

Urban Greening Resources

Here you will find extensive annotated listings of three types of resources related to urban greenspace:

1. **Research and studies** about the effects of urban greenspace on individual and civic wellbeing, and about the impacts of participation in greenspace-related activities, such as community gardening. Click [here](#) to go to the research and studies.
2. **Case studies** related to the creation, use, and management of urban greenspace. Click [here](#) to go to the case studies.
3. **Manuals** for how to create, use, and manage urban greenspace. Click [here](#) to go to the manuals.

This guide was prepared by [Erie Neighborhood House](#) through a grant from The Richard H. Driehaus Foundation.*

* Thanks to Jerry de Jaager, Ena Kumar, and Ben Helphand for their contributions to the creation of this guide. Ms. Kumar and Mr. Helphand are from [NeighborSpace](#).

Urban Greening Research

This section is divided into two parts. The first part presents annotated research about the ways in which the presence of urban greenspace improves individual and civic well-being. Click [here](#) to see those resources.

The second part contains annotated research and studies about the effects of participation in urban greenspace activities, such as community gardening. Click [here](#) to see those resources.

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Urban Greening Research: Part 1

STUDIES RELATED TO THE PRESENCE OF URBAN GREENSPACE

Click on a topic below to see the research associated with it. (Some entries appear in multiple categories.)

This guide was prepared by [Erie Neighborhood House](#) through a grant from The Richard H. Driehaus Foundation.

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[ADD/ADHD](#)

[Neighborhood cohesion](#)

Aggression (see [Safety](#))

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[Health, Physical](#)

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Mental fatigue (see [Cognitive functioning](#))

Activity, encouragement of

Coley, R., Kuo, F., Sullivan, W. (1997). Where does community grow? The social context created by nature in urban public housing. *Environment and Behavior*, 29(4), 468-494.

In a study of relatively green spaces within inner-city public housing developments, “results consistently indicated that landscaping encourages greater use of outdoor areas by residents. Spaces with trees attracted larger groups of people, as well as more mixed groups of youth and adults, than did spaces devoid of nature. In addition, more dense groupings of trees and trees that are located close to public housing buildings attracted larger groups of people.” The article reflects on relationships discussed in other articles by the authors, such as the development of neighborhood social ties, sense of personal efficacy, and crime and safety.

[Read this article](#)

Kuo, F., Sullivan, W., Coley, R., Brunson, L. (1998). Fertile ground for community: Inner-city neighborhood common spaces. *American Journal of Community Psychology*, 26(6), 823-851.

In a study of residents of an inner-city housing development, it was found that neighborhood social ties—a measure of sense of community—were stronger among residents who lived close to greener open spaces: “[T]he more vegetation in a common space, the stronger the neighborhood ties near that space—compared to residents living adjacent to nearly barren spaces, individuals living near to greener common spaces had more social activities and more visitors, knew more of their neighbors, reported that their neighbors were more concerned with helping and supporting one another, and had stronger feelings of belonging.” The article includes an extensive discussion of the importance of neighborhood social ties, particularly for lower-income individuals.

[Read this article](#)

Robert Wood Johnson Foundation. (2010) Research synthesis: Parks, playgrounds, and active living.

This very thorough review of existing studies shows, among other things, that “having more parks and more park area within a community is associated with higher physical activity levels.”

[Read this research synthesis](#)

Sullivan, W., Kuo, F., DePooter, S. (2004). The fruit of urban nature: Vital neighborhood spaces. *Environment and Behavior*, 36(5), 678-700.

Within a low-rise urban housing development, residents’ use of space for individual activity and social interaction was measured, comparing relatively

green areas with relatively barren areas. Significantly greater use and interaction was measured in the greener areas. This was particularly true for women, and not true for teens. “Trees and grass help create vital neighborhood spaces in inner-city settings,” the authors conclude. This article includes a thorough summary of many other articles relating to the impacts of green space on urban individuals.

[Read this article](#)

Taylor, A., Wiley, A., Kuo, F., Sullivan, W. (1998). Growing up in the inner city: Green spaces as places to grow. *Environment and Behavior*, (30)1, 3-27.

Observing children within 64 low-rise courtyards in an inner-city housing project, researchers found: “There was more play, and more creative play, in spaces that had more trees.” And “Children had more access to adults in greener spaces than they did in more barren spaces....Children had *double* the access to adult attention when higher levels of vegetation were present.”

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ADD/ADHD

Faber Taylor, A. & Kuo, F. (2009). Children with attention deficits concentrate better after walk in the park. *Journal of Attention Disorders*, 12, 402-409.

Children diagnosed with Attention Deficit/Hyperactivity Disorder went on twenty-minute individual guided walks in a city park, a well-kept urban neighborhood, and a well-kept urban downtown. The walks took place at one-week intervals. They concentrated better after the walk in the park than after the downtown walk or the neighborhood walk. “Twenty minutes in a park setting was sufficient to elevate attention performance relative to the same amount of time in other settings. These findings indicate that environments can enhance attention not only in the general population but also in ADHD populations. ‘Doses of nature’ might serve as a safe, inexpensive, widely accessible new tool in the tool kit for managing ADHD symptoms.”

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Faber Taylor, A., Kuo, F., Sullivan, W. (2001). Coping with ADD: The surprising connection to green play settings. *Environment and Behavior*, 33(1), 54-77.

In a study of children with Attention Deficit Disorder, reports from the children’s parents showed that the children’s symptoms were more manageable after activities in green outdoor settings than after activities in other settings (indoors and in built outdoor settings). Moreover: “Although the greenness of a child’s residential setting was unrelated to the severity of their ADD symptoms, the greenness of their play setting was related to symptom severity....

Children who played in windowless indoor settings had significantly more severe symptoms than children who played in grassy outdoor spaces with or without trees did.”

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Kuo, F., Faber Taylor, A. (2004). A potential natural treatment for Attention-Deficit/Hyperactivity Disorder: Evidence from a national study. *American Journal of Public Health, 94*(9), 1580-1586.

Parents rated the aftereffects of 49 common after-school and weekend activities on children’s ADHD symptoms. Green outdoor activities reduced symptoms significantly more than did activities conducted in other settings; findings were consistent across age, gender, and income groups, community types, geographic regions, and diagnoses.

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Asthma

Kimes, D., Ullah, A., Levine, E., Nelson, R., Timmins, S., Weiss, S., Bollinger, M., Blaisdell, C. (2004). Relationships between pediatric asthma and socioeconomic/urban variables in Baltimore, Maryland. *Health and Place, 10*:141–152.

Using satellite data, the researchers found (among other things) that urban areas with the highest asthma hospitalization rates have the lowest vegetation cover.

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Attention restoration theory

Kuo, F. (2001). Coping with poverty: Impacts of environment and attention in the inner city. *Environment and Behavior, 33*(1), 5-34.

When residents of housing with low levels of nearby vegetation (some grass and trees) were compared to residents of similar housing with no nearby vegetation (just concrete and asphalt), “[I] individuals who had some nearby vegetation were significantly more effective in managing their major life issues than were their counterparts living in barren environments.” Because the more effective residents were also more successful at tests that measure the ability to pay attention, the difference is ascribed to Attention Restoration Theory.

The author states: “Research and theory on coping has focused almost exclusively on social support as an external resource for coping; this work

suggests that the physical context matters as well and points to a possible new focus for intervention efforts.... This study suggests that, in poor inner-city neighborhoods, planting a few trees may help provide individuals and families the psychological resources needed to ‘take arms against a sea of troubles.’”

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Children/Child development

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Faber Taylor, A., Kuo, F., Sullivan, W. (2002). Views of nature and self-discipline: Evidence from inner-city children. *Journal of Environmental Psychology, Special Issue: Environment and Children*, 22, 49-63.

For girls, the more that a view from the apartments where they lived contained natural elements as opposed to man-made ones, the higher their self-discipline related to concentration, impulse inhibition, and delay of gratification was found to be. Attention Restoration Theory is offered as an explanatory mechanism for this connection.

No connection between view and self-discipline was found for boys in the study. The researchers suggest this might result from the fact that boys usually play farther from home than girls. “Consistent with this, findings from a previous study indicated that boys’ attentional functioning was not related to the level of nature immediately around their home, but was related to the level of nature in their usual play space.” (See “[Coping with ADD](#)”).

The researchers also suggest: “These findings raise the possibility that incorporating trees and grass in schoolyards could play an important role in the classroom. Perhaps after spending breaks in green schoolyards, children return

to their classrooms better prepared to pay attention, to suppress disruptive impulses, and to wait patiently for future breaks.”

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Faber Taylor, A. & Kuo, F. (2006). Is contact with nature important for healthy child development? State of the evidence. In Spencer, C. & Blades, M. (Eds.), *Children and Their Environments: Learning, Using and Designing Spaces*. Cambridge University Press, Cambridge, U.K.

After describing the methodological limitations of most studies regarding the relationship between nature and child development, the authors nonetheless conclude: “[G]iven the pattern of findings pointing in the same direction and persisting across different sub-populations of children and in different settings...current evidence suggests that the general hypothesis may be correct: contact with nature is supportive of healthy child development in several domains—cognitive, social, and emotional. Until proven otherwise, we may continue to assume that, just as they need good nutrition and adequate sleep, children may very well need contact with nature.”

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Wells, N. (2000). At home with nature—Effects of “greenness” on children's cognitive functioning. *Environment and Behavior*, 32, 775-795:

17 children of low-income families that moved into new housing were assessed for the quality of their cognitive functioning; their capacity to focus or direct their attention. The researcher concluded: “Children whose homes improved the most in terms of greenness following relocation also tended to have the highest levels of cognitive functioning following the move.”

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Cognitive functioning

Cimprich, B., Ronis, D (2003). An environmental intervention to restore attention in women with newly diagnosed breast cancer. *Cancer Nursing*. 26 (4): 284-292

This dissertation studied recovering breast-cancer patients engaged in gardening activity programs. Compared to another recovering group who were not given such an opportunity, the patients who undertook nature activities three times a week for ninety days had far less tendency to complain of mental fatigue, depression, marital problems, or a general inability to cope. They scored significantly higher on tests of cognitive acuity than their counterparts. They were far more likely to go back to work full-time and tackle new projects, such as losing weight or learning a foreign language.

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Concentration (see also Self-discipline)

Hartig, T., Mang, M., Evans, G. (1991) Restorative effects of natural environment experiences. *Environment and Behavior*, 23, 3–26.

The researchers compared the effects, among college students, of a walk in a natural setting, a walk in an urban setting, and relaxing in a comfortable chair, finding that mental fatigue was most successfully relieved by a walk in a park.

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Ottosson, J., Grahn, P. (2005). Comparison of leisure time spent in a garden with leisure time spent indoors on measures of restoration in residents in geriatric care. *Landscape Research*, 30, 23-55.

In this study involving “very elderly nursing-home patients,” the researchers state: “The results indicate that powers of concentration increase for very elderly people after a visit to a garden outside the geriatric home in which they live, compared to that after resting indoors in their favorite room. The results did not show any effects on blood pressure or heart rate. It is suggested that having a one-hour rest outdoors in a garden setting plays a role in elderly people's powers of concentration, and could thereby affect their performance of activities of daily living.”

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Coping skills

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Kaplan, R., Kaplan, S., Ryan, R. (1998) *With people in mind: Design and management of everyday nature*. Washington, DC: Island Press.

A study reported in this book shows that workers with a view of natural elements, such as trees and flowers, experienced less job pressure, were more satisfied with their jobs and reported fewer ailments and headaches than those

who either had no outside view or could only see built elements from their windows. Moreover, simply the knowledge that the view was available was important to the employees, even if they did not take advantage of it.

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Kuo, F. (2001). Coping with poverty: Impacts of environment and attention in the inner city. *Environment and Behavior*, 33(1), 5-34.

When residents of housing with low levels of nearby vegetation (some grass and trees) were compared to residents of similar housing with no nearby vegetation (just concrete and asphalt), “[I] individuals who had some nearby vegetation were significantly more effective in managing their major life issues than were their counterparts living in barren environments.” Because the more effective residents were also more successful at tests that measure the ability to pay attention, the difference is ascribed to Attention Restoration Theory.

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Leather, P., Pyrgas, M., Beale, D., Lawrence, C. (1998) Windows in the workplace. *Environment and Behavior*, 30, 739–763.

In a factory, 100 workers were studied to determine the attitudinal effects of direct sunlight, views of nature, and higher levels of illumination. The researchers report: “A view of natural elements (i.e., trees, vegetation, plants, and foliage) was found to buffer the negative impact of job stress on intention to quit and to have a similar, albeit marginal, effect on general well-being.”

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Defensible space theory

Kuo, F. (2003). The role of arboriculture in a healthy social ecology: Invited review article for a Special Section. *Journal of Arboriculture* 29(3), 148-155.

In this summary of research findings, the author suggests that defensible space theory helps explain why trees and grass cover have been shown to be “systematically linked to...stronger ties among neighbors, greater sense of safety and adjustment, more supervision of children in outdoor spaces, healthier

patterns of children’s play, greater use of neighborhood common spaces, fewer incivilities, fewer property crimes, and fewer violent crimes.”

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Economic value

Been, V. and Voicu, I. (2006) The effect of community gardens on neighboring property values: Working Paper 06–01 Furman Center for Real Estate & Urban Policy New York University School of Law and Wagner School of Public Service

Reviewing community gardens in New York City, the authors conclude: “[C]ommunity gardens have significant positive effects on surrounding property values in all neighborhoods, and that those effects are substantial in the poorest of host neighborhoods (raising neighboring property values by as much as 9.5 percentage points within five years of the garden’s opening).”

[Read this study](#)

Harnik, P., Welle, B. (2009) Measuring the economic benefit of a city park system. Philadelphia : The Trust for Public Land.

Acknowledging, “Determining the economic value of a city park system is a science still in its infancy,” the authors describe and apply ways of measuring economic benefits from such park systems with regard to hedonic/property values, tourism, direct use, health, community cohesion, and management of stormwater runoff and air pollution.

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Wolf, K. (2004). Public response to the urban forest in inner-city business districts. *Journal of Arboriculture* 29(3): 117-126.

A nationwide survey shows that “creating and stewarding an urban forest canopy may enhance revenues for businesses in retail districts that offer diverse products at varied prices.”

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Elderly

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Takano, T., Nakamura K., Watanabe M. (2002). Urban residential environments and senior citizens' longevity in megacity areas: The importance of walkable green spaces. *Journal of Epidemiology and Community Health*, 56, 913-918.

In Tokyo, longevity of populations of elderly citizens (86, 81, 76, and 71 years old) was compared with the presence of walkable green spaces. The researchers concluded: “Living in areas with walkable green spaces positively influenced the longevity of urban senior citizens independent of their age, sex, marital status, baseline functional status, and socioeconomic status.”

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Health, Mental

Maas, J., Verheij, R., de Vries, S., Spreeuwenberg, P., Schellevis, F., Groenewegen, P. (2009). Morbidity is related to a green living environment. *Journal of Epidemiology and Community Health*. Dec; 63(12):967-73.

Morbidity data were derived from electronic medical records of 195 general practitioners in 96 Dutch practices, serving a population of 345,143 people, and the percentage of green space within a 1 km and 3 km radius around the postal code coordinates was derived from an existing database and was calculated for each household. The researchers state: “The annual prevalence rate of 15 of the 24 disease clusters was lower in living environments with more green space in a 1 km radius. The relation was strongest for anxiety disorder and depression. The relation was stronger for children and people with a lower socioeconomic status.... The study stresses the importance of green space close to home for children and lower socioeconomic groups.”

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Maas, J., van Dillen, S., Verheij, R., Groenewegen, P. (2008) Social contacts as a possible mechanism behind the relation between green space and health. *Health and Place*. Jun; 15(2):586-95.

This study involving 10,089 residents of the Netherlands explored whether social contacts are an underlying mechanism behind the relationship between green space and health. The researchers report: “After adjustment for socio-economic and demographic characteristics, less green space in people's living environment coincided with feelings of loneliness and with perceived shortage of social support.”

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Maller, C., Townsend, M., Pryor, A., Brown, P., and St. Leger, L. (2005) Healthy nature healthy people: ‘contact with nature’ as an upstream health promotion intervention for populations *Health Promotion International*, Vol. 21 No. 1 :

A survey of the anecdotal, theoretical, and experimental evidence that nature promotes health, in support of the authors’ contention that “In the context of the growing worldwide mental illness burden of disease, contact with nature may offer an affordable, accessible and equitable choice in tackling the imminent epidemic, within both preventative and restorative public health strategies.”

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Mind. (2007). Ecotherapy: the green agenda for mental health.

This report includes a study that compared a walk in nature with a walk in a shopping mall (pages 18-25). Compared to those who participated in the mall walk, participants in the nature walk reported stronger increases in self-esteem, greater reduction in feelings of depression, and greater improvements in many aspects of mood.

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Pretty, J., Peacock, J., Sellens, M., Griffin, M. Mental and physical health outcomes of green exercise. (2005). *International Journal of Environmental Health Research* 15(5): 319 – 337:

While exercising on a treadmill, the study subjects were exposed to a sequence of 30 scenes projected on a wall; the scenes were “rural pleasant, rural unpleasant, urban pleasant and urban unpleasant.” Both rural and urban pleasant scenes produced a significantly greater positive effect on self-esteem than the exercise-only control. “This shows the synergistic effect of green exercise in both rural and urban environments. By contrast, both rural and urban unpleasant scenes reduced the positive effects of exercise on self-esteem.”

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Sugiyama, T., Leslie, E., Giles-Corti, B., Owen, N. (2008). Associations of neighbourhood greenness with physical and mental health: do walking, social

coherence and local social interaction explain the relationships? *Journal of Epidemiology and Community Health*, 62, e9.

Adults in Adelaide, Australia were surveyed regarding their physical and mental health, the amount of greenspace in their neighborhoods, and their levels of physical activity. The researchers state: “Perceived neighbourhood greenness was more strongly associated with mental health than it was with physical health. Recreational walking seemed to explain the link between greenness and physical health, whereas the relationship between greenness and mental health was only partly accounted for by recreational walking and social coherence.”

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Sherman, S., Varni, J., Ulrich, R., Malcarne, V. (2005). Post-occupancy evaluation of healing gardens in a pediatric cancer center. *Landscape and Urban Planning* Volume 73, Issues 2-3, 15: 167-183.

In this study of 1400 users of hospital gardens, “preliminary data suggest that emotional distress and pain are lower for all groups when in the gardens than when inside the hospital.”

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Health, Physical

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de Vries, S., Verheij, R., Groenewegen, P., Spreeuwenberg, P. (2003). Natural environments—healthy environments? An exploratory analysis of the relationship between greenspace and health. *Environment and Planning*, A35, 1717-1731.

In a Dutch study of more than 10,000 people, living in a green environment was positively related to all three health indicators in the study: recently-reported symptoms, overall self-assessment, and score on a general health questionnaire. The researchers state: “[P]eople living in a greener environment appear to be

significantly more healthy than others....[A]ssuming a causal relation between greenspace and health, 10% more greenspace in the living environment leads to a decrease in the number of symptoms that is comparable with a decrease in age by 5 years.”

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Frumkin, H. (2001). Beyond toxicity human health and the natural environment. *American Journal of Preventative Medicine*, 20, 234–240.

A review of evidence (mostly non-urban) in support of the author’s conviction that natural elements might be included more in public health and patient care: “On the clinical level, this may have implications for patient care. Perhaps we will advise patients to take a few days in the country, to spend time gardening, or to adopt a pet, if clinical evidence offers support for such measures. Perhaps we will build hospitals in scenic locations, or plant gardens in rehabilitation centers. Perhaps the employers and managed care organizations that pay for health care will come to fund such interventions, especially if they prove to rival pharmaceuticals in cost and efficacy.”

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Hu, Z., Liebens, J., Ranga, K. (2008). Linking stroke mortality with air pollution, income, and greenness in northwest Florida: An ecological geographical study. *International Journal of Health Geographics*, 7, Article number 20.

This study across a broad geographic area shows that “exposure to more green space could reduce the risk of stroke mortality.” The authors state: “The empirical result in this study supports the “salutary” effects of the exposure to natural environments on human health as well as the significance of residential environments to counteract “sedentary” lifestyles and that greening of urban areas could make a contribution to increase physical activity.”

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Kimes, D., Ullah, A., Levine, E., Nelson, R., Timmins, S., Weiss, S., Bollinger, M., Blaisdell, C. (2004). Relationships between pediatric asthma and socioeconomic/urban variables in Baltimore, Maryland. *Health and Place*. 10:141–152.

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Maas, J., Verheij, R., de Vries, S., Spreeuwenberg, P., Schellevis, F., Groenewegen, P. (2009) Morbidity is related to a green living environment. *Journal of Epidemiology and Community Health*. Dec; 63(12):967-73.

Morbidity data were derived from electronic medical records of 195 general practitioners in 96 Dutch practices, serving a population of 345,143 people, and the percentage of green space within a 1 km and 3 km radius around the postal code coordinates was derived from an existing database and was calculated for each household. The researchers state: “The annual prevalence rate of 15 of the 24 disease clusters was lower in living environments with more green space in a 1 km radius. The relation was strongest for anxiety disorder and depression. The relation was stronger for children and people with a lower socioeconomic status.... The study stresses the importance of green space close to home for children and lower socioeconomic groups.”

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Maller, C., Townsend, M., Pryor, A., Brown, P., and St. Leger, L. (2005). Healthy nature healthy people: ‘Contact with nature’ as an upstream health promotion intervention for populations. *Health Promotion International*, Vol. 21 No. 1.

A survey of the anecdotal, theoretical, and experimental evidence that nature promotes health, in support of the authors’ contention that “In the context of the growing worldwide mental illness burden of disease, contact with nature may offer an affordable, accessible and equitable choice in tackling the imminent epidemic, within both preventative and restorative public health strategies.”

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Maas, J., Verheij, R., Groenewegen, P., de Vries, S., Spreeuwenberg, P. (2006). Green space, urbanity, and health: How strong is the relation? *Journal of Epidemiology and Community Health*, 60, 587-592.

In this very large Dutch study, correlations were sought among self-reported health status and proximity to greenspace. The authors report: “The percentage of green space in people’s living environment showed a positive association with the perceived general health of residents. People with a greener environment within a 1 km or 3 km radius around their homes have better self perceived health than people living in a less green environment.... The overall relation is somewhat stronger for lower socioeconomic groups. Elderly, youth, and

secondary educated people in large cities seem to benefit more from presence of green areas in their living environment than other groups in large cities.”

[Read this article](#)

Mitchell, R., & Popham, F. (2008). Effect of exposure to natural environment on health inequalities: An observational population study. *Lancet*, 9650, 1655-1660.

In this study of the entire below-retirement-age population of England, the researchers found that the presence of green spaces counteracts some of the health inequalities of lower-income people: “The inequality in all-cause and circulatory disease mortality related to income deprivation is lower in populations who live in the greenest areas than in those who have less exposure to green space. We also noted an independent association between residence in the most green areas and decreased rates for all-cause and circulatory mortality.”

[Read this article](#) [Requires brief free registration]

Mitchell, R., & Popham, F. (2007). Greenspace, urbanity and health: Relationships in England. *Journal of Epidemiology and Community Health*, 61, 681-683.

This study, conducted in England, compared the quantity of greenspace in a number of areas with general health data for those areas. The researchers state: “In general, a greater proportion of greenspace was associated with better health.... The association varied according to the combination of area income deprivation and urbanity. It held in all urban areas and rural low-income areas, but there was no significant association between greenspace and health in higher income suburban and higher income rural areas.”

[Read this article](#)

Pretty, J., Peacock, J., Sellens, M., Griffin, M. Mental and physical health outcomes of green exercise. (2005). *International Journal of Environmental Health Research* 15(5): 319 – 337.

Subjects were exposed to a sequence of 30 scenes projected on a wall whilst exercising on a treadmill; the scenes were “rural pleasant, rural unpleasant, urban pleasant and urban unpleasant.” Both rural and urban pleasant scenes produced a significantly greater positive effect on self-esteem than the exercise-only control. “This shows the synergistic effect of green exercise in both rural and urban environments. By contrast, both rural and urban unpleasant scenes reduced the positive effects of exercise on self-esteem.”

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Sherman, S., Varni, J., Ulrich, R., Malcarne, V. (2005). Post-occupancy evaluation of healing gardens in a pediatric cancer center. *Landscape and Urban Planning* 73, Issues 2-3, 15:167-183.

In this study of 1400 users of hospital gardens, “preliminary data suggest that emotional distress and pain are lower for all groups when in the gardens than

when inside the hospital.”

To read an [abstract](#) of this article, [click here](#) and then enter:
10.1016/j.landurbplan.2004.11.013 [\$ for full text]

Ulrich, Roger, S. (1984). View through a window may influence recovery from surgery. *Science*. 224: 420-1.

Abstract: “Medical records on recovery of patients after [gall bladder surgery] in a suburban Pennsylvania hospital between 1972 and 1981 were examined to determine whether assignment to a room with window view of a natural setting might have restorative influences. Twenty-three surgical patients assigned to rooms with windows looking out on a nature scene of trees had shorter postoperative hospital stays, received fewer negative evaluative comments in nursing notes, and took fewer potent analgesics than 23 matched patients in similar rooms with windows facing a brick building wall.”

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Longevity

Mitchell, R., & Popham, F. (2008). Effect of exposure to natural environment on health inequalities: An observational population study. *Lancet*, 9650, 1655-1660.

In this study of the entire below-retirement-age population of England, the researchers found that the presence of green spaces counteracts some of the health inequalities of lower-income people: “The inequality in all-cause and circulatory disease mortality related to income deprivation is lower in populations who live in the greenest areas than in those who have less exposure to green space. We also noted an independent association between residence in the most green areas and decreased rates for all-cause and circulatory mortality.”

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Takano, T., Nakamura K., Watanabe M. (2002). Urban residential environments and senior citizens' longevity in megacity areas: the importance of walkable green spaces. *Journal of Epidemiology and Community Health*, 56, 913-918.

In Tokyo, longevity of populations of elderly citizens (86, 81, 76, and 71 years old) was compared with the presence of walkable green spaces. The researchers concluded: “Living in areas with walkable green spaces positively influenced the longevity of urban senior citizens independent of their age, sex, marital status, baseline functional status, and socioeconomic status.”

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Neighborhood Cohesion

Coley, R., Kuo, F., Sullivan, W. (1997). Where does community grow? The social context created by nature in urban public housing. *Environment and Behavior*, 29(4), 468-494.

In a study of relatively green spaces within inner-city public housing developments, “results consistently indicated that landscaping encourages greater use of outdoor areas by residents. Spaces with trees attracted larger groups of people, as well as more mixed groups of youth and adults, than did spaces devoid of nature. In addition, more dense groupings of trees and trees that are located close to public housing buildings attracted larger groups of people.” The article reflects on relationships discussed in other articles by the authors, such as the development of neighborhood social ties, sense of personal efficacy, and crime and safety.

[Read this article](#)

Kim, J., Kaplan, R. (2004) Physical and psychological factors in sense of community: New urbanist Kentlands and nearby Orchard Village. *Environment and Behavior*, 36(3), 313-340

Comparing two residential areas in England, the authors find, “Natural features and open spaces play a particularly important role in sense of community.”

[Read an abstract of this article](#) [\$ for full text]

Kuo, F., Sullivan, W., Coley, R., Brunson, L. (1998). Fertile ground for community: Inner-city neighborhood common spaces. *American Journal of Community Psychology*, 26(6), 823-851.

In a study of residents of an inner-city housing development, it was found that neighborhood social ties—a measure of sense of community—were stronger among residents who lived close to greener open spaces: “[T]he more vegetation in a common space, the stronger the neighborhood ties near that space—compared to residents living adjacent to nearly barren spaces, individuals living near to greener common spaces had more social activities and more visitors, knew more of their neighbors, reported that their neighbors were more concerned with helping and supporting one another, and had stronger feelings of belonging.” The article includes an extensive discussion of the importance of neighborhood social ties, particularly for lower-income individuals.

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Sullivan, W., Kuo, F., DePooter, S. (2004). The fruit of urban nature: Vital neighborhood spaces. *Environment and Behavior*, 36(5), 678-700.

Within a low-rise urban housing development, residents’ use of space for individual activity and social interaction was measured, comparing relatively green areas with relatively barren areas. Significantly greater use and interaction

was measured in the greener areas. This was particularly true for women, and not true for teens. “Trees and grass help create vital neighborhood spaces in inner-city settings,” the authors conclude. This article includes a thorough summary of many other articles relating to the impacts of green space on urban individuals.

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Overview

Faber Taylor, A. & Kuo, F. (2006). Is contact with nature important for healthy child development? State of the evidence. In Spencer, C., Blades, M. (Eds.), *Children and Their Environments: Learning, Using and Designing Spaces*. Cambridge University Press, Cambridge, U.K.

After describing the methodological limitations of most studies regarding the relationship between nature and child development, the authors nonetheless conclude: “[G]iven the pattern of findings pointing in the same direction and persisting across different sub-populations of children and in different settings...current evidence suggests that the general hypothesis may be correct: contact with nature is supportive of healthy child development in several domains—cognitive, social, and emotional. Until proven otherwise, we may continue to assume that, just as they need good nutrition and adequate sleep, children may very well need contact with nature.”

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Frumkin, H. (2001). Beyond toxicity: human health and the natural environment. *American Journal of Preventative Medicine*, 20, 234–240.

A review of evidence (mostly non-urban) in support of the author’s conviction that natural elements might be included more in public health and patient care: “On the clinical level, this may have implications for patient care. Perhaps we will advise patients to take a few days in the country, to spend time gardening, or to adopt a pet, if clinical evidence offers support for such measures. Perhaps we will build hospitals in scenic locations, or plant gardens in rehabilitation centers. Perhaps the employers and managed care organizations that pay for health care will come to fund such interventions, especially if they prove to rival pharmaceuticals in cost and efficacy.”

[Read this article](#)

Kaplan, R. (2001). The nature of the view from home—psychological benefits. *Environment and Behavior*, 33, 507-542

In the context of an overall review of literature concerning window views of nature, the author reports on a study conducted in an urban housing development that showed that views of nature were more impactful than views of sky and weather or views of a built environment for increasing residents' sense of well-being.

To read an abstract of this article, [click here](#) and then enter:
10.1177/00139160121973115 [\$ for full text]

Kuo, F. (2003). The role of arboriculture in a healthy social ecology: Invited review article for a Special Section. *Journal of Arboriculture* 29(3), 148-155.

In this summary of research findings, the author suggests that defensible space theory helps explain why trees and grass cover have been shown to be “systematically linked to...stronger ties among neighbors, greater sense of safety and adjustment, more supervision of children in outdoor spaces, healthier patterns of children's play, greater use of neighborhood common spaces, fewer incivilities, fewer property crimes, and fewer violent crimes.”

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Kuo, F. (2004). Horticulture, well-being, and mental health: From intuitions to evidence. In Relf, D. (Ed.), *Proceedings of the XXVI International Horticulture Congress: Expanding roles for horticulture in improving human well-being and life quality. Acta Horticulturae*, 639, 27-36.

A summary of the evidence for horticultural contributions to human mental health and well-being, with a particular focus on its implications for children, the poor, and other vulnerable populations, showing outcomes that include lower rates of violent and property crime, lower incidence of aggression, greater ability to cope with poverty, better life functioning, greater life satisfaction, reduced attention deficit symptoms, and greater strength of community.

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Maller, C., Townsend, M., Pryor, A., Brown, P., and St. Leger, L. (2005). Healthy nature healthy people: “contact with nature” as an upstream health promotion intervention for populations. *Health Promotion International*, Vol. 21 No. 1.

A survey of the anecdotal, theoretical, and experimental evidence that nature promotes health, in support of the authors' contention that “In the context of the growing worldwide mental illness burden of disease, contact with nature may offer an affordable, accessible and equitable choice in tackling the imminent epidemic, within both preventative and restorative public health strategies.”

[Read this article](#)

Relf, D. (1992). Human issues in horticulture. *Horticulture Technology* April/June: 2

A thorough exploration of theories and research relating to the positive place of plants in individual and social life.

[Read this article](#)

Sullivan, W., Kuo, F., DePooter, S. (2004). The fruit of urban nature: Vital neighborhood spaces. *Environment and Behavior*, 36(5), 678-700.

Within a low-rise urban housing development, residents' use of space for individual activity and social interaction was measured, comparing relatively green areas with relatively barren areas. Significantly greater use and interaction was measured in the greener areas. This was particularly true for women, and not true for teens. "Trees and grass help create vital neighborhood spaces in inner-city settings," the authors conclude. This article includes a thorough summary of many other articles relating to the impacts of green space on urban individuals.

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Safety

Kuo, F., Sullivan, W. (2001). Environment and crime in the inner city: Does vegetation reduce crime? *Environment and Behavior*, 33(3), 343-367.

Whereas dense vegetation such as thick shrubbery and groves of trees may increase crime or fear of crime, the authors suggest that "in some settings, visibility-preserving forms of vegetation may actually deter crime. Specifically, we propose that in poor inner-city neighborhoods, vegetation can inhibit crime through the following two mechanisms: by increasing surveillance and by mitigating some of the psychological precursors to violence." Surveillance is increased because more people use green spaces (and, relatedly, potential criminals may be deterred by the expectation of greater surveillance in such spaces, even when it is not actually taking place). The propensity to violence is reduced because vegetation can reduce "attentional fatigue," which has been shown to be related to irritability, impulsiveness, and outbursts of anger.

In a comparison of 98 buildings within a housing project, with different levels of nearby vegetation, the authors found: "Compared to buildings with low levels of vegetation, those with medium levels had 42% fewer total crimes, 40% fewer property crimes, and 44% fewer violent crimes. The comparison between low and high levels of vegetation was even more striking: Buildings with high levels of vegetation had 52% fewer total crimes, 48% fewer property crimes, and 56% fewer violent crimes than buildings with low levels of vegetation."

This paper also reports “a variety of evidence suggesting that vegetation may be linked to lower levels of crime in residential neighborhoods, particularly poor inner-city neighborhoods,” showing that “residential vegetation has been linked with a greater sense of safety, fewer incivilities, and less aggressive and violent behavior.”

[Read this article](#)

Kuo, F., Sullivan, W. (2001). Aggression and violence in the inner city: Effects of environment via mental fatigue. *Environment and Behavior*, Special Issue 33(4), 543-571.

A study of residents of an urban housing development shows that aggression is less when there is vegetation nearby than it is in more barren settings: “Nearby nature was systematically related to lower scores on multiple indices of aggression against partners and one index of aggression against children.” The research suggests that this effect relates to the attention restoration effect of nature, which combats chronic mental fatigue and fatigue-related aggression: “At this juncture, attention restoration theory provides the best explanation for the link between nature and aggression.”

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Kuo, F., Bacaicoa, M., Sullivan, W. (1998). Transforming inner-city neighborhoods: Trees, sense of safety, and preference. *Environment and Behavior*, 30(1), 28-59.

One hundred residents of urban public housing were shown a variety of computer simulations of landscaping around their buildings and asked which landscaping they preferred and which made them feel safer. They reacted very positively to the ideas of having more trees and better grass maintenance; the highest recommended density of trees was preferred.

Both high levels of grass maintenance and high density of trees were highly correlated with the residents’ anticipated sense of safety. These findings are contradictory to many other findings; the authors speculate: “Perhaps in the context of barren inner-city no man’s lands, the presence of trees and well-maintained grass sends a positive signal, indicating to residents and possible offenders that this is a “nice” place, a civilized, cared-for place with civilized standards of behavior.”

The authors also note, “This study suggests that landscape design principles developed in the context of largely middle- or upper-income European American neighborhoods are not universal.”

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Self-discipline

Faber Taylor, A., Kuo, F., Sullivan, W. (2002). Views of nature and self-discipline: Evidence from inner-city children. *Journal of Environmental Psychology, Special Issue: Environment and Children*, 22, 49-63.

For girls, the more that a view from the apartments where they lived contained natural elements as opposed to man-made ones, the higher their self-discipline related to concentration, impulse inhibition, and delay of gratification was found to be. Attention Restoration Theory is offered as an explanatory mechanism for this connection.

No connection between view and self-discipline was found for boys in the study. The researchers suggest this might result from the fact that boys usually play farther from home than girls. “Consistent with this, findings from a previous study indicated that boys’ attentional functioning was not related to the level of nature immediately around their home, but was related to the level of nature in their usual play space.” (See “Coping with ADD”).

The researchers also suggest: “These findings raise the possibility that incorporating trees and grass in schoolyards could play an important role in the classroom. Perhaps after spending breaks in green schoolyards, children return to their classrooms better prepared to pay attention, to suppress disruptive impulses, and to wait patiently for future breaks.”

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Self-esteem

Pretty, J., Peacock, J., Sellens, M., Griffin, M. (2005). Mental and physical health outcomes of green exercise. *International Journal of Environmental Health Research* 15(5): 319 – 337.

While exercising on a treadmill, subjects viewed a sequence of 30 scenes projected on a wall; the scenes were “rural pleasant, rural unpleasant, urban pleasant and urban unpleasant.” Both rural and urban pleasant scenes produced a significantly greater positive effect on self-esteem than the exercise-only control. “This shows the synergistic effect of green exercise in both rural and urban environments. By contrast, both rural and urban unpleasant scenes reduced the positive effects of exercise on self-esteem.”

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Mind. (2007) Ecotherapy: the green agenda for mental health.

This report includes a study that compared a walk in nature with a walk in a shopping mall (pages 18-25). Compared to those who participated in the mall walk, participants in the nature walk reported stronger increases in self-esteem,

greater reduction in feelings of depression, and greater improvements in many aspects of mood.

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Social ecology

Coley, R., Kuo, F., Sullivan, W. (1997). Where does community grow? The social context created by nature in urban public housing. *Environment and Behavior*, 29(4), 468-494.

In a study of relatively green spaces within inner-city public housing developments, “results consistently indicated that landscaping encourages greater use of outdoor areas by residents. Spaces with trees attracted larger groups of people, as well as more mixed groups of youth and adults, than did spaces devoid of nature. In addition, more dense groupings of trees and trees that are located close to public housing buildings attracted larger groups of people.” The article reflects on relationships discussed in other articles by the authors, such as the development of neighborhood social ties, sense of personal efficacy, and crime and safety.

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Kuo, F. (2003). The role of arboriculture in a healthy social ecology: Invited review article for a Special Section. *Journal of Arboriculture* 29(3), 148-155.

In this summary of research findings, the author suggests that defensible space theory helps explain why trees and grass cover have been shown to be “systematically linked to...stronger ties among neighbors, greater sense of safety and adjustment, more supervision of children in outdoor spaces, healthier patterns of children’s play, greater use of neighborhood common spaces, fewer incivilities, fewer property crimes, and fewer violent crimes.”

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Social support

Maas, J., van Dillen, S., Verheij, R., Groenewegen, P. (2008). Social contacts as a possible mechanism behind the relation between green space and health. *Health and Place*. June; 15(2): 586-95.

This study involving 10,089 residents of the Netherlands explored whether

social contacts are an underlying mechanism behind the relationship between green space and health. The researchers report: “After adjustment for socio-economic and demographic characteristics, less green space in people's living environment coincided with feelings of loneliness and with perceived shortage of social support.”

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Stroke

Hu, Z., Liebens, J., Ranga, K. (2008). Linking stroke mortality with air pollution, income, and greenness in northwest Florida: An ecological geographical study. *International Journal of Health Geographics*, 7, Article number 20.

This study across a broad geographic area shows that “exposure to more green space could reduce the risk of stroke mortality.” The authors state: “The empirical result in this study supports the “salutary” effects of the exposure to natural environments on human health as well as the significance of residential environments to counteract “sedentary” lifestyles and that greening of urban areas could make a contribution to increase physical activity.”

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Theories

Kaplan, S. (1995). The restorative benefits of nature. *Journal of Environmental Psychology* 15: 169-182

An extended discussion of Attention Restoration Theory in the context of seeking to integrate the role of ARS in understanding restorative properties of nature with Ulrich's stress reduction theory.

[Read this article](#)

Kuo, F. (2003). The role of arboriculture in a healthy social ecology: Invited review article for a Special Section. *Journal of Arboriculture* 29(3), 148-155.

In this summary of research findings, the author suggests that defensible space theory helps explain why trees and grass cover have been shown to be “systematically linked to...stronger ties among neighbors, greater sense of safety and adjustment, more supervision of children in outdoor spaces, healthier patterns of children's play, greater use of neighborhood common spaces, fewer incivilities, fewer property crimes, and fewer violent crimes.”

[Read this article](#) [May require brief registration and/or selection of Adobe Reader to open]

Lewis, C. (1996). *Green Nature/Human Nature: The Meaning of Plants in Our Lives*. University of Illinois Press

The author, a horticulturist since the 1960s who was employed for more than twenty years at the Morton Arboretum outside Chicago, offers his thoughtful view that: “There are deep reasons for our love affair with nature. We are creatures who evolved in an environment already green. Within our cells live memories of the role vegetation played in fostering our survival as a species. Plants reconnect that distant past, calling forth feelings of tranquility and harmony, restoring mental and physical health in a contemporary, technological world. Whether in pots, gardens, fields, or forests, living plants remind us of that ancient connection.”

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Work Settings

Leather, P., Pyrgas, M., Beale, D., Lawrence, C. (1998). Windows in the workplace. *Environment and Behavior*, 30, 739–763.

In a factory, 100 workers were studied to determine the attitudinal effects of direct sunlight, views of nature, and higher levels of illumination. The researchers report: “A view of natural elements (i.e., trees, vegetation, plants, and foliage) was found to buffer the negative impact of job stress on intention to quit and to have a similar, albeit marginal, effect on general well-being.”

[Read an abstract of this article](#) [\$ for full text]

Kaplan, R., Kaplan, S., Ryan, R. (1998). *With people in mind: Design and management of everyday nature*. Washington, DC: Island Press.

A study reported in this book shows that workers with a view of natural elements, such as trees and flowers, experienced less job pressure, were more satisfied with their jobs and reported fewer ailments and headaches than those who either had no outside view or could only see built elements from their windows. Moreover, simply the knowledge that the view was available was important to the employees, even if they did not take advantage of it.

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Urban Greening Research: Part 2

STUDIES RELATED TO PARTICIPATION IN GREENSPACE ACTIVITIES

This guide was prepared by [Erie Neighborhood House](#) through a grant from The Richard H. Driehaus Foundation.

INTRODUCTORY NOTE

Although research on the impacts of community-managed gardens and open space has accelerated, many observers note that there is still room for more, better research. Authors of the articles cited here have made comments that include the following:

“Anecdotal evidence abounds, but important outcomes such as the physical benefits of gardening and community connectedness are difficult to measure. User-friendly, multilingual, and adaptable evaluation tools are urgently needed given the diversity of participants and disciplines.” (Robinson-O’Brien, R., Story, M., Heim, S. (2009). “Impact of garden-based youth nutrition intervention programs: a review.” *Journal of the American Dietetic Association*)

“Community gardens are viewed as a potentially useful environmental change strategy to promote active and healthy lifestyles but the scientific evidence base for gardens is limited.” (Teig, E., Amulya, J., Bardwell, M., et al (2009) “Collective efficacy in Denver Colorado: Strengthening neighborhoods and health through community gardens.” *Health & Place*)

“Few studies have explicitly focused on the health impacts of community gardens.....” (Wakefield, S., Yeudall, F., Taron, C., et al. (2008) “Growing urban health: Community gardening in South-East Toronto.” *Health Promotion International*)

THE RESEARCH AND STUDIES

Alaimo, K., Packnett, E., Miles, R., Kruger, D. (2008) “Fruit and vegetable intake among urban community gardeners.” *Journal of Nutrition Education and Behavior*, 40 (2), 94-101.

In a study including 766 adults, researchers found: “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.

[Read an abstract of this article \[for full text\]](#)

Armstrong, D. (2000) “A survey of community gardens in upstate New York: Implications for health promotion and community development.” *Health and Place*, 6 (4), 319-327.

A study of upstate New York community gardens (20 garden programs, 63 gardens) shows that “Many of the community gardens seemed to facilitate improved social networks and organizational capacity in the communities in which they were located, especially in lower income and minority neighborhoods.”

[Read this article](#)

Austin, E., Johnston, Y., Morgan, L. (2006) Community gardening in a senior center: A therapeutic intervention to improve the health of older adults.” *Therapeutic Recreation Journal: First Quarter, 2006*

This study of six community gardeners in a senior center showed that gardening generally improved their physical health, social activity, and psychological wellness.

[Read this article](#)

Dickinson, J., Duma, S., Paulsen, H., Rilveria, L., Twiss, J. and Weinman, T. (2003) “Community gardens: lessons learned from California healthy cities and communities.” *American Journal of Public Health*, 93, 1435–1438.

In community-managed gardens funded by a California program, the researchers find results that include increased physical activity, increased consumption of fruits and vegetables, and increased gardening at home by young people.

[Read this article](#)

Egger, M. (2007) *Cultivating Social Capital: Community Gardens in Lansing, MI* (Michigan State University)

In this Master’s thesis, seven community gardens in Lansing, Michigan are studied. The author says: “This research considers some of the ways which community gardens foster trust, reciprocity, and social interaction (factors that can lead to social capital) for communities. Also it investigates the dynamic two-way flow of social benefits between community gardeners and garden neighbors, providing examples of the powerful relationship that

exists between community gardeners and social capital.”

[Read abstract and table of contents \[\\$ for full text\]](#)

Gobster, P. (2002) “Managing urban parks for a racially and ethnically diverse clientele.” *Leisure Sciences*, 24:143–159, 2002

898 users of Chicago’s largest park (217 Black, 210 Latino, 182 Asian, and 289 White) were surveyed to ascertain their preferred activities within the park. Many core similarities in preferences were found among all groups, as well as some differences.

[Read this study](#)

Meehan, A. E. (2007) *Community in the Garden in the Community: The Development of an Open Space Resource in Boston’s South End*. (Master’s Thesis: Massachusetts Institute of Technology)

In this Master’s thesis, the researcher shows how community gardens hold unique value for non-gardeners both as open space and as gardens, and provides lessons for the potential benefits of developing and maintaining new community gardens elsewhere.

[Read a preview \[\\$ for printable version\]](#)

Miles, I., Sullivan, W., Kuo, F. (2000) “Psychological benefits of volunteering for restoration projects.” *Ecological Restoration*, 18(4), 218-227.

Using written surveys completed by 100 individuals participating in prairie restoration outside of Chicago, the researchers ranked six general sources of satisfaction from that participation. In descending order, they were: involvement in meaningful action; fascination with nature; participation with others; a chance to be away; physical fitness; and personal growth.

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Robinson-O’Brien, R., Story, M., Heim, S. (2009) “Impact of garden-based youth nutrition intervention programs: a review.” *Journal of the American Dietetic Association*. 109 (2), 273-80. “

The researchers cautiously observe: “Findings from this review suggest that garden-based nutrition intervention programs may have the potential to promote increased fruit and vegetable intake among youth and increased willingness to taste fruits and vegetables among younger children; however, empirical evidence in this area is relatively scant.”

[Read an abstract of this article \[\\$ for full text\]](#)

Teig, E., Amulya, J., Bardwell, M., et al (2009) “Collective efficacy in Denver Colorado: Strengthening neighborhoods and health through community gardens.” *Health & Place* 15:4 1115-1122

Acknowledging, “Community gardens are viewed as a potentially useful environmental change strategy to promote active and healthy lifestyles, but the scientific evidence base for gardens is limited,” the authors “set out to examine the social processes that might explain the connection between gardens, garden participation and health.” They observe that “collective efficacy” is “a powerful mechanism for enhancing the role of gardens in promoting health.”

[Read an abstract of this article \[for full text\]](#)

Wakefield, S., Yeudall, F., Taron, C., et al. (2008) “Growing urban health: Community gardening in South-East Toronto.” *Health Promotion International*: Vol. 22 No. 2

Through interviews, focus groups, and observation, researchers conclude: “Community gardening can lead to positive health outcomes through improved nutrition, increased physical activity and enhanced mental health.”

[Read this article](#)

Westphal, L. (1999) *Growing power?: Social Benefits from Urban Greening Projects*.

In this Master’s thesis, the author concludes (beginning on page 191) that the beautifying effects of urban greening projects were empowering for residents’ conception of their neighborhoods and themselves—but that the concept of “beauty” must be responsive to the perceptions of neighborhood residents.

[Read this thesis](#)

[Go back to first page of this guide](#)

Urban Greening Case Studies

The works listed here contain descriptions of how gardens, parks, and other green spaces have been created and/or utilized. Books and lengthy documents (often master's theses) are included in the first section; article-length case studies are listed in the second section.

This guide was prepared by [Erie Neighborhood House](#) through a grant from The Richard H. Driehaus Foundation.

Books and Lengthy Documents

Barton, S., Ludington, E., Mandalong, E., et al. (2009) *Queen City Gardens Plan: Planning for Community Gardens in the City of Buffalo*

This extensive report includes detailed case studies of four cities (Cleveland, Philadelphia, Seattle, and Toronto) that have “exemplary planning and public policies for creating and sustaining community gardens and urban agriculture.”

[Read this report \(case studies begin on p. 81\)](#)

Egger, M. (2007) *Cultivating Social Capital: Community Gardens in Lansing, MI* (Master's Thesis: Michigan State University)

In this thesis, seven community gardens in Lansing, Michigan are studied. “This research considers some of the ways which community gardens foster trust, reciprocity, and social interaction (factors that can lead to social capital) for communities. Also it investigates the dynamic two-way flow of social benefits between community gardeners and garden neighbors.”

[Read abstract and table of contents \[§ for full text\]](#)

Feenstra, G., et. al. (1999) *Entrepreneurial Community Gardens: Growing Food, Skills, Jobs, and Communities*

This study includes five illustrative case studies from California.

[Read this study at google books](#)

Garvin, A., et. al. (1997) *Urban Parks and Open Space* (New York: Urban Land Institute)

15 case studies tell how “derelict areas” in cities were transformed into vibrant public spaces.

[See at amazon.com](#)

Hassler, D., Gregor, L., Eds. (1998) *A Place to Grow: Voices and Images of Urban Gardeners* (Cleveland: The Pilgrim Press)

Community gardeners from Cleveland tell about their involvement with gardening projects.

[See at amazon.com](#)

Hou, J., Johnson, J., Lawson, L. (2009) *Greening Cities, Growing Communities: Learning from Seattle’s Urban Community Gardens* (Seattle: University of Washington Press)

Six thorough Seattle community-garden case studies are at the core of this book (on pages 63-152), which also contains advice and other information.

[See at amazon.com](#)

Hynes, P. (1996) *A Patch of Eden: America’s Inner-City Gardeners* (White River Glen, Vermont: Chelsea Green Publishing)

This book contains extensive descriptions of how community members created gardens in New York City, Chicago, Philadelphia, and San Francisco.

[See at amazon.com](#)

Johnson, L. (2002) *Cities in Nature: Case Studies of Urban Greening Partnerships*

This resource from Evergreen includes eight thoroughly-described Canadian case studies, including ways that communities created parks, greened river corridors, fostered urban agriculture, and developed rooftop gardens.

[Read this document](#)

Linn, K. (2007) *Building Commons and Community* (Oakland, CA: New Village Press)

This book includes 12 case studies of urban gardens, parks, and playgrounds, covering urban grassroots projects from the 1960s to the present. It also includes advice for creating and sustaining community-managed greenspace.

[See at amazon.com](#)

Meehan, A. (2007) *Community in the garden in the community: The development of an open space resource in Boston's South End*. (Master's Thesis: Massachusetts Institute of Technology)

This thesis traces the historical development of a community garden movement in Boston's South End and also examines the specific present-day dynamics of two case study gardens.

[Read a preview](#) [[\\$ for printable version](#)]

Project for Public Spaces. (2000) *Public Parks, Private Partners: How Partnerships Are Revitalizing Urban Parks*

This 120-page book contains many examples of ways in which communities and corporations collaborate to create, manage, and improve urban parks.

[See more about this book](#)

Schwab, James. (2009) *Planning the Urban Forest: Ecology, Economy, and Community Development*

This guide for planners, urban forestry professionals, and advocates “addresses the need for planners to adopt a green infrastructure approach and presents the technical means to incorporate trees into planning.”

[See more about this book](#)

Young, T., Longcore, T. (2000) *Creating Community Greenspace: A Handbook for Developing Sustainable Open Spaces in Central Cities*

18 case studies of central-city communities that augmented their greenspaces in a variety of ways, including parks, street-tree programs, and community gardens, butterfly gardens; greened roadway covers, underground parking structures, rooftops, and alleys; and daylighted streams). Sidebars address typical issues in urban greenspace planning, development, and utilization.

[Read this document](#)

Article-Length Case Studies

Blaha, K. (2007) “Parks, public greenspace, and smarter growth: Opportunities for linking land and people.” (Funders Network)

This examination of how new and rehabilitated parks and public green spaces have been created includes case studies from Los Angeles, Philadelphia, and New York City, along with briefer descriptions of activities in many other locations.

[Read this study](#)

DeSouza, C. (2003) “Turning brownfields into greenspace in the City of Toronto.” *Landscape and Urban Planning* 62 (2003) 181–198

Ten Toronto case studies are presented in order to “examine the issues, obstacles, and processes involved in remediating potentially contaminated urban brownfield sites and converting them into green spaces.”

[Read this article](#)

Irvine, S., Johnson, L., Peters, K. (1999) “Community gardens and sustainable land use planning: A case-study of the Alex Wilson Community Garden.” *Local Environment*: 4:1 33-46

A thorough description of how participative planners incorporated ecological restoration, community gardening, and other social benefits in a Toronto park.

[Read an abstract of this article \[for full text\]](#)

Project for Public Spaces. “Placemaker Profiles”

Twenty pioneers of urban spaces are briefly profiled here, with links for additional information. Not all are greenspace-related, but the stories are potentially inspiring.

[Go to these profiles](#)

Saldivar-Tanaka, L., Krasny, M. (2008) “Culturing community development, neighborhood open space, and civic agriculture: the case of Latino community gardens in New York City” *Agriculture and Human Values* 21:399-412

This study of largely Puerto Rican community-managed gardens in New York concludes: “Perhaps more than in other communities, Latino community gardens, with their *casitas*, provide a place for social interactions in neighborhoods where social gathering places are often lacking. This study also points out the importance of community gardens in providing leadership, landscape design, and organizing experience for community members—experiences that sometimes spill over into other aspects of civic life. While this aspect of community gardens is likely not unique to Latino neighborhoods, it takes on added importance in immigrant and poor communities where residents may not have had other opportunities to develop these skills.”

[Read this article](#)

Smith, C. M., & Kurtz, H. E. (2003) Community gardens and politics of scale in New York City. *Geographical Review*. 93 (2), 193.

This article describes how New York City residents created urban gardens and organized to successfully respond to a 1999 auction of land containing 114 community gardens.

[Read excerpts from this article](#) and *see also* Elder, R., (2005) “Protecting New York City’s community gardens” [here](#) for a thorough discussion of the legal and political issues and history of these events and recommendations for protecting community gardens.

Westphal, L. (2003) “Urban greening and social benefits: A study of empowerment outcomes.” *Journal of Arboriculture* 29(3): 137-147

Examining four urban greening projects, the author considers explanations for the perceived success of some and lack of success of others.

[Read this article](#)

[Go back to first page of this guide](#)

Urban Greening Manuals

The works listed here describe ways to create, design, and maintain community greenspaces. They are organized in three categories. Click on a category to go to those listings.

[General Urban Greening](#)

[Community Gardens](#)

[Trees and Urban Forest](#)

This guide was prepared by [Erie Neighborhood House](#) through a grant from The Richard H. Driehaus Foundation.

General Urban Greening

Chicago Park District. (2008) “Volunteer Steward Handbook”

Volunteers in the Chicago Park District’s Volunteer Steward Program receive this handbook to help them understand the purpose of stewardship, as well as details about Chicago nature areas and best practices for managing them. Planning tips, a tool glossary, and related horticultural information and resources are included to provide the volunteer steward with knowledge necessary to successfully maintain natural areas.

[Contact Chicago Park District to request this handbook](#)

Chisholm, S., and Holmes, R. (2000-2006) “No Plot Too Small: A Community’s Guide to Restoring Public Landscapes” (Cleveland: The Pilgrim Press)

This guide from an Ontario non-profit is a step-by-step look at how communities can take collective action to preserve and restore public spaces, focusing on both the individual and community experiences and relationships.

[Read this document](#)

Dunnett, N., and J. Hitchmough, Eds. (2004) *The Dynamic Landscape: Design, Ecology and Management of Naturalistic Urban Planting* (London: Spon Press)

Landscape architects, urban planners, and others contributed chapters to this book on the aesthetics, practicalities, and politics of including nature in urban settings.

[Read \(partial\) at google books](#)

GreenKeys. (2004) *GreenKeys@Your City: A Guide for Urban Green Quality*

This European-focused manual includes a methodology for creating an urban greening strategy, a “toolbox” of methods for implementing that strategy, case studies of successful projects, and more. An expanded CD version is also available.

[Read this manual](#)

Ignatieva, M., et. al. (2003) *Urban Greening Manual: How to Put Nature into Our Neighbourhoods* (Auckland, NZ: Manaaki Whenua Press)

This 56-page guide from New Zealand focuses on methods for low-impact urban development and protecting biodiversity.

[Read this manual](#)

Kaplan, R., Ivancich, J.E., De Young, R. (2007) “Nearby Nature in the City: Enhancing and Preserving Livability”

This 32-page guide describes ways to incorporate natural elements into urban spaces. It discusses putting nature at peripheries, as a link between spaces, and in elevated places, and suggests strategies for community action to accomplish those things.

[Read this document](#)

Kaplan, R., Kaplan, S., Ryan, R. (1998) *With People in Mind: Design and Management of Everyday Nature*. (Washington, D.C.: Island Press)

This 225-page book explores the qualities that make natural settings accessible and enjoyable, showing 45 patterns that improve the experience of nature and recommending ways to create, upgrade, and manage natural settings in and around urban areas.

[See at amazon.com](#)

Openlands. (1996) “Building Greener Neighborhoods: A Citizen’s Guide to Community Open Space Planning”

This guide describes the steps for forming a neighborhood greening plan in Chicago, from organizing a group through implementing

projects and ensuring maintenance of sites, including a “toolbox” of tips for planning meetings, acquiring a site, and scheduling key events.

[Contact Openlands to request this guide](#)

Pennsylvania Horticultural Society. (2009) *The PHS City Parks Handbook*

In this handbook, an organization with a very active thirty-year history of helping create and manage parks (urban and otherwise) provides advice for citizens, including how to reclaim land for parks, how to encourage park use, how to organize and empower volunteers, and how to raise funds.

[See at amazon.com](#)

Project for Public Spaces. (2000) *How to Turn A Place Around: A Handbook for Creating Successful Public Spaces*

This book, which is full of ideas for re-imagining urban public spaces (including more than greenspaces), includes a step-by-step workbook for citizen designers.

[See more about this book](#)

Project for Public Spaces. “Ten Principles for Creating Successful Squares”

The authors of this concise list of principles—not all of which are greenspace-related—say: “We’ve honed the ten principles below based on the hundreds of squares—the good and the bad—that we’ve analyzed and observed. What stands out most is that design is only a small fraction of what goes into making a great square. To really succeed, a square must take into account a host of factors that extend beyond its physical dimensions.”

[Read this document](#)

Yale Urban Resources Initiative. “Community Greenspaces Manual”

This manual includes information and rationale related to tree planting, plant selection for urban environments, as well as pruning, watering, soil health, garden design, and mulching. There are also helpful lists of trees, shrubs, perennials, plants for sun and shade, groundcovers and vines, winter interest plants, and a list of resources in New Haven, Connecticut.

[Read this document](#)

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Community Gardens

American Community Gardening Association. (2007) “Starting a Community Garden.”

This guide is designed as a fact sheet to provide groups with “the information they need to get their project off the ground.” Topics include forming a planning committee, choosing an appropriate site for a community garden, preparing and developing that site, and organizing the garden so that it may benefit all members.

[Read this document](#)

Atkinson, C., and Philbin, M. (2006) “How to Do a *Lot* With a Lot” (NeighborSpace)

This detailed handbook, designed for leaders of NeighborSpace community gardens in Chicago, provides a thorough and practical overview, using NeighborSpace gardens to illustrate key points.

[Contact NeighborSpace to request this handbook](#)

Bonlender, R., and Johnson, D. (1992) “Creating Community Gardens” (St. Paul: Minnesota State Horticultural Society)

This out-of-print manual is thorough and excellent. If you can obtain it from a local library or community-gardening organization, it is quite worthwhile.

Boston Urban Gardeners. (1982) *A Handbook of Community Gardening* (New York: Charles Scribner’s Sons)

This guide, written by Boston-area community gardeners, covers a broad range of topics, including organizing, site selection and layout, soil quality, plant selection, marketing, youth involvement, and garden security. The section, “Land Ownership Alternatives,” highlights ways to maintain a community garden in the long term.

[See at amazon.com](#)

Chicago Park District. “Community Gardens in the Parks Manual for Development”

This manual provides advice about starting a community garden in a public park. All information, including the application process, site surveys, and the terms of agreement with the Chicago Park District, is included, as well as some ideas for funding and educational opportunities.

[Read this document](#)

Federation of City Farms and Community Gardens. (2005) “Community Garden Starter Pack”

This manual differs from many others in that it does not offer specific horticultural or garden design information, but rather provides advice about building a solid organizational infrastructure for a community garden or city farm. It also addresses insurance, safety, and the importance of maintaining written records for volunteers, leaders, and potential funders.

[Read this document](#)

Feldt, B.H. (2005). *Garden Your City*. (Lanham, Maryland: Taylor Trade Publishing)

This book addresses specific challenges of urban gardening and presents creative solutions. The third section suggests a variety of places to garden, including in private spaces, community gardens, and on public land. It includes a listing of online, print, and organizational resources across the United States.

[See at Amazon.com](#)

Garfield Park Conservatory Alliance and Openlands. “Building Urban Gardens: A Course in Organic Gardening for City Dwellers”

This is the curriculum for an organic gardening continuing education class offered by the Garfield Park Conservatory and Openlands in Chicago. The modules include organic gardening, alternatives to lawns, designing and installing ecological gardens, recommended readings, and a comprehensive list of perennial native plants.

[Contact Openlands to request this curriculum](#)

National Sustainable Agriculture Information Service. (2002) “Start a Farm in the City: Change Your Community by Growing What You Eat.”

This short, well-rounded publication begins with a comic-style section in which a young girl in an urban neighborhood starts a community garden. Concrete examples of community involvement, civic pride, and health benefits are portrayed as she goes through the process of growing the garden with her neighbors. Other sections are devoted to the safety of urban soils, how to build proper raised beds, where to get soil testing done, a discussion of food-system movements as related to social justice, and an extensive national and selected international list of urban agriculture resources.

[Read this document](#)

Openlands. (2008) “Community Garden Guidebook for Chicago: All You Need to Know to Start and Maintain a Public Open Space in the City”

Beyond basic gardening and community organizing information, this guidebook includes advice about safely gardening in the city, planning events in public spaces, and approaching city officials for resources and support.

[Contact Openlands to request this guidebook](#)

P-Patch Community Gardening Program. (2008) “I Love My P-Patch: A Community Garden Leadership Handbook”

This leadership handbook was prepared by the staff of the Seattle-based P-Patch Community Gardening Program. After an extensive and instructive discussion of the program’s history, the second section of the manual focuses on organization and leadership in three main areas: interactions with P-Patch program staff, garden management, and special projects. The garden management portion is especially thorough and addresses a broad range of issues. The organic gardening section includes comprehensive compilation titled “Organic Gardening 101.”

[Read this document](#)

Surls, Rachel. (2001) “Community Garden Start-Up Guide”

This guide, written in collaboration with the Los Angeles Conservation Corps and Common Ground Garden Program, is a brief introduction on how to start a community garden. Steps outlined include forming a group, getting the land and water, planning and planting the garden, dealing with vandalism, and others.

[Read this document](#)

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Trees and Urban Forest

Chicago Trees Initiative. “It’s Time to Go Green”

This straightforward web page advises on the process of urban tree planting, with links to additional sites for further information.

[Read this document](#)

Schwab, James. (2009) *Planning the Urban Forest: Ecology, Economy, and Community Development*

This guide for planners, urban forestry professionals, and advocates “addresses the need for planners to adopt a green infrastructure approach and presents the technical means to incorporate trees into planning.”

[See more about this book](#)

United States Department of Agriculture. (2006) *Urban Forestry Manual*

This extensive and detailed manual (377 pages), meant primarily for U.S. Forest Service personnel, includes chapters on—among many other things—benefits and costs of the urban forest, site selection, urban soils, tree selection, planting, and maintenance.

[Read this manual](#)

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