

Building community health from the ground up: community gardens and food insecurity in  
North Carolina

by

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## **Abstract**

Community gardens are a potential option to help alleviate food security problems. This research evaluated North Carolina community garden cases that are in operation within counties where food security is a significant problem. The research sought to understand if North Carolina community garden projects help to alleviate food security issues; and if so, how. A case study of three different community gardens and their participants was conducted in order to answer this question. In reviewing each of the garden cases, it is apparent that each increases food security through its own unique garden framework. It is also apparent that different models for community engagement have a relationship with positive food security outcomes as well as positive outcomes for community growth within the context of the community garden. The research also points to how different models for governance, location, and success management practices may be useful in increasing positive food security outcomes. Further study is required in order to understand the degree to which the framework of each garden impacts food insecurity and how that may be leveraged for further successes in community development.

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## Definitions

For this research, the following definitions were used:

*Food Insecurity* – a household-level economic and social condition of limited or uncertain access to adequate food (USDA, 2006).

*Community garden* - an organized initiative through which a section of land is used for urban agriculture which may be for the personal use or collective benefit of its members (Glover, 2003, p. 265; Holland, 2004).

*Community garden framework* - the means by which the garden operates and reaches the community

*Garden context* - the physical properties of the garden as well as the relationship of the location to community members and assets

## **Chapter 1 - Introduction**

Food security, the reliable access to enough nutritious and affordable food, is a problem in the United States as well as throughout the world. According to Feeding America (2018), there were 41,204,000 people in the United States as of 2016 that are considered food insecure. This is no exception in North Carolina, which is rated as the 10th most food insecure state in the country with 15.4% of the population considered to be food insecure. In order to resolve this food insecurity problem, traditional food security improvement methods such as food banks and soup kitchens as well as alternative programs like community gardens have been suggested.

While they are a much older concept elsewhere in the world, community gardens have existed in the United States in some form since at least the 1890s (Community of Gardens, n.d.). These early gardens were intended as a use for vacant land to help those unemployed due to financial crisis to have food. Community gardens provided a measure of resilience to an urban community that was struggling and on the brink of civil unrest. There are many cases in the US and the rest of the world in which community gardens have been utilized to aid food shortage concerns throughout their history. As such, community gardens have become a popular method of helping to alleviate food security concerns. Within the practice of community development, this solution is one of those excellent opportunities to strengthen community bonds by solving a community concern.

## **Chapter 2 - Background**

The practice of establishing community gardens has experienced a great deal of resurgence in the last several years, especially in North America. The bulk of the literature reviewed is from 2007 or more recent, in part due to this resurgence and discussion as to the many potential values of community gardens. In reviewing the literature, three main themes present themselves: effects of community gardens, garden framework, and impact on food security.

### **Effects of Community Gardens**

The theme of effects on community gardens focuses on the non-food security related benefits of participation. Many of the articles in this category seek to dig deeper into the additional positive effects of the participation in community gardens beyond the provision of a measure of food and food security. Draper and Freedman (2010) identified eleven unique themes within the available literature on community gardens including health, food security, economic development, youth education, open space preservation, crime prevention, leisure and recreation, beautification, social interaction, cultural preservation/expression, and community empowerment. This review broadly arranges many of those benefits into the categories of cultural, health, and environmental.

#### **Cultural Effects**

Cultural effects of community gardens are those that preserve and enhance a sense of community through participation in the community garden. Firth, Maye, and Pearson (2011) review garden sites in Nottingham, United Kingdom to understand the link between community gardens and thriving communities. This research determined that community gardens can contribute to the generation of social capital. Hite, Perez, D'Ingeo, Boston, and Mitchell (2017)

made similar observations. The gardens bring people together, create a meeting place, and involve food centered activities that have historically generated social capital. They also appear to promote a sense of place and improve cohesion in the communities in which they exist. Community gardens also have a unique potential for helping immigrants establish a new home. Hondagneu-Sotelo (2015) discusses how community gardens provide an outlet for experiences that were a part of life in immigrant home countries, providing an opportunity for immigrants to flourish where they are planted. In that same vein, Filkobski, Rofe, and Tal (2016) discuss how community gardens offer a means of connecting multicultural and highly urbanized communities, leading to connections between different socioeconomic groups. Community gardens also have the potential to change communities by increasing collective efficacy (Teig et al., 2009) and connecting individuals to sustainable ideals (Turner 2011). Seifert (2014) also discusses a social advantage for those struggling with substance abuse. Substance abuse peer groups have the potential to reinforce behavior, while community gardens provide social outlets that move addicts away from addictive behaviors.

### **Health Effects**

Aside from food related health effects to be discussed further, the literature suggests community gardens are linked to other significant improvements in participants' health. Community gardens have positive implications for mental health. They also provide exercise as participants till the soil and care for the plants (Seifert 2014). This needs to be monitored closely as Dewi et al. (2017) discuss that those dealing with mental disabilities might need a more intentionally crafted garden routine to be of benefit. Hartwig and Mason (2016) discuss that participation in community garden has a positive impact on depression and general mental well-being, introducing a sense of positive power and control as well as a sense of belonging.

## **Environmental Effects**

The environmental effects of community gardens are perhaps the more readily apparent of the different non-food security related effects. Gardening gets participants involved in the cultivation of the earth and allows them to connect with their local environment. Turner (2011) discusses the role of bringing community gardeners to understand inherent environmental values and connect with the environment down to the soil, creating a cultural appreciation for the environment. Cabral et al. (2017) discuss the impacts of community gardens on ecosystems services, specifically benefits to microbial soil activity, nutrient cycling, and water regulation in Germany.

## **Community Garden Framework**

The second primary theme of literature revolves around different design features and functions of community gardens. Garden framework, as discussed here, is the means by which the garden operates and reaches the community. While the health, cultural, and environmental effects of community gardens and their impact on food security answer the question “why,” garden framework explains the “how.” In developing a model of community gardening, this theme provides some instructions and methods to avoid potential pitfalls and ensure the greatest possible benefit. Within this theme a few categories are most prominent: community engagement, context, and governance.

## **Community Engagement**

One of the most relevant elements of garden framework to the practice of community development is community engagement, or the means by which the community garden leadership improves outcomes through education and outreach. This area of the literature tends to investigate existing gardens to understand what might be done better. Often, community

gardener participants are not gardening experts. As such, they require some level of education in order to best manage a community garden plot for productive results. In one study, Clavin (2011) discusses the learning that happens naturally as part of participating in community gardens. This learning is a benefit to participant well-being and an integral part of the community garden experience. Gregory, Leslie, and Drinkwater (2015) discuss the potential areas to focus education of participants including soil health management, crop rotation, and pest management among other opportunities. This work suggests both the importance of education and some areas in which garden coordinators may focus their efforts and resources to ensure that garden benefits are fully realized.

The second element to community engagement is understanding how different gardens perform the vital task of community outreach. This vital area that connects community gardening so closely to community development is one of the areas of study that seems to appear least in literature (Drake & Lawson, 2015). Within the area of outreach, there are perceived to be two methods of encouraging participation: push and pull. Push strategies are similar to project management strategies in which required tasks are identified and garden members are encouraged to complete these tasks through either formal processes like sign ups or informal processes like running task lists. Pull strategies encourage participation with education and social events designed to bring individuals into the garden. Shiffler, Sheets, and Tylander (2009) describe various push and pull strategies utilized by community gardens throughout the United States. Simmen (2009) goes one step further to list several opportunities for growing community and outreach in a style like the American Community Gardening Association's "Growing Communities Workshop" (ACGA, n.d.). These education and outreach strategies are considered vital for ensuring that community gardens are capable of functioning effectively in the long term.

## **Context**

The context of community gardens, or the physical properties of the garden as well as the relationship of the location to community members and assets, is a subject of a great deal of discussion. This is in part because gardens are touted as a method of reducing food insecurity. In order to provide this benefit, the garden would necessarily be located in or near the community being challenged with food security issues. Wang, Qiu, and Swallow (2014) discuss that community gardens studied in Canada were most likely to be located near supermarkets, thus reducing the chance that these gardens might alleviate food insecurity for those areas most challenged. Mack, Tong, and Credit (2017) similarly studied food access in Phoenix, Arizona. The result was similar in that they noted that existing gardens might be better located to provide some level of coverage to 96.4% of food deserts but at the time of the study only provided coverage to 8.4%.

Loopstra and Tarasuk (2013) took a slightly different approach in surveying low-income families in Canada to understand why they did not participate in alternative food programs including community gardens. Among these families, lack of knowledge about how or where to participate and “not in neighborhood” accounted for 52.6% of the reasons for non-participation. This indicates the importance of location to those that need the support that community gardens might be able to offer. Especially when in a position of financial need, community members need gardens to be available nearby in order to encourage more participation.

Another interesting area of study in garden location involves how location can affect potential governance concerns. Hou and Grohmann (2018) discuss some of the advantages and lessons learned from co-locating community gardens with existing parks. It tends to be that community gardens occupy vacant lots and are the first target for development when the

opportunity arises. This challenge is discussed further in the governance section of garden design. By locating gardens within or near community parks, a community has the potential to provide a more encouraging public space to garden as well as removing the vacant land problem. This strategy has numerous other benefits if executed properly.

## **Garden Governance**

The final aspect of garden framework that gets a lot of attention in the literature is the strategy for governing or managing community garden projects. This area of study seeks to understand various governance methodologies as well as identifies how these strategies might impact garden participation. Fox-Kämper et al. (2018) sorted case studies and research into a spectrum of governance models ranging from top-down with limited community help to bottom-up with little formal or informal help. These governance methods had a wide range of strategies for planning and design, implementation, and management. While the work was unable to gather specific data on barriers and enablers associated with these methods, it did provide a level of understanding. As professionals look to establish community gardens to alleviate food insecurity, understanding the range of methods available for garden management may be beneficial to creating a garden that best fits the community.

Eizenberg (2012) discusses the vacant land problem in detail through reviewing New York Community Gardens. In this case, several community gardens were targeted for development. In order to protect the benefits of these gardens, two non-profits purchased the land on which 126 community gardens had been established. This discussion elaborates on the special concerns that might be associated with community gardens in a top-down type of environment. Special attention was given to the strategies each organization employed for the site management and how this impacted the ability of the community garden to provide needed

benefits to the community. This was also juxtaposed against 400 gardens that were adopted into the City Parks and Recreation Department, similar to case studies reviewed by Hou and Grohmann (2018). Conclusions here discussed the risks of establishing community gardens under a non-governmental organization with its own goals as well as the importance of participation in developing the governance methodology of community members. Similarly, Ghose and Pettygrove (2014) addressed the concerns associated with Milwaukee governance strategies and their impact on participation. This research cited how city strategies of requiring permitting and limited support often reinforced existing problems, suggesting that the community has the opportunity to rethink garden governance strategies to best help alleviate the burden to potential participants.

The work of He and Zhu (2018) and Mwakiwa, Maparara, Tatsvarei, and Muzamhindo (2018) discuss in detail the importance of including community gardens in the community planning process. This research elaborates on the concerns addressed in part with the vacant land problem. It further discusses how this informal arrangement reduces participation and can even lead to arguments among garden participants as there is no defined, formal arrangement for garden plot management. Due to the concerns associated with informal tenancy, this area of research recommends that community gardens be a part of the urban development process and be designed into communities for the future.

### **Impact on Food Security**

The final theme in the literature regarding community gardens, and the primary focus of this research, is the potential effect on food security. This area of the literature is focused solely on community gardens to understand their potential role in food production and the alleviating of food insecurity. Much of the literature in the area focuses on quantitative research to understand

the degree to which food security is impacted by a community garden. Interestingly, one bit of the research discusses the historical background of community gardens supporting food security. Barthel and Isendahl (2013) discuss how urban gardens have been a feature of urban resiliency since ancient Mayan times as a means of responding to droughts and conserving resources within irrigated ancient cities.

Studies in this area range from demonstration of excellent benefits to questioning whether community gardens are effective at all for food security. Carney et al. (2011) discuss users of community garden participant households as demonstrating a four-fold vegetable increase among adults and three-fold increase among children. Hartwig and Mason (2016) determine that adults of community garden participant households are 3.5 times more likely to consume fruits and vegetables five times daily. Shisanya and Hendriks (2011) as well as Roncarolo, Bisset, and Potvin (2016) determine that community gardens do not contribute significantly to food security.

Part of the challenge the literature points to is differing methodologies and different types of community garden setups. McCormack, Laska, Larson, and Story (2010) review and determine that gardens encourage higher intake of fruits and/or vegetables in 9 of 16 cases reviewed but cited this varying methodology problem as an issue in comparing cases which would require further study. As discussed in previous sections, garden design plays a role in garden effectivity. Corrigan (2011) discusses specifically that gardens do provide some level of food security support, but additional assistance would enable further success. Ruysenaar (2013) similarly discusses that gardens did not represent a significant impact but there were several management factors that impacted success. For reasons like this, it is difficult to correctly evaluate the degree to which a successful community garden may impact food insecurity.

## **Chapter 3 - Methods**

In order to understand how community gardens alleviate food security issues, it is important to review community garden cases that are in food-stressed communities. This research will use an exploratory multi-case study in order to sample multiple cases in hopes of best identifying successful methods for North Carolina food insecurity alleviation. The case study was selected based on Yin's (2014, pp. 9-14) identification as case studies to answer 'how' and 'why' questions and allows the review to understand practical applications of community garden development. A multi-case study was pursued to ensure that successful features are understood among multiple environments, bringing a higher chance that this model will have broader application for other areas of North Carolina.

### **Garden Selection**

Three garden locations were chosen based on their explicit mission to help those in need and alleviate food insecurity in North Carolina. The Betty and Jim Holmes Food Bank Garden, Bountiful Harvest Community Garden, and Help Our People Eat (HOPE) Garden are the gardens identified for case study. All three gardens exist among communities of varying food insecurity with Bountiful Harvest Community Garden in one of the most food insecure counties studied, Guilford County, at 17.1%; Betty & Jim Holmes Community Garden at 15.5% in Forsyth County; and HOPE Garden in Catawba County at 12.3% (Feeding America, n.d.). This variation is intentional and seeks to understand the conditions in which community gardens may be effective in alleviating food insecurity.

### **Research Process**

The research process was conducted in four parts which focused primarily on qualitative data: an interview with the garden coordinator for each garden, a survey of garden participants,

participant-observation in the garden during operation, and secondary research where necessary to fill in gaps. Each of these specific methods were intended to provide the greatest clarity by looking at each case through several different lenses. Interviews and surveys were chosen for the case study to understand the gardens from the perspective of those actively involved in their management and operation. Participant-observation has the potential to result in bias in the subject of research, but has the benefit of providing a means of understanding the garden's function first-hand as well as provided a mode of discussing the garden with participants that might not otherwise feel comfortable providing survey feedback (Yin, 2014, pp. 115-117). Secondary research was used in a limited way to understand how each garden approached community outreach as well as to monitor some of the work being conducted in the gardens when observation was not possible.

## **Surveys**

Garden coordinator surveys were semi- structured and were intended to better understand the design features and high-level program goals and results as measured by garden coordinators as well as understanding their perspective of the garden's functioning and efficacy. Interviews were conducted on February 2<sup>nd</sup>, 2019 for Betty & Jim Holmes Food Bank Garden, February 26<sup>th</sup>, 2019 for HOPE Garden, and March 5<sup>th</sup>, 2019 for Bountiful Harvest Community Garden.

Each garden coordinator was asked the below questions:

1. What are the goals of your community garden?
2. How do gardeners participate in the garden?
3. What is the average number of participating gardeners during the growing season?
4. What do you see as the garden's role in your community's food security?
5. How is the garden governed?
6. What is your education strategy for new gardeners?
7. How was the location for the garden chosen?
8. Are there any design features that make this garden especially effective?
9. How does your garden measure impact?

10. Are garden participants the primary recipient of produced food, or does the food go to another location? If another location, where?

Participant surveys were semi-structured and intended to understand the choices made by participants as well as the perceived benefit to participants. Survey responses were saved with no personal identification, sorted by garden they represented, analyzed, and compared between the different selected community gardens. The survey was kept as simple and anonymous as possible to encourage participation. The questions asked of participants are listed below.

1. How far (in minutes) is your travel to the garden?
2. Do you walk, bike, or drive to the garden?
3. Why do you participate in community gardening?
4. If you had more than one choice of community gardens, why did you choose to participate in this one?
5. Are there any features of this garden that you particularly enjoy?
6. Do you consider gardening to be a primary source of healthy food for you and your family during the growing season?
7. Do you eat differently during the growing season?
8. Have you ever been affected by food insecurity?

### **Participant-observation**

Participant-observation opportunities were scheduled for each garden as close to the beginning of the planting season as possible with multiple visits where possible. Garden observation and participation dates are listed in Table 3.1. Each participant-observation opportunity was scheduled for a time when other volunteers would be present in hopes of understanding the reasons for their participation in the community garden and other details that were requested in the participant survey. As a participant, this observation was limited to the area in which different work was assigned but also reduced the barrier that can sometimes be present during more formal research methods. During each visit, participants were informed of the research being conducted.

**Table 3.1 Garden Participant-Observation Dates**

<b>Garden</b>	<b>Scheduled Participant-Observation Dates</b>
Betty & Jim Holmes Food Bank Garden	20 April 2019
Bountiful Harvest Community Garden	6 April 2019
Help Our People Eat Garden	18 May 2019

### **Secondary Research**

Secondary research was conducted as needed and as information became available. This research was largely based on garden websites and by becoming a member of distribution lists or Facebook groups that would allow for an understanding of the activities conducted in the garden when observation was not possible. This research was used to understand more completely how participants were kept engaged as well as how garden work was coordinated.

## Chapter 4 - Community Garden Cases

The three community gardens chosen for this research were identified based on their stated goals of alleviating food insecurity. Data regarding background, mission, context, governance, and impact was collected from interviews with garden coordinators Ellen Kirby from Betty & Jim Holmes Food Bank Garden on February 2<sup>nd</sup>, Cristine Cofer from HOPE Garden on February 26<sup>th</sup>, and Brad Bowers from Bountiful Harvest Community Garden on March 5<sup>th</sup>, 2019. Details on mission, community engagement, and additional details on governance were collected between April 6<sup>th</sup> and June 10<sup>th</sup>, 2019 through participant-observation, direct observation, and secondary research. Participant-observation was conducted on scheduled dates and additional observation dates were utilized as needed when garden schedule and weather allowed which included May 19<sup>th</sup> and 25<sup>th</sup> for the Betty & Jim Holmes Food Bank Garden and May 6<sup>th</sup> for the Bountiful Harvest Community Garden. Additional details on garden context and community engagement were gained through ten participant surveys, seven representing the Betty & Jim Holmes Food Bank Garden and three representing the HOPE Community Garden.

**Table 4.1 Garden Case Background**

<b>Site Name</b>	<b>Management Organization</b>	<b>Location</b>	<b>First Year</b>	<b>Food Insecurity</b>
Betty & Jim Holmes Food Bank Garden	Independent 501(c)(3)	Winston-Salem, NC	1998	15.5%
Bountiful Harvest Community Garden	West End Ministries	High Point, NC	2015	17.1%
Help Our People Eat Community Garden	WNCEA/ Corinth Church	Hickory, NC	2010	12.3%

## **Background**

The largest and longest running community garden among those studied is the Betty & Jim Holmes Food Bank Garden in Winston-Salem, North Carolina. The garden was started in 1998 by Jim Holmes Jr. with the goal of helping people in need and utilizing a portion of the Winston-Salem Children's Home, now known as the Crossnore Children's Home, property that was previously unused but adjacent to the Children's Home farm. From its inception, the garden has been partnered with Second Harvest Food Bank of Western North Carolina to provide food to those in need.

The second longest running garden of those studied, the Help Our People Eat Community Garden, was started in 2010 in Hickory, NC. The garden was started by Christine Cofer on a vacant plot of land that was eventually bought for development. It has since been moved several times between Newton, NC and Hickory, NC and at one point reached a total of five acres through management of multiple locations including at a local YMCA and the local college. Each time the garden was moved due to issues with the location's sustainability or development until finally being located on the property of Corinth Church in 2017. The garden is in the process of transitioning from management under the Western North Carolina Epilepsy Association, which Christine Cofer runs, to Corinth Church who has been a long-time sponsor of its operations (personal communication, 26 February 2019).

The newest of the three gardens studied is Bountiful Harvest Community Garden in High Point, NC. The garden was started in 2015 in a vacant lot near the West End Ministries operation that manages the garden with the intent of providing an opportunity for the local community to gather and grow fresh food. West End Ministries itself was grown out of a collaboration between a local church alliance that saw a need to engage in targeted outreach of

High Point's West End community (personal communication, 5 March 2019). The idea of creating a garden as a part of West End Ministries was a result of the challenge the area had with fresh fruits and vegetables and the fact that West End was already running a food pantry program. The garden was perceived as an option to add fresh fruits and vegetables to the food pantry as well as an opportunity to continue efforts to gather the community.

### **Mission and Purpose**

The mission of the Betty & Jim Holmes Food Bank Garden is “To grow and provide fresh, local produce to those in need in our service area (the 18 counties served by Second Harvest Food Bank of Northwest NC)” (Betty and Jim Holmes Food Bank Garden, n.d.). Ellen Kirby, coordinator for the garden noted that she sees the garden as an ‘emergency room’ for food insecurity. The long-term goal of getting people involved in the garden is to encourage them that growing their own food is possible (personal communication, 02 February 2019). The garden has a variety of different types of produce and planting methods, providing participants with multiple models for gardening efforts. This garden measures success through crop production as measured in pounds. Each January, an annual report is generated to discuss successes, challenges, and improvements done to the garden over the course of the year. The garden board also measures volunteer output and hours throughout the year in order to understand a second measure of success.

The mission of HOPE Garden is a bit broader and looks to help those in need. Christine Cofer further elaborated on this and noted that the purpose of the garden is to get people, especially youth, to be able to self-sustain affordably through gardening and to help people develop skills that would help them avoid food insecurity in the future (personal communication, 26 February 2019). HOPE Garden measures success in terms of produce in pounds. Christine

Cofer keeps a running log of the produce as a means of ensuring that the garden remains efficient with the use of resources (personal communication, 26 February 2019).

The mission of Bountiful Harvest Community Garden is to work with residents and stakeholders to make the West End Neighborhood a better place to live, work, and worship (personal communication, 5 March 2019). This garden's mission is focused on the West End Community and is aligned with the mission of West End Ministries as a whole. The garden is one of the several means through which West End Ministries works to achieve its overall mission. Bountiful Harvest Community Garden measures success based on the amount of the community that is involved in the garden and park. If the garden is a place where people gather, Brad Bowers and the West End Ministries see it as a success (personal communication, 5 March 2019).

## **Community Garden Framework**

### **Context**

Winston-Salem is the largest of the three communities served by these community gardens at a population of approximately 246,328 in 2018 (US Census, n.d.). Winston-Salem is plagued heavily by food insecurity with 21 different food deserts as of 2016 (Farley, 2017). The garden is located just north of the downtown area and just south of the historic Reynolda area, operating on land owned by the Crossnore Children's Home. This land is private property and due to concerns over the children's privacy, there is no public space near the garden. Some of the wealthiest neighborhoods line the western and northern end of the Crossnore property while an elementary school and a food insecure neighborhood border the eastern edge of the property. Of the seven surveys received and multiple participants observed, most participants of this garden live outside a two-mile range at an average commute time of 15 minutes with some

coming from communities bordering Winston-Salem. One of seven respondents in the survey was able to bike to the garden but no participants being observed in either April or May observation dates arrived at the garden in anything but automotive transportation. Business group participants were very likely to operate within Winston-Salem. Garden leaders were more likely to be from the surrounding community due to the time commitment required. None of the garden participants surveyed had been previously affected by food insecurity.

Hickory, NC is the smallest of the three communities in which these gardens operate with a population of 40,325 as of 2018 (US Census, n.d.). Previous locations for the garden in Newton and Hickory were not on property owned by the garden. The current location is owned by Corinth Reformed Church, which has always been a major sponsor of the garden and is in the process of absorbing full ownership of the garden's management from the WNCEA (personal communication, 26 February 2019). The garden is physically located on the northwestern edge of the property and not co-located with other public amenities. Two of the three respondents from the HOPE survey noted that they lived within 10 minutes of the garden and during participant-observation, those that were not volunteering as part of a corporate sponsorship were participating in the garden because of its proximity to their home. Christine Cofer noted that part of the reason for relocating the garden to the church grounds was to enable more ease of participation at the site from church members that had previously supported the garden (personal communication, 26 February 2019).

High Point, NC is the second largest of the communities that these gardens represent at 112,316 as of 2018 (US Census, n.d.). The site is owned and operated by West End Ministries, which was established specifically because of High Point's issues with food insecurity. (personal communication, 5 March 2019). The garden features a small playground and 20'x40'

shelter in order to serve as a small park and community public space for gathering. The park features swings, mini ‘ninja warrior’ course, and recently added a handicap accessible swing. During participant-observation, one participant was from the West End Community, five were from a larger church that is active in the area, and most participants were from nearby High Point University as a service-learning opportunity.

**Table 4.2 Community Garden Context**

<b>Garden</b>	<b>Site Owned</b>	<b>Located in Food Desert</b>	<b>Local Participation</b>	<b>In or Near Park</b>
Betty & Jim Holmes Food Bank Garden	X	X	X	
HOPE Community Garden	X*		X	
Bountiful Harvest Community Garden	X	X	X	X

\*Current site at Corinth Reformed Church, which is taking full ownership of program

**Governance**

The Betty & Jim Holmes Food Bank Garden is governed through an independent 501(c)(3) organization with the sole purpose of managing the community garden for the alleviation of food insecurity. There are ten total directors on the organization’s board, with most of these being active garden leaders. Daily activities in the garden are managed by a rotation of garden leaders with at least two leaders onsite for any workday. These individuals are trained on both how to manage the garden and manage the people and resources during each workday. The garden board and senior leaders work with new leaders through mentorship and training to ensure that all garden leaders can manage workdays (personal communication, 02 February 2019). Garden leaders follow a task list generated by the garden’s senior leaders through volunteer management and individual maintenance. Consistent workday schedules are

maintained based on the seasonal requirements and any corporate or group volunteer efforts are pre-scheduled through garden leaders to ensure support.

HOPE Community Garden operates as a partnership. Christine Cofer founded the garden in part as a means of providing a place to work in a garden for those with epilepsy for the benefit of both fresh fruits and vegetables as well as to improve symptoms through time in the garden. For this reason, the garden became part of the Western North Carolina Epilepsy Association, run by Christine. As the garden has evolved and changed location, WNCEA has remained the controlling organization but is in transition to leadership by Corinth Reformed Church, which has always been a major sponsor. Garden leadership is provided by Christine as well as onsite assistance by Lori Groveling and other local Master Gardeners. Regular scheduled workdays are scheduled based on seasonal demand in advance and groups can schedule service dates for special days and times (personal communication, 26 February 2019).

Bountiful Harvest Community Garden operates under the West End Ministries 501(c)(3) organization. The garden is essentially considered one department of West End's programs, with each program run by a department head. The programs are intended to work in congress with one another in order to achieve the greatest possible benefit for the community. Garden leaders are not formally trained but Brad Bowers (personal communication, 5 March 2019) noted that the High Point Community Garden Coordinator offers information and advice to organizations looking to establish or run community gardens in the city. Apart from annual cleanup and planting, this garden does not have scheduled regular workdays and has requested, via Facebook, that individuals reach out to garden leadership to plan work in the garden (West End Ministries, 8 June 2019). The garden does not require scheduled harvesting efforts as community members are encouraged to pick fresh fruits and vegetables when they are available for personal use.

**Table 4.3 Garden Governance**

<b>Garden</b>	<b>Independent 501(c)(3)</b>	<b>Trained Leadership</b>	<b>Scheduled Workdays</b>
Betty & Jim Holmes Food Bank Garden	X	X	X
HOPE Community Garden		X	X
Bountiful Harvest Community Garden			

### **Community Engagement**

Betty & Jim Holmes Food Bank Garden leaders engage participants and the community through a variety of methods. Education of participants is done mostly through informal means of learning through execution. Participants are given some basic information via a pamphlet meant to educate them on the basics of the garden’s mission and details regarding food insecurity in North Carolina (personal communication, 25 May 2019). The outreach strategies employed by the garden are primarily push strategies in which work requirements are planned out and disbursed among garden leaders. The garden advertises workdays both through an online email distribution list as well as a website (personal communication, 19 May 2019). Garden leaders also have a relationship with local organizations including local churches and businesses to conduct specially planned group workdays, often during the week (personal communication, 02 February 2019). The garden provides updates to participants and those interested via a blog-style website. Garden leaders are assigned to provide this information after each workday to inform stakeholders on the status of the garden including the number of participants, tasks accomplished, and amount of produce prepared for the food bank (personal communication, 19 May 2019).

HOPE Community Garden seeks to engage its community in methods similar to the previous. Education in the garden is informal and is based on learning through execution. Christine Cofer (personal communication, 26 February 2019) noted that much of the garden's education is lead through local Master Gardeners that actively work in the garden and direct garden efforts. Emails are sent regularly from Christine Cofer and Lori Groveling identifying work that needs to be accomplished in the garden and laying out future workdays. The primary strategy for engaging participants is through push methods of workdays and target tasks sent in email and via a Facebook group (Corinth HOPE Garden, 2019). The garden also employs a limited pull strategy in which the garden and Corinth Reformed Church plan community improvement events for which the garden is a beneficiary (personal communication, 26 February 2019). The garden also utilizes its Facebook group to publish progress in the garden and as a means to publicly thank the volunteers for their participation after each workday (Corinth HOPE Garden, 2019).

Bountiful Harvest Community Garden engages the community in a means very dissimilar to the other two gardens in this study. The garden has formal education events with participants and the local community. Brad Bowers (personal communication, 5 March 2019) noted that they have had events to both train participants in gardening as well as in preparing fresh produce for meals. The garden engages in push strategies by limited scheduling of major workdays such as land preparation, planting, and cleanup. The garden also utilizes a pull strategy through events scheduled in the garden and park like Easter sunrise services, community barbeques, and other events meant to bring members of the community together to build bonds as well as interest in the garden (personal communication, 6 April 2019). West End Ministries operates a separate Facebook page for the garden and the overarching organization, but there was no observed

consistency in garden updates on the main organization page during the period between March and June 2019 as well as no updates to the garden’s page (Bountiful Harvest Community Garden, 2019).

**Table 4.4 Garden Outreach Strategies**

<b>Garden</b>	<b>Participant Education Strategy</b>	<b>Push Strategies</b>	<b>Pull Strategies</b>	<b>Regular Progress Updates</b>
Betty & Jim Holmes Food Bank Garden	X	X		X
HOPE Community Garden	X	X	X	X
Bountiful Harvest Community Garden	X	X	X	

### **Impact on Food Security**

The Betty & Jim Holmes Food Bank Garden distributes most of the produce to the Second Harvest Food Bank of Western North Carolina in order to accomplish its mission of alleviating food insecurity throughout Western North Carolina. Food collected at the garden is stored after harvest temporarily in refrigerated spaces on the Crossnore Children’s home property prior to shipment to the food bank. In some cases, produce is delivered directly to the food bank or other related charity by garden leaders based on the day of the week and need. Second Harvest Food Bank then distributes the food via its many vehicles intended to reach those in need (personal communication, 02 February 2019).

Some of the produce generated is sent directly to a related program that provides culinary training to those in need, including the children from Crossnore Children’s Home (personal communication, 25 May 2019). In 2018, the garden produced approximately 5,675 pounds of produce. According to Ellen Kirby, 2018 was one of the worst years in terms of produce since

the garden started later in the year due to poor weather conditions in the spring and pressure from rabbits and other crop related pests. In the course of the garden's operation, they have measured a total of 84,625 pounds of produce that have been donated directly to Second Harvest Food Bank (Betty & Jim Holmes Food Bank Garden, 2019). No participants surveyed responded that they had ever been impacted by food insecurity.

The HOPE Community Garden distributes produce through several different vehicles depending on the greatest need. Christine Cofer noted that the food goes to the Hickory Soup Kitchen, Eastern Catawba Christian Ministry, Meals on Wheels, and some individuals that reach out based on their own need. The means of distribution is based on the organization that needs the produce and can receive it quickly because there is no onsite refrigeration available. The last year saw a total production of 1,100 pounds of fruits and vegetables. The total lifetime impact of the garden is approximately 23,000 pounds. The garden has also worked to encourage those in need to work in the garden to develop gardening skills and as a means of self-distributing harvested product but has been unsuccessful in generating this interest (personal communication, 26 February 2019). No participants surveyed responded that they had been impacted by food insecurity.

The Bountiful Harvest Community Garden's model for impacting food insecurity is significantly different from the other two cases. The garden encourages foraging from the surrounding community and has planted 27 fruit trees and berry bushes with the hopes that ripe fruits would be readily available for those in need. Brad Bowers described his hope that children from the nearby school would be able to pick fresh fruits on their way home each day. The garden is also divided in such a way as to encourage the community to participate actively. The garden operates on one acre, half of which is garden. Half of the garden portion is then fenced

off for individuals to grow their own fruits and vegetables in raised beds. The other half of the garden is considered the public area. Most of the volunteer efforts are in the public area of the garden, although the fenced area is prepared at the beginning of the season and weeded/mowed during the season. During participation-observation, volunteers planted the tilled soil in the public area while one local resident began preparing her own raised bed. The garden was observed during a second impromptu visit on 6 May 2019 and while the raised bed area looked to be well tended, the public portion of the garden appeared to no longer be well managed.

**Table 4.5 Impact on Food Insecurity**

<b>Garden</b>	<b>Measured Produce Volume</b>	<b>Participants Impacted by Food Insecurity</b>	<b>Produce Distributed to Known Need</b>
Betty & Jim Holmes Food Bank Garden	X		X
HOPE Community Garden	X		X
Bountiful Harvest Community Garden		X	X

## **Chapter 5 - Discussion**

There are a few things that are common among the three garden cases that point to specific ways in which community gardens in North Carolina can impact food insecurity. There are also a few practices that stand out among the cases that seem to present either pitfalls to avoid or best practices that could enable future successes in alleviating food insecurity through community gardening. The overall ideas that seemed to stand out among the cases are governance, context, distribution, outreach, and measuring success. Based on these items there are also some recommendations for the practice of community development when considering community gardens.

### **Governance**

The literature pointed to some concerns regarding gardens being governed by bodies with goals other than food production (Eizenberg, 2012). For this reason, a detail that seemed apparent was that only one case operates as an independent organization, specifically a 501(c)(3). The Betty & Jim Holmes Food Bank Garden appears to be the most consistent of the three gardens both in location and in production as well as having the most significant planning and involvement by multiple individuals. This could point to a best practice among community development practitioners in order to set community gardens up for success. In an organization where the community garden is a secondary effort, it is possible that garden work is not prioritized for maximizing garden value due to other organizational needs or conflicting goals. By separating the garden from other efforts, this does not mean that efforts cannot be synergistic, but that garden leadership has an independent perspective on key priorities for managing the garden.

## Context

### Location

One of the features discussed by Hou and Grohmann (2018) for garden context was only found in one of the three cases. Bountiful Harvest Community Garden is located in a community park. During participant-observation, several children were playing on the equipment. West End Ministries is also able to schedule community gathering events as previously discussed in order to build community and strengthen community relationship to the garden. If there is one single feature that seemed to stand out among the cases that was likely to encourage community development in tandem with improving food security, this appeared to be it. This feature also enables participants in the garden to have their family members nearby while working in the garden, potentially improving the likelihood of participation. The challenge to this strategy is based on how much land is available. By choosing to separate the available land into garden in park, a community garden project might lose out on the available crop production.

Two of the garden cases, the Betty & Jim Holmes Food Bank Garden and Bountiful Harvest Community Garden are also located within a food desert while the HOPE Community Garden is only a block away from a grocery store. For a community garden to most effectively help create a positive trend in food security within a community, it needs to exist in a community that needs it (Wang, Qiu, and Swallow, 2014). This suggests that the HOPE Community Garden may have a reduced overall value because of its location. For this reason, one might perceive gardens like this one to be more likely to act as an emergency room for food insecurity than as a means of growing food security. The opposite side of this point is that not all members of food insecure communities have the time or resources to participate in the community garden. By

providing this emergency room for food insecurity, a garden may in fact be generating the conditions necessary for the community to begin to grow capacity for self-improvement.

An interesting contextual feature worth noting for all garden cases was that all three locations have a cooperative organization onsite. Crossnore Children's Home, Corinth Reformed Church, and West End Mission provide some level of support to the garden and can act as a means of ensuring success. The way the gardens interact with their partnered organization is different in each of the three cases. Betty & Jim Holmes Food Bank Garden utilize their partner for logistical and equipment support, HOPE Community Garden utilizes members of Corinth Reformed Church as a primary source of labor as well as a source of funding to keep the garden operation up, and Bountiful Harvest Community Garden utilizes West End Mission as a primary governing and financial support body as well as a secondary distribution point. It may be worth consideration for future study to understand what types of organizations provide the most effective partnerships among community gardens.

### **Target Community Involvement**

All three community gardens had an apparent lack of participation by those currently impacted by food insecurity at an individual level. The significant health and cultural advantages mentioned by Filkobski et al (2016), Teig et al (2009), Turner (2011), Seifert (2014) Hartwig and Mason (2016), and Carney et al (2011) are not available to those not participating in the garden. All ten surveys returned noted that respondents did not currently, nor had they dealt with food insecurity. While impacts of food insecurity are not known of all participants met during participant-observation, the vast majority were from communities outside of the targeted food desert/s. This may suggest opportunities in both context and community engagement in order to yield the greatest long-term benefit.

Bountiful Harvest Community Garden is the only one of the three cases that is close enough to its served food desert to allow residents to walk to the garden in order to participate. Although the Betty & Jim Holmes Food Bank Garden resides in a food desert, the size of the property and location of walking paths do not provide a simple opportunity for walking. All but one survey respondent noted that they drive to the garden. Although the HOPE Community Garden is walkable to the adjacent neighborhood, it is not in a food desert and is unlikely to draw members of nearby areas to participate in the garden for their own food insecurity. Bountiful Harvest Community Garden is a good example for how location can be used to benefit community gardens.

### **Distribution**

All three garden cases have a simple distribution path for produce to make it to the end user in a way that ensures it remains fresh. This seems like a vital portion in the planning of a community garden set up specifically for reducing food insecurity. Even with the forage model that Bountiful Harvest Community Garden uses, there is a conscious effort to ensure that vegetables in the public area that can be harvested are brought to the West End Ministry food pantry as a backup option to prevent spoilage. The process for moving produce to distribution is the most formally organized in the Betty & Jim Holmes Food Bank Garden. This process is an efficient use of available resources, but other gardens may not operate with the access to refrigeration to make the process work. The advantage to distribution models used by HOPE Community Garden and Bountiful Harvest Community Garden are that produce will go to wherever there is the most urgent need at the time. The disadvantage to this system is that it relies on a network of volunteers to operate independently to ensure produce reaches a fluctuating distribution source.

Much of the existing literature assumes the community garden participants as the primary recipients of produce so this subject is not heavily treated in the reviewed literature. For those communities interested creating community garden programs to alleviate food insecurity, even as an emergency means, it is important to consider the methods of keeping these vegetables fresh for extended periods or ensuring that produce reaches its destination in a relatively short time from harvest.

## **Outreach**

All of the garden cases reviewed have some version of an education strategy to engage participants and the community. The Bountiful Harvest Community Garden is the only case that utilizes a formal education strategy which seems to at very least achieve a goal of getting members of the community together and likely assists in the goal of alleviating food insecurity. This is an area in which the other two cases are reliant on education through practice and their partnering distribution networks to educate more thoroughly. Interestingly, although there is not a formal education process for participants at the Betty & Jim Holmes Food Bank Garden, it is the only garden that takes an active role in training its own garden leaders through any sort of formal process. In the participant-observation experiences, this made a large difference for participants. Volunteering can sometimes be frustrating for participants when there is a perception that the leaders do not have a firm grasp in what needs to be done. The Betty & Jim Holmes Community Garden takes this seriously and ensures that garden leaders have some minimal level of training before overseeing one of its most important resources: volunteers. The HOPE Community Garden has similarly well-trained leadership, but not through internal training. The use of community Master Gardeners and experienced farmers is an effective way of giving a similar experience with less stress on the garden's resources.

Each garden utilizes a push strategy, which might be considered a necessity in order to manage projects like community gardens effectively. The HOPE Community Garden and Bountiful Harvest Community Garden utilize varieties of pull strategies to bring individuals into the garden through means different than basic scheduled work. The church community workdays at HOPE are a great opportunity for the garden to get the congregation involved and help to grow community cultural capital but are less likely to draw in members of the community affected by food insecurity. This is an area where Bountiful Harvest's location again works in its favor as community events are more likely to draw in those that need the garden than volunteers. It is great to have volunteers in the garden to ensure that produce is available, but the literature points to the impacts of community gardening go well beyond food production. For that reason, it is important for community gardens to both consider a pull strategy but also target members of the community most in need.

An interesting aspect for consideration of community garden outreach is information sharing. Each of the gardens had some form of this that may be considered of varying degrees of success. The Betty & Jim Holmes Food Bank Garden's blog style website offers participants a sense of accomplishment through reporting. Each week, when garden leaders post what was accomplished for the week, they are effectively thanking their participants again for what is accomplished and making sure efforts are perceived to be of value. All participants have access to the annual reports and documentation from the garden. These are opportunities for ensuring repeat volunteers. HOPE Community Garden does a similar activity through their Facebook account. Each workday is followed by a picture of the participants and what was accomplished. This has the added benefit of creating a more enduring and public connection with garden participants. Bountiful Harvest Community Garden and West End Ministries operate Facebook

accounts as well and although the posts have been less consistent than the other two gardens, still give participants and those interested a snapshot into what is going on with the garden after major work events.

## **Measuring Success**

Two of the three gardens measure success in terms of pounds of production while Bountiful Harvest Community Garden focuses on the community aspect of gardening and by necessity does not measure success in output. There are clearly values to both sides, but it is worth noting that the garden that does not measure crop output is the only of the three that seemed to be challenged in garden upkeep during the observed period. A common principle of project management is that ‘what isn’t measured isn’t managed’ and this is no less true for a good cause like food security. If a community garden is as much about the community growth as the food production, it may be wise to measure both. Brad Bowers mentioned that he believed if people are gathering in the garden, then it is a success (personal communication, 5 March 2019). That is certainly true up to a point. Part of his mission is to strengthen the community for food security and diverse other issues that West End Ministries hopes to improve. However, when challenged with issues of garden abandonment, a produce-based goal may encourage participants and garden leadership to remain focused on the food production aspect of the garden. The other side is equally true that garden participation must be measured to ensure success. Whether that means a community annual survey, volunteer hour tracking, or other means, it is as important to attempt to measure success in building community as in producing food for these gardens.

## **Conclusions**

The Betty & Jim Holmes Food Bank Garden, HOPE Community Garden, and Bountiful Harvest Community Garden all seek to impact food insecurity in North Carolina in different

ways. Differing missions, context, governance, and engagement strategies appear to affect the ways in which impact is both measured and accomplished. Each of these gardens provide a value to the community in which they reside and provide an opportunity for individuals to gather and make significant strides towards reducing food insecurity in North Carolina. Combined, these gardens have produced over 100,000 pounds of fresh produce and brought in significant amounts of community volunteers committed to improving food security. While further investigation would need to occur in order to understand how these gardens have changed food security data over time, it seems apparent that these gardens have contributed to community development and community food security.

### **Recommendations for the Practice**

Community gardens appear to be an effective means of growing community capitals and alleviating food insecurity. In researching these three gardens, there appear to be a few opportunities to build on the practice of community development. First, consideration needs to be given to the governance strategy for the garden and how that can potentially impact mission outcomes. Second, context is important. The location of the garden and its interaction with the physical features of the community can impact the potential success of the garden. If the goal of the garden is impacting food security, the garden is best located inside the community it is designed to serve in order to maximize impact through social and behavioral changes as well as raw produce output. If the garden is targeted at building community, a combination of push and pull strategies will likely be required. If the garden is intended as a community volunteer effort to help those in need, it is important to consider the logistics of delivering food to those in need throughout the growing season. Finally, the community garden's impact should be measured through whatever lens success is defined. Future study is recommended to begin to quantify how

each feature of a community garden's framework affect its impact on food insecurity in order to prepare future garden coordinators to make the most of the opportunity.

### **Limitations of the Study**

This research has limitations with regards to understanding the impacts of community garden models on food insecurity. The study utilized garden cases based on availability and access to the researcher. As such this study was limited to a relatively small number of community gardens in North Carolina. The research also did not study community gardens in some of the most food stressed communities of North Carolina due to a lack of access or feedback from garden coordinators. This research was limited to a single growing season, which reduced the likelihood for observation of how different conditions affect garden outcomes over time. As this research relied on contact with a central garden coordinator, garden models using more informal forms of governance were not considered. This limits the opportunities to understand how more informal garden models are impacting food insecurity as well as the methods they use to do so.

### **Opportunities for Future Research**

This study seems to point to a few different recommendations for future study of community gardens. More quantitative data to related garden framework and methods and their impact on food insecurity would be excellent for community garden projects with limited resources looking to understand exactly which garden features most impact food insecurity. It would also be illuminating to study gardens in some of the most stressed communities in order to understand how these gardens may function differently to best serve their community. Future research may also be used to understand the relationship between garden context and garden

outreach to understand some of the methods that might be applied to ensure the greatest success in a given garden situation and in order to have the greatest chance for success.

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