needs greater power and agency in program design, implementation, and benefits to insure the greatest impact.

Additional comments

- Some respondents want differentiated programs for maximum effect and impact (FiM programs for children, seniors, etc.). FiM are typically treatment programs, but FiM prevention programs, especially for children, are needed to prevent chronic disease and the associated human, economic, and cultural toll.

Not enough is known about the clients' perspectives to speak to their perceptions and experiences of FiM programs at this time.



SUSTAINING, SCALING, AND SPREADING FOOD IS MEDICINE IN NORTH CAROLINA

Sustainable financing of FiM programs is the biggest concern for those interviewed in this report. Funding is needed for staffing, storage space, screening clients, tracking client data and program outcomes, and food procurement. Practitioners are busy doing the work; key federal policy partners (including policy-focused nonprofits, researchers, etc.) must be engaged to advocate for the necessary changes, especially reimbursement through Medicare/Medicaid, to make FiM truly sustainable. We asked FiM practitioners what they needed in order to sustain, scale, and spread FiM in North Carolina. The most common requests were for insurance reimbursement (changes in policy so that FiM can be a billable service, like pharmaceuticals and diagnostic tests), and state-level policy change (to facilitate FiM funding, and to require local food purchasing).

Additional supports identified by respondents to sustain, scale, and spread FiM in North Carolina, beginning with those most frequently reported, include:

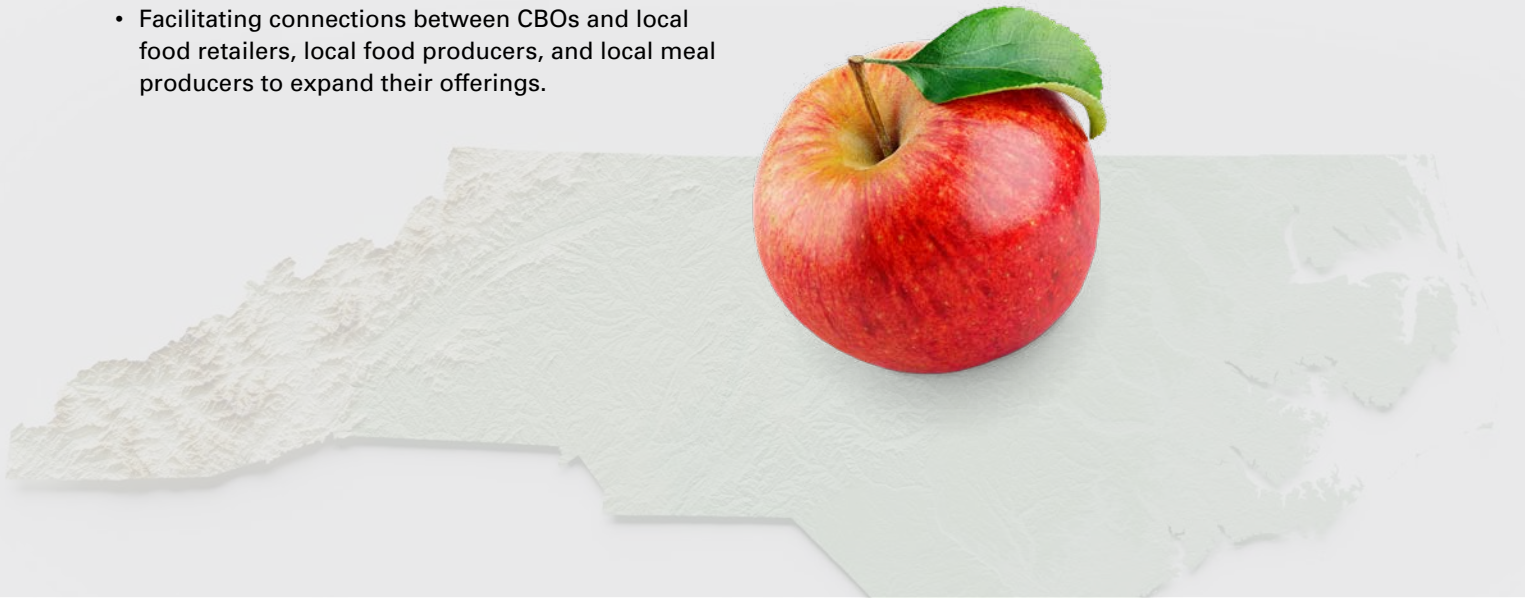
- Technical assistance (teaching CBOs how to manage reimbursable prescription food programs, how to engage health care organizations in the work, etc.); see below for more details.
- Facilitating connections between CBOs and health care providers.
- National-level policy change (to allow for reimbursement, and to facilitate program development and scaling).
- Facilitating connections between CBOs and potential clients, so that patients know to ask health care providers for available services.
- Physical infrastructure (storage and transportation for all types of food, but especially perishable, cold, and frozen items); see below for more details.
- Facilitating connections between CBOs and local food retailers, local food producers, and local meal producers to expand their offerings.

FiM practitioners requesting technical assistance were interested in:

- How to set up a CBO to be able to manage reimbursement-based FiM programs (insurance requirements, secure technology support and operations, data management, etc.).
- Best practices for FiM programs in rural or urban settings.
- Accessing a community-of-practice resource hub.
- Measuring, analyzing, and acting on data related to program operations and client outcomes.
- How to increase local farmer capacity to serve FiM-type programs, including food safety requirements, product forecasting, and contract negotiations, etc.
- How to generate a list of resources (other social determinants of health resources, such as transportation and housing) to share with clients.

Additional comments

- One respondent was unsure if current health care and CBO operations are compatible at all without disruptive systems change, including universal health care, major investment in regional food systems infrastructure, and funding mechanisms for health and agriculture.
- Another respondent had mixed feelings about allowing free-market, for-profit companies to enter the FiM food provision space, in direct competition with CBOs: on the one hand, competition could lead to more effective and efficient solutions; on the other, competition could lead to greater disparities and gaps where large for-profit companies cannot reach.

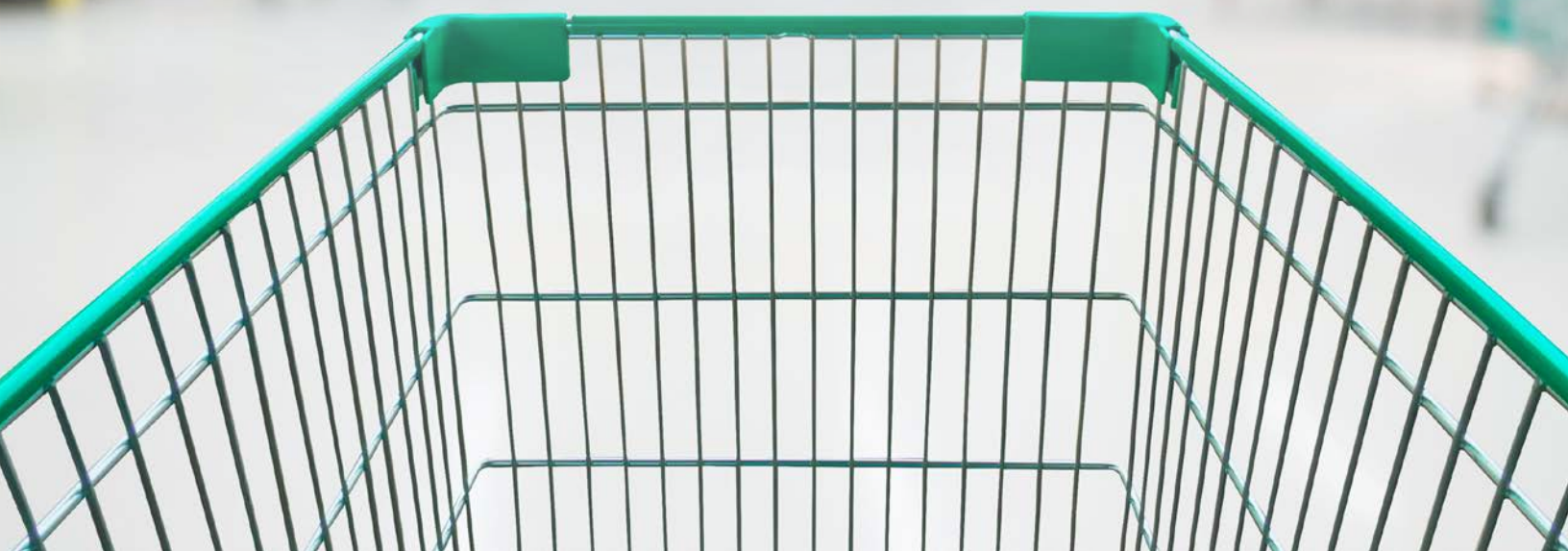


Conclusion

Food is Medicine programs have the potential to positively impact individual lives, improve health care outcomes, support local agriculture, and grow local economies. They also serve as a tool to help health care stakeholders think and act on upstream factors affecting health and health outcomes, such as food, transportation, health care, and interpersonal violence. North Carolina has a number of FiM program models to study, learn from, and potentially adapt across the state. And CBOs play an integral role in understanding how to maximize benefits offered through these programs for individuals, local agriculture, and local communities.

How FiM programs develop and grow in North Carolina is still unfolding, and this report does not delve into return on investment of each type of FiM opportunity. Immediate next steps may include statewide convening and connection between current and future FiM practitioners; advocacy and policy work around changes to federal and state reimbursement for social determinants of health; research to understand everything from client perspective to return on investment; and a more coordinated funding approach.

What is known is that health care providers and organizations stepping into the world of Food is Medicine programs will gain a deeper understanding of how best to support their community, and how best to engage in FiM programs holistically, if they connect to local CBOs to begin conversations. New and adaptive programs will take a number of different forms as these partnerships continue to evolve programming to meet need, demand, and funding. While challenges to sustaining, scaling, and spreading FiM programs remain, partners across community-based organizations, health care providers, and other interested parties remain dedicated to lifting up and advancing the work of FiM programs to improve lives for many North Carolinians.



Limitations

This report is a first step in understanding Food is Medicine programs in North Carolina – opportunities, challenges, and what is needed to advance this movement forward. We acknowledge many limitations, including:

- We only interviewed or surveyed those agencies brought to our attention as engaging in FiM work; there are undoubtedly other groups that were not included and should be included in future updates to this report and ongoing work.
- We did not speak with FiM clients/recipients to understand their perspective (e.g., Are these programs addressing their basic needs and concerns? How would they like to receive items? What works or does not work? What is needed instead or in addition? What happens when these programs – often grant-funded or time-limited – end? What is the long-term impact of temporary food assistance? etc.).
- We did not consider for-profit partners that are engaged in FiM operations (largely in other states currently, but beginning to appear in North Carolina).
- We only spoke with known CBO and health care partners involved in current FiM operations. We did not speak with those who tried – and ended – FiM programs for their perspective on why they stopped or why the program failed. Nor did we speak with CBOs and health care providers not engaged in FiM.
- Health care providers especially were limited in their capacity to participate in early information gathering because of the strain of COVID on hospital personnel's time and attention.
- We do not describe impact; we did not measure what the impact of current FiM programs is on individual lives, health care operations, local economies, etc.
- Most people we spoke with are not those directly interacting with the recipients, so there was sometimes limited knowledge of the personal or individual impact.
- We were not able to compare and contrast the relative costs and benefits of specific FiM programs in North Carolina; we can only see the prevalence of certain model components.

Appendix

PARTICIPATING FOOD IS MEDICINE PROGRAMS

Appalachian Regional Healthcare System works in partnership with Hunger and Health Coalition (see below) to provide food to patients identified as food insecure by their health care provider. Ongoing food and nutrition support is available to patients prescribed food for pick-up at Hunger and Health community sites, as well as through their food and meal delivery programs. Additional partners in these FiM efforts include Appalachian State University and Watauga County Schools.

Organization	Appalachian Regional Healthcare System
Service area	Ashe, Avery, Watauga Counties
Type of food provided	Combination fresh and stable food box
Food access points	Community pick-up site, delivery
Eligibility criteria	Food insecure
Current FiM funding	Foundation grant, hospital foundation, business donation, individual donation
Sources of food	Regional broadline distributor, local aggregator/food hub, direct from local farms, local BIPOC farms, local small farms, local women-owned farms, food donation, food bank, local caterer/restaurant
Accommodations	Allergies, medical need, dietary preferences

Appalachian Sustainable Agriculture Project (ASAP) seeks to "help local farms thrive, link farmers to markets and supporters, and build healthy communities through connections to local food." ASAP has a myriad of food and farming programs that support strong communities. Through their FiM program, Farm Fresh Produce Prescription program, participating health care providers write a prescription for fresh produce for patients identified as food insecure. Produce prescriptions can be filled at farmers markets, roadside stands, or through community supported agriculture (CSA) opportunities. Current funding restrictions require the patient to participate in Medicaid, SNAP, or other federally qualifying program as a proxy identifier for elevated risk of food insecurity.

Organization	Appalachian Sustainable Agriculture Project
Service area	Buncombe County; expanding next to Alleghany, Ashe, Avery, Burke, Caldwell, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania, Watauga, Wilkes, Yancey Counties
Type of food provided	Produce only
Food access points	Voucher for local food retail
Eligibility criteria	Food insecure, dependent on having or being at risk of developing a diet related disease
Current FiM funding	Federal grant, foundation grant, individual donation
Sources of food	Local aggregator/food hub, direct from local farms, local BIPOC farms, local small farms, local women-owned farms
Accommodations	Allergies, medical need, dietary preferences, religious preferences, taste preferences

Atrium Health Wake Forest Baptist is an academic health system based in Winston-Salem, North Carolina, and a part of Atrium Health Enterprise. Atrium Health Wake Forest Baptist addresses food insecurity in a number of ways, including screening for food insecurity at every visit, and screening for WIC/SNAP enrollment at well child visits. Positive screens for food insecurity are followed by a care navigator meeting; an on-site food pantry bag with recipes and QR code-linked cooking videos; backpack program and/or meal or fresh produce delivery; and/or produce voucher to a farmers' market. Patients also have access to a mobile produce market on site at the hospital every Tuesday afternoon, gift cards for emergency food needs, and WIC/SNAP referrals.

Organization	Atrium Health Wake Forest Baptist
Service area	Davidson, Davie, Forsyth, and Guilford Counties
Type of food provided	Fresh produce, combination fresh/stable food boxes, shelf stable food boxes, medically tailored meals
Food access points	Clinic-based pantry, community pick up, voucher for food retail location, delivery
Eligibility criteria	Food insecure
Current FiM funding	Foundation grant
Sources of food	National broadline distributor, regional broadline distributor, food donation, direct from local farms
Accommodations	Information unavailable

Carolinas Collaborative (in partnership with the American Academy of Pediatrics and funded by The Duke Endowment) "brings together academic pediatric programs and their host health care systems across the Carolinas. The goal of this collaborative is to create an environment that empowers action through access to data, comparative analytics, and technical expertise, uplifting all residents of the Carolinas." In addition to important work on addressing toxic stress, the Carolinas Collaborative is focusing on food insecurity in children. All participating pediatric programs screen children for food insecurity, and then offer wrap-around services through partnerships with WIC/SNAP enrollment offices, Johnson & Wales, local food pantries and food share programs, and other community-based organizations to provide culturally relevant food and meals (as needed) for food insecure children. Program specifics vary by location.

Organization	Carolinas Collaborative
Service area	Durham, Forsyth, Mecklenburg, Orange, Pitt Counties
Type of food provided	Produce only, fresh food box, shelf stable food box, combination fresh/stable food box
Food access points	Clinic/health care center, community pick-up site
Eligibility criteria	Food insecure or identifying desire for referral or resource without being food insecure
Current FiM funding	Foundation grant, charitable hospital foundation, non-charitable hospital dollars, business donation
Sources of food	National distributor, local aggregator/distributor, local farms, local BIPOC farms, food donation, food bank
Accommodations	Medical need, dietary preferences, taste preferences

Cone Health is a not-for-profit network of health care providers, and engages in a long list of community-based outreach efforts. Their FiM programs include medically tailored frozen meals for patients managing diabetes and renal patients (created by Sodexo food service providers that manage all hospital food production). Cone Health is in the process of opening a new Food Market (pantry) in a women's medical center to support patients and their families who struggle with access to healthy food and nutrition education, in partnership with Food Lion and the local food bank. Providers will prescribe food to patients, who will be able to shop on-site before leaving the clinic; food prescriptions can also be filled at other community and food retail locations. Additional partners include 'Message in a Meal,' Out of the Garden Project, among others.

Organization	Cone Health
Service area	Alamance, Forsyth, Guilford, Randolph, Rockingham Counties.
Type of food provided	Produce only, shelf stable food box, combination fresh/stable food box, medically tailored food box, medically tailored meals
Food access points	Clinic/health care center, community pick-up site, voucher for food retail location, delivery
Eligibility criteria	Food insecure and/or diet-related disease
Current FiM funding	Foundation grant, charitable hospital foundation, non-charitable health care dollars, business donation, individual donation
Sources of food	Direct from local farms, local BIPOC farms, local small farms, food donation, food bank, local caterer/restaurant, national frozen meal company
Accommodations	Dietary preferences, taste preferences

Conetoe Family Life Center's (CFLC) mission is to improve the health of the youth and community by increasing access to healthy foods, increasing physical activities, and providing access to health services. The goal is to disrupt the poverty cycle in families by improving the resources available, specifically to children. CFLC operates a farm and beekeeping operation, youth development programs, and food security efforts. They partner with Vidant Health and Nash UNC Health Care to provide fresh produce to patients and staff. Current CFLC FiM operations include delivery of fresh food boxes (with produce, proteins, grains, etc.) to hospital sites for distribution, directly from the farm, and direct to patients' homes.

Organization	Conetoe Family Life Center
Service area	Edgecombe and Nash Counties
Type of food provided	Fresh food box
Food access points	Clinic/health care center, community pick-up site, delivery
Eligibility criteria	Food insecure and/or diet-related disease
Current FiM funding	Foundation grant, business donation, individual donation
Sources of food	Direct from local farms, direct from local BIPOC farms, food donation, food bank
Accommodations	None

Feast Down East "strengthens the farming communities in and around the Wilmington area by providing resources, education, and distribution opportunities to farmers while addressing equitable food access in communities with the greatest need." Feast Down East works in partnership with local medical providers, the local housing authority, and community partners around New Hanover, Brunswick, and Pender Counties to fulfill fresh food prescriptions for individuals identified as food insecure by health care providers. The fresh food items come from (often small or midsize) local, traditionally disadvantaged farmers seeking new outlets for their products.

Organization	Feast Down East
Service area	Brunswick, New Hanover, Pender Counties
Type of food provided	Fresh food box
Food access points	Community pick-up site
Eligibility criteria	Food insecure
Current FiM funding	Foundation grant, charitable hospital foundation, non-charitable hospital dollars, business donation, individual donation
Sources of food	Local aggregator/food hub, direct from local farms, direct from local BIPOC farms, local small farms, local women-owned farms
Accommodations	Allergies, medical need, dietary preferences, taste preferences

Green Rural Redevelopment Organization (GRRO) was founded to address poverty, food insecurity, and chronic diseases in rural North Carolina. What began as a grassroots effort to revitalize rural communities through micro-market farming and food-base entrepreneurship has grown into a systems approach to addressing acute and upstream causes of hunger and poverty. GRRO's FiM operations include a food prescription program in which local health care providers write a prescription for patients identified as food insecure and/or managing diet-related disease, and GRRO connects the patient to fresh produce and other food items. GRRO also provides nutrition and lifestyle support and connection to wrap-around services for the patient. GRRO is moving toward the production and delivery of medically tailored meals in one of the Healthy Opportunity Pilot regions in North Carolina in 2022.

Organization	Green Rural Redevelopment Organization
Service area	Franklin, Granville, Person, Vance, Warren Counties
Type of food provided	Combination fresh and shelf stable food box
Food access points	Community pick-up site, delivery
Eligibility criteria	Food insecure and/or diet-related disease
Current FiM funding	Foundation grant, hospital foundation, business donation, individual donation
Sources of food	Information unavailable
Accommodations	Allergies, medical need, dietary preferences

Healthy Highland is a grassroots effort located in a historically Black community in western North Carolina, which aims to support health and well-being for all people in Gastonia. Originally started to address acute hunger needs in a community identified as a food desert, Healthy Highland has expanded services and programs to better serve the community. A new addition to their programming includes an FiM-style opportunity where providers in local community health centers can prescribe Healthy Highland food certificates to patients requesting support in accessing healthy meals or a healthier food lifestyle. These certificates can be redeemed for prepared meals at Healthy Highland's central kitchen, called "RAMS Kitchen" which is located in the Highland Community, or the meals can be delivered. Meals include healthy adaptations of culturally relevant foods, prepared by community members familiar with the needs and preferences of their neighbors.

Organization	Healthy Highland
Service area	Gaston County
Type of food provided	Combination fresh and stable food box
Food access points	Community pick-up site, delivery
Eligibility criteria	Food insecure
Current FiM funding	Foundation grant
Sources of food	Information unavailable
Accommodations	Allergies, medical need, dietary preferences, religious preferences, taste preferences

Hunger and Health Coalition is dedicated to "empowering neighbors in need through healthy, nutritious food and life-saving medications." Hunger and Health Coalition provides a wide range of food and medication services. They provide FiM programming in partnership with all local health care providers in Watauga County, including the Appalachian Regional Health Care System. Medical professionals screen patients for food insecurity and diet-related disease, and then use a Hunger and Health prescription pad to refer patients to ongoing care: Hunger and Health provides nutrition education for the whole family, medically tailored food boxes, and delivery services for individuals with transportation challenges.

Organization	Hunger and Health Coalition
Service area	Ashe, Avery, Watauga Counties
Type of food provided	Combination fresh and stable food box, medically tailored meal box
Food access points	Community pick-up site, delivery
Eligibility criteria	Food insecure
Current FiM funding	Foundation grant, hospital foundation, business donation, individual donation
Sources of food	Regional broadline distributor, local aggregator/food hub, direct from local farms, local BIPOC farms, local small farms, local women-owned farms, food donation, food bank, local caterer/restaurant
Accommodations	Allergies, medical need, dietary preferences

North Carolina A&T State University is a land-grant research institution dedicated to "scholarly exchange and transform[ing] society with exceptional teaching, learning, discovery, and community engagement." NC A&T's Dr. Chyi-lyi Liang's research farm supports efforts to understand how delivery of organically-grown specialty fruits and vegetables impacts the health of residents. Specialty produce donated from Dr. Liang's research farm provides fresh produce for participants and limits food waste from the farm.

Organization	North Carolina A&T
Service area	Wayne County
Type of food provided	Fresh produce
Food access points	Community pick-up site, delivery
Eligibility criteria	Food insecure and diet-related disease
Current FiM funding	Federal grant
Sources of food	Food donation (from research farm)
Accommodations	Allergies, medical need, dietary preferences

Novant Health New Hanover Regional Medical Center (NHRMC) provides care to a large portion of southeastern North Carolina. NHRMC offers a Food Pharmacy to patients who are identified as food insecure by a health care provider using the Hunger Vital Sign™ screening tool. Both outpatients and inpatients are referred to the program; the food boxes provided contain about six days' worth of canned and shelf-stable food. Food is procured in partnership with a local Feeding the Carolinas affiliate. Currently, NHRMC distributes about 90 food boxes per month.

Organization	Novant Health New Hanover Regional Medical Center
Service area	New Hanover County
Type of food provided	Shelf stable food box, combination fresh and shelf stable food box
Food access points	Community pick-up site, clinic/health care center
Eligibility criteria	Food insecure and diet-related disease
Current FiM funding	Foundation grant, business donation
Sources of food	National broadline distributor, direct from local farms, direct from small local farms, food donation, local caterer/restaurant
Accommodations	Medical need, dietary preferences, religious preferences, taste preferences

Reinvestment Partners' (RP) mission is to foster healthy and just communities by empowering people, improving places, and influencing policy. RP addresses the problems of poverty and social injustice in the areas of food, housing, community development, health, and financial services. Eat Well, RP's produce prescription program, provides $40 per month to each enrolled participant. The electronic benefit is linked to a retail grocery customer loyalty card to facilitate access, ensure client choice, and maintain the dignity of participants. Health care partners screen patients for low income, food insecurity, and/or diet-related disease (depending on the funding mechanism's requirements). Referred patients sign up by phone or online. Eat Well facilitates access to produce for individuals with limited barriers to enrollment, and access to food in places where clients are already shopping.

Organization	Reinvestment Partners
Service area	90 North Carolina Counties (all 500 North Carolina Food Lion stores)
Type of food provided	Produce only (fresh, frozen, canned - minimally processed)
Food access points	Automatic electronic health care benefit for food retail location
Eligibility criteria	Food insecure and/or diet-related disease
Current FiM funding	Foundation grant, federal grant, state legislative support, non-charitable health care dollars
Sources of food	National broadline distributor, regional broadline distributor
Accommodations	Allergies, medical need, dietary preferences, religious preferences, taste preferences

SHARE Winston-Salem is a faith-based, food-focused organization, formed to serve the diverse citizens of Winston-Salem, North Carolina. Their mission centers on providing wholesome and nutritional food to families in and around areas designated as food deserts. SHARE Winston-Salem's Food Pharmacy Project involves a health care provider writing a food prescription for a patient, and then typically that patient brings the prescription to SHARE's Harvest Market, where a staff nutritionist helps the patient select food items that will support their health and wellness goals. In some cases, patients can order items for delivery.

Organization	SHARE Winston-Salem
Service area	Forsyth County
Type of food provided	Fresh produce, medically tailored meals
Food access points	Voucher for food retail location (SHARE's cooperative grocery store), delivery
Eligibility criteria	Food insecure
Current FiM funding	Foundation grant, individual donation
Sources of food	National broadline distributor, regional broadline distributor, direct from local farms, direct from small local farms, national frozen meal company
Accommodations	Allergies, medical need, dietary preferences, religious preferences, taste preferences

TRACTOR Food and Farms is a food hub focused on "increasing access to local food by empowering producers and consumers alike, reconnecting people with agriculture for a healthier community, environment, and economy." TRACTOR's Clinical Referral Program procures and delivers locally sourced produce to individuals and families experiencing food insecurity or diet-related illnesses. Individuals are referred to the program by local health care providers, and CSA-style shares are available for pick-up or delivery.

Organization	TRACTOR Food and Farm
Service area	Avery, Buncombe, Haywood, Henderson, Madison, Mitchell, Transylvania, Yancey Counties
Type of food provided	Fresh food box
Food access points	Community pick-up site, delivery
Eligibility criteria	Food insecure
Current FiM funding	Foundation grant, charitable hospital foundation, business donation, individual donation
Sources of food	Local aggregator/food hub, direct from local farms, local BIPOC farms, local small farms, local women-owned farms
Accommodations	Allergies, medical need, dietary preferences, religious preferences, taste preferences

Other Key Informants

- Blue Cross and Blue Shield of North Carolina Healthy Blue
- Blue Cross and Blue Shield of North Carolina
- Carolina Farm Stewardship
- Feeding the Carolinas
- Impact Health, Dogwood Health Trust
- Resourceful Communities

ENDNOTES

1. Food Insecurity in North Carolina. America's Health Rankings. https://www.americashealthrankings.org/explore/health-of-women-and-children/measure/food_insecurity_household/state/NC 2021.
2. Wolfson, J.A.; Leung, C.W. Food Insecurity during COVID-19: An Acute Crisis with Long-Term Health Implications. Am. J. Public Health 2020, 110, 1763–1765.
3. Schanzenbach, D.W.; Pitts, A. Estimates of Food Insecurity during the COVID-19 Crisis: Results from the COVID Impact Survey, Week 1 (20–26 April 2020); Institute for Policy Research Rapid Research Report: Evanston, IL, USA, 2020.
4. Definitions of Food Security. United States Department of Agriculture. https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security.aspx
5. Definitions of Food Security. United States Department of Agriculture. https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security.aspx
6. Berkowitz, Seth A., Sanjay Basu, Craig Gundersen, and Hilary K. Seligman. "State-Level and County-Level Estimates of Health Care Costs Associated with Food Insecurity." Preventing Chronic Disease 16 (July 11, 2019): 180549. https://doi.org/10.5888/pcd16.180549.
7. Ettinger de Cuba, Stephanie, Mariana Chilton, Allison Bovell-Ammon, Molly Knowles, Sharon M. Coleman, Maureen M. Black, John T. Cook, et al. "Loss Of SNAP Is Associated With Food Insecurity And Poor Health In Working Families With Young Children." Health Affairs 38, no. 5 (May 2019): 765–73. https://doi.org/10.1377/hlthaff.2018.05265.
8. Gundersen, Craig, and James P. Ziliak. "Food Insecurity And Health Outcomes." Health Affairs 34, no. 11 (November 1, 2015): 1830–39. https://doi.org/10.1377/hlthaff.2015.0645.
9. Accountable Health Communities Model. Centers for Medicare & Medicaid Services. https://innovation.cms.gov/innovation-models/ahcm
10. Food is Medicine: Opportunities in Public and Private Health Care for Supporting Nutrition Counseling and Medically Tailored, Home-Delivered Meals. Harvard Law School. https://dash.harvard.edu/bitstream/handle/1/32151131/6.5.2014-Food-is-Medicine-Report-FINAL.pdf?sequence=1&isAllowed=y
11. Produce Prescriptions: A US Policy Plan. Harvard Law School; Rockefeller Foundation. https://www.chlpi.org/wp-content/uploads/2013/12/Produce-RX-US-Policy-Scan-FINAL.pdf
12. Food Banks as Partners in Health Promotion: How HIPAA and Concerns about Protecting Patient Information Affect Your Partnership. Harvard Law School; Feeding America. https://www.chlpi.org/wp-content/uploads/2013/12/Food-Banks-as-Partners_HIPAA_March-2017.pdf
13. Key Drivers to Improve Food Security and Health Outcomes: An Evidence Review of Food Bank-Health Care Partnerships and Related Interventions. Connecticut Food Bank; Foodshare; Feeding America. https://hungerandhealth.feedingamerica.org/resource/food-bank-health-care-partnerships-evidence-review/
14. Food is Medicine: Peer-Reviewed Research in the US. Harvard Law School. https://www.chlpi.org/wp-content/uploads/2013/12/Food-is-Medicine_Peer-Reviewed-Research-in-the-U.S.1.pdf?fbclid=IwAR3HfO5ZZRILr7ortrUn9_OUOXrTJc5MGAakdlQmB0dcTzb_k8jachSLTuo
15. Legal & Policy Strategies for Health Care & Food System Partners. ChangeLab Solutions. https://www.changelabsolutions.org/sites/default/files/2021-05/CLS-BG243-0-Legal-Policy-Strategies-for-Health-Care-Food-System-Partners_Entire-Guide_FINAL_ACCESS_20210525.pdf
16. Ronit A. Ridberg et al., A Pediatric Fruit and Vegetable Prescription Program Increases Food Security in Low-Income Households, J. Nutrition Educ. & Behav. (2019). https://pubmed.ncbi.nlm.nih.gov/30224295/
17. Amy Saxe-Custack et al., Caregiver Perceptions of a Fruit and Vegetable Prescription Program for Low-Income Pediatric Patients, 21 Pub. Health Nutrition 2497 (2018). https://pubmed.ncbi.nlm.nih.gov/29667562/
18. Darcy Freedman, et al., A Farmers' Market at a Federally Qualified Health Center Improves Fruit and Vegetable Intake Among Low-Income Diabetics, 56 Preventative Med. 288 (2013).
19. Richard Bryce et al., Participation in a Farmers' Market Fruit and Vegetable Prescription Program at a Federally Qualified Health Center Improves Hemoglobin A1C in Low Income Uncontrolled Diabetes, 7 Preventative Med. Reps. 176 (2017). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5496208/
20. Food is Medicine: Opportunities in Public and Private Health Care for Supporting Nutrition Counseling and Medically Tailored, Home-Delivered Meals. Harvard Law School. https://dash.harvard.edu/bitstream/handle/1/32151131/6.5.2014-Food-is-Medicine-Report-FINAL.pdf?sequence=1&isAllowed=y
21. Health Opportunities Pilots. NCDHHS. 2021. https://www.ncdhhs.gov/about/department-initiatives/healthy-opportunities/healthy-opportunities-pilots.
22. Social Determinants of Health: Healthy People 2030. Office of Disease Prevention and Health Promotion, US Department of Health and Human Services. https://health.gov/healthypeople/objectives-and-data/social-determinants-health
23. Food is Medicine: Peer-Reviewed Research in the US. Harvard Law School. https://www.chlpi.org/wp-content/uploads/2013/12/Food-is-Medicine_Peer-Reviewed-Research-in-the-U.S.1.pdf?fbclid=IwAR3HfO5ZZRILr7ortrUn9_OUOXrTJc5MGAakdlQmB0dcTzb_k8jachSLTuo
24. Produce Prescriptions: A US Policy Plan. Harvard Law School; Rockefeller Foundation. https://www.chlpi.org/wp-content/uploads/2013/12/Produce-RX-US-Policy-Scan-FINAL.pdf
25. Hager ER, Quigg AM, Black MM, Coleman SM, Heeren T, Rose-Jacobs R, Cook JT, Ettinger de Cuba SA, Casey PH, Chilton M, Cutts DB, Meyers AF, Frank DA. Development and validity of a 2-item screen to identify families at risk for food insecurity. Pediatrics. 2010 Jul;126(1). http://www.childrenshealthwatch.org/wp-content/uploads/EH_Pediatrics_2010.pdf
26. Definitions of Food Security. United States Department of Agriculture. https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/definitions-of-food-security.aspx
27. https://www.aspeninstitute.org/wp-content/uploads/2022/01/Food-is-Medicine-Action-Plan-Final_012722.pdf"Food is Medicine Research Action Plan, Center for Health Law and Innovation, Center for Health Law and Policy Innovation, Harvard Law School
28. Social Determinants of Health: Healthy People 2030. Office of Disease Prevention and Health Promotion, US Department of Health and Human Services. https://health.gov/healthypeople/objectives-and-data/social-determinants-health