Towards an Equitable, Food Secure Charlottesville

Michael Jarosz
Frank Batten School of Leadership and Public Policy
University of Virginia
2020

ACKNOWLEDGEMENTS

I would like to thank Jeanette Abi-Nader, Shantell Bingham, and Megan Donovan at Cultivate Charlottesville. You have provided me with invaluable knowledge about the local food system and directed me to many invaluable emerging areas of research. I greatly appreciate your willingness to welcome me into the operations and planning process of the Charlottesville Food Justice Network.

I would also like to thank Professor Kirsten Gelsdorf, Professor Lucy Bassett, Professor Barbara Wilson, and Brooke Ray for supporting me with advice and guidance throughout this project. Your expertise has been instrumental in the development of this project.

Finally, I would like to thank Mikayla Woodley and Julia Payne for your support on this project and the incredibly valuable feedback you provided me on my work throughout the year.

DISCLAIMER

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other entity.

HONOR CODE

On my honor as a student, I have neither given nor received unauthorized aid for this assignment.

Michael M Jarosz

UNIVERSITY of VIRGINIA
FRANK BATTEN SCHOOL of LEADERSHIP and PUBLIC POLICY

CULTIVATE CHARLOTTESVILLE
GROW · SHARE · ADVOCATE.

Table of Contents

Acronyms……4

Key Terms……5

Executive Summary……7

Introduction……8

Client Profile……10

Background……12

State of the Problem……14

Planning for a Just, Local Food System……16

Review of Best Practices in Local Food Systems Planning……19

- Issue Area 1: Transportation……19
- Issue Area 2: Urban Agriculture……22
- Issue Area 3: Affordable Housing……24
- Issue Area 4: Healthy School Foods……26
- Issue Area 5: Neighborhood Food Access……28

Criteria……30

Alternatives……32

Evaluation and Results……43

Recommendation……51

Implementation……52

Appendix A……56

Appendix B……58

Appendix C……59

Appendix D……60

References……61

Acronyms

CAT – Charlottesville Area Transit

CFJN- Charlottesville Food Justice Network

CRHA – Charlottesville Redevelopment Housing Authority

CSG – City Schoolyard Garden

FEI –Food Equity Initiative (Charlottesville)

LFLP – Local Foods Local Places Initiative (EPA)

PHAR – Public Housing Association of Residents (Charlottesville)

SIA – Strategic Investment Area

TDP – Transit Development Plan

UACC – Urban Agriculture Collective of Charlottesville

Key Terms

The **food system** describes the set of activities that occur between food manufacturing and food consumption. These activities include processing, distribution and access, consumption, and waste management. The food system includes all of the associated supporting and regulatory institutions and activities involved in this set of activities.

Local foods are the products available for direct human consumption that are grown, processed, packaged, and distributed a certain distance within a region. These are often the food products that go directly from the grower/producer to the consumer, often via farmers markets.

The **local food system** is a cohesive way of producing food locally and making it readily available to all people in the region. The system includes producing, aggregating, processing, storing, distributing, selling and consuming food. In a local food system, healthy food is available and accessible for all community members; there is a strong network of successful and culturally appropriate businesses that produce, process, cook, transport, and sell that food; there are opportunities to produce food locally; and food waste is prevented.

Food Access is the availability of quality food within a reasonable distance from where people live. Access includes the ease and ability to travel to where quality food is available, as well as the affordability of that food and its cultural suitability to specific population groups within the community.

Food Security refers to individuals having access to culturally acceptable, nutritionally adequate food through non-emergency sources at all times. At the regional scale, food security typically refers to the capacity of a geographic area to produce an adequate supply of healthy food for its population. At the household and individual scale, food security is understood to mean that regular and sufficiently diverse selections of foods are regularly accessible and affordable for a person or family's purchase and consumption. Community food security is the condition which exists when all of the members of a community have access, in close proximity, to adequate amounts of nutritious, culturally appropriate food at all times, from sources that are environmentally sound and just.

Equity is achieved when identity, such as race, ethnicity, gender, age, disability or sexual orientation, has no detrimental effect on the distribution of resources, opportunities and outcomes for group members in a society.

Food Equity is the equal access to affordable, healthy, and nutritious foods regardless of an individual's identity, such as race, ethnicity, gender, age, disability or sexual orientation.

Executive Summary

There are substantial disparities in one's ability to access healthy, affordable foods both nationally and locally. Race and income are two of the strongest predictors of one's ability to access food and achieve food security.

In Charlottesville, Virginia, roughly 1 in 6 residents are food insecure. The City's local food system fails to serve the needs of all residents. Studies suggest that food insecurity can be exacerbated by other systematic problems, such as inadequate public transportation and insufficient affordable housing. A food equity lens is a tool that can be utilized to identify structural barriers in accessing healthy, affordable foods. With a food equity lens in mind, the Charlottesville community identified five action areas that influence access to healthy, affordable food in the City. These areas include transportation, urban agriculture, affordable housing, healthy school foods, and neighborhood food access.

Despite the community's best efforts to advance food systems policy, the City has failed to adopt a food action plan or food equity policies. It is imperative for the City to adopt a plan and policies in order to address the overt problem of food insecurity and the underlying problems of other systems that lead to disparities in access to food. The Charlottesville Food Justice Network (CFJN) of Cultivate Charlottesville is uniquely poised to influence the City's work thanks to a history of collaborative work and strong working relationships. CFJN can leverage its community and governmental ties in order to advocate for an improved food system. Specifically, CFJN can engage in the following advocacy strategies:

- Advise the City to develop a food impact analysis in regards to its transportation infrastructure, existing bus routes, and future bus routes.

- Urge the City to develop healthy food financing plans to act on its expressed commitments to connect residents in affordable housing with healthy, affordable food outlets.

- Advise the City to make more land available for urban gardens and agriculture by connecting residents to resources and exploring zoning changes.

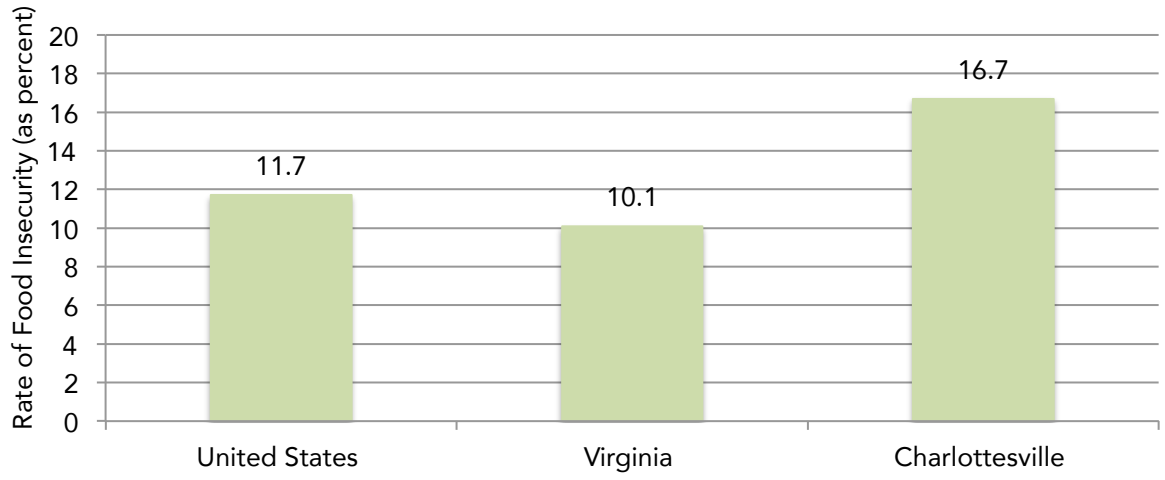
This report recommends that CFJN advocate for all three options over a prolonged period of time given the time and resource constraints of the COVID-19 crisis.

Introduction

Problem Statement: Charlottesville, Virginia faces a challenge in ensuring that all residents are able to access healthy and affordable food. About **1 in 6 Charlottesville residents are food insecure** (Map the Meal Gap, 2017).

Food insecurity is a measure of the availability of food and an individual's ability to access it. Among Charlottesville residents, certain individuals face greater challenges to accessing healthy, affordable foods. Nationally, Black, non-Hispanic households experience food insecurity at about twice the average rate of all households (Coleman-Jensen et al., 2018). This disparity holds true in the Charlottesville region. Residents of color and low-income residents are more likely to be food insecure. This is due in large part to the influence of other systemic barriers. These include disparities in transportation, housing, education, urban agriculture, and neighborhood food access. As Figure 1 shows, given the national food insecurity rate of 11.7% and Virginia's rate of 10.1%, Charlottesville's rate of 16.7% is exceptionally high (USDA, 2019).

FIGURE 1: Prevalence of Household Food Insecurity by Region (2018)



(USDA, 2019)

The food system describes the set of activities that occur between food manufacturing and food consumption. These activities include processing, distribution and access, consumption, and waste management. The food system includes all of the associated supporting and regulatory institutions and activities involved in this set of activities. The

food system can be specific to a region. A local food system is one that is rich with local food suppliers and consumers. In a local food system, healthy food is available and accessible for all community members; there is a strong network of successful and culturally appropriate businesses that produce, process, cook, transport, and sell that food; there are opportunities to produce food locally; and food waste is prevented.

Charlottesville has a local food system; however, it does not serve the needs of all community member, leaving 1 in 6 people food insecure. Food insecurity, a measure of the availability of food and an individual's ability to access it, is an indicator of a failing local food system.

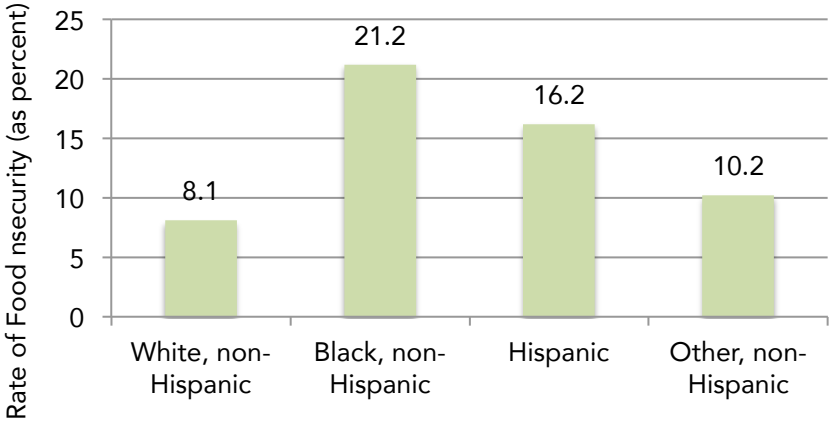
ADDRESSING FOOD INSECURITY IN THE COMPREHENSIVE PLAN:

As part of its next Comprehensive Plan, the City of Charlottesville is planning to include information on the local food systems. A comprehensive plan conveys a community's shared vision on how it plans to grow and develop in the years ahead. Comprehensive plans most often propose non-binding land use and zoning policies that will improve the livelihoods of the local population. Charlottesville residents, local experts, and public officials have expressed interest in including a food systems chapter in the City's next Comprehensive Plan or a food systems action plan alongside the Comprehensive Plan. This report integrates the content of the proposed food systems chapter in the section Review of Best Practices in Food System Planning. It suggests policies related to land use that aim to improve accessibility to healthy, affordable foods, especially for historically marginalized groups in the community.

ADDRESSING FOOD INSECURITY WITH AN EQUITY LENS:

Food equity describes the equal access to culturally acceptable, nutritionally adequate, and affordable food **regardless of an individual's demographic background.** Across the United States, 21.2% of Black, non-Hispanic households faced food

FIGURE 2: Prevalence of Household Food Insecurity by Race/Ethnicity in the U.S (2018)



(Coleman-Jensen et al., 2018)

insecurity in 2018, whereas only 8.1% of White, non-Hispanic households were food insecure (see Figure 2 below) (Coleman-Jensen et al., 2018). In Charlottesville, residents of color and low-income residents face historic and structural barriers that prevent them from accessing healthy, affordable food. It is important to approach food systems policy and planning in this region with an equity framework. This approach allows the historically marginalized communities that are more likely to experience food insecurity to meaningfully voice their needs, contribute to the policy-making process, and receive the benefits of an improved food system.

Client Profile: Charlottesville Food Justice Network

Charlottesville, Virginia is a promising city for food equity work due primarily to a strong network of nonprofit food justice organizations, as well as a willingness from the City to embed equity into its work.

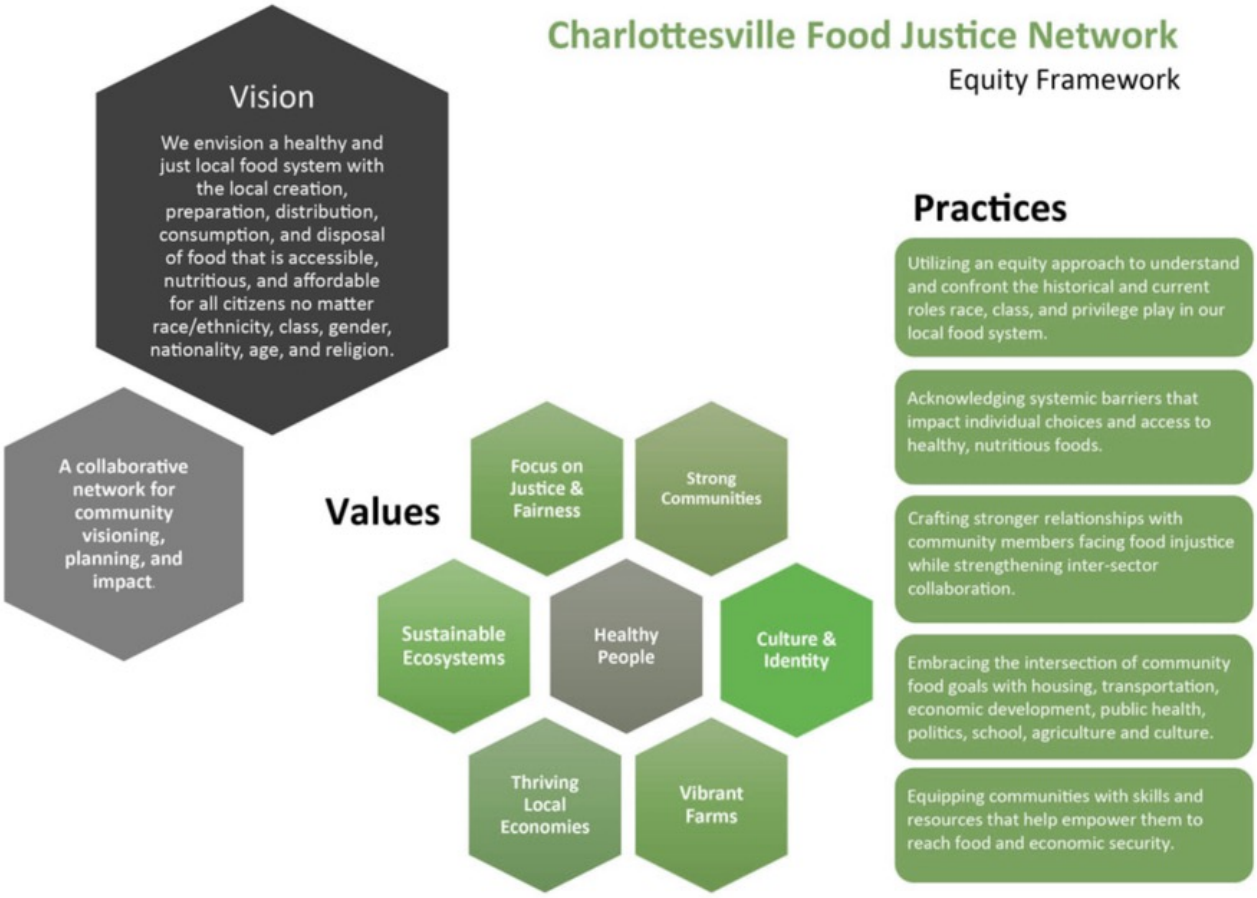
Cultivate Charlottesville is the umbrella organization that leads the nonprofit charge for food equity work in Charlottesville. It directs a network of over 30 nonprofit organizations called the Charlottesville Food Justice Network (CFJN). Many of the member organizations are shown below.

FIGURE 3: CFJN Member Organizations

CFJN uses its cumulative capacity to influence and advocate for policies on the district level that will improve the livelihoods and wellbeing of all Charlottesville residents. The network utilizes the resources and working knowledge of its member organizations to influence the City's food policy and build food equity initiatives across the City. Moreover, it encourages its members to develop and carry out individualized equity frameworks and practices in their own work.

CFJN embeds equity into its work using the Equity Framework (Figure 4 below). This framework was derived from the Whole Measures for Community Food Systems' values-based planning and evaluation framework. It establishes a **general vision** for the local food system, **guiding values**, and **relevant practices**.

FIGURE 4: CFJN Equity Framework



(Bingham, 2018)

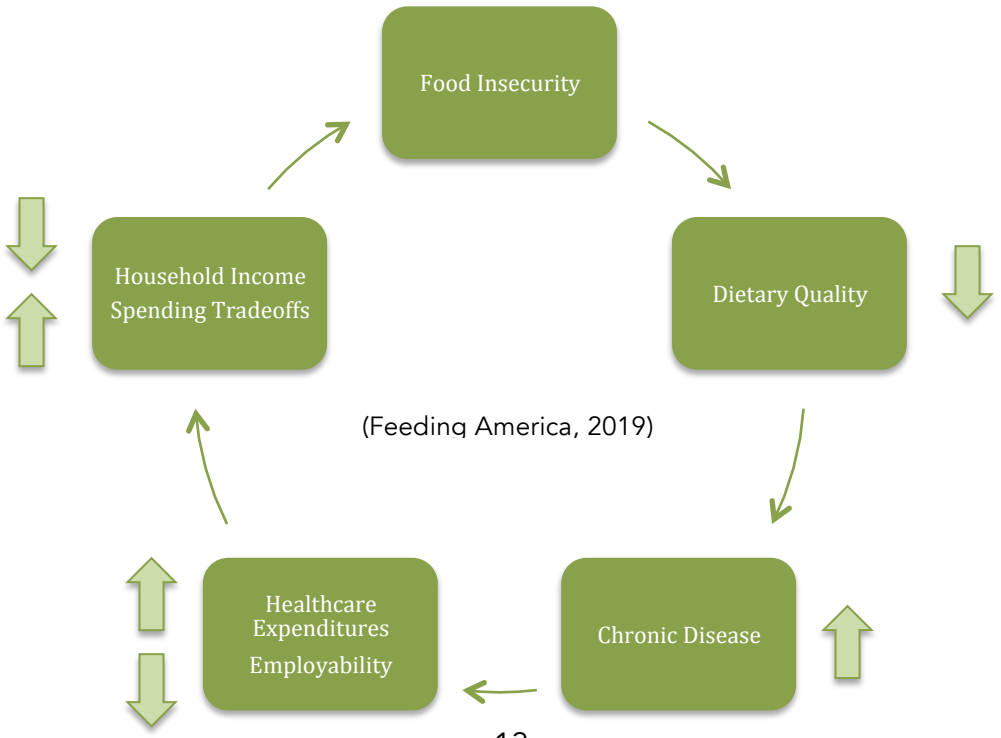
Background: Food Insecurity and Health Impacts

Roughly 40 million Americans struggle with food insecurity. Working families across the nation can slip into food insecurity due to job lay-offs or unexpected household expenses. Other families face persistent food insecurity because of high barriers to accessing healthy, affordable foods. These barriers include earning a limited income; living in neighborhoods that are isolated or distant from food markets; and, lacking reliable forms of transportation (Feeding America, 2019).

Regardless of the cause, food insecurity poses major societal implications. Most notably, it is closely tied to **health impacts**. It leads to nutrient deficiencies and dietary compromise, which increases the risk of developing chronic disease, such as Type 2 diabetes, high blood pressure, heart disease, and obesity. It is also associated with a higher risk of developing depression and anxiety. Food insecurity poses particularly high risks for children. Children that face food insecurity are more likely to develop mental health disorders, diabetes and heart disease, asthma, and both cognitive and non-cognitive disorders that impact school performance.

Individuals that are food insecure often fall into a self-perpetuating cycle of poor health and loss of opportunities, as outlined below. (Lee et al, 2012; Gundersen and Ziliak, 2015; Feeding America, 2019)

FIGURE 5: Cycle of Food Insecurity and Chronic Disease



(Feeding America, 2019)

Food insecurity leads to a nationwide burden of higher **healthcare costs**. Studies indicate that healthcare costs are on average higher for individuals that face food insecurity in the United States (Basu et al., 2018; Berkowitz, 2019). One 2019 study found that adults who were food insecure had annual healthcare expenditures that were $1,834 higher than adults who were food secure (Berkowitz et al., 2019). Accounting for all adults that are food insecure in the United States brings the **total healthcare costs of food insecure adults to a conservative estimate of $51.8 billion**. Though costs vary widely from state to state and county to county, the collective healthcare costs place a large burden on the United States' healthcare system and economy. Local and state level policies can have a major impact on the number of individuals that are food insecure and the consequent healthcare costs.

State of the Problem: Food Insecurity and Food Inequity in Charlottesville

1 in 6
residents are food insecure in Charlottesville.

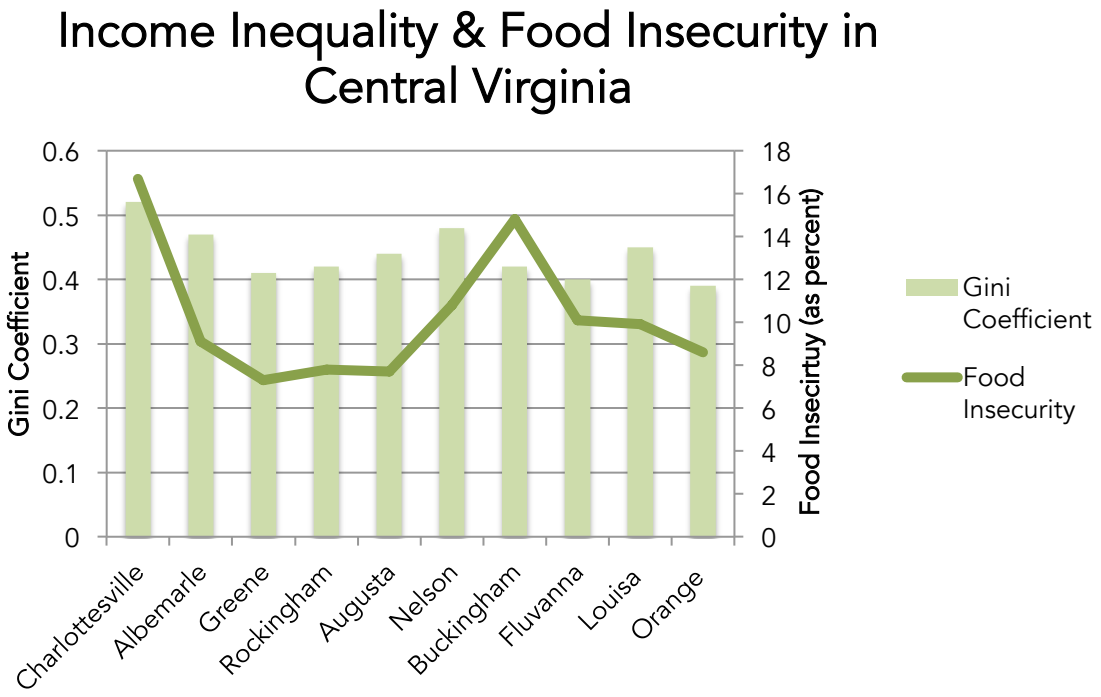
About 16.7% of Charlottesville residents face food insecurity. Though any individual can become food insecure, certain groups are more likely to face food insecurity. Notably, communities of color and low-income communities are disproportionately affected by food insecurity and its health effects. Food insecurity is both **a racial equity and income inequality** issue (USDA, 2018; Hilmers et al., 2012).

1 in 5
Black, non-Hispanic households are food insecure in the U.S.

1 in 3
low-income households are food insecure in the U.S.

Residents that struggle to access healthy, affordable foods largely come from households that struggle to make ends meet. Among the group that faces food insecurity in Charlottesville, 64% of individuals earn an income that is less than 130% of the Federal poverty line (Map the Meal Gap, 2017). This level of income means that these families are forced to make tradeoffs on what they can spend money on, with housing and living costs often taking priority over healthy foods. Nationally, 35.3% of households with incomes below the Federal poverty line were food insecure (USDA, 2018).

Income inequality in Charlottesville further supports the relationship between food insecurity, communities of color, and low-income communities. The Gini coefficient, a measure of income inequality, is .52 in Charlottesville, considerably higher than all surrounding counties (see Figure 6 below), the state average of .48, and the United States' average of .49. This suggests a particularly acute state of local income inequality.[1] The breakdown of income by race suggests greater inequality. The median income for White residents in Charlottesville is $60,100, whereas for Black residents it is $26,600. Non-White residents in Charlottesville are more likely to receive a lower income than White residents and experience food insecurity than White residents. (Data USA, 2019; Statistical Atlas, 2020).



[1] The closer the Gini coefficient is to 1.0, the greater the income inequality in the region.

Planning for a Just, Local Food System

Food systems planning can provide economic, environmental, and social benefits to the Charlottesville community. Policies that support a local food system can provide more local job opportunities and strengthen the resiliency of the local economy. Prioritizing local food production and access to locally produced foods can reduce the energy and resources needed to produce and distribute food, which in turn leads to fewer negative environmental impacts. Providing greater access and affordability of local foods in addition to educating the community on the local food system can increase social capital, improve sense of place and attachment to community, and offer opportunities for community leadership. Planning with an equity lens can ensure that community members that are otherwise detached from the policy-making and planning process have the opportunity to provide input and local expertise.

While municipalities across the country have adopted hundreds of distinct pieces of legislation and policies regarding food and agriculture, only a handful of municipalities have comprehensive food system action plans (refer to **Appendix A** for a sample list of food plans by locality). Most relevant to Charlottesville are the handful of municipalities that embed equity into their food systems planning. The three main takeaways of these plans are:

- The community must be an integral component in the **agenda setting** stage in order to make equity the center of food systems work. This includes creating **stakeholder committees and steering committees**.

- A **public-private partnership** between the City and local nonprofits maximizes the potential impact of equity planning in the food system. It provides the community with the greatest capacity to make change on all levels from the individual to the entire region.

- A food system plan that outlines goals/objectives and actionable items must be accompanied by **food equity policies from the City** to ensure that the goals are not just proposed, but that they are also implemented with regulations, ordinances, and departmental commitments.

FOOD SYSTEMS PLANNING IN CHARLOTTESVILLE

CFJN recognizes that food insecurity is not simply a product of circumstantial and temporary personal constraints. It is also due to structural forces that predispose certain individuals to higher barriers than others. However, there is insufficient data on the structures that predispose certain community members to higher rates of food insecurity. This is due to many factors, including the wide variance in local and state level policies and the lack of streamlined mechanisms for monitoring, tracking, and collecting data in this field.

To improve the state of Charlottesville's local food system, the City of Charlottesville initiated the **Charlottesville Food Equity Initiative (FEI)** in 2018 to collect input from diverse stakeholders throughout the community, including public officials, local food experts, and other community members. The purpose of this ongoing initiative is to build a healthy and just community food system for all Charlottesville residents through community driven processes, resident leadership, and business and non-profit engagement. In line with this initiative, CFJN has conducted extensive community outreach. The results of this outreach are five issue areas that community members have identified as the greatest structural elements that impact the food system and access to healthy, affordable foods. These issue areas include:

1.  **Transportation**
2.  **Urban Agriculture**
3.  **Affordable Housing**
4.  **Healthy School Foods**
5.  **Neighborhood Food Access**

The community generated a collective vision for how each of these issue areas could promote a just, local food system, as well as action items to achieve the vision, and metrics to gauge success.

Despite the City's effort to include the community in the agenda setting stage and the number of existing public-private partnerships, **there remains a lack of food equity policies on the City level**. The absence of these policies will allow the racial disparity in food insecurity to persist.

HOW DOES THIS REPORT FIT INTO CHARLOTTESVILLE'S FOOD SYSTEMS PLANNING?

This report builds on the work of the City's Food Equity Initiative and CFJN's work. It provides data on the local, regional, and national level that connects each issue area with food insecurity. This evidence shows that the food system is inequitable and fails to provide equal access to healthy, affordable foods for all Charlottesville residents. The report offers best practices in local food systems planning across the nation, categorized via the five issue areas that the Charlottesville community generated. Based on the current state of the local food system and a survey of best practices, it suggests specific policies developed from the survey of best practices that satisfy at least one of the five issue areas if not more.

LIMITATIONS OF FOOD SYSTEMS PLANNING

A notable limitation is the general lack of evidence in food systems planning. Efforts to improve food insecurity with a focus on equity have largely emerged only in the last decade. Therefore, existing evidence is currently insufficient. When evidence is available, it is difficult, if not impossible, to connect it to a discrete food policy or program. This report presents evidence when available; however, this evidence is often limited in its generalizability.

It is important to note that this report's proposed policies are by no means comprehensive. The primary goal in this report is to demonstrate examples of specific policies related to the local food system that follow logically from the express needs of the community. These policies complement the proposed food systems chapter for the City's next Comprehensive Plan. They will be most effective at reducing food insecurity if adopted in unison with an entire food systems chapter or action plan. Continued community engagement and public-private partnership is important to guarantee success.

Review of Best Practices in Local Food Systems Planning

This section provides a review of the food systems planning literature. It is structured around Charlottesville's five community-generated issue areas. Each section includes a vision that the Charlottesville community has developed, offers pertinent local and national statistics, outlines best practices from existing local food systems planning from across the country, and notes impacts when data is available.

Issue Area 1: Transportation

Transportation is a key element to ensure access to food. Residents that do not have access to a personal automobile must rely on other means of transportation to access food, such as Charlottesville's public transportation system. Studies suggest that households that do not have access to a personal automobile face higher rates of food insecurity. However, those households that do not have an automobile but have access to a robust and reliable public transportation system are associated with lower rates of food insecurity (Baek, 2016).

Community vision:

Designing a transportation system that provides safe, diverse and reliable travel options to emergency and regular food markets and health and nutritional services for low-wealth residents, the elderly and disabled.

According to Charlottesville's 2018 Comprehensive Plan community survey, many Charlottesville residents feel that the area's public transportation system does not service all residents and does not provide sufficient connection to food access points. The current state of the public transportation system makes it difficult for individuals to physically access healthy, affordable foods.

This is especially true for households of color and low-income households. In Charlottesville, households with salaries under $25,000 make up over 50% of public transportation ridership, whereas households that make over $100,000 are only 3% of ridership. Additionally, while only 18.3% of the City's residents are Black, 32% of the

area's public transportation riders are Black (Transit Development Plan, 2018). These residents are disproportionately affected by the state of the public transportation system and are more likely to face issues of food insecurity as a result.

BEST PRACTICES

1. The **Cass-Clay and Fargo Metropolitan Food Systems Plan Food Access Map** visually presents the region's food system in Ohio. Using mapping, this strategy highlights the ways in which the transportation system can better align itself with the food system to serve the food needs of the population. The Food Access Map includes variables such as vehicle access, public transit access, convenience stores, grocery stores, farmers markets, health food stores, ethnic grocery stores, environmental justice areas, and emerging food deserts. The desired outcomes include:

    - Increase access to locally grown/produced food for those with limited incomes who are currently facing mobility limitations.
    - Develop strategies to bring healthy and local food closer to those who currently do not have the opportunity to buy and eat it, specifically neighborhoods with higher concentrations of low-income and/ or minority populations.
    - Identify opportunities to locate community gardens, farmers markets, and other key components of the food infrastructure in established, walkable neighborhoods.
    - Support the development of a food system in the F-M Metropolitan area that is naturally entwined with the existing transportation network and increase the likelihood of residents making food related trips by public transit, walking, and biking.

2. The **Seattle Food Action Plan Strategy 1** calls on the city to promote the location of healthy food access points, such as grocery stores, healthy food retail, farmers markets, food gardens, and farms, within walking or bicycling distance from homes, work places, and other gathering places. This goal heavily involves the transportation system. It recommends integrating food access policies into the Comprehensive Plan, the Transportation Strategic Plan, Pedestrian and Bicycle Master Plans, the neighborhood planning process, and other relevant plans. It also recommends that officials include safe and convenient pedestrian, bicycle, and transit connections between residential neighborhoods and community gardens, food banks, grocery stores, and farmers markets as criteria in evaluating transportation projects.

IMPACTS

Evidence suggests that addressing transportation can lead to significant impacts on food insecurity and the strength of the local food system. A study using data from the Current Population Survey Food Security Supplement and the National Transit Database from 2006 to 2009 found that an extra bus-equivalent vehicle per 10,000 people decreases the probability of food insecurity of households by 1.6 percentage points (Baek, 2016). This relationship is stronger among low-income households and Black households.

FIGURE 7: One of Seattle's gardens is situated along a public transit line to provide easy access for residents.
Photo Credit: Trevor Dykstra (Lerman, 2012)

Case studies support this evidence. After Seattle enacted its Food Action Plan, it reported a range of improvements to the local food system. A few years following the release of its action plan, Seattle reported **65** farmers markets, grocery stores, and supermarkets participating in a fresh food financing program. Moreover, the action plan resulted in **53,737** purchases of fresh fruits and vegetables through a fresh food financing program in 2018; a **137%** increase from the prior year. It also reported that more people were accessed food: **5418** children and seniors served healthy, local, and organic produce through the farm to table program. In addition, the City's plan opened up more room for regional gardening practices with **37** acres of publicly available urban farms and **89** P-Patch community gardens, which offer community members of all ages the opportunity to grow food, eat healthy food, restore and protect habitats, and feed the larger community (Seattle Office of Sustainability and Environment, 2018).

Issue Area 2: Urban Agriculture

Dedicating land for urban agriculture can ensure that neighborhoods throughout Charlottesville are connected to green space and fresh foods. Studies suggest that an increase in land dedicated to urban agriculture can decrease rates of food insecurity. In 2019, the Urban Agriculture Collective of Charlottesville (UACC) managed 32,000 square feet of gardens in neighborhoods throughout the community. Additionally, City Schoolyard Garden (CSG) operates school gardens at eight of the area's schools.

Community vision:

Cultivating food equity through urban agricultural spaces continues a long Charlottesville tradition of building food security by low-wealth residents working together. Promoting and preserving permanent land for this green infrastructure is critical.

Though Charlottesville has existing urban agriculture plots, the community has expressed demand for increased land for urban agriculture. This land offers the opportunity for community members to grow fresh, local food and develop gardening skills and knowledge regarding nutritious food consumption.

BEST PRACTICES

1. The City of Detroit's **Creating a Food Secure Detroit** prioritizes urban agriculture in its food systems planning. The plan outlines a number of positive outcomes that urban agriculture can provide. For example, it:

    - Connects residents to the source of their food.
    - Empowers individuals and groups to take action toward their own food security.
    - Builds safer and more connected communities.
    - Offers economic opportunity.

2. In its **Greater Philadelphia Food Systems Plan**, Philadelphia takes Detroit's strategies a step further by considering strategic investment in urban agriculture. The plan calls for city officials to develop standards and guidelines for community gardens and urban agriculture sites on public lands to ensure transparency, continuity of use, and community benefit. It also calls on planners to consider local food consumption. It recommends an increase in local food production through zoning designations that permit urban agriculture as-of right in strategic locations.

3. The **Central Ohio Food Assessment and Plan** calls on city officials to establish best practices in planning and zoning standards to promote the local food system. These standards should preserve farmland, encourage local food production in urban and suburban areas, and fix land-subdivision regulations to preserve farmland and encourage local food production.

IMPACTS

There is a lack of evidence base for the impact of urban agriculture on food insecurity. Systematic reviews have failed to generate reliable data on the scale and impact of urban agriculture strategies (Berti et al., 2004; Stewart et al., 2013; Seigner et al., 2018). Nonetheless, there has been an abundance of case studies to demonstrate that urban agriculture brings substantial benefits to the communities it serves. These benefits are not limited to improved nutrient intake; they also include improved social wellbeing and greater community strength. Detroit's emphasis on urban agriculture in its food action plan resulted in many benefits to the community. For example, there are now **440** community gardens, **15** farmers markets and farm stands, **85,000** school meals served each day, and a persistent effort to ensure that the local food system is providing for Detroit's residents **(**Detroit Food Policy Council, 2018**).**

FIGURE 8: Garden rows at Mill Creek Farm – a farm dedicated to bringing food security to an urban neighborhood in Philadelphia, PA (DVRPC, 2011).

Issue Area 3: Affordable Housing

Charlottesville faces a challenge in providing a sufficient amount of affordable housing units. About 43% of Charlottesville homes are owner-occupied. Renters occupy the other 57% of Charlottesville's housing supply. Roughly 7400 of Charlottesville's renters (or 27%) are either cost burdened or severely cost burdened (CVRHP, 2019).[2] Cost burdened households are much more likely to experience food insecurity. Across all U.S. counties, a 10% increase in the share of households that are extremely cost-burdened is correlated with 86,000 more food insecure people (CHR&R, 2019). In Charlottesville, some neighborhoods face much higher isolated rates of cost-burdened homes. For example, the rate for cost-burdened homes in the historically African American neighborhood of 10th and Page is at least 57% (PolicyMap, 2019)

Community vision:

Housing cost is a core financial burden impacting food choices at the cash register. Strategically supporting organizations and businesses developing affordable housing in collaboration with affordable food markets or nutrition and health services to ensure low-wealth residents have livable housing and health opportunity.

Both public officials and residents in Charlottesville acknowledge the problem of housing affordability in the area. However, less attention has been placed on the connection of affordable housing and food insecurity. Affordable housing investments that explicitly prioritize access to healthy, affordable foods can act to increase food access and decrease rates of food insecurity for the most cost-burdened households in Charlottesville.

[2] Cost burdened describes those who spend 30% or more of their salary on housing. Severely cost burdened describes those who spend 50% or more of their salary on housing.

BEST PRACTICES

1. **Vermont's Northeast Kingdom Food Systems Plan** emphasizes the importance of providing quality, affordable housing to decrease rates of food insecurity. It reports metrics that demonstrate not only the state of the regional housing market, but also the number of households that struggle to meet basic needs. Therefore, the plan recommends closing the affordability gap so that even those residents that face systematic neglect have the means to purchase healthy foods. Some measures to close the affordability gap include: cost of wages relative to the cost of food, decision-making on a limited budget, understanding how local dollars are re-circulated into a community ("multiplier effect"), and cost of product quality and smaller scale production.

IMPACTS

A great deal of evidence suggests that housing plays a large role on food security (Kirkpatrick, Tarasuk, 2011). Families that live in affordable housing or subsidized housing have a lower income on average than families not living in affordable or subsidized housing (Office of Nutrition Policy and Promotion, Health Canada, 2007). Food insecure families also have a lower income on average than food secure families (Wight et al., 2014). These two issues become compounding when a family has an income that cannot support their housing or food needs. For many low-income families, compromises in housing quality are concomitant with food insecurity. That being said, evidence suggests that addressing issues of housing affordability can lead to improvement in food insecurity. Programs that provide access to quality housing are positively associated with increases in food security (Burrowes, 2019).

FIGURE 9: Residents gardening at Highgate Apartments in Barre, VT (Meisenheimer, 2015).

Issue Area 4: Healthy School Food

About 54% of Charlottesville public school students are African American. However, African American residents only make up 18.2% of the total population. Families that have a higher average income often elect to send their children to private schools in the area. Students in Charlottesville's public school system are more likely to come from households that struggle with food insecurity. In the majority nonwhite public schools, 55% of students are eligible to receive free and reduced price meals (Bingham, 2018). These students come from households that earn an income that necessitates financial support to ensure a reliable supply of meals throughout the week.

Community vision:

The majority of students at Charlottesville public schools are at risk of food insecurity. Transforming the school food system to provide, fresh, healthy, appealing meals will build equity, create a foundation for academic success, and cultivate long -term health for our youth.

Access to healthy, affordable foods is important for the wellbeing of all individuals, especially children. Though there is room for improvement, this issue area poses the smallest challenge. City Schoolyard Garden (CSG) is dedicated to providing comprehensive programs that ensure access to healthy school foods using an explicit racial equity framework. The City could benefit from adopting practices from CSG and school food plans in other localities.

BEST PRACTICES

1. The **Greater Philadelphia's Food System Plan** has two policy areas that relate to healthy school foods. The Healthy Food Awareness and Access recommendation calls on city officials to promote the use of new technology and community-based communication outlets by all partners—government, private sector, and nonprofits—to educate people about healthy food. The School System Solutions recommends that city officials integrate all aspects of Farm to School programs into a robust and comprehensive education program. These two recommendations aim to make healthy foods the default option in Philadelphia schools for all students.

The **Pioneer Valley Food Security Plan** presents various subgoals under its two main goals: no one goes hungry, and we grow our own food. The plan's second subgoal is to expand consumer outreach, education and advocacy to enhance the use of healthy, local and culturally appropriate food. The plan uses Supplemental Nutrition Assistance Program (SNAP) rates as well as the U.S. Department of Agriculture's Women, Infants, and Children Program (WIC) to gauge if children are able to access healthy foods inside and outside of school.

IMPACTS

Providing healthy school foods is proven to increase access to food and decrease rates of food insecurity. On the national level, a USDA report on the National School Lunch Program, Summer Food Service Program, and Child and Adult Care Food Program found that the programs were associated with significantly lower rates of food insecurity for households with children, after accounting for assistance program eligibility and increased likelihood of food insecurity among low-income households (Ralston, 2019). In communities across the world, school food programs have been shown to decrease rates of household food insecurity (Petralias et al., 2016).

"Students rely on school meals as their best source of nutritious food."

- Tom Vilsack, former United States Secretary of Agriculture

FIGURE 10: Burnley-Moran Elementary School provides students in Charlottesville, Virginia with interactive gardens where students can learn gardening and outdoors skills and try new foods (CSG, 2018).

Issue Area 5: Neighborhood Food Access

Charlottesville residents face unequal opportunities in accessing food. A critical element to food access is the presence of food markets that meet the needs of the community. Historically, Charlottesville's residents of color have faced structural discrimination that destroyed both their homes and their local markets and businesses. In the first half of the 20th century, Charlottesville's Vinegar Hill neighborhood was a hub for African American business and homeownership with over 600 residents, 29 businesses, and four grocery stores. Despite its success, the City deemed it a "country-style slum" and raised the entire neighborhood, forcing residents into public housing. This act is representative of the City's efforts to erase the livelihoods of non-White residents and destroy their markets. It is critical for the City to redress its practices of discrimination. One critical strategy is providing affordable food markets for these communities.

Community vision:

Aligning efforts to increase affordable living for low-wealth residents is enhanced by strategically supporting organizations, businesses and city departments working to build affordable and innovative food markets in neighborhoods with low-access.

BEST PRACTICES

1. The City of Portland's **Portland Plan Progress Report** supports neighborhood food access with various initiatives. One goal in particular looks at the supply end of food access. It calls on city officials to retain and recruit grocery stores and other sources of health food (e.g. farmers markets and small market farms) as key components of neighborhood centers. It also recommends that officials expand the existing Healthy Retail Initiative to support and encourage owners of existing small markets and convenience stores to provide healthy, affordable and culturally relevant food, especially in underserved neighborhoods.

2. **Chicago's A Recipe For Healthy Places** examines food access not just in terms of food deserts. It proposes finance solutions that will enable all members of the community to consistently access and consume healthy foods, regardless of incomes. Specifically, it sets the four goals: set high nutrition standards for programs that provide supplemental food and serve meals to persons in need, expand the use of financial assistance cards and incentive programs at retail outlets, coordinate and expand food rescue and distribution networks to provide more high-quality food to more people, and connect more residents in need with food assistance programs.

IMPACTS

Food access is one of the main components to ensure food security. Studies suggest that improving food access through strategies like food assistance programs and green infrastructure can lead to lower rates of food insecurity. A 2014 study of 11,000 Philadelphia residents found a statistically significant negative association between neighborhood food access and food insecurity (Mayor et al., 2014). This study took into account variables such as individuals on food assistance programs and those that lived near or interacted with community gardens. Case studies show that planning for neighborhood food access has many impacts that relate to food insecurity. Portland officials have observed many improvements to the local food system due to food action plan and prioritizing food access. These impacts include **24** farmers markets, **70** Community-Supported Agricultural farms, **22** neighborhood store owners supported by a healthy food financing program, **50** community gardens on public and private properties, and **220** community garden plots on public and private properties (City of Portland, 2017).

FIGURE 11: One of Philadelphia's street markets offering fresh fruits and vegetables (DVRPC, 2011)

FIGURE 12: Local markets in Chicago provide access to fresh, affordable foods throughout the City. (City of Chicago, 2013).

Criteria

This report presents three policy alternatives that complement a food systems chapter and evaluates each against/using the following set of criteria. The aim is not to recommend one alternative and eliminate the other two alternatives, but instead, to illuminate the strengths of each policy alternative. The three policy options are recommended in a series in order to achieve the greatest impact.

Because the alternatives focus on advocacy strategies for CFJN to engage in, the criteria are weighted most heavily towards administrative capacity and political feasibility. These two criteria will consider the time and resources necessary for each policy option to be carried out by both CFJN and the City. The results of this weighting scheme will inform the order in which the options should be adopted.

ADMINISTRATIVE CAPACITY refers to Cultivate Charlottesville and CFJN's capability to adopt each policy alternative.

- Administrative capacity is measured qualitatively on a scale of 'Low', 'Medium', or 'High.'
- An option that scores highly on administrative capacity will be one that requires the least amount of time, resources, staff capacity, and new public-private partnerships necessary to implement the alternative.
- **Weighted at 20%.**

POLITICAL FEASIBILITY refers to the likelihood that local public officials will accept the policy alternative.

- Political feasibility is measured qualitatively on a scale of 'Low', 'Medium', or 'High.'
- A highly politically feasible option will be on that aligns with the express priorities stated in the City's Food Equity Initiative and commitments stated in the planning process for the next Comprehensive Plan.
- **Weighted at 20%.**

EQUITY aims to maximum benefits to communities that have been historically underserved. It will evaluate equity of process (procedural justice) and equity of outcomes (distributive justice) that each policy alternative carries.

- Each form of equity is measured qualitatively using a scale of 'Low', 'Medium', or 'High'.
- A highly equitable alternative will be one whose chief purpose is to serve low-income residents and residents of color and meaningfully engages these individuals in the design and implementation of the alternative.
- **Weighted at 20% (10% for equity in process; 10% for equity in outcomes).**

SUSTAINABILITY will measure the impact of each alternative on the environment and communities that they intend to serve.

- Sustainability is measured qualitatively using a scale of 'Low', 'Medium', or 'High' for both environmental sustainability and social sustainability.
- A highly sustainable alternative will encourage locally sourced foods and promote community empowerment and self-reliance.
- **Weighted at 15%.**

EFFECTIVENESS refers to each policy alternative's ability to decrease the number of food insecure households.

- Effectiveness is measured qualitatively using a scale of 'Low', 'Medium', or 'High.'
- These ranking will be determined by quantitative measures of the estimated number of households that stand to benefit from each policy alternative. These predictions will be gathered using data from similar policies in other settings.
- Effectiveness will be gauged not simply by the number of households that become food secure. It can be very difficult to measure the discrete impacts of a program on food security. **Appendix B** provides a concept map with factors like availability, access, and use, which will be used to measure effectiveness in regards to security.
- The most effective policy will be the one leads to the greatest potential increase in number of food secure households.
- **Weighted at 15%.**

COST will measure the cost to the City of each alternative to provide healthy, affordable food access to additional Charlottesville households.

- Cost is measured quantitatively using the estimated implementation costs gathered from other localities.
- The lowest cost policy option will be the one with the lowest projected costs.
- **Weighted at 10%.**

Alternatives

The following policy alternatives aim to achieve two goals. First, each alternative strives to reduce the prevalence of food insecurity in the City of Charlottesville. Second, each alternative includes an equitable policymaking process that will redress the systems of inequities that have led to the racial and economic disparities in rates of food insecurity. These three alternatives are inspired by policies adopted by other localities. It is important to note that none of these alternatives can address food insecurity and food inequity alone. Instead, this report recommends that these three policies all be adopted, in addition to a food systems chapter in the Comprehensive Plan. However, each of these options requires time and resources. The analysis will guide the order in which the options should be implemented.

Option 1:	Advise the City to develop a food impact analysis in regards to its transportation infrastructure, existing bus routes, and future bus routes.
Option 2:	Urge the City to develop healthy food financing plans to act on its expressed commitments to connect residents in affordable housing with healthy, affordable food outlets.
Option 3:	Advise the City to make more land available for urban gardens and agriculture, particularly in low-income areas.

OPTION 1: Advise the City to develop a food impact analysis in regards to its transportation infrastructure, existing bus routes, and future bus routes.

This option recommends that the City adopt a food impact analysis. A food impact analysis aims to provide low-income communities with more options to access affordable food outlets via public transportation. A food impact analysis will require that planners and policymakers consider the location of food outlets when planning transportation infrastructure and bus routes. In unison with private actors, City planners have the opportunity to improve access to healthy, affordable foods. A food impact analysis will require three steps:

1. Map the existing local food environment. Identify low-income areas, minority areas, food outlets, and existing bus routes.

2. Plan for at least one bus route dedicated to connecting low-income areas to food outlets.

3. Require that future bus routes and bus modifications promote access to food outlets using the food environment map generated in Step 1.

A 2015 USDA study on Food Choices and Store Proximity suggests that there is only a modest negative effect of living in a low-income household with low access to food on the amount of healthy food consumed. However, low-income households with low access to food almost always traveled greater than one mile to purchase foods from the grocery store. Being low-income is a stronger predictor of purchasing unhealthy foods than living in low-access areas (Rahkovsky, Snyder, 2015). Many studies support the theory that supermarket proximity alone does not adequately capture the likelihood of accessing and consuming healthy food (Chan, 2019). Instead, we must consider the entire food environment surrounding low-income households (Ver Ploeg et al., 2015). In Charlottesville, a crucial element of the food environment for low-income communities is the existing public transportation infrastructure.

Step 1: Mapping the Food Environment

Many localities have successfully employed mapping as a tool to connect the region's transportation system with the food environment. A map of the local food environment would overlay certain variables such as neighborhood income, demographic makeup, transportation access, and food retail points.

1. The **Cass-Clay and Fargo Metropolitan Food Systems Plan Food Access Map** sets a precedent in mapping the region's food system. It includes two maps. Both maps indicate minority areas, low-income areas, and emerging areas of low-access to food (note: labeled as "emerging food desert" areas, a socially problematic label name). The first map includes the variable of percentage of households with vehicle access, as well as points indicating grocery stores, ethnic grocery stores, health food stores, and convenience stores. The second map includes variables of private and public gardens, school gardens, and farmers markets. Though quite robust, these maps lack an overlay of the existing public transportation routes. If they were overlaid with bus routes, they would act as strong tools to identify the physical points in which the local transportation system could better align itself with food outlets to serve the food needs of the population.

FIGURE 13: The Case-Clay Fargo Plan Maps the Region's Food Environment Pt. 1

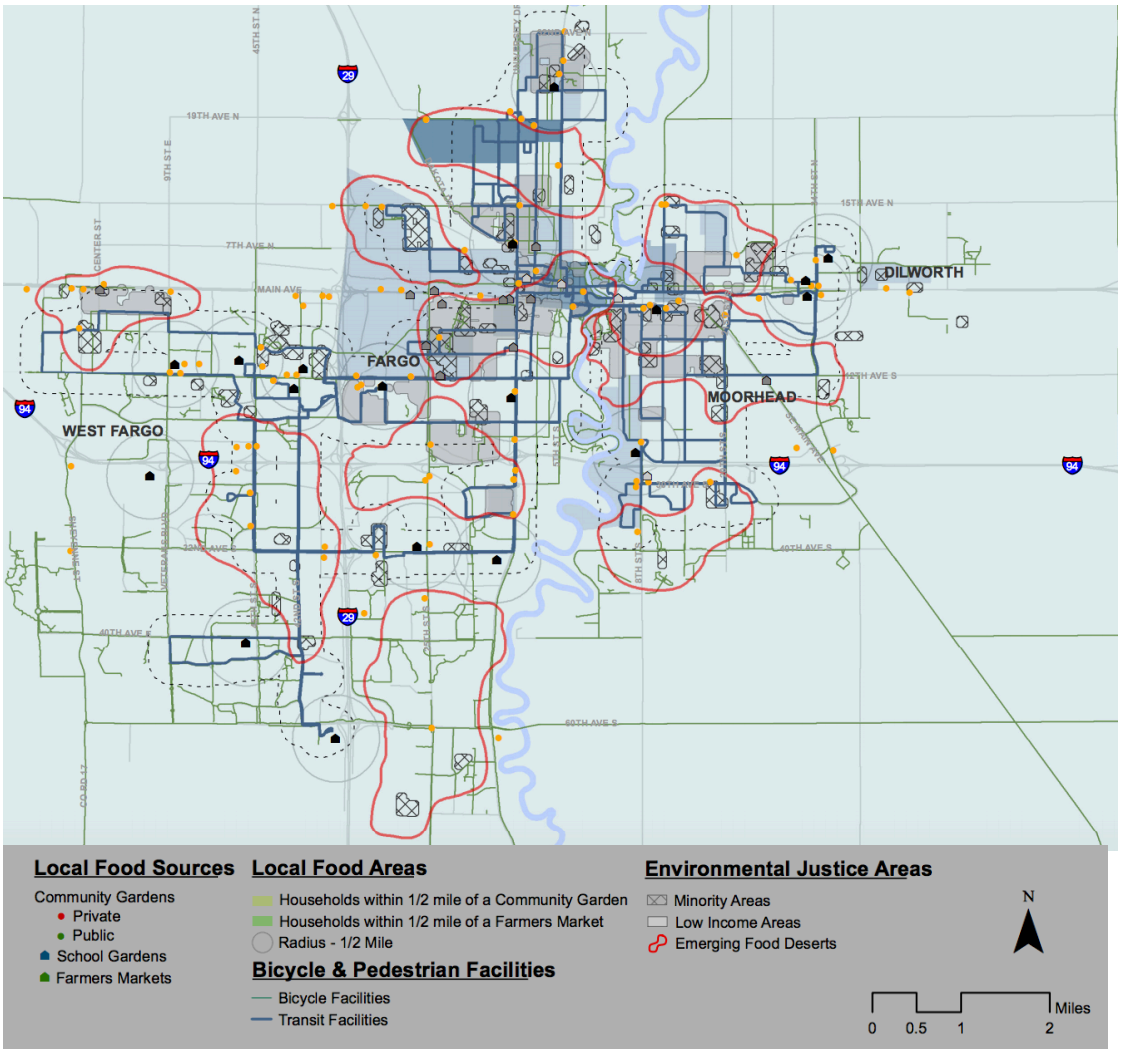
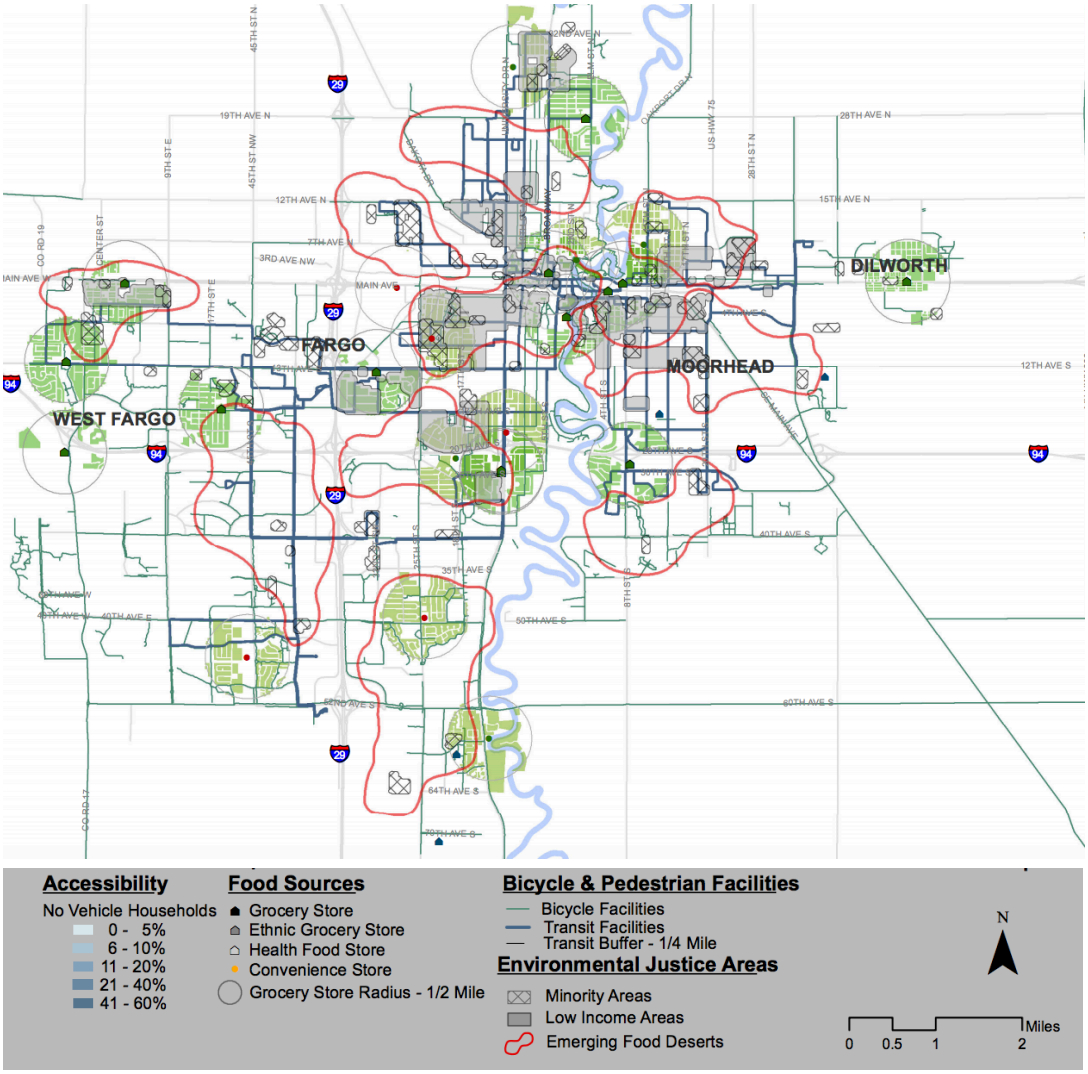


FIGURE 14: The Case-Clay Fargo Plan Maps the Region's Food Environment Pt. 2[3]



The most useful map for the community will be one that is developed with input from Charlottesville community members. This could be done using a tool called **participatory asset mapping.** Asset mapping provides information about the strengths and resources of a community and can uncover solutions using geographic relationships. Community members collectively identify and provide information about their own community's assets, and label these assets physically on a map. In this case, community members would be advised to reflect on the food assets in their daily lives. Once community strengths and resources are inventoried and depicted on a map,

[3] Note: these maps include problematic labels, such as "food desert" and "ethnic grocery stores." Charlottesville has the opportunity to amend these labels in its own food maps.

decision-makers can more easily think about how to build on these assets to address community needs (Lightfoot et al., 2014).

The Charlottesville community has already participated in at least one asset mapping exercise during the Local Foods Local Places (LFLP) federal assistance program (FEI, 2019). Charlottesville City planners can use this exercise as a model to conduct asset mapping in the community. These insights can then be incorporated onto the food environment maps described above. **Appendix C** provides the Local Foods Local Places map; North Carolina's process of food systems asset mapping; and a toolkit that CFJN and/or City planners can use to conduct further participatory asset mapping in relation to the Charlottesville food system.

Steps 2 & 3: Integrating Transit and Food

Since low-income communities are more likely to rely on public transportation to access food, it is important to prioritize a bus route that will connect these communities directly to food outlets and plan for future routes with the food environment in mind. In the last few decades, various cities have designed bus routes dedicated to connecting low-income communities directly to food outlets. Across the board, these bus routes have resulted in increased ridership and increased use for the purpose of accessing and purchasing food. Two prime examples include:

1. The City of Austin **East Austin Circulator "Grocery Bus" line** Capital Metro Route 208. This route began in 1996 in order to connect residents of East Austin, a historically low-income Latino area, to two major community grocery stores. Since its creation, the route has become one of the agency's most utilized ridership services. The route has evolved into Route 320: St. Johns and has grown to serve schools, healthcare facilities, libraries, museums, employment sites, housing developments, and other local destinations (Lentz and Patel, 2016).

2. The **Los Angeles DASH Downtown Route 2 and Route DD**. In 2007, the City's Department of Transportation modified two bus lines to expand service to South Park residents and gave customers direct access to Ralph's Fresh Fare Supermarket and other nearby stores. At its opening in 2007, Ralph's was the only local full-service supermarket serving residents in the downtown area (Gloria, 2007).

OPTION 2: Urge the City to develop healthy food financing plans to act on its expressed commitments to connect residents in affordable housing with healthy, affordable food outlets.

This option recommends that the City develop plans to invest in healthy food initiatives within close proximity to affordable housing properties. These initiatives require action from public officials in the economic development and housing fields. They entail three steps from the City:

1. Map existing food retail options within close proximity to affordable housing units throughout Charlottesville.

2. Identify affordable housing areas that are in need of local food retailers.

3. Provide incentives for food retailers to offer healthier and more affordable foods.

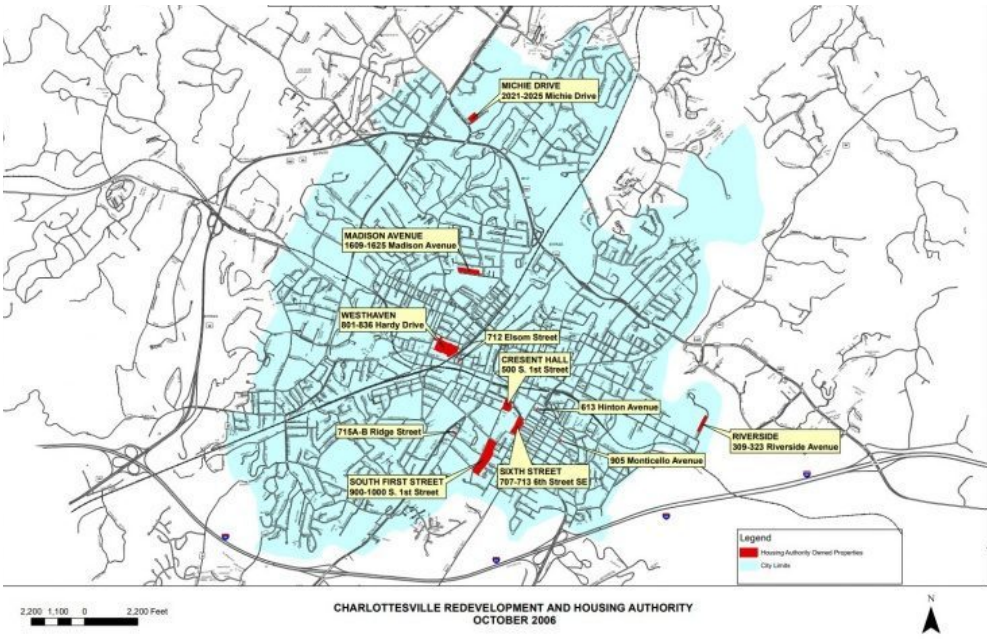
A 2014 Enterprise Community Efforts report suggests that housing can act as an especially promising platform to expand food access for low-income families (Charette et al., 2014). Low-income individuals that live in affordable or subsidized housing are less likely to experience food insecurity than low-income individuals who do not live in affordable or subsidized housing (Kirkpatrick and Tarasuk, 2011;). That being said, individuals that live in affordable or subsidized housing still struggle to access healthy, affordable food (Fafard St-Germain, Tarasuk, 2017). In response to this challenge, cities can invest in plans that connect residents in affordable housing units with healthy, affordable food outlets, such as grocery stores or community gardens.

Steps 1 & 2: Mapping and Identifying Opportunity Areas

The City has expressed a clear commitment to pair opportunities for healthy, affordable food with housing development in its (draft) Housing Chapter of the Comprehensive Plan (refer to **Appendix D**). This policy option identifies two opportunities in which the City can develop concrete plans to uphold this commitment:

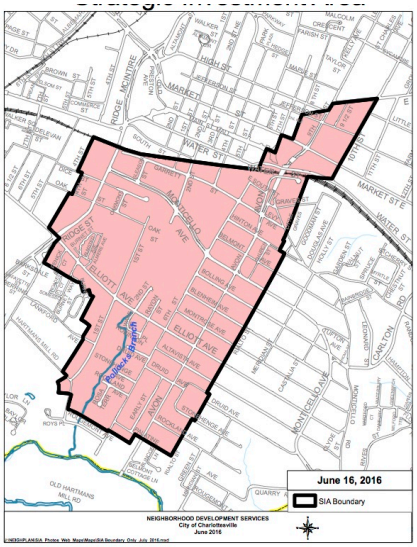
1. The Charlottesville Redevelopment and Housing Authority (CRHA), a quasi-governmental agency, owns and manages 376 units of public housing in seven locations throughout the City (CRHA, 2019). In 2018, CRHA proposed a three-stage redevelopment plan to update many of these aging properties and add additional housing units (Stout, 2018). Six of these properties are located either within, directly adjacent to, or very close to mixed-use land. Each of these locations has the potential to be served by healthy, affordable food outlets within close proximity to the housing units.

FIGURE 15: CRHA Has Seven Public Housing Properties Across the City



2. Beginning in 2013, the City considered an area of Charlottesville with the potential for major growth. The Strategic Investment Area (SIA) is an approximately 330-acre area south and east of downtown, including portions of the Ridge Street, Belmont Carlton, North Downtown, Martha Jefferson and Fifeville neighborhoods. The plan's goals included adding affordable housing units and providing "excellent food sources" in the development area (Booker et al., 2013). As of 2020, the plan has generally stalled. That being said, the City has the opportunity to pursue investment in healthy food sources near existing housing in this area, as well as in any future plans it considers as part of the SIA .[4]

FIGURE 16: Strategic Investment Area (SIA)



[4] Note: some local affordable housing advocates have voiced concern with the SIA, feeling that the plan may act as a tool for urban renewal, resulting in the displacement of low-income communities. This option does not necessarily support the overall goals of the SIA. Rather, its aim is to hold the City accountable to the commitments it has made to connect food and housing.

Step 3: Integrating Affordable Housing and Food

With the need for more than 3000 additional affordable housing units in Charlottesville, the community will require continued public and private investment in affordable housing (Hays, 2018). There is great potential to pair future affordable housing developments with investment in healthy, affordable food initiatives. The City can do this equitably by leveraging the local expertise of the Public Housing Association of Residents (PHAR) of Charlottesville, an alliance of low-income residents and housing activists. Public and private entities across the country have successfully implemented healthy food financing models that align with housing development. Examples include:

1. The **Philadelphia Department of Health** partnered with the **Healthy Food Trust**, a nonprofit in Philadelphia, and used a comprehensive approach to increasing healthy food intake, with a concentration on low-income areas. It coupled its program of increasing grocery stores in underserved neighborhoods with other initiatives that provided nutrition education, marketing of healthy foods, community gardens and farmers markets, and healthier options in corner stores (The Food Trust, 2016).

2. **San Francisco's Healthy Retail SF** initiative targeted existing food retailers in the low-income, minority area of Tenderloin. This area included many families living in affordable housing. The initiative paired a new food retail business model that promoted in-store healthy foods with community engagement and education in order to provide healthy foods to the area's residents. By connecting families in affordable housing to existing retailers, the effort showed improvements in healthy food consumption for many of the area's residents (Kim, 2015).

3. The **Piedmont Housing Alliance in Charlottesville**. In 2016, Piedmont Housing began plans to redevelop Friendship Court, an affordable housing area of 150 families centrally located just blocks from Charlottesville's downtown mall. It created the Friendship Court Advisory Committee, a representational body of nine resident members elected by their neighbors and six members from the broader Charlottesville community, to plan and develop their future homes through a multi-phased redevelopment. Residents expressed that a community garden was among the top priorities in redevelopment plans. Piedmont Housing officials are committed to guaranteeing that the existing community garden at Friendship Court, which includes 39,000 square feet planting beds and workspace, be brought back to some capacity in the new development. This will ensure that residents continue to have access to healthy foods (Piedmont Housing Alliance, 2016).

OPTION 3: Advise the City to make more land available for urban gardens and agriculture, particularly in low-income areas.

This option recommends that the City prioritize urban agriculture on underutilized properties within the City, especially in low-income areas. The option entails three steps.

1. Identify land that has the potential to be cultivated for community gardens and/or urban farms.

2. Connect Charlottesville residents that own underutilized private land with other residents or organizations that have the interest and/or capacity to cultivate these lands for community gardening. Use the City's website for a land share portal.

3. Develop land agreements that allow residents, nonprofits, or other entities to use the underutilized land for urban agriculture.

A 2018 systematic review of urban agriculture and food insecurity found that there are few robust analyses that demonstrate an impact of urban agriculture on decreasing rates of food insecurity (Siegner, et al., 2018). This may be due in large part to the heterogeneity of urban gardens and urban agriculture across the country. Urban agriculture can take the form of vertical and rooftop farming, urban foraging, community and residential gardens, and commercial urban farms. Some urban farms operate as for-profit businesses, whereas others operate as nonprofits reliant on grants, subsidies and donations to sustain their operations. Some form of urban agriculture can be observed in cities and localities of all sizes across the nation.

In Charlottesville, existing urban gardens and urban agriculture practices have brought plentiful benefits to residents. For example, the Urban Agriculture Collective of Charlottesville, a local nonprofit, manages 4 area gardens that produce up to 17,000 pounds of produce to residents at no cost. The Friendship Court garden serves around 10,000 pounds of fresh produce to residents that live in affordable housing mere feet from the garden. This garden, however, has since closed due to the Friendship Court redevelopment.

Despite a lack of robust analyses, case studies from communities across the country demonstrate that urban agriculture can provide a diverse array of benefits. In particular, many urban agriculture initiatives that target low-income areas have led to a host of

health and social benefits for the community, including access to fresh produce, fostering social interactions, increased educational opportunities, and community and economic development (Santo et al., 2016). Moreover, urban agriculture programs provide useful knowledge and skills for the community that can be used in a variety of ways (Meenar, Hoover, 2012).

Steps 1 & 2: Identifying Land and Creating an Online Portal:

Many localities have successfully inventoried and identified available land for urban agriculture. Moreover, some localities have gone further by creating online, public-access portals that connect residents who have spare land with residents who would like to farm/garden, but do not have land available. A few notable cases include:

1. In 2008, The **City of Seattle's Department of Neighborhoods** inventoried land and locations for community gardens, food bank gardens, and community kitchens that would strengthen and maximize accessibility for all neighborhoods and communities, especially low-income and minority residents. Megan Horst, a graduate researcher working for the department, identified a total of 45 vacant and unused sites comprising over 12 acres of land are identified as being suitable for urban agriculture. In addition, 122 school properties and 139 public parks have under-used space that has the potential to be turned into community gardening space (Horst, 2008).

2. The **Sustainable Food Center in Austin, Texas** works with the city and county to map land, advertise the available land to the community, and help arrange lease agreements with the city. It created the Community Garden Program under the City's Parks and Recreation Department as a single point of contact to ease the process of creating urban gardens. It provides useful deliverables to the public, including an application packet for gardens on public land, a garden planning worksheet, a comprehensive list of garden resources, and a list of organizations that accept produce donations in the area (SFC, 2020).

Step 3: Developing City-wide Land Agreements

Some cities have gone even further to encourage urban agriculture. A handful of cities across the nation have passed legislation or made zoning changes that encourage the use of public and private land for urban agriculture. Some localities have not just made

zoning changes, but introduced legislation that provides tax incentives for urban agriculture. One such case from Washington, DC is below:

1. **Washington, DC** enacted a bill that connects publicly and privately owned vacant land with urban farming ventures in an effort to provide more sustainable and healthy food options for surrounding communities and to transform unused and sometimes unsafe areas into productive green spaces. This bill also enables residents using their property for urban agriculture purposes to take advantage of a 90% tax abatement program. Additionally, the legislation enables those tax-exempt entities that allow farmers to grow and sell produce on their property to maintain their tax-exempt status (Chen, 2014).

Evaluation and Results

	Option 1	Option 2	Option 3
Administrative Capacity (20%)	**High**	**Medium**	**Medium**
Political Feasibility (20%)	**Medium**	**Medium**	**Medium**
Equity in Process (10%)	**High**	**Low**	**Medium**
Equity in Outcomes (10%)	**High**	**High**	**High**
Sustainability (15%)	**Medium**	**High**	**High**
Effectiveness (15%)	**Medium**	**High**	**Medium**
Cost (10%)	**~$36,000**	**~$100,000**	**~$200,000**
Action Area Satisfied	 Transportation  Neighborhood Food Access	 Affordable Housing  Neighborhood Food Access  Urban Agriculture	 Neighborhood Food Access  Urban Agriculture

OPTION 1 EVALUATION

ADMINISTRATIVE CAPACITY

This option ranks 'High' for administrative capacity. Cultivate Charlottesville would need to invest minimal time and energy in order to engage in this option. It would require that Cultivate Charlottesville bring the community's existing food system asset map and the Cass-Clay and Fargo model to the attention of officials at the City's transportation department, the Charlottesville Area Transit (CAT). It also requires that Cultivate Charlottesville stress the importance of public transportation in providing access to food for low-income communities. If the City agrees to uphold a food impact analysis to align the transportation system with the food environment, Cultivate Charlottesville would not need to expend ongoing administrative support for this option.

POLITICAL FEASIBILITY

This option ranks 'Medium' on political feasibility. CAT officials and other City officials have expressed interest in exploring opportunities to utilize the area's transit system to satisfy the food needs of the local population. Juwhan Lee, Assistant Director of CAT, publicly remarked that the organization is making an effort to understand patterns of community need related to food access and incorporate more food access points into transportation planning (FEI, 2019). CAT's FY2019-FY2028 Transit Development Plan (TDP) outlines potential route modifications, at least one of which is meant to improve ease of access to food retailers (TDP, 2018). On the other hand, the City has failed to state any food access priorities in its draft Transportation Chapter of the next Comprehensive Plan. This serves as a signal that a food impact analysis is a lower priority to the City.

EQUITY

This option ranks 'High' on both equity of process and equity of outcomes. The asset mapping tool will act to incorporate the insights of community members throughout Charlottesville. It will not only gather important perspectives for CAT and City officials, but it will also provide a space for low-income communities to meaningfully engage in the political process. It is a powerful tool because it places substantial weight on the value of community members' local expertise in the political process. This option is strong on equity of outcomes because it entails that transportation officials invest in at least one bus route that serves the food needs of low-income and minority communities in Charlottesville. Though a dedicated bus line for underserved communities will be a great endeavor, it redresses past policies

that have displaced communities of color and disconnected them from areas of business and commerce.

SUSTAINABILITY

This option ranks 'Medium' on sustainability. It will have mixed impacts on the environment, but bring positive impacts to the communities it serves. A food impact analysis that successfully incorporates all food access points means that destinations such as farmers markets and community gardens will be recognized and valued as legitimate sources of food that should be integrated into the region's connectivity considerations. This will promote local food, which is a proven strategy to reduce carbon emissions from food transport and distribution (Wakeland et al., 2012). However, this option relies on buses as the primary mode of transit. CAT has a fleet of 37 buses. In 2015, it made a switch from investing in diesel-electric hybrid buses back to investing in clean energy diesel buses due to maintenance costs (TDP, 2018). Without a large-scale investment in non-diesel modes of transportation, the carbon emissions from diesel buses will continue to negatively impact the environment. Despite environmental concerns, increased transit options will provide more opportunities for underserved communities to choose how they would like to navigate their community and local food environment, providing greater community empowerment.

EFFECTIVENESS

Based on the successes of similar strategies in other settings, this option tentatively ranks as 'Medium' on effectiveness in reducing the number of households that struggle with food insecurity. In Hartford, Connecticut, a bus route modification designed to connect low-income residents to grocery stores saw a doubling in bus ridership. One-third of riders from the low-income area cited grocery store shopping as the primary reason for taking the bus (Shak, et al., 2010). Charlottesville's low-income and minority communities are scattered throughout the City. The 10th and Page neighborhood and the Fifeville neighborhood are two areas in the City with particularly low average household incomes (Policy Map, 2019). An ongoing food impact analysis and grocery bus route will provide an additional option for residents of these neighborhoods to use when accessing food.

COST

This option will have relatively few associated costs in the short-term. Mapping the local food environment with the community will cost CFJN staff and local public officials multiple days worth of time to plan and host a community event (or series of events) in order to collaboratively generate a map. The long-term costs of this

option are higher. In the FY2019-FY2028 Transit Development Plan, Charlottesville transportation officials estimated the cumulative operating costs in the decade of eleven potential bus route changes to be $1.3 million (TDP, 2018). In Flint, Michigan, officials reported that a new "Ride to Groceries" bus route that connects low-income households to grocery stores costs the City an additional $3000 per month to operate (Nagl, 2019).

OPTION 2 EVALUATION

ADMINISTRATIVE CAPACITY

This option ranks 'Medium' on administrative capacity. It requires Cultivate Charlottesville to invest a fair amount of time and resources to urge the City to develop healthy food initiatives in relation to affordable housing throughout the region. Cultivate Charlottesville has strong existing relationships with private housing officials. Notably, Cultivate Charlottesville has a valuable relationship with Sunshine Mathon, Executive Director at Piedmont Housing Alliance. Alliances in the private sector will serve as greater collective pressure on public officials. However, Cultivate Charlottesville would need to create a coalition that aligns the efforts of public officials in the Charlottesville Redevelopment Housing Alliance, Neighborhood Development Services, and Office of Economic Development.

POLITICAL FEASIBILITY

This option ranks 'Medium' on political feasibility. The City has expressed several commitments to align affordable housing efforts with food access. Jason Ness, Business Development Manager Office of Economic Development, publicly remarked that the office supports economic development efforts to promote local food sourcing to provide an economy that works for everyone (FEI, 2019). The City's draft Housing Chapter of the next Comprehensive Plan includes a goal to ensure health food sources in relation to affordable housing development. Moreover, the City's SIA Plan emphasizes a commitment to aligning healthy food initiatives with housing and neighborhood development. However, CHRA has not released an explicit goal or commitment to embed affordable food outlets as a component in its future redevelopment plans (RCLCO, 2016).

EQUITY

This option ranks 'Low' on equity in process and 'High' on equity in outcomes. Healthy food initiatives will require a great deal of expertise on economic and community development from private and public officials. As it stands, families residing in the area's affordable housing units have few opportunities to

meaningfully engage in the agenda-setting stage of housing redevelopment plans. The PHAR is a useful body of affordable housing residents that have the potential to contribute local expertise to the planning process. However, creating a system of dialogue between PHAR and housing officials would require a great deal of time and resources from the City's housing and economic development officials. That being said, this option will result in a much more equitable local food system because it prioritizes food access for those residents that face some of the strongest barriers to accessing healthy, affordable foods.

SUSTAINABILITY

This option ranks 'High' on sustainability. Healthy food initiatives bring food outlets directly to families residing in affordable housing units. These projects will promote a more walkable food environment, particularly for low-income families. Moreover, strategic planning in healthy food initiatives can ensure that food outlets developed near affordable housing provide locally sourced foods. This can be done through financial incentives for food retailers that source their products from the local region. By providing more food outlet options for residents in affordable housing, this option will promote community empowerment. It allows residents in low-income areas to not only choose where to buy food, but it also provides potential business opportunities for these residents.

EFFECTIVENESS

Based on the successes of similar strategies in other settings, this option ranks as 'High' on effectiveness in generating greater access to healthy, affordable foods and reducing the number of food insecure households (The Food Trust, 2019). Effectiveness varies widely depending on context. In Ohio, eight local healthy food financing projects increased access to food for a total of 45,000 people (an average of 5,600 people per project). A single project funded in Inglewood, CA in the densely populated southwestern part of Los Angeles increased food access for all 105,000 nearby residents. In New Orleans, a healthy food retail initiative brought increased access to 28,6000 residents in the surrounding low-income neighborhoods. A single project in the far less densely populated rural town of Limon, CO increased access to healthy, affordable foods to the town's entire 2000 residents. Based on these cases, a healthy food financing initiative that pairs Charlottesville's affordable housing residents to healthy, affordable foods will be very effective in increasing access to food and decreasing food insecurity (The Food Trust, 2019).

COST

The short-term costs of this alternative are low. Mapping food retailers and affordable housing units will require multiple days worth of time from CFJN staff and public officials. However, the long-term costs of this alternative are much higher. The most successful healthy food financing programs are implemented at the state level. While costs vary widely, states with healthy food financing programs receive on average $86 million to cover the costs of state-wide healthy food retail programs (The Food Trust, 2016). A review of rural cases shows that local healthy food financing program can cost as little as $100,000 in less urban areas (The Food Trust, 2019).

OPTION 3 EVALUATION

ADMINISTRATIVE CAPACITY

This option ranks 'Medium' on administrative capacity. It requires that Cultivate Charlottesville spend a fair deal of time and resources to encourage the City to invest in more strategies and dedicate more land for urban agriculture. Cultivate Charlottesville has significant experience and a high amount of expertise in urban garden agriculture. Its sub-organizations, City Schoolyard Garden and Urban Agriculture Collective of Charlottesville have spent over a decade managing community gardens in Charlottesville City Schools and low-income neighborhoods. However, this strategy requires that Cultivate Charlottesville work closely with public entities, including Charlottesville Parks and Recreation and the Neighborhood Community Services. Successfully implementing long-term land agreement policies entails a great deal of continued advocacy.

POLITICAL FEASIBILITY

This option ranks 'Medium' on political feasibility. City officials have made commitments to provide space for urban agriculture. Alex Ikefuna, Director of Neighborhood Development Services, publicly remarked that the City needs changes to the zoning ordinances to make it easier for people to have land for urban agriculture within the City. Chris Gensic, a Parks & Trails Planner, publicly remarked that the City needs to bring food access to residents through gardening among other efforts. (FEI, 2019). Nonetheless, the City's draft Comprehensive Plan includes no mention of urban agriculture. Providing food access through urban agriculture will entail major modifications to the existing zoning ordinances. These changes will be particularly hard to implement on the scale of the City due to insufficient evidence and robust systematic analyses that would demonstrate the positive impacts or urban agriculture.

EQUITY

This option ranks 'Medium' on equity of process and 'High' on equity of outcomes. Using its Food Equity Framework, CFJN has a proven method of meaningfully incorporating the input and needs of community members, especially low-income and minority residents. The insights gained from this collaborative framework are foundational in the consequent work and programs of CFJN. If the City adopts public policies and programs to strengthen its urban agriculture, there is a prospect that it will fail to develop an equally equitable agenda-setting framework, resulting in the exclusion of valuable local expertise from low-income communities. However there is potential for a high level of equity in outcomes, if the City successfully implements urban agriculture land use agreements. The resulting environment will be one that provides a diverse array of food access points, especially for underserved neighborhoods.

SUSTAINABILITY

This option ranks 'High' on sustainability. Urban agriculture is shown to bring a wide array of environmental and social benefits. A stronger presence of urban agriculture in Charlottesville will mean that residents' food options will be expanded to include fresh, affordable, locally grown food. Urban agriculture not only provides environmental benefits. In underserved neighborhoods, urban gardens bring a host of social benefits, including increased gardening knowledge and skills, a greater amount of social interactions among neighbors and across socio-economic divides, and stronger sense of community. Urban agriculture empowers communities to address their own food needs by harvesting food in their own neighborhoods. The result is a strong network of communities with a great deal of self-reliance.

EFFECTIVENESS

Based on the successes of similar strategies in other settings, this option ranks as 'Medium' on effectiveness in generating greater access to healthy, affordable foods and reducing the number of food insecure households. Though the strength of evidence is generally quite low for urban agriculture, it has been a proven method to increase food access for low-income and underserved communities in Charlottesville. Annually, Charlottesville's existing urban agriculture spaces attract hundreds of community members and provide tens of thousands of pounds of fresh, affordable foods. An ongoing study from University of Berkeley's Food Institute suggests that with a strategic framework, urban agriculture can provide increased food access as well as ecological and economic benefits (UC Berkeley, 2018).

COST

The short-term and long-term costs of urban agriculture vary widely depending on the size, scope, and location of the project. The USDA's Urban Agriculture Toolkit provides an estimate of the first year costs of building and operating a one-acre urban farm plot. These estimates include the upfront costs for land and infrastructure, as well as the operating costs for the growing season. Notably, these estimates do not take into account the cost to acquire land, which will serve as an additional cost on top of these estimates depending on the parcel of land. In Chicago, the cost estimate for one plot was $207,790, whereas in Indianapolis, the estimate was slightly lower at $189,050 (USDA, 2016)

Recommendation

YEAR:

0-1	**OPTION 1**: Advise the City to develop a food impact analysis in regards to its transportation infrastructure, existing bus routes, and future bus routes.
1-2	**OPTION 3**: Advise the City to make more land available for urban gardens and agriculture, particularly in low-income areas of the region.
2-3	**OPTION 2**: Urge the City to develop healthy food financing plans to act on its expressed commitments to connect residents in affordable housing with healthy, affordable food outlets.

Based on the evaluation, this report recommends that CFJN engage in Option 1 from years 0-1, Option 3 from years 1-2, and Option 2 from years 2-3. Each of these policy options are proven to reduce food insecurity and address underlying issues of inequity. Their cumulative impact will be maximized if all three are adopted in addition to a food action plan. This report recommends that CFJN engage in Option 1 first because it ranks highly on administrative capacity and political feasibility. This option will be fairly easy to initiate, and a grocery bus route will be relatively easy to achieve given CAT's expressed interest in incorporating food points into the transit system in the next 8 years. Option 3 is recommended to follow Option 1. It will take more time and energy to advocate for. Urban agriculture has proven successful both in Charlottesville and localities around the country. Creating a platform to connect those with land to those who are interested in urban agriculture will be straightforward. However, ensuring that the City can identify and dedicate more public space to urban agriculture will be a larger challenge. Finally, Option 2 is recommended last. Pairing healthy food with affordable housing using healthy food financing programs is especially effective in decreasing rates of food insecurity. That being said, this option will require a great deal of advocacy on CFJN's end and a great deal of time and energy on the City's end to identify and capture sufficient streams of funding.

Implementation

OPTION 1: Advocating for a food impact analysis

In the first year, this report recommends that CFJN focus its efforts on advocating for a food impact analysis. This route will require three tasks from CFJN:

- Coordinating community events to engage public officials and community members in asset mapping exercises.
- Strengthening relationships and partnerships between CFJN and transportation officials.
- Developing a pledge for officials to sign to commit to using a food impact analysis in future work.

CFJN has successfully engaged the community using workshops and asset mapping activities in the past. Policy and operations staff at CFJN could generate a model protocol for the asset mapping exercises and leverage this to gain buy-in from the Charlottesville Area Transit (CAT). CAT officials have already expressed a desire to make eleven major bus route changes in the next decade. Once CFJN has developed an asset mapping model and generated maps with City officials and community members, these maps can be used by CAT officials as the templates for the food impact analysis to ensure that the future route changes align with the food system. In order to convince CAT officials to engage in the asset mapping exercises and use the food environment maps, it will require pressure both from community members and local food justice advocates. The most promising intervention for community members is voicing support for a food impact analysis to City Council at the bi-monthly meetings. For food justice advocates, an opportunity for intervention is building relationships with CAT officials at events during the ongoing outreach process for the next Comprehensive Plan. Once CAT is on board, CFJN should consider using a pledge for CAT officials to sign in order to uphold that they will refer to and take into consideration the food environment maps when proposing future bus route changes.

CFJN's greatest challenge to implementing this step is ensuring that transportation officials continue to use the food environment maps into the future and consider it when making future transportation changes. Despite this challenge, CFJN will achieve some degree of success if it can meaningfully co-host one or a series of community asset mapping events, and can get the maps and pledge on the radar of CAT officials.

OPTION 3: Advocating for more urban agriculture land

Starting in the second year, this report recommends that CFJN focus its efforts on advocating for more urban agriculture land. This route will require three tasks from CFJN:

- Surveying residents to determine support for an online interface that facilitates connections between those requesting and supplying land for agricultural use.
- Creating a relationship with the City's communications team in order to advance a page on the City's website dedicated to urban agriculture, including maps of the food landscape, existing urban agriculture programs, and a portal for residents to connect.
- Developing a pledge for officials to sign to commit to incorporating urban agriculture into the land use and zoning section of the next Comprehensive Plan.

This option requires working with a variety of public officials, particularly those in the Charlottesville Parks and Recreation department and the Neighborhood Development Services department. CFJN has ongoing channels of communication with officials in these departments, but staff must invest in the time to establish stronger relationships with more frequent communications and collaboration. CFJN could leverage its strong connection with the Urban Agriculture Collective of Charlottesville as well as City Schoolyard Garden to urge the City officials to create an online medium to connect residents with urban agriculture. Staff could develop and distribute a survey to gauge the community's general interest in learning about Charlottesville's urban agriculture environment and opportunities to participate virtually.

The greatest challenge for CFJN will be in advocating that the City publicly commit to land use changes that encourage urban agriculture and gardening on public and private plots. To combat this hurdle, CFJN can demonstrate to public officials that other localities have established land lease agreements that allow property owners to parcel some portion of their land off for agricultural use by a tenant (Wooten and Ackerman, 2011). Alternatively, CFJN can identify potential areas in the land use ordinance where an amendment could be made to encourage more urban agriculture and bring that suggestion to Charlottesville City Council. Regardless, CFJN will find success if it is able to rally its base of residents that support the use of more land for urban agriculture and help to create a medium that connects these residents with officials and other individuals that have land resources to offer.

OPTION 2: Advocating for healthy food financing plans alongside affordable housing developments

Starting in the third year, this report recommends that CFJN focus its efforts on developing healthy food outlets alongside affordable housing development. This route will require three tasks from CFJN:

- Connecting public officials with best practices in healthy food financing initiatives.
- Developing a pledge for public officials to sign to commit to providing healthy, affordable food outlets alongside affordable housing.
- Advising the City on how it can scale up its efforts to get traction on the state level.

CFJN has strong existing partnerships with many of the areas housing officials, including connections with the staff at Piedmont Housing Alliance and members of Charlottesville's Public Housing Association of Residents. However, in order to put healthy food financing initiatives alongside existing and future affordable housing developments, CFJN will need to get this issue on the radar of public officials, particularly the Charlottesville Redevelopment Housing Alliance, the Neighborhood Development Services, and the Office of Economic Development. As this option is years out, CFJN can attempt to build relationships and partnerships with officials in each department through City Council events and events conducted as part of the outreach for the next Comprehensive Plan.

The greatest challenge that CFJN will face is mobilizing City officials to support small- to large-scale healthy food financing programs. These programs are usually funded at the state level and carried out on the local level. In order to carry out initiatives locally, Charlottesville officials would need to organize supporters across the state, coordinate with other localities in favor of these programs, and appeal to state legislators. Despite these challenges, CFJN could achieve success in this step by urging City officials to commit to tangible plans that will connect residents in public housing areas and/or future residents in the Strategic Investment Area (SIA) with a predictable and close source of healthy, affordable foods.

DISCLAIMER

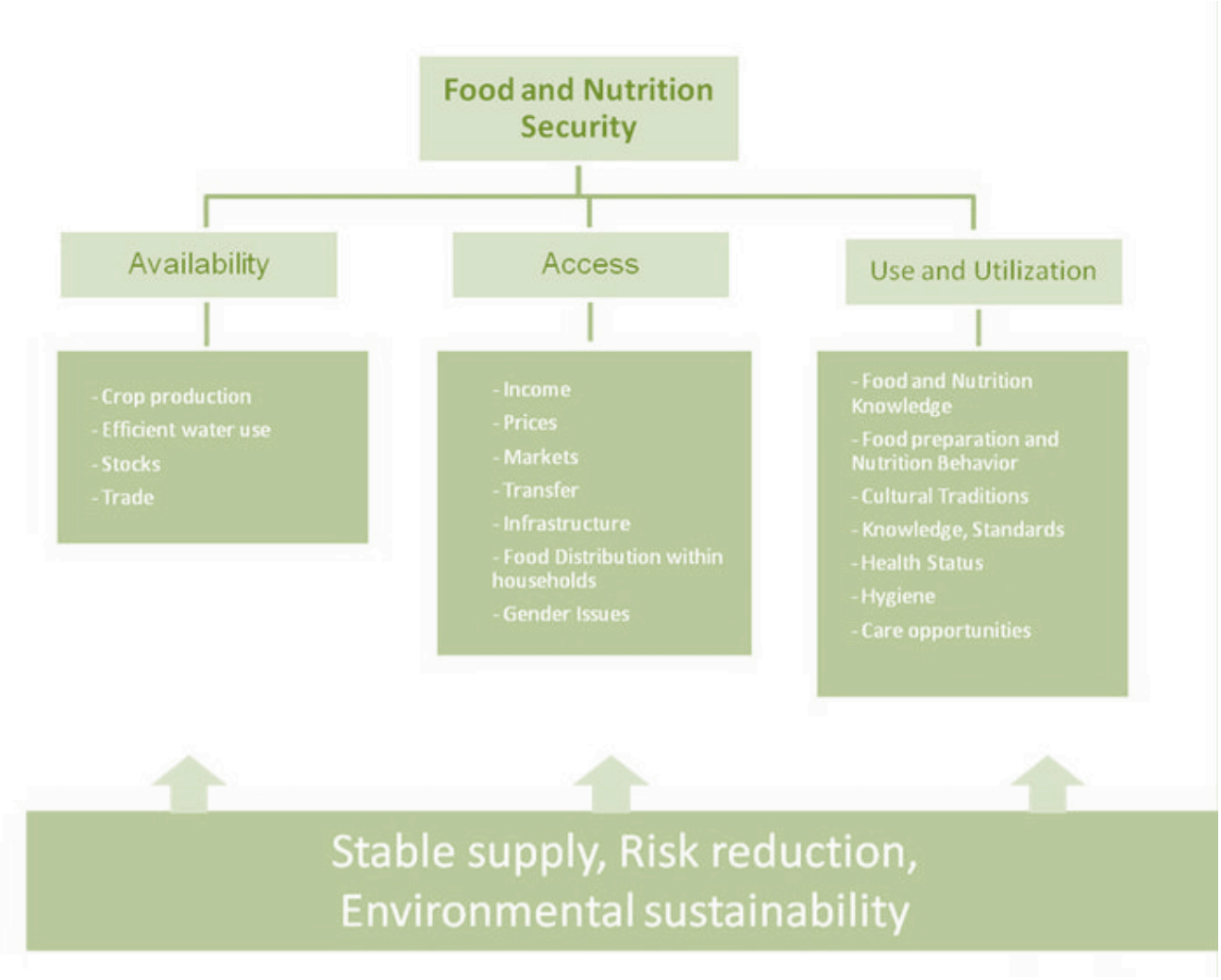
The scope of this project and its accompanying research were selected before the COVID-19 crisis. Thus, this report reflects the state of the local food system prior to the COVID-19 crisis. In light of the crisis, the local food system must attend to especially urgent needs, such as handing out school meals to children and families despite school cancelations, and ensuring that area food pantries and meal assistance programs continue to receive supplies and other resources. The author of this report recognizes the unprecedented demands that the crisis places on the food system and anticipates major impacts in the coming months and years. COVID-19 will only act to exacerbate the problem of food insecurity outlined in this report. While this report does not address the future needs that the local food system may face as a result of the crisis, its background and case studies nonetheless serve as resources to consult when responding to future needs.

Appendix A: Local Food Action Plans

Location	Description
Asheville, NC	Asheville does not include a food chapter in its comprehensive plan, but the Asheville Buncombe Food Policy Council released a Food Policy Goals and Action Plan report. https://feedva.org/wp-content/uploads/2019/02/City-of-Asheville-food-policy.pdf.
Chicago, IL	Chicago's comprehensive plan includes a "promote sustainable local food" section under its Community section and it has a food system plan. https://www.chicago.gov/content/dam/city/depts/zlup/Sustainable_Development/Publications/Recipe_For_Healthy_Places/Recipe_for_Healthy_Places_Final.pdf https://www.cmap.illinois.gov/documents/10180/17927/Livable-Communities_10-6-2010.pdf/d1cb084b-c3d8-44ad-830b-b511c200c3db
Columbus, OH	The region has a local food assessment and plan. The city of Columbus/Franklin County does not have a food section in its comprehensive plan, but it has its own Local Food Action Plan. https://www.morpc.org/wordpress/wp-content/uploads/2018/01/LocalFoodPlan.pdf
Detroit, MI	Detroit does not include an explicit food chapter in its comprehensive plan, but it has a Detroit Food Policy Council that issues a policy review report on Creating a Food Secure Detroit. https://detroitfoodpolicycouncil.net/sites/default/files/images/DFPC%20Food%20Policy%20Document%20021317%20%281%29.pdf.
Fargo, ND	The city has a food system plan and the city's comprehensive plan has a health petal that includes a Healthy Food Initiative section http://download.cityoffargo.com/0/metropolitan_food_systems_plan_final_november_2013-1.pdf. http://download.cityoffargo.com/0/_go2030_comprehensive_plan_-_final.pdf
Minneapolis, MN	The Homegrown Minneapolis Food Council releases annual reports on updates to the food policy goals and it is developing a complete food action plan, but the city does not have a food section in its comprehensive plan. http://www.minneapolismn.gov/sustainability/homegrown/WCMSP-218227 http://www.minneapolismn.gov/sustainability/homegrown/WCMS1P-130120
Northeast Kingdom, VT	The city's comprehensive plan doesn't have an explicit food section, but makes reference to a separate document, the Regional Food System Plan. http://www.nvda.net/files/Final.Online.pdf.

Philadelphia, PA	The region has a food system plan and the city's comprehensive plan includes a section for healthy food access under the Thrive - Neighborhood petal https://www.dvrpc.org/Reports/10063.pdf https://www.phila2035.org/citywide-vision
Pioneer Valley, MA	The region has a food security plan, but no city within the region has a food plan in its comprehensive plan. http://www.pvpc.org/sites/default/files/PV%20Food%20Security%20Plan.pdf.
Portland, OR	The city's Portland Plan has a goal to increase healthy and affordable food. The region has a plan, the **Multnomah** Food Action Plan Local Action on Health, Equity, Environment and Jobs in our Food System. https://multco.us/file/36656/download. https://www.portlandonline.com/portlandplan/index.cfm?c=45722&a=632343
Rappahannock-Rapidan, VA	The region has a farm and food plan. http://www.rrregion.org/pdf/publications/environment/foodsystem/Rappahannock-Rapidan%20Food%20System%20Plan.pdf
Seattle, WA	The city has a Food Action Plan. https://www.seattle.gov/Documents/Departments/OSE/Seattle_Food_Action_Plan_10-24-12.pdf
Sonoma County, CA	The region has a Healthy and Sustainable Food Action Plan. https://sonomacofsa.files.wordpress.com/2018/05/scfsa_fap.pdf.

Appendix B: Effectiveness Concept Map

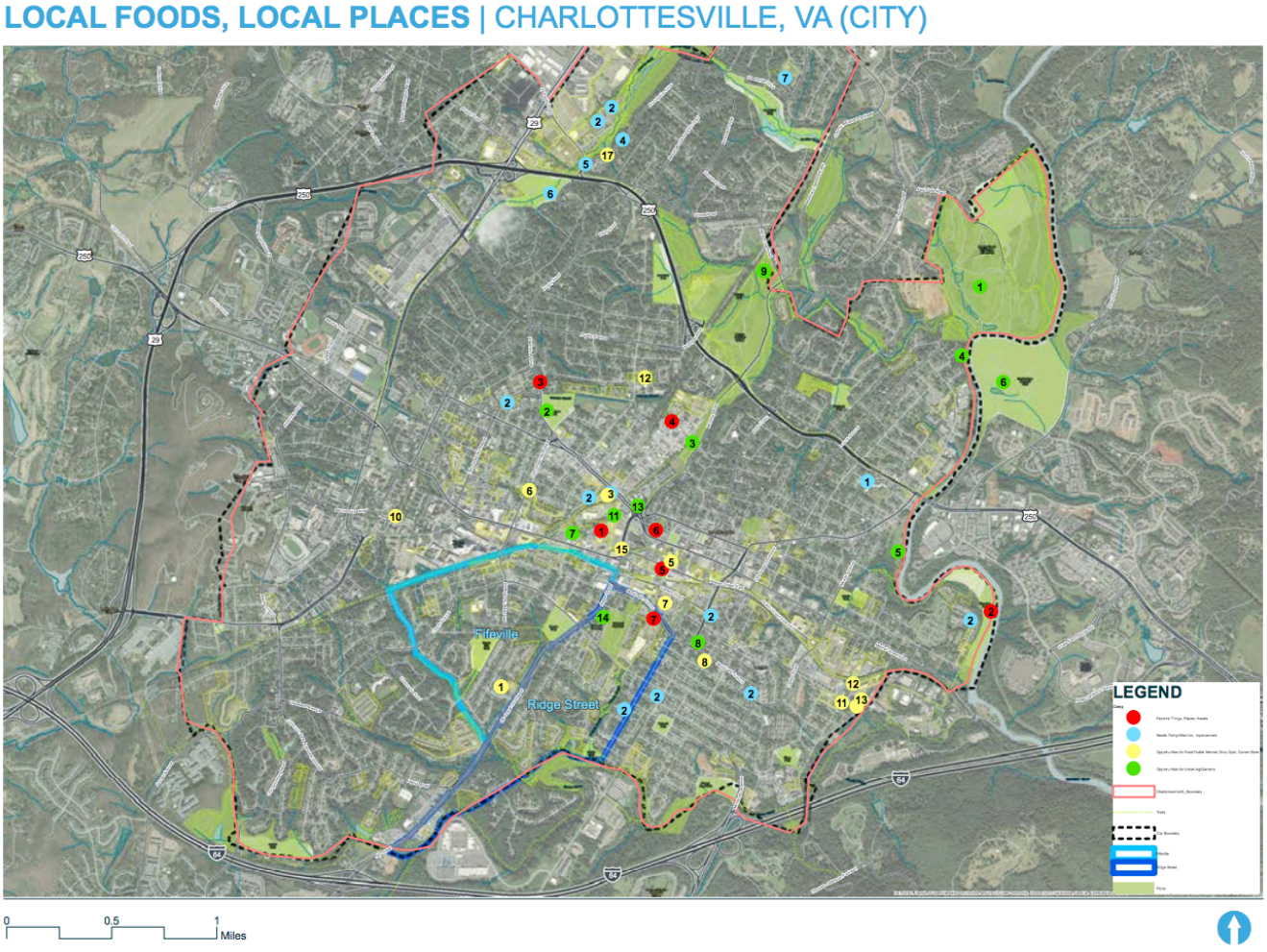


Food security can be decreased by improvements in the availability, access, and use and utilization of healthy foods. Interventions that address at least one of these three elements will result in a more food secure food system.

Appendix C: Asset-Mapping

RED: Needing immediate help and attention, fixing or improvement
BLUE: Favorite things, favorites places and assets
YELLOW: Opportunities for food access points, e.g, pop up market, drop off point, corner store, etc.
GREEN: Opportunities for urban agriculture/gardens

Community Asset Map – City Level



Further Resources:
1) The North Carolina Food System Asset Mapping Project (https://asapconnections.org/research/projects/local-food-system-intro/)
2) Community Research Lab Participatory Asset Mapping Toolkit (https://www.communityscience.com/knowledge4equity/AssetMappingToolkit.pdf)

Appendix D: Comprehensive Plan Housing Chapter

The City's draft Housing Chapter for the next Comprehensive Plan calls for Goal 8.8:

"Improve access for lower-income households to adult learning and employment opportunities, job training, health food sources, and public amenities, such as parks and recreational facilities, shopping destinations, and libraries with the goals of reducing family isolation, deconcentrating poverty, and enhancing neighborhood and school health, and economic mobility."

Most notable to Option 2 is the mention of "health food sources." With input from a range of community stakeholders, the City has clearly expressed a priority in connecting health food sources with affordable housing.

References

Abi-Nader, J., & Bingham, S. (2019). *Just Food for US – United Society Charlottesville. City Schoolyard Garden | Charlottesville Food Justice Network*. City Schoolyard Garden.

Asheville Buncombe Food Policy Council. (2017). *City of Asheville Food Policy Goals and Action Plan*.

Baek, D. (2016). The Effect of Public Transportation Accessibility on Food Insecurity. *Eastern Economic Journal*, *42*(1), 104–134. https://doi.org/10.1057/eej.2014.62

Basu, S., Meigs, J. B., & Seligman, H. K. (2018). Food Insecurity and Health Care Expenditures in the United States, 2011–2013. *Health Services Research*, *53*(3), 1600–1620. https://doi.org/10.1111/1475-6773.12730

Berkowitz, S. A. (2019). State-Level and County-Level Estimates of Health Care Costs Associated with Food Insecurity. *Preventing Chronic Disease*, *16*. https://doi.org/10.5888/pcd16.180549

Berti, P. R., Krasevec, J., & FitzGerald, S. (2004). A review of the effectiveness of agriculture interventions in improving nutrition outcomes. *Public Health Nutrition*, *7*(5), 599–609. https://doi.org/10.1079/PHN2003595

Bingham, S. (2018). *White Paper on Building a Healthy and Just Local Food System*. City Schoolyard Garden; Charlottesville Food Justice Network.

Booker, D., Foster, J., Galvin, K., Grant, C., Henry, A., Ix, A., Keller, G., Kuttner, F., Jackson, G., Lewis, C., Long, V., O'Shea, P., Price, R., Scott, M., Shears, C., Talbert, L., Smith, D., & Szakos, K. (2013). *City of Charlottesville Strategic Investment Area Plan*. 271.

Burrowes, K. (2019, October 2). *How Stable, Affordable Housing Can Help Tackle Food Insecurity*. Housing Matters. https://housingmatters.urban.org/articles/how-stable-affordable-housing-can-help-tackle-food-insecurity

Canada (Ed.). (2007). *Canadian community health survey: Income-related household food security in Canada*. Office of Nutrition Policy and Promotion, Health Canada.

Causes and Consequences of Food Insecurity. (n.d.). Hunger and Health. Retrieved March 1, 2020, from https://hungerandhealth.feedingamerica.org/understand-food-insecurity/hunger-health-101/

Central Ohio Local Food Assessment and Plan. (2010).

Chan, N. L. (2019). *Healthy Food Availability & Food Bank Network Report*. 168.

Charette, A., Jakabovics, A., & Spotts, M. A. (2014). *Affordable Housing as a Platform to Overcome Nutritional Challenges*. 33.

Charlottesville City Council. (2019). *Charlottesville Food Equity Initiative (FEI) Strategic Review and Action Plan*.

Charlottesville Redevelopment and Housing Authority. (2019). *Public Housing Charlottesville Redevelopment and Housing Authority*. https://www.cvillerha.com/public-housing/

Charlottesville, VA | Data USA. (2019). https://datausa.io/profile/geo/charlottesville-va/

Chen, K. (n.d.). DC considers bill to encourage urban farming on vacant lots. *The Washington Post*. Retrieved March 9, 2020, from https://www.washingtonpost.com/local/dc-considers-bill-to-encourage-urban-farming-on-vacant-lots/2014/09/19/1a51ad0c-3de9-11e4-9587-5dafd96295f0_story.html#Sept22

City of Asheville. (2018). *Asheville Comprehensive Plan*.

City of Austin Community Gardens Program. (2020). http://www.austintexas.gov/department/city-austin-community-gardens-program

City of Chicago. (n.d.). *Chicago Comprehensive Plan—Living Communities*.

City of Chicago Department of Housing and Economic Development. (2013). *Chicago A Recipe for Healthy Places*.

City of Columbus and Franklin County. (2016). *City of Columbus and Franklin County Local Food Action Plan*.

City of Fargo. (n.d.). *Fargo Comprehensive Plan*.

City of Minneapolis. (2009). *Minneapolis Comprehensive Plan Executive Summary*.

City of Philadelphia. (n.d.). *Philadelphia Comprehensive Plan—THRIVE*.

City of Portland. (2018). *Portland Comprehensive Plan*.

City of Portland Bureau of Planning and Sustainability. (2017). *The Portland Plan Progress Report*. 71.

City of Seattle Department of Planning and Development. (2015). *Seattle Comprehensive Plan*.

City of Seattle, & Lerman, S. (2012). *Seattle Food Action Plan*.

Coleman-Jensen, A. (2018). *Household Food Security in the United States in 2018*. 47.

Comprehensive Regional Housing Study and Needs Assessment. (2019). *The Central Virginia Regional Housing Partnership of the Thomas Jefferson Planning District Commission*.

County Health Rankings Key Findings Report | County Health Rankings & Roadmaps. (2019). https://www.countyhealthrankings.org/reports/2019-county-health-rankings-key-findings-report

Delaware Valley Regional Planning Commission. (2011). *Greater Philadelphia's Food System Plan*.

Detroit Food Policy Council. (2019). *Creating a Food Secure Detroit: Policy Review and Update*.

Duggan, M., & Detroit Planning and Development Department. (n.d.). *City of Detroit Master Plan of Policies*. 259.

Evans, A., Banks, K., Jennings, R., Nehme, E., Nemec, C., Sharma, S., Hussaini, A., & Yaroch, A. (2015). Increasing access to healthful foods: A qualitative study with residents of low-income communities. *International Journal of Behavioral Nutrition and Physical Activity*, *12*(1), S5. https://doi.org/10.1186/1479-5868-12-S1-S5

Fafard St-Germain, A.-A., & Tarasuk, V. (2017). High vulnerability to household food insecurity in a sample of Canadian renter households in government-subsidized housing. *Canadian Journal of Public Health = Revue Canadienne De Sante Publique*, *108*(2), e129–e134. https://doi.org/10.17269/cjph.108.5879

Fargo-Moorhead Metropolitan Council of Governments. (n.d.). *Cass-Clay & Fargo Metropolitan Food Systems Plan*.

Food Insecurity in America: Causes and Solutions | Feeding America. (2019). https://www.feedingamerica.org/hunger-in-america/food-insecurity

Food Systems. (2019). American Planning Association. https://www.planning.org/knowledgebase/food/

FourSquare ITP. (2018). *Transit Development Plan (TDP) FY2019—FY 2028: Charlottesville Area Transit*. Michael Baker International.

Friendship Court. (2016). Piedmont Housing Alliance. https://piedmonthousingalliance.org/friendship-court/

Gloria, J. (2007). DASH Downtown Los Angeles Study and Recommendations. *City of Los Angeles Department of Transportation*. http://clkrep.lacity.org/onlinedocs/2007/07-3772_rpt_ladot_09-04-07.pdf

Grosso Invest in Urban Farming in FY16 Budget. (2015, June). David Grosso, Chairperson, Education Committee. http://www.davidgrosso.org/grosso-analysis/tag/food+security

Gundersen, C., & Ziliak, J. P. (2015). Food Insecurity And Health Outcomes. *Health Affairs*, *34*(11), 1830–1839. https://doi.org/10.1377/hlthaff.2015.0645

Hackett, J., & Rhoads, A. (2010). *Multnomah Food Report*. 75.

Hays, E. (2018, August). *Council debates affordable housing strategy*. https://www.cvilletomorrow.org/articles/council-debates-affordable-housing-strategy

Hilmers, A., Hilmers, D. C., & Dave, J. (2012). Neighborhood Disparities in Access to Healthy Foods and Their Effects on Environmental Justice. *American Journal of Public Health*, *102*(9), 1644–1654. https://doi.org/10.2105/AJPH.2012.300865

Horst, M. (2008). *Growing Green: An Inventory of Public Lands Suitable for Community Gardening in Seattle, Washington*. https://works.bepress.com/megan-horst/4/

Horst, M., McClintock, N., & Hoey, L. (2017). The Intersection of Planning, Urban Agriculture, and Food Justice A Review of the Literature. *Journal of the American Planning Association*, *83*(3), 277–295. https://doi.org/10.1080/01944363.2017.1322914

Importance of Nutrition on Health in America | Feeding America. (2019). https://www.feedingamerica.org/hunger-in-america/impact-of-hunger/hunger-and-nutrition

Jacobs, J. (1993). *The death and life of great American cities* (Modern Library ed). Modern Library.

Kim, C. (2015). *This New San Francisco Corner Market Design Will Make You Crave Vegetables*. Next City. https://nextcity.org/features/view/san-francisco-food-desert-corner-store-design

Kirkpatrick, S. I., & Tarasuk, V. (2011). Housing Circumstances are Associated with Household Food Access among Low-Income Urban Families. *Journal of Urban Health : Bulletin of the New York Academy of Medicine*, *88*(2), 284–296. https://doi.org/10.1007/s11524-010-9535-4

Lee, J. S., Gundersen, C., Cook, J., Laraia, B., & Johnson, M. A. (2012). Food Insecurity and Health across the Lifespan. *Advances in Nutrition*, *3*(5), 744–745. https://doi.org/10.3945/an.112.002543

Lentz, E., & Patel, R. (2016). Food for All: Inclusive Neighborhood Food Planning in North Austin. *Lyndon B. Johnson School of Public A Airs*.

Lightfoot, E., McCleary, J. S., & Lum, T. (2014). Asset Mapping as a Research Tool for Community-Based Participatory Research in Social Work. *Social Work Research*, *38*(1), 59–64. https://doi.org/10.1093/swr/svu001

Map the Meal Gap. (2017). Feeding America, Tableau Software. https://public.tableau.com/views/2017StateWorkbook-Public_15568266651950/CountyDetailDataPublic?%3Aembed=y&%3AshowVizHome=

no&%3Adisplay_count=y&%3Adisplay_static_image=y&%3AbootstrapWhenNotified=true

Mayer, V. L., Hillier, A., Bachhuber, M. A., & Long, J. A. (2014). Food Insecurity, Neighborhood Food Access, and Food Assistance in Philadelphia. *Journal of Urban Health : Bulletin of the New York Academy of Medicine*, *91*(6), 1087–1097. https://doi.org/10.1007/s11524-014-9887-2

Meenar, M., & Hoover, B. (2012). *Community food security via urban agriculture: Understanding people, place, economy, and accessibility from a food justice perspective*. file:///Users/michaeljarosz/Downloads/143-Article%20Text-268-1-10-20160720.pdf

Meisenheimer, M. (2015). *Integrating Food Access and Affordable Housing*. Vermont Housing Conservation Board. https://www.hungercenter.org/wp-content/uploads/2015/07/HFCR_Montpelier_VT_2015_Meisenheimer.pdf

Minneapolis Food Action Plan—City of Minneapolis. (2019). http://www.minneapolismn.gov/sustainability/homegrown/WCMSP-218227

Nagl, K. (2019, January). *Ride to Groceries bus route gets Flint shoppers to stores after closings*. Mlive. https://www.mlive.com/news/flint/2015/04/flints_new_bus_route_helps_sho.html

Northeastern Vermont Development Association. (2013). *Vermont's Northeast Kingdom Comprehensive Plan*.

Petralias, A., Papadimitriou, E., Riza, E., Karagas, M. R., Zagouras, A. B. A., & Linos, A. (2016). The impact of a school food aid program on household food insecurity. *The European Journal of Public Health*, *26*(2), 290–296. https://doi.org/10.1093/eurpub/ckv223

Pioneer Valley Planning Commission. (2014). *Pioneer Valley Food Security Plan*.

Rahkovsky, I., & Snyder, S. (2015). *Food Choices and Store Proximity*. 36.

Ralston, K. (2019). *Children's Food Security and USDA Child Nutrition Programs*. 2.

Rappahannock-Rapidan Regional Commission. (2015). *Rappahannock-Rapidan Food and Farm Plan*.

Robert Charles Lesser & Co. Real Estate Advisors (RCLCO). (2016). *Comprehensive Housing Analysis and Policy Recommendations: Affordable and Workforce Housing*.

Robert Wood Johnson Foundation. (2019). *2019 County Health Rankings Key Findings Report*. County Health Rankings & Roadmaps. https://www.countyhealthrankings.org/reports/2019-county-health-rankings-key-findings-report

Santo, R., Palmer, A., & Kim, B. (2016). Vacant Lots to Vibrant Plots. *Johns Hopkins Center for a Livable Futures*.

Shak, L., Mikkelsen, L., & Chehimi, S. (2010). Recipes for Change: Healthy Food in Every Community. *Convergence Partnership: Healthy People, Healthy Places*.

Siegner, A., Sowerwine, J., & Acey, C. (2018). Does Urban Agriculture Improve Food Security? Examining the Nexus of Food Access and Distribution of Urban Produced Foods in the United States: A Systematic Review. *Sustainability*, *10*(9), 2988. https://doi.org/10.3390/su10092988

Sonoma County Department of Health Services. (2012). *Sonoma County Healthy and Sustainable Food Action Plan*.

Stewart, R., Korth, M., Langer, L., Rafferty, S., Da Silva, N. R., & van Rooyen, C. (2013). What are the impacts of urban agriculture programs on food security in low and middle-income countries? *Environmental Evidence*, *2*(1), 7. https://doi.org/10.1186/2047-2382-2-7

Stout, N. (2018, November). *Redevelopment plans for city public housing outlined*. The Daily Progress. https://www.dailyprogress.com/news/local/redevelopment-plans-for-city-public-housing-outlined/article_10cca9c4-f1ec-11e8-a0b4-db0a9dce878f.html

Sustainable Urban Farming for Resilience and Food Security. (2018). Berkeley Food Institute. https://food.berkeley.edu/sustainable-urban-farming-for-resilience-and-food-security/

The Demographic Statistical Atlas of the United States—Household Income In Charottesville, Virginia. (2020). https://statisticalatlas.com/place/Virginia/Charlottesville/Household-Income

The Food Trust. (2016a). *Healthy Food Financing Programs Across the Country*.

The Food Trust. (2016b). *What We Do: In Corner Stores (Philadelphia)*. http://thefoodtrust.org/what-we-do/corner-store

The Food Trust. (2019a). *Healthy Food Financing Initiative (HFFI) Impacts: Nationwide Success of Healthy Food Financing Initiatives*. http://thefoodtrust.org/administrative/hffi-impacts

The Food Trust. (2019b). *Healthy Food Financing Initiative Impacts: Case Studies*. http://thefoodtrust.org/administrative/hffi-impacts/hffi-impacts-case-studies#_ftn1

UCLA Asset Mapping. (n.d.). UCLA Center For Health Policy Research. https://asapconnections.org/research/projects/local-food-system-intro/

U.S. Census Bureau QuickFacts: Charlottesville city, Virginia (County). (2019). https://www.census.gov/quickfacts/charlottesvillecityvirginiacounty

USDA ERS - Food Security and Nutrition Assistance. (2019). https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/food-security-and-nutrition-assistance/

USDA ERS - Key Statistics & Graphics. (2018). https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx

Ver Ploeg, M., Dutko, P., & Breneman, V. (2015). Measuring Food Access and Food Deserts for Policy Purposes†. *Applied Economic Perspectives and Policy*, *37*(2), 205–225. https://doi.org/10.1093/aepp/ppu035

Vermont's Northeast Kingdom Regional Food System Plan. (2016). http://www.nvda.net/files/Final.Online.pdf

Wakeland, W., Cholette, S., & Venkat, K. (2012). Food transportation issues and reducing carbon footprint. In J. I. Boye & Y. Arcand (Eds.), *Green Technologies in Food*

Production and Processing (pp. 211–236). Springer US. https://doi.org/10.1007/978-1-4614-1587-9_9

Wight, V., Kaushal, N., Waldfogel, J., & Garfinkel, I. (2014). Understanding the Link between Poverty and Food Insecurity among Children: Does the Definition of Poverty Matter? *Journal of Children & Poverty*, *20*(1), 1–20. https://doi.org/10.1080/10796126.2014.891973

Wooten, H., & Ackerman, A. (2011). *Seeding the City: Land Use Policies to Promote Urban Agriculture*. ChangeLab Solutions. https://changelabsolutions.org/sites/default/files/Urban_Ag_SeedingTheCity_FINAL_%28CLS_20120530%29_20111021_0.pdf