

2012

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Recommended Citation

Crossney, K. B., & Shellenberger, E. (2012). Urban Food Access and the Potential of Community Gardens. *Middle States Geographer*, 44, 74-81. Retrieved from http://digitalcommons.wcupa.edu/geog_facpub/18

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URBAN FOOD ACCESS AND THE POTENTIAL OF COMMUNITY GARDENS

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ABSTRACT: *Access to food is an issue in urban areas. It is important from a social justice perspective since it may lead to inequalities such as obesity, malnutrition, and health diseases such as diabetes. Community gardens have the ability to improve neighborhood conditions and may be a viable option for improving access to locally grown fresh food in many urban food deserts. This study examines the relationship between neighborhood quality and the presence of a community garden in Philadelphia. Neighborhoods are discussed using population and neighborhood characteristics including race, ethnicity, and income. T-tests are used to assess the statistical significance of neighborhood characteristics between those areas with a community garden, and to describe how these areas are different than other parts of the city. The statistical results indicate that while areas with community gardens are more challenged, they underwent more positive change and improvements between 2000 and 2010 than other parts of the city.*

Keywords: *Community gardens, Food justice, neighborhood quality*

INTRODUCTION

An important issue, which has been in the forefront of media for many years, is the unhealthy food choices of Americans, though for some people the food that they eat is not always a matter of choice. This type of situation is often the case for those living in urban areas, where the food that is most accessible is not necessarily the most nutritious. This is particularly the case in sections of cities occupied by members of marginalized populations. This apparent unequal spatial distribution of quality, nutritious food is a common occurrence within urban areas such as Philadelphia, which negatively impacts the health and well-being of low socioeconomic and marginalized populations. It has been found that the commonality in such underserved urban areas is the lack of supermarkets located in proximity to resident's homes (Tangtrakul, 2010). The foods that are locally available tend to be high calorie foods containing little nutritional value, but at an affordable price which makes them attractive (Borradaile, et al., 2009; Cummins and Macintyre, 2006). There is little dispute over the significance of inadequate food access and its impact on the health and nutrition status of the population within urban neighborhoods. Community gardens have arisen in Philadelphia as part of a revival of local food culture, and have the potential to alleviate this issue of inadequate food access.

Community gardens¹ are typically a positive addition to any neighborhood. These gardens have the ability to positively impact an area's food environment, as well as provide additional positive social benefits. This community cooperation can impact the physical and social makeup of a neighborhood and may have the following outcomes: neighborhood revitalization, increased availability of nutritious food, positive environmental impacts and increased social capital. Not only can community gardens have positive impacts on health and nutritional outcomes, but they can also influence the quality of life within a neighborhood. The location and impact of community gardens is generally poorly understood. In many cases, it is unknown when a community garden began. It is also possible that the role of community gardens changes over time and is sensitive to changes in local resident characteristics, social capital, and community organizations.

This paper empirically analyzes the relationship between community gardens and neighborhood characteristics, and attempts to establish a base line using data from the 2010 Census. Specifically, the main research questions are:

What are the neighborhood conditions of community gardens in Philadelphia?

Have neighborhoods with a community garden experienced different changes in characteristics between the 2000 and 2010 Census than the rest of Philadelphia?

Philadelphia has a long history of community gardens (Parks and People, 2000), and it is expected that many of the community gardens in this analysis are not newly established. Therefore, it is expected that the presence of community gardens in urban neighborhoods in Philadelphia has helped to stabilize neighborhood conditions and will be associated with higher educational attainment, increased income levels, increased housing values and a higher level of owner occupied housing. However, it is possible that these community gardens were founded as part of an effort to provide fairer food access to challenged communities, and may be found in areas with lower socioeconomic characteristics. This research cannot definitely – and causally - link these neighborhood characteristics to the existence of gardens, but can nonetheless describe and evaluate the relationship.

BACKGROUND SIGNIFICANCE

Community gardens have persisted through the past 120 years in the United States (Henderson and Hartsfield, 2009). The cycle of community gardens emerging and disappearing throughout different periods of U.S. history has coincided with periods of economic strife and war. During the initial phases, gardens were encouraged by federal and local governments, while more recently community gardens have been established due to social activism (Henderson and Hartsfield, 2009). Government partnerships and support are based in the realization that community gardens serve to alleviate, not only health and nutrition dilemmas, but also various community-wide issues related to social and physical problems (Henderson and Hartsfield, 2009).

The presence of community gardens has been observed to improve the social climate of inner-city neighborhoods. Gardens may be found throughout the urban landscape in central parts of the city, as well as outlying sections. Even though garden locations are present in a mix of environments, each type of neighborhood can reap rewards from varying aspects of a garden. One such reward is that neighborhoods located near community gardens tend to have lower levels of crime (Armstrong, 2000; Brown and Jameton, 2000). Additionally, Armstrong identifies community gardens as areas that bring community members together to promote the beautification of the local community (2000). The possible social rewards of community gardens include stronger communities due to greater cooperation toward a common goal, reduced racial tensions, increased social capital, and an overall renewed sense of community (Schmelzkopf, 1995).

The types of people that are attracted to a neighborhood usually depend on the overall health of the housing market within a neighborhood. There is often less stability in neighborhoods with large rental markets (Galster, 2001). Areas with a community garden appear to transition less when compared to the overall surrounding urban area. These neighborhoods often have an increased portion of higher income residents, although these areas have maintained a mix of income levels over time (Tranel and Handlin, 2006). Overall the community gardens promote change within neighborhoods, especially when community members are involved in the implementation of the project. Through the implementation of smaller programs and localized efforts, indicators of change can be seen and connected to the presence of community gardening projects.

When gardens are introduced into dilapidated communities, they tend to become catalysts for change. Once neighborhoods are restored and become more favorable places to inhabit, the open spaces and community gardens are seen as disposable entities and these areas become in danger of development (Brown and Jameton, 2000). Voicu and Been's study is one of the few that quantitatively evaluates the economic impact of community gardens on local housing values (2008). Specifically their study points out that different types of neighborhoods and community needs/wants (i.e. low-income vs. high-income, large garden creating more noise vs. less noise in a smaller garden, etc.) can change the degree of impact on property values (Voicu and Been, 2008). Homes within 1,000 feet of active garden sites tend to have higher sale prices, and disadvantaged neighborhoods would benefit the most from the establishment of a community garden (Voicu and Been, 2008).

Community gardens may lead to many positive social effects, including increases in social connections, mutual trust, assistance of others, collective decision-making, social ordering, civic engagement, community building and organized social activity (Teig et al., 2009). The enhancement of these qualities can all be tied to community efforts towards the common goal of establishing and maintaining a community garden site. After interviewing participants in community gardening projects throughout the Denver, CO urban area, it was found that many were involved in the garden projects primarily for the social benefits and enjoyed feeling like they belong to a group (Teig, et al. 2009). It was also found that trust was common among garden members, however there seemed to be a certain level of mistrust developed towards members of the surrounding community who did not participate in the garden. This mistrust was attributed to those who experienced theft and vandalism (Teig et al., 2009). Even though some negative attributes were observed, overall the presence of a community garden created a positive social

influence within neighborhoods, as well as being a catalyst for other positive place-based social dynamics (Teig et al., 2009).

Shinew, Glover and Parry view community gardens as shared public spaces that can help to breakdown racial barriers that are often seen within urban environments (2004). Once racial tensions are eased within neighborhoods, a more inclusive and cohesive atmosphere can be established, breaking down long standing barriers stemming from racial segregation. Community garden locations may act as an alternative land use in neighborhoods that are plagued by vacant buildings and parcels of land (Schmelzkopf, 1995). As a result of this alternative land use, there is a decrease in the amount of drugs, refuse and homeless persons inhabiting the area (Schmelzkopf, 1995). Overall the results from neighborhood beautification through community garden projects have been positive contributions to the surrounding neighborhoods. An important factor in stabilizing these types of projects is gaining partnership with local governmental departments.

Equal access to nutritious healthy foods within one's neighborhood should be a basic right for all human beings; without this access, it is difficult to maintain a proper level of health. Urban areas face many obstacles to obtaining healthy nutritious foods and are often labeled as food deserts, which are described as areas with a combination of negative qualities including a lack of local supermarkets, unaffordable prices for healthy foods, socioeconomic deprivation and dependence on corner stores to purchase food (Black and Macinko, 2008). The mixture of these attributes within an area creates a difficult environment to make healthful choices. A myriad of other issues contribute to the accessibility of nutritious foods such as the lack of transportation, poor health education, poor examples for children and constraints on time and knowledge of preparing healthy meals (Story, 2008).

The increased incidence of obesity within populations marked by lower education levels and low socioeconomic status can be traced to an inadequate availability of nutritious foods. According to Cummins and Macintyre this phenomenon is due to the fact that foods which are locally available to such populations tend to be high calorie foods containing little nutritional value, but at an affordable price which makes them attractive (2006). Increasing obesity rates are also discussed by Freedman and Bell as being influenced by local food environments (2009). Food environments for white, upper and middle class populations consist of larger chain grocery stores which provide various options for nutritious foods; whereas low income and minority populations do not have access to such large affordable supermarkets (Freedman and Bell, 2009).

Within food desert communities, typically the distance traveled between a person's home and a market which offers affordable nutritious foods is beyond a level of convenience. In comparison, supermarkets are usually a ten to fifteen minute drive in a typical suburban area. This commute is no problem for suburban residents, as the majority owns their own vehicle. The big issue in urban areas is that many residents do not own a vehicle, and instead rely on public transportation networks, which can be unreliable at times (Carter and Mann, 2010). The local growth and production of food is usually the best option for fresh and convenient foods.

METHODS

This paper examines the neighborhood characteristics surrounding community gardens in Philadelphia. Due to the size of urban community gardens and the level of impact that these gardens affect, tract level census data was selected as the appropriate scale. Community garden locations were compiled from two organizations, Pennsylvania Horticultural Society and the local Neighborhood Garden Association (2010). The list contained 64 established community gardens throughout Philadelphia. The gardens were geocoded, and then intersected with Census tracts using ArcGIS software. It was found that a total of 48 tracts contain garden sites. Multiple garden sites within a tract were not considered. Many of the gardens are located in the neighborhoods immediately surrounding City Hall and the Center City neighborhood (Figure 1).

Demographic and housing variables from the 2000 and 2010 Census were chosen to quantify neighborhood characteristics. The Longitudinal Tract Database allows for analyses to compare data from different Censuses using a common set of boundaries (Logan et al., Forthcoming). Selected variables include: racial and ethnic characteristics; educational attainment; median income; median housing value; median gross rent, housing vacancy status, owner occupancy rate, and percentage of households in poverty. Descriptive statistics were calculated for tracts groups containing a community garden and the entire city. T-tests are used to assess the statistical significance of substantial differences in these neighborhood characteristics between the different locations for 2010 values, as well as the percent change in characteristics between 2000 and 2010.

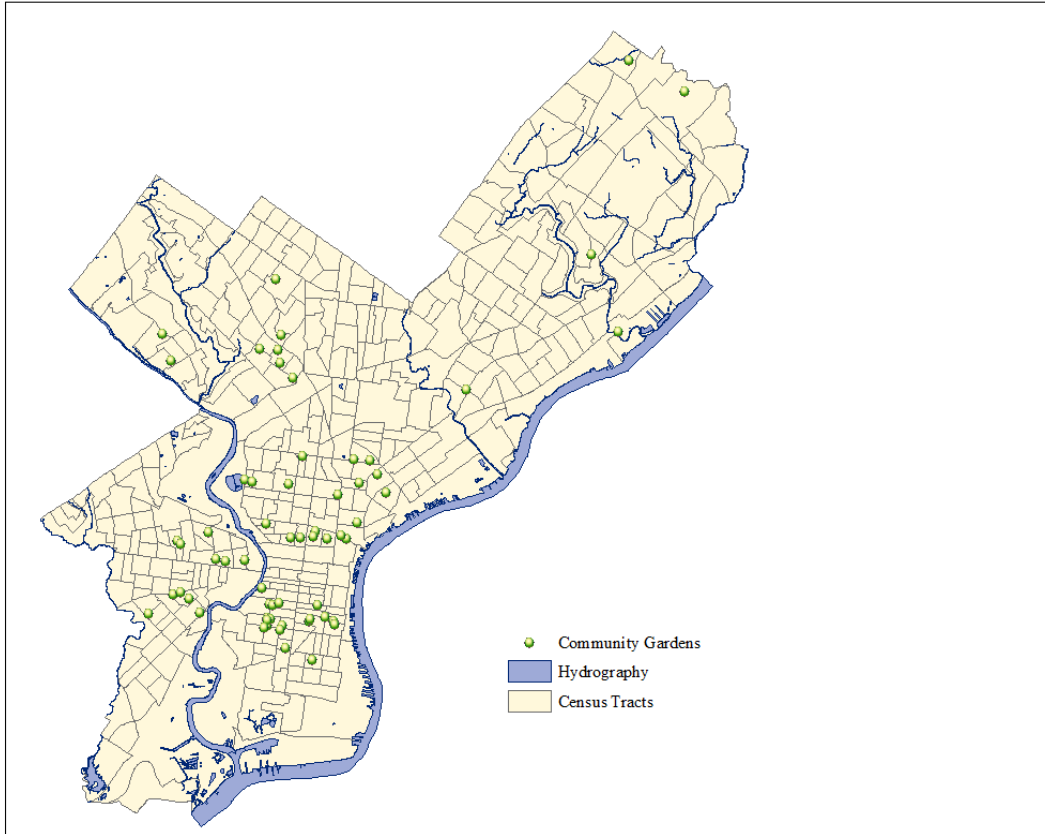


Figure 1. Location of Community gardens. Philadelphia, Pennsylvania

RESULTS AND DISCUSSION

There are 48 tracts with a community garden location within their boundaries. The racial and ethnic characteristics of these tracts is very similar to the overall city characteristics (Table 1). The educational attainment, as measured by the portion of the population with a high school diploma or less, and those with a college degree, are also very similar to the rest of the City. There are fewer owner occupants and more vacant housing units in tracts with a community garden. There are also more residents living in poverty. The median income of residents and median gross rent are slightly less, while the median housing value is greater than Philadelphia

T-tests were used to assess if these differences were statistically significant. The t-tests reveal significant differences in the characteristics between garden areas and the rest of the city (Table 2). Median housing values are not statistically significantly different, but the difference in median gross rent is statistically significant. Owner occupancy rates are more than 10 percentage points lower, and vacancy rates that are more than 25% higher, in tracts with gardens than the rest of the city. There is statistically significantly more people living in poverty in tracts with a garden.

Areas with a community garden transitioned differently than other parts of the city between 2000 and 2010 (Table 3). Across the city, the portion on the population with only a high school diploma or less decreased, but it decreased more dramatically in tracts with a community garden. The percent of college graduates increased almost twice as much in these tracts than in the city overall. Vacant housing units and poverty increased across the city, but actually decreased in these tracts. Housing values increased more dramatically.

Table 1. Descriptive Statistics of Independent Variables, Philadelphia, PA

Variables	Garden in Tract (n=48)		Philadelphia (n=383)	
	Mean	Std Dev	Mean	Std Dev
White	36.5%	0.32	37.8%	0.33
African American or Black	46.5%	0.36	44.3%	0.36
Hispanic	10.5%	0.17	10.8%	0.16
HS diploma or less	53.1%	0.23	54.8%	0.20
College Graduate	28.1%	0.24	24.2%	0.21
Owner Occupancy Rate	37.5%	0.14	47.4%	0.19
Vacant Housing Units	14.5%	0.12	10.7%	0.07
In Poverty	31.3%	0.19	25.5%	0.16
Median Income	\$34,255	20,633	\$37,684	19,210
Median Housing Value	\$179,698	133,790	\$159,206	117,016
Median Gross Rent	\$575	399	\$656	349
Median Income	\$34,255	20,633	\$37,684	19,210

Source: Census 2010

LIMITATIONS AND FUTURE RESEARCH

The community gardens included in this study consist of well-established gardens associated with larger organizations. By limiting the study to these larger, well established gardens, smaller grassroots gardens were not represented. This limitation potentially biased the results of the study by not having a complete sample area. A larger sample size would help to identify a wider range of neighborhood types. Also, gardens not associated with large organizations could potentially have a different level or type of impact on their surrounding neighborhood. The date that each garden was established should be taken into account as well in future research, in order to get a better idea of the actual impact of each garden and to identify and articulate change over time.

Another limiting factor was the perceived versus actual effects that a community garden had on its surrounding neighborhood. All of the changes seen within an area cannot be attributed solely to the existence of a community garden. Further study should include change over time comparison of all variables to gain a better understanding the community garden's impact on urban neighborhoods.

Case studies should be performed on specific garden locations of various sizes and length of establishment to determine what factors lead to positive neighborhood impacts. Through focusing on specific locations data can be collected on health indicators, participant's level of engagement, socioeconomic indicators and educational opportunities accessible at each garden location. The information from more detailed case studies can help to establish the most influential characteristics in each garden. These characteristics can then be used as future guidelines for establishing new community gardens that will positively impact urban neighborhoods.

CONCLUDING THOUGHTS

Equal access to nutritious healthy foods within one's neighborhood should be a basic right for all human beings; without this access, it is difficult to maintain a proper level of health. In conjunction with equal access, better health and nutrition education is needed in schools and in high risk communities to help inform people about making better choices. The various projects currently underway in Philadelphia are a good example of how to get community members involved in educating themselves about good food choices. Not only do the farmers' markets and urban farms provide fresh nutritious sources of food, but they also create a more sustainable community. Overall the movement towards food equality is in its early stages and it may take decades to evaluate the full success of these efforts and their ability to transform both people and places.

This study sought to answer the main research question: is the existence of a community garden positively correlated with neighborhood conditions? Census variables from 2000 and 2010 were evaluated for tracts with community gardens. The findings from this study demonstrate that there are positive neighborhood characteristics in

neighborhoods surrounding community garden locations. Possibly more significant, these tracts seemed to have improved more than the city as a whole. Although these characteristics cannot be fully attributed to a community garden’s presence, the evidence provided in this study, along with previous qualitative research further establishes that community gardens have positive effects on surrounding communities. The different t-test results for housing occupancy (vacant and owner occupied), educational attainment, and housing values may lend support that the gardens have been effective at improving and stabilizing the immediate surrounding community. If so, these gardens can and should be leveraged to effect additional positive change

Moving forward, including community gardens in various governmental policy aspects would be beneficial for urban neighborhoods as a whole. Philadelphia is currently in the process of revising the land use code and zoning ordinances for the city. This revision would be an ideal time to put the numerous vacant properties, which cause many negative impacts on surrounding neighborhoods throughout the city, to a good use. By donating or selling vacant properties at a discounted/reasonable price to neighborhood groups interested in building community gardens, improvements can be made throughout the city. Not only can community gardens help to alleviate vacant land issues throughout the city, these gardens can be used as educational opportunities as well. Governmental funding for programs that teach gardening techniques, nutritional benefits of fresh fruits and vegetables and cooking skills would have a positive health impact on neighborhood participants. Where larger gardens are located, farm stands could be setup to help fund garden maintenance and teach business skills to participants. Overall, access to fresh nutritious foods for the communities that are most in need is a social justice issue that needs to be addressed. Community gardens can help to mitigate the overwhelming lack of nutritious, affordable and accessible foods for these populations.

Table 2. Summary of T-Test Results. Tract Characteristics, 2010. Philadelphia, PA

Variable		Mean	Std.	Sig.
White	No Garden	37.9%	0.33	0.79
	Garden	36.5%	0.32	
African American or Black	No Garden	44.0%	0.36	0.66
	Garden	46.5%	0.36	
Hispanic	No Garden	10.9%	0.16	0.89
	Garden	10.5%	0.17	
HS diploma or less	No Garden	55.1%	0.20	0.52
	Garden	53.1%	0.23	
College Graduate	No Garden	23.5%	0.21	0.22
	Garden	28.1%	0.24	
Owner Occupancy	No Garden	48.8%	0.19	0.02
	Garden	37.5%	0.14	
Vacant Housing Units	No Garden	10.1%	0.06	0.00
	Garden	14.5%	0.12	
In Poverty	No Garden	24.7%	0.16	0.00
	Garden	31.3%	0.19	
Median Household Income	No Garden	\$38,102	18,961	0.19
	Garden	\$34,255	20,633	
Median Housing Value	No Garden	\$155,613	113,873	0.24
	Garden	\$179,698	133,790	
Median Rent	No Garden	\$667	340	0.09
	Garden	\$575	399	

Table 3. Summary of T-test Results. Change in Tract Characteristics 2000-2010. Philadelphia, PA

Variable		Mean	Std.	Sig.
White	No Garden	49.5%	5.38	0.75
	Garden	75.0%	1.42	
African American or Black	No Garden	90.0%	7.30	0.34
	Garden	-10.6%	0.38	
Hispanic	No Garden	735.1%	116.90	0.70
	Garden	82.3%	1.24	
HS diploma or less	No Garden	-9.6%	0.18	0.00
	Garden	-18.6%	0.19	
College Graduate	No Garden	43.5%	0.98	0.07
	Garden	94.5%	1.85	
Owner Occupancy	No Garden	-5.9%	0.30	0.50
	Garden	-2.8%	0.26	
Vacant Housing Units	No Garden	16.1%	0.73	0.09
	Garden	-3.0%	0.52	
In Poverty	No Garden	21.5%	0.63	0.00
	Garden	-3.6%	0.29	
Median Household Income	No Garden	21.4%	0.50	0.64
	Garden	25.0%	0.46	
Median Housing Value	No Garden	119.0%	0.91	0.00
	Garden	184.3%	0.95	
Median Rent	No Garden	37.7%	0.59	0.50
	Garden	43.7%	0.28	

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ⁱ Described as an area of land that is broken into plots for the purpose of community members to plant and tend a garden in the collective space. The plots of land used are often vacant and/or abandoned. Sometimes privately owned or city owned land is used with the permission of the landholder.