

# Community Gardening – A Review of the Research Literature



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## Introduction

The report, *Community Gardens – A Review of the Research Literature*, was conducted for the University of Missouri Extension, East Central Region. The review was conducted by the MU Office of Social and Economic Data Analysis.

Proponents of community gardens believe these gardens can play an important role in strengthening social networks, increasing social capital, and encouraging individuals to consume more nutritious food and adopt healthier lifestyles.

The research literature on the efficacy of community gardens tests these beliefs through research using a variety of methods in countries around the world.

OSEDA's methodology for conducting the review included the following steps:

- Conducted on-line searches using academic search engines.
- Searched on terms related to community and urban gardening and local food production, excluding school-based gardening.
- Majority of articles drawn from peer-reviewed journals. Some research was drawn from student theses. A few articles included in the lit review were from popular publications.
- The literature on community gardens comes from a variety of disciplines: sociology, community development, geography, planning and urban studies, economics, psychology and leisure studies.
- Most research focused on urban places, both in the US and internationally.

Five major themes or areas of research emerged from this process:

- Evaluation (8 articles)
- Health Promotion & Nutrition (12 articles)
- Social Networks & Connectedness (10 articles)
- Community Development (15 articles)
- Social Justice & the Politics of Land Use (18 articles)

The review of literature is organized around these themes. Each section includes an overview that summarizes topics addressed, methods and findings, policy implications, and gaps in the research as well as brief review of each article that includes:

- An abstract
- Methods and Findings
- Outcomes and Results
- Policy Implications

## Evaluation

**Topics Addressed:** Eight publications were identified that described evaluations of community garden programs or discussed research methods and/or reporting strategies, such as indicators, for understanding the impact of community gardening for purposes of informing policy and implementation.

Six articles described outcomes of specifically identified community gardening programming including; a state-wide program in California, a regional program in southeast Wisconsin, and four city-wide programs located in New York City, Philadelphia, St. Louis, and Melbourne, Australia. Another article examined results of descriptive national survey conducted by the American Community Gardening Association in 1996. A final article described efforts to validate a neighborhood characteristics survey instrument to measure perception of quality of life, social networks, and attachment.

**Methods Used:** A variety of methods and analysis strategies were used in this diverse set of articles. Most publications are based on a mixed-methods approach involving both user perception as well as independent evidence of impact.

- Four articles were published in peer-reviewed journals. One publication was produced by a state Extension agency and one by a national association of community gardens. One publication was thesis/dissertation research.
- Evaluation research was informed through primary and secondary data collection techniques. Primary data collection involved surveying participants to measure perception and change in behavior. Artifact analysis was conducted to understand organizational development. Observation methods, including participant observation, were used to collect data on social networks and relationships. Secondary data, including census population estimates, real estate valuation, land use documentation, and geo-spatial information, were used to explain and predict patterns of gardening use.
- Existing, validated instruments were utilized in original or modified form in some of the research. Original instruments were developed in other cases.

### Policy Implications:

- Local policy decisions, such as zoning and use of economic development tools, i.e, TIFs, can and should be used to encourage effective community gardens.
- Community gardens have the potential to positively impact property values, particularly in low income neighborhoods.
- Community gardens generally improve seasonal access to high quality nutritional food in neighborhoods lacking affordable access and may change gardeners' preferences throughout the year.
- The presence of community garden programs increases opportunity for nutrition and healthy lifestyle education.
- Community gardens are perceived as tools to enhance social networks and improve social relations.

### Gaps in the Research:

- There is a lack of longitudinal analysis of the impact of community gardens on gardeners' nutritional choices and personal health and behavior choices.
- There is a lack of longitudinal analysis of the impact of community gardens on perceptions of stability and density of social networks.
- There is a lack of longitudinal analysis on the impact of community gardens on property values and neighborhood environmental quality of life indicators.
- There is no evidence of intentional validation of evaluation research strategies in the program-specific evaluation articles.
- Better measures of quantity of food produced in community gardens.

American Community Gardening Association. (June 1998). *National Community Gardening Survey: 1996*. ACGA.

**Abstract:**

This report is a summary of the findings from the 1996 survey of American Community Gardening Association (ACGA) members in 40 cities. The report includes city profile charts, rankings of cities based on overall number of gardens and number of gardens per 10,000 people, comparison information from 15 cities which also participated in a 1992 survey, and complete data from 38 cities who participated in the 1996 survey. The survey finds an increase in the number of community gardens in most locations despite concerns about long term access to land where gardens are located. The report identifies neighborhood gardens as the most common community garden type, with potential for growth in gardens located on public land such as public housing, senior centers and schools, and gardens serving special purposes such as rehabilitation, mental health services, and job training and economic development for at-risk youth and adults. The survey did not find a difference in garden retention rates between gardens initiated by general grassroots neighborhood support and those initiated by public or non-profit agencies.

**Method/Findings:**

A survey was mailed to members of the American Community Gardening Association (ACGA) in 40 cities; 38 cities participated. The questionnaire was revised from a 1992 survey of ACGA members which included 24 cities, and some comparisons are made between the two surveys. All but six cities reported concern about long-term access to land where gardens are located (called “site permanency” in the study), and only 5.3% of the gardens included in the survey were owned by the gardening organization or included in a land trust. Other gardens are secured through 10 year leases. Despite land access issues, the number of community gardens is increasing.

**Outcomes/Results:**

- Site permanency (or long-term access to land) is a major concern for most community gardens.
- Despite concerns about site permanency, the number of community gardens reported to the American Community Gardening Association is growing.
- Open space initiatives can provide an important vehicle to establish and support community gardens.
- Most community gardens are considered “neighborhood” gardens, but there is room for growth for other types of gardens, including those located on public land, and those providing services for vulnerable populations.
- The way gardens are initiated (i.e. grassroots support from neighbors versus community or government organization) does not appear to impact the garden retention rate.

**Policy Implications:**

- Communities can support community gardening efforts by improving land access through long-term leases on public land, locating city-sponsored gardens on public land, or supporting land trust arrangements or open space initiatives.
- Community gardens could be included as a social services strategy for public or non-profit agencies, providing rehabilitation, mental health services, and job training and economic development for at-risk youth and adults.
- Public entities can support community gardening by locating gardens on public land, including public housing gardens, school gardens, and senior center and senior housing gardens.

Beilin, R. and A. Hunter. (2011). "Co-Constructing the Sustainable City: How Indicators Help Us 'Grow' More than Just Food." *Local Environment*. 16(6): 523-538.

**Abstract:**

This paper reviews the literature on community gardens associated with social wellbeing, participatory engagement and ecological services. It then describes a year-long study of community gardens in inner-Melbourne (Australia) where local communities were involved in deriving social and ecological indicators for community gardens, starting from an existing Victorian Government-approved community indicator framework (Community Indicators Victoria-CIV).

**Method/Findings:**

Deriving indicators for monitoring social and ecological outcomes of community gardens involved discussions with both local government and community gardening organizations and industry experts. The research involved a combination of qualitative methods, including focus groups, semi-structured interviews, participant observation and coding of data to correlate with the established community indicators. Quantitative data included counting various aspects of community gardens, like the number of members, meetings, and partnerships with external community organizations.

**Outcomes/Results:**

- Local community wellbeing indicators can serve as a democratic tool for engaging community gardeners in discussions about shared goals and priorities, a policy tool for addressing issues identified as important by community gardens and in guiding evidence-based planning in support of community gardens, and a reporting tool for tracking trends toward agreed goals over time.
- If community gardeners are included in the process of developing indicators for the success/benefits of community gardens, they can be utilized to collect data and assist in evaluating community gardening.
- Community members decided it was important to evaluate community gardens in terms of 3 main categories of indicators: social, ecological/environmental, and local food production.
- The gardeners who participated in the development of community garden indicators were concerned about how local government officials would use the data collected. For example, they were concerned that gardens would be pitted against one another for scarce government resources, or some gardens would be slated for development based on their reporting on the indicators.

**Policy Implications:**

- Local government officials can work with community groups (in this case community garden organizations) to develop indicators that can be used to measure the success/benefits/importance of community gardens, and enlist gardeners to collect and report data.



Blair, D., C. Giesecke, and S. Sherman. (1991). "A Dietary, Social and Economic Evaluation of the Philadelphia Urban Gardening Project." *Journal of Nutrition Education*. 23(4): 161-167.

**Abstract:**

This study evaluates the dietary, economic, psychological and social impacts of the Philadelphia Urban Gardening Program (PUGP), a joint project of the Pennsylvania State University Cooperative Extension Service and Philadelphia Horticultural Society. One of largest community gardening programs in country, PUGP included 560 garden sites at the time of the study and 5,000 family participants, including the urban poor, elderly, and members of diverse ethnic groups. Community gardening was related to improvements in diet, increased community participation, and increased life satisfaction.

**Method/Findings:**

Structured personal interviews were conducted with 144 community gardeners and 67 non-gardening controls, using a random sample stratified by ethnic group, location, number of plots/site, length of time garden established, and the number of old and new gardeners. Ethnic groups included in the study include African-American, Korean, Caucasian and Hispanic. Data were analyzed with SPSS, including analysis of variance, the Scheffe test, covariance and multiple regression techniques. Community gardening was related to improvements in diet, increased community participation, and increased life satisfaction. The average net value of the garden plots (after expenses) was \$113 per family in 1987 dollars, or \$224 in 2011 dollars.

**Outcomes/Results:**

- Gardening is related to increased frequency of vegetable consumption
- Gardening is related to decreased consumption of high sugar foods and beverages, and milk products
- Gardening appears to facilitate community self-help. Gardeners are more active than non-gardeners in community projects, and shared their vegetable wealth with family, friends, passersby, and church food pantries.

**Policy Implications:**

- Gardening access in inner cities can be an empowering nutritional strategy that overcomes many of the barriers to increased vegetable consumption.
- Community gardens can provide an abundant source of fresh produce in neighborhoods that lack a full-service grocery store or transportation to grocery stores with affordable produce prices.
- Nutritional advice provided along with gardening technical assistance could improve nutritional outcomes for gardeners and their families.

Jill Florence Lackey & Associates. (1998). *Evaluation of Community Gardens: A program of the University of Wisconsin Cooperative Extension*.

**Abstract:**

This detailed report is an evaluation of Community Gardens, a program of the University of Wisconsin Cooperative Extension in Southeast Wisconsin (Milwaukee, Waukesha and Kenosha counties). The Community Gardens program includes rental gardens (where gardeners rent plots for the season), youth gardens (where children are taught about gardening, nutrition, etc.), and pantry gardens (where food is grown to donate to a food pantry). The program reaches Asian American (predominantly Hmong), Latino, African American and European American populations. Qualitative and quantitative methods were used to evaluate the success of the program and its impacts on participating gardeners and their communities. Community gardens were found to provide material benefits (increased vegetable consumption and physical exercise, and savings on food bills), non-economic benefits (a way to transmit cultural heritage, convene with nature, and engage in an enjoyable activity), and social and psychological benefits (building a sense of community, promoting social justice, and build personal character and self-esteem, including a sense of self-sufficiency). Challenges for the Community Gardening program include gaining long-term access to garden land, maintaining the garden on a daily basis, and engaging some of the beneficiaries of the gardens (food pantry clients and youth).

**Method/Findings:**

Seven community gardens (4 rental gardens, 2 youth gardens, and 1 food pantry garden) located in three southeastern Wisconsin counties were selected to conduct this evaluation of Community Gardens—a program of the University of Wisconsin’s Cooperative Extension. Both qualitative and quantitative methods were used. Qualitative methods included document reviews, participant observation and 47 semi-structured stakeholder interviews. Qualitative results were analyzed and used to inform a post-test only quantitative survey of 123 randomly selected gardeners and 123 matched comparison group participants. Gardeners and the comparison group were asked about social and community activities, and health habits like diet and exercise. Gardeners were also asked about the importance of gardening and reasons for gardening, and estimated the amount they saved on groceries by participating in the community gardening program.

Gardeners reported that the gardens were very important for their personal wellbeing (a mean score of 8.62 on a scale of 10). Gardeners reported consuming more than twice the helpings of vitamin rich vegetables in the previous 24 hours than comparison group. Gardeners also reported more physical exercise and twice the number of calories burned through exercise in previous week than comparison participants. In the previous 4 months gardeners reported that they had a more balanced diet, shared more food, spent more time with family, made more improvements in their neighborhoods, felt more in charge of their lives and learned more about gardening than comparisons reported. In addition, 3/4 gardeners reported they ate organic food and over half said they gardened organically. The gardeners also reported that they saved money on food, with rental gardeners saving the most money (a mean savings of \$167.95 in 1998\$). The mean savings for all gardeners (rental, youth and pantry gardens) was \$131.90. The pantry saved about \$2000 on food

ingredients because of the garden, and was able to spend more of its money on other foods like fruits, canned tuna and cereals.

Through qualitative research, the evaluation team learned that gardeners used Community Gardening program to transmit cultural heritage to younger generations, enjoy watching plants grow and improve their gardening skills, and convene with nature. Many gardeners felt their plots had become focal points for community-building activities, and gave away their produce to promote social justice.

### **Outcomes/Results:**

- Participating gardeners rank the Community Gardening program very high as a factor contributing to their personal wellbeing
- Community gardeners realized material gains from the Community Gardening program, including:
  - Saving money on food
  - Eating significantly more vitamin-rich vegetables than comparison group
  - Eating a more balanced diet than comparison group
  - Expending more calories in exercise than comparison group
- Community gardeners ascribed meanings to the Community Gardens that were more important to them than material benefits
  - Gardening as a means to transmit cultural heritage
  - Gardening as an enjoyable practice
  - Gardening as way to convene with nature
- Community gardeners identify social and psychological benefits from gardening
  - Community Gardening builds a sense of communities
  - Gardening can promote social justice by providing healthy food to others in need.
  - Gardening builds personal character and self-esteem, including a sense of self-sufficiency
- Gardeners identified a number of future challenges for the Community Gardening program
  - Gardeners are anxious about continuing access to good quality garden land.
  - Gardens need more broad-based daily management, possibly utilizing the gardeners as volunteers for maintenance projects.
  - Gardeners would like to engage beneficiaries of gardens (pantry clients and parents of youth) in the gardens.

### **Policy Implications:**

- City and county governments should enlist strategies to protect land access for community gardens, since they provide a number of material, community and psychological benefits to residents, and are places where residents find meaning and a sense of well-being.

McGuire, J.B. (1997). "The Reliability and Validity of a Questionnaire Describing Neighborhood Characteristics Relevant to Families and Young Children Living in Urban Areas." *Journal of Community Psychology*. 25(6): 551-566.

**Abstract:**

The neighborhood characteristics questionnaire by Simcha-Fagan and Schwartz (1986) was modified to be relevant to families with young children living in urban areas, from a range of ethnic backgrounds. The modified questionnaire describes residents' perceptions of street crime and life quality, social relationships and networks among neighbors, attachment to the neighborhood and neighborhood disorder. The questionnaire can be used as a tool to measure neighborhood characteristics as an alternative to census data. The study considers the theory of social disorganization (Sampson and Groves 1989) and how social disorganization is related to disadvantaged urban neighborhoods. Social disorganization is a different approach to measuring neighborhood characteristics than the other studies included in this review, which normally focus on social networks and social capital (normally considered "positive" features) rather than negative perceptions of the neighborhood.

**Method/Findings:**

The questionnaire was used in a disadvantaged area of Boston as part of an evaluation of a community empowerment program. Household interviews and the neighborhood characteristics questionnaire were used with 142 primary care-taker respondents on randomly selected streets in the block group. Every fifth household on the street was selected for participation, and were screened for the presence of a child aged 6 months to 5 years. Researchers also conducted neighborhood observations using a modified Block Environment Inventory (Taylor, Gottfredson and Brower 1984).

**Outcomes/Results:**

- The modified questionnaire was found to be a reliable and valid measure of neighborhood characteristics among families with young children in a disadvantaged urban environment.
- Researcher observations of social disorder were related to the residents' feeling of attachment to an area.
- Local social relationships were significantly associated with the knowledge of the services and personnel involved in the child abuse prevention program being implemented in the neighborhood.
- The questionnaire should be useful for programs conducted in disadvantaged neighborhoods because it appears to be sensitive enough to detect variability within a community that has many risk factors, locating specific streets or small areas within a community that may need intensive support, and sufficiently brief to be part of a "doorstep" needs assessment survey.
- A survey of this type can act as a good supplement to census or other secondary data sources.

**Policy Implications:**

- The level of social disorganization (characterized by crime, drug and gang activity, litter, traffic problems, etc.) can be an important measure of quality of life for a neighborhoods' residents.
- The questionnaire tested in this study could be a useful tool for policymakers and organizations who are seeking a way to target neighborhood improvement efforts to where they are most needed.

Tranel, M. and L. Handlin. (2003). *Planting Seeds; Growing Communities*. Gateway Greening/University of Missouri-St. Louis Public Policy Research Center.

**Abstract:**

This study used Census data from 1990-2000 and a telephone survey to determine the impacts of community gardens on their surrounding neighborhoods. The study found measurable improvements in neighborhoods around community gardens. The article describes a methodology that could be applied in other locations to evaluate the impacts of community gardens on their neighborhoods in any US location.

**Method/Findings:**

Census data on housing and socioeconomic conditions in a 3-block radius around gardens was compared with their surrounding neighborhoods. The telephone survey (n=97 active gardeners and 177 garden area residents) asked questions on neighborhood crime, community relations, and neighborhood appearance.

**Outcomes/Results:**

- Garden areas had greater increases in rents and mortgage expenditures, higher rates of home ownership, more stability in low-income households, and larger increases in household income than non-garden areas.
- Gardeners in the telephone survey felt very strongly that neighborhood conditions greatly improved in recent years and would improve even more in the coming years.
- Non-gardening, garden area residents felt that neighborhood conditions had improved, but not as much as gardeners.
  - Non-gardening residents were largely unaware of the garden in their neighborhood and had no opinion on its impact.
- Crime data for the 1990s did not show a significant difference between garden areas and comparable neighborhoods without a garden.

**Policy Implications:**

- This study on the impacts of community gardens can be replicated in any US location.
- The analysis indicates that the areas surrounding community gardens enjoyed improvement in most socio-economic variables included in the study, an outcome that could lead to greater tax revenues and reduced cost for city and county governments.

Twiss, J., J. Dickinson, S. Duma, T. Kleinman, H. Paulsen, and L. Rilveria. (2003). "Community Gardens: Lessons Learned from California Healthy Cities and Communities." *American Journal of Public Health*. 93 (9): 1435-1438.

**Abstract:**

Since 1988, California Healthy Cities and Communities (CHCC) has supported over 65 communities with developing, implementing, and evaluating programs, policies, and plans that address the environmental, social and economic determinants of health. CHCC provided grants and technical assistance to 6 cities to develop community gardens as a means to promote positive public health outcomes and build and nurture community capacity. Key elements for successful community gardens included commitment of local leadership and staffing, involvement of volunteers and community partners, and availability of skill-building opportunities for participants.

**Method/Findings:**

This report summarizes lessons learned through evaluation of community gardening programs implemented in 6 California cities, with grant funding and technical assistance provided by California Healthy Cities and Communities (CHCC). Through community garden initiatives, cities have enacted policies for interim land and complimentary water use, improved access to produce, elevated public consciousness about public health, created culturally appropriate educational and training materials and strengthened community building skills. Gardeners included newly arrived immigrants, who use them to transfer cultural traditions, and those committed to sustainability and to personal and family health. Given the opportunities and challenges inherent in this work, long-term investments (policymaking, funding, staffing and acquiring in-kind resources) are needed to support planning, implementation and evaluation. Community visioning and strategic planning processes are additional opportunities to integrate this work.

**Outcomes/Results:**

Important characteristics of successful programs include:

- Ongoing training, mentoring, and leadership development for gardeners and staff.
- Building on successful community-based programs through partnerships.
- Public awareness of the benefits of community gardens.
- Experiential work (e.g. classes in gardening, exercise, or cooking), which often led to municipal codes and administrative policies.
- Communicating benefits beyond traditional leadership (i.e. mayor, city council, etc.) to the community at large to build a broad-based constituency and provide long-term consistent support of community gardens.

Strategies to increase success:

- Publications, electronic networks and meetings to support learning across communities.
- Integrate community gardens into new developments (i.e. include space for community gardens in the plans for new structures, use rooftop gardens).
- Research on the impacts of community gardens, including user-friendly, multilingual, and adaptable evaluation tools.

**Policy Implications:**

- Cities/local governments can use zoning regulations to require new developments include space for community gardens and/or other open spaces.
- Access to water should be considered along with access to land
- Examples of City policies influenced by community gardening initiatives:
  - City of Berkeley passed the Berkeley Food and Nutrition Policy, which supports small-scale sustainable agriculture (e.g. community gardens, local farms).
  - Escondido approved the “Adopt-A-Lot” policy, which allows for the interim use of public and private property for community benefit. This policy provides a special no-fee city permit and an expedited land use approval process that allows normal zoning regulations and requirements (e.g. those concerning parking) to be waived. The policy contributes to city beautification, decreases code violations and increases space for community gardens.



Voicu, I. and V. Been. (2006). *The Effect of Community Gardens on Neighboring Property Values*. New York University.

**Abstract:**

This paper estimates the impact of community gardens on neighborhood property values using data for New York City and a difference-in-difference specification of a hedonic regression model. Community gardens have significant positive effects on surrounding property values and those effects are driven by the poorest of host neighborhoods. Higher quality gardens have the greatest positive impact. The introduction and literature review provide good summaries of the arguments used to support local policies and programs promoting community gardens.

**Method/Findings:**

This paper uses statistical methods (difference-in-differences specification of a hedonic regression model) to estimate the effect of community gardens on neighborhood property values. Impacts are estimated as the difference between property values in the vicinity of the garden sites before and after a garden opens relative to price changes of comparable properties farther away, but still in the same neighborhood. A simple cost-benefit analysis is also completed.

Opening a community garden has a statistically significant positive impact on the sale prices of residential properties within 1000 feet of the garden, and that the impact increases over time. Higher quality gardens have the greatest positive impact. (Garden quality was ranked through qualitative observations during garden visits and included measures of public accessibility, fencing quality and security, cleanliness, landscaping quality, presence of decorations, existence of social spaces and overall condition.) Gardens in the most disadvantaged neighborhoods also have greater impact than gardens in more affluent neighborhoods. The simple cost-benefit analysis suggests that the gain in tax revenue generated by community gardens in the 1000-foot ring may be substantial.

**Outcomes/Results:**

- Community gardens have significant positive effects on surrounding property values
- Community gardens can contribute to significantly higher property tax revenues
  - In this study, results show that community gardens can lead to increases in tax revenues of about half a million dollars per garden over a 20-year period.
- Positive effects are greatest in the poorest neighborhoods
- Positive effects increase with the quality of the garden

**Policy Implications:**

- Community gardens are a legitimate investment strategy to improve property values and tax revenues, especially in the most disadvantaged neighborhoods.
- Local governments may want to consider tax increment financing (TIF) as a means to invest in community gardens.
- Local governments may consider impact fees on developers to finance the development of community gardens (since developers' properties will increase in value if they are located close to a garden).

## Health Promotion and Nutrition

**Topics Addressed:** Twelve articles were identified that considered the impact of community gardens as a health promotion tool for gardeners as well as the broader community in which gardens were located.

### Methods Used:

- The research on health and nutrition impacts was more likely to use a mixed methods approach than other categories of research, e.g., a combination of a relatively small sample of surveyed individuals combined with a spatial analysis of food accessibility.
- The research reviewed on health and nutrition impacts tended to use existing, validated instruments such as the Behavioral Risk Factor Surveillance Survey than other categories of research.
- The consistent themes of these studies regarded perceptions of the importance of nutritional quality among consumers, consumer's perceptions of the availability of food, and the existence of community gardens as an intervention in improving health and nutritional choices.
- Primary data collection techniques predominately focused on personal interviews based on both random and purposive sampling techniques.
- Secondary data used included public information related to census demographic data and geo-spatial data related to consumer distance to food by type of outlet and quality of nutrition.

### Policy Implications:

- Community gardens can improve access to fresh produce.
- Community gardens can impact the effectiveness of nutritional and healthy lifestyle interventions.
- Community gardens in low income neighborhoods and other food "deserts" disproportionately improves access to higher quality food than in more affluent neighborhoods with generally greater food sources.
- More dense and diverse food sources may increase consumption of healthy foods.
- Community gardening as an intervention with at-risk youth improves both their health and behavioral outcomes.
- Participation in community gardening is associated with self-reported improved mental health among gardeners and neighborhood residents.
- Consider community gardens as a primary and permanent use of open space in land use planning and zoning.
- As a public health tool, community gardens represent to local communities a relatively low-cost, high impact intervention to improve citizens' quality of life and have the potential to lower the cost of health care.

### **Gaps in the Research:**

- Longitudinal analysis of a persistence of change in consumer and food preferences based on community garden awareness and/or participation.
- Cross-cultural analysis of impact of community gardens on nutritional and healthy lifestyle choices.
- Impact of community gardens on other food suppliers stocking and marketing of high quality nutritional food.
- Explicit testing of the relationship between enhanced community attachment and social networks and improved nutritional and healthy lifestyles.
- Research related to the quantity and quality of local food production in community gardens, home gardens and farmers within the local food shed.

Alaimo, K., E. Packnett, R. A. Miles, and D.J. Kruger. (2008). "Fruit and Vegetable Intake among Urban Community Gardeners." *Journal of Nutritional Education and Behavior*. 40(2): 94-101.

**Abstract:**

This study focuses on the association between household participation in a community garden and fruit and vegetable consumption among urban adults. The study found that households with a member who participated in community gardens in Flint, Michigan, consumed more fruits and vegetables than households without community garden participation. The study concludes that household participation in a community garden may improve fruit and vegetable intake among urban adults.

**Method/Findings:**

Cross-sectional random phone survey of 766 adults in Flint, Michigan. Data collected in 2003, utilizing a quota sampling strategy to ensure that all census tracts in the city were represented. Fruit and vegetable intake was measured using questionnaire items from the Behavioral Risk Factor Surveillance System. Household participation in a community garden was assessed by asking the respondent if he or she, or any member of the household, had participated in a community garden project in the last year. Generalized linear models and logistic regression models assessed the association between household participation in a community garden and fruit and vegetable intake, controlling for demographic, neighborhood participation, and health variables. Adults with a household member who participated in a community garden consumed fruits and vegetables 1.4 more times per day than those who did not participate, and they were 3.5 times more likely to consume fruits and vegetables at least 5 times daily.

**Outcomes/Results:**

- 15% of Flint respondents reported that they or a member of their household had participated in a community gardening project in the last 12 months.
- Adults with a household member who participated in a community garden consumed fruits and vegetables 1.4 more times per day than those who did not participate.
- Adults with a household member who participated in a community garden were 3.5 times more likely to consume fruits and vegetables at least 5 times daily.

**Policy Implications:**

- Community gardens were originally established in Flint, Michigan, in the late 1990s, through an initiative to prevent neighborhood violence.
- Community gardens improve access to fresh produce in locations where lack of access to fresh produce is a primary barrier to eating a healthful diet. (In Flint, supermarkets are less common in census tracts where low-income, predominantly African American individuals reside.)
- Community gardens may address other impediments to fruit and vegetable consumption, including preference, quality, selection, cost and difficulty obtaining transportation.
- Urban gardens can produce a large quantity of food with relatively few resources, particularly when land is abundant (as in Flint).

Blanck, H.M., O.M. Thompson, L. Nebeling, and A. Yaroch. (2011). "Improving Fruit and Vegetable Consumption: Use of Farm-to-Consumer Venues among US Adults." *Preventing Chronic Disease: Public Health Research, Practice and Policy*. 8(2): 1-5.

**Abstract:**

Improvements to the food environment including new grocery stores and more farmer-to-consumer approaches (farmers' markets, roadside stands, pick-your-own produce farms or CSAs) may help Americans make healthier dietary choices. This article analyzes a subset of respondents (n=1,994) from the National Cancer Institute's Food Attitudes and Behaviors Survey, a mail survey of US adults. Over a quarter (27%) of grocery shoppers reported at least weekly use of farm-to-consumer approaches. Older adults and respondents living in the Northeast were more likely to shop farm-to-consumer venues at least weekly, and no differences were found by sex, race/ethnicity, or annual household income. Use of farmers' markets or cooperatives did increase by education level.

**Method/Findings:**

The article focuses on primary grocery shoppers from the National Cancer Institute's Food Attitudes and Behaviors Survey (n=1994). Odds ratios and corresponding 95% confidence intervals were computed for at least weekly summertime use of farmers' markets, roadside stands, pick-your-own produce or CSAs. The article finds that 93% of respondents use a farmer-to-consumer venue for purchasing fruits and vegetables at least some of the time, and 27% reported they use the venue at least weekly. One of the limitations of the study is that the researchers cannot distinguish whether a "no response" meant that the respondent had a farm-to-consumer venue available but did not use it, or that the venue was not available or known by the respondent.

**Outcomes/Results:**

- Farm-to-consumer venues have the potential to reach many Americans and can augment supermarkets and grocery stores as places to obtain fruits and vegetables.
- Farmers' Markets and road side stands are relatively quick approaches to improve a community's food supply and economy, while grocery stores/supermarkets can take many years to establish.

**Policy Implications:**

- Farm-to-consumer approaches like farmers' markets, roadside stands, pick-your-own produce farms or CSAs are used by many Americans, and could be expanded to increase access to fruits and vegetables.
- This is not from the article, but it seems reasonable to suggest that community gardens could become sites for farmers markets or roadside stands, which would increase access to fresh fruits and vegetables in those neighborhoods.

Caldwell, E.M., M.M. Kobayashi, W.M. DuBow, and S.M. Wytinck. (2008). "Perceived Access to Fruits and Vegetables Associated with Increased Consumption." *Public Health Nutrition*. 12(10): 1743-1750.

**Abstract:**

This study examines the association between fruit and vegetable access in a community and change in fruit and vegetable consumption among participants in community-based health promotion programs, using a self-administered questionnaire. The study also assessed grocery stores to quantify the amount and affordability of fruit and vegetables available in each community. Environmental factors, such as access to fruits and vegetables, can modify the effects of community interventions. Interventions with the goal of increasing fruit and vegetable consumption should consider focusing on increasing access to fresh fruits and vegetables in target communities.

**Method/Findings:**

Fruit and vegetable consumption and perceived access to fresh fruit and vegetables were measured by self-administered questionnaires at program start, end, and 1-year follow-up (n=130). Community produce availability was determined by grocery store assessments measuring display space devoted to fruit and vegetable offerings, as well as price, variety and freshness in 9 communities. Participants made modest but significant increases in fruit and vegetable consumption: the average increase from program start to end was 2.88 servings weekly; from program start to 1-year follow-up was 2.52.

**Outcomes/Results:**

- Participants in communities with grocery stores with greater display space devoted to fresh fruits and vegetables had greater increases in fruit and vegetable servings from program start to end.
- Participants in communities with grocery stores with more varieties of produce had greater average increases in weekly servings of fruits and vegetables from program start to end.
- Participants who lived in communities with more than one grocery store increased their fruit and vegetable consumption by an average of 7.27 servings from program start to end.
- Participants who lived in communities where organic produce was available made greater increases in fruit and vegetable consumption from program start to end than those living in communities without organic produce.
- None of the above factors was associated with increased fruit and vegetable consumption in the 1-year follow-up survey.
- The average price of produce was associated with increases in fruit and vegetable consumption: the greater the price the greater the increase. This relationship includes both program start to end, and program start to 1 year follow-up.

**Policy Implications:**

- Environmental factors, such as access to fruits and vegetables, can modify the impacts of community interventions.

- It may be useful for interventions with the goal of increasing fruit and vegetable consumption to focus on increasing access to fresh fruits and vegetables in the target communities.



Carpiano, R.M. (2006). "Toward a Neighborhood Resource-Based Theory of Social Capital for Health: Can Bourdieu and Sociology Help?" *Social Science and Medicine*. 62: 165-175.

**Abstract:**

This paper applies Bourdieu's social capital theory to create a conceptual model of neighborhood socioeconomic processes, social capital (resources held within social networks), and health. It is in response to the popularization, and subsequent critique, of Putnam's theory of social capital as it relates to public health (see other articles in this literature review). While Putnam's theory focuses on interpersonal trust, norms of reciprocity, and social engagement that foster community and social participation, Bourdieu emphasizes the collective resources of groups that can be drawn upon by individual group members for procuring benefits and services through means other than economic capital. Bourdieu measures social capital by the size of the network connections that an individual can mobilize, and the amount and types of capital (economic, cultural, or symbolic) possessed by the people in someone's network. The author separates social capital into four elements: structural antecedents (socioeconomic factors like median income and income inequality, etc.), social cohesion, social capital and outcomes of social capital.

**Method/Findings:**

The author reviews and critiques Putnam and Bourdieu as their theories of social capital relate to public health. The author suggests a conceptual model that could be tested with multilevel analysis of a dataset with a neighborhood clustered sampling design: structural antecedents are measured with area census data, social cohesion and social capital forms are measured using neighborhood-level mean scores of respondents' appraisals of the neighborhood social environment, and individual neighborhood attachment is measured with several items assessing the extent of a respondent's interaction with other residents.

**Outcomes/Results:**

- The author recommends that social capital researchers consider alternative theories of social capital when designing their studies, namely using Bourdieu rather than Putnam.

**Policy Implications:**

- The author recommends an alternative approach to studying the links between social capital and health outcomes, which policymakers can consider if they plan to evaluate neighborhoods for public health interventions like the establishment of community gardens.

Flanigan, S. and R. Varma. (2006). "Promoting Community Gardening to Low-Income Urban Participants in the Women, Infants and Children Programme (WIC) in New Mexico." *Community, Work and Family*. 9(1): 69-74.

**Abstract:**

This study explores the effectiveness of methods used by nutrition educators in promoting the Women, Infants and Children (WIC) community garden project in Albuquerque, New Mexico. Albuquerque's WIC program began a community gardening project in 1999 to promote vegetable consumption among low-income women and their children. WIC nutrition educators were required to promote gardening during their nutrition classes, and had the option to offer seeds to clients, plant seedlings during class, or organize field trips to gardens.

**Method/Findings:**

A survey of 257 clients from five clinics found that less than 30% of clients have been exposed to the project, and caseload was unrelated to the methods used to promote the project. Clients exposed to any method of promotion were more likely to garden than those who were not exposed. Clients reported eating more vegetables after being exposed to the project.

**Outcomes/Results:**

- In spite of being required to promote the garden by their supervisors, nutrition educators at clinics did not promote the WIC community garden project frequently or did not promote it in a memorable way.
- Caseload is not clearly related to the types of gardening promotion methods used (i.e. nutrition educators with higher caseloads were just as likely to use hands-on gardening promotion such as handing out seeds or planting seeds in class as those with lower caseloads).

**Policy Implications:**

- The local WIC program could serve as a partner with other organizations to help establish community gardens, and may even be a source of funds and technical assistance for gardening programs.
  - WIC nutrition educators may not adequately promote gardening as a strategy to increase vegetable and fruit consumption.

Jilcott, S.B., T. Keyserling, T. Crawford, J.T. McGuirt, and A.S. Ammerman. (2011). "Examining the Associations among Obesity and Per Capita Farmers' Markets, Grocery Stores/Supermarkets, and Supercenters in US Counties." *Journal of the American Dietetic Association*. 111(4): 567-572.

**Abstract:**

This study examines county-level data for associations between food venues (farmers' markets, grocery stores/supermarkets, and supercenters) and obesity in the US. It finds that greater levels of food venues/capita are associated with lower levels of obesity. Farmers Markets are significantly associated with lower levels of obesity in non-metro counties, but not in metro or metro- and non-metro combined models.

**Method/Findings:**

Uses data from the USDA Economic Research Service Food Environment Atlas to examine county-level associations among obesity prevalence and per capita farmers' markets, grocery stores/supermarkets, and supercenters, adjusted for natural amenities, percent black, percent Hispanic, median age, and median household income, stratified by county metropolitan status. In models that included all three of the food venues, supercenters and grocery stores per capita were inversely associated with obesity in the combined (metro and non-metro) and metro counties. Farmers' markets were not significant in the model for combined (metro and non-metro) or for metro alone, but were significantly inversely related to obesity rates in the model for non-metro counties. Density of food venues was inversely associated with county-level obesity prevalence, and the researchers suggest studying similar associations at the individual-level.

**Outcomes/Results:**

- Other studies have shown that obesity is associated with proximity to convenience stores and fast-food restaurants and negatively associated with proximity to supermarkets that offer a wider selection of lower-cost, healthy food.
- More farmers' markets, grocery stores/supermarkets, and supercenters per capita were associated with lower obesity prevalence. Community gardens were not included in the food venues studied.

**Policy Implications:**

- Because density of food venues (farmers' markets, supermarkets and supercenters) is associated with lower levels of obesity, local communities may want to combat obesity by increasing access to fresh fruits and vegetables through such food venues.

Lautenschlager, L. and C. Smith. (2007). "Beliefs, Knowledge, and Values Held by Inner-City Youth about Gardening, Nutrition and Cooking. *Agriculture and Human Values*. 24: 245-258.

**Abstract:**

This study explores the effects of community gardens on youth dietary behaviors, values and beliefs, and cooking and gardening behaviors, specifically among multi-ethnic urban youth in Minneapolis/St. Paul. Findings suggest that garden programs positively impact youth garden habits, food choice, social skills, nutrition knowledge, and cooking skills.

**Method/Findings:**

Focus groups in Minneapolis/St. Paul with youth involved in the Youth Farm Market Project (YFMP- established in 1994) compared with youth not involved with gardening programs. YFMP is a multicultural gardening enterprise that educates youth about environmental responsibility, empowerment and cultural expression while fighting racism and poverty. YFMP includes gardening; cooking groups; community markets; classroom based activities focusing on science, health, nutrition, and literature; and field trips to grocery stores, restaurants, nature centers, and cultural events. Youth garden participants were more willing to eat nutritious food and try ethnic and unfamiliar food than those not in the program. Garden participants had a stronger appreciation for individuals and cultures and were more likely to cook and garden on their own than youth not involved in a garden program.

**Outcomes/Results:**

- Youth gardeners had a better understanding of the food system and gardening than non-gardeners, were eager to talk about their cooking skills, and appeared to be more willing to eat vegetables than non-gardeners.
- Youth gardeners had a deeper appreciation and sense of responsibility for the environment, including conserving resources like water.
- The youth gardening program was an important influence on youth ethnic food and unfamiliar food consumption.
- YFMP gardeners reported improved social skills, especially in terms of respecting people from other cultures.

**Policy Implications:**

- Youth gardening programs can increase youth participant knowledge about health, gardening, cooking and nutrition.
- Youth gardening programs may give youth participants a sense of empowerment and increase their respect for people from other cultures.

Litt, J.S., M. Soobader, M. Turbin, J.W. Hale, M. Buchenau, and J.A. Marshall. (2011). "The Influence of Social Involvement, Neighborhood Aesthetics, and Community Garden Participation on Fruit and Vegetable Consumption." *American Journal of Public Health*. 101(8): 1466-1473.

**Abstract:**

This study considers the relationship between an urban adult population's fruit and vegetable consumption and several selected social and psychological processes, beneficial aesthetic experiences, and garden participation. Community gardeners reported higher intake of fruits and vegetables than home gardeners and non-gardeners. Social involvement was positively correlated with fruit and vegetable consumption, after adjusting for education, physical activity, and neighborhood aesthetics. Perceived neighborhood aesthetics were also positively correlated with fruit and vegetable consumption.

**Method/Findings:**

Population-based survey representing 436 residents across 58 block groups in Denver, Colorado, from 2006-2007. Data were collected through a 45-minute, face-to-face survey at or near homes of sampled English- or Spanish-speaking adults. Fruit and vegetable consumption measured with 6-item Behavioral Risk Factor Surveillance System (BRFSS). Physical activity measured with the Community Healthy Activities Model Program for Seniors (CHAMPS) instrument. Multilevel statistical models were used to evaluate survey data.

Neighborhood aesthetics, social involvement, and community garden participation were significantly associated with fruit and vegetable intake. Community gardeners consumed fruits and vegetables 5.7 times per day, compared with home gardeners (4.6 times per day) and non-gardeners (3.9 times per day). More than half of community gardeners (56%) met national recommendations to consume 5 fruits and vegetables per day, compared with 37% of home gardeners and 25% of non-gardeners.

**Outcomes/Results:**

- Community gardeners are more likely than home gardeners and non-gardeners to eat the recommended servings of fruits and vegetables.
- The array of qualities intrinsic to community gardens makes them a unique environmental and social intervention that can narrow the divide between people and places where food is grown and increase local opportunities to eat better.

**Policy Implications:**

Land planners, health officials, and policymakers should aim to do the following:

- Weave community gardens throughout the fabric of communities.
- Encourage programming that connects community gardens to other nodes in the local food system, including food banks, farmers' markets, and local chef networks.
- Consider community gardens as a primary and permanent open space option as part of master planning efforts, on a par with valued elements such as playgrounds, bike trails and community plazas.
- Include community gardens in land-planning processes rather than as an afterthought in urban development projects.
- Establish zoning codes that protect gardens, while liberally allowing them in appropriate zone codes and identifying them as a use by right.
- Consider gardens as a viable use across institutionalized properties where gardens become part of the permanent programming of a site, such as schools and affordable housing developments.

McCormack, L.A., M.N. Laska, N.I. Larson, and M. Story. (2010). "Review of the Nutritional Implications of Farmers' Markets and Community Gardens: A Call for Evaluation and Research Efforts." *Journal of the American Dietetic Association*. 110(3): 399-408.

**Abstract:**

This article reviews the research on nutrition-related outcomes relating to obtaining produce from farmers' markets or community gardens. Sixteen studies were included: four of the reviewed studies relate to community gardens; seven on farmers' market nutrition programs for WIC participants; and five on farmers' market nutrition programs for seniors. The authors found a shortage of research on this topic.

**Method/Findings:**

Studies were included in the review if they took place in the US and examined nutrition-related outcomes, including dietary intake; attitudes and beliefs regarding buying, preparing, or eating fruits and vegetables; and behaviors and perceptions related to obtaining produce from a farmers' market or community garden. Studies focusing on garden-based youth programs were excluded.

Article gives a brief history of community gardens and summarizes the findings of Alaimo et al, Blair, et al, Lackey, et al, and Johnson and Smith. All but Johnson and Smith are included elsewhere in this review.

**Outcomes/Results:**

- Community Gardens and Farmers' Markets may improve nutritional outcomes, but the existing research does not prove causation. (For example, it may be that individuals who prefer to eat fruits and vegetables are more likely to seek out community gardens or farmers' markets as a source of produce, rather than these programs have a positive influence on availability and fruit and vegetable consumption preference.)
- Community gardens and farmers' markets may provide opportunities for community building and for people to come together around food-related issues.

**Policy Implications:**

- Research is needed to assess barriers to community gardens and farmers' markets such as zoning regulations and other local policies.

Sharkey, J.R., C.M. Johnson, and W.R. Dean. (2010). "Food Access and Perceptions of the Community and Household Food Environment as Correlates of Fruit and Vegetable Intake among Rural Seniors." *BMC Geriatrics*. 10(32): 1-12.

**Abstract:**

This study examines the relationship between fruit and vegetable consumption among rural seniors in Brazos Valley, Texas, and food access, and perceived food access variables. The study finds that objective and perceived measures of food store access-increased distance to the nearest supermarket, food store with a good variety of fresh and processed fruit, or food store with a good variety of fresh and processed vegetables-were associated with decreased daily consumption of fruit, vegetables, and combined fruit and vegetables, after controlling for the influence of individual characteristics and perceptions of community and home food resources.

**Method/Findings:**

Cross-sectional analysis using data from the 2006 Brazos Valley Health Assessment (mail survey) for 582 rural seniors (60-90 years), recruited by random digit dialing; food store data from the 2006-2007 Brazos Valley Food Environment Project that used ground-truthed methods to identify, geocode, and inventory fruit and vegetables in all food stores. The Brazos Valley food environment consisted of 186 food stores, including 1 supercenter, 11 supermarkets, 12 grocery stores, 141 convenience stores, 16 dollar stores, 4 mass merchandisers, and 1 pharmacy, and lacked public transportation.

**Outcomes/Results:**

- Few of the BVHA seniors consumed the recommended intakes of fruits or vegetables.
- Women consumed more servings of fruit, similar servings of vegetables, and more combined fruit and vegetables than men.
- Median distances to fresh fruit and vegetables were 5.5 miles and 6.4 miles, respectively. When canned and frozen vegetables were included in the measurement of overall fruit and vegetables the median distance decreased to 3.4 miles for fruit and 3.2 for vegetables.
- Almost 14% reported that their food supplies did not last and there was not enough money to buy more.
- Inadequate household food resources (i.e. households who reported that food supplies did not last through the month) or poor community food resources (i.e. lack of access to a food store that sells fruit and vegetables) were associated with lower fruit and vegetable consumption.

**Policy Implications:**

- Interventions designed to increase fruit and vegetable consumption among rural seniors should consider strategies to improve access to healthy food in places where food stores are far away (i.e. providing transportation to grocery stores may increase fruit and vegetable consumption).
- Educational interventions aimed at increasing fruit and vegetable consumption may need to include information on where to access fruits and vegetables outside of traditional grocery stores. For



example, canned and frozen fruits and vegetables may be available at convenience or dollar stores.

Story, M., K.M. Kaphingst, R. Robinson-O'Brien, and K. Glanz. (2008). "Creating Healthy Food and Eating Environments: Policy and Environmental Approaches." *Annual Review of Public Health*. 29: 253-272.

**Abstract:**

Review of environmental and policy approaches that could be used to improve health and nutrition outcomes. Includes an ecological framework that considers individual, social, physical and macrolevel environments that interact and impact eating behaviors. Focuses on specific food settings like home, child care, schools, work sites, retail food stores, restaurants while considering environmental/macro issues like food and agriculture policy and food marketing. Community gardening was just briefly mentioned, but article reviews an extensive list of food-related policies that can be used to improve community health and nutrition outcomes.

**Method/Findings:**

Proposes a conceptual framework for research about environmental and policy influences on nutrition and eating behaviors. The authors use a review of the literature to explore the role of environmental factors on healthy eating in each food setting, as well as review policy that may effectively promote healthy eating and nutrition.

School gardens are recommended as a way to improve the quality of foods in schools and introduce youth to nutritious foods at a young age. Community gardens are recommended as a strategy to improve access to fresh produce in low income neighborhoods.

**Outcomes/Results:**

- Article provides a framework for research that includes policy and environmental factors in the study of health and nutrition outcomes.

**Policy Implications:**

- School gardens and community gardens provide opportunities for children and communities to learn about and access healthy foods.
- Many local, state and federal policies relating to improving health and nutrition were reviewed in this article, though community gardening was only briefly mentioned.

Wakefield, S., F. Yeudall, C. Taron, J. Reynolds, and A. Skinner. (2007). "Growing Urban Health: Community Gardening in South-East Toronto." *Health Promotion International*. 22(2): 92-101.

**Abstract:**

This article describes results from an investigation on the health impacts of community gardening, using Toronto as a case study. Results suggest that gardeners perceived community gardens to provide health benefits like access to food, improved nutrition, increased physical activity, and improved mental health. Other benefits included social health and community cohesion. Benefits were set against a backdrop of concerns about land access and tenure, bureaucratic resistance, soil contamination and lack of awareness and understanding by community members and decision-makers.

**Method/Findings:**

The study was community-based research (CBR) using participant observation, focus groups (including 55 participants), and in-depth interviews (13 participants). Gardeners were very diverse: 79% were visible minorities compared with 43% for the city of Toronto as a whole. Gardeners expressed that gardening improved their health through better access to food, improved nutrition, increased physical activity and improved mental health (including improved self-esteem). In addition, many gardeners mentioned that gardening helps them save money on groceries, have access to culturally appropriate foods, and get out in nature. A second set of benefits relates to "community health"—gardeners felt connected to their community, and had a sense of pride from being able to share produce with their neighbors. The gardens improved the beauty of their neighborhoods and provided a space for social interaction.

Concerns include lack of long-term access to land for the gardens, and lack of concern about land access by local decision-makers. Gardeners were also concerned about soil contamination and air pollution, and wished for more resources like water, gardening tools, and seeds.

**Outcomes/Results:**

- Gardeners reported that community gardens improved their health through better access to food, improved nutrition, increased physical activity and improved mental health and self-esteem.
- Community gardens help gardeners save money on groceries.
- Community gardens improved access to culturally appropriate foods.
- Gardeners felt more connected to their community through their community gardening experience.
- Concerns include long-term access to land, soil contamination, air pollution, and need for more resources like water, gardening tools, and seeds.

**Policy Implications:**

- Local decision-makers can make a difference by expressing interest in community gardens and supporting gardening efforts.
- Community gardens are a relatively low-cost investment by local communities and provide tremendous benefits to the public, including improved health and improved social connections.
- Improving long-term, consistent access to land is one of the most important roles policymakers can play.

## Social Networks and Connectedness

**Topics Addressed:** Ten peer-reviewed articles were identified that considered the role of community gardens and community gardening on social networks, i.e., the set of relationships between individuals and roles played by individuals within a shared geographic context such as a neighborhood or community.

### Methods Used:

- Eight articles analyzed social networks within specific urban areas. Two articles were primarily theoretical, narrative explorations of social network analysis as a research and analytical tool for understanding the power of interventions, i.e., community gardens, to create social capital and strengthen social networks.
- Primary data collection techniques included cases studies, focus groups, and personal interviews based on both random and purposive sampling techniques as well as measures of gardening output, i.e., food.
- Roles surveyed included gardening participants as well as community garden organizers, planners, and managers.
- Secondary data used included public information related to property ownership and land use, census demographic data, and crime data.
- Several articles were based on analysis of journalistic and historical documents and artifacts.

### Policy Implications:

- Community gardens are associated with attachment to place.
- Community gardens can create social capital for an identified geographic area such as a neighborhood.
- General research on social networks and neighborhood connectedness finds that high levels of connection within a neighborhood have positive impacts, like reduced crime and housing stability, but may have negative impacts too, like residents lacking connection outside the community that might lead to better employment, schooling, and leisure opportunities.
- Participation in organizing community gardens is associated with increased advocacy and community-building skills that are transferable to other issues and forms of self- and community-efficacy.
- Community gardens can create or reveal conflict within a community about appropriate land use and public and private ownership.
- Community gardens can be used as a tool to increase contact and cultural awareness between diverse cultural groups sharing a geographic space.
- Community gardens can be used to increase awareness of food systems and food justice.

### **Gaps in the Research:**

- Validated, standardized instruments to measure social networks and social capital.
- Longitudinal analysis of impact of community gardening and the work of organizing community gardens on the sustainability of communities.
- Longitudinal analysis of impact of community gardening on the behavioral choices of individuals in regard to nutrition and healthy lifestyle choices.
- Longitudinal analysis of impact of participation in organizing community gardens on individuals in terms of community involvement and participation.

Baker, L.E. (2004). "Tending Cultural Landscapes and Food Citizenship in Toronto's Community Gardens." *The Geographical Review*. 94(3): 305-325.

**Abstract:**

Three garden case studies explore the issue of "food citizenship" as it relates to food security. Toronto has 110 community gardens, which are one strategy used within the Community Food Security movement (CFS movement) to regenerate the local food system and provide access to healthy, affordable food. The gardens reveal the role gardeners play in transforming urban spaces, the complex network of organizations working cooperatively and in partnership to implement these projects, and the way social and cultural pluralism are shaping the urban landscape.

**Method/Findings:**

Case studies were funded by FoodShare, an organization founded in 1985 in response to concerns about the growth in hunger and increase in food banks that took place in Canada in the recession in the early 1980s.

The case studies considered the following questions:

1. How much food is being grown in Toronto's community gardens?
2. What kind of crops are being grown?
3. How is cultural diversity linked to biodiversity?
4. Who participates in community gardening?
5. How are gardens started and maintained?
6. Are community gardeners participating in the wider Community Food Security movement?

The participatory research process involved gardeners in documenting their gardening activities and harvest. Key informant interviews and garden mapping were also used.

The study also explored community development taking place through the gardens. FoodShare wanted to engage immigrant gardeners in the broader CFS movement and used the research project as a way to connect gardeners to one another and the movement and as a way to explore their barriers to participation.

**Outcomes/Results:**

- The gardens reflect Toronto's thriving social and cultural pluralism and illustrate how groups, marginalized from the formal political process, can produce and contest space through the assertion of their cultural identity.
- The Francis Beavis garden, developed by Chinese seniors, utilizes companion planting, vertical gardening and succession planting based on traditional Chinese farming methods to produce more than five times the average production of mixed vegetables per square meter, and provide significant food resources to gardeners and their community.
  - Older Chinese gardeners provide formal and informal gardening education to other gardeners without farming experience.
  - The garden was started when a Chinese senior resident in the public housing complex saw a garden in at another building in the city. The resident worked with a complex network of

- NGOs and community groups to establish the garden, and strong partnerships formed with the Toronto Community Housing Corporation and the City of Toronto.
- Transportation and language (many of the educational and community activities are conducted in English) were identified as the two greatest barriers to garden participation.
  - Shamba is an African-centered community garden, part of a community organization called the Afri-Can FoodBasket
    - The garden focuses on African and Caribbean vegetables, gardeners and volunteers, and experiments with growing locally-adapted tropical crops.
    - African immigrant without gardening experience were volunteering at Shamba to gain Canadian volunteer experience, meet other new Canadians and obtain access to fresh food thorough the Afri-Can FoodBasket.
    - The garden stresses the importance of culturally appropriate food in diverse cities like Toronto.
  - Riverside Community Garden is located near the Riverside Apartments, owned by a large building-management company in one of the fastest-growing, densely populated areas, with high levels of immigrants and high unemployment. The neighborhood has very few social services and amenities like grocery stores, so residents travel far to shop for food and other basic necessities.
    - The garden started in 1999 when NGO Greenest City and the Apartment management company came together to establish the garden.
    - Residents got involved, and transformed the once-bleak urban landscape into a garden that reflects the cultural diversity of the residents.
    - Riverside residents have reported that the garden helped develop a sense of community in the apartment complex.

**Policy Implications:**

- A Food Policy Council (in the case of this study the Toronto Food Policy Council) was the catalyst for a dynamic relationship between Community Food Security organizations and the municipality of Toronto. Community Food Security organizations use community gardening as one strategy for combatting food insecurity, along with alternative food networks, improved access to food, and encouragement for people to “delink” from the global corporate food system.
- The gardens offer an opportunity to develop a sense of “food citizenship” including food system localization and the values of caring for the community and the environment.



Bicho, A.N. (1996). "The Simple Power of Multicultural Community Gardening." *Community Greening Review*. 6: 2-11.

**Abstract:**

Community gardens promote multiculturalism by fostering and maintaining cultural pride and heritage while also encouraging community sharing.

**Method/Findings:**

This article uses journalistic methods to describe some of the benefits of community gardening in multicultural neighborhoods, including providing a place for recent immigrants to express their cultural heritage by planting seeds from their home communities. It also reports on a "multiplier effects" of community gardening, including outcomes like decreased crime and vandalism, improved mental health, increased conflict resolution skills, and increased interactions between generations and cultures. The article also reports that gardens serve as community hubs.

**Outcomes/Results:**

Tips to improve cross-cultural communications

- Post a map of the garden site with photos and names of gardeners in a private secure place, such as the tool shed. This facilitates communication by matching a face and name to a specific plot.
- Maximize the value of translation services. Any time translators visit the garden, dictate garden news to them for immediate translation and then post this information on a central bulletin board or in appropriate community publications.
- Translate instructions and rules into written word since providing clear information facilitates learning.
- Simple, hands-on oriented workshops are best, especially for people with few reading skills
- Embrace and work with cultural differences.

**Policy Implications:**

- Multicultural community gardens can be a space for people from different cultures and backgrounds to come together, learn from one another, and express and celebrate their cultural heritage.
- Gardens may result in decreased crime and vandalism.
- Gardening improves mental health.
- Community gardens may increase gardener's conflict resolution skills, as they negotiate garden issues like water, plot allocation, pest control, etc.

Comstock, N., L.M. Dickinson, J.A. Marshall, M.J. Soobader, M.S. Turbin, M. Buchenau, and J. Litt. (2010). "Neighborhood Attachment and Its Correlates: Exploring Neighborhood Conditions, Collective Efficacy, and Gardening." *Journal of Environmental Psychology*. 30: 435-442.

**Abstract:**

Neighborhood attachment relates to one's emotional connection to physical and social environments. This study examines the relationship between objective and perceived neighborhood conditions (e.g., crime, physical incivilities, sense of safety), social processes (e.g., collective efficacy) and recreational gardening and neighborhood attachment. Results indicate length of residency, collective efficacy, and home and community garden participation are associated with neighborhood attachment.

**Method/Findings:**

Quantitative methods (hierarchical linear modeling) used to analyze data from a population-based survey (face to face interviews). Other data sources include neighborhood audits, and crime and demographic data for neighborhoods in Denver. Same data set as Litt et. al. 2011, included in this review. Community and home gardening were associated with higher levels of neighborhood attachment when compared to people who did not garden. While homeownership is significantly associated with neighborhood attachment in most of the statistical models described, it is no longer significant in the presence of collective efficacy and community garden participation.

**Outcomes/Results:**

- Long-term residents have higher levels of neighborhood attachment.
- Community and home gardeners have higher levels of neighborhood attachment than their non-gardening neighbors.
- Homeowners generally have higher levels of neighborhood attachment, although involvement by renters in neighborhood activities can decrease the difference between renters and owners.
- To the extent that renters can become involved in meaningful neighborhood activities like gardening, it strengthens their sense of collective efficacy, and may lead to higher levels of neighborhood attachment.

**Policy Implications:**

- As environmental and policy strategies are increasingly being used to increase physical activity and improve diet, understanding the social processes and meanings people attach to neighborhood places may be critical to explaining residents' willingness to utilize these resources.
- Community gardens are an environmental strategy that increase physical activity and improve access to healthy foods.
- Community gardens require active engagement and support formal and informal social interactions with family, friends, and neighbors. As such, they can be important tools to improve neighborhood attachment.

Glover, T.D. (2010). "Social Capital in the Lived Experiences of Community Gardeners." *Leisure Sciences*. 26: 143-162.

**Abstract:**

This article explores a community garden as a social context where social capital is produced, accessed, and used by a social network of community gardeners. Social capital can be both a benefit and a cost, depending on the position a social actor occupies within the social network.

**Method/Findings:**

The author uses narrative inquiry to explore the strength of ties among gardeners and its implications for access to the collective resources within the gardening network, and compared the social capital outcomes for core garden members with non-core garden members/neighborhood residents. The garden used in the study was developed specifically to address crime in the neighborhood. This study is unique because it studies the distribution of social capital within a social network. Previous work focuses on the production and maintenance of social capital.

**Outcomes/Results:**

- Some residents outside of the core group of garden organizers were cynical about the organizers' motives, and viewed the organizers as an exclusive group of residents committed to their own ends.
  - One of the respondents felt that the community garden effort had the potential to foster discrimination against those who failed to fit the garden organizers' image of an ideal neighbor.
- In this study, the community garden was both a consequence (the end product of a persistent network of individuals who formed a garden network) and a source (the garden strengthened social ties and facilitated further connections among neighbors) of social capital.
- Social groups appeared to have unequal access to the resources embedded in the garden network—in this case, the core group of gardeners had greater access to the garden and the social capital created through the garden process.

**Policy Implications:**

- Social capital can be both beneficial and costly, depending on the social actor's position within a functioning social network.
- Social groups (often organized by race and socio-economic status) have different levels of access to social capital because of their advantaged or disadvantaged positions in the neighborhood's social structure.
- Different levels of access can perpetuate or increase inequalities in the neighborhood by continuing the differences between social groups in their access to information, influence and solidarity.
- In the case of the garden studied, African American neighbors had less access to the social capital generated by the garden because of tense relationships with police and fear of retribution from other African Americans who were involved in the criminal activity the garden group was trying to

displace.

Glover, T.D., D.C. Parry, and K.J. Shinew. (2005). "Building Relationships, Accessing Resources: Mobilizing Social Capital in Community Garden Contexts." *Journal of Leisure Research*. 37(4): 450-474.

**Abstract:**

This study focuses on how community garden groups leverage resources (financial, connections, knowledge, time and skill) from within the group and outside the group, based on research with Gateway Greening gardeners.

**Method/Findings:**

The study used three methods: in-depth phone interviews with community gardeners, a focus group with 3 Gateway Greening staff members, and gardener interviews conducted during a garden tour hosted by Gateway Greening, which focused on successful and sustainable gardens. Thirteen gardeners and 3 staff participated in the study. There was a strong belief among gardeners that community gardens required a collective effort to be successful, and five categories of findings were found relating to social ties:

1. Sociability
2. Recruiting outside the garden network
3. Acquiring resources through strong social ties
4. Acquiring resources through weak social ties
5. Friendships as sources for resource acquisition.

**Outcomes/Results:**

- Sociability (and fun!) in the gardens was the key to attracting participants and sustaining their involvement.
- Recruiting outside the garden network: Garden leaders used door-to-door canvassing or relying on neighbors' sense of obligation to expand the size of the garden network.
- Acquiring resources through strong social ties: gardeners relied on neighbors they knew well to access water, tools, and labor for special projects.
- Acquiring resources through weak social ties: gardeners would reach beyond their social networks to get some resources for the garden. For example, one of the gardeners used a weak social tie with the mayor to access electricians, plumbers and carpenters for garden projects.
- Friendships as sources for resource acquisition: friendships started through the garden became important for gardeners outside of the garden context (bridging social capital developing into bonding social capital).
- Leisure is a facilitator for the development of social ties and networks, not a form of social capital.

**Policy Implications:**

Leisure activities, like community gardening, are particularly important in building strong ties (bonding social capital).

Hale, J., C. Knapp, L. Bardwell, M. Buchenau, J. Marshall, F. Sancar, and J.S. Litt. (2011). "Connecting Food Environments and Health through the Relational Nature of Aesthetics: Gaining Insight through the Community Gardening Experience." *Social Science and Medicine*. 72: 1853-1863.

**Abstract:**

At the neighborhood scale, community gardens and gardener experience provides an opportunity to learn about a potentially healthy and productive landscape within the urban food environment. This study explores gardeners' tactile, emotional, and value-driven responses to the gardening experience and how these responses influence health at various ecological levels. The study finds that gardeners' aesthetic experiences generate meaning that encourages further engagement with activities that may lead to positive health outcomes. The physical and social qualities of garden participation awaken the senses and stimulate a range of responses that influence interpersonal processes (learning, affirming, expressive experiences) and social relationships that are supportive of positive health-related behaviors and overall health.

**Method/Findings:**

Key informant interviews (67 individuals from 28 gardens in Denver) were used to explore how 3 domains of interest--social structures/networks, social and psychological processes, and the physical environment—shaped perceptions, behaviors and health of community gardeners. The researchers used a qualitative, inductive analysis approach.

**Outcomes/Results:**

- Community gardens have distinct holistic qualities that can physically and socially connect gardeners to the world in ways that encourage healthy lifestyles.
- Gardens can become a place for people to create emotional connections with other people AND the garden environment/the environment in general.
- Learning about biophysical and social processes in a community gardening context can help gardeners have a holistic understanding of the biophysical and social processes that affect their own personal health.
- The gardeners reported that the community garden was a place where they could "escape" the urban environment, spend time in a quieter place, and enjoy better air quality and cooler temperatures.
- Gardeners reported that gardening connected them with their cultural roots, and to pleasant experiences with food production that they had as children.
- The gardeners reported that community gardens and their public setting provided benefits not generated by backyard gardens—there was a sense of pride in sharing the garden's beauty with the neighborhood, and non-gardeners also benefited from the community gardens. Social connections were created between gardeners and other neighbors.
- Gardeners reported that their children more readily ate vegetables from their garden than from the grocery store, and that the vegetables from their gardens were more flavorful, fresh and desirable than other produce.

**Outcomes/Results (con't/):**

- Gardeners reported that their gardens provided an opportunity for exercise, and that they filled a therapeutic or spiritual role for them.

**Policy Implications:**

- Community designers and planners can “design for health” by considering how the connections between people and place can be used to improve health behaviors. For example, neighborhoods can be designed (or redesigned) with an eye for creating a built environment that supports a healthy lifestyle (i.e. sidewalks, gardens, spaces to play).
- Organizations facilitating the development of community gardens and other neighborhood-level changes around active living and healthy eating must balance physical interventions with strategies that empower and engage residents.

Irvine, S., L. Johnson and K. Peters. (1999). "Community Gardens and Sustainable Land Use Planning: A Case-Study of the Alex Wilson Community Garden." *Local Environment*. 4(1): 33-46.

**Abstract:**

This case-study of the Alex Wilson Community Garden in Toronto explores how community gardening and ecological restoration can be linked as a means of nurturing relationships between people, communities and the landscape that are social, economic and ecological. The garden aims to link the needs of a diverse urban community with the natural environment in a way to answer the needs of the community and restore the natural environment. The planning process for the garden was participatory, including friends and colleagues of Alex Wilson, local residents and city planning officials and used planning tools like a conservation easement. The garden addresses emerging issues associated with globalization and large cities by providing food production opportunities for local residents, including a low-income housing complex.

**Method/Findings:**

The article starts with a narrative on the history of community gardening and urban agriculture in developed and developing countries. The Alex Wilson Community Garden has a unique history—friends and colleagues of Alex Wilson (AWCG committee) were looking for land to develop into a garden in his honor. They worked with the landowner to negotiate with the City of Toronto to donate the land for community use. The landowner was an industrial design company (Studio Innova) and launched a competition to solicit designs for the garden, incorporating both community gardening and naturalized areas. AWCG and Studio Innova worked with the Toronto Parks and Recreation department, which was willing to explore new and innovative planning methods and tools in making the garden a practical example of sustainable development planning.

**Outcomes/Results:**

- Planning for sustainable development should include:
  - Equal factoring of economic, community and environmental conditions into the design and operation of the garden.
  - Fully engaging relevant interest groups and users in the planning and development of the garden.
  - Considering long-term trends and constraints and focusing on underlying systemic problems connected with the planning and operation of the garden.
- The garden responds to the needs of local low-income residents for food production AND responds to Alex Wilson's concern with creating meaningful urban spaces through ecological restoration and landscape design, and in promoting an understanding of the natural history of the landscape.
- The AWCG committee worked to involve the neighbors in the development of the garden, and clients at neighborhood social service agencies and low-income housing units were given first opportunity for garden plots.
- AWCG used a conservation easement to secure long-term access to the land.



**Policy Implications:**

- Local governments can use tools like conservation easements in innovative ways to secure long-term land access for community gardens.
- The Alex Wilson Community Garden provides a model of public, private and non-profit sectors working together to establish a community garden and nature area.

Kingsley, J.Y. and M. Townsend. (2006). "Dig In' to Social Capital: Community Gardens as Mechanisms for Growing Urban Social Connectedness." *Urban Policy and Research*. 24(4): 525-537.

**Abstract:**

This study examines whether a community garden provides opportunities for enhancing social capital. The community garden is used as a proxy for "natural amenity." The study finds that the 'Dig In' community garden increases social cohesion, social support, and social connections. However, at least in the early stages of development, these benefits do not necessarily extend beyond the garden setting.

**Method/Findings:**

Qualitative methods included face-to-face interviews with ten key informants involved in the Dig In garden. Data were analyzed using four steps: mind maps to identify major themes, coding of individual interviews to identify recurring themes, identification of sub-themes, and double-checking of coding by additional researcher. The study found that Dig In membership was associated with increased levels of social capital as defined by Putnam (*Bowling Alone*).

**Outcomes/Results:**

- The members of the Dig In community garden enjoyed the following benefits:
  - Increased social cohesion (the sharing of values enabling identification of common aims and the sharing of codes of behavior governing relationships)
  - Social support (having people to turn to in times of crisis)
  - Social connections (the development of social bonds and networks)
- The benefits did not seem to extend beyond the daily, minor exchanges of garden-related work (i.e. the benefits did not extend to networks about child care, job referral, advice and labor trading outside of the garden context).
- In the case of Dig In, the members shared common socio-economic characteristics (white, middle class) and lacked diversity.
  - Members of the garden commented that they didn't understand why people from different cultures didn't become members, though it was observed that the gardens were only advertised in English-language local papers.
- Members of Dig In indicated that the garden was a place where social networks could be developed, and that the garden offered a space to communicate, cooperate, socialize and gain support from others in the area.
- Members of Dig In observed that they felt isolated from their community before they were involved in the garden.
- Time may be a key factor influencing both the diversity of garden membership (bridging social capital) and the depth of social capital (bonding).

**Policy Implications:**

- As Glover points out in another article, “community gardens are often more about the community than they are about the gardening”
- The social capital benefits of community gardening may take a long time to develop, but offer great benefits to garden members, including increased social cohesion, social support and social connections.
- Care should be taken when establishing a garden that gardeners come from a wide variety of backgrounds and represent the diversity of the community
  - To increase diversity, gardens could be advertised through culturally appropriate venues, like newsletters for specific groups in the community, through community radio programs and in alternate language publications/posters/fliers/radio programs.
  - The greatest social benefits are realized in gardens where the diversity of the community is reflected in the garden membership.

Litt, J.S., M. Soobader, M. Turbin, J.W. Hale, M. Buchenau, and J.A. Marshall. (2011). "The Influence of Social Involvement, Neighborhood Aesthetics, and Community Garden Participation on Fruit and Vegetable Consumption." *American Journal of Public Health*. 101(8): 1466-1473.

**Abstract:**

This study considers the relationship between an urban adult population's fruit and vegetable consumption and several selected social and psychological processes, beneficial aesthetic experiences, and garden participation. Community gardeners reported higher intake of fruits and vegetables than home gardeners and non-gardeners. Social involvement was positively correlated with fruit and vegetable consumption, after adjusting for education, physical activity, and neighborhood aesthetics. Perceived neighborhood aesthetics were also positively correlated with fruit and vegetable consumption.

**Method/Findings:**

Population-based survey representing 436 residents across 58 block groups in Denver, Colorado, from 2006-2007. Data were collected through a 45-minute, face-to-face survey at or near homes of sampled English- or Spanish-speaking adults. Fruit and vegetable consumption measured with 6-item Behavioral Risk Factor Surveillance System (BRFSS). Physical activity measured with the Community Healthy Activities Model Program for Seniors (CHAMPS) instrument. Multilevel statistical models were used to evaluate survey data.

Neighborhood aesthetics, social involvement, and community garden participation were significantly associated with fruit and vegetable intake. Community gardeners consumed fruits and vegetables 5.7 times per day, compared with home gardeners (4.6 times per day) and non-gardeners (3.9 times per day). More than half of community gardeners (56%) met national recommendations to consume 5 fruits and vegetables per day, compared with 37% of home gardeners and 25% of non-gardeners.

**Outcomes/Results:**

- Community gardeners are more likely than home gardeners and non-gardeners to eat the recommended servings of fruits and vegetables.
- The array of qualities intrinsic to community gardens makes them a unique environmental and social intervention that can narrow the divide between people and places where food is grown and increase local opportunities to eat better.

**Policy Implications:**

Land planners, health officials, and policymakers should aim to do the following:

- Weave community gardens throughout the fabric of communities.
- Encourage programming that connects community gardens to other nodes in the local food system, including food banks, farmers' markets, and local chef networks.
- Consider community gardens as a primary and permanent open space option as part of master planning efforts, on a par with valued elements such as playgrounds, bike trails and community plazas.
- Include community gardens in land-planning processes rather than as an afterthought in urban development projects.
- Establish zoning codes that protect gardens, while liberally allowing them in appropriate zone codes and identifying them as a use by right.
- Consider gardens as a viable use across institutionalized properties where gardens become part of the permanent programming of a site, such as schools and affordable housing developments.

Schmelzkopf, K. (2002). "Incommensurability, Land Use, and the Right to Space: Community Gardens in New York City." *Urban Geography*. 23(4): 323-343.

**Abstract:**

This article explores the conflict between advocates for community gardens on city-owned land and the New York City administration, specifically under Mayor Giuliani, who argued that the removal of gardens would lead to an increase in affordable and market-rate housing, and an expansion in the city tax base through the sale of properties and housing. Beyond a conflict between green space and affordable housing, the issue can be framed in terms of scale and level of market orientation. Do community gardens make sense at the neighborhood level (due to their use value or public value or nonmonetary value), and does this put them in conflict with land use planning at the city level, which often favors exchange value or market value over welfare, service and collective consumption? Who ultimately has the right to public space and who decides how to express the public will?

**Method/Findings:**

This article uses historical analysis of community gardens in NYC to examine the conflict between community gardening and housing, between moral rights and legal rights, and between market-driven and community-driven perceptions of public space. The author argues that housing became aligned with the dominant paradigm (which emphasizes economic/market value) while community gardening was aligned with public value/welfare/use value. Giuliani's use of the dominant, market-driven paradigm set up a system where gardens would be un-valued compared to housing.

**Outcomes/Results:**

- Giuliani's administration stressed the economic value of the land where the gardens were located, and argued that gardens were standing in the way of affordable housing, robbing the city of much-needed market rate revenues and taxes and that the city was legally entitled to sell the garden plots to whomever they deemed appropriate (because the city owned them).
- Community garden advocates argued that the garden benefits included food production, reduced crime, a cleaner environment and social services. These benefits were difficult to quantify in economic terms.

**Policy Implications:**

- The potential for conflict exists between community gardening and other land uses, both public and private land uses.
- City/county and other public officials and community garden advocates should be aware of different values and how they can create conflict around the use of public land for neighborhood community gardens.

## Community Development

**Topics Addressed:** Fifteen articles were identified that considered the role of community gardens and community gardening in the context of community development practice, i.e., the intentional use of community gardening as a tool to improve the quality and sustainability of a defined, local community. Many of the publications in this section are from practitioners, like Extension, public health and community organizations, rather than scholars. This research relied extensively on a single frame, Putnam's work of social capital.

Much of the community gardening literature focused on social justice and the politics of land use comes from other countries, including both developed and developing nations. Among developing nations, community gardens are seen as a means to increase food security and combat climate change. In developed regions, community gardens are often incorporating immigrants and refugees with an agricultural background from developing countries.

### Methods Used:

- Five of these articles describe the impact of community gardening outside the United States. Two articles were primarily theoretical, narrative explorations of community gardening and community development theory and practice. The remainder of articles analyzed community gardens and community development programming in the United States.
- Primary data collection techniques included cases studies, focus groups, and personal interviews based on both random and purposive sampling techniques as well as artifact analysis.
- Secondary data used included public information related to property ownership and land use, census demographic data, historical documents, and crime data.
- Roles surveyed included gardening participants as well as community garden organizers, planners, and managers.

### Policy Implications:

- Community gardens can serve as a catalyst for other forms of community integration and action.
- Land use planning and policymaking should address and promote green space for community gardening and food production.
- Community garden space has the potential to be rolled into other common public green space purposes such as parks and other public campuses and properties.
- Community gardens can have an educational function related to environmental awareness and health-related interests.
- Community gardens can be used as a tool for positively integrating local government programs and staff into neighborhoods and communities at perceived political odds with local government.
- Community gardens can serve as a tool to teach and experience democratic, self-governance.

- To be sustainable, community gardens require on-going financial and organizational support that are typically provided through public support or private, not-for-profit organizations.

### **Gaps in the Research:**

- Validated, standardized instruments to measure impact of gardening on community sustainability and development.
- Longitudinal analysis of impact of community gardening and the work of organizing community gardens on the sustainability of communities.
- Cross-cultural analysis of impact of community gardens on community involvement and participation.
- Exploration of the relationship between community gardening, local food production, and climate change.
- The community development literature relies heavily on a single theoretical construct (Putnam), and needs additional empirical research.



Abegunde, A.A. (2011). "Community Approach to Growing Greener Cities Through Self-Help Street Horticultural Gardens: A Case Study of Lagos, Nigeria." *British Journal of Environment and Climate Change*. 1 (3): 103-117.

**Abstract:**

This study focuses on community gardens (called "street gardens") in road setbacks and vacant lots in the large urban center of Lagos, Nigeria. The theoretical framework comes from the urban planning literature, with a focus on urban greening and self-help initiatives in the context of global climate change and poor governance by leadership in many African nations. "Self-help" initiatives are defined as activities undertaken by private individuals and non-profit organizations, outside of government. The gardens are found to have socio-ecological (very interesting spin on socio-economic) and physical benefits to urban populations. The study is not particularly well-done (especially in terms of motivating factors for street gardeners), but has an interesting perspective.

**Method/Findings:**

Seventy-five street gardens were located throughout Lagos, and a survey was completed with 63 garden manager/owners measuring socio-economic characteristics, plot size, economic value of the gardens, garden contributions to community development, sources and cost of inputs, and value of sales from the gardens. Demographically, most the respondents were male (93.7%) and relatively well educated (85.7% had at least some formal education and 27% having some formal education beyond secondary school). Most (63.6%) earned more than US\$3.00/day. A good number of the gardeners had planted trees (76.2%), hedges and shrubs (47.6%), and flowering plants (65.1%) in public places to benefit the general population in the area and combat global warming. The survey asked questions about motivating factors for street gardeners, with the highest motivating factor (2.55/5) being individual concern for the decline in green spaces as the city grows in population. The second highest (2.32/5) was concern about global warming. On a scale of 5, neither of these shows strong motivation, but the author of the study, and may suggest that there are other motivating factors other than those relating to green space (which were the only ones included in the study).

**Outcomes/Results:**

- The author indicates that international efforts and public education about green space development in urban areas have been effective in reaching residents in developing countries.
- Street gardeners ranked the social value of urban greening higher than economic value.
- Street gardeners found a way to green their communities despite a lack of available land through purchase or rental. Gardens were located in road set-backs.

**Policy Implications:**

- Individuals can play a role in promoting urban green spaces, even without government support.
- Urban planners should include green space in their development plans, and can encourage gardening and green space in informal locations, such as road set-backs.

Cattell, V., N. Dines, W. Gesler and S. Curtis. (2008). "Mingling, Observing, and Lingerin: Everyday Public Spaces and their Implications for Well-Being and Social Relations." *Health and Place*. 14: 544-561.

**Abstract:**

This paper explores the relationship between public spaces and well-being and social relations. It demonstrates that ordinary spaces are a significant resource for both individuals and communities, and are not reducible to natural or aesthetic criteria. Social interaction in public spaces can provide relief from daily routines, sustenance for people's sense of community, opportunities for sustaining bonding ties or making bridges, and can influence tolerance and improve mental health. They can also be spaces of exclusion, where tight bonds are developed between homogenous groups. Different users of public spaces attain a sense of well-being for different reasons.

**Method/Findings:**

Literature review and qualitative research in a multi-ethnic area of East London (including recent refugees and migrants from India, Pakistan, Bangladesh, Africa, and the Caribbean) were conducted. A flexible qualitative research approach was used, including a scoping exercise, discussion groups, observation of public space sites (including shopping streets, parks, and markets), and in-depth interviews. Interviewees reported that they needed a variety of public spaces to meet their needs—both social interaction and spaces to be by themselves.

**Outcomes/Results:**

- Public spaces possess subjective meanings that accumulate over time, and contribute to meeting needs for security, identity, and a sense of place.
- People often have complex and contradictory relationships with public spaces, and need a variety of public spaces to meet their needs, from shopping venues to green space.
- Public open spaces provide an arena to experience and negotiate ethnic diversity, and have the potential to develop inter-ethnic understanding.

**Policy Implications:**

- Everyday spaces, like shopping areas or community gardens, play an important role in people's everyday lives. The economic focus of development activities should not overshadow the social and therapeutic value of mundane spaces or ignore people's needs for a degree of constancy in their physical and social environment.
- Policymakers need to strike a balance between providing opportunities for strengthening homogenous social ties (bonding social capital) and encouraging diversity and tolerance of outsiders (bridging social capital).
- Open spaces that provide opportunities for physical activity and social interaction and/or increase access to healthy foods can support healthy lifestyle choices. Community gardens would fit into this type of open space.

Comstock, N., L.M. Dickinson, J.A. Marshall, M.J. Soobader, M.S. Turbin, M. Buchenau, and J. Litt. (2010). "Neighborhood Attachment and Its Correlates: Exploring Neighborhood Conditions, Collective Efficacy, and Gardening." *Journal of Environmental Psychology*. 30: 435-442.

**Abstract:**

Neighborhood attachment relates to one's emotional connection to physical and social environments. This study examines the relationship between objective and perceived neighborhood conditions (e.g., crime, physical incivilities, sense of safety), social processes (e.g., collective efficacy) and recreational gardening and neighborhood attachment. Results indicate length of residency, collective efficacy, and home and community garden participation are associated with neighborhood attachment.

**Method/Findings:**

Quantitative methods (hierarchical linear modeling) used to analyze data from a population-based survey (face to face interviews). Other data sources include neighborhood audits, and crime and demographic data for neighborhoods in Denver. Same data set as Litt et. al. 2011, included in this review. Community and home gardening were associated with higher levels of neighborhood attachment when compared to people who did not garden. While homeownership is significantly associated with neighborhood attachment in most of the statistical models described, it is no longer significant in the presence of collective efficacy and community garden participation.

**Outcomes/Results:**

- Long-term residents have higher levels of neighborhood attachment.
- Community and home gardeners have higher levels of neighborhood attachment than their non-gardening neighbors.
- Homeowners generally have higher levels of neighborhood attachment, although involvement by renters in neighborhood activities can decrease the difference between renters and owners.
- To the extent that renters can become involved in meaningful neighborhood activities like gardening, it strengthens their sense of collective efficacy, and may lead to higher levels of neighborhood attachment.

**Policy Implications:**

- As environmental and policy strategies are increasingly being used to increase physical activity and improve diet, understanding the social processes and meanings people attach to neighborhood places may be critical to explaining residents' willingness to utilize these resources.
- Community gardens are an environmental strategy that increase physical activity and improve access to healthy foods.
- Community gardens require active engagement and support formal and informal social interactions with family, friends, and neighbors. As such, they can be important tools to improve neighborhood attachment.

Firth, C., D. Maye, and D. Pearson. (2011). "Developing 'Community' in Community Gardens." *Local Environment*. 16(6): 555-568.

**Abstract:**

Two case studies explore how community gardens help to build cohesion and vitality in a community, contributing to the generation of bonding, bridging and linking social capital. The literature review critiques the general agreement that community gardens increase social cohesion, support networking and enhance levels of social capital, by pointing to studies where benefits of a garden accrued to a core group of mainly white people while others felt left out (Glover 2004) or where gardens lacked ethnic and socio-economic diversity. This article focuses on Arkwright Meadows Community Garden, an inner city garden initiated by community members with the purpose of community development; and Dig In Community Garden, initiated by health professionals in a suburban, formerly industrial town with the purpose of improving health and the environment.

**Method/Findings:**

A case study method was used to contrast two types of community gardening projects to learn more about the impact of community gardening on social capital. Qualitative methods were chosen to address a gap in social capital research, which tends to focus on quantitative, survey-based work.

**Outcomes/Results:**

- Both gardens contribute towards and benefits from the generation of social capital.
- Community gardens are a consequence and a source of social capital.
- Community Gardens generate social capital in 4 main ways:
  1. Bringing people together with a common purpose to participate in a joint activity or venture (bonding social capital).
  2. Creating a meeting place or "third space" outside of work and home, enabling people to interact and contribute to the creation of community (bonding social capital).
  3. Providing activities like growing, cooking and eating of food that are sociable and allow people of all ages, ethnicities and socio-economic backgrounds to interact informally (bridging social capital).
  4. Building links with outside institutions and policymakers (linking social capital).

**Policy Implications:**

- Different types of community are formed in and around community gardens.
  - Place-based gardens are more likely to create social capital that is shared with the local community than “interest-based” gardens (such as those started by outsiders to encourage health and other benefits).
  - The purpose of the community garden will determine the type of community formed, including combinations of local community development, environmental awareness, food access and/or health-related interests.
- If the core aim of the community garden is to promote community development, it is essential that the community garden is initiated and managed by individuals from within the local community.
  - Any external support needs to be on a partnership bases and must recognize the significant contribution volunteers make to such schemes.
- Community gardens should be encouraged to network together to share best practice.

Glover, T.D., K.J. Shinew, and D.C. Parry. (2005). "Association, Sociability, and Civic Culture: The Democratic Effect of Community Gardening." *Leisure Sciences*. 25: 75-92.

**Abstract:**

The purpose of this study was to compare the democratic values of community garden leaders and non-leaders with the intent to understand the democratic effects of participation in community gardening. The study was conducted in St. Louis, and supports existing research findings that the intensity of membership in voluntary associations is important to the development of democratic citizens. Moreover, the findings reveal the salience of context, namely a leisure-oriented context, in instilling democratic values. Time spent in a community garden was a stronger, albeit weak, predictor of political citizenship orientations than was time spent talking and visiting with other community gardeners, which implied the significance of the garden space and its public sphere effects.

**Method/Findings:**

A telephone survey was conducted with 191 community gardeners (91 leaders and 100 gardeners) randomly selected from Gateway Greening's gardener database, stratified by zip code to ensure city-wide representation. Garden leaders and gardeners were compared on a variety of variables to determine if there was a difference between the two groups in social interaction and level of political citizenship orientation

**Outcomes/Results:**

- Gardeners and leaders did not vary significantly in their intent to socialize with other people, though garden leaders were significantly more likely than gardeners to actually talk or visit with other community gardeners in a typical week.
  1. Garden leaders may consider community gardening to be a high-investment activity, and have greater social responsibility, commitment and obligation to their gardens than non-leader gardeners.
    - Garden leaders may develop greater levels of social capital through the community garden than non-leading gardeners, both in terms of the number of relationships/size of the social network generated through their participation (bridging social capital) AND the quality or depth of those relationships (bonding social capital).
  2. Community gardens function as social spaces in which people build relationships.
- During the gardening season, leaders spent significantly more time in their community gardens than gardeners.
- Leaders had stronger democratic values than gardeners.
- The study shows that the context of social interaction (in this case community gardens) matters. Social interactions within the context of community gardens (and, authors assert, other leisure environments) are more salient than general social contact when looking at relationships to civic orientation.

**Policy Implications:**

- Community gardens are mediums through which democratic values are practiced and reproduced.
- Because community gardeners that participate in their gardens with a higher level of intensity (e.g. garden leaders) demonstrate greater levels of democratic values than participants who are just gardening, efforts to cultivate new leadership in community gardens could result in citizens who are better prepared to be more actively engaged in their community.

Hill, A. (2011). "A Helping Hand and Many Green Thumbs: Local Government, Citizens and the Growth of a Community-Based Food Economy." *Local Environment*. 16 (6): 539-553.

**Abstract:**

This article examines a municipality-wide communal gardening project in Mindanao, Philippines, which aims to feed malnourished children in schools, support poor families in self-provisioning, and generating income and employment opportunities for volunteer gardeners. The article examines economic decision making by various actors in the program in relation to individual versus community orientations. The Opol Food Project started as a small food initiative in one neighborhood and became a successful municipality-wide initiative with little money and little help from outside agencies.

**Method/Findings:**

Open-ended qualitative interviews were conducted with key Opol Food Project actors including a municipal agriculturalist, zone leaders, communal gardeners and the outgoing and incoming mayors of Opol, Mindanao, Philippines. Local government officials in Opol adopt a "helping-hand" approach to developing this successful sustainable food project, while other towns/institutions have taken an "arm's length" approach.

The communal gardens have an interesting structure: 3-4 gardeners work 4 days per week growing vegetables and herbs, and sometimes manage livestock or fish ponds. Household volunteers (average=15 people) assist the gardeners when they attend a weekly garden working bee held in conjunction with the neighborhood meeting. Household volunteers (aka communal gardeners) are encouraged to take as much produce as they wish, mostly for household consumption but sometimes for sale to supplement household income. Additional food is sold door-to-door or through street vending, and is gifted to the local elementary school. Each garden supplies the school feeding program for 1 week, once per month.

**Outcomes/Results:**

- Four aspects of the "helping-hand" approach enabled the neighborhood project to be scaled up to a city-wide program:
  1. A catalyst and enabler who pushes things along
  2. Emphasis on community mobilization and citizen empowerment
  3. Emphasis on utilizing resources and assets already in the community
  4. Understanding how ideas travel and lead to new practice.
    - Models developed that can be adopted by new places
    - Word of mouth from trusted people
    - Research, education, training programs
    - Creative arts and digital media
- Individual-focused perspectives can be in conflict with community-focused perspectives, and conflicts can emerge between stakeholders if they are approaching a community gardening project from differing perspectives.



**Outcomes/Results (con't.):**

- Cultivating civic awareness/community orientation through training community leaders and skilling and remunerating volunteers was a key strategy used by the mayor to promote the communal gardening/school food programs.
- The Opol story demonstrates that poor and economically marginalized citizens can work up their own ethics to create and re-create communal gardening practice that meets both household and community needs, and build a community economy.

**Policy Implications:**

- Local governments plays an important role in cultivating a community orientation, and communal/community gardens are a tool that can be used to encourage community-identity.
- A catalyst or enabler is a key component to successful community gardening programs. This catalyst can come through government, neighborhood associations or interested gardeners in the community.

Kingsley, J.Y. and M. Townsend. (2006). "Dig In' to Social Capital: Community Gardens as Mechanisms for Growing Urban Social Connectedness." *Urban Policy and Research*. 24(4): 525-537.

**Abstract:**

This study examines whether a community garden provides opportunities for enhancing social capital. The community garden is used as a proxy for "natural amenity." The study finds that the 'Dig In' community garden increases social cohesion, social support, and social connections. However, at least in the early stages of development, these benefits do not necessarily extend beyond the garden setting.

**Method/Findings:**

Qualitative methods included face-to-face interviews with ten key informants involved in the Dig In garden. Data were analyzed using four steps: mind maps to identify major themes, coding of individual interviews to identify recurring themes, identification of sub-themes, and double-checking of coding by additional researcher. The study found that Dig In membership was associated with increased levels of social capital as defined by Putnam (*Bowling Alone*).

**Outcomes/Results:**

- The members of the Dig In community garden enjoyed the following benefits:
  - Increased social cohesion (the sharing of values enabling identification of common aims and the sharing of codes of behavior governing relationships)
  - Social support (having people to turn to in times of crisis)
  - Social connections (the development of social bonds and networks)
- The benefits did not seem to extend beyond the daily, minor exchanges of garden-related work (i.e. the benefits did not extend to networks about child care, job referral, advice and labor trading outside of the garden context).
- In the case of Dig In, the members shared common socio-economic characteristics (white, middle class) and lacked diversity.
  - Members of the garden commented that they didn't understand why people from different cultures didn't become members, though it was observed that the gardens were only advertised in English-language local papers.
- Members of Dig In indicated that the garden was a place where social networks could be developed, and that the garden offered a space to communicate, cooperate, socialize and gain support from others in the area.
- Members of Dig In observed that they felt isolated from their community before they were involved in the garden.
- Time may be a key factor influencing both the diversity of garden membership (bridging social capital) and the depth of social capital (bonding).

**Policy Implications:**

- As Glover points out in another article, “community gardens are often more about the community than they are about the gardening”
- The social capital benefits of community gardening may take a long time to develop, but offer great benefits to garden members, including increased social cohesion, social support and social connections.
- Care should be taken when establishing a garden that gardeners come from a wide variety of backgrounds and represent the diversity of the community
  - To increase diversity, gardens could be advertised through culturally appropriate venues, like newsletters for specific groups in the community, through community radio programs and in alternate language publications/posters/fliers/radio programs.
  - The greatest social benefits are realized in gardens where the diversity of the community is reflected in the garden membership.

Lee, E-J, H-S Lee, E-J Yoon, K.I. Ekpeghere, S-C Koh. (2011). "Design of Green Community Rediscovery Center with Community Gardens and Social Integration Functions." *Journal of the KIEAE*. 11(4): 29-36.

**Abstract:**

This article is a proposal to develop a Green Community Rediscovery Center in an urban area in Korea, a place for recreation, community activity and education about green homes/buildings and ecosystems. Community gardens are envisioned as a "green island" for urban residents to escape from the urban landscape. There is also space for an urban farm, and vegetable community gardens on rooftops.

**Method/Findings:**

The literature review includes arguments for developing community gardens as a way for residents to meet others with similar interests and help forge a sense of community ownership and stewardship, promote social inclusion, improve health and reduce stress, encourage interactions between different age groups, and serve as a neighborhood place to resolve conflicts, organize community members.

**Policy Implications:**

- Community gardens can be integrated into the design of new developments for housing, government buildings, or businesses. They may foster a sense of social integration in the neighborhood.

Okvat, H.A. and A.J. Zautra. (2011). "Community Gardening: A Parsimonious Path to Individual, Community, and Environmental Resilience." *American Journal of Community Psychology*. 47: 374-387.

**Abstract:**

This paper introduces community gardening as a promising method of increasing well-being for individuals, social groups and the natural environment, and as a means to ease the impacts of global climate change. The paper asserts that the human community is inextricably linked to the well-being of the Earth, and provides a conceptual framework for understanding community gardens in the field of community psychology.

**Method/Findings:**

This study reviews the literature on the impact of community gardens specifically or green space in general on individual well-being (including cognitive and affective benefits), community well-being (including social networks, multicultural relations, community organizing and empowerment, crime reduction, nutrition and physical activity, and economic benefits) and environmental well-being (climate change mitigation and other environmental benefits).

**Outcomes/Results:**

- Relating to crime: the article reports research by Sullivan and Kuo (1996) and Brunson, Kuo and Sullivan (1998) that "the ability to see or experience green space in an urban setting has been linked to fewer incidents of graffiti and other incivilities, and reductions in domestic violence." Regression analysis found that the greener a building's surroundings, the fewer crimes were reported, including both property crimes and violent crimes.
- Contact with nature, even everyday outdoor features like a tree or small piece of open land, have been found to be important for psychological well-being.
- Certain characteristics of inner-city neighborhoods, such as crime rate, levels of noise, crowding, and barren common spaces are correlated with a lack of neighborhood social ties.
- Community gardens provide an opportunity to balance the key forces in our lives: social, economic and ecological.
- While community gardens build community among the gardeners, they also may give rise to conflict or exclusionary behavior which would increase the disparity between those with access to the garden and those without access. This disparity and conflict increases with fences, locks, posted hours and close-knit interaction among some gardeners.
  - In-group behavior may be reduced by involving a wide representation of community members and groups in the planning phase and throughout the development of the garden.

**Policy Implications:**

- Victory Gardens, which were supported by the US Department of Agriculture during WWI and WWII, may provide an example of how federal- or state-level policy can impact community gardening.
- Despite the success of Victory Gardens, however, current research indicates that grassroots development of community gardens may be a more successful model for modern community gardening.
- Policies must be flexible enough to allow local neighborhoods to meet their own differing needs through local garden management.
- Policy initiatives to reduce current barriers to urban community gardening include:
  - Easing zoning restrictions and conducting soil testing to ensure that no contaminants are present at a proposed garden site
  - Incentives for the establishment of community gardens and participation in them, perhaps linked to demonstration of carbon sequestration
  - Provision of land tenure, to protect against gentrification

Saldivar-Tanaka, L. and M.E. Krasny. (2004). "Culturing Community Development, Neighborhood Open Space, and Civic Agriculture: The Case of Latino Community Gardens in New York City." *Agriculture, Food and Human Values*. 21: 399-412.

**Abstract:**

This study focuses on the role Latino community gardens play in community development, open space, and civic agriculture. The gardens produced conventional and ethnic vegetables and herbs, but were also the site for numerous social, educational, and cultural events, including neighborhood and church gatherings, holiday parties, children's activities, school tours, concerts, health fairs, and voter registration drives. In some cases, the gardens promoted community activism. The primary concern of gardeners was to secure land tenure in the face of pressures to develop the garden sites for housing. Although the community development role of the Latino gardens appears to be more important than their role in open space or agricultural production, the gardens can also be viewed as unique "participatory landscapes" that combine aspects of all three movements, and provide a connection between immigrants and their cultural heritage.

**Method/Findings:**

Open-ended interviews with 32 community gardeners from 20 New York City Latino gardens included 30 questions on demographics, crops and planting practices, activities, facilities, garden history, and issues facing the garden. Open-ended interviews were also conducted with staff from 11 community gardening support non-profit organizations and government agencies, focusing on the type of support they offered to gardens, other types of work they perform and the staff's perception of the role of the gardens in the context of community development, open space and civic agriculture.

The gardens were selected to represent the types of Latino gardens one might encounter in NYC, and varied on location, garden age, and status (garden threatened or not threatened by commercial development). Researchers also reviewed written documents from gardeners and staff from 13 support organizations and agencies. Researchers chose the Latino gardens in NYC because they are usually located in low-income neighborhoods that lack amenities that could be provided by the gardens, like open space and community meeting places, and because they have not been extensively studied. Existing research on community gardens focus on African-American and White gardeners, who the research has found to be frequently focused on community development aspects like reducing crime. The researchers were curious if Latino gardeners were focused on community development, neighborhood open space, or civic agriculture/food production. They also focused on whether the services offered to community gardens through non-profit organizations and government agencies focused primarily on community development, open space or civic agriculture.

The researchers initially attempted to use a Participatory Action Research Approach (where the research team would work in the community and provide opportunities for education, empowerment and actions to benefit the residents). Specifically, the researchers were intending to engage gardeners as co-researchers, following a participatory Rural Appraisal approach. However, the researchers could not identify individuals

who were active and knowledgeable about the gardens who had enough free time or willingness to act as co-researchers. Research approach changed to participant observer and interviewer.

### **Outcomes/Results:**

- Community development is reported by both gardeners and organizational/city staff as the main reason the gardens exist (more important than having access to green space or a place to grow food).
- All of the gardens included in the study benefited from a group of neighbors who wanted to improve their community and personal lives by keeping the vacant lots clean and free of hazards such as trash, abandoned cars, gangs and drug sales.
- The gardens included three main constituent groups:
  - Gardeners: active gardeners and participants in other activities like parties, barbeques and meetings
  - Garden members: organize and participate in garden activities but do not garden
  - Garden friends: relatives or neighbors of all ages who visit the garden.
- The gardens included *casitas*: small wood houses that accommodate no more than 10 people that are common in Puerto Rico (where most of the gardeners come from) & *bateys*: unplanted areas surrounding the casitas used for barbeques, picnics and potlucks.
- Resources available through non-profits and city agencies are not meeting demand, and they do not reach all gardens equally. Support goes to better organized gardens with managers who are persistent, charismatic and savvy.
- In terms of access, the article cites Cornell Extension figures that the average economic profit of NYC gardens is \$5-10/sq.ft, and well-managed gardens can go up to \$40/sq.ft. (In a 10x20 foot lot, gardeners could produce \$500-\$700 per season.

### **Policy Implications:**

- Lack of secure access to land (land tenure) is the main problem cited by gardeners and garden managers.
- Lack of resources like water, tools, soil and plant and building materials is the second biggest problem cited.
- The older gardens included in this study were started through a pilot program funded by a federal government grant under the National Urban Gardening Program. Government financial support for community gardens may be an important strategy for helping gardens get started.
- Non-profit organizations have formed to protect gardens from commercial development, pressuring the City to follow the Uniform Land Use Review Process which calls for community input and community board approval before City-owned land can be sold or developed. Gardeners and garden friends have been active participants in rallies and sit-ins.



Schroeder, E. (2011). *Dead Zones, Weed Nests, and Manure Mishaps: How Gardeners Cultivate Collective Place in Eagle Heights Community Gardens*. University of Wisconsin-Madison Master of Science (Geography) Thesis.

**Abstract:**

This master's thesis explores a large community garden space as a collective place where gardeners have individual allotments but hold other things in common, including land, infrastructure, material practices, social ideals, neighborhood, weeds, and governance structure. The thesis asserts that what gardeners hold as common changes with shifts in people's perceptions of the Gardens.

**Method/Findings:**

Analysis of historical documents and interviews with people historically connected to the gardens. The gardens started in 1960 by married students at the University of Wisconsin. The garden primarily started as a means for students with limited incomes to make their food dollars stretch and to productively use land viewed as vacant. The "purpose" of the garden changed through its 5 decade history, to include a space for creating social change and to express changing beliefs, values, and demographics in the student population. The opportunity to garden has been an important means for many international students to express their culture and have access to familiar foods, and for cultural exchange between gardeners from Wisconsin, other parts of the country and other parts of the world. The thesis covers areas of conflict between gardeners, and between gardeners and the university which owns the land.

**Outcomes/Results:**

- Eagle Heights Community Gardens started informally, with students utilizing vacant land near their housing for gardening. Garden location, governance and relationships to outside entities like the University of Wisconsin College of Agriculture and the Campus Natural Areas became increasingly formal over the 50 year history.
- The Eagle Height's Community Garden has become a place that creates social change and expresses social change over time.
- The Garden integrates people into ecological systems.
- Through providing examples of garden tension and lack of participation in common activities, this thesis provides a critique of the literature that assumes collective gardening spaces automatically yield community cooperation.

**Policy Implications:**

- Public and private universities may provide access to land for community gardens.
- Conflict can arise when community gardens compete with other open space initiatives (like nature preserves or agricultural research test plots), and for other community priorities like housing and development.

Semenza, J.C., T.L. March, and B.D. Bontempo. (2006). "Community-Initiated Urban Development: An Ecological Intervention." *Journal of Urban Health*. 84 (1): 8-20.

**Abstract:**

This article reviews an intervention in Portland, OR, initiated to promote community participation in urban renewal and engage residents in the construction of attractive urban places in public right-of-ways, including murals, public benches, planter boxes, information kiosks and trellises.

**Method/Findings:**

The intervention strategy began with a situation analysis and asset mapping in the community. Pre- (n=325) and Post (n=349)-intervention surveys were completed with residents within a 2 block radius of intervention sites (n=265 both pre-and post). Multivariate analysis showed improvements in mental health, increased sense of community and overall expansion of social capital. The survey instrument included validated instruments on depression, well-being, social capital, and community capacity.

**Outcomes/Results:**

- Design workshops established or reinforced bonding social capital and problem-solving capacity among the low- to moderate-income residents.
- Municipal approval and permitting augmented bridging/linking social capital.
- Construction empowered residents through communal action.

**Policy Implications:**

- Dynamic collaboration between urban planners, public health practitioners, residents, developers, and politicians creates more human, more beautiful, more livable and healthy urban places.

Speer, P.W. and J. Hughey. (1995). "Community Organizing: An Ecological Route to Empowerment and Power." *American Journal of Community Psychology*. 23(5): 729-748.

**Abstract:**

This paper examines how the concept of social power is developed and manifested in the context of community organizing, to contribute to empowerment theory and community psychology practice. Lessons from a national community organizing network (Pacific Institute for Community Organizations) highlight the relationship between empowerment (at the individual level) and power (at the social or organizational level) through a set of organizing principles and a cycle of organizing activity. A reciprocal relationship exists between development of power for community organizations and individual empowerment for organization members. Article includes a matrix adapted from Zimmerman's description of empowerment processes and outcomes at multiple levels of analysis (i.e. individual, organizational, and community levels).

**Method/Findings:**

Researchers observed the organizing process and collected data qualitatively through attending meetings, conducting in-depth interviews, observing leadership development training, reviewing documents and participating in staff retreats. Findings focused on the process and outcome of empowerment and social power at the individual, organizational and community levels.

**Outcomes/Results:**

- Empowerment must be linked with the development or use of social power.
- There is a reciprocal relationship between individual development and organizational action.
- There is a distinction between empowering and empowered organizations.
- The cycle of organizing used by PICO (building organization, cultivating relationships among members and engaging in an action-reflection dialectic) are important actions for individual empowerment as well as social power/organizational efficacy.

**Policy Implications:**

- Efforts to organize community members around social change should take into account the relationship between empowerment at the individual level and power held within community organizations and local government (i.e. organizations and institutions-whether private or public-hold their social power through empowered individuals who participate in those organizations and institutions).

Teig, E., J. Amulya, L. Bardwell, M. Buchenau, J.A. Marshall, and J.S. Litt. (2009). "Collective Efficacy in Denver, Colorado: Strengthening Neighborhoods and Health through Community Gardens." *Health and Place*. 15: 1115-1122.

**Abstract:**

This article examines the social processes that might explain the connection between gardens, garden participation and health, and discusses the potential for place-based social processes found in community gardens to support collective efficacy.

**Method/Findings:**

Semi-structured interviews were conducted with individual and groups of community gardeners in Denver (n=67 respondents from 29 garden sites).

**Outcomes/Results:**

The data were analyzed to answer two primary research questions:

- What social processes are described by the community gardeners?
  - Social connections: gardeners frequently described gardens as a place to connect across different cultural backgrounds, to feel a part of a community, to connect with family and neighborhoods and a place for social activism.
  - Reciprocity/helping each other
  - Mutual trust: while the gardeners described high levels of trust with other gardeners, there was some concern about non-gardeners in the neighborhood. Gardeners were aware that not being able to feel trust with people outside the garden was at odds with belonging to the larger community of the neighborhood. They were mainly concerned about vegetable theft and vandalism.
  - Collective decision-making: gardeners reported that the community gardens provided an opportunity to practice consensus decision-making.
  - Social norms: one group reported that social norms changed once youth were included in the gardening effort. For example, the gardens had frequently been the setting for vandalism by youth, who would throw vegetables and destroy plants. Once the students were introduced to gardening through a youth gardening program, the problem decreased.
    - The garden promoted social norms like neighborhood safety and health (i.e. gardens may act as a change agent setting higher standards for neighborhood safety or supporting spread of healthy food through vegetable and recipe exchanges and donations to community institutions)
  - Civic engagement: nearly every interview documented the involvement of gardeners with at least one voluntary association in the community such as student groups, social service programs, neighborhood schools and churches, and health-related organizations.
    - Gardeners felt the garden was important to improving their neighborhood and reducing crime.

- Community building: the garden was seen as a place where diverse people come together to form a community that is working toward a common goal.
- How are those social processes cultivated by, or supportive of activities in community gardens?
  - Volunteer Activity: active participation in the community garden encouraged individuals to lead more engaged lives.
  - Leadership Activity
  - Organized neighborhood activity: garden activities like workdays, picnics and potlucks act as a catalyst for other neighborhood activities.
  - Recruitment activity: community improvement and crime prevention became part of the message to recruit new gardeners

**Policy Implications:**

- Community gardeners report numerous new skills and benefits that transfer to their neighborhood at large, including civic engagement and communications skills.

## Social Justice and the Politics of Land Use

**Topics Addressed:** Eighteen articles were reviewed that primarily focused on community gardens as a device for increasing food security and as a method and tool for increasing the political influence and advocacy capacity of poor neighborhoods and/or disenfranchised communities. All of these articles analyzed the role of community gardens in urbanized areas.

Of particular interest, a series of analysis has focused on the evolution of public policy regarding community gardens in New York City. Three political interpretations of community gardening space have emerged from this research that spans a period from 2000 to the present. The first interpretation views community gardens as appropriately situated on public land for public use. The second interpretation views community gardens as appropriately situated on publicly-owned property with exclusive rights to use controlled by neighborhood residents. The third view is a market interpretation that suggests that publicly-owned property should be privatized and the market should determine the appropriate intensity of use.

### Methods Used:

- Two articles were primarily theoretical, narrative explorations of the community gardening. The remainder of articles used specific community garden programs to explore the power of shared space and food production in communities to empower citizens.
- Primary data collection techniques included cases studies, personal interviews, observation, including participant observation as well as artifact analysis.
- Secondary data used included public information related to property ownership and land use records, census demographic data, historical documents, court documents and legal findings.
- Roles surveyed included gardening participants, community garden organizers, planners, and managers, community-level policymakers, and opponents to community gardens.

### Policy Implications:

- Community gardens are more successful when they are citizen-/user-driven.
- Establishment of community gardens can be addressed through land use policy and planning.
- Community gardens may play a role in environmental justice policy.
- Success of community gardens is based on long-term access to land.
- As property becomes more valuable or the potential for more intense use of property increases, community gardens can become politicized.
- In order to sustain community gardens, a public dialogue should occur to establish community norms around issues of how community garden property is owned, used, and accessed.
- Lack of public infrastructure, like access to water, appropriate storm water management, and environmental quality can affect the ability to establish community gardens.

- Some research on community gardens indicates a prophylactic effect in diminishing crime and violence in neighborhoods.

### **Gaps in the Research:**

- Validated, standardized instruments to measure impact of gardening on community sustainability and development.
- Longitudinal analysis of impact of community gardening and the work of organizing community gardens on community and individual efficacy.
- Cross-cultural analysis of impact of community gardens on community involvement and participation.
- Disaggregation of participants' demographic and socio-economic characteristics to better understand role of community gardening as one variable among many that affects individuals' and communities' capacity for participation in self-governance and access to economic opportunity.

Corrigan, M.P. (2011). "Growing What You Eat: Developing Community Gardens in Baltimore, Maryland." *Applied Geography*. 31: 1232-1241.

**Abstract:**

Food security is a growing concern in the US and has been linked to increased health problems like obesity and diabetes. The community food security movement was created in an attempt to overcome unequal distribution of food by localizing food production through approaches like community gardening. While it is evidenced that the community garden in this study contributes to individual, household and community food security, additional help is needed in the form of education, policy and funding to increase food security and promote healthy lifestyles.

**Method/Findings:**

Qualitative data from in-depth interviews with 5 gardeners (including the garden manager) and a non-profit organization and field observations from food stores and community gardens in Baltimore, MD, were used to determine the extent to which community gardens contribute to food security. The research question asked "How does engagement with community gardens make people more aware of issues of food security as well as their overall involvement with the food system."

**Outcomes/Results:**

- The gardeners who were interviewed reported that the community garden increased their individual food security (they grew a fair amount of their own food), household food security (they were able to provide vegetables to the other members of their household), and community food security (many vegetables were donated to churches and community groups with soup kitchens and food pantries).
  1. Food security was further improved by food preservation methods like freezing and canning.
- Interviewees responded that the garden provided a place to relax and teach their children about growing their own food.

**Policy Implications:**

- Community gardens experience a higher success rate when they are developed through a "bottom-up" approach, which occurs when the community is involved from the beginning of the planning process.
- Local policymakers can support community gardens through education programs on quality/healthy food, food policy councils, and increased financial assistance to help promote more gardens and other approaches to community food security.



Eizenberg, E. (2012). "The Changing Meaning of Community Space: Two Models of NGO Management of Community Gardens in New York City." *International Journal of Urban and Regional Research*. 36(1): 106-120.

**Abstract:**

Examines alternative approaches taken by NGOs in NYC to confront the conflict between housing (and market-driven policy) and community gardens (public-good-driven policy). The Trust for Public Land promotes a model of community ownership of community gardening space; the New York Restoration project promotes a land preservation model.

**Method/Findings:**

The article is based on large-scale grounded theory research on community gardens in NYC (from 2003-2007) through ethnographic interviews with gardeners, representatives of supporting organizations and the municipality, observations in community gardens, and through quantitative analysis of data files provided by the municipality and other organizations. The article compares the two models of NGO management of community gardens through the lens of community participation, sense of ownership, and control over space, and argues that both models transform the meaning of public space in ways that undermine its opportunity to develop as an autonomous community space.

**Outcomes/Results:**

- While low socio-economic status and disadvantageous geographical locations are usually associated with low levels of political power of residents, community gardening changed the status of gardeners within the urban power structure.
  1. "Through their activities in the gardens [residents] produced themselves as aware, involved and indissmissible urbanites"
- The Trust for Public Land model of community ownership of community gardening space often overwhelmed the community gardeners, who expressed their preference for spending their time gardening and maintaining/managing the garden rather than in the role of property owners and board members of a land trust.
  1. This model also involved purchasing the land, which kept the land in a market-driven arrangement.
  2. This model reaffirms the importance of legal land ownership as the only means of protecting public space from market forces and diminishes the responsibility of the public from protecting the space for public use.

- The New York Restoration Project was more interested in preserving green space than gardens/gardeners, and operates its 57 gardens as a reservoir of green space that the organization is responsible for managing.
  1. Rationale of centralization, efficiency and land preservation.
  2. NYRP purchased gardens, found sponsors/investors, and often hired professional landscape designers to update the gardens.
  3. The redesign process, from the selection of the designer to design and construction, was done without including the previous gardeners.
  4. This process undermined the participation, sense of ownership and cultural expression of the community gardeners who had been using the gardens before the threat of auction by the City.

**Policy Implications:**

- The NYC example demonstrates how different political ideologies can lead to different outcomes for community gardening.
- The solutions provided by TPL and NYRP are based on civil-society organizations/non-profits, backed by private money, with the goal of reversing a public decision to privatize the space.
- As an alternative, civil organizations could work to ensure that public institutions (like local government) work for the benefit of their community and protect democratic processes—in this case, that the city would not privatize the gardens.

Evers, A. and N.L. Hodgson. (2011). "Food Choices and Local Food Access Among Perth's Community Gardeners." *Local Environment*. 16(6): 585-602.

**Abstract:**

This research investigates members of community gardens in Perth, Australia, examining how they engage with local alternative food networks, their attitudes toward food production, and the food choices they make. The constraints which people experience in making these choices are highlighted and some ways in which these constraints may be overcome are suggested.

**Method/Findings:**

Structured, face-to-face interviews and surveys were conducted with 28 gardeners and 7 garden coordinators from 7 community gardens in Perth to examine the preferred food sources of individuals, as well as the barriers they perceived to accessing food from their preferred sources.

**Outcomes/Results:**

- Community gardeners are interested in accessing local food networks.
- Community gardeners expressed concerns about contemporary food production and a desire to obtain food from sources other than the supermarket, like growing their own food at home or in a community garden.
- Community gardeners highlighted a range of perceived barriers to accessing their preferred sources:
  1. Lack of time was the most common barrier to growing more of their own food (and the one most difficult to address because of the long Australian work week).
  2. Lack of growing space.
- Community gardens can contribute to food security in two ways:
  1. Directly, by acting as sites of urban food production.
  2. Indirectly, by acting as sites of education and empowerment, encouraging food production and changes in food consumption habits in urban home gardens, and helping to recreate the social and community connections important for food security.

**Policy Implications:**

- Local governments can increase food production within their municipality through changes in land-use planning.
- Space for community gardens can be set-aside through land-use planning.

Ferris, J., C. Norman, and J. Sempick. (2001). "People, Land and Sustainability: Community Gardens and the Social Dimension of Sustainable Development." *Social Policy and Administration*. 35(5): 559-568.

**Abstract:**

Community gardens vary in what they offer, according to local needs and circumstance. This article reports on research and experience from the US, within the context of implementing Local Agenda 21 and sustainable development policies in the UK. Emphasis is given to exploring the social dimension of sustainable development policies by linking issues of health, education, community development and food security with the use of green space in towns and cities. The article concludes that the use of urban open spaces for parks and gardens is closely associated with environmental justice and equity.

**Method/Findings:**

The article is a survey of the literature and an exploration of community gardens in the San Francisco area. The goal was to inform the Local Agenda 21 taking place in the UK at the time of the research. A typology of gardens was developed.

**Outcomes/Results:**

- Gardens in San Francisco fell into the following categories (although they are not mutually exclusive):
  1. Leisure gardens-neighborhood gardens for apartment dwellers and others without gardens at home.
  2. Child and school gardens
  3. Entrepreneurial gardens-gardens driven by the need to alleviate poverty and social exclusion in disadvantaged neighborhoods. Gardens provide safe places for recreation and may provide income to teenagers who sell vegetables out of the garden.
  4. Crime diversion gardens/Work and training gardens
  5. Healing and therapy gardens/Quiet gardens
  6. Neighborhood pocket parks
  7. Ecological restoration gardens/parks
  8. Demonstration gardens
- All of the gardens had specific communities actively supporting them.
- Many of the gardens had non-profit or government grant support.
- Community gardens may be a strategy to improve ecological and social health in low-income neighborhoods, where residents are often exposed to environmental hazards at higher rates than residents of middle- and higher-income areas.

**Policy Implications:**

- City planners should consider the need for green space/open space (of which community gardens are one example) along with other neighborhood needs like housing.
- Community gardens can be considered part of an environmental justice strategy.

Holland, L. (2004). "Diversity and Connections in Community Gardens: A Contribution to Local Sustainability." *Local Environment*. 9(3): 285-305.

**Abstract:**

This study examines community gardens in the UK as a possible example of sustainable development in action.

**Method/Findings:**

A survey (n=96) plus in-depth interviews (n=13) were conducted.

**Outcomes/Results:**

- The community gardening movement could act as a model for the implementation of social, economic and environmental sustainable policies at the local level.
- Community gardens can act as agents of change in the following ways:
  1. Promotion of physical and ecological sustainability by food growing
  2. Social sustainability by communal interaction
  3. Economic sustainability by the use of gardens for training, research and skills development.
- Community schemes (in this case community garden schemes) develop according to the needs prevailing in the community concerned.
- If a community garden is developed for a specific purpose (for example, as a learning garden connected with a school), widening participation (beyond the school in this example) will alter the nature of the garden and it may not meet its objectives.
- There are multiple purposes for community gardens, and the purpose of growing food appears second to other purposes like building community and providing green space in the gardens studied.
- The gardens in this study showed some success in implementing environmental and social goals, but were not as successful in economic development.

**Policy Implications:**

- Long term access to land is an important precursor to the development of a community garden by a neighborhood community.
- Policymakers could consider community gardens as a space to promote sustainability in action.

McClintock, N. (2010). "Why Farm the City? Theorizing Urban Agriculture through the Lens of Metabolic Rift." *Cambridge Journal of Regions, Economy and Society*. 3: 191-207.

**Abstract:**

This article examines the phenomenon of urban agriculture in developed and developing countries, placing agricultural practices within a Marxist, and Polanyian theoretical framework. It builds on the concept of "metabolic rift"-particularly ecological, social and individual rift.

**Method/Findings:**

A theoretical examination of urban agriculture, which places urban agriculture as an alternative to capitalist/industrial agriculture.

**Outcomes/Results:**

Urban agriculture has the potential to address the "metabolic" rifts in capitalist/industrial production:

- Ecological rift-marked by large scale agriculture in rural places, where CAFOs struggle with animal waste while large cropping operations purchase petroleum-based fertilizers. Urban ag addresses ecological rift by paying attention to nutrient cycling and improving soil fertility by using waste products from the urban environment (like yard waste for compost, etc.)
- Social rift-wage labor causes workers to be separated from the products of their labor and also commodifies land. In developing countries, low wages and dispossession of common land largely explain the rise in urban agriculture. In developed countries, urban ag provides a subsistence alternative to capitalist/industrial ag, provides a productive activity and nutritious food outside the mainstream economy, and returns the means of production (land) to urban populations.
- Individual rift-what Marx calls alienation from labor and nature and manifests itself as perception of self as external to the environment. Urban agriculture addresses this rift by connecting people with their natural environment and the "fruits of their labor."

Urban agriculture frequently arises as a protective countermovement at a local level from the inevitable crises of capitalism unfolding at the global level.

**Policy Implications:**

- Policymakers, planners and non-profits can seize urban agriculture and community gardens as an opportunity to transform the food system into something more equitable, healthy, and ecologically sustainable.

Moore, S. (2006). "Forgotten Roots of the Green City: Subsistence Gardening in Columbus, Ohio, 1900-1940." *Urban Geography*. 27(2): 174-192.

**Abstract:**

This article challenges the notion from the Chicago School of Urban Sociology that cities are sites of capitalist/industrial hegemony, and that subsistence gardens (or any type of pre-industrial production) can only take place within city boundaries in times of crisis (economic crisis like the Great Depression or war). The author asserts that cities have a complex character and can incorporate alternatives to mainstream structures.

**Method/Findings:**

This historical analysis of subsistence gardens in Columbus, Ohio, argues that gardens and garden history have been removed from the City of Columbus, mainly to be replaced by more "normal/proper" urban spaces/modernist history. The author asserts that subsistence gardens are symbols of rural, pre-industrial societies, that historical accounts of their existence often coincide with times of crisis (war and economic recession/depression), and that their physical and historical removal are a result of hegemonic capitalist/modern/industrial structures. The article focuses on the American Addition, an historically African-American, working-class community.

**Outcomes/Results:**

- The author's review of subsistence gardens in Columbus reveals an alternative history that includes development of non-market social relations (collective land use and management) and cultivated green space (for food production) within city boundaries.
  - These contrast the land uses emphasized in the city's planning literature, which tend toward market-based land development (buildings) and decorative natural amenities (flowers and trees).
- Representation of these spaces as crisis landscapes helps perpetuate, rather than challenge, an urban normative that excludes both productive nature and non-capitalist commodity production and communal relationships.

**Policy Implications:**

- The prevailing ideological paradigm among city leadership (both elected leadership and influential residents) impacts the possibility for community gardens. For example, when leadership asserts that the city function exclusively within a capitalist framework, alternatives like community gardens will be overlooked, undervalued, and possibly even erased from history.

Patel, I.C. (1991). "Gardening's Socioeconomic Impacts." *Journal of Extension*. 29(4): 7-8.

**Abstract:**

This article summarizes the findings from 178 gardener interviews in Newark, New Jersey, and surrounding communities in terms of quality of life, economic wellbeing and social wellbeing. The article recommends that University extension provide technical assistance to community gardens/urban gardens much in the way it provides assistance to rural farmers.

**Method/Findings:**

Interviews were conducted with 178 gardeners in Newark, New Jersey and surrounding communities. Participants reported that gardening improved their life quality by providing fresh food/vegetables, improved diet, personal satisfaction and enjoyment; economic wellbeing by saving money; and social well-being by providing an opportunity to socialize, help others, share produce with others, feel self-sufficient and improve the neighborhood.

**Outcomes/Results:**

- Gardens were an average of 720 square feet, and were estimated to provide an average savings on food bills of \$475/year (1991\$-input costs subtracted from total production value).
- The author finds that many at-risk youth could benefit from the sense of pride and self-worth that develops from community gardening if more emphasis would be placed on involving them and focusing on their needs.

**Policy Implications:**

- The extension model which contributed to improved farming techniques in rural areas could be applied to urban agriculture.



Pudup, M.B. (2008). "It Takes a Garden: Cultivating Citizen-Subjects in Organized Garden Projects." *Geoforum*. 39: 1228-1240.

**Abstract:**

This article examines the contemporary movement of deploying community gardens to change people and places. The author asserts that community gardens are spaces that promote neo-liberal structures by encouraging individuals to make their own adjustments to economic restructuring and social dislocation through self-help technologies centered on personal contact with nature. This process produces "subject-citizens." The tendency of community gardens to become important during times of crisis suggests that community gardening has been a response to pronounced and recurring cycles of capitalist restructuring. In most recent times, community gardens have become a personal rather than a social process, and encouraged personal responsibility, empowerment and personal choice (i.e. characteristics of neoliberal initiatives). The article recommends changing the terminology from "community garden" to "organized garden project."

**Method/Findings:**

This article reviews the literature on community gardens and places the "eras" of community gardening within a historical framework. It examines how the meanings and practice of community gardening change with the particular crisis or emergency that spurred the popularity of community gardening in that time period. It also uses The Edible Schoolyard (school garden started by Alice Waters) and The Garden Project (prison garden) as garden models that promote the development of neo-liberal subject-citizens.

**Outcomes/Results:**

Contemporary community garden movements have occurred under three "discourses" under "roll-out neoliberalism":

1. Response to urban restructuring: in the 1970s, community gardens were organized to ameliorate deteriorating conditions in urban centers, caused by divestment. When urban cores once again became "desirable" based on structural changes in urban economies, gardens became contested space, and conflicts arose between community gardens and other uses, like housing and commercial development.
2. Horticultural therapy and people-plant interactions—popular since the 1980s, the core belief is in the transformative power of nature, and specifically plants, on the human spirit.
3. Environmental activism and environmental psychology: emphasis on preservation and maintenance of green and open spaces as a positive value in themselves and also as a direct benefit for city dwellers. ("Community Greening" or "Community Open Space Movement")

Technology changes, especially the internet, have enabled academics, non-profits and social entrepreneurs and activists to trade ideas and promote gardening with resources from an issue-based interest group.

**Policy Implications:**

- Policymakers could consider community gardens as training spaces to produce subject-citizen-consumers.

Rosol, M. (2012). "Book Review: Power at the Roots: Gentrification, Community Gardens and the Puerto Ricans of the Lower East Side." *Urban Studies*. 49: 1155-1157.

**Abstract:**

This review considers the book *Power at the Roots: Gentrification, Community Gardens and the Puerto Ricans of the Lower East Side* by Miranda Martinez, which focuses on the relationship of community gardens and gentrification. It uses the conflict between New York City gardens and other land uses detailed in other articles included in this literature review to explore the issue of gentrification.

**Method/Findings:**

The book uses participatory observation and interviews to analyze community gardens and the movement for their preservation within the frame of gentrification and critical race studies. She compares the different models of community gardens represented by Latino casita gardens and the more park-like gardens of the white middle class.

**Outcomes/Results:**

- The rescue of many of the community gardens came with the sacrifice of a redefinition of community gardens as public amenities rather than the "visionary community spaces" created by Latino gardeners.
  1. Saving the gardens privileged the "public amenity" version of community gardens (often linked to white middle-class definitions/visions of gardening), and dramatically changed the ethnic composition, internal organization, significance and appearance of the Lower East Side gardens.

**Policy Implications:**

- The book demonstrates how gentrification changes the social relations and spaces of a neighborhood.

Sampson, R.J., S.W. Raudenbush, and F. Earls. (1997). "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science*. 277: 918-924.

**Abstract:**

This study tests the hypothesis that collective efficacy (defined as social cohesion among neighbors combined with their willingness to intervene on behalf of the common good) is linked to reduced violence, using survey data with a large sample size. The study finds that neighborhood-level collective efficacy is associated with lower levels of violence in neighborhoods.

**Method/Findings:**

This study uses data from the Project on Human Development in Chicago Neighborhoods, a 1995 survey of 8,782 residents of 343 neighborhoods in Chicago. Multilevel analyses showed that a measure of collective efficacy is negatively associated with violence when individual-level characteristics, measurement error and prior violence are controlled.

**Outcomes/Results:**

- Associations between violence and concentrated disadvantage (i.e. neighborhoods with high levels of poverty, public assistance, unemployment, female-headed households, children and African Americans) are mediated by collective efficacy.
- Associations between violence and residential instability (i.e. neighborhoods with high levels of resident-turnover and low levels of owner-occupied homes) are also mediated by collective efficacy.

**Policy Implications:**

- Tools that increase social cohesion and collective efficacy at the neighborhood level are associated with lower levels of violence in those neighborhoods.
- Other studies have shown that community gardening is one tool that can increase social cohesion and social capital at the neighborhood level.

Schmelzkopf, K. (1995). "Urban Community Gardens as a Contested Space." *Geographical Review*. 85(3): 364-379.

**Abstract:**

This article focuses on community gardens in Loisaida, in New York City, examining how the city and federal governments initially supported the gardens at a time when the land was perceived to have little economic value (during the city's fiscal crisis of the 1970s). When the economy improved, the community gardens became politically contested spaces with land use conflicts between housing and gardens.

**Method/Findings:**

This article is a review of gardening activities in Loisaida, NYC, and gives an account of the gardens, as well as conflicts between the gardens and other land uses.

**Outcomes/Results:**

- The gardeners are mostly Latino or white, although a significant number are African American.
- Some of the gardeners are focused exclusively on food production, but most are interested in reclaiming vacant land from crime, vandalism and homeless populations and to have a safe outdoor place to be outside of their crowded apartments.
- NYC became involved in urban gardening in 1976, when the Department of Housing Preservation and Development designed and built gardens throughout the city as an interim use for vacant land awaiting construction.
  - While these gardens failed, the city changed their approach to supporting gardeners (rather than building gardens and expecting neighborhood residents to care for them) through a program called Operation Green Thumb.

**Policy Implications:**

- Local governments need to consider all the potential land uses for potential garden sites, considering the tension between housing and community garden land uses.
- While local governments and non-profits are often needed to provide access to land and technical assistance, gardens initiated by neighborhood residents are shown to be more successful than those developed by outside agencies.

Schmelzkopf, K. (2002). "Incommensurability, Land Use, and the Right to Space: Community Gardens in New York City." *Urban Geography*. 23(4): 323-343.

**Abstract:**

This article explores the conflict between advocates for community gardens on city-owned land and the New York City administration, specifically under Mayor Giuliani, who argued that the removal of gardens would lead to an increase in affordable and market-rate housing, and an expansion in the city tax base through the sale of properties and housing. Beyond a conflict between green space and affordable housing, the issue can be framed in terms of scale and level of market orientation. Do community gardens make sense at the neighborhood level (due to their use value or public value or nonmonetary value), and does this put them in conflict with land use planning at the city level, which often favors exchange value or market value over welfare, service and collective consumption? Who ultimately has the right to public space and who decides how to express the public will?

**Method/Findings:**

This article uses historical analysis of community gardens in NYC to examine the conflict between community gardening and housing, between moral rights and legal rights, and between market-driven and community-driven perceptions of public space. The author argues that housing became aligned with the dominant paradigm (which emphasizes economic/market value) while community gardening was aligned with public value/welfare/use value. Giuliani's use of the dominant, market-driven paradigm set up a system where gardens would be un-valued compared to housing.

**Outcomes/Results:**

- Giuliani's administration stressed the economic value of the land where the gardens were located, and argued that gardens were standing in the way of affordable housing, robbing the city of much-needed market rate revenues and taxes and that the city was legally entitled to sell the garden plots to whomever they deemed appropriate (because the city owned them).
- Community garden advocates argued that the garden benefits included food production, reduced crime, a cleaner environment and social services. These benefits were difficult to quantify in economic terms.

**Policy Implications:**

- The potential for conflict exists between community gardening and other land uses, both public and private land uses.
- City/county and other public officials and community garden advocates should be aware of different values and how they can create conflict around the use of public land for neighborhood community gardens.

Smith, C.M. and H.E. Kurtz. (2003). "Community Gardens and Politics of Scale in New York City." *Geographical Review*. 93(2): 193-212.

**Abstract:**

New York City community gardens have been the subject of political conflict for 30 years. In 1999, 114 gardens were slated for public auction and redevelopment (the auction later canceled). This article examines the controversy over the garden auction as a politics of scale in which garden advocates successfully raised the scope of the controversy beyond the scale of individual gardens, and ultimately beyond that of the city.

**Method/Findings:**

Analysis of the land-use conflict in NYC highlights the significance of politics of scale for grassroots organizations within a market-centric, neoliberal economic framework.

**Outcomes/Results:**

- NYC community gardens started in the 1970s were different than prior urban gardening/community gardening initiatives during times of war and economic crisis: they were initiated by residents without government assistance and on oppositional terms.
  - The name of an early CG organization-Garden Guerillas-provides a picture of the context.
- The neoliberal urban landscape emerged from both market privatization and from efforts to portray neoliberalism as natural.
- Garden advocates charged that Giuliani fabricated the housing vs. gardens conflict to fracture the city's political left.
- Giuliani framed the conflict as a tension between communism and capitalism, a strategy that Mitchell theorizes as the figureheads of neoliberalism working to naturalize the dynamics of the free market.

**Policy Implications:**

- Community gardens can become a space of conflict over public land uses vs. privatization.
- A strong coalition of non-profit gardening organizations rallied to protect the community gardens from auction/privatization.
- Community gardens can be seen as a public amenity, supported by public institutions.

Staeheli, L.A., D. Mitchell and K. Gibson (2002). "Conflicting Rights to the City in New York's Community Gardens." *GeoJournal*. 58: 197-205.

**Abstract:**

This article explores the different meanings of the land where community gardens are located, based on the position of the observer. NYC government officials viewed the land, which was originally obtained by the City through foreclosure and abandonment of property during the 1970s economic crisis, as owned property within their rights to re-privatize (i.e. sell to developers for housing and commercial development). Gardeners viewed the land as a space where they "grew" community, developed civic skills, and were empowered to fully participate in city politics.

**Method/Findings:**

Using interviews with participants in the conflict over community gardens, the article evaluates how the resolution to the garden crisis, which in part occurred through the privatization of what are often taken to be public or community rights to land, transform not only the legal status of the gardens, but also their role as places where different "publics" can exercise their right to the city and solidify that right in the landscape.

**Outcomes/Results:**

- Land trusts operate in murky spaces between public and private—they own land as private entities but claim to do so in the public interest.
- Community gardeners were often marginalized groups of neighborhood residents, who came to appreciate the garden for its ability to develop their sense of rights to the city (and in this case city property), their sense of citizenship, and their sense of community. They felt a psychological sense of ownership of the garden (i.e. attachment to the garden).
- NYC government focused on legal ownership of the land, and their right to privatize the land by selling on the private market. They partially justified this by claiming the land would be developed for low-income housing, but much of the land was developed commercially or for high-income housing.

**Policy Implications:**

- Gardens can become a space for conflict with competing interest groups vying for control of the land.
- City governments should consider their roles of providing public goods and enforcing contracts/rights between private entities.



Staehele, L.A. (2008). "Citizenship and the Problem of Community." *Political Geography*. 27: 5-21.

**Abstract:**

This essay explores the relationship between citizenship and community in contemporary western societies in an attempt to put the theories of philosophers, academics and agents of the state into conversation with the theories of activists. The author argues that community is a "problem" not because it is "bad," but because it is a site where contests are waged over citizenship and the terms of membership in society.

**Method/Findings:**

This article uses a community garden in New York City, an informal neighborhood watch program and the post-9/11 US and UK Arab Community to explore the different meanings of "community" from different perspectives. It aims to integrate the theories of community from academic, professional, and a variety of activist perspectives, noting that concepts and experiences of community and citizenship are contradictory, always evolving, and operating simultaneously.

**Outcomes/Results:**

- Different theoretical perspectives—including the perspectives of activists—assume different relationships between community and citizenship and locate each in different places and institutions.
- Gardeners developed a community garden out of a vacant lot, and they used the garden as a basis for mobilizing the community, educating gardeners and neighborhood residents about their rights and how to participate in city politics
  1. The garden was successful in organizing neighborhood members to claim more services from NYC, in registering voters, in teaching about the importance of civic participation, and in organizing protests over police brutality against poor, immigrant and racialized communities.

**Policy Implications:**

- Government and institutional reliance on "community" to solve problems and to integrate marginalized groups is based on a particular understanding of the roles of government, community and citizenship, not just an abdication of responsibility.
  - Activists and academics with alternate visions of the roles of government, community and citizenship should be explicit about the roles they define for government, community and citizenship.

Turner, B., J. Henryks, and D. Pearson. (2011). "EDITORIAL-Community Gardens: Sustainability, Health and Inclusion in the City." *Local Environment*. 16(6): 489-492.

**Abstract:**

This editorial comes from an issue of *Local Environment* based on papers from a National Community Garden Conference in Canberra, Australia. It summarizes the range of papers which explore key themes that emerged from the conference and deepens our knowledge of community gardens in theory and practice. In particular, conference participants addressed various aspects of community gardening that centered on issues of sustainability, health and inclusion for urban dwellers.

**Method/Findings:**

The conference considered the diverse forms of community gardens, including city farms, therapeutic gardens, school kitchen gardens, and guerilla gardens under a variety of names, including community gardening, urban gardening, and urban or civic agriculture.

**Outcomes/Results:**

- Community gardens can play an important role in promoting urban health, social inclusion, active civic participation and practices of sustainable living in urban environments.

**Policy Implications:**

- In Australia, government officials and gardening non-profits have called for increasing use of city land for community gardens.

Wills, J., F. Chinemana, and M. Rudolph. (2009). "Growing or Connecting? An Urban Food Garden in Johannesburg." *Health Promotion International*. 25(1): 33-41.

**Abstract:**

The Syakhama project is a food garden in the center of Johannesburg, South Africa, established by a University Health Promotion Unit in partnership with other stakeholders including city officials and a permaculture organization. It was set up to provide food for children attending early-childhood development centers and for NGO clients with HIV/AIDS. The project provides a model for a community-university partnership providing opportunities for service learning by students and for social investment by the university.

**Method/Findings:**

The method for this study was developed in conjunction with the subjects, who chose a narrative evaluation through the telling of the project's "story." Stories and narrative accounts were collected from 19 participants.

**Outcomes/Results:**

- A survey of urban food security in Johannesburg (cited in the literature review of this study) found that urban food gardens play a very minor role in addressing food insecurity among the urban poor in the city—less than 3% of people interviewed consumed food they grew themselves.
- The Siyakhana Food Garden project was set up to provide food and be a capacity-building tool.
- In this location, vegetables were only locally available at supermarkets, pre-packed and relatively expensive, so alternative access to the garden produce was beneficial.
- The garden included plants used for medicinal purposes (to treat minor ailments like coughs, colds, stomach upset, etc.) in addition to food.
- The project was envisioned as a community development project, but stakeholders and funders were concerned that the project was led by the University (a more top-down approach).
- The garden provided an opportunity for project participants to network with one another, which had the impact of building capacity of local organizations and individuals involved.
- The project generated human/intellectual capital, natural capital, economic capital and social capital while also building community capital.
- Additional research is needed to determine the impact of community gardens on food security and nutrition. Production and nutritional data have been difficult to collect.

**Policy Implications:**

- Secure access to land for the Siyakhana Garden was accomplished through university involvement. Lack of long-term access to water and land is a barrier to community garden development, and may be a role that can be filled by city or county government.
- Community gardens are often more successful if there is a neighborhood champion or a small group of neighborhood residents dedicated to its development.