

From Food Bank to Food Hub: Challenges and Opportunities

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Abstract

Our study, which was sponsored by the Worcester County Food Bank, assessed partnerships between food banks and food hubs in various locations of the United States. The majority of our data was collected through phone interviews with staff members at four different food hub/food bank partnerships. The study conducted proved that various resources, infrastructure, partnerships, and networks can be shared between food banks and food hubs. This partnership between food banks and food hubs has the ability to facilitate increased access of healthy, locally grown food.

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Executive Summary

In the United States, 49.1 million Americans live in food insecure households, including some 15.8 million children (Feeding America, 2013). Food insecurity is the limitation of access of adequate food due to lack of resources and money (TBFN, 2015). The primary population affected are low-income citizens who have decreased accessibility to healthy nutritious food (Coleman-Jensen et al., 2014). The issue of food insecurity and food safety are on a rise as a result of the global food system, which does not allow for easy access of healthy foods for a large part of the population (Horrigan et al., 2002).

One of the primary causes of hunger is poverty. Due to lack of sufficient resources and funds, individuals who are living in poverty cannot afford nutritious foods for themselves and for their family (WFP, 2015). The hunger problem has been targeted by many organizations throughout the country. Current government strategies to deal with the hunger issues are to provide monetary assistance for eligible low-income families through a program called Supplemental Assistance Program (SNAP). A family of four has the maximum allotment of \$649 of assistance per month, and contribution they receive is dependent on the net income of the family (FNS, 2015).

The most recent Farm Bill Act cut eight billion dollars of funding to the federal food assistance programs. Due to these recent cuts, a family of 3 will lose on average of \$29 from their monthly benefits, which a significant loss due to already low amounts of benefits is provided (Dean et al., 2015). Cuts to the SNAP program contribute to food insecurity because individuals affected will have less resources to purchase food.

A solution to help lift the burden from the limited state and federal policies on food insecurities have been food banks. A food bank is a non-profit hunger relief organization that

receives food donations to distribute to those in need. Food banks receive funding from donors and utilize the help of volunteers to help carry out operations. Food banks initially were a short-term solution to dealing with the hunger problem. But with food insecurity increasing, some food banks have decided to shift the focus from trailing behind the food needs of individuals, to preventing food insecurities in the first place by having a broader reach into markets that have otherwise been untapped. These food banks want to go beyond the redistribution of donated foods and address issues of food insecurity directly.

Innovative food banks around the country have initiated programs to find a long-term solution to the hunger problem. Such food banks have started initiatives to work on a range of policy issues and advocacy in which they could address the long-term need for food assistance. Some of these food banks have addressed food insecurity and food policy by turning to food hubs to provide locally grown fresh foods for the community.

Food hubs are an emerging innovative approach of aggregating and distributing locally grown food within a community. A food hub is defined as an organization that handles the aggregation, distribution, and marketing food products from local and regional producers in order to satisfy demand (NGFN, 2015). It tackles the critical need of infrastructure and business management to handle the logistics of bringing the food from the farm to the table (FarmAid, 2011). Food hubs can address food insecurity by increasing the accessibility of fresh foods to the local community, where it previously would not have been accessible. Food hubs help producers gain access to new markets, and helps consumers gain access to local foods.

The Worcester County Food Bank (WCFB), the sponsor of this study, was interested in understanding the opportunities and challenges presented to food banks as they try to develop the capacity to operate a food hub. To understand the relationship between food banks and food

hubs, the team conducted case studies of 4 different food banks/food hubs across the US. The WCFB staff identified four food hubs, which began as food banks, that more closely fit the size and mission of WCFB. The food banks identified were the Food Bank of North Alabama, Foodlink Food Bank, Harvested Here Food Bank, and the Food Bank of Northeast Georgia. The team performed extensive background research based on websites, newspapers, and articles on the food banks and food hubs related to them. Additionally, the team interviewed the food banks about the current challenges and opportunities in the development of the food hub. The team identified common themes across the four interviews. The themes we identified were the food hub initiatives, the motivation that drove each of the food banks to partner up or create a food hub, the key partners and resources of a food hub, the challenges faced in the implementation of a food hub, and the impacts of a food hub.

Initiatives for all four food hubs differed, however the collaboration with the food bank was very significant in the development stages. FoodLink developed the food hub to go beyond food banking and leverage their large infrastructure “to be good partners in the local food movement” (NGFN, 2013). The Food Bank of Northeast Georgia initiated the food hub to help improve the local farming stream, and work with farmers in aggregating demand and getting into more markets (T.J. Smith, personal communication, March 4, 2015). The Chattanooga Area Food Bank developed Harvested Here Food Hub from an initiative with a partnering agency called The Benwood Foundation, with the purpose to grow and sustain the local farming economy (R. Rollison, personal communication, February 24, 2015). Finally, the Food Bank of North Alabama started the food hub initiative to help local farmers increase their revenue and increase the accessibility of fresh nutritious food to the community (FBNA, 2012).

Motivational factors for these initiatives differed between the food hubs. They included loss of farms, high rates of diet related diseases, increasing local farming stream, going beyond donations, and helping sustain the local farming economy. Some of the key partners in these operations included the University of Georgia (FBNG, 2015), the FDA (FBNG, 2015), and the USDA (FoodLink, 2015). Additionally, local foundations such as the Benwood Foundation, Footprint Foundation, and Winrock were also helpful in providing key resources to the development of the food hub (R. Rollison, personal communication, February 24, 2015). These organizations provided donations, grants, and facilitated relationships with farmers.

The main challenge faced by the food hubs was acquiring funding and support to start operations. The most common theme addressed by the directors of the food hub was start-up funding and the importance of continual financial support. Other challenges included sparking local interest in the community, developing relationship with farmers, developing a fair pricing structure, facing locational challenges, and creating a cutting-edge model.

All four food hubs impacted the community economically and socially through stimulating the local economy and providing access of locally grown to food to institutions or directly to the consumer. They differed in the environmental impact, in which the Food Hub of Northeast Georgia stood out by planning the use of Instant Quick Freeze (IQF) technique to prolong the usability of food and prevent spoil (T. J. Smith, personal communication, March 4, 2015).

Based on the findings, the team formulated recommendations for the WCFB regarding its future involvement with a food hub in the Worcester County. Facilitating partnerships for the food hub through the use of WCFB's own network will help determine the need for local, fresh foods in the community. The team also recommends that the WCFB consider operating the food

bank and the food hub under the same roof, but keeping their operations different, to keep a close communication between the two entities. It is also recommended that the WCFB take into consideration the long implementation period of a food hub. Finally, it is recommended that the model for the food hub be carefully considered and decided upon in the early stages of planning.

Some of the future considerations for the WCFB in determining their involvement with the development of the food hub is to question the opportunities and risks of sharing current resources and infrastructure. Additionally, it will be important to identify how the food hub will complement the food bank's mission and purpose.

Authorship

All team members contributed to the collaborative writing effort exemplified in this report. The following is a breakdown of the contribution of the report by each team member.

Anny Cunha authored the executive summary, background sections ‘2.2 Government Strategies for Hunger Relief’ and ‘2.4 Food Hubs Provide Fresh Local Food’; findings section ‘4.1 Food Hub Initiatives’ and ‘4.5 Food Hub Impacts’; Recommendation 1; and ‘Considerations for the Future’.

Haley Morgan authored the ‘Abstract’; background Section ‘2.1 Challenges of an Industrialized Food System’; ‘3.0 Methodology’; findings section ‘4.4 Challenges Faced’; and Recommendation 2.

Michael Moroney authored the ‘1.0 Introduction’; background section ‘2.3 Innovative Food Banks’; findings Section ‘4.3 Key Partners and Resources’; and Recommendation 4.

Sonia Banegas authored the background section ‘2.5 WCFB and Hunger Relief’; findings section ‘4.2 Motivation’, and Recommendation 3.

Anny Cunha, Haley Morgan, and Michael Moroney conducted the interviews and authored the respective transcripts for the food banks/food hubs interviewed for the research required of this report. Additionally, they each took a role in editing the final format and layout of the report.

1.0 Introduction

A typical food bank focuses on a food in, food out model to provide much needed donated food to food insecure persons. It does not, however, address the systemic issues that cause food insecurity (Kendall, Olson, & Frongillo Jr, 1996). Food insecurity is defined as the state of being without reliable access to a sufficient quantity of affordable, nutritious food (Dimitri & Rogus, 2014). One out of every six Americans is food insecure and that number is rising every year. In Worcester County, one out of every four children comes from a household that is food insecure (WRRB, 2002). The increased number of food insecure people puts pressure on food banks to provide more and more food. In 2009, the Feeding America Food Banks provided meals to twenty five million Americans, in 2014 that number had risen to forty-nine and a half million Americans.

In response to growing pressure and demand, food banks have begun to look at new and innovative ways to provide meals and assistance to those who need it most. One of these innovative programs that have gained momentum over the past few years is the idea of a food hub. A food hub is an organization that aggregates, processes, stores, and distributes food sourced from local farms. Some food banks around the country have started their own food hubs to try and get more locally grown, fresh produce into the hands of local consumers, and to also keep food dollars local and lower food related diseases.

The Worcester County Food Bank (WCFB) is considering how it can be more effective in addressing chronic hunger, and one possibility is partnering with food hub operation in Worcester County. The goal of this project was to help the WCFB identify some of the key challenges and opportunities of launching a food hub. To do this, our team researched aspects of

the food system in the US and how it has led to food insecurity. The team researched websites, newspapers, and case studies to find out more about the food banks that had developed their own food hub. Then we conducted four interviews with each food hub that had helped supplement the operations of the food bank. We then analyzed those interview transcripts and came up with some key findings. One of our key findings was that each of the food banks had key partners that help them make this transition by providing survey work, financial backing, and other key resources. From our findings we made some recommendations (such as sharing resources with existing partners or that they plan for a seven to ten year implementation period) to the WCFB and also left them with some questions to consider while planning their food hub. More details are provided in the following report.

2.0 Background

This chapter provides an overview of the many issues concerning food insecurity currently plaguing the United States, and takes a look at some of the methods that are in place to attempt to solve this growing problem. In section 2.1, we give an overview of the current industrial food system in the United States, and a bit of a history on the country's current food system. Section 2.2 takes a deeper look at some of the current government strategies being used to address hunger in the United States. Section 2.3 focuses on food banks, and some of the innovative strategies they have developed to address the rising issue of food insecurity. Section 2.4 takes a further look at one of these innovative strategies: food hubs and their mission to provide increased access to local, healthy food. Section 2.5 takes a deeper look into the Worcester County Food Bank, and its current operations.

2.1 Challenges of an Industrialized Food System

Food insecurity and food insufficiency are increasingly common in the United States as a result of the current food system. Throughout United States history there has been a shift from the consumption of local foods cultivated on local lands, to the ever-increasing consumption of food imported from areas all over the country (Horrigan et al., 2002). This shift towards a more global food system, as opposed to local, has had substantial impact on the health of Americans. The current food system in the United States does not allow for easy access to healthy, nutritious food for a large portion of the population. Many of the population who are affected are low-income citizens, resulting in an increased reliance on government assistance programs, like SNAP (Coleman-Jensen et al., 2014). Food insecurity and food insufficiency levels are on the

rise as a result of this system, creating a multitude of negative side effects for many American citizens, including increased health issues (Feeding America, 2015).

The current global food system that dominates in the United States evolved during the World War II era (Grey, 2000). During this time, American society was becoming increasingly developed, and a shift from farm animals to machinery was taking place in more and more areas of the country. Farming techniques were being constantly improved and refined. The use of chemicals was introduced to farmlands, in order to make the land more suitable for increasing agriculture. This increase in efficiency led to an increase in pressure on the production of increased amounts of food, and demand was on the rise.

As farming productivity increased, demand was on the rise and pressure was placed on farms to increase their productivity. This led to small farms combining to form larger farms, resulting in a decrease in the population of small, local farmlands (Grey, 2000). In 1900, 42% of Americans worked on farms. By 1990, the farming population had decreased to 2% (Grey, 2000). As larger farms formed, larger corporations and businesses took them over, leading to further industrialized food production. As larger companies started to gain control on the food production process in the United States, international markets were created. Companies from other parts of the world were interested in gaining a hand in the United States food production industry. Multinational food corporations were then able to get their hands on some control of food production in the United States (Grey, 2000). This increasing concentration of ownership in the agricultural world has created a largely automated and fast-paced style of food production, which has many negative health implications (Horrigan et al., 2002). This industrial method of food production places heavy importance on providing food for the masses, but does not place much importance on producing the healthiest food.

Industrial agriculture has negative effects on human lifestyle, consumption, and the earth in general on many different levels. It is known to cause increasing disease, pollution, and a depletion of natural resources (Horrigan et al., 2002). There is also the risk posed from the newer genetically engineered foods, which present new allergens to the food supply. These systems could have harmful, lasting effects on the immune system and vital organs (Horrigan et al., 2002). Pesticides used widely in the production of food are being traced to various cancers and other diseases (Horrigan et al., 2002). It is estimated that about 70% of the pollution in America's rivers and streams is from current farming practices (Horrigan et al., 2002). Industrial agriculture is considered a resource-intensive practice, which is also a type of practice that is considered unsustainable. The average number of hectares per person has been steadily decreasing since World War II, as a result of poor farming practices that have damaged roughly 38% of the farmland currently used today (Horrigan et al., 2002). Many of the resources consumed are nonrenewable, and the renewable resources that are being used are being consumed faster than their rates of regeneration (Horrigan et al., 2002). Specifically, fossil fuel, topsoil, and water are all being used at unsustainable rates as a result of the industrialized food system (Horrigan et al., 2002). All of these are valid reasons as to why the current industrial food system of the United States is flawed. A shift towards more local food systems could potentially help to solve these issues. A higher emphasis on local food systems/food production would require less chemical use and less energy use, since food is produced in smaller quantities and moved shorter distances to the end consumer. It would also offer increased access to healthy, fresh food.

These deficiencies in the industrial food system have led to deeper problems involving hunger, food insecurity, and food insufficiencies for many Americans. Food insecurity is

defined as “having limited or uncertain availability of nutritionally adequate and safe foods, or ability to acquire acceptable foods in socially acceptable ways” (Casey et al., 2001). The industrial food system and high amounts of processed foods resulting from it create a series of adverse effects on human health and the environment. People who suffer from food insecurity consume a significantly less amount of servings of fruits and vegetables than those who are food secure (Kendall et al., 1996). A person’s quality of life largely relies on their ability to obtain and consume healthy, nutritious food. Food insufficiency is defined as “inadequacy in the amount of food intake because of a lack of money or resources that provide access to enough food” (Casey et al., 2001). An increasingly large number of children and families in the United States live in food-insufficient homes.

Food insecurity and food insufficiency have other side effects that cause additional stress in people’s lives. In a study conducted by the Economic Research Service (ERS), in the year 2013 there were an estimated 14.3% of food insecure American households (Coleman-Jensen et al., 2014). Another significant finding from this study was that rates of food insecurity were “substantially higher than the national average for households with incomes near or below the Federal poverty line, households with children headed by single women or single men, and Black- and Hispanic-headed households” (Coleman-Jensen et al., 2014). About 9.9% of households in the United States with children were found to be food insecure (Coleman-Jensen et al., 2014). Children who suffer from hunger are more likely than non-hungry children to develop minor health problems, leading them to have to make more frequent trips to doctors, causing additional expenses. Typically, these families are low-income families with lower levels of health insurance, making frequent doctor trips a stressful and financially straining situation. Food insufficiency has also been linked to impaired growth and poor cognitive development in

children, obesity, and behavioral, emotional, and academic problems (Casey et al., 2001). In a study done, 92.8% of the low-income, food insufficient families surveyed reported the “reason for food insufficiency was lack of money, food stamp, or aid” (Casey et al., 2001). It was also noted that the food insufficient, low income households with children were “significantly larger, had more children in the family, had lower income, and had a less educated head of household than when compared with food-sufficient families” (Casey et al., 2001). In the year 2000, only about 10% of households in the United States were reported as food insecure, a number that has steadily increased in the past 15 years to about 14.3% (Coleman-Jensen et al., 2014).

An idea that is continually gaining momentum is a shift from industrialized food production towards more local food systems and sustainable agriculture. Sustainable agriculture is defined by “relatively small, profitable farms that use fewer off-farm inputs, emphasize technologies that are appropriate to the scale of production, and make the transition to renewable forms of energy” (Horrigan et al., 2002). It would result in less environmental and human health costs. It would also involve more local connections between food producer and consumer, resulting in more accountability of healthy and safe production of food. Also, shorter distances of food travel would result in less energy use for transportation. The positive effects of a more local, sustainable food system make the negative effects of the current industrial food seem fixable, with the right approach.

2.2 Government Strategies for Hunger Relief

Current government strategies to fight hunger focus on short term emergency relief while failing to address long term chronic hunger issues. Programs such as the Supplemental Nutrition Assistance Program (SNAP), formerly called food stamps, and the supplemental nutrition program for women, infants, and children (WIC) provide nutritional education, supplemental

foods, health education, and nutritional assistance to eligible persons (FNS, 2015). SNAP benefits only allow for the purchases of food, plants, and seeds for food growth and limitations for purchases include non-food items, soaps, paper products, house supplies, grooming items, cosmetics, toothpaste, tobacco, and alcohol (FNS, 2015) Qualification for SNAP benefits depend on the number of people in the household, assets, gross monthly income, and household expenses (FNS, 2015). For a family of four, the net monthly income must be less than \$1,988 dollars (FNS, 2015). The maximum allotment is dependent on the number of people in the household. For a family of four people the maximum allotment is \$649. However, the benefit received is dependent on the net income of the family. Thirty percent of the net income of the family is subtracted from the maximum allotment the family is received. Table 1 shows how SNAP benefits are computed.

Table 1: Benefit computation of SNAP benefits (FNS, 2015).

Benefit Computation	Example
<p>Multiply net income by 30%... (Round up)</p> <p>Subtract 30% of net income from the maximum allotment for the household size...</p>	<p>\$1,136 net monthly income x .3 = 340.8 (round up to \$341)</p> <p>\$649 maximum allotment for 4 - \$341 (30% of net income) = \$308, SNAP Allotment for a full month</p>

Reductions to SNAP benefits due to the latest farm bill will greatly affect struggling individuals. The most recent Farm Bill Act, signed into law on February 7, 2014, cut eight billion dollars in funding to the federal food assistance programs such as SNAP and WIC. The farm bill is the primary agricultural and food policy tool of the federal government, with a new bill getting

passed every five years (Barnett, 2014). It controls subsidies paid to farmers and funding to the federal food assistance programs. The average estimated cut amount will be about \$29 a month for a family of three, which is a serious loss of assistance due to an already low amount of SNAP benefits currently provided (Dean et al., 2015). Additionally, the 2014 bill cuts to SNAP will result in 850,000 families, or about four percent of participants, losing around \$90 per month in SNAP benefits (Board et al., 2014). The average SNAP benefits provides less than \$1.40 per meal, which represents a \$5 billion dollar cut to the program in the 2014 fiscal year (Dean et al., 2015).

Table 2 shows the estimated amount of money cut per household.

Table 2 SNAP Cuts by Household Beginning in November 2013 (Dean et al., 2015).

	ARRA Maximum Benefits Through Oct. 2013	Maximum Benefits Beginning Nov. 2013	Monthly Cut	Total Cut FY 2014
Household of 1	\$200	\$189	-\$11	-\$121
Household of 2	\$367	\$347	-\$20	-\$220
Household of 3	\$526	\$497	-\$29	-\$319
Household of 4	\$668	\$632	-\$36	-\$396

While these programs provide a safety net for eligible participants, they do not address long-term relief of hunger. Participants are not transitioned into becoming independent of the program, and they are often immediately cut-off when they exceed the requirement eligibility.

Recent cuts to SNAP and WIC have forced food banks and other hunger relief organizations to provide more assistance to make up the difference. Food banks as well as hunger relief organizations have had greater demands in hunger relief. There was a 23% increase in demand for food aid from 2005 to 2009 according to the Boston Food Bank (Conti, 2012). In the Merrimack Valley Food Bank alone there has been a 75% increase of number of people

served from 2010 to 2012 (Conti, 2012). Catherine D' Amato, who is the director of the Greater Boston Food Bank stated that "Nearly half of the people we serve do not qualify for government assistance. These are working adults who simply can't make ends meet. This is the meal gap" (Conti, 2012). The CEO of the Red Cross food pantry in Boston, Jarret Barrios, mentioned in an interview with CBS Boston that reductions in government food assistance would put "more pressure on pantries to meet the need [for hunger relief]. We're worried about the thousand people we have through here a week growing to 11, 12, 1300" (Elias, 2013). The Red Cross food pantry is the largest food pantry in New England feeding tens of thousands of people each year. Due to cuts in government assistance they are anticipating the growth in assistance needed to be provided to community members.

Even though many people have sought government assistance for hunger relief, billions of dollars in SNAP benefits still go unclaimed. A study in 2004 estimated that only 60% percent of the population eligible for SNAP partake in the program (FNS, 2015). The remaining 40% of government funding allocated for food relief remains unclaimed (FNS, 2015). Inaccessibility of information about the program may be a contributing reason for not applying for government help. In a study from the Federal Research and Action Center, the most common reason for under-participation is that households are not aware of their eligibility (FRAC, 2011). The impact of claiming SNAP benefits also positively affect the community due to the money being injected directly in the community. "Underparticipation in SNAP/Food Stamps adversely affects not only low-income people who are missing out on benefits, but also communities that could be benefiting from more federal dollars circulating in the local economy" (FRAC, 2011). An estimate from USDA suggests that \$1.79 dollars is generated in economic activity for every SNAP dollar used (FRAC, 2011). Improving accessibility of SNAP benefits could assist

residents to be lifted out of poverty as well as improving local economy and tax base (FRAC, 2011).

Over the past few years the amount of food and benefits from SNAP and other federal programs has decreased while food bank's outputs have increased. Total benefits for SNAP in 2013 were 6.3 billion, in 2014 this number is down to 5.7 billion (ERS, 2014). The emergency food assistance program (TEFAP), which provides food for local food banks, including the Worcester County Food Bank (WCFB), saw their budget increase from 228 million in 2013 to 318 million in 2014 (Agriculture, 2014). TEFAP is a federal program that helps supplement the diet of low-income individuals by providing emergency food assistance (FNS, 2015). "The increased need for food assistance observed within federal nutrition programs is mirrored in the number of clients seeking help from the charitable food assistance network. Despite known undercounts of those seeking charitable help, government studies have documented increases in the number of individuals getting help from food pantries and emergency meal programs in 2012 compared with 2010" (BRAFB, 2015). Feeding America, which is a non-government program that also provides food for local food banks, saw a twenty percent increase in its food donations from 2012 to 2013 (America, 2014). Food insecurity is a growing problem which must be addressed long term.

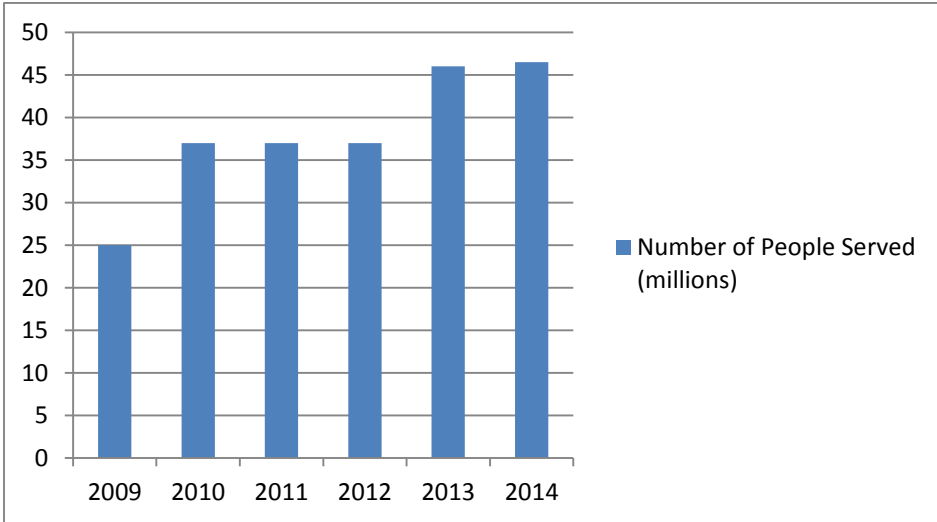
2.3 Innovative Food Banks

The first food bank in the United States was St. Mary's Food Bank Alliance, which opened in Arizona in 1967 (Popejoy, 2013). Today, there are over two hundred food banks across the country. The overall goal of food banks is to provide short-term emergency relief for those who need it. They are designed to help people get back on their feet by providing them

with meals for a short period of time. They are not designed to be a long-term solution to solving hunger.

Food banks operate as distribution centers, taking food either purchased or donated and then distributing it to local food pantries. The local food pantries receive food from the food banks and then distribute the food to people who need it. Food banks get food in a couple of different ways. The first is through donations which can come from both large corporations such as Walmart or Wegman’s, or everyday people. In 2014, the Feeding America Food Bank network received over one billion meals as donations from retail corporations (America, 2014). Food Banks also purchase food using money they receive through state funding through programs like TEFAP. The most recent farm bill had an increase in TEFAP funding by two-hundred million dollars. The number of people relying on food banks has increased over the past five years dramatically. In 2009, the Feeding America Food Bank Network served twenty five million people (America, 2014). In 2014, that number was up to forty-six and a half million people(America, 2014).

Figure 1: Population Served by Feeding America Food Banks



The majority of food banks and other hunger relief organizations allocate most of their resources towards short-term, emergency relief, rather than a long-term solution to the hunger problem. Innovative food banks across the country are currently looking at new approaches to the long-term hunger problem. Food banks were initially created in the United States as a short-term safety net for provision of emergency food due to the US government's "rediscovery of hunger" (Van Steen et al., 2014).

Recently, food banks around the country have been participating in annual conferences such as Partner Agency, Closing the Hunger Gap, Harvest of Knowledge, Food Bank Hunger Action, and Agency conferences to discuss common challenges and develop ideas and innovative approaches to address chronic hunger. During the Closing the Hunger Gap Conference hosted in Arizona, directors of food banks emphasized that one of the most important challenges faced today is decreased federal funding, as discussed in section 2.2, when there is a widespread increased need for food (CFBSA, 2013). Food banks agreed this challenge has caused them to internally question how they can better serve the community and integrate "community food security strategies into their work" (CFBSA, 2013). These food bank networks have decided to re-orient their mission and put together programs, come up with new strategies, and mobilize political support to affect change.

Innovative food banks around the country have been starting different programs to find a long-term solution to food insecurity through policy advocacy, developing community assets, and community organizing. In Phoenix, Arizona, Mary's Food Bank Alliance developed a community kitchen to "empower disadvantaged adults to achieve greater self-sufficiency through

job training, personal development, and employment in the foodservice industry”. The program has a success rate of 80% job placement of its graduates (Arizona, 2013; CFBSA, 2013). The Oregon Food Bank has developed a program called Food Education Agriculture Solutions Together (FEAST), where plans for food system work in the community are developed through broad spectrum regional communities. The outcomes have been the inclusion of new “farmers’ markets, increased SNAP and WIC acceptance, expanded community gardens, new donors for food bank, and nutritional education opportunities”. Currently this program has “been replicated in over 50 events in 7 states” (CFBSA, 2013). The Gleaner’s Community Food Bank of Southeast Michigan partnered with policy makers to “affect local, state, and national policy change”. They work on a “range of policy issues from urban agriculture ordinances to state tax credits to federal food and policy (CFBSA, 2013). The Food Bank of New York City (FBNYC) has an innovative partnership with the company Toyota in which Toyota donated their expertise in operational efficiency in a production philosophy of ‘kaizen’. Kaizen is the Japanese process of continual improvement in order to achieve long-term organizational success. With such partnership, the food bank made it a priority to “take on kaizen as an organization” (FBNYC, 2014).

In order to advocate for hunger policies, FBNYC also launched a campaign called Go Orange to End Hunger which brings awareness of the hunger issue by challenging New Yorkers to wear orange and share issues about hunger. The campaign also provides links for volunteers, donations, and partnerships with restaurants that donate money to the food bank per specific item bought. In California, the Santa Clara and Santa Mateo Counties put together The Harvest of Knowledge Partner Conference raising awareness of their commitment to end local hunger. Provision of free training workshops focused on topics such as dealing with volunteers,

nutritional healthy eating for children, communicating positive results to partners, best practices for pantries, building a fundraising team of board members and volunteers, helping clients access food stamps, and food safety. The highlight of the conference was a presentation about the future of food from the Institute for the Future (IFF) which is a “non-profit research center specialized in long-term forecasting, and quantitative futures research methods” (IFF, 2014). The first innovative idea from the presentation was Food Cowboy Project, which is an app connecting truckers with “wholesome, but unmarketable fresh produce to nearby food charities and connects spoiled food to composters and farmers instead of landfills” (Food-Cowboy, 2014). The other innovative idea proposed in the presentation was advocacy through a photo-voice project called Hunger Through My Lens which “sheds light on the reality of hunger in Denver metro area” (Hunger Free Colorado, 2014). Their advocacy is based on a photo-voice model in which people can “identify, represent, and enhance their community through specific photographic techniques” (Hunger Free Colorado, 2014). They “enable people to record and reflect their community’s strengths and concerns, to promote discussion about important issues through group discussions of photographs, and finally to reach and influence policy makers” (HFC, 2015). Looking at the long-term need for food assistance, these innovative approaches may hold the key to solving the hunger issue.

2.4 Food Hubs Provide Fresh Local Food

Some food banks have turned to food hubs to provide locally grown fresh foods to the community while addressing concerns of food insecurity and food policy. Such food banks have developed a social mission to provide greater food access in low income minority neighborhoods. Food hubs are an emerging innovative approach to the aggregation and distribution of locally grown food within a community. They are designed to tackle a critical

need: the infrastructure and business management needed to handle the logistics of bringing food from the farm to the plate (FarmAid, 2011). Small farmers themselves often don't have the time or resources to accomplish or manage such task. Additionally food hubs can address food insecurity by providing fresh foods to the local community and to centers where purchase of locally grown foods would have previously been inaccessible.

A food hub is defined as “a centrally located facility with a business management system that facilitates the aggregation, storage, processing, distribution, and/or marketing of locally or regionally produced food products” (Horst et al., 2011). Food hubs provide a management team that coordinates supply chain logistics and that is typically tasked with finding new markets for producers and coordinating distributors, processors, and buyers (FarmAid, 2011). Many food hubs have permanent facilities that offer equipment for food to be stored, processed, packed, and even sold under a shared label (FarmAid, 2011).

Food hubs can offer technical and business planning for farmers (FarmAid, 2011). They can serve a variety of purposes such as educating consumers about their food sources, providing local farmers with markets, providing access to healthy food, and providing nodes for social interaction (Horst et al., 2011). Food hubs build relationships and networks among local farmers and consumers and promote food-related health and social services for people from all socioeconomic and cultural backgrounds. Some food hubs facilitate use of food assistance, including SNAP and WIC (Horst et al., 2011).

Food hubs have partnered with food banks to provide fresh, local food to the community. Short-termed charity-based solutions were thought to be ineffective to deal with the issue of hunger. The humanistic approach to food hubs implies a more health-centric focus rather than producer-focus approach with an emphasis on the community. The vision for this type of food

hub is the ownership by the consumer rather than the producer (Horst et al., 2011). The main purpose of this type of food hub is to contribute to a healthier equitable system (Horst et al., 2011).

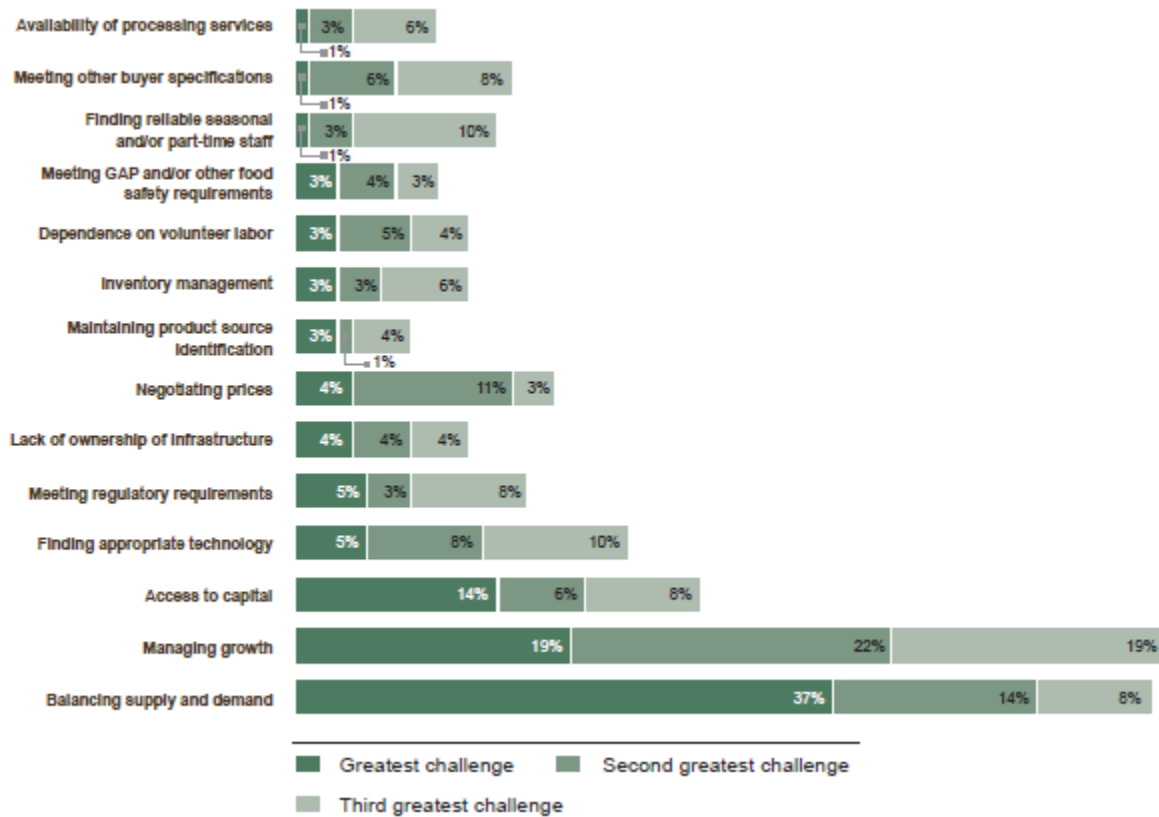
The Wholesome Wave recognizes that food hubs are able to provide easy access, opportunity and viability for low income consumers and small producers. The Wholesome Wave is an organization that enables “underserved consumers to make healthier food choices by increasing access to fresh, local, and regional food” (Wholesome Wave, 2015). It also collaborates with 80 community based partners and impacts more than 500 farmers’ markets, community health centers, hospital systems, and food hubs (Wholesome Wave, 2015). Wholesome Wave has been in the forefront of providing incentive programs in low-income communities that attract SNAP customers to farmers’ markets. Customers are given “bonus incentives” (vouchers) in the form of tokens or paper coupons to match or supplement EBT purchase (Young, et.al, 2011). These vouchers are utilized as a strategy to improve the purchase power of low-income families at farmers’ markets as well as reduce barriers of farmer’s markets purchases (Young, et.al, 2011). “The incentives, funded by private foundations, non-profit organizations and local governments, are structured to improve the purchasing power of low-income families at farmers’ markets so they can afford to buy more fruits and vegetables and other healthy foods” (Young et. al, 2011).

Food hubs have the ability to fill the gap between local food producers and buyers. In a 2013 national survey of food hubs, it was estimated that the 2012 food hub sales exceeded \$3.7 million dollars which contributed significantly to the local economy (Kresge, 2013). Additionally, about 19 jobs were created per food hub with half of national food hubs having operational commitments to “increasing food access and/or community development” (Kresge,

2013). The top six challenges faced by food hubs are managing growth, balancing supply and demand, access to capital, finding appropriate technology to manage operations, negotiating with producers and/or consumers, and finding reliable seasonal and/or part time staff (Kresge, 2013).

Figure 2 shows the main challenges faced by 79 food hubs in the US.

Figure 2. Top Challenges of 79 Food Hubs in the US in 2013



A big operational challenge is to be able to have year-round sales instead of seasonal operations. Out of 107 food hubs interviewed, 13 did not operate year round, which may have been contributed to the fact that about 70% of these food hubs had been operating for less than five years (Kresge, 2013). Additionally, about 70% of these food hubs were nonprofit, and four

out of the thirteen food hubs had indicated the food hub was run by volunteers with no full-time paid staff (Kresge, 2013).

2.5 WCFB and Hunger Relief

Hunger currently affects 10.3 percent of the population in Worcester County, representing about 83,000 people living at or below the federal poverty line (WCFB, 2014). The Worcester County Food Bank (WCFB) is a non-profit anti-hunger organization responsible for the distribution of food to 138 partner agencies which affect 60 cities and towns in Worcester County. WCFB's mission is to "engage, educate, and lead Worcester County in creating a hunger-free community, so its efforts go beyond the distribution of donated food". The WCFB distributes over 5 million pounds of donated food and grocery product in partnership with food donors, financial supporters, and volunteers. The WCFB obtains perishable and non-perishable food and distributes it. Together with its network of partner agencies, WCFB works on implementing best practices in food and nutrition assistance and collaborates with a variety of leaders at the local, state, and federal levels to create sustainable solutions to hunger through systemic change.

There were 99,796 people in Worcester County (12 percent of the population) that received food assistance from the Worcester County Food Bank and its network of food pantries in 2012. There was a total distribution of 5.4 million pounds of donated food, which accounted for 4.5 million meals. There have been many approaches towards closing the hunger gap. Some current strategies of food collection and distribution, food safety, and advocacy have been in the forefront of new implementations to assist in closing the hunger gap.

Emergency food relief provision by Worcester County Food Bank has been on high demand. Worcester County contains four food deserts which are currently listed on the United

States Department of Agriculture (USDA) website. Food deserts are “parts of the country that lack fresh fruit, vegetables, and other healthful foods” which is largely due to “lack of grocery stores, farmer’s markets, and healthy food providers” (USDA, 2015). Even though the poverty rate in Worcester is relatively low compared to other cities in the northeast, it has increased over the last decade. Income inequalities in the city of Worcester are increasing. Research has shown the poverty rate increased 15% and the percent of households making more than \$150,000 per year increased 20% compared to 1990.

The income gap between Worcester and its surrounding towns increased over the last ten years. The increase during this period was considerably slower than the increase that occurred between 1980 and 1990 based on research. There have been increases in income and educational levels in some areas of Worcester like Shrewsbury and Grafton. Advocacy priorities for the WCFB have been focused on urban agriculture, healthy food financing bill, and the healthy school fund. The Worcester County Food bank is responsible for the creation of the Worcester Food & Active Living Policy Council which advocate legislation to help expand access to healthy food outlets like grocery stores, corner stores, and farmer’s markets in parts of the state that need them (MPHA, 2014). Urban agriculture currently provides a possible solution to local access to fresh food. City planners and local nonprofit organizations including the Regional Environmental Council, are trying to expand urban farming on vacant lots in the city of Worcester. The project will allow for urban farmers to grow food in areas zoned for manufacturing and industrial uses.

The legislation makes use of the Food Trust Program to provide flexible financing programs, including loans, grants, and technical assistance to support the development, renovation, and expansion of food stores, farmers markets, and other retailers selling healthy

food in the low-income areas “WCFB is a leading advocate for promoting access to healthy food by improving the quality of school breakfast and lunch, expanding the summer food service program, and increasing funding for the Supplemental Nutrition Assistance Program or SNAP, formerly known as Food Stamps” (WCFB,2014).

The WCFB faces current challenges in their hunger relief effort. One of the challenges is that there are some changes that will affect the community hunger problem beyond the distribution of donated food. “National food insecurity data reveals that about 45% of those struggling with hunger actually have incomes above the federal poverty level, and 53% of poor households are food secure. Thus, measuring need based on local poverty rates alone provides an incomplete illustration of the potential need for food assistance within our communities” (FBSJ, 2015). Food insecure children are those children who live in households who struggle to put food on their table. However, food insecure households are not necessarily food insecure all the time. Food insecurity may represent the need to make tradeoffs between important basic needs like housing, medicine, heat, etc., and healthy food.

Food relief is also directly related to other issues such as environmental contamination. “Constant efforts on food safety and sanitation in relation to the factors such as environmental contamination (e.g. heavy metal), mishandling of processing (e.g. aflatoxin), poor social conditions, and lack of safe food preparation facilities are necessary to ensure the supply of food, especially staple food in poor and food-insecure countries (Van de Venter et al., 2000; WHO, 2009). Food security would be jeopardized if food production systems are not safeguarded against contamination; for instance, forced discard of contaminated staples (unsafe for consumption) would diminish the staple food supply and consequently intensify the chronic food shortage problem.” (Nah et al., 2010). There have been many efforts to improve food safety,

sanitation, and quality assurance. Hunger has been a concern for generations and has continued to affect millions of people around the world. “Although many efforts have been devoted to reduce hunger, challenges such as growing competitions for natural resources, emerging climate changes and natural disasters, poverty, illiteracy, and diseases are posing threats to food security and intensifying the hunger crisis. Concerted efforts of scientists to improve agricultural and food productivity, technology, nutrition, and education are imperative to facilitate appropriate strategies for defeating hunger and malnutrition” (Nah et al., 2010).

Our team interviewed the Worcester County Food Bank and asked them about what they think the obstacles are towards reaching their goal of closing the hunger gap in the city of Worcester. The following challenges were that the demand has grown and has changed over years. Also the way people live now is different and chronic hunger has become an issue. Another challenge was that the WCFB wants to go beyond emergency food donations. Changes in the economy have also been a challenge to the WCFB since they are dependent on the government for funding. The WCFB looks to promote ways in which all the community has access to healthy food and where there is no stigma attached. Another challenge is that a lot of the current volunteers at the WCFB now are in retirement age, so the food bank wants to find new people to hire if jobs could be created. And lastly, the WCFB wants to find ways to produce local food and find a way to be independent from processed and canned food. They are trying to find a system that is self-sufficient.

3.0 Methodology

The overall goal of our project was to better understand the opportunities and challenges presented to food banks as they try to develop the capacity to operate a food hub. To achieve this goal, previous food hubs that had either partnered with or had been developed by food banks in their development processes were studied through extensive research and interviews.

Our primary objectives were:

Identify current cases of food banks partnering with food hubs in the United States.

Understand the motivating factors behind the start-up of these food hubs.

Identify and assess the partnerships formed and resources used to establish the food hubs.

Better understand how the social mission of the organization influenced strategies and outcomes.

Consider the impacts that these food hubs have had, or any anticipated impacts that they will have in the future.

3.1 Identifying Existing Cases

Our first objective was to determine if there were any existing models of partnerships between food hubs and food banks in the United States. After extensive research, we created a list of about 15 food banks that had some type of affiliation with a food hub. We sent that list to Jean McMurray, the Director of the Worcester County Food Bank, to get her input on any specific food banks from our newly compiled list that she would like us to focus on in our study. Jean selected the following four food banks that she wanted us to look further into:

Food Link in Rochester, New York

Food Bank of Northeast Georgia in Athens, Georgia

Chattanooga Area Food Bank in Chattanooga, Tennessee

Food Bank of Northern Alabama in Huntsville, Alabama

All of these food banks had some type of food hub associated with them. Table 3 shows the food bank, the name of the food hub associated with it, and the name and job title of the respective person interviewed in our study.

Table 3: Interviewee Information

Food Bank	Food Hub	Person Interviewed
FoodLink	The FoodLink Food Hub	Mitch Gruber, Community Food Access Coordinator
Chattanooga Area Food Hub	Harvested Here Food Hub	Ray Rollison, Director of Harvested Here Food Hub
Food Bank of Northeast Georgia	Northeast Georgia Food Hub	TJ Smith, Food Hub Manager
Food Bank of North Alabama	North Alabama Farm Food Collaborative	Kathryn Strickland, CFS Director of Food Bank of North Alabama

3.2 Conducting Interviews

Our next step was to come up with a set of questions to use in our interviews that would address useful topics concerning the development of food hubs. The following questions were determined as a team by brainstorming thematically what we thought the Worcester County Food Bank would need to know if they wanted to assist in the development of a food hub themselves. We also worked directly with Jean McMurray and our advisors at WPI to refine the questions. Our final interview questions were as follows:

What led you and your organization to take on the challenge of creating a food hub as part of your operations?

How did you coordinate with local farmers?

Who were your main supporters/ what sort of assistance did you need?

Can you help us understand your current operations as both a food hub and food bank?

- How long did it take to go from idea to implementation?
- Did you use pre-existing resources?
- How do you measure success/evaluate your operations?
- What sort of costs have you incurred?
- Are there still segments of the population that you're not reaching?
- What are the key staff and volunteer roles in your food hub?
- How does the food hub distribute food? What are some of the impacts of the food hub?
 - Economic, social, and environmental?
- What was the main obstacle in implementing your food hub?
- Is there anything else that you'd like to share?
- What advice would do you have for the directors and staff of the WCFB as they consider the possibility developing a food hub in central Massachusetts?

After finalizing this set of interview questions, we conducted phone interviews with the directors of each of the food hubs previously mentioned in this report. We were all present for the phone interviews; one person conducted the interview, another recorded the interview, and the others took notes. We then each took an interview recording and typed up a transcript for each of the conducted interviews.

3.3 Analyzing Transcripts

After the transcripts for each of the conducted interviews had been typed up, we each printed out copies of the four interviews and carefully studied them. We took notes on important themes we identified across all four food hubs. In analyzing these transcripts, we made a list of specific areas of interest that we wanted to look for in each of the interviews. The themes we looked for across all four interviews were:

The motivational factor behind the start-up of the food hub

The partnerships and resources that were necessary

The main challenges that were faced in development of the food hub

The impacts that the food hub has had, or is expected to have

4.0 Findings

This section of the report outlines the major findings resulting from our case studies of the aforementioned food banks and food hubs. Section 4.1 talks about the initiatives of the food hubs. Section 4.2 talks about some of the reasoning and motivation for the start-up of the food hubs. Section 4.3 looks at the key resources and partners needed in implementation of a food hub. Section 4.4 outlines some of the major challenges faced by the food hubs/food banks studied. Section 4.5 takes a look at some of the impacts that these food hubs have had, or are expected to have in their respective communities

4.1 Food Hub Initiatives

More than 200 food banks currently operate in the United States. Additionally, there are more than 63,000 affiliated agencies which help distribute more than 2.5 million pounds of food yearly (USDA, 2015). Integrating local foods into the food bank's operation allows for the provision of healthy local foods to families as well as the creation of economic opportunities for farmers (USDA, 2015).

The team identified four food banks that have partnerships with food hubs to determine the role that each play in the start-up of the facility and determine the motive behind starting this new type of organization. Each of the initiatives varied uniquely, however all had come to the conclusion that building relationships with farmers to provide fresh, healthy, local foods to the community was the best reason for the development of a food hub. Based on interviews with executive board members of the food hubs, the team was able to capture the beginnings and initiatives of these four food hubs.

Each of the food hubs had different beginnings, however, the collaboration with a food bank was a significant piece in the organization and development. The four food banks identified

are the FoodLink Food Bank, Food Bank of Northeast Georgia, Chattanooga Area Food Bank, and Food Bank of North Alabama. Table 4 contains a brief description of the food banks identified.

The location of each of the food banks/food hubs interviewed is displayed in Figure 3.

Figure 3. Geographical Location of Food Banks Interviewed

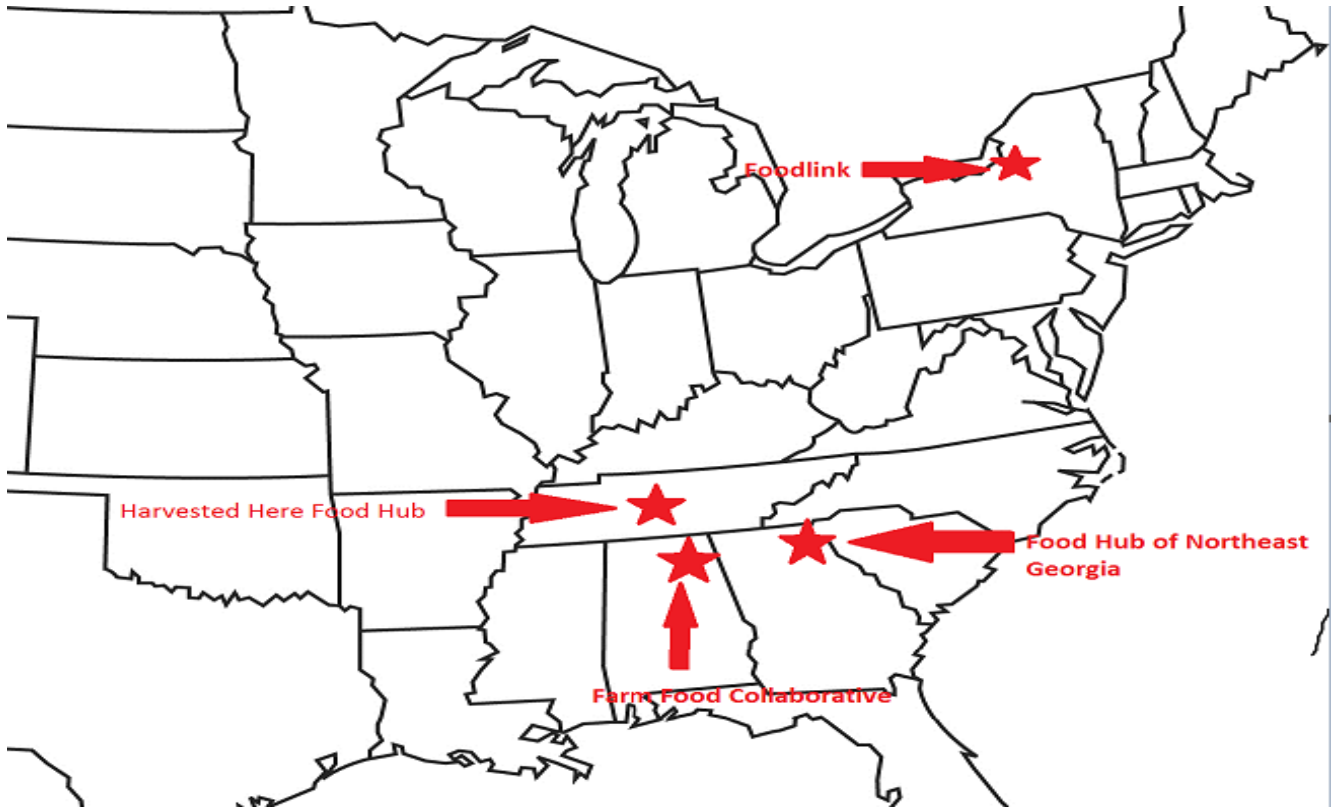


Table 4: Description of Food Banks Involved with Food Hub Development

	FoodLink Food Bank	Food Bank of Northeast Georgia	Chattanooga Area Food Bank	Food Bank of North Alabama
Mission	"To end hunger and to leverage the power of food to build a healthier community" (FoodLink, 2015).	"To work toward ending hunger as part of an overall community effort to alleviate poverty" (FBNG, 2015).	"To end hunger for every person in our region, today. And tomorrow, do it again" (CAFB, 2015).	"To feed the hungry today and create solutions to end hunger tomorrow" (FBNA, 2015).
About	<ul style="list-style-type: none"> - Distribute food to network of human service agencies. - Offers more than 30 food-related programs - Operations target addressing root causes of hunger 	<ul style="list-style-type: none"> - Food is distributed through partner agencies and community programs - Includes mobile pantry program, Food 2kids program and agency distribution. 	<p>The food bank believes:</p> <ul style="list-style-type: none"> "Operating collaboratively, efficiently & ethically will help us end hunger in our region"(CAFB, 2015). - "All people deserve dignity and respect" (CAFB, 2015). - "Access to local and healthy food is an urgent need, and critical to a prosperous community" (CAFB, 2015). 	<ul style="list-style-type: none"> -Food bank "procures warehouses and distributes food products in support of North Alabama's needy, ill and children" (FBNA, 2015). - Provides the Hyatt Loan fund to give micro loans to family farmers and entrepreneurs who "create jobs and greater access to healthy food choices in underserved communities" (FBNA, 2015).
Location	Rochester, NY	Athens, Georgia	Chattanooga, Tennessee	Huntsville, Alabama
History	Food bank started in 1976 with the mission of rescuing and redistribute food from manufacturers in a network of 500 programs. One of the oldest food banks in the country.	Food bank was founded in 1992 initially distributing 350,000 pounds of food to 36 agencies.	Food bank founded in 1982 as an "outgrowth of as task force on hunger issue lead by area congregations and civic-minded leaders" (Charity Navigator, 2015).	Food bank founded in 1984 from a small group of volunteers started collecting and distributing food and wanted to "make sure food gleaned from food suppliers did not go to waste" (FBNA, 2015).
Service Area	10 counties	14 counties	22 counties	11 counties
Food Distributed Annually	18 million pounds	12 million pounds	10.8 million pounds	7 million pounds
Programs affiliated	500	230	380	200
Food Hub Partner	FoodLink Food Hub	Food Hub of Northeast Georgia	Harvested Here Food Hub	The Farm Food Collaborative

Each of these food banks had an impact in the development of its respective food hub. However, their experiences varied and their respective relationships are described below.

FoodLink Food Hub

FoodLink developed its food hub program out of its existing FoodLink Food Bank for the purpose of “helping underserved individuals and institutions in acquiring fresh, healthy, and affordable foods” (FoodLink, 2015). The organization wanted to go beyond “food banking” and do more than redistribute food by taking charge of the many assets and resources available in the food bank. In an interview with Mitch Gruber, the food access and program manager at FoodLink, the team was able to identify that program initiatives were linked the availability and variety of nutritious foods and vegetables in the local agricultural community. “The answer is that we really started this whole process well before the term food hub was even around and before it was even born of the USDA and Wellness Center. We have had leadership in this food bank forever. We are one of the oldest food banks in the country, and it’s really been part of our mission right from the beginning that we wanted to make sure we were addressing the root causes of hunger and not just the symptoms” (M. Gruber, personal communication, January 16, 2015).

Going beyond the traditional food bank mentality meant more than receiving and distributing donations. They decided to shift their motto after acknowledging that traditional food banks do not end the issues of hunger (NGFN, 2013). Over the 30 years of food banking FoodLink had acquire an infrastructure which included an 80,000 sq. foot warehouse, a 3,700 sq. ft. cooler, a 5,200 sq. ft. freezer, a 10,000 sq. ft. commercial kitchen, and a fleet of 13 trucks that included refrigeration (NGFN, 2013). Additionally, they also had an inventory system, workforce, and critical relationships necessary to start the initiative. The FoodLink Food Bank

wanted to leverage their large infrastructure "to be good partners in local food movement" (NGFN, 2013). FoodLink had many initiatives to link the agricultural community, and in 2010 started running a program that enabled purchasing from farmers and reselling to the local, underserved community. Initiatives to providing local food to the community were started before FoodLink had heard about the term food hub, therefore FoodLink was able to label something they were already doing. "Right around that same time is when we started hearing the term food hub. It just seemed to really mesh well with the things we had already been doing. We got involved with the Wellness Center and USDA and the rest is history" (M. Gruber, personal communication, January 16, 2015).

Food Hub of Northeast Georgia

The Food Hub of Northeast Georgia (FHNG) stemmed from the Food Bank of Northeast Georgia which has distributed 12 million pounds in 2013 through 230 partner agencies (FBNG, 2015). Food hub operations are scheduled to start in the fall of 2015. Initiatives for creating a food hub in Georgia stemmed in 2008 from an idea from the food bank's current president, John Becker. An interview with TJ Smith, food hub manager, revealed Becker recognized the efforts to operate as a food bank were very great. However he sought to go beyond traditional food banking and improve the area's farming stream. "A lot of these farms are smaller, versus the traditionally larger farms of South Georgia. We thought we could work with these farmers to aggregate demand, get their produce, and get it into more markets. And then also have another source for the food bank itself" (T.J. Smith, personal communication, March 4, 2015). Therefore, the goal of having this food hub is to increase the output of small local farms while providing fresh foods to the community. The food bank operates in a 14 county service area where there

are 5,000 registered farms. “A lot of these farms are smaller, versus the larger traditional farms of South Georgia” (T.J. Smith, personal communication, March 4, 2015).

The food bank saw an opportunity to work with the farmers to “aggregate demand, get their produce, and get it into more markets” (T.J. Smith, personal communication, March 4, 2015). The food bank wants to create an opportunity for small fruit and vegetable producers to “compete in the commercial market in areas of processing, canning, storage, marketing and business strategies” (UGA, 2015). This food hub hopes to help small farmers to get into the commercial markets by "implementing educational and resource programming for farmers, entrepreneurs, markets, and the community" (UGA, 2015). Additionally, FHNG has partnered with Georgia Organics which has partnerships with small farms and organic markets. Such partnership help facilitate relationships between the food hub and the farmers (TJ. Smith, personal communication, March 4, 2015).

Harvested Here Food Hub

Harvested Here was established in 2013 with the mission to “strengthen and secure the future of a healthy regional food supply by providing local farmers with services that connect their food to the Chattanooga community” (Harvested Here, 2015). It developed from an initiative of a local food movement foundation called The Benwood Foundation and the collaboration of the Chattanooga Area Food Bank (CAFB). “Benwood supported with some educational resources for farmers, and a marketing program for local produce,” said Ray Rollison, Director of Harvested Here Food Hub. Additionally, up to two times a year Benwood printed a “pretty exhaustive directory that had all the local farms, artisans, restaurants, grocery stores, and institutions in them so they could use that as a reference and contact each other and purchase local products and get them into the marketplace” (R. Rollison, personal

communication, February 24, 2015). Benwood Foundation is an organization that has the mission of "supporting the people and projects that make Chattanooga a great city" (Benwood, 2015). The organization provides grants and supports projects that demonstrate strategies with high impact results (Benwood, 2015). Due to a survey by Benwood to determine next steps to grow and sustain local economy, the foundation was able to determine the market opportunity to help grow and sustain the local farming economy (R. Rollison, personal communication, February 24, 2015). "Out of that research, they found the market, with the number of farms it had, the number of retail outlets, restaurants, and potential customers that local farmers would have" (R. Rollison, personal communication, February 24, 2015). Based on this research they were able to determine the potential for the development of a food hub.

Benwood approached CAFB to house and support this operation due to the facility's existing infrastructure to house and support the food hub operation "The food hub supporting local food, its distribution, and the producers of it, blended quite well with the new leadership in the food bank and their goal to not only provide food for the masses in need in the market, but also to provide nutritional, local, healthy food" (R. Rollison, personal communication, February 24, 2015). Therefore, the CAFB decided to support Harvested Here with accounting, human resources, banking, and licensing issues (R. Rollison, personal communication, February 24, 2015). Benwood along with another organization called Footprint Foundation provided grants to cover operation expense and budgeted business plan for four years (R. Rollison, personal communication, February 24, 2015). Footprint Foundation is a foundation organized to create a "community-led board" and has the mission to "foster meaningful connections to place" where it "strives to enrich learning, honor the natural environment, and build a creative culture"

(Footprint Foundation, 2015). The four year plan was based on the food hub becoming sustainable within such time period.

Farm Food Collaborative

Providing fresh local foods to the community was determined to be a way to help local farmers increase their revenue as well as help the local community to have access to fresh nutritious food grown locally. Between the years 2007-2012, North Alabama lost over 2000 farmers and about 54% of North Alabama farmers have reported net losses according to the latest agriculture census (FBNA, 2012; Food Bank of North Alabama, 2014). A census of food consumption by residents of North Alabama revealed that community members spent 2.2 billion a year on food produced outside their region versus 0.2 billion invested in locally grown foods (Food Bank of North Alabama, 2014). Additionally, some of the highest rates of diet related diseases in the nation is reported to be located in Alabama with an estimated 340,000 overweight children at risk of serious health problems (FBNA, 2012).

The Food Bank of North Alabama (FBNA) partnered up with the Alabama Sustainable Agriculture Network (ASAN) to investigate “models applicable in the southeast that link local farmers with institutional buyers” (SARE, 2012). FBNA then facilitated a multi-stakeholder Working Group of farmers and institutions to help identify current barriers in local wholesale markets while educating stakeholders about successful models (SARE, 2012). Additionally, it investigated value chain development through site visits, extensive interviews with, and/or presentations by food hubs to identify models that are applicable in the southeast. They also conducted interviews with service directors, chefs, and facilitated conversations between local producers, institutional buyer and supporting agencies. These extensive interviews were performed to identify barriers which impede producer access of local wholesale markets (SARE,

2012). After challenges were identified, the food hub developed a “Through these activities, FBNA has laid the foundation for an entity called the North Alabama Farm Food Collaborative that (1) adapts the two most promising models; (2) leverages existing community resources; and (3) fosters a mutually beneficial business relationship among producers, aggregators and institutions” (SARE, 2012).

The Farm Food Collaborative Food Hub project was “designed to capture food dollars leaving the region and create easy access to healthy, local food choices” (K. Strickland, personal communication, April 9, 2015). The project was also designed to help family farms thrive while increasing access to local healthy food and strengthen local economy (Watson, 2014).

4.2 Motivation

To understand the reasoning behind the development of the food hub, the team set out to identify motivational factors that influenced the involvement with the food hub initiative. It is important to get a good sense of the background of how each food hub came about to understand the role that it will play in the local community, whether it will provide food accessibility to local institutions or directly to the consumer. Table 5 shows the main motivators that led food banks to become involved in the development of each of the four food hubs interviewed.

Many farms that produce local food are small farms that work directly with buyers. Direct marketing of their produce is usually the most profitable for the small producers. There are a number of factors that producers take into consideration when choosing their marketing partners. These factors include the ability to develop relationships with customers; to maintain profitable prices; to maintain autonomy in production scale and produce type; and the ability to provide access to fresh and quality produce (Pinchot, 2014). The producers also face some challenges such as the ability to produce enough volume to meet demand and to access sufficient

markets and customers to make a profit (Pinchot, 2014). To address the supply chain gaps in local food distribution, food hubs are becoming a very popular market development.

Table 5. Motivational Factors for the Development of a Food Hub.

Motivation	Food Bank of North Alabama	Northeast Georgia Food Hub	FoodLink	Harvested Here Food Hub
Loss of farms and high rates of diet related diseases	✓			
Help farmers and help improve the farming stream in their area		✓		
Go beyond donations and beyond food coming in and out			✓	
To help grow and sustain the local farming economy				✓

Many farms that produce local food are small farms that work directly with buyers. Direct marketing of their produce is usually the most profitable for the small producers. There are a number of factors that producers take into consideration when choosing their marketing partners. These factors include the ability to develop relationships with customers; to maintain profitable prices; to maintain autonomy in production scale and produce type; and the ability to provide access to fresh and quality produce (Pinchot, 2014). The producers also face some challenges such as the ability to produce enough volume to meet demand and to access sufficient

markets and customers to make a profit (Pinchot, 2014). To address the supply chain gaps in local food distribution, food hubs are becoming a very popular market development.

Our team conducted four interviews with different food banks/food hubs and asked them about what drove them into the creation of a food hub. The Food Bank of North Alabama's motivation was related to the loss of farms and high rates of diet related diseases. They decided to create The Farm Food Collaborative food hub project is designed to provide access to healthy and local produce. Also, their food hub project aims to avoid food dollars leaving their region due to the loss of farms.

Northeast Georgia Food Hub developed the idea of creating a food hub when their current president, John Becker, was searching for ways to address the hunger issues in their area. They serve a 14 county service area and he wanted to try something new that would help farmers and help improve the farming stream in their region. Georgia has large scale farms but also many small farms. Their idea was to see in what ways they could work with these farmers to aggregate demand, get their produce, and introduce it to more markets. They also thought it would be convenient to have another source of food for the food bank itself. This idea of a food hub went along with their mission which is to work toward ending hunger as part of a community effort to eradicate poverty. So based on this, they started developing the idea of creating a food hub.

FoodLink informed us that they first started the concept of a food hub before the term was formally introduced. Their mission is to address the main roots of hunger. They wanted to go beyond donations and beyond food coming in and out. They have created different programs and initiatives that are closely related to the agricultural community. The agricultural community in Rochester is a very important asset for them since they have nutritious and affordable fresh produce. Then they started focusing on specific programs that enabled them to buy from farmers

and then resell to the local community. Then the term food hub became more popular and later then they got involved with the USDA and the Wellness Center.

Harvested Here Food Hub provided us with some background information on Chattanooga to have a better understanding of what led them to create a food hub. He said that there are a number of foundations and benefactors in the Chattanooga market. One of them is the Benwood Foundation. This foundation started a program in 2010 that they supported with educational resources for farmers and a marketing program for local produce. This program included a directory that had all of the local farms, artisans, restaurants, grocery stores, and institutions in it so they could use it as a reference. This directory made it possible for participants to contact each other and purchase local products. That was a program that was supported for about three years financially. Towards the third year of the program, there was a survey to see what would be the next steps to help grow and sustain the local farming economy. Based on the survey, they decided that a food hub would enable them to build on the current system of supplying and purchasing local food products. This survey was based on the market, on the number of farms it had, the number of retail outlets and restaurants, and potential customers the local farmers would have.

The food hub aggregates, markets, sells, delivers, and develops markets for the local farmers and their products. After the decision to create a food hub, the Harvested Here Food Hub went to existing produce distributors in the area to see if they would be willing to be part of a program that would support local farmers. The distributors were not willing to because they thought it would be detrimental to specialize in local products. Then the Benwood Foundation took a step ahead and decided to contact different organizations that would be able to support this project. The Chattanooga Area Food Bank was found to be the best organization to do that.

The food bank had the goal to provide local and healthy food to the community and the food hub supported this goal. The Chattanooga Area Food Bank decided to be part of this project and agreed to make a portion of their 45,000 square foot facility house the offices, the coolers, the receiving dock, and the trucks that the food hub would use in operating their business. The food bank also supported the food hub with accounting, banking, and licensing issues. The staff that was currently working and the offices that already existed were used in the development of the food hub. Two of Chattanooga’s largest foundations, Benwood and Footprint Foundation, provided the monetary assistance that would cover the operation’s expense and the budgeted business plan for four years. The decision to have a food hub was made early in 2013. Then May 2014 they hired the director of the food hub and since then they have been working on the food hub. They expect the food hub to be self-sustainable after four years of implementation.

4.3 Key Partners and Resources

The table below shows briefly shows the key partners and resources for three of the four food hubs that we interviewed. It shows who their partners were and what these partners provided for the food hub. It also shows what key resources the hub poses and the employees that help operate the hub. The section that follows the chart goes into more detail about each.

Table 6: Key Partnerships and Resources

	Foodhub of Northeast Georgia	FoodLink Foodhub	Harvested Here Foodhub
Key Partners	-University of Georgia -Georgia Organics -Food and Drug Administration	-United States Department of Agriculture -State of New York	-BenwoodFoundation -Footprint Foundation -WinRock
What Partners Provided	-Donations -Grants -Helped establish Relationships with Farmers	- Grant money for first few years of operations	-Survey work -Helped establish relationships with farmers -Grant Money -Private Donations

			-Break-Even Analysis
Key Resources	-Warehouse -Refrigerated Trucks -IQF Machine	-Warehouse -Commercial Kitchen -Refrigerated Trucks	-Warehouse -Refrigerated Trucks
Employees	-Director -Warehouse Manager	-Twenty Employees	-Director -Sales and Marketing Coordinator -Assistant Manager

FoodLink Food Hub Rochester, New York

The FoodLink Food Hub in Rochester, New York has partnered with local farmers, the United States Department of Agriculture, and the State of New York to assist with its operations as a food hub. Their partnership with local farmers is how FoodLink acquires the food that it sells to its local consumers. FoodLink is currently partnered with about 15- 20 local farmers in the Rochester area. These farmers provide FoodLink with the food that they sell to consumers and organizations, such as the Rochester YMCA. FoodLink negotiates fair prices with farmers to purchase their produce. Then they add a five to fifteen percent markup, in order to cover their operational costs, and then they sell the produce. Other partners that FoodLink utilizes are the USDA and the State of New York. These agencies provided FoodLink with grant money in order to help get their operations started. Grant money is necessary as during the first few years because food hubs often experience losses as they try to expand their operations and reach economies of scale.

Some of the key resources that the FoodLink Food Hub utilizes are their state of the art warehouse, commercial kitchen, trucks, and their employees. In 2012 FoodLink moved their operations into a state-of-the-art warehouse. The state of the art warehouse has allowed the food hub to have its own designated space, where in the old facility the food hub and food bank were working very closely with one another. Also the warehouse provided them with more space allowing them to purchase, store and sell more food than the previous warehouse allowed. The

state of the art warehouse includes a thirty thousand square foot cooler and a large freezer. The warehouse also has truck docks which make it easy to load and unload the trucks. The food hub utilizes the trucks to both pick up food from farmers and drop off food with customers. They have a commercial kitchen which they utilize for value added processes. For example, they purchase apples from local farmers and then slice them in the commercial kitchen before selling them to the local YMCA. The FoodLink Food Hub has over twenty employees on staff with titles including food sourcer, logistics coordinator, director of kitchen operations, warehouse pickers, kitchen staff, and sales person. These people are responsible for the day-to-day operations of the food hub.

Food Hub of Northeast Georgia

The Food Hub of Northeast Georgia has partnered with local farmers, the University of Georgia at Athens, Georgia Organics, and the Food and Drug Administration. They have partnered with the University of Georgia on a couple of FDA grants which will help them fund the first three years of operations. In addition to the USDA grants, they have also received funding from private donors which will assist their operations until they can achieve economies of scale. Their goal is to be self-sustaining after year three of operations. Their partnership with the University of Georgia has also allowed them to establish partnerships with local farmers. The University of Georgia is home to the state's cooperative extension program that works with local farmers to assist them in increasing their produce outputs. They have used the cooperative extension program to reach out to local farmers and establish relationships with them. Their partnership with local farmers provides them with the produce that they sell to local restaurants, retail markets and institutions. Another way they have established relationships with these farmers is through their open forum meetings. They hold these meetings to introduce themselves

to farmers, let them know what the food hub is doing, and how the food hub can benefit them. Another partner they have is Georgia Organics. Georgia Organics is an organization that has partnered with numerous local, organic farmers and farmers markets. These use this partnership to help establish relationships with local organic farmers and to also assist local farmers in getting certified organic.

The key resources that the Food Hub of Northeast Georgia utilizes are their warehouse, trucks, and employees. They are currently constructing the warehouse that will hold their operations. The warehouse will house their individual quick frozen machine that will allow them to extend the shelf-life of the products they sell, providing convenience to both them and their consumers. The warehouse will also have a commercial kitchen which will allow them to do value-added processing. They have refrigerated trucks which they will use to pick up foods from the local farmers, bring them to the warehouse, and then distribute them to their customers. The food hub currently has two employees but will be bringing on more as operations expand. They have one employee who handles everything that occurs outside of the building which includes building relationships with farmers, coordinating produce purchases, and finding markets to sell the produce to. The other employee they have handles everything inside the building which includes operating the machinery, coordinating volunteers, and making sure the deliveries get out on time. They will be hiring a maintenance man to ensure all of their equipment remains operational. Over the next five years they will be looking to create thirty additional jobs.

Harvested Here Food Hub

The Harvested Here Food Hub of Chattanooga, Tennessee has partnered with local farmers, the Benwood Foundation, the Footprint Foundation, and WinRock. They have partnered with local farmers who provide the food hub with the produce that they can sell to local

restaurants, retail markets, and institutions. The Benwood Foundation did a lot of survey work for the food hub to establish that there was need for a food hub in the area. Also, the Benwood foundation helped them establish relationships with farmers. The Benwood Foundation had a previous history with local farmers as they used to print a monthly magazine that had info on the local farms and what they had available to purchase. The Benwood Foundation and Footprint Foundation provided Harvested Here with grants to help cover the operating expenses of the food hub for the first four years, with the goal of being self-sustaining after four years. WinRock is an organization that has gone around the country and catalogued existing food hubs and gotten information about their financials. WinRock has projected that for a food hub to sustainable they must have margins of twenty-five percent and sales between 1.8 and 2.2 seven million dollars (R. Rollison, personal communication, February 24, 2015).

4.4 Challenges Faced

Some of the major challenges associated with starting a non-profit, sustainable food hub are outlined in this part of the report. After interviewing several current food hub directors across various locations in the United States, the following were determined to be the main themes that these food hubs had to address: funding and support, local interest and time, relationships with farmers, pricing structure of goods, locational challenges, and newness of the food hub model. Table 5 outlines the main challenges by category, and signifies whether each of the interviewed food hubs are currently facing each of the challenges mentioned. FoodLink is a more established food hub, while the three others are newly implemented food hubs. This is why FoodLink is not currently facing some of the challenges mentioned in this section.

Table 5: Challenges Faced in Food Hub Implementation

	Harvested Here Food Hub	Northeast Georgia Food Hub	FoodLink	Farm Food Collaborative
Funding and Support	X	X		X
Local Interest and Time	X	X		X
Relationships with Farmers	X	X		X
Pricing Structure	X	X	X	N/A
Locational Challenges	X	X	X	N/A
Cutting-Edge Model	X	X	X	X

Funding and Support

The most common theme addressed by the directors of the food hubs interviewed was start-up funding and continual financial support. Many mentioned the helpfulness in finding local benefactors. Ray Rollison, Director of the Harvested Here Food Hub, a subsidiary of Chattanooga Area Food Bank, mentioned that they had partnered with two local foundations early on: Benwood Foundation and Footprint Foundations Foundation. These two foundations were able to supply money for the start-up of Harvested Here via grants. It is intended that they will provide Harvested Here with money to stay running for the first four years of operation, with the intention that they will become self-sustaining by that time. While speaking on this subject, Mr. Rollison said, “How can you do this and make money? Recover your expenses in

this non-profit. To me, that is the main obstacle of the implementation of the plan.” One of the biggest challenges for this non-profit model of a food hub is becoming and remaining self-sustaining.

TJ Smith, the manager of the Food Hub of Northeast Georgia, also mentioned the difficulty in finding funding for the start-up operations. The Food Hub of Northeast Georgia is also a non-profit, and they have their fair share of financial concerns. He mentioned that they raise a lot of money themselves, and are also continually “coming up with creative ways of getting the money.” Mr. Smith also spoke of an interesting partnership that they had developed with the University of Georgia. Along with helping the food hub to initiate contact and develop relationships with local farmers, the university also helps with funding of certain programs that are used to help educate farmers. This innovative partnership is an asset that Worcester County definitely has available to it considering the high concentration of local colleges it has to work with. The local colleges in the area might not necessarily have agriculture programs, but perhaps other assets of the local universities could be utilized, such as networking and community outreach. The University of Massachusetts Amherst has an agriculture program that could possibly be utilized. Mr. Smith also mentioned the difficulty in finding funding for the start-up operations. Another thing Mr. Smith mentioned was that once the food hub is up and running, it is important to maintain good relations with partnering farmers, because they are the fundamental sustaining feature of a successful food hub.

FHNG is a new food hub and plans to become completely self-sustaining in about three years’ time. Mr. Smith’s main advice for the Worcester County Food Bank in regards to funding was to, “find as many partnering agencies as you can find that are willing to make a

contribution.” Again, importance is stressed on creating local partnerships that will contribute to funding.

Mitch Gruber is the Food Access Programs Manager of FoodLink, an innovative non-profit food bank in Rochester, New York that has created a food hub within its food bank operations. Their food hub has been in operation for a few years now, and they are now for the most part a self-sustaining operation. Mitch said, “The vast majority of what we do is self-sustained by our operating budget and part of it has to do with the network of supporters that we have in the Greater Rochester area, and part of it has to do with the fact that we decided to make our operating budget look different than other food banks.” FoodLink has had their share of a combination of private funding, government grants, support from the state, and support from the USDA. Another thing that Mitch noted is that none of FoodLink’s products are purchased with grant money. This is a testament to the sustainability of FoodLink’s model. He noted how FoodLink was unique to other food hubs, stating that over 60% of their revenue is earned through food sales from their various programs. They use the revenue earned to continually buy more food to supply the food hub. They are able to use all of this earned revenue to sustain their programs, and continually purchase fresh food from local farmers.

Kathryn Strickland, the Executive Director of the Northern Alabama Food Hub, said that most of their funds come from grants, funding, and contributions from buyers and farmers. The NAFH’s main supporters consist of the Alabama Department of Agriculture, the Alabama Cooperative Extension, three local school districts, three key foundations, farmers, and buyers. She also mentioned that the biggest costs the food hub incurs are money spent for salaries, insurance, and food safety training costs.

Local Interest and Time

Time and interest were two other challenges that were noted by both Mr. Rollison of Harvested Here Food Hub and TJ of the Food Hub of Northeast Georgia. Mr. Rollison noted that prior to beginning to build the operations of a food hub in Tennessee, they had administered an extensive survey to local residents and businesses to determine the need and interest level in the community. This enabled them to determine their support level within the community, giving them an idea of who could possibly be beneficial and helpful in their start-up.

Mr. Smith spoke about the significant time challenge that the Food Hub of Northeast Georgia encountered in their start-up process. He noted that informing people and getting people interested and excited about the upcoming food hub were highly enjoyable tasks. However, he also noted that most people believed that from the time they were hearing about the food hub, they believed it meant that there would be one running in their community in about one or two years. With the Food Hub of Northeast Georgia, this was not the case. Mr. Smith noted that it took them a lot longer than expected to get everything set up and to a place of successful operation. The reason the implementation of the FHNG took so long is that they needed to completely build their operation from the ground up; including building the housing facility of the food hub. This construction project of a new warehouse storage and office space is what took the implementation so long. When he spoke of the time constraint and local interest, he said, "That would be a challenge too, now coming back and saying 'we're doing it now, sorry for the wait.'" It took the Food Hub of Northeast Georgia about seven years to go from the initial idea to actual final implementation of a food hub.

Ms. Strickland of the North Alabama Food Hub also mentioned that the implementation of a food hub is not a short process. While she did not expand much on it, she did say that when planning for a food hub, one should "plan for a very long incubation period, up to 7 to 10 years."

This parallels with what Mr. Smith of FHNG said, both mentioning an implementation time period of about seven years.

FoodLink, in New York, did not have the difficulty of stirring local interest, because their food hub developed on its own naturally over time. Their model of a food hub is more of a program within a food bank, so they had an operation arising in parallel with the development of food hub operations. Mr. Gruber noted the importance of determining the need. He said the food hub has to “fill a void” within the community. It has to serve a needed purpose within the community, so it is important to determine that need.

Relationships with Farmers

All four food hubs interviewed spoke of the importance of developing good, lasting relationships with local farmers. Farmers are the lifelines of food hubs; without them food hubs would not exist. In the start-up processes of a food hub, getting in touch with farmers can be as simple as looking up existing farms, picking up the phone, and informing them of the upcoming food hub (R. Rollison, personal communication, February 24, 2015). The hard part can be enticing the farmers to transition from their old ways to selling their crops to the food hub instead. Mr. Rollison of Harvested Here Food Hub framed the challenge as “getting the farmers to buy into these new markets, what’s new for them, and what standards did they have to adhere to become those customers.” On the topic of farmers, another issue that Mr. Rollison noted was determining what amounts of food would be needed to be purchased from each farm. Balancing the supply of the farmer with the need of the consumer is a challenge, because both the consumer need and the farmers' supply varies.

Mr. Smith of the Food Hub of Northeast Georgia spoke of their relationship with farmers and their partnership with the University of Georgia. The University of Georgia has

connections with many local farmers in the area there, and they work with the Northeast Georgia Food Hub to connect them with farmers. The Food Hub of Northeast Georgia also partners with other organizations within the area that are involved with farmers and organic growers. For example, they are partnered with Georgia Organics which helps them to initiate contact with farmers and set up relationships. TJ Smith said that, “our partners are what is really helping us facilitate relationships.”

Ms. Strickland of NAFH did not mention the troubles of initiating contact and developing relationship with farmers. She said that they quite simply facilitate their relationships with farmers through outreach, meetings, and phone calls. One challenge she noted, however, was ensuring that the farmers would benefit from partnering with the food hub. Ms. Strickland mentioned how important is that farmers are able to "sell above the cost of production", and the food hub has to be able to offer them the opportunity to do so. She also mentioned another difficulty concerning farmers: the lack of food safety certifications among farmers. This is an issue that should be dealt with as early on in the implementation stage of the food hub development process as possible, because if farmers are not properly certified it could lead to delays in the start-up operation of the hub.

FoodLink has well-established relationships with farmers, considering it is a food hub operation that has been in business for about 5 years. Mr. Gruber noted that the beginnings of their relationships with farmers mostly stemmed from them visiting farmers markets and speaking to them directly. He mentioned that it was not a challenge to get farmers to sell to FoodLink as a food hub, because most of them had donated to FoodLink in the past. FoodLink is a very well-known organization in Rochester, so a lot of people know who they are already and what they do.

Pricing Structure

Determining a fair, yet sustainable pricing structure was another difficulty that was addressed in all of the interviews with current food hubs. Mr. Rollison of Harvested Here Food Hub spoke of a recent conference that he attended in which the subject was food hubs. He mentioned that the USDA expert on food hubs spoke at the event who indicated that “to breakeven, the food hubs as they see it need to do between 1.8 and 2.2 million dollars annually, and have margins of about 25%.” This means that for every dollar of sales, food hubs need to keep 25 cents. However, in a 2013 survey of food hubs conducted by the National Good Food Network, it was found that 67th percentile of food hubs surveyed had a net margin of 14% (Wallace, 2015). It was not mentioned whether the food hubs surveyed were non-profits, for-profits, or a mix of the two. Mr. Rollison mentioned that it is a “slow road in sales” to get to that margin.

When Mr. Gruber of FoodLink spoke about determining pricing, he noted that they charge whatever they have to be based on both the product and labor required to produce the final product. He noted that they sell their product at “without a doubt” market rate. It is a challenge, as a non-profit, because they need to ensure that their consumer will be able to purchase the product at as low a price as possible, while simultaneously ensuring that they are making enough money to sustain the food hub operations. On this subject, Mr. Gruber stated that “we are not buying and selling it at a loss that would be crazy. We are trying to make sure that we at least can cover our costs.” This suggests that FoodLink aims to breakeven with their sales from the food hub, which differs from the 25% profit margin previously mentioned that Mr. Rollison spoke of. FoodLink, being an older and more established organization, does not have to make up for a lot of the extra costs that other, new food hubs have to take into account

(such as an additional rent, new certification fees, any additional construction costs needed, etc.). Since FoodLink does not have to rely on sales from the food hub to cover these one-time start-up costs, they simply can use the money they make from food hub sales to continually purchase more food from farmers.

Mr. Smith of the Food Hub of Northeast Georgia noted that when considering pricing of products, they first start with the current USDA market price for respective products. He said that their main concern is determining a fair price for both the farmers and the consumers that purchase the products. Mr. Smith mentioned that it is not an exact science with pricing, stating that it is a lot of “back and forth and figuring out what’s good for everybody.” Mr. Smith also said that he estimates currently about 46 cents per pound of food to process and freeze the produce. This price estimate includes things like gas costs to pick up the produce, processing, bagging, and storage of the product. From there, they give the farmer the option to take that cost out of their sales or pay it upfront.

Locational Challenges

Location plays a couple of roles in determining food hub operations. Since food hubs rely on the production of local farms, the geographic location determines what produce can be grown at certain times of the year. For example, the food hubs in the South, like the Food Hub of Northeast Georgia and Harvested Here Food Hub in Chattanooga, Tennessee both experience longer growing seasons than those up north, like FoodLink. The food hub at FoodLink is considered to be a year-round operation. Mr. Gruber spoke on this, stating, “Our food hub thrives when the growing season thrives. When it isn’t thriving, then we don’t have much of an operation. We still do as much as we can.” Another challenge that location poses, on a smaller scale, is the determination of truck routes. Depending on the distance of the farms from the

central location of the food hub, this could incur significant costs. If there are a dense number of farms contributing in a smaller radius of the food hub, however, these costs could be minimized. Food hubs also have to consider a way to move food from the farms to the actual hub warehouse location. Most do this through the use of refrigerated trucks. Some food hubs have the farmers drive their produce to the food hub, while others pick it up and transport it themselves. Some food hubs, like FoodLink, do a combination of the two, depending on the location of the farms.

Cutting-Edge Model

Possibly one of the most relevant challenges in developing a food hub is the issue of its newness. The food hub is still a very new business model, especially those that work in collaboration with food banks as non-profit organizations. The non-profit food hubs that are currently being developed are paving the way for future food hubs. Considering the limited number of non-profit food hub/food bank partnerships, there are not many past cases to learn from. Mr. Smith of the Food Hub of Northeast Georgia spoke on this issue, noting that the “learning curve is very steep”.

As new issues arise, these food hubs have to experience them for the first time and share the obstacles they encounter with prospective food hub developers at conferences. Collaboration between current and upcoming food hubs is vital to the success of future food hubs. This collaboration is currently being done on a national scale throughout the country through various conferences. Representatives from current food hubs, and people interested in creating potential food hubs, are encouraged to attend to share their experiences and knowledge on the implementation of successful organizations. The National Good Food Network is an online database that offers a variety of useful resources regarding food hubs (NGFN, 2013). The NGFN

also organizes conferences to encourage personal collaboration between food banks, the model will have to be continually refined for many years before it is close to perfected.

4.5 Food Hub Impacts

The food hub primarily has a positive impact in the community by providing access of locally grown fresh foods to buyers, whether it be institutions or direct consumers. The team divided key components of food hub impact based on economic, environmental, and social impacts it has in the community.

Economic Impact

Economic impact affects the level of local activity in an area and is a function of measures like sales volume, value added, job creation, and the economic well-being of residents (EDRG, 1997). These measurements can indicate the economic well-being provided to the community. Food hubs have the potential for economic development, especially for small farms. creating sales at about less than \$500,000. Three out of the four food hubs interviewed have already started operations with tangible economic impact; the fourth food hub has projected what their contribution will be.

Shortly after five months of operation, Harvested Here had built a network of 29 different farms, selling 53 different items to “15 upscale restaurants, three larger retail supermarkets, and three institutional cafeteria” (R. Rollison, personal communication, February 24, 2015). Currently, they are purchasing produce from farmers and redistributing it to “retailers, cafeterias, schools, institutions, and restaurants.” (R. Rollison, personal communication, February 24, 2015). Additionally, the food hub is projected to increase the consumption rate of local foods

from 7% to about 15% -20%, which would inject millions of dollars into the local economy (Foundation, 2015). Being able to sell the food to restaurants and cafeterias allows more local foods to be consumed along with contributing to the expansion of local agriculture.

The Farm Food Collaborative food hub project, in North Alabama has “distributed over 500,000 pounds of local food sold to public schools, grocery stores, restaurants” (K. Strickland, personal communication, April 9, 2015). They have taken a systemic approach in which distribution of local foods is not limited to low income communities. Fresh food is sold to hospitals, public schools, workplace cafeterias, and restaurants in the region (FBNA, 2015). The FoodLink organization has also had the opportunity to increase purchases of produce from local farms in the last five years, currently purchasing 3 million pounds of food. It also has the capacity to distribute over 18 million pounds of food yearly (Harvested Here, 2015). By promoting advantages of buying local, such as food delivery to the consumer in less than 36 hours after harvest, Harvested Here has emphasized the food hub’s economic value.

The FoodLink food hub provides fresh nutritious foods at a price lower than retail. The food hub workers deliver food directly to individuals through the curbside market and to select for-profit stores (NGFN, 2013). The curbside market is a mobile market that provides fresh produce to rural and under-served low-income communities in the months of July through August (FoodLink, 2015). They accept EBT and WIC Farmer's Market Nutrition Program (FMNP) which means they increase the accessibility of fresh foods to the population under government assistance (FoodLink, 2015). The Curbside market is available in 30 sites, mostly around public housing. The healthy corner stores are in the pilot phase in which FoodLink Food Hub is currently working with 3 stores. Furthermore, FoodLink has 12 farm stand sites with community farmers in which they have distributed over 35,000lbs of food (NGFN, 2013). The

farm stands also accepts EBT and WIC. "So we try to make sure that they [prices] are under market value in terms of if that means retail. But we are not buying stuff and selling it at a loss, that'd be crazy. We are trying to make sure that we at least can cover our costs"(M. Gruber, personal communication, January 16, 2015). Because the hub is working with non-profits, they "are getting everyone the lowest price as possible" by taking things that are off-sized and off-colored (M. Gruber, personal communication, January 16, 2015). The revenue created by the food hub allows it to stay in business well as help the food bank become self-sufficient. In 2012 alone the food bank was able to benefit from \$662,320 dollars of revenue from wholesale food (FoodLink, 2015). FoodLink is a non-profit organization and 60% of the revenue it maintains is earned. The food is not purchased with grant money, even though grant funding is received. Grants are allocated to specific programs have been added to move the purchased products.

Given the need for full time staff to run their operations, food hubs also contribute to new job creation. All of the food hubs interviewed had full time staff members which included managers, food truck drivers, distributors, human resources, mechanics, and maintenance staff. With a projected growth of the facility, all of the food hubs project to increase the hiring of full-time employees to run the operation.

With NGFH opening its operations later this year, it is anticipating to allow farmers to use the food hub facility to process or freeze their produce to "have a year round sales rather than just seasonal sales" (T.J. Smith, personal communication, March 4, 2015). It would impact the community by allowing farmers to continue sales beyond the growing season.

Environmental Impact

Food hub has taken the role of "encouraging producers to use more sustainable production practices" along with finding new ways to reduce waste and energy use in the

distribution system (Barham, 2015). Furthermore, they have come up with innovative practices to increase the length of food viability to provide sales year round. The food bank staff at the North East Georgia food bank noticed a very large loss of surplus perishable products due to lack of demand for specific items. Therefore, the food bank came up with the idea to “take the donations from the corporations and farmer, process it, freeze it, and provide it to the food banks that need frozen vegetables” (T.J. Smith, personal communication, March 4, 2015). By freezing the produce, the shelf-life is preserved by six months, therefore allowing for the distribution of food products over time. The food hub hopes to join such efforts to allow farmers to utilize their facilities to provide sales year round, as well as decrease the amount of food wasted due to lack of demand during the growing season.

Additionally, the trucks and refrigeration systems being utilized can have routes that are economical for the food hub (M. Gruber, personal communication, January 16, 2015). The FoodLink food hub plans the routes so that when food is dropped off at a certain location, fresh picked food is being picked up at a near location for further processing. Therefore, energy and costs for collection and distribution can decrease.

Social Impact

The food hub develops initiatives to create relationships between the farmers and consumers who are purchasing the food. Additionally it builds bridges with other organizations to help create new opportunities in the community

NGFH has taken the initiative to develop a partnership with the University of Georgia (UGA), that has helped cultivate and create relationships with farmers. UGA helps “create programs to assist farmers with improving their facilities and volume that that they [farmers] can participate in the food hub” (T.J. Smith, personal communication, March 4, 2015). Additionally,

the hub is coordinating meetings and open forums with farmers to introduce farmers to the facilities and services available through the food hub. It will give farmers "a more sustainable status for their business" as well as introducing farmers to what is being done at the food hub while getting feedback about how farmers "would best like to use those facilities" (T.J. Smith, personal communication, March 4, 2015).

The Harvested Here food hub has socially expanded to help create new initiatives for new food hubs in other communities. They have been helping a group from Greensboro, North Carolina to understand the best practices of the trade in different areas of the community. This help comes in the hope of creating a ripple effect in which North Carolina will also be developing its own food hubs. Additionally it has made a continuous effort to encourage the community to ask for local foods and support their movement by creating advertising that supports the purchase of locally grown food to be displayed in affiliated stores and restaurants. Harvested Here has also reached the population by advertising and promoting a healthy cooking class through Facebook. Recently, they prepared cooking demos on winter vegetables and had 50 people attend. The FoodLink food hub has also provided nutritional classes to hundreds of individuals, as part of the food hub initiative.

FoodLink connects the products with the clientele by searching for products in demand from organizations like YMCA. The food bank has been cultivating partnerships with people in a variety of different groups similar to YMCA since 1978, therefore the initiatives to expand are supported by these groups. Some additional programs it promotes includes a mobile market, which sells 150,000 pounds of fresh local produce every year. This hub also has 10 different small urban farms which contribute to 50,000 pounds of produce. Even though these programs have been implemented separately, it is integrated in what FoodLink calls a food hub.

Additional social impacts are to provide these fresh foods to a lower income community. The Food Bank of North Alabama has provided technical assistance to help start five new farmers markets which now accept SNAP benefits. It also has developed partnerships with three local schools to make fresh food available and provide healthy choices for the students while supporting local family farms (Bonvillian, 2014).

Future Plans

Even with much success impacting the community, food hubs are still looking to continue utilizing their current resources to expand the impact they have in the community. Currently, Harvested Here is working on balancing, understanding, and developing the fruit, vegetable, and cheese market which accounts for 17% of the farms locally available. However, they have plans to become involved with the purchase and distribution of animal protein.

Upon opening, NGFH plans to determine fair pricing for farmers and markets which include processing, freezing, pick-up and delivery services of the produce utilize IQF. Since the purchase of the equipment is the biggest costs incurred during this process, NGFH plans to optimize IQF use by arranging visits to Winter Suns Organization in Kingston, New York. The facility utilizes IQF and will be a good resource for learning about operations and costs involved with IQF use. They are also visiting facilities such as Mott Food Ventures, and Western Massachusetts food bank in Greenfield, MA to understand how they process “food from the farm to the table” (T.J. Smith, personal communication, March 4, 2015). Additionally they will be visiting Seabrook Farms in New Jersey to understand how to perform IQF preparation to be able to utilize similar procedure in the food hub and food bank. Visiting these facilities will allow the food hub to learn more about the operations and food processing of IQF. This will be an

advantageous process in providing the needed background to implement IQF in the food hub for future use.

5.0 Recommendations

This section of the report makes specific recommendations for the Worcester County Food Bank regarding ways they could go about partnering with a newly implemented food hub in Worcester County. Four specific recommendations are made for the WCFB: help the food hub facilitate new partnerships and relationships through the use of the food banks already established network; operate as two separate entities, but in the same roof; plan for a long (about 7-10 years) implementation period; and consider the various food hub models that exist and determine the one that would work best for Worcester County.

Recommendation 1: WCFB should help facilitate partnerships for the food hub through the use of their current networks.

Based on the WCFB's extensive partnerships and networks, it can utilize its connections to facilitate relationships between the food hub, farmers, and consumers. In case the mission of the food hub is to support farmers by connecting them to institutions, the food bank should decide what their involvement will be in facilitating relationships, and how they want to support the initiative. In order for the food hub to be successful it ought to first determine if there is a gap or need the community for the provision of local foods. Such need can be determined and addressed by surveying and informing current partnering agencies of WCFB about the food hub's mission to provide local fresh foods to the community. The survey would be utilized to determine the demand for accessibility of local fresh foods that could be addressed with the development of a food hub. This connection can also help determine if the establishment of a

food hub will be competing with existing local food initiatives or food-based enterprises (K. Strickland, personal communication, April 9, 2015).

Furthermore, partnering agencies can help with monetary resources as well as being influential in development of a plan of action that fills the need in Worcester County. In the development of the FoodLink food hub, the need for providing access of fresh local foods to the community was determined through informing partnering agencies of food hub initiatives (M. Gruber, personal communication, January 16, 2015). Such partnering agencies then informed other organizations about the food hub initiative which helped determine the demand needed to be filled by such agencies. Partnering agencies who are interested in the food hub initiative may be able to assist monetarily in the implementation of the hub. Since financial backing is crucial for the food hub to thrive, facilitating partnerships will be beneficial for the food hub.

Once a plan of action is in place for the food hub, the food bank should contact any farmers that currently provide food to WCFB. The WCFB will be able to facilitate the relationship between the food hub and partnering farmers based on the already established relationships the food bank maintains. Additionally, the food hub can be used as a resource to benefit local agriculture as well as fulfilling the mission of decreasing hunger in the Worcester County. The food hub benefits local agriculture by being a resource that connects food produced by local farmers directly with the buyers whether they are institutions or directly the consumer. It will also benefit local agriculture by encouraging stewardship of healthy soils, clean water, and conserving the land to provide healthy food for the hub. From connections facilitated by the WCFB, the food hub will be able to determine what the farmer's needs are, and develop ideas of how the facilities can be utilized (T.J. Smith, personal communication, March 4, 2015).

Furthermore, by establishing early on relationship with farmers, the hub will be better able to effectively communicate value proposition to farmers.

Recommendation 2: Have separate food hub/food bank operations, but operate under the same roof.

The WCFB should consider operating under the same roof as the implemented food hub, but keeping their two operations separate. Ray Rollison had mentioned how the Harvested Here Food Hub operates under the same roof as the Chattanooga Area Food Bank, but as a completely separate operation. It seems as though this model could benefit the WCFB in keeping a close relation with the food hub, and to help keep communication open and immediate between the two entities.

The implementation of a food hub can be extremely resource-heavy, especially during the initial phases of operation. Food banks can offer assistance to food hubs in the area of resources, since a lot of the infrastructure that food hubs require is similar to that of food banks. The WCFB could share a portion of its warehouse space in order to be used as a storage area for food belonging to the food hub. In the case of the Food Hub of Northeast Georgia, they had to construct their own, brand-new warehouse from the ground-up to house the food hub facilities. This incurred many extra costs that could be avoided if the warehouse space could be shared with an already-established organization, like the food bank. The WCFB could then potentially also share other aspects of the facility, like trucks for food transportation, coolers and refrigeration areas, and office space for the “backroom” functions.

The food bank could also share volunteers with the food hub, especially in the early stages of implementation. By the current volunteers at the WCFB learning about the food hub, the

simple spread by word of mouth could help to gain the food hub more recognition within the community, and to spread its mission. The food hub would benefit from the volunteer help, not having to incur a cost for help, and also make itself known to new people who could be beneficial within the community. It could be seen as a networking opportunity for the food hub.

It would also be useful for any members of the Worcester County Food Bank to go out personally to other food banks around the country who have partnered with a food hub, to see firsthand how they interact. In most of the cases that we studied, the food banks and food hubs operated as completely separate entities. That being said, they shared space with each other in terms of offices and warehouse storage.

Recommendation 3: Take into consideration the implementation period of a food hub

The planning process to create a food hub requires a long period of time before it is actually implemented. It may take up about five years or more for a food hub to actually start operating after the planning process. The planning process of a food hub has basic steps that are listed below.

1. Create a Committee.

The committee should include representatives from various areas. These areas include the local agricultural community, business area, local high education institutions, buyers, and consumers. The objective of a committee is to gain feedback for the food hub plan and make recommendations.

2. Distribute Surveys.

Surveys are an important part for the food hub plan. The surveys help in getting to know the needs of the local community and local producers. This survey can be distributed among schools, restaurants, potential buyers and consumers, local farmers, and business areas.

For example, the WCFB can distribute the surveys to restaurants asking questions regarding their access to local foods. Some questions for example could be: Does your restaurant makes use of local fresh product? If you do, have you had challenges accessing this local product? Would you be interested in having some sort of service delivering this local product to your restaurant?

3. Identify conditions related to creating a food hub.

Taking into to consideration the characteristics of the local agricultural community is important to decide what type of food hub would work best for the local producers. The current farmers markets and locally grown products can be identified to help define the food hub functions.

4. Food hub characteristics and services.

A business plan for a food hub must take into consideration the needs of consumers, producers, and the local community. The food hub should be able to be involved in the community's characteristics, for example, education, community service, and supporting the local economy. The goals of the business plan should be profitability and sustainability.

5. Create objectives and strategies for the food hub

Taking into consideration the recommendations from the committee, objectives for the food hub can be identified and also the strategies to achieve those objectives.

Recommendation 4: Establish the proper model

One of the biggest issues that needs to be addressed in the early stages of planning is what type of food hub model should be utilized. From the interviews it became clear that there are two main models for food hubs. The first type of model emphasizes meeting the farmer's needs first and foremost and individual consumers second. This type of model focuses on opening up new retail markets for small, local farmers by aggregating supply from numerous

small farms and selling the products to large retail markets such as grocery chains, restaurants, or institutions. Both Harvested Here and the Food Hub of Northeast Georgia utilized this model, focusing more on the needs of local farmers, rather than the needs of consumers. The other type of model focuses on getting fresh, locally grown produce directly into the hands of low-income consumers. While this model does support local farmers, the main concern for a food hub using this model is to benefit consumers and provide them with the opportunity to purchase fresh produce at or slightly below market price. The FoodLink Food Hub in Rochester uses this model. It is essential to establish what food hub model will be used in the early stages of planning.

Another issue that needs to be considered is who will run the food hub operations. All three food hubs have their own director, someone who is in charge of the food hub and only the food hub. The FoodLink Food Hub, which operates in close proximity to the FoodLink Food Bank, has its own director. The director of the food hub still reports to the director of the food bank, but they are separate people with their own responsibilities. The person that is in charge of the food hub does not necessarily need to have experience in the food industry. None of the people that were interviewed for this study had any past experience in the food industry. Mitch Gruber, the food access coordinator for the FoodLink Food Hub was a history and anthropology major in college. TJ Smith, the manager of the Food Hub of Northeast Georgia, was an English professor before being hired to his current position. Some qualifications that all three interviewees had was passion and the ability to learn on the fly. From the interviews, it was clear that these men were very passionate about their jobs and the difference that they were making in the community. The process was definitely not smooth, but their willingness to learn and put in hard –work allowed them to overcome issues.

One person cannot handle all of the responsibilities of running the food hub so other full time staffers will have to be brought in to assist with the work. Harvested Here and the Food Hub of Northeast Georgia had three and two full time employees respectively. FoodLink has twenty but they are more of a mature food hub than the other two. We recommend that two other full-time staff member be brought on to help run the hub. One of the people brought in will be responsible for everything that goes on outside of the hub's facility. This includes but is not limited to building and maintaining relationships with farmers, finding markets to sell the produce, and marketing the hub to the community. The other person will handle everything that goes in inside of the food hub's facility. This includes but is not limited to coordinating volunteers, processing food drop offs, and fulfilling produce orders.

6.0 Considerations for the Future

Our project opened the avenue for a few questions that the food bank should consider in determining their involvement in the development of a food hub in Worcester County. These questions pinpoint areas in which the WCFB should assess when thinking about partnering up.

How can the Worcester County Food Bank share its current resources and infrastructure to support the development of a food hub? What are the opportunities and risks, if any?

It is important for the WCFB to determine to what extent it will be able to contribute to development of the food hub. Resources such as trucks, warehouse space, volunteers, overhead operations, and partnerships should be weighed to determine what can be offered in support of the food hub development. Sharing resources during the food hub launch can reduce initial costs, but can also reduce WCFB productivity. It will be important to ask what is the availability of the resources and infrastructure and how much can be shared without affecting the WCFB productivity.

How might a food hub interfere with food bank operations? In what way would it compliment the food bank's mission and purpose?

Maintaining food bank operations is the primary concern of the WCFB, therefore it is important to research how the development of the food hub can affect it. Would farmers, who now donate fresh foods to the WCFB, still donate their produce when given the option of selling their produce to the food hub? An understanding of the roles and boundaries to preventing redundancy between the two must be identified and considered.

How might the WCFB, through its networks and fundraising skills, assist in the financing of a food hub? What are the opportunities and risks in doing so?

The food hub will need financial backing for it to start before it is fully independent. Therefore, the WCFB could assist the food hub by identifying current partners that may be potential donors and contributors to this new initiative. The utilization of WCFB networks creates investment opportunities for interested partners that can provide benefits for both the Food hub and the investor. The financial backing would be crucial in initiating operations of the food hub, and decreasing the incubation period needed for the food hub to start operating.

What role might partnerships with universities, such as WPI, play in helping the WCFB support the development of a food hub?

This is a good question to help determine how universities, like WPI, can better assist the WCFB in initiatives to end hunger. As previously mentioned, the Northeast Georgia Food hub was able to utilize the University of Georgia to foster better relationships with farmers. UGA was able to help small farmer meet demands so that they could participate in the food hub initiative. It worked as a facilitator between farmers and the food hub. Due to its success, it would be important for the WCFB to have in mind what role universities can fill to help with the food hub initiative. What could WPI and the surrounding universities offer to the initial launch and sustainability of the new food hub? Through sponsorships, WPI and the surrounding universities can engage in project work that can serve to benefit the food hub. Outside perspectives on food issues provided by university students and professors can provide fresh and innovative ideas.

How will the food hub organize its leadership structure in order to maintain operations?

The food hub will need to be managed differently and independently than that of WCFB in order to keep the business aspect manageable. What organizational communication structure suits the food hub for optimal efficiency? Preventing structures that limit or prolong decision making can limit growth and innovation for the food hub.

Who will be the target audience and demographic the food hub will serve? How will the new food hub differentiate itself from WCFB?

A survey of the market can help identify the demographic in the area and aid in understanding the needs of the community. Additionally, it would be good to explore how the design of the image and branding influence the public's opinion of the food hub? Presenting a different and unique image for the new food hub can help reach the desired clientele.

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