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An Argument and Model for Garden Corps

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Departmental Honors Thesis
The University of Tennessee at Chattanooga
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This thesis is dedicated to my mother Tonya, my father Ajani, and my grandmother Iris (Mimi), each of whom played invaluable roles in my upbringing. Each distinctly instilled in me passions for knowledge, food, and, most importantly, helping others. Without each of you, this thesis, a passion project, would never have come to fruition.

“More grows in the garden than the gardener sows.”

-Spanish Proverb

Table of Contents

Dedication Page.....	1
Table of Contents.....	3
Abstract.....	4
Introduction.....	5
Literature Review.....	7
Methodology.....	14
Results.....	15
Garden Corps Business Model.....	32
Limitations and Further Research.....	37
References.....	38
Appendix A: The Interview Guide.....	41

Abstract

The benefits of community gardening have been thoroughly documented. Despite the value of community gardens, however, these gardens face many barriers that threaten their sustainability. This research investigated the benefits, barriers, and solutions to barriers of community gardening. The author performed literature review and conducted interviews with four community garden coordinators from the Chattanooga area to explore these topics. The author used the insights gained from the interviews to develop a business model for Garden Corps, a nonprofit dedicated to building capacity for community gardens.

Introduction

According to the U.S. Department of Agriculture (2019), a food desert is defined as a neighborhood or community where there is limited access to supermarkets, grocery stores, or other sources of fresh food, particularly fruits and vegetables, due to a lack of proximity to fresh food sources and limited access to vehicles and public transportation. The community members of these areas often have access to only fast-food restaurants and convenience stores. As a result, there is an increasing number of people developing obesity, diabetes, heart disease, and other diet-related illnesses in these communities (Bellian, 2019). The rising number of diet-related illnesses concentrated in food deserts gives urgency to the need for a solution to America's food desert problem.

In 2010, Michelle Obama's "Let's Move!" initiative aimed to end childhood obesity. This initiative, in part, focused on food deserts, and was one of the first nation-wide moves towards battling food deserts ("Taking on 'Food Deserts'", 2010). The initiative's main approach to combatting food insecurity was to build grocery stores and supermarkets in food deserts. While seemingly fixing the immediate problem, this has proven to be largely ineffective and even detrimental to these neighborhoods, as dollar stores and superstores built in these areas often shut down "mom-and-pop" businesses, worsen local economies, and do not positively influence community members' diets (Karpyn, 2019).

Since then, there have been many other attempts to fix America's food desert issues—besides creating more retail food options. One step towards food security that food-insecure communities often take is creating community gardens. Community gardens serve as spaces in which communities can have easy access to fresh, healthy produce, and have largely shown success in providing such to their communities (Ulug & Horlings, 2019). However, a sustainable

community garden can provide many more benefits to their garden participants, community members, and communities as a whole, addressing issues of mental, physical, and community health and food justice and security (Litt, et al., 2011; Soga, Gaston, and Yamaura, 2017; Nishii, 2013).

Despite these benefits, community led and manned gardens often do not remain permanent fixtures in communities (Ulug & Horlings, 2019). Many community gardens face a number of barriers to their continued support of their communities. Regarding established community gardens, difficulties such as garnering and maintaining volunteered participation and obtaining funding and other resources necessary for a garden's success pose significant threats to community gardens' sustainability. Additionally, internal issues such as garden governance and frequency and quality of communication can jeopardize gardens' sustainability (Ulug & Horlings, 2019; Anderson, Maher, & Wright, 2018; Laycock Pedersen, Robinson, & Surman, 2019).

Due to the ever-growing number of food desert-related social and health issues, and based upon the benefits for individuals and communities from community gardens, it is clear that there is a need for sustainable community gardens. However, it seems that most community gardens fail before communities can fully reap the gardens' benefits. Nevertheless, if one can identify the barriers to sustainability of community garden initiatives and devise an easily applicable solution, it may be possible to improve the sustainability of existing community gardens and provide communities with the full breadth of opportunities and resources of community gardens. Therefore, this thesis will synthesize previous research and information from expert interviews in order to find a solution to community garden sustainability and then

provide a business model for a nonprofit organization based upon this solution that could apply to any community garden across the country.

Literature Review

Defining Community Gardens

The term community garden was first used during the World Wars, referring to the collectively grown gardens that were encouraged at the time (Lawson, 2005; USDA, 1942), though community gardens in essence predated the term. According to Lawson (2005), this term evolved over time to define neighborhood gardens with individually manned plots but common management; however, this term now generally refers to gardens that serve to reintroduce nature to urban areas, unite diverse groups, and provide access to fresh foods.

Today the USDA defines community gardens as "plots of land, usually in urban areas, that are rented by individuals or groups for private gardens or are for the benefit of the people caring for the garden" (USDA, n.d.). This definition encompasses a wide variety of forms of community gardens, including plot-gardens, where individuals, groups, or families are assigned plots to tend as they wish, or site gardens, where paid or unpaid workers tend entire gardens. Plot-style gardens are not conducive to widespread community benefits and services, such as individual and community mental and physical health, education, or food security (Lawson 2005). Therefore, this thesis will not discuss plot-style gardens but will discuss site-style gardens, as these gardens are more conducive to providing communities and individuals the touted benefits of community gardens.

History

Community gardens have historically been leveraged to improve mental, physical, and community health. Community gardens in the United States can be traced back to late 19th

century Detroit. Mayor Hazen S. Pingree enacted community gardens to relieve the stress of the 1893 to 1897 depression by providing sources of fresh food and uplifting the morale of the unemployed (Lawson, 2005). News of Detroit's success with community gardens spread, and the rest of the country quickly adopted this method of addressing community health (Lawson, 2005).

During both World Wars, community gardens supplied fresh food to many Americans with the use of minimal resources required for the typical production of fresh vegetables (Lawson, 2005). Just twelve days after the United States' entrance to WWII, the Secretary of Agriculture hosted a conference to "discuss and formulate a broad coordinated program for enlisting interest in and guiding a national campaign to encourage home and community gardens..." with a goal "... to improve health through encouraging better food habits, and the use of high-vitamin and mineral food" (USDA, 1942). This conference led to the Victory Gardens Program in the U.S. which, in its prime, was 20 million gardens strong, and produced 40% of the fresh produce consumed in the United States (Lawson, 2005; USDA, 1942).

Despite the overwhelmingly positive results of previous implementations of community gardens, it was not until the 1970s that they enjoyed a regular, sustained presence of community gardens (Lawson, 2005). Grassroot activism inspired by food security and community beautification led to the creation of community gardens that were less in support of the health and morale of the country as previous gardens, yet more in support of the health and morale of the individual and the community (Lawson, 2005). These gardens were more permanent in nature and therefore much more reliant on the planning, funding, and nurturing of community members. This is where gardens akin to those we have today first appeared in the United States (Lawson, 2005).

Benefits Provided by Community Gardens

The benefits provided by community gardens have been widely documented and span physical, social, cultural, and economic issues. In addressing the issue of sustainability of community gardens, and devising a solution for the sustainability of these gardens, it is important to note the extensive variety of benefits and services they provide. This section offers a summary of the benefits and services provided by community gardens and the impact these benefits and services have on individuals and communities.

Community gardens, and gardening generally, have the potential to provide many health benefits—physical, nutritional, and emotional. Soga, Gaston, and Yamaura's (2017) meta-analysis found that those who participated in gardening had reductions in stress and BMI and increases in general health and life satisfaction. Their analysis asserts multiple possible, and not necessarily mutually exclusive, reasons for why this is the case.

Mental & Physical Health

The first of Soga, Gaston, and Yamaura's (2017) reasons for why gardening is beneficial relates to mental health. The authors found that the cognitively restorative properties of immersing oneself directly in nature contributes greatly to one's mental health. Gardening historically has been used as a form of therapy for those with a range of psychological conditions, including clinical depression, chronic mental illness, learning and developmental disability, and substance abuse and addiction. The act of gardening, which requires directing attention away from negative thoughts and towards engagement in a restorative practice, is contributory to improving mood for depressive patients and attentional functioning for those with anxiety (Soga, Gaston, & Yamaura, 2017; Nishii, 2013). Additionally, after engaging in gardening, those with learning disabilities or chronic mental illness experienced feeling more valued, greater self-confidence, and higher self-esteem. When gardening in a group setting, those

with chronic mental illness found improvements in life satisfaction and self-concept (Nishii, 2013).

The second of Soga, Gaston, and Yamaura's (2017) explanations as to how gardening improves health is the inherent physical activity associated with gardening, which in turn contributes to the physical and psychological health of gardeners. It has been found that those who participate in community gardening see significant increases in their physical activity levels. Phelps, et al. (2010) found that gardening offers a non-competitive form of physical activity for children who are turned off to more typical, competitive forms of physical activity. Additionally, the authors identified gardening as a sustainable form of physical activity, broadening children's understanding of physical activity and health from a short-lived period of playing competitive sports to participating in a sustainable active lifestyle (Phelps, et al., 2010).

Beyond adolescence, gardening has proven to be an effective tool to increase physical activity in those aged 50 or older or those with disabilities, who otherwise may be immobile (Sommerfeld, Waliczek, & Zajicek, 2010; Soga, Gaston, & Yamaura, 2017). This increase in physical activity not only has shown to improve physical health and mobility for elderly gardeners, but it also has shown to increase life satisfaction by filling social and leisure gaps in this population's lifestyle (Sommerfeld, Waliczek, & Zajicek, 2010).

Community Health

The third of Soga's, Gaston's, and Yamaura's (2017) explanations, which applies especially to community gardening, is the opportunity provided by community gardening to forge and reinforce a sense of community. It has been found that community gardens not only benefit from—but also contribute to—the generation of social capital (Soga, Gaston, & Yamaura, 2017; Firth, Maye, & Pearson, 2011; Armstrong, 2000). There are four distinct ways

in which this happens: the bringing together of people with a common purpose; the creation of a common meeting place which enables people to interact and contribute to the creation of community; the hosting of activities that are inclusive for all demographics; and the building of connections between institutions and authorities and the community (Firth, Maye, and Pearson, 2011).

Armstrong (2000) found that community gardens can enhance social networks and organizational capacity within their respective communities, especially lower income and minority neighborhoods where needs to address certain social issues, such as poverty, are more prominent. Beyond supporting community organization and promoting the connection of community to authority, community gardens also help to increase overall pride in neighborhoods and communities (Armstrong, 2000) and decrease rates of criminal activity and violence (Kuo, 2001) through the fostering of deeper social connections within neighborhoods.

Food Justice & Security

According to the organization Food Print (2019), food justice is defined as a “holistic and structural view of the food system that sees healthy food as a human right and addresses structural barriers to that right.” This includes not only having access to healthy foods but also an understanding of how to prepare and enjoy healthy foods within the context of one’s lifestyle and culture. Tangentially, according to the USDA (2019), a food desert is defined as a neighborhood where there is limited access to supermarkets, grocery stores, or other sources of fresh food, particularly fruits and vegetables, due to a lack of proximity to fresh food sources and limited access to vehicles and public transportation. As mentioned earlier, one attempt towards battling food deserts and food insecurity is to build retail food stores in food deserts. However, it has been found that there is no direct correlation between giving these communities access to healthy

food and community members buying the food or being healthier as a result (Wright et al., 2016). In other words, the sudden presence of a grocery store in an area that has long been a food desert does address the issue of a food desert but does not address the issue of food justice.

The fourth of Soga, Gaston, and Yamaura's (2017) explanations for community gardening's positive impact on health is the influence of gardening on fruit and vegetable intake, resulting in a healthier diet. Community gardeners have a higher intake of fresh vegetables and a lower intake of sweet foods and drinks (Armstrong, 2000). Interestingly, this influence does not stop at the gardener but rather travels throughout the household; those who live in the same household as a gardener are likely to share similar health benefits, such as a diet high in fresh fruit and vegetable intake, compared to households where no member gardens (Soga, Gaston, & Yamaura, 2017; Zick, et al., 2013; Alaimo et al., 2008). In fact, adults with a household member who participated in a community garden consumed fruits and vegetables 1.4 more times per day than those who did not participate, and they were 3.5 times more likely to consume fruits and vegetables at least 5 times daily (Alaimo et al., 2008).

Barriers to Sustainable Community Gardens

It is clear that community gardens offer numerous benefits—not only to the individual, but also to the community. However, community gardens often face barriers that prevent them from being sustainable sources of these touted benefits. While there are many barriers that communities face to start a community garden, this thesis discusses only the barriers to sustainability that currently established community gardens face. These include participation, funding, and accessibility to resources.

Participation

An ever-prevalent barrier to community garden sustainability is a lack of consistent garden participation. Poor communication among gardening participants, competing priorities and time commitments, and gardening knowledge retention and deficit all are barriers to participation (Anderson, Maher, & Wright, 2018; Laycock Pedersen, Robinson, & Surman, 2019). A lack of awareness and information about local community gardens and inadequate communication to volunteers contributes to feelings of disengagement and a lack of impetus for volunteers to stay in touch with community gardens (Anderson, Maher, & Wright, 2018). Those who do stay regularly involved with community gardens find that their time is more often spent on recruiting new participants rather than partaking in gardening activities, which also leads to burnout among participants (Laycock Pedersen, Robinson, & Surman, 2019).

Funding & Resources

Procuring funding and other resources is another challenge for community gardens. As many gardens are the result of community effort rather than government funded initiative, community gardens are often funded by fundraisers and donations of money, land, and other resources.

Governing style can be a barrier to community gardens' ability to procure and retain funding and other resources and therefore maintain sustainability. Often, community gardens will initially develop "... grassroots desire for self-organization and evoke the impression that they can be used as a 'carefree' strategy to activate social capital, foster community resilience, and fill vacant urban land with new life..." but quickly realize that "... they depend—to various degrees, and with regard to national frameworks—on collaborations with, and support from, external organizations and individuals" (Fox-Kämper et al., 2018). Overall, motivated, well-connected, and well-managed community gardens have the best chances at securing public

support and funding, as well as professional and informal help, and therefore are better positioned to be sustainable community assets (Fox-Kämper et al., 2018).

Methodology

The author conducted in-depth interviews to gather insights on the benefits of and barriers to community gardening, as well as solutions to barriers to community gardening. Participants were recruited via email through convenience sampling of community gardens in the greater-Chattanooga, TN area. All participants participated through this source.

In total, four participants were interviewed. Given the limited target population of community gardens in the area, the author felt that a sample of four community gardens would be adequate in representing the target population. Additionally, each participant is involved with distinct types of community gardens, which offered a varied view on the benefits and barriers of community gardening. To protect the identities of the participants, pseudonyms have been given to them and the organizations and gardens with which they are involved. Below is a brief overview of the individuals and their gardens:

John: John participates with many gardens in the greater Chattanooga area through his nonprofit which is dedicated to strengthening the local community's understanding of local food systems and food justice through community gardening.

Jane: Jane facilitates a garden located at a private school which is maintained by children ranging in age from 3 to 14 and serves the school's associated church community.

Beth: Beth is a coordinator for a community garden at an area foodbank.

Sarah: Sarah oversees a neighborhood community garden located at a nonprofit urban farm.

The author developed the interview guide to cover four topics, see Appendix A. First, the author asked each participant to discuss his/her community garden and the community it serves. Second, the author asked each participant to describe the benefits of community gardens and the

barriers to community gardens. Third, the author asked each participant to provide solutions to the respective barriers named by each participant. Finally, the author asked each participant to react to the following statement:

What do you think about the following? a nonprofit dedicated to addressing the needs of community gardens through the procurement and allotment of funds and volunteers, the generation of a forum for communication between community gardens and their participants, and the creation and distribution of informational community garden materials.

Due to COVID-19 restrictions, all interviews were performed via an online platform (Zoom or Google Meet).

All interviews were transcribed and then coded. During the coding phase, the author identified themes that were mentioned repeatedly among participants. These themes, described in detail in the next section, were then sorted into categories that cover distinct dimensions of benefits, barriers, and solutions to barriers of community gardening. This research was approved by the Internal Review Board.

Results

Benefits Provided by Community Gardens

The first topic participants were asked to describe is the benefits of community gardening. Five specific themes were mentioned by participants when discussing the benefits of community gardening. The author has named these specific themes: 1) Education, 2) Community Engagement, 3) Food, 4) Spiritual Dynamic, and 5) Physical and Mental Wellness.

Table 1: Benefit Themes

Benefits					
	Education	Spiritual Dynamic	Community Engagement	Food	Physical/Mental Wellness
John	X	X	X	X	
Jane	X	X	X	X	
Beth	X	X	X	X	X
Sarah	X		X	X	X

Theme: Education

All participants named the educational component of community gardening as an important benefit, offering that community gardening allows experiential learning for all ages and for many topics, including the environment, agricultural technique, and issues of food access. Participants named forms of learning in community gardens ranging from structured to informal.

Jane focused primarily on the formal educational aspect of community gardening, as her respective garden serves a community of private school children ranging in age from 3 to 14. The food grown and harvested from this garden is given to parishioners of a local church, communicating issues of food access and benefits of natural food production to the children who maintain the garden, which aligns with the garden's goal—"to have an outdoor learning environment, and at the same time, provide an opportunity to children to learn about something that they wouldn't normally learn about in the classroom: organic gardening" (00:33, p.1). Furthermore, the children who maintain the garden learn the ecological implications of gardening through guest speakers and the practice of composting and recycling: "... the benefit is just a whole generation, I hope, of understanding the importance of taking care of the soil" (08:12, p.3).

Similarly, John reflected on a garden he had previously worked with that had the explicit goal of education. “We started a community garden with homeschool moms to watch how they utilized the garden in teaching their kids everything from spelling to art to math to science.” Through that experience and others, John concluded, “The educational component, you know, this is a classroom, you know, every garden is a college campus, and there’s so much to learn in a formal way like that” (33:00, p.5).

Other participants named less-formal educational opportunities of community gardening. Many named the sharing of agricultural technique as a valuable learning opportunity of community gardening. Beth highlighted this benefit. “The first couple of things that come to mind are learning from each other. So, you know, gardening at home can be, I think, a bit overwhelming if you don't know much about it. Whereas if you're gardening, if you are doing a community garden, or you're just doing it with somebody else, you get to learn from each other” (03:11, p.2). Sarah highlighted a similar type of knowledge sharing. “... they [the garden participants] have come from a community in Guatemala that is very agricultural, and so when they come to here, we're learning so much about, like, different growing techniques in different vegetables, and we're all learning. It's kind of just really bonding, learning moment for all of us, not just the folks who are community gardening, but for [the staff] as well” (04:49, p.3).

Theme: Community Engagement

The theme of community engagement emerged from each participant’s interview. Particularly, many participants named community building and community improvement as key benefits of community gardening, citing instances where gardens served to strengthen social connections within neighborhoods and provide a neutral ground for cultural exchange.

While gardening does ultimately yield food, some participants indicated that the community aspect of community gardening sometimes is of more importance. Sarah offered, “The main goal for that garden was developing a sense of community among the gardeners, and then subsistence, you know, that they are raising food to take home” (41:49, p.6). Furthermore, she emphasized the importance of the community over the garden, championing for communities to have the autonomy to dictate what and how food is grown in their respective gardens. “...the community garden is not our [the coordinators’] garden. It’s those who are in it doing, you know, who are doing the work and growing the food, and so we have to be very careful and diligent and conscious that we’re serving them versus us dictating what they need” (17:08, p.5).

John touted neighborly connection as a powerful benefit, especially in light of the COVID-19 pandemic: “It’s a great way to meet people. The conversations that come out of just being present in a garden—you learn so much about people, about the neighborhood” (33:00, p.6). Furthermore, he added that the connections formed in community gardens can reach beyond the boundaries of the neighborhood. “The program had probably 8 or 10 different nations represented, from Congo to Kenya, Chad, Burundi, Iraq, Guatemala. It was just beautiful in the diversity; four or five different languages being spoken in the garden. It was just awesome” (07:26, p.2).

Theme: Food

Unsurprisingly, the theme of food emerged from each interview. Particularly, participants placed emphasis on the benefit of cultivating food in community gardens as a way to address issues of food insecurity within their respective gardens’ communities, citing issues of proximity to grocery stores, lack of transportation, and inadequate funds contributing to food insecurity for each garden’s respective communities.

The distribution of food grown in community gardens varied between participants. Two participants, Jane and Beth, listed donation as the main form of distributing the fresh produce. “As the kids harvest and prepare the food for storage, we hand it right over to the community kitchen,” said Jane. “We’re growing this [the garden] up in the hopes of providing something of benefit for someone else in the community that may not have access to fresh food” (06:34, pp.2,3). Similarly, Beth listed donation as the focus of the food harvested in the garden, stating, “everything that is grown goes to the emergency food box program [at the local food bank]” (00:40, p.1).

Alternatively, two participants, John and Sarah, stated that their respective gardens allow for the communities who tend the garden to take home the produce they grow, a practice referred to as workshare. “We need people to come and help with the labor of production on pulling weeds, irrigating, harvesting, helping control insect pests and disease. So, there's some training involved in that, but in exchange for a certain number of hours they would volunteer hands on, they would take home a share of the produce every week, so in still having their own little area that's allotted to them to grow produce, everyone shares from the totality of produce being grown,” said John. “So it's kind of like coming to the farmers market. But instead of buying the produce, it's like a sweat equity exchange where you come and volunteer, help raise the food, and then take produce home” (07:26, pp. 2,3). Nonetheless, John stressed, “... man, they’re in the garden for food, you know. This is for their kitchen, and they depend upon that garden for food” (33:00, p.5).

Similarly, Sarah’s garden is tended by- and provides food to- a community that, aside from the garden in their neighborhood, has limited access to fresh food. “There are not grocery stores super close to our residents, and most of the residents in our area actually don't own

vehicles, and so they are on foot. They have to walk, you know, to the neighborhood convenience store that often doesn't have fresh produce and things of that nature.” The benefit of this garden, Sarah stated: “... it’s food access to nutrient dense foods, and so our community gardeners can grow vegetables and fruits—and with support and guidance” (04:49, p.2).

Theme: Spiritual Dynamic

An interesting theme emerged from three of the four participants; terms such as faith, higher purpose, values, and sense of peace were used, all of which the author has categorized as spiritual dynamic.

Out of the three participants who mentioned themes of spirituality, only one facilitates a garden with explicit ties to faith. Jane’s garden is located at a private school that has a mission to “to know, love, and serve.” This mission influences the use of the garden, which exists in part to be a learning garden. What food is harvested is given to community members who are in need of healthy food, which, as this participant stated, aligns with the school’s faith-based mission: “it’s about, first of all, that is in our faith” (06:34, p.3).

Two other participants, John and Beth, named a spiritual dynamic as being a benefit of community gardening, but not because faith is explicitly tied to the mission of the garden. Both participants named a spiritual dynamic as being a sought-after effect on those who maintain the gardens. John offered a story of a garden participant who uses the garden as a way to deal with the challenges of life.

We’ve sort of designated her the farm manager. And [she] has said over and over, when she’s stressed, when she’s worried, when, you know, ‘Do I pay the light bill or do I repair the car?’ You know, ‘when they cut off our food stamps. When my grandson got arrested.’ I mean, all of these things that life puts on you sometimes. And I hear her say over and over, ‘but when I come to the garden, it’s just such great therapy. I always discover a sense of peace. No matter what’s going on. And then I come away with a strength to do another day.’ And that’s just incredible. You know, there’s a Spanish proverb. ‘More grows in the garden than the

gardener sows.’ And it's kind of along that line. There's all kinds of value that way that are hard to measure, and you don't really recognize them. People just experience them (00:33, p.5).

Beth offered a similar thought: “I mean I think specific to [this garden] because what we are growing, we don't get to keep any of the food, you know, we're growing it to give away, I think that really gives people kind of a higher purpose. It's just a really good motivator” (05:19, p.2).

Theme: Physical and Mental Wellness

The theme of physical and mental wellness appeared in two of the participants’ interviews. Specifically, these two participants, Beth and Sarah, cited the physical activity of gardening improving the physical and mental health of those who garden.

Beth focused primarily on the effects on mental health community gardening can have. Particularly, this participant cited being a member of a community garden as a form of motivation to be outside, which this participant credits to positive mental health. “I also think just having some like encouragement to be outside and try something new, and to get your hands dirty, I really do think there's a big kind of link between being outside and growing things and mental health” (03:11, p.2).

Sarah focused primarily on the effects of community gardening on physical health. She asserted community gardening as a good way to get low-vigor exercise.

Increasing physical aptitude, physical wellness: there are couple studies out there about the wellness of older adults is increased through community gardening, because, you know, it's not always tremendously strenuous, but you have to be active in a garden. You're moving your body and, you know, kneeling and standing up and picking, and, you know, and it's keeping people’s bodies supple and moving and active. So physical wellness is a big part of that as well (04:49, p.3).

Barriers to Sustainable Community Gardens

The second topic participants were asked to describe is the barriers of community gardening. Four specific themes were mentioned by participants when discussing the barriers of community gardening. The author has named these specific themes: 1) Volunteerism, 2) Funding, 3) Knowledge, and 4) Procuring and Storing Supplies.

Table 2: Barrier Themes

Barriers				
	Procuring/ Storing Supplies	Funding	Knowledge	Volunteers
John	X	X		X
Jane		X	X	X
Beth			X	X
Sarah	X	X	X	X

Theme: Volunteerism

A prevailing theme among all participants was the barrier of volunteerism. Each participant offered a unique perspective on this. Some participants' gardens do not have an issue with volunteerism due to the focus or overseeing organization of the gardens. John did state that volunteerism is an issue for the various community gardens in which he is involved. However, despite volunteerism being an issue or not for each participant's garden, every participant named it as a barrier to sustaining community gardens.

Two of the four participants, John and Sarah, described instances where a lack of consistent volunteers affected the lifetime of gardens. In each example, participants described the hard work of gardening as being a deterrent to volunteers, even in instances where communities expressed interest in building a garden. John added:

You know, I've always kind of jokingly told people one day I'd like to have a bumper sticker made that says, 'you just think you want a garden'... But it's not like just mowing the grass when it gets tall. You literally need to have a daily relationship if you really want to get some food out of this and protect those little plants. To give them a chance. And, unfortunately, we just have a lot of lifestyle

conflict (46:20, p.7,8).

John was clear on the consequences of the volunteerism barrier. "... Even trying to do it by the book, not having committed gardeners is a sure way, not necessarily to fail, but it will certainly require a plan B or even a plan C" (46:20, p. 8). Sarah offered similar advice, stating, "You have to have very dedicated volunteers to keep the program going on because if you don't, who really does? It peters out very quickly" (08:04, p.7).

Two other participants, Jane and Beth, addressed the barrier of volunteerism—and not because it was a barrier to their community gardens, but because each of their community gardens were uniquely positioned to have a steady supply of volunteers, which each participant recognized. Jane, who is associated with the private school community garden, was quick to name volunteerism as a barrier, citing conflicting obligations as the root of the volunteerism barrier. "I would say the biggest barrier is, it's got to be the maintenance.... we can't expect the children to also be out there [in the garden] all the time maintaining. They just have so many other responsibilities." However, due to the nature of the garden being located at a school, Jane ultimately does not have a volunteerism issue thanks to "a lot of parent volunteers" (09:59, p.4).

Beth, a coordinator associated with an area foodbank's garden, offered a similar narrative.

I'm lucky because the [garden] has been established for a bit, and we're tapped into the Master Gardeners of Hamilton County, so volunteers aren't really a problem for me. But I think volunteers are probably the biggest thing to kind of a startup organization because, like I said, I think a lot of people have kind of this, you know, they kind of paint this picture that gardening is going to be really fun and it sounds good and then actually getting people to, like, follow up and to actually, like, do the work I think can be really difficult (08:56, p.3).

Theme: Funding

Though each participant listed volunteerism as the foremost barrier to sustaining community gardens, funding—or a lack thereof—for community gardens was named by most

participants as being almost as dire. For some participants, funding was not as much of an issue due to their gardens' associations with other businesses, such as a school, a farm, and a food bank. Nonetheless, almost every participant named funding as a barrier to community gardening.

Participants expressed that funding is a barrier to community gardens, but not their community gardens. "Second to [volunteerism], it might be funding," stated Jane. "But you know, to be honest with you, we have so many parents that believe in this, GivingTuesday is always meant just for our nature place classroom. So, whatever we receive, that usually is enough each year to fund all that we want to do in the [garden]" (09:59, p.4). Similarly, Sarah offered, "The challenge that arises is there's not enough money to support [community gardens].... Why do most community gardens on school property [not] last more than one year? Because there is not a dedicated person with enough funding to support the program. I mean, teachers can't do it. There's just, that isn't just a reality" (14:54, p.5).

Theme: Knowledge

Three of the four participants expressed that insufficient knowledge of gardening technique is a barrier to community gardening. The gardens in which each participant is involved are maintained primarily by volunteers. Accordingly, many of these volunteers are not well versed in gardening technique, methods, pests and parasites, or even how to prepare the food that is grown. According to Sarah, garden participants often need someone to "teach them how to, you know, to prep and grow and harvest and actually, like, cook their produce" (08:04, p.3). As Jane stated, gardening "is a learning process" (11:19, p.4).

Beth particularly stressed this barrier. According to this participant, volunteers generally fall into two categories: those who "kind of grew up [gardening] and grew up watching people

[garden]” and those who “have no link to it.” For the latter group, approaching gardening can feel like “a daunting task” (06:41, p.3).

There are a lot of kind of nitty-gritty details where it's like, a lot of people might think like, ‘oh, gardening sounds like a good idea,’ and then you get into the details of it, and there are just a lot of moving pieces, so you have to know, you know, taking into consideration the weather.... And, you know, once you get it in the ground. ‘Oh no, now that my plant has bugs or it's not flowering or the leaves are turning yellow and then you know, at what point do I harvest this? How do I prepare it? When do I pull this out to make room for the next batch of things that I want to put in the ground?’ So, I think all of those kind of nitty-gritty details, like, when you start getting into it can be just overwhelming for people and they're like, ‘never mind, I don't want to deal with this’ (06:41, p.3).

Theme: Procuring and Storing Supplies

Two of the four participant named procuring and storing supplies such as soil, water, and tools as a barrier to community gardening. Regarding procurement of these items, there can be a knowledge gap in gardeners on where to find these supplies. Additionally, cost can be a deterrent in procuring supplies. Regarding storing supplies, the issue is often that community gardens do not have storage facilities, which can lead to theft or waste, and building adequate facilities can be costly.

Gardens require supplies such as adequate soil, water, and various gardening tools in order to be sustainable. According to John, “That's a hindrance for a lot of people is, like, ‘I need a wheelbarrow. You know, we need a wheelbarrow out at the garden, but I can't even get a wheelbarrow in my car and then we don't have a place we don't really have a tool set. We don't have a safe place to keep tools’” (01:03:35, p.11). However, according to John, even more pressing than the need for tools is the need for water.

But man, you better figure out the water. I mean, you've got to figure out how you're going to irrigate. Because, you know, there's some plants that are just thirsty, they just have to have regular water.... [or] they just don't do as well, they're not as healthy, they're susceptible to disease. And so yeah, you got to know where you're going to get your irrigation up, how you're going to source

that (46:20, p.9).

Through the discussion of procuring supplies, the discussion of safeguarding them also emerged. While most participants did not address the issue of theft, John did at length. However, he offered an unexpected take on the issue.

Everyone is concerned about theft and security, that's always the big question as well. 'If we put a garden here, how are we going to keep people from stealing our stuff, you know?' The truth is, you're not. I mean, what are you thinking? A brick wall? A guard dog? I mean, if somebody wants to come in and get some zucchini, they're going to. But what usually happens is they stopped doing it. You know, maybe you lose a little bit of produce at first, but then they just quit stealing it. And then the people that can see your garden, they start keeping an eye on it (46:20, p.9).

Overall, participants did express the issue of procuring and storing supplies as a barrier to community gardening. While this was not the most prominent theme among the barriers, participants were quite clear on the consequences of this barrier: as Sarah said, "if we don't have easy access to [supplies], then your community garden is not going to work out" (10:00, p.3).

Solutions to the Barriers

After discussing the benefits and barriers of community gardening, participants were asked to discuss potential solutions to the barriers. Four specific themes were mentioned by participants when discussing the barriers of community gardening. The author has named these specific themes: 1) Formal Plan, 2) Organization and Leadership, 3) Establishing a Form of Communication, and 4) Training and Education.

Table 3: Solution Themes

Solutions				
	Formal Plan	Organization/ Leadership	Form of Communication	Training/ Education
John	X	X	X	X
Jane	X	X	X	
Beth	X		X	X
Sarah	X	X		

Theme: Formal Plan

Overwhelmingly, the consensus was that a clear plan for a garden will mitigate many of the barriers named. Sarah offered a statement that encompasses the thoughts provided by all participants regarding this theme: “Solutions to the barriers. Clear communication of things. Everything in writing in terms of, like, you know, creating a program outline from the very beginning that, you know, sets out expectations, and, you know, a calendar, timelines. And not that it has to be set in stone forever, but it gives you the foundation” (12:12, p. 4). Similarly, Jane offered, “So that's really, you know, if you want to get around barriers, it's just a clear plan” (13:27, p.4).

The items listed to be included in a plan varied between participants. Some felt that clear expectations of who the garden serves, who maintains the garden, and timelines for planting and maintenance are adequate. Beth offered more specific items to be included in a plan: “the steps that you need to take to start a community garden. So, I do feel like that information, you know, kind of like the general information on how to start a community garden, is out there like, uhm, but there might be, like, some very location specific information that people don't have access to” (12:23, pp.4,5). However, John named multiple items that could be either included in a plan

or implemented on a larger scale through an entity that exists to serve community gardens. The first of these items relates to tools.

They tried a number of kinds of alternative approaches to getting community garden started in in Denver, one of the things was a tool bank. That's a hindrance for a lot of people... So they started a tool bank. And a gardener could email them or call them, and they put tools in a van and deliver them and then come back at the end of the day, pick them up, take them back to the tool bank. It was like a library, and that worked really well (01:03:35, p.11).

The second of these items relates to water.

The other thing they did was they got one of these old army trailers that had the big water tank on it. And it's like from World War II or Vietnam or something. I don't think they use them anymore. Maybe they do. There's like a big 1,000 to 2,000 gallon tank on a trailer. And they would fill that thing up from the water hydrant, from the fire hydrant. And they were paying like next to nothing per gallon. And then they would drive that thing out to a community garden. They turn on the pump. And they'd fill their water containers and then they'd shut off the pump, crank up the truck, drive to the next garden, fill their water containers. They had a route, and no one was having to catch rainwater. They were catching it all from the fire hydrant into their tank and then delivering it (01:03:35, p.11).

The third and final item John mentioned relates to funding.

You either need to be able to find a sponsor that'll pay for it, or you need the funds to pay for it. Any kind of food project that way, there is kind of a business aspect to it. You know, you're going to have some costs. Uh, you're going to need a budget so that you know ahead of time. Yeah, 'here's how much money if we want to if we want to grow this much stuff, and we're going to get drip tape to irrigate it. You know, here's how much that costs or the wheelbarrow. Spade, forks, bow rakes.' Or if you're going to get some good compost to put on the beds before the season or whatever, you know, well, 'let's build up, if we had our own little greenhouse, you know, blah blah, blah.' It all costs money (01:22:50, p.13).

Theme: Organization and Leadership

Three of the four participants named garden organization and leadership as a solution to the barriers of volunteerism, knowledge, and funding. Generally, participants expressed that organizations external to the garden that could oversee it and aid in funding or procuring resources would serve to circumvent barriers such as funding and procuring resources.

Additionally, participants felt that having a central leader in gardens would serve to lessen the impact of the volunteerism and knowledge barriers.

John focused primarily on how external organizations can assist community gardens. In particular, he named an existing organization in the Chattanooga area that exists to address the barrier of funding, albeit not exclusively for community gardens.

Man, the UN foundation. It's like a group of people. I don't know how many of them there are. You join the UN Foundation by contributing actual amounts of money every month. Every month they take applications for a \$3000 grant. So when [organizations] apply to the UN Foundation, you show on the budget, 'here's how we'll spend your money,' and that's the most important thing to them is your budget, to make sure that you thought through, so, what you actually need. And then once a month they all sit and evaluate these applications and decide, 'they get our money. We're going to give them the grant.' So maybe there could be gardeners, you know enough people who, like, they buy food at the farmer's market. They shop at Whole Foods. Maybe they, you know, go to Crabtree's farm stand. Maybe they intentionally go to restaurants that source from regional farms. And maybe you could create some kind of collective with people, like, that want to offer a grant, maybe just every growing season, That would be awesome. That would be, would be a fantastic approach to that funding obstacle (01:26:54, p.14).

Other participants focused primarily on having a central leader as being a solution to the barriers of knowledge and volunteerism. Jane stated, "I think that's the best solution, just making sure really we have one person having ownership over it that will take care of the plan throughout the year" (13:59, p.5). Sarah stated something similar, adding that having a central leader adds to the barrier of funding.

It's got to have a central leader in that, that inspires and encourages and motivates people to keep going throughout the year and to teach them how to, you know, to prep and grow and harvest and actually, like, cook their produce. So, you know, community gardening is not a passive, easygoing experience. Everybody has to be in it. So that, you know, that's a challenge of community gardening is, like, having that central person. Having the economics to support that is a big part of it (08:04, p.3).

Theme: Establishing a Form of Communication

Establishing a Form of Communication emerged as a solution from three of the four interviews. Participants felt that having an established form of communication between coordinators and volunteers could mitigate the barrier of volunteerism. Additionally, participants expressed that having a channel of communication among different community gardens could address the barrier of knowledge and supplies.

John expressed that having a form of communication both to volunteers and among gardens would be beneficial but not easy to facilitate.

There is no central place to go to, there's no one phone number. There's no one email address. If you want to know 'where are the community gardens in Chattanooga,' there's an old directory..., and a lot of the gardens in that directory don't even exist anymore. There are some new initiatives that aren't included because it hasn't been updated, so if you wanted to find a community garden, there's no one central number or person to talk to.... I don't want people calling me. I want to help someone else be that person. You know, let's just wait and find out how to help someone else do that. But, no, I've got plenty to do. When someone is starting a community garden and they want to do a workday. And it's like, 'man, we're going to try to move, like, 8 yards of topsoil on a Saturday. And we're going to need a bunch of people with wheelbarrows and shovels and rakes. Where do I get those volunteers?' And it's like bam, there needs to be like a database, you know? And where you can, you can contact that same central point of communication and express the need to schedule a work day. You know, we need wheelbarrows and tools and labor. And it's like, 'yeah, man, we'll put the word out. And here's how people will sign up. And now what's your contact information? Put a date on the calendar' (01:32:27, p.15).

Beth added that a form of communication could be of use to communicate with not only volunteers but also other community members.

It's kind of interesting because I am talking to my boss this week about the role that the [our] Garden plays in terms of supporting people in the community. So right now, like, we'll give out seeds to community gardens or school gardens or church gardens. We also give out plants. We haven't given, you know, we haven't done so much in terms of, like, forums or anything like that, but I was actually going to suggest to him that we create some kind of like Facebook page or something to connect community gardens in the area. Just so, uhm, you know, if I get all sorts of

random stuff at the food bank, people will drop off like pots and they'll drop off, like, bags full of seeds, and I'll get, like, all this stuff and I'm like 'I just I need to find someone to give this to.' I know somebody in this, somebody could use this, I just don't always know. I don't have a good way to, like, distribute that kind of information (12:23, p.4).

Jane also expressed similar interest in a form of communication to connect the produce grown in the garden to community members who are in need of nutritious food.

And it's not just communicating within the people here, it's the outreach, you know. Where do you want that to go? You know, we do have a great partnership with the community kitchen. If we were able to do more, maybe we could reach out to the foodbank. And see who else is in need, you know, we would like to form other partnerships, and possibly in the summertime, if we're, again, talking about our parishioners getting involved. There are some parishioners that probably would. Some have a great need for taking home some fresh organic vegetables, and we'd love to see them, rather than go to waste, go to the right person (17:56, p.6).

Theme: Training and Education

Two of the four participants indicated that training and education for volunteers in some capacity could address some of the barriers to community gardening, namely the barriers of knowledge and volunteerism.

John is involved with a nonprofit in the Chattanooga area that serves to, among other things, consult individuals and organizations on starting and maintaining community gardens. According to him, this nonprofit has been an important asset to the community gardening community in Chattanooga.

What we noticed was missing was a lot of people work in their own little silos. They compete for the same resources. And wouldn't it be a lot more effective if we all collaborated together? So, we've been at it a couple of years now. We're still kind of new, but it has been, I would say, very successful in establishing those powerful partnerships (26:18, p.5).

Beth asserted that training for volunteers in fledgling gardens is imperative.

I would say, like, if I was kind of starting from scratch with people who weren't well trained, I think that training would probably be the biggest thing, or education. Like I said, a lot of the people who volunteer at [our garden] are Master Gardeners, so they do have, like, a good deal of experience. And they also have a good deal of free time because a lot of Master Gardeners are retired. So, if you don't have that as a community garden, I think that educating the people who you're expecting to come volunteer, I think, is probably a big thing. I haven't had to do a lot of that, but I think there's always room for that in any situation (10:14, p.4).

Garden Corp Business Model

While community gardens serve their communities by contributing to local food systems, these gardens serve many purposes beyond the benefits provided by cultivating food. As such, these gardens deserve to be sustained for the many benefits they provide their communities, which calls for the creation of some entity, ideally nonprofit, which exists to build capacity for community gardens with the goal of preserving, promoting, and perpetuating community gardens. The author has named the idea for this nonprofit Garden Corps. Establishing such a nonprofit would ensure community gardens a better chance at sustainability. This organization would ideally function to address the needs of community gardens through capacity-building services such as offering tool banks and water trucks, collecting educational resources and grant opportunities, and providing an app and/or forum that allows community gardens to organize and communicate with volunteers.

Garden Corps Business Model

The author has elected to organize the business model using the Business Model Canvas, shown in Figure 1.

Figure 1: Garden Corps Business Model Canvas

<p>Key Partners </p> <ul style="list-style-type: none"> Website/app hosting service; Gardening tool/supply stores; and Local municipalities. 	<p>Key Activities </p> <ul style="list-style-type: none"> Prospecting and maintaining members; Driving and delivering tools and water; Maintenance of website, app, and forum; Writing and/or collecting and publishing educational resources; and Collecting and publishing grant opportunities. 	<p>Value Propositions </p> <p>Garden Corps provides capacity-building services that allow community gardens to better serve their communities. Services include:</p> <ul style="list-style-type: none"> Tool banks and water trucks; Collection of educational resources; Collection of grant opportunities; and A forum/app that allows community gardens to organize and communicate with volunteers. 	<p>Customer Relationships </p> <p>In-person relationships:</p> <ul style="list-style-type: none"> Tool bank; and Water truck. <p>Online relationships:</p> <ul style="list-style-type: none"> Membership to Garden Corps; Educational resources; Grant opportunities; and App with forum for gardens and volunteers. 	<p>Customer Segments </p> <p>Community Gardens</p> <ul style="list-style-type: none"> School community gardens; Church community gardens; Neighborhood community gardens; Urban farm community gardens; Foodbank/r\organization-based community gardens; and Any other community garden.
<p>Key Resources </p> <ul style="list-style-type: none"> Staff; Work truck(s); Water tank truck(s); Storage space; Gardening tools/supplies; and Internet. 	<p>Channels </p> <ul style="list-style-type: none"> App and forum; Website; Social Media; and Social advertising. 			
	<p>Cost Structure </p> <ul style="list-style-type: none"> Exact costs are undefined. Costs can be inferred from key resources section. 		<p>Revenue Streams </p> <ul style="list-style-type: none"> Member Dues; Grants; and Donations. 	

1. Value Proposition: Garden Corps provides capacity-building services that allow community gardens to better serve their communities. Services include:
 - a. Tool banks and water trucks;
 - b. Collection of educational resources;
 - c. Collection of grant opportunities; and
 - d. A forum/app that allows community gardens to organize and communicate with volunteers.

2. Customer Segments: Community Gardens
 - a. School community gardens;
 - b. Church community gardens;
 - c. Neighborhood community gardens;

- d. Urban farm community gardens;
 - e. Foodbank/organization-based community gardens; and
 - f. Any other community garden.
3. Customer Relationships:
- a. In-person relationships:
 - i. Tool bank; and
 - ii. Water truck.
 - b. Online relationships:
 - i. Membership to Garden Corps;
 - ii. Educational resources;
 - iii. Grant opportunities; and
 - iv. App with forum for gardens and volunteers.
4. Channels:
- a. App and forum;
 - b. Website;
 - c. Social Media; and
 - d. Social advertising.
5. Key Activities:
- a. Prospecting and maintaining members;
 - b. Driving and delivering tools and water;
 - c. Maintenance of website, app, and forum;
 - d. Writing and/or collecting and publishing educational resources; and
 - e. Collecting and publishing grant opportunities.

6. Key Resources:

- a. Staff;
- b. Work truck(s);
- c. Water tank truck(s);
- d. Storage space;
- e. Gardening tools/supplies; and
- f. Internet.

7. Key Partners:

- a. Website/app hosting service;
- b. Gardening tool/supply stores; and
- c. Local municipalities.

8. Cost Structure:

- a. Determining the cost structure for Garden Corps is beyond the scope of the research conducted by the author; the author suggests further research to determine the cost structure.

9. Revenue Streams:

- a. Membership dues;
- b. Grants; and
- c. Donations.

In essence, the barriers and solutions to barriers named by participants indicate that community gardens have a capacity issue; that is, these gardens do not have enough capacity to both address the issues in their communities they are trying to solve and handle the barriers to sustaining these gardens. This business model for Garden Corps offers an actionable solution to

the capacity issues faced by community gardens that could be easily implemented in any community across the United States.

Services offered by Garden Corps are direct implementations of solutions named in the interviews to combat barriers named in the interviews. For the barrier of volunteers, Garden Corps offers an app and forum that allows community garden coordinators to schedule workdays for their gardens and communicate directly with volunteers. For the barrier of funding, Garden Corps collects and publishes grant opportunities via the app/forum. Addressing both the barrier of funding and the barrier of procuring and storing supplies, Garden Corps provides members with a tool bank and water trucks; members “check out” tools they need or request water for their gardens via the Garden Corps app, and a Garden Corps truck will deliver and retrieve the tools and supply water to their garden. Addressing the barrier of knowledge, Garden Corps collects and writes educational materials for community gardens and digitally distributes these materials to Garden Corps members.

Implementation of this business model likely should happen in stages. The author suggests the stages of implementation mimic the progression of barriers from most pressing to least. That is, barriers to community gardening that are most pressing, such as the barrier to volunteers or procuring and storing supplies, ought to be addressed primarily through the creation and implementation of the Garden Corps app and forum and the collection of a tool bank, tool truck, water truck, and employees. Once the services addressing these more pressing barriers are successfully implemented, services of Garden Corps that address less-pressing barriers, such as the grant and educational materials database should be developed and published.

Prior to implementing the business model, however, the author suggests developing a membership base, and developing relationships with key partners. It is the opinion of the author

that social marketing would be an effective strategy to develop a membership base in the early stages of Garden Corps, as 1) capital will be limited at this point of Garden Corps and 2) from the author's experience of surveying the community gardening community of Chattanooga, this community is tightly knit.

Limitations and Further Research

The author was able to uncover benefits of community gardening, barriers to community gardening, and solutions to the barriers of community gardening through in-depth interviews and literature review. The author used these insights to inform the business model for Garden Corps. The author suggests that further research be conducted to determine a service/market fit. Additionally, the author did not explore the costs associated with starting and operating this business. Future research could explore the cost structure of a business similar to Garden Corps.

Furthermore, the author interviewed only four participants in the Chattanooga area. While the sample was adequate for the purposes of this research, the author suggests interviewing more community garden coordinators in the Chattanooga area to refine the insights gained from the current participants. Additionally, given that community gardens exist beyond the Chattanooga area, and given that the barriers faced by community gardens also exist in abundance beyond the Chattanooga area, the author suggests that further research akin to the research highlighted in this paper ought to be performed in other communities across the nation in order to gain more insights into the benefits, barriers, and solutions to the barriers of community gardening.

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APPENDIX A: The Interview Guide

1. *Please tell me about your garden and the community it serves.*

2. *What are the benefits of community gardening?*

Expected Answers:

- Health of community members
 - Exercise in gardens
 - Access to fresh fruits/vegetables
- Foster a sense of community

Follow up questions:

- What positive effects have you observed on gardeners?
- What are some goals of your garden?

3. *What are the barriers to community gardening?*

Expected Answers:

- Access to funding
- Access to land/supplies
- Volunteerism/participation

Follow up questions:

- Do any of the following affect your garden? If so, how?
 - Lack of participation/volunteers
 - Procuring funding, land, water, seeds, other resources
- How do you combat these barriers?

4. *What are solutions to these barriers?*

Expected Answers:

- More funding
- Land grants

Follow up questions:

- If there was some entity dedicated to helping community gardens, in what capacity would you like to see it help?
- What do you think about the following?
a nonprofit dedicated to addressing the needs of community gardens through the procurement and allotment of funds and volunteers, the generation of a forum for communication between community gardens and their participants, and the creation and distribution of informational community garden materials.

5. *Is there anything else you'd like to add?*