Improving Health, Building Community: Exploring the Asset Building Potential of Community Gardens

By Lindsey Jones

ABSTRACT

Community gardens, community-based cooking programs, and produce distribution programs are components of a relatively new model for addressing hunger in communities, one that empowers community members regarding their food choices and consumption patterns. This paper examines the role of community gardens in strengthening both individual and community assets. It does so through a review of six studies that evaluate community gardens in the context of at least one of the following asset categories: participant health, human capital, individual financial benefits, and community development. Review and analysis of the literature suggest that while community gardens may have the potential to increase health assets, human capital, and individual financial benefits among participants, and may be an effective community development tool, more research is needed to determine when, in what communities, and in conjunction with what other programs (such as community-based cooking and produce distribution) community gardens are most effective at increasing participant and community assets.

I. INTRODUCTION

Community gardens, community-based cooking programs, and produce distribution programs, such as Toronto’s FoodShare (www.foodshare.net/index.htm) and Seattle’s Rainier Valley Eats! (www.rainiervalleyeats.org), present an alternative framework for thinking about community
food security, “a condition in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance and social justice” (Hamm and Bellows, 2003, p. 37). Rather than focusing on the emergency food needs of community members, these programs emphasize empowering community members regarding their food choices and consumption patterns. The underlying theory behind such programs is that a systemic approach that addresses awareness, access, and consumption barriers will lead to long-term behavioral shifts, resulting in healthier individuals and communities (D. Vinh, personal communication, April 25, 2012). Program managers may or may not think in terms of asset building, but by improving the overall health and well being of participants through the consumption of fresh, healthy foods and increased community connections and support, such programs may in fact be strengthening both individual and community assets.

While I initially intended to explore the role of all three programs – community gardens, community-based cooking, and produce distribution – as asset-building strategies, I encountered a dearth of literature concerning both community-based cooking and produce distribution programs. Therefore, this paper focuses solely on community gardens, although I hope to be able to further explore all three programs as components of an integrated asset-building approach in the future.

Through an examination of the existing literature, this paper evaluates the potential of community gardens to increase individual and community assets. Miller-Adams (2002) defines asset building as “a broad range of efforts to help low-income people acquire new assets and sustain or improve the quality of assets they already possess,” emphasizing four different kinds of assets: economic (financial), human (education, knowledge, skills, and talents), social (community networks and trust) and natural (natural resources). This paper analyzes the ability of community gardens to increase economic, human, and social assets\(^1\) among participants by focusing on the following research questions:

- Do community gardens help low-income participants improve their health, gain job-related skills, and increase individual financial benefits?

\(^1\) Although the relationship between community gardens and natural assets is important and worthy of further research, it is beyond the scope of this paper.
• Do community gardens foster community economic development and strengthened social networks?

Using Miller-Adams’ (2002) distinctions as a guideline, this paper evaluates six community garden studies as they relate to the following asset categories: participant health, human capital, individual financial benefits, and community development (economic and social capital). The strongest community garden programs will lead to increased assets among participants in all of these categories.

**Community Gardens**

Community gardens can mean many different things to many different people; for the purposes of this paper community gardens are defined broadly as “any piece of land gardened by a group of people” (American Community Garden Association). The studies in this paper focus mainly on urban community gardens, and I have tried to select community gardens that are targeted toward low-income adult and youth participants, although this has not always been possible due to the lack of research in this area.

**II. METHODOLOGY**

This paper evaluates the effectiveness of community gardens primarily through a review of the existing literature. While there has been increased interest and research surrounding community gardens in recent years, there is still a limited amount of rigorous research regarding quantitative effects of these programs, especially as they relate to asset building among low-income populations. I initially identified relevant articles through Google Scholar with search terms including “community gardens, asset building, community kitchens, good food boxes, produce distribution, gardens and health, gardens and community development.” The references of selected articles provided additional studies that I then reviewed and analyzed as well, eventually setting aside the few articles related to community-based cooking (community kitchens) and

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2 In addition to individual financial benefits and community economic development, this paper considers improved participant health as an economic asset. As Smith (1999) discusses, there is clearly a relationship between income and health outcomes, although causality is not always clear; low income may lead to poor health outcomes, or it may also be the case that poor health negatively affects an individual’s ability to build economic assets.
produce distribution (good food boxes). The articles selected for this paper met the following criteria: they were peer-reviewed scholarly articles, examined community gardens in the context of at least one of four identified asset categories (participant health, human capital, individual financial benefits, and community development), and evaluated gardens that either targeted or included low-income participants.

Despite the need for further and more rigorous research addressing community gardens as components of asset-building strategies, six substantial studies met the criteria outlined above: Blair, Giesecke, & Sherman, 1991; Patel, 1991; Feenstra, McGrew, & Campbell, 1999; Armstrong, 2000; Saldívar-Tanaka and Krasny, 2003; and Been and Voicu, 2008. The results section of this paper is structured as a review of these selected studies as they relate to participant health, human capital, individual financial benefits, and community development and includes a discussion of study limitations and key implications of findings.

III. RESULTS

This review and analysis includes six studies that examined the role that community gardens play in the lives of participants and their communities. These studies varied in focus and scope; three evaluated the effect of community gardens on participant health (Blair et al., 1991; Feenstra et al., 1999; and Armstrong, 2000), one explored the implications for human capital development (Feenstra et al., 1999), three addressed individual financial benefits among participants (Blair et al., 1991; Patel, 1991; and Feenstra et al., 1999) and all six examined the connection between community gardens and community development, either in terms of economic development or increased social capital (Blair et al., 1991; Patel, 1991; Feenstra et al., 1999; Armstrong, 2000; Saldívar-Tanaka and Krasny, 2003; Been and Voicu, 2008).³

³ See Appendix A: Table of Reviewed Literature for a concise overview of included studies.
Participant Health

Studies

Four of the six studies included participant health outcomes in their assessments of community gardens, with results suggesting that health benefits and/or improved food security are motivators for becoming involved with community gardens (Patel, 1991; Feenstra et al., 1999; and Armstrong, 2000), and that gardeners consume vegetables more frequently than non-gardeners and have greater overall life satisfaction (Blair et al., 1991).

Patel (1991) interviewed 178 gardeners from around Newark, New Jersey, with the goal of defining how Rutgers Cooperative Extension could help to improve quality of life and socioeconomic well-being of individuals, families and neighborhoods through community gardening projects. While the study did not target low-income populations, it did assert that “gardening cut across social, economic, and racial barriers” (Patel, 1991). Forty-four percent of respondents cited fresh food/vegetables as a benefit of community gardening, while 35.2% identified an improved diet as a realized outcome of involvement with a gardening program.

Feenstra et al. (1999) conducted an in-depth review and analysis of 27 entrepreneurial gardens across the United States (fifteen located in California, four in other states in the West, two in the Midwest, four in the Southeast, and two in the Northeast) with the purpose of understanding what makes entrepreneurial gardens successful and identifying the individual and community benefits to such gardens. Entrepreneurial gardens in this study were defined as “any community-based garden that included a formal component in which garden products were sold or community residents were employed, or both” (Feenstra et al., 1999). All 27 gardens were targeted to either low-income or youth populations, with half of the youth programs focusing on at-risk populations. Methods included interviews with key garden personnel and in-depth case studies of five of the garden programs. While this study focused most heavily on human capital and community development outcomes, and will be discussed in greater detail in those sections, it did also address participant health effects related to food security, with 30% (8 of 27) of garden leaders citing improved food security as a direct benefit of the garden.

Armstrong (2000) reviewed twenty community garden programs (63 individual gardens) in upstate New York in an attempt to determine how such programs contribute to community development and improved health among participants. The sample included rural and urban
gardens, with 46% of the gardens operating in low-income neighborhoods. Through phone interviews with garden coordinators, Armstrong identified the most common reasons for participating in a community garden program: access to fresh/better tasting food, to enjoy nature, and because of health benefits, including mental health (2000). In urban settings, the role of the community garden as a source of food for low-income households was cited as a reason for participation by 60% of the coordinators.

Blair et al. (1991) evaluated Philadelphia Urban Gardening Project gardens, focusing on dietary, social, and economic benefits. Through a stratified random sample of city garden sites, the study compared 144 gardeners to 67 non-gardeners, and through one-on-one interviews gathered data including demographic information, food consumption frequencies and dietary habits, measures of life satisfaction, and neighborhood involvement (Blair et al., 1991). The population involved in these gardens included over 5000 families, including low-income, elderly, and ethnically diverse participants. Results included increased frequency of vegetable consumption and reduced dairy and sweet food and drink consumption among gardeners as compared to non-gardeners. Gardeners also had significantly more positive responses to questions relating to psychosocial well-being.

Limitations

One possible limitation of these studies relates to the selection of participating gardens and interviewees. Both Armstrong (2000) and Feenstra et al. (1999) (minus case study gardens) interviewed only garden coordinators or key staff, not garden participants themselves. While garden coordinators likely had a good understanding of why participants chose to be involved with the community garden programs, they may also have brought in their own biases and may have unintentionally weighted or censored their observations based on their own beliefs about the purpose and benefits of community gardens.

A limitation of the Blair et al. (1991) study involved selection of the non-gardener control group. The authors thought it critical to control for “intent to garden” among the non-gardener group but were unable to attain a random sample of individuals that allowed them to control for this characteristic. They therefore relied on friends of gardeners and potential gardeners identified by the garden coordinators for their control group (Blair et al., 1991). This control group may be more similar in unobservable ways to the gardener group, although differences
between the two groups regarding dietary patterns were significant, suggesting that the inability to randomize the control group may not have biased results too greatly.

**Key Implications**

The results of these three studies suggest that community gardens may be an effective strategy to improve health among individuals in low-income communities. Gardeners tend to consume vegetables more frequently than non-gardeners (Blair et al., 1991), which has been linked to positive health outcomes including the prevention of chronic diseases such as heart disease, cancer, diabetes and obesity (World Health Organization). Community gardens located in low-income neighborhoods may help residents access fresh, healthy food they would not otherwise be able to procure and may help achieve food security for these individuals and communities (Feenstra et al., 1999 and Armstrong, 2000).

**Human Capital**

**Studies**

Only one of the six studies focused explicitly on increased human capital as a benefit from community gardens (Feenstra et al., 1999). As noted previously, the authors focused on entrepreneurial garden programs targeting low-income and youth (often at-risk) populations. In this setting, the development of human capital among participants, including job-related skills and education, factored heavily in the program design. One of the major goals of many of these entrepreneurial gardens was to provide job training for youth and adults in low-income neighborhoods. Although entrepreneurial gardens do provide health and more direct financial benefits to individual participants, it was the development of human capital that was the focus for many of these programs. Interviewed staff cited basic job skills training and more specific training in horticultural, marketing, landscaping, value-added processing, and entrepreneurial skills as some of the ways in which human capital was developed among participants. While these trainings did not necessarily lead to immediate job placement and increased income, participants left the programs with increased knowledge, skills, and training, better preparing them for future employment (Feenstra et al., 1999).
Feenstra et al. (1999) also noted that the entrepreneurial gardens included in the study gave participants an opportunity to strengthen their education. This was especially true for programs that targeted youth populations. Several programs included homework tutoring, counseling, and help exploring opportunities for continued education.

In addition to job training and education opportunities, the authors highlighted that many garden leaders emphasized the personal benefits realized by participants, including increased self-esteem, personal satisfaction and stability, and pride in themselves (Feenstra et al., 1999). While perhaps not as tangible as job training, these attitudinal shifts have the potential to bolster the skills that participants learned through the programs, making them more resilient and confident as they search for long-term employment. It is therefore accurate to consider these personal benefits another form of human capital.

Limitations
Limitations include those discussed in the previous section, namely that for the majority of entrepreneurial garden programs in the study, interviews were conducted with key program staff but not participants. In addition, while the study includes a cross-section of programs from around the country with different sites, target populations, production models, and employment strategies, there are many more specific programs (and probably program types) in existence, especially in the years since the study was completed (1999). The economic climate has also experienced some dramatic changes in the years since this study, and it would be useful to revisit these (and other) programs to understand how they weathered these changes.

Key Implications
The results of Feenstra et al. (1999) suggest that entrepreneurial garden programs may be an effective way to increase human capital among low-income and youth populations, potentially leading to higher paying employment opportunities. As a strategy, these programs may also produce long-term attitudinal shifts in participants, who may experience increased self-esteem and related personal benefits as a result of their success in the entrepreneurial garden setting. These benefits may act as an emotional buffer if participants experience difficulty attaining employment or other stressful life situations. This hypothesis requires further research; it would be interesting and informative if researchers could follow up with the program staff and
participants (from the five case studies) to determine whether or not this hypothesis in fact played out as suggested.

**Individual Financial Benefits**

Studies
Three studies included an assessment of individual financial benefits derived from community gardens, with results suggesting that such benefits tended to be small but important. Individual financial benefits were the result of direct employment (Feenstra et al., 1999), money saved by growing rather than purchasing produce for consumption, or gained through sale of produce (Blair et al., 1991 and Patel, 1991).

In addition to job training and education, one of the major goals of the entrepreneurial gardens studied by Feenstra et al. (1999) was to provide actual jobs for participants. Evaluation of these programs suggested that the number of jobs provided were not overwhelming, but that they were beneficial for the participants who received them. Twenty-four of the 27 programs provided direct employment; 46% of the programs employed five or less participants, 63% employed ten or less, and participants earned an average of $6.50 per hour (Feenstra et al., 1999). This average wage was above the federal minimum wage ($5.03 in 1997, Federal Minimum Wage Rate table, retrieved from http://www.infoplease.com/ipa/A0774473.html), and programs employed participants between 20 and 30 hours per week, intentionally keeping participant numbers low to ensure an adequate number of hours and a reasonable wage for those who were employed. While modest, the entrepreneurial garden programs did lead to financial benefits for at least some of the participants. Overall, the programs employed approximately 350 low-income or at-risk individuals, who collectively earned $621,000 over a three-month period during the growing season (Feenstra et al., 1999).

Blair et al. (1991) also addressed the economic benefit of community gardens to participants. However, this study did not look at direct employment but rather assessed the economic value of garden plots. The annual average value of 151 garden plots (in Philadelphia community gardens) was $160 +/- $178

<table>
<thead>
<tr>
<th>Value of produce yield</th>
<th>Percentage of plots</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$100</td>
<td>49.7%</td>
</tr>
<tr>
<td>$101-$250</td>
<td>29.2%</td>
</tr>
<tr>
<td>$251-$500</td>
<td>15.1%</td>
</tr>
<tr>
<td>&gt;$500</td>
<td>6.0%</td>
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</tbody>
</table>

Figure 1: Philadelphia garden plot yields
ranging from $2 to $1,134; as a comparison, the median value for community vegetable production as reported by the National Gardening Association was $101 to $250 (Blair et al., 1991). After costs of $47 (seeds, tools, etc.), the average net value of a Philadelphia garden plot was $113. The sample was not stratified such that a separate analysis could be done to determine if these averages were the same for low-income gardeners and middle or high-income gardeners. Presumably a greater percentage of low-income participants could not afford the $47 average cost per gardener, perhaps resulting in a lower economic value for plots maintained by low-income gardeners, although this cannot be determined given the existing data. The study also did not distinguish between produce that was consumed or given away by the gardener and produce that was sold for profit, although it is possible that within the Philadelphia Urban Gardening Project participants were prohibited from selling crops.

In addition to health benefits, 33.5% of respondents from Newark, New Jersey listed money saved as an economic benefit of gardening (Patel, 1991). This study calculated net economic benefits of $475, much greater than both Blair et al. (1991) and the National Gardening Association. The cause for the discrepancy is not clear, although it may have to do with average plot size (720 square feet in Newark and not given for Philadelphia). Some of the qualitative statements regarding money saved through gardening include the following: “I garden mainly to save money and provide vegetables to meet out family’s needs year-round,” and “I have hardly bought any vegetables since gardening” (Patel, 1991).

Limitations

Limitations of the Feenstra et al. (1999) and Blair et al. (1991) studies include those discussed in the previous two sections. An additional limitation to meaningful interpretation of the Blair et al. (1991) study results from the fact that the economic assessment of garden plots does not distinguish between low-income and higher-income gardeners. An average of $113 may be a meaningful amount of money to save annually, but if gardeners cannot afford the up front costs of seeds, soil, etc., they may be realizing a much lower economic benefit from their garden plots. A more in-depth analysis and interpretation of the results would also be possible if it were clear whether gardeners were able to sell their yields for profit, which would likely lead to a higher net economic benefit.
Key Implications

Despite the limitations discussed above, it does appear that while personal financial gains may not be the principal benefit of community gardening for low-income individuals and families, they are a valuable component in the overall strategy of community gardens as a mechanism for asset building. Based on the three studies that addressed individual financial benefits, it appears that these gains are the greatest in an entrepreneurial garden program. While all garden participants may experience financial benefits in terms of money saved from growing their own vegetables, programs targeted towards low-income populations should include a more explicit financial component such as employment opportunities or opportunities for sale of crops or value-added garden products.

Community Development

Studies

All six studies addressed community development in their assessments of community gardens. Three studies addressed community development in terms of economic development (Feenstra et al., 1999; Saldivar-Tanaka and Kresny, 2003; and Been and Voicu, 2008) while five studies looked at the implications for increased social capital within the community (Blair et al. 1991; Patel, 1991; Feenstra et al., 1999; Armstrong, 2000; and Saldivar-Tanaka and Krasny, 2003).

In addition to health and individual financial benefits, Patel (1991) also addressed the community development potential of community gardens in his Newark, New Jersey study, where 29% of survey respondents asserted that helping others was one of the benefits resulting from community gardening, and 13% identified improved neighborhoods as an important benefit. Although not as popular a benefit as having fresh vegetables (44%), these results still indicate that some participants engage in community gardening as a neighborhood-building activity (Patel, 1991).

Along with health effects, human capital, and individual financial benefits, Feenstra et al. (1999) also examined the role that community gardens play in fostering both community economic development and increased social capital among community members. In terms of community economic development, approximately half of program leaders (12 of 27) discussed the garden’s role in revitalizing the local economy (Feenstra et. al., 1999). Approximately 25%
of the garden leaders cited participants selling value-added products in local communities as a contributing factor to increased local economic development. The authors also claimed that individual benefits realized by participants from employment through the programs would be recirculated in the community, resulting in increased benefits for their neighbors as well. This claim seems a bit tenuous; while participants may choose to spend their income within the immediate neighborhood, if there were not opportunities for them to purchase goods or services locally (lack of stores, etc.) or they chose to spend elsewhere, then these benefits would not spillover to the neighborhood. A stronger case for how community entrepreneurial gardens induce community economic development is that local businesses hire program participants due to the increased human capital they gained through training and education components of the programs (Feenstra et al., 1999). While this recirculation of human capital back into the local economy may not happen on its own either, garden leaders could work to create partnerships with local businesses and other nonprofits with the explicit goal of creating these opportunities.

Feenstra et al. (1999) also examined the role of entrepreneurial gardens in increasing social capital among participants and the larger neighborhood. Program leaders discussed the effect that the gardens had on neighborhood cohesion and trust, which decreased racial discrimination, increased the number and quality of neighborhood associations, and decreased reported crime among 75% of the programs (Feenstra et al., 1999). Garden program leaders also reported that community members who were not garden participants began to feel respect for the program participants and ownership in the programs, even though they themselves were not directly involved. According to the authors, “long-term benefits such as increased community cohesion and partnerships, leadership development, increased opportunities for higher education, and greater citizen participation in community affairs clearly contribute to a community’s economic development potential” (Feenstra et al., 1999, p. 29).

Armstrong (2000) also identified increased social capital as a benefit of the community gardens of upstate New York; 51% of garden coordinators claimed that the garden improved attitudes of residents about the neighborhood. Coordinators also noticed a spillover effect, where previously neglected properties (other than the community garden space) began to be maintained after creation of the community garden. Thirty-three percent of garden coordinators asserted that the garden lead to other neighborhood issues being addressed and that the garden became a gathering place for organizing other neighborhood activities. In addition, community gardens in
low-income neighborhoods (46% of sample) were four times more likely than gardens in high-income neighborhoods to lead to other neighborhood issues being addressed, although this could possibly be because there are more issues that need to be addressed in low-income communities.

Saldivar-Tanaka and Krasny (2003) focused on both community economic development and increased social benefits in their study of twenty Latino gardens in mainly low-income New York City neighborhoods. This study included interviews with both gardeners (32) and staff from eleven supporting nonprofits, observations of community garden activity, and review of community garden and supporting nonprofit documents. The results of this study illustrated that in the Latino gardens sampled, community development (economic and social) tended to be more of a focal point than open space preservation or even food production (Saldivar-Tanaka and Krasny, 2003). The authors found that economic profit from selling produce was not an important aspect of these gardens (in fact the gardens involved did not allow sale of yields), but donating produce to members of the community (church members, firefighters, senior citizens, etc) was very important, creating additional social capital among community members (both gardeners and non-gardeners). As one Cornell Cooperative Extension staff member noted, “By growing food for a soup kitchen, gardeners start to make connections with other organizations in the area and widen the scope of their community” (Saldivar-Tanaka and Krasny, 2003, p. 408).

Been and Voicu (2008) provided the most unique study involving community development and the economic effects of community gardens in a neighborhood. The authors examined the effect of proximity to community gardens on neighborhood property values, and employed a difference-in-differences hedonic regression model to estimate the effect of community gardens on neighborhood property values (Been and Voicu, 2008). The study was longitudinal, comparing sales prices of residential and commercial properties in close proximity (within 1000 ft) of a community garden with properties outside the designated area but still within the same neighborhood (determined by census tracts) both before and after the community garden opened. The study also explored whether property values changed over time or varied with neighborhood type and garden quality. Results of the analysis indicate that community gardens have a positive effect on neighboring residential property values. This effect increased over time and was stronger with closer proximity to the garden. The effect of gardens

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4 Both the discussion included in the original study and this paper focus more heavily on residential effects than commercial.
on residential property values was greater in low-income neighborhoods than high-income neighborhoods. The effect was also greater when the community gardens were of higher quality, as measured by accessibility, fencing quality and security, cleanliness, landscaping quality, presence of decorations, existence of social spaces, and overall condition (Been and Voicu, 2008).

**Limitations**

In addition to limitations discussed previously, it is difficult to prove causality in these studies exploring community development, especially social capital. Do community gardens really increase social capital within a neighborhood or do they provide an avenue for social capital to be realized? While the distinction between these two observations is slight, it seems important. If community gardens lead to an increase in social capital (rather than capture existing social capital) within a neighborhood, there may be a stronger case to be made that asset-building strategies should include community garden development. If community gardens are capturing social capital that is already there, there may be other asset-building strategies that could harness this potential just as well, if not better.

**Key Implications**

Community gardens appear to lead to increased community development, especially increased social capital. Gardens provide a space for neighbors to get to know one another and organize in support of other important neighborhood issues. Community gardens may help to revitalize the local economy through creation of meaningful jobs, sale of produce yields and value-added products, and training of participants who upon leaving the program are able to join the local workforce with increased skills and knowledge. Based on the studies reviewed for this paper, it appears that entrepreneurial gardens are the most likely to lead to increased community economic development. Community gardens also have a positive effect on neighboring residential property values, especially in low-income neighborhoods. This is an interesting finding, and could perhaps be used to support the creation of new community gardens in low-income neighborhoods as an asset-building strategy focused on community development, although I think that it deserves additional research and thoughtful analysis.
IV. CONCLUSION

After reviewing the existing literature, my primary recommendation is for the continuation of rigorous studies exploring the effectiveness of community gardens as asset-building strategies. Despite the need for additional research, the existing literature provides some important initial insights:

**Participant health**
- Gardeners may consume vegetables more frequently than non-gardeners (Blair et al., 1991)
- Community gardens located in low-income neighborhoods may help residents access fresh, healthy food they would not otherwise be able to procure and may help achieve food security for these individuals and communities (Feenstra et al., 1999 and Armstrong, 2000)

**Human Capital**
- Entrepreneurial gardens may provide opportunities for gains in human capital, specifically job training and education, for low-income individuals and at-risk youth (Feenstra et al., 1999)

**Individual Financial Benefits**
- Community gardens provide small but important financial gains for program participants, specifically in an entrepreneurial garden program (Feenstra et al., 1999)

**Community Development**
- Proximity to community gardens results in increased residential property values in at least some locations (Been and Voicu, 2008)
- Community gardens can be a catalyst for other neighborhood improvements, especially in low-income communities (Armstrong, 2000)
• Community gardens can facilitate community cohesion and trust (Feentstra et al., 1999)

While these results are promising, especially concerning entrepreneurial community gardens, they are just the beginning. Continued research and evaluation by those implementing community garden programs is required to increase the body of knowledge surrounding the effectiveness of community gardens as asset-building strategies.
## Appendix A: Table of Reviewed Literature

<table>
<thead>
<tr>
<th>Title</th>
<th>Author</th>
<th>Criteria addressed</th>
<th>Target population</th>
<th>Setting</th>
<th>Unit of analysis</th>
<th>Sample</th>
<th>Method</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>The effect of community gardens on neighboring property values</td>
<td>Been and Voisur (2008)</td>
<td>Individual financial benefits, community development (economic)</td>
<td>All properties neighboring community gardens; analysis highlighted results in disadvantaged neighborhoods</td>
<td>New York, NY</td>
<td>Residential property sales</td>
<td>n=5,177/91</td>
<td>Hedonic difference-in-differences regression analysis</td>
<td>The opening of a community garden has a significant positive effect on residential properties within 1080 ft; impact increases over time and is greatest in most disadvantaged neighborhoods.</td>
</tr>
<tr>
<td>Gardening's socioeconomic impacts</td>
<td>Patel (1991)</td>
<td>Health, individual financial benefits, community development (social capital), human capital</td>
<td>General community garden participants from various economic, racial, and social backgrounds</td>
<td>Newark, NJ</td>
<td>Individual gardeners</td>
<td>n=178</td>
<td>Interviews</td>
<td>Benefits cited by gardeners included money saved (33.5%), helping others (29%), improved neighborhood (13%).</td>
</tr>
<tr>
<td>Entrepreneurial community gardens</td>
<td>Fesnstra, McGrew, and Campbell (1999)</td>
<td>Health, individual financial benefits, community development (economic and social capital), human capital</td>
<td>Either low-income (21 program and/or youth (16 programs); half of youth programs were targeted towards &quot;at-risk&quot; populations</td>
<td>Nationwide (emphasis on CA)</td>
<td>Community gardens</td>
<td>n=27</td>
<td>Interviews and case studies</td>
<td>Individual financial benefits were small, but important. The role of entrepreneurial community gardens in developing human capital was much stronger (education and job-training). Community development occurred through increased trust and neighborhood cohesion (social capital) and creation of meaningful jobs (economic development). Increased social and human capital withing the communities may also contribute to long-term economic development, although this needs to be studied further.</td>
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<tr>
<td>A dietary, social, and economic evaluation of the Philadelphia Urban Gardening Project</td>
<td>Blair, Giuseppe, and Sherman (1991)</td>
<td>Health, individual financial benefits, community development (social capital)</td>
<td>General community garden participants; not targeted to one specific population</td>
<td>Philadelphia, PA</td>
<td>Individuals (gardeners v. non-gardeners)</td>
<td>n=144 (gardeners n=67 (non-gardeners))</td>
<td>Interviews with gardeners selected from a stratified random sample of participants among PUGP sites and non-random sample of non-gardeners; multiple regression techniques used in analysis</td>
<td>Gardeners ate vegetables more frequently and consumed less sweet foods, drinks, and dairy than non-gardeners. Gardeners demonstrated greater levels of social capital (in the form of community involvement) than non-gardeners. Gardens yielded an average net financial gain of $143.</td>
</tr>
<tr>
<td>A survey of community gardens in upstate New York: Implications for health promotion and community development</td>
<td>Armstrong (2000)</td>
<td>Health, community development (social capital)</td>
<td>General community garden participants, although 46% of included gardens were in low-income neighborhoods</td>
<td>Upstate New York</td>
<td>Community gardens</td>
<td>n=63</td>
<td>Interviews with garden coordinators; descriptive study</td>
<td>Health benefits was one of the top two reasons cited for participation in community garden programs. Food source for low-income households was cited as a reason for participation more frequently in urban than rural areas. Gardens in low-income neighborhoods were four times more likely to lead to other neighborhood issues being addressed.</td>
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<tr>
<td>Cultivating community development, neighborhood open space, and civic agriculture: The case of Latino community gardens in New York city</td>
<td>Saldívar-Tanaka and Krasny (2003)</td>
<td>Community development (economic and social capital)</td>
<td>Latino gardeners (mostly Puerto Rican); gardens tended to be in low-income neighborhoods</td>
<td>New York, NY</td>
<td>Community gardens</td>
<td>n=20</td>
<td>Interviews with gardeners and staff from gardening support nonprofit; observations, review of garden documents</td>
<td>In the Latino gardens studied, community development appears to be more of a focal point than open space preservation or civic agriculture (food production), although all three are motivating factors to a degree.</td>
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</table>
Bibliography


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