



Measuring the Social Influences of Urban Agriculture

A Post Occupancy Evaluation

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ABSTRACT

The movement of integrating urban agriculture into our cities has gained momentum partly due to the urban migration of suburban residents and rapidly growing populations but also as a result of the increasing concerns regarding sustainability and health related to our current food systems. Historically, urban agriculture was viewed as a way to repurpose vacant lots and to provide better food security for those at the poverty level. The value of urban agriculture proves to be much more diverse in impacting the communities economic, environmental, and social needs. The compilation of these findings provides a framework of evidence-based research to question the sustainability and realistic need for urban agriculture opportunities and development to be integrated into community guidelines or initiatives by a municipality's policy leaders, urban planners, and designers.

Keywords: urban agriculture, community building, civic capacity, urban farm, community garden, landscape performance, sociocultural benefits, post occupancy evaluation

INTRODUCTION

History.

In the United States, urban agriculture has been a movement that has ebbed and flowed with periods of economic disparity. In the 1890s and 1930s with the Great Depression, vacant lots were cultivated as a “self-help approach” for unemployed laborers to create jobs [7,8]. In the 1940s during the World War, the term “victory garden” was coined to describe the gardens that were established as part of the movement to contribute to the food supply and support civilian morale [7,8]. The 1970s experienced another growth period of urban agriculture as an ‘expression of self-reliance’ responding to rising food prices [7,8].

Conclusions have been drawn about why this social reform element was centered around urban agriculture. One, the Marxist theory, argues that the development of capitalism and its attendant urbanization has ‘alienated humans from the natural environment and disrupted our traditional forms of ‘social metabolism’, the material transformation of the biophysical environment for the purpose of social reproduction [6]. Lawson described it as a form of urban activism that ‘showed resistance to the deterioration of the city’ just as another suggested that the community greening movement was a response to a urban decay and crime [7,8]. Another study revealed that participants found participation in this gardening process as a reactivation of natural order in the apparent chaos of war, again, another suggestion that urban agriculture was a response to a form of metabolic rift.

Factors motivating today's community members to establish or maintain urban agriculture sites include goals to improve food security [7], access to healthy, culturally appropriate foods [7,8],

respond to growing interest in localized food systems and the related opportunities to improve the sustainability of the system [4,7,8], the potential to retain cultural heritage [7], and provide green space in urban environments [8].

Perceived Benefits Based on Existing Literature.

Existing research and literature has established a wide array of perceived benefits as a result of the presence of an urban agriculture site in a community. These benefits can be categorized as contributing to five different categories of influence: (1) psychological and physical health and well-being, (2) an individual's sense of place and connection to the space in which they live, (3) community ties and identity, (4) diverse cultural and generational relationship building, and (5) educational and economical. A detailed documentation of these findings can be found in Table 1.

Barriers.

Despite the diversity of benefits that urban agriculture seems to hold for a community there are many constraints and barriers to its execution. Dimitri and Lovell's research found that not only is there is a significant disconnect between urban agriculture and urban agriculture policy, but that planners and designers are often ill-equipped to integrate food systems into future plans for cities and thus incur a reactive nature of policy formation related to the establishment of urban agriculture [4,7]. However, there is a lack of a model of sustainable development that can be examined, critiqued, and replicated [5] in order to aid in the creation of policies.

Another barrier is the limited access to suitable land for growing [7]. This includes appropriate environmental needs such as sunlight requirements, future sunlight conditions, water, and growing media. Sites also need to be located where they are accessible for gardeners, in close proximity to markets, and are protected from vandalism and theft [7]. With the revitalization of neighborhoods, urban agriculture that was once located on a vacant lot may now be competing with competition for more profitable land uses, and this contributes to the insecurity of tenure of a site.

Lastly, a community's residents may have a lack of basic urban agriculture skills because of little previous experience [7]. In addition to maintaining its competitive value, skilled leaders and workers are extremely important when it comes to the sustainability of a site. If a site cannot transition between leaders and generations, it will cease to exist long-term and thus lose its value becoming a vacant site or area of blight in a neighborhood.

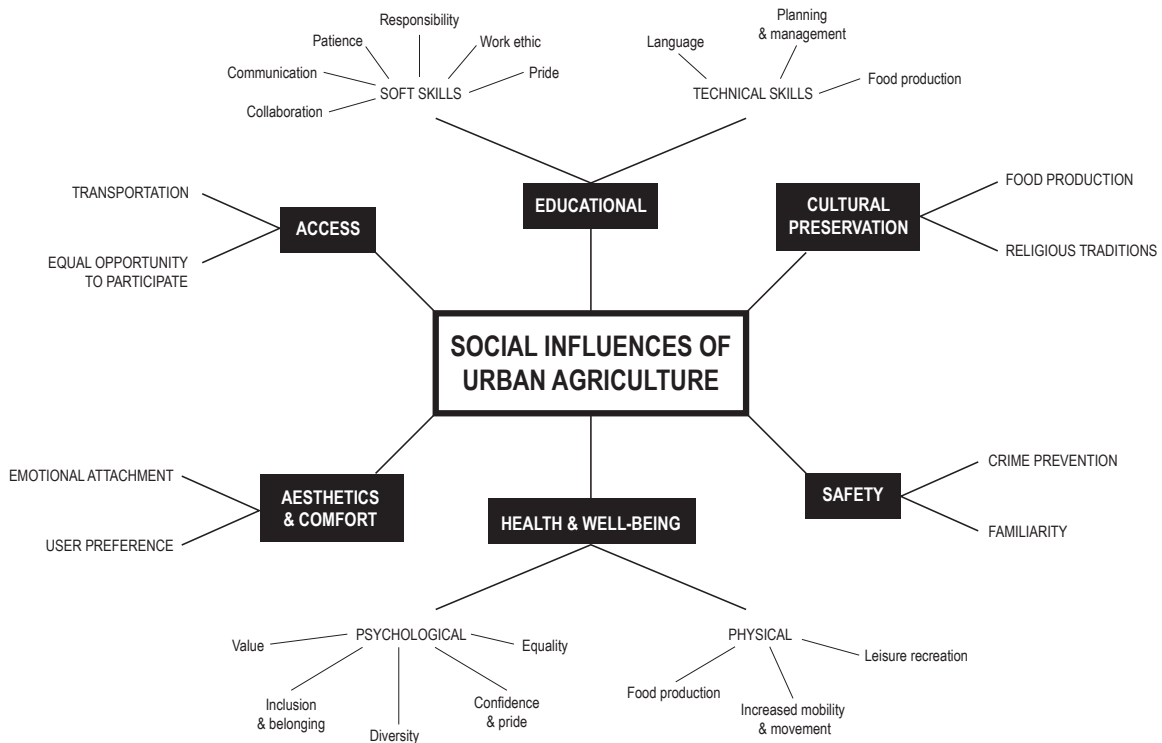
Significance.

Urban agriculture is unique in its ability to contribute to its community because of the multiplicity of functions it can serve. Based on the Landscape Architecture Foundations list of "social" benefits, many can be viewed as overlapping with a reoccurring theme – community. Figure 1. diagrams how these benefits relate to one another and how topics like "food production" actually can fall under several other categories such as physical health and well-being, cultural preservation, and education as a technical skill and knowledge base.

Table 1. Documentation of existing research conclusions of the benefits of urban agriculture.

<p>Psychological and physical health and well-being</p> <ul style="list-style-type: none"> • encourage ‘upliftment’, ‘cohesions’, and ‘community development’ [6] • ‘enhance feelings of self-worth’ and ‘self-confidence’, ‘psychological security’ and ‘psychological well-being’ [6] • venue for ‘creating empowerment’ [6] • psychological benefits of green spaces in urban areas, general health and well-being and relieving stress [6] • improved access to fresh, nutritious food helping in combating childhood obesity, diabetes, and poor nutrition, and having healthier diets, consuming more fruits and vegetables [7] • recreation and relaxation of gardening outdoors [7] • higher consumption of fruits and vegetables [8]
<p>An individual’s sense of place and connection to the space in which they live</p> <ul style="list-style-type: none"> • enhance people’s sense of place and belonging [6] • alleviate some of the alienating aspects of modern lifestyles, restoring a sense of place to the urban context [6] • potential to ‘change people and places’ and people’s relationships with the space in which they live [6] • building community links between students and the community they are studying in [9]
<p>Community ties and identity</p> <ul style="list-style-type: none"> • revitalize degenerated neighborhoods [6] • transform dangerous and neglected public spaces [6] • foster ‘community development’ [6] • Strengthened community identity and community organization [6] • opportunities to socialize and cooperate with friends and family [7] • improved social ties [8] • community building tool
<p>Diverse cultural and generational relationship building</p> <ul style="list-style-type: none"> • intergenerational cultural transfer encouraging cohesion and cooperation [6] • extends opportunities for combining food production with cultural functions on urban green space [7] • access to rare foods that support their cultural heritage [7] • improving interracial relationships and decreasing crime [7] • increased cooperation and understanding between diverse community members, break down stereo types [9] • break down barriers between generational groups [9]
<p>Educational and economical</p> <ul style="list-style-type: none"> • creation of new jobs [7] • environmental awareness [7] • improve food security [7] • gain new knowledge and technical skills [7] • knowledge development in cooking, nutrition, science, environment, business management, and cultural sensitivity or understanding [7] • provide learning opportunities in the physical and social sciences [8] • learning and teaching opportunity [9]

Figure 1. A reorganization of the connectivity and reach of the social benefits determined by the Landscape Architecture Foundation.



Of the benefits found in the literature, each study's results emphasized relevance to the community and what the community can or is providing for the individual. McMillan and Chavis [13] define a sense of community by four criteria: (1) membership, comprising of characteristics like emotional safety, feeling of belonging and identity, and personal investment (2) influence, both of the individual on the community and the community on the individual, (3) integration and fulfillment of needs, to the degree that communities successfully facilitate person-environment fit among members, and (4) shared emotional connection representing the outcome of a high quality interaction and contact between community members.

The concept of community building is required to meet the "sense of community" criteria defined by McMillan and Chavis. Saegert [3] describes community building as an approach which emphasizes:

- a. Communities working together to identify and solve their problems
- b. Cultivation of socially valuable relationships
- c. Support for leadership development and increased human capital
- d. Increased relational and organizational skills of residents and groups
- e. Sustained stakeholder engagement
- f. Development of a sense of common purpose and action agenda
- g. Increased local institutional capacity

Therefore, the general community building principles with suggested action steps by H. Daniels Consulting firm support not only the characteristics described by Saegert but also the outcomes that have been concluded in the above documentation of benefits recorded from past research studies [1]. These principles include strategies to build community characteristics of participation and inclusion, civic responsibility, collaboration and partnership, embrace diversity, encourage learning, and focus on assets, building capacity, and results to assess the effectiveness of community efforts.

Saegert [3] quotes Robert Chaskin (1999):

“Community capacity is the interaction of human, organizational and social capital existing within a given community that can be leveraged to solve collective problems and improve or maintain the well-being of a given community. It may operate through informal social processes and/or organized efforts by individuals, organizations, and the networks of associations among them and between them and the broader systems of which the community is part.” Robert Chaskin (1999)

Urban agriculture is relevant to this analyzation of community building and capacity as the catalyst in which these needs can be fulfilled. With the fluctuation in significance of urban agriculture throughout history, the question must be asked: Should urban agriculture be a considered a foundational tool for community building integrated into design, planning, and policy or is it merely a trend that attempts to serve as a solution to revitalize a struggling economy or community?

METHODS + TOOLS

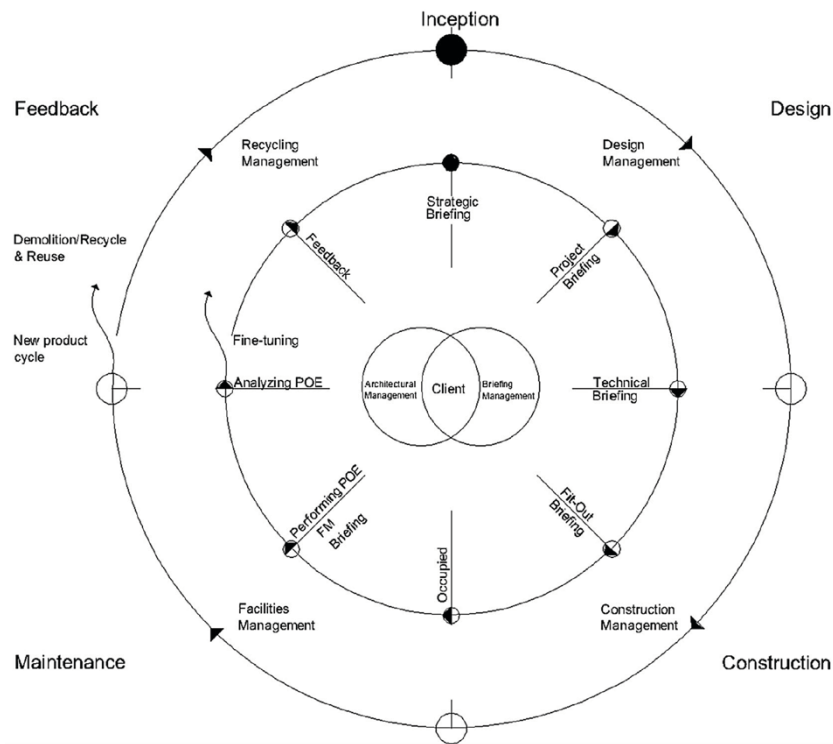
To evaluate the performance of urban agriculture sites, a post occupancy evaluation (POE) is the most commonly used method for data collection and interpretation. According to Zimring & Reizenstein, POE is ‘the examination of the effectiveness for human users of occupied design environments. Effectiveness includes the many ways that physical and organizational factors enhance achievement of personal and institutional goals’ [2].

Post occupancy evaluations vary between qualitative and quantitative methods but maintain three primary types [2,10]:

1. Indicative: short time span, quick walk-through evaluations may include interviews, group meetings with end users, and may provide indications of major successes and/or failures
2. Investigative: utilize structured interviews and survey questionnaires, in addition to photographic/video recordings, and physical measurements, is often prompted by issues raised in an indicative POE and adds more depth to the analysis
3. Diagnostic: most comprehensive and in-depth taking months or years at a time, use of multiple methods focused on a wide range of performance evaluation aspects, comparative evaluations, often recommendations are aimed at creating design guidelines for future similar facilities

Advancements in methods for building POEs can be applied to urban agriculture research as well. Cole et al. “suggests a more integrated approach, called ‘interactive adaption’, to better understand the interaction between building occupants and new technologies” and is “based on the context of involving users in the projects framework” [2]. This advanced method “changes POE from a one-off practice into continuous information collection for supporting building design by taking advantages of an improved feedback loop with user information” [2].

Figure 2. The steps of the briefing process in the building design process utilizing the ‘interactive adaption’ POE approach. [2]

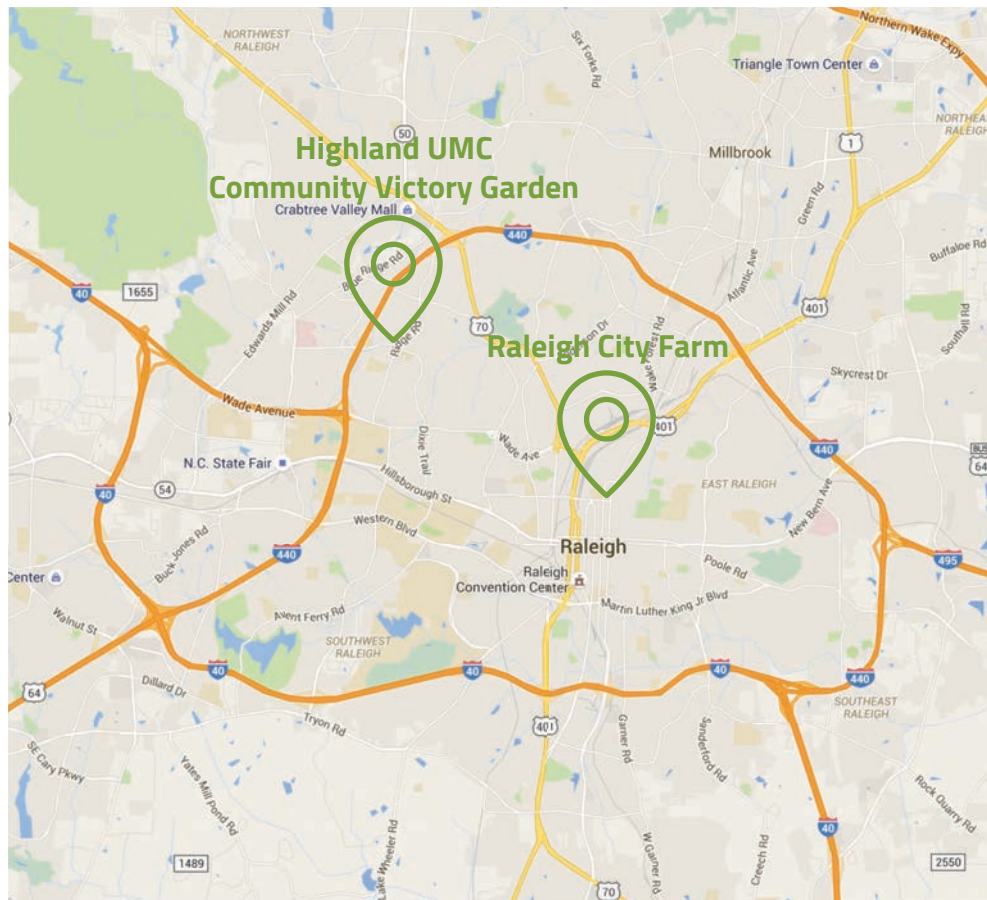


Research utilizing the ‘interactive adaption’ approach should be used in the future to assess urban agriculture. However, documented research in the realm of urban agriculture has only utilized the indicative and investigative type of POE. Case studies documented the use of survey questionnaires and participant interviews and their primary means of data collection. In 2013, Dimitri and her fellow researchers utilized a 35 question web-based survey distributed to a national list of urban farmers in USA to make conclusions about the connection between urban agriculture producers and consumers [4]. In the United Kingdom a researcher sent a survey to the 255 members of the Federation of City Farm and Community Gardens and interviewed 13 individuals [5]. A research study in Cape Town, South Africa used participant observation in addition to individual and focus group interviews [6]. Lastly, a more comprehensive study conducted in Baltimore, Maryland engaged 28 participants from 13 different gardens for individual and focus group interviews [8].

POEs provide a valuable approach to the evaluation of performance of an existing site by generating information about how a facility or site is used, which could be accompanied by a set of resulting design guidelines, and provides information to guide a redesign or fine-tuning of a site that is no longer meeting the original goals or needs of the neighborhood or community.

Two sites of varying degrees were selected to use as a pilot study. The first was the Highland United Methodist Church Community Victory Garden and the second, Raleigh City Farm. Both sites are located within the city limits of Raleigh, North Carolina but have distinctly different missions and characteristics.

Figure 3. Location of study sites: Highland UMC Community Victory Garden & Raleigh City Farm.



The Highland United Methodist Church (UMC) Community Victory Garden called “Peas on Earth” was established in the spring of 2010 with the mission “to allow English as a Second Language students, immigrants, church members, community and regional volunteers to participate in and learn about sound and sustainable urban gardening practices” [11]. The garden comprises of approximately 1,100 square feet of raised beds that are 100% supported by donations and volunteer hours. Produce is shared between members that are vested in the garden (\$10 + 10 hours gives members access to produce) and the Interfaith Food Shuttle in Raleigh through donations of produce to Logan Trading Company’s “Plant a Row for the Hungry”. As a result of

its success, the pioneer for this garden, Cullen Whitley, has presented at over 100 different events to churches, organizations, municipal groups and conferences and helped establish an additional 102 community gardens around the world. The garden has also earned numerous awards including the 2011 City of Raleigh Human Relations Non-Profit Organization Award.

In contrast, Raleigh City Farm is a formerly vacant, one-acre site of more traditional row gardens and greenhouses established in 2011 with the original mission of “transforming forgotten urban spaces into nourishing farmland” [12]. Their mission has since been revised to “growing urban farms and farm entrepreneurs to strengthen sustainable, healthy food systems”. Produce can be purchased from their on-site Farmstand on Saturdays or clients can join the {Raleigh} Farmshare Community-Supported Agriculture (CSA) program with opportunities for customized seasonal membership or produce selection for their share. At least two new farms have been established as a result of their new farm entrepreneur initiative.

For the purpose of this pilot study, a survey questionnaire and participant interviews were used. The survey and interview questions were designed to identify the following topics:

- a. How do community members learn about the site? Is it accessible?
- b. Who uses the site or reaps the benefits of it?
- c. Why are participants engaged or not engaged?
- d. How often are participants using the site and do they visit with others or alone?
- e. What benefits do the participants perceive the site is providing for them? Is there a pattern in perceived benefits for each different site or the City of Raleigh as a whole?
- f. Does the site meet their personal needs for inclusion and belonging? Education? Health?
- g. Are participants strengthening community ties as a result of the site?
- h. Does the site help create and encourage civic engagement?

Testing of the quality of this survey for future use was done on-site with participants while they worked in the garden and via an online link to the SurveyMonkey form. The official survey can be found in Appendix A. Proper distribution to obtain optimal participation and diversity in users responding in the future would be to gain assistance from site partners to disseminate and encourage completion of the survey through their media, mail, and word-of-mouth resources. Any applicable and willing neighborhood groups and homeowner’s associations will also be used as a resource for distribution of the survey. Targeted social media advertisements and USPS mail advertisement by zip code would help gain input responses from participants and non-participants of the varying sites.

There are several limitations to survey questionnaires and participant interviews to be considered as part of this research. First, “the users have their own history, experiences, and perceptions in relation to the [site] and the activities that take place there. Further, the way they perceive the [site] will always be influenced by both the individual and psychosocial considerations that have little to do with the [site] itself” [2]. Second, the design of the survey needs to be constructed in a way that is as unbiased as possible and consistent in ranking systems (if utilized). My findings during interviews with participants regarding the survey were that one question ranked 1 as high/8 as low and the very next question ranked 1 as low/5 as high

which created confusion. Lastly, some indicators can be measured while others rely on subjective assessment such as closed-ended vs. open-ended questions.

RESULTS

In general, survey results from the Highland United Methodist Church Community Victory Garden “Peas on Earth” were extremely positive in its individual and community influence. Seven participants, both community members and church members with two from different countries, reported many strengthened relationships and connections as a result of the garden. One individual mentioned that the garden was able to overcome the community’s apprehension of its establishment due to perceived negative appearances and is now a source of beauty and exploration for neighbors. Many participants felt motivated to engage as a way to give back to the community, to participate in something enjoyable after retirement, stay in shape, and connect with others. It was also noted that the church has partnered with Wake Tech Community College to host English as a Second Language classes and each Wednesday, class is held in the garden with lessons on cooking for their lunchtime meal and a portion of the produce harvested is distributed to students at the conclusion of the day.

Raleigh City Farm representatives neglected to respond to contact attempts requesting permission to conduct on-site interviews and distribution of survey material. However, based on online literature [12], the farm seems to have had a positive impact on bringing awareness to local agriculture efforts in the Raleigh community. It is assumed that their primary focus is on economic performance based on their mission and stated responsibilities. It is also assumed that their main connection with the community is via the Farmstand and {Raleigh} Farmshare versus relying on the necessary volunteer hours required at the Highland UMC Community Victory Garden although they do accept volunteers and organized work days.

DISCUSSION + CONCLUSION

The method of using post occupancy evaluations to gather data on the performance of an existing site has been utilized by researchers for many years and is considered a reliable method. Data gathered during the pilot study for the social influences of urban agriculture in Raleigh, North Carolina can be used to prove or disprove the successfulness of sites like the Highland United Methodist Church Community Victory Garden and Raleigh City Farm to meet the social needs of its surrounding community and the city.

A full-scale diagnostic POE study including social, economic, and environmental impacts would have stronger credibility, ability to influence local policy makers, and grow more awareness of the existing urban agriculture sites in Raleigh and what benefits they provide to the communities. Holland states that “Sustainability requires the integration of social, environmental and economic concerns in international, national and local policy-making...It is suggested that

the community garden movement could act as a model for the implementation of social, economic, and environmental policies at the local level” [5]. Such policies, with the support and backing of community members, can contribute to the future expansion and design of future urban agriculture sites if the conclusion can be drawn that urban agriculture has a sustainable and foundational role in community building for the City of Raleigh. Table 2 is an example of Lovell’s interpretation of how urban planning can support various functions of urban agriculture.

Table 2. Urban planning to support various functions of urban agriculture. [7]

Function	Description and Justification	Supportive Planning Strategies
Production	Urban agriculture produces fruits, vegetables, mushrooms, herbs, medicinal plants, meats, milk, cheese, eggs, and other products.	Provide suitable, accessible, and safe land with good solar access and an irrigation source.
Energy Conservation	Producing food locally reduces the embodied energy resulting from inputs, transport, and packaging.	Develop transportation systems and networks to efficiently get food to consumers.
Waste Management	Organic waste products can be composted and used as a fertility resource for growing food and other products.	Identify systems to collect, divert, and transport organic wastes away from landfills to urban agriculture.
Biodiversity	Agricultural systems can support a wide range of species, including some native plants, as crops or associated plants.	Convert some open space areas of low diversity (<i>i.e.</i> , turf) to community gardens and farms.
Microclimate Control	Urban agriculture can positively alter microclimate through humidity control, wind protection, and shade.	Allow edible plantings in built areas to combat the heat island effect and other unfavorable climatic conditions.
Urban Greening	Community and backyard gardens contribute to the greening of urban areas, improving aesthetics and well-being.	Support efforts to convert vacant and derelict lands into productive green spaces for use by residents.
Economic Revitalization	Urban agriculture ventures offer new jobs for neighborhood residents and vitality from improved economics of the community.	Create networks to connect laborers, farmers, and markets to help retain and grow new ventures.
Community Socialization	Community members often find gardening and farming to be a social activity through sharing food, knowledge, and labor.	Along with community garden spaces, integrate other activities and features to encourage socializing.
Human Health	In addition to the known benefits of access to green space, urban agriculture offers healthy food and encourages physical activity.	Explore opportunities to develop community programming around gardening/farming as a healthy lifestyle.
Cultural Heritage	Urban agriculture can provide access to rare ethnic foods that are typically not available in existing markets.	Integrate community garden spaces in areas known to have high immigrant populations, and link with culture.
Education	Children and adults learn about foods, nutrition, cooking, environment, economics, and cultures through urban agriculture.	Offer gardening and urban agriculture activities within existing programs, particularly during summer.

Social, economic, and environmental impacts are interwoven and interdependent. This theory is supported by Dimitri’s statement that “Socially-minded companies ‘create economic value by creating societal value’” [4]. An establishment like the Highland UMC Community Victory Garden focuses highly on social influence but leverages their social connections and support to fill an

economic need. Holland discusses how, despite the many different schemes associated with vegetable growing, “all appear to be based in a sense of community, with participation and involvement being particularly strong features. This sense of community participation and empowerment is what links examples of community gardening” [5]. Suggesting the same theory of engagement, Glover claims “the focus of urban agriculture then is about: citizen participation and the production of social capital” [6].

Saegert analyzed the historical and future strategies of community building for civic capacity. She defines “civic capacity” to mean:

“the beliefs, knowledge, and skills necessary for individual citizens (including students), social organizations in the private and nonprofit sectors, and formal institutions of governance to work together in a way that enhances the collective ability of local communities to become more self-consciously directed in shaping their futures.” [3]

Urban agriculture could be just one of many ways that can contribute to the progression of community building by enhancing civic capacity and social capital.



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APPENDIX A

Highland United Methodist Church Community Victory Garden Survey Monkey Form.

Highland UMC Community Victory Garden Post Occupancy Evaluation Survey

The purpose of this survey is to gather data for a graduate research study. It is completely voluntary but we appreciate your insight as we assess the successes and constraints of urban agriculture.

1. How did you learn about the "Peas on Earth" Community Victory Garden at Highlands Methodist Church?

I attend church at Highlands Methodist Church.

A friend.

Drove/Walked by.

Wake County Technical Community College.

My child is in their preschool academy.

Other (please specify)

2. How has "Peas on Earth" influenced its surrounding neighborhood?

Negatively	Somewhat negatively	Neither negative or positive	Somewhat positively	Positively
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Are you an active participant, shareholder, buyer or volunteer with "Peas on Earth"?

Yes

No

Why or why not?

4. How often do you visit "Peas on Earth"?

- Almost daily
- Once a week
- Twice a month
- Once a month
- A couple times a year

5. How far do you typically travel to visit "Peas on Earth"?

- < 1/2 mile
- 1/2 mile to 2 miles
- 2 miles to 5 miles
- 5 miles to 10 miles
- > 10 miles

6. Do you typically visit alone or with others?

- Alone
- Others (please specify - i.e. parents, children, siblings, neighbors, church members, etc.)

7. How many new relationships or strengthened relationships have you formed as a result of "Peas on Earth"?

- 0-3
- 4-5
- 6-10
- 10+

8. Please rank the following in order of most important benefit (1) to least important benefit (2) of "Peas on Earth"?

<input type="text"/>	Educational Value
<input type="text"/>	Cultural Value
<input type="text"/>	Safety
<input type="text"/>	Aesthetically Pleasing
<input type="text"/>	Accessibility
<input type="text"/>	Diversity
<input type="text"/>	Psychological Health Value
<input type="text"/>	Physical Health Value

9. On a scale of 1 (poor) to 5 (excellent), how well does "Peas on Earth" allow you to execute the following abilities?

	1	2	3	4	5
to share my skills with others?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to share my concept & ideas with others?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to learn skills from others?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
to collaborate on projects I am interested in?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. How likely are you to recommend community garden involvement to a friend or colleague?

Not likely	Somewhat likely	Likely	Very likely	Absolutely
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. How important is a community garden or variation of urban agriculture to the community?

Not important	Somewhat important	Important	Very Important	Necessity
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. Do you feel that the City of Raleigh has a successful network of urban agriculture opportunities?

Yes

No

Why or why not?

The following questions are completely optional however the information will help us better understand the various users and their potential needs of the site. Thank you for your assistance.

13. Gender:

Male

Female

14. Age:

<18

18 - 29

30 - 44

45 - 59

60 +

This research initiative will be continued throughout the 2016 Fall and 2017 Spring semesters. We would like to compile a list of supporters that we can send future surveys to during this time. Your information will be kept confidential and will only used for the purpose of sharing any applicable research survey information. If you are interested, please fill out your name and email address below. Thank you for your support.

15. Contact Information:

Name

Email Address