



Using Active Design to Create Healthy Public Spaces **Activating New York City**

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Active Design uses architecture and urban design as tools to encourage healthier lifestyles.

Architecture and urban design too often support sedentary, rather than active daily lifestyles. According to a 2012 article in the *Lancet*, physical inactivity is a global pandemic, representing the fourth leading cause of death worldwide.¹ Yet there's also reason for optimism: ample health research has shown that the design of buildings and neighbourhoods can be a crucial facilitator of healthy lifestyles. By incorporating health-promoting strategies into architecture, planning, and real estate development, cities can enhance quality of life while improving public health outcomes.

This article provides the background on New York City's experience of using Active Design strategies to increase opportunities for physical activity. Recognising the negative affects of the chronic disease epidemic on the New York City population, in 2010, the city partnered with professional organisations and private sector firms to develop and publish a resource known as *Active Design Guidelines*.² The Guidelines provides architects and urban designers with a manual of design strategies for creating healthier buildings, streets, and urban spaces in order to reverse current trends of sedentary behaviour. Part I of this article describes the historic and conceptual background in which Active Design is rooted.

Parks and open spaces are particularly beneficial to community health, by providing spaces for physical activity, exercise, play, or simply respite or community gathering. Too often, communities are built without adequate access to parks, playgrounds, or open spaces. The consequences of this omission in the design of neighbourhoods have contributed to current public health concerns, including the rise in chronic diseases. Part II of this article summarises several key strategies from the Guidelines related to parks and recreation. It is followed by case studies to illustrate how these concepts have been applied in New York City.

Part I: Why Active Design?

Active Design uses architecture and urban design as tools to encour-

age healthier lifestyles. It is rooted in an historic understanding of how the design of urban spaces can influence public health.

The historic precedent of infectious disease

The history of infectious diseases in urban areas offers insight into how the built environment can shape health. In the mid nineteenth to early twentieth centuries, rapid population growth in New York City resulted in massive overcrowding in dark and waste-filled streets and tenements. As a result, the city was plagued by repeated epidemics of infectious diseases, such as tuberculosis, cholera, and yellow fever. Between 1810 and 1856, mortality rates from infectious diseases in the city had not only doubled, but were also disproportionately high in the poorest neighbourhoods.

City officials responded to the spread of infectious disease with a series of major design and policy changes. The Croton aqueduct system was built, bringing clean water to the city from upstate New York. Central Park was created in 1857, bringing clean air and access to open space to the masses. The Department of Street Sweeping was established to maintain clean public streets. In 1901, the Tenement House Act was passed, banning the construction of windowless and airless buildings. The subway was constructed in 1904, helping to alleviate the overcrowding in lower Manhattan. In 1916, zoning ordinances were passed to require that buildings be set back from the street to allow for an increase of light and air into buildings and public spaces.

Within a few decades of using design to control disease (and prior to the widespread use of antibiotics and other modern medical technologies), New York City saw a dramatic decrease in deaths from infectious diseases such as cholera and tuberculosis. While infectious disease had caused 57 percent of deaths in 1880, by 1940, this number dropped to 11 percent. Environmental design was successful in controlling for the public health threats of this earlier era. Design strategies can once again be employed to address the largest killers of our time: chronic diseases.



1. Outdoor gym equipment provided at McCarren Park.

2, 3. Running tracks at McCarren Park.

Addressing today's epidemic of chronic disease

Obesity has risen at an alarming pace over the last two decades and is now considered an epidemic. In New York City alone, the majority of adults and 43 percent of elementary school children are overweight or obese. Obesity is particularly dangerous because it increases the risk of other cardiovascular diseases, which are the leading cause of death globally and the cause of nearly 25,000 deaths annually in the New York metropolitan area. Obesity is also associated with the increased risk of several common and deadly cancers, including breast and colon cancers. Perhaps the most widespread and direct consequence linked to obesity yet is a more than doubling of the rate of diabetes in recent years. Diabetes leads to complications, such as blindness, limb amputations, cardiovascular disease, and kidney failure.

These diseases exact a toll on not only our health but also our economy. Rising healthcare and disability costs, coupled with declining workforce productivity, have troubling consequences. In fact, in 2000, the total healthcare costs attributable to obesity in the United States were estimated to be US\$117 billion. If obesity rates continue to grow at their current speed, healthcare costs attributed to obesity are anticipated to reach about US\$900 billion in the United States by the year 2030.

These circumstances have taken hold because Americans consume more calories than they expend. Poor diets coupled with low levels of physical activity are the main risk factors in contracting a chronic disease. Physical activity is a crucial factor in maintaining weight and preventing its gain. In fact, the US Department of Health and Human Services recommends that adults achieve at least 150 minutes of moderate physical activity (such as cycling or brisk walking) per week, or 75 minutes of vigorous activity (such as running) per week. For children, the recommendation is 60 minutes or more of daily physical activity. Unfortunately the majority of adults and children do not meet the recommended amount of physical activity needed in order to maintain a healthy lifestyle.

Over the last several decades, physical activity has essentially been “designed” out of people’s daily routines. Sedentary jobs have overtaken manual labour, cars have replaced walking or biking, elevators and escalators are used over stairs, and devices have replaced active hobbies, particularly among children. Community and building design standards and strategies have facilitated the rise of inactive behaviours.

The *Active Design Guidelines* offers methods of reversing these health trends. Public health professionals can work with architects, urban designers, and planners to make the effects on health a deliberate part of the development process. Fortunately, research and evidence offer many simple architectural solutions that encourage movement and activity. Land-use mix, walkability, bicycling infrastructure, parks, and open spaces all significantly impact health and physical activity. A summary and checklist of urban design strategies reproduced from the Guidelines can be seen on p. 76.

Part II: Using Parks to Create an Active City

Parks serve as an essential amenity to neighbourhoods, offering a variety of spaces that encourage physical activity, such as gardens, food markets, trails, playgrounds, sports courts, and open spaces for unstructured play. A number of studies indicate that proximity to parks and recreational facilities is associated with higher levels of physical activity and healthier weights for both youth and adults. The *Active Design Guidelines* provides a number of specific and strategic recommendations regarding the design of parks and recreational facilities, which can be summarised according to three broad themes.

Ensure that parks are readily accessible

PlaNYC, New York City’s guiding planning and sustainability document, set a goal that all New York City residents should live within a 10-minute walk of an outdoor park. In response, the New York City Plaza Program was created and has resulted in dozens of new public spaces throughout the city (see Case Studies).³ The Schoolyards to



Playgrounds programme was also established to improve existing school playgrounds and open them up to community users after school and on the weekends.⁴ These initiatives help to maximise the use of existing land in a very dense urban environment. Safe and well-designed bicycle and pedestrian routes to parks, playgrounds, and plazas are also critical to ensuring that these public spaces are readily accessible and regularly used by the surrounding community.

Incorporate key park amenities

Well-designed park features, such as walking paths, running tracks, playgrounds, and sports courts, can certainly encourage physical activity. At the same time, park design should include supportive amenities, such as trees for shade, lighting for evening play, drinking fountains, benches, and restrooms. Such features make it easy for people of all ages to be a part of the park experience and stay for as long as they choose. Brooklyn Bridge Park is a recently developed iconic waterfront park that offers a breadth of amenities to its users.⁵ Visitors have access to playgrounds, courts for volleyball and soccer, fishing piers, kayak launches, bike paths, and a variety of food vendors. Open fields offer views of the East River and serve as ideal spots for public events, such as outdoor film screenings, while landscaped areas provide spaces for shade and relaxation.

Address the needs of the surrounding community

Park facilities should complement the cultural preferences of the local neighbourhood and accommodate a range of age groups, from young children to grandparents. Community-based organisations can be enlisted to help maintain the park's green spaces, keep the park clean, and offer programmes such as exercise classes that will keep its spaces lively and activated. New York City's High Line Park provides a fantastic example of a recreation space that was developed, and is currently managed, in conjunction with the surrounding community (see the case studies on High Line and NYC Plaza Program).

Designing parks to promote widespread use can serve as a boon to public health and urban sustainability. Well-designed park amenities encourage higher levels of physical activity among all community members. Parks also tend to integrate greenery and plantings that enhance urban air quality. Large or small, parks, plazas, and other outdoor recreation spaces can play a vital role in enhancing community identity, by serving as iconic gathering spaces that instill community pride and a sense of well-being among users.



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4. Pedestrian routes (pictured McCarren Park) that are safe, visible, and lined with objects of visual interest encourage physical activity.

5. Seating provided along the walkways to support increased frequency and duration of walking at Washington Square Park.

6. Flexible open space at Washington Square Park provides a space for exercise.

7. Washington Square Park creates a natural terrain to stimulate children's play.

Case Studies

The High Line

Built on an abandoned elevated railway, the High Line is a 1.45-mile linear park that has been carved out of New York City's existing urban fabric. The High Line is currently one of only two urban railroad viaducts converted to park space in the world, the other being the Promenade Plantée in Paris. Visitors reach the 30-foot-high park through intermittently located stairs, which take people from the public sidewalk to the elevated park with views to the city beyond. One of the access points is a monumental and highly visible "slow stair" that permits users to fully experience the transition from the street through the existing steel structure and up to the new landscape.


The design team of James Corner Field Operations and Diller Scofidio + Renfro tailored the High Line's unique elements to incorporate native plantings, viewing decks, innovative "peel-up" benches, water fountains, and recreational pathways. The project uses inventive design to encourage an array of opportunities for stair climbing, walking, relaxation, and community gathering. The High Line has proven to be highly successful in not only adding to the breadth of New York City's unique outdoor spaces, but also providing an added park that promotes health.

This project was made possible through a public-private partnership between a non-profit organisation known as Friends of the High Line and various city agencies, including the Department of Parks and Recreation. Today, Friends of the High Line oversees maintenance, operations, and programming at the park, engaging a vibrant and diverse community of park users.⁶ Public programmes targeting children, teenagers, and adults offer a range of education, volunteer, and entertainment opportunities to ensure the High Line is a well-used and well-cared-for neighbourhood amenity.

NYC Plaza Program

New York City's Department of Transportation (DOT) manages the NYC Plaza Program, a key initiative to help ensure that all New Yorkers live within a 10-minute walk of an outdoor recreation space. Plazas adapt underutilised road spaces or parking areas to create high-quality public spaces for pedestrians. They are typically situated near shops, transit nodes, or other land uses that support pedestrian activity. Plaza amenities often include tables and seating, trees and plants, lighting, bike racks, public art, and drinking fountains. DOT prioritises new plaza sites in neighbourhoods that lack access to open space as well

as places where a community organisation is willing to maintain and programme the space to ensure ongoing, vibrant activity.

According to the DOT publication *Measuring the Street*, plazas have demonstrated significant benefits to their surrounding neighbourhoods.⁷ For example, Pearl Street Plaza in Brooklyn transformed a parking area into an active community space. Following this transformation, local businesses saw a 172-percent increase in retail sales (as compared to a 18-percent average increase in Brooklyn during the same period). The local community partner that manages Pearl Street Plaza held 27 public events during the year 2012, attracting further plaza use among residents and visitors alike. Plazas throughout New York City have exhibited traffic-calming properties, reducing rates of speeding as well as the risk of pedestrian injury. 

The article is based on Active Design Guidelines, published by New York City in 2010, available at <http://centerforactivedesign.org/guidelines/>. The Center for Active Design is a nonprofit organisation that uses architecture and urban planning to promote public health. As a resource for design professionals, policymakers, real estate developers, and community advocates, the Center is committed to promoting and expanding the Guidelines.

- 1 Harold W. Kohl, Cora Lynn Craig, Estelle Victoria Lambert, Shigeru Inoue, Jasem Ramadan Alkandari, Grit Leetongin, and Sonja Kahlmeier, "The pandemic of physical inactivity: global action for public health," *The Lancet* 380 (2012): 9839: 294-305.
- 2 Read and download the *Active Design Guidelines* at <http://centerforactivedesign.org/guidelines/>.
- 3 More information on NYC Plaza Program at <http://www.nyc.gov/html/dot/html/pedestrians/nyc-plaza-program.shtml>.
- 4 More information on Schoolyards at <http://www.nycgovparks.org/greening/planyc/schoolyards>.
- 5 More information about Brooklyn Bridge Park at <http://www.brooklynbridgepark.org/>.
- 6 More information on Friends of the High Line at <http://www.thehighline.org/about/friends-of-the-high-line>.
- 7 NYCDOT (New York City Department of Transportation), "Measuring the Street: New Metrics for 21st Century Streets," 2012, accessed May 2, 2014, <http://www.nyc.gov/html/dot/downloads/pdf/2012-10-measuring-the-street.pdf>.



8. Times Square, before and after enhancements in 2009 (Photo "Before and After: Broadway-Times Square": New York City Department of Transportation on <https://flic.kr/p/eViiX2> / CC by 2.0).

9. Intermittently located stairs take visitors from the public sidewalk to the 30-foot-high High Line with views to the city beyond (Photo "The High Line NY": Nick Harris on <https://flic.kr/p/8C6m1J> / CC by 2.0).

10. A mural by artist David Ellis beautifies Pearl Street Triangle as part of NYCDOT Urban Art (Photo "Pearl Street Triangle Planting": New York City Department of Transportation on <https://flic.kr/p/cmNyTd> / CC by 2.0).

11. The High Line's unique design incorporates native plantings, viewing decks, innovative "peel-up" benches, water fountains, and recreational pathways (Photo "The High Line": Payton Chung on <https://flic.kr/p/6Qqmn7> / CC by 2.0).

CHECKLIST URBAN DESIGN: CREATING AN ACTIVE CITY

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LAND USE MIX

- When planning urban-scale developments, provide for a mix of uses—for example, residences, offices, schools, retail stores, cultural and community spaces, and recreational facilities.
- Locate places of residence and work near destinations such as parks, walking paths, trails, and waterfront recreation areas.
- Develop supermarkets and full-service grocery stores near places of work and residence.

TRANSIT AND PARKING

- Locate buildings and building entrances near public transit stops and along transit corridors.
- Place public transit stops along well-connected streets.
- Provide signage at buildings, transit stops, and major intersections showing a map and the distance, time, route, and calories burned to the nearest or next transit stop.
- Encourage transit use by furnishing transit stops with pedestrian conveniences.
 - Make sidewalks wide enough to comfortably accommodate pedestrians, including those with disabilities.
 - Provide additional space for passengers to wait by adding bus bulbs.
 - Create bus stop shelters that protect users from sun, wind, and rain.
 - Furnish bus stop shelters with seating or places to lean.
- When designing sites that include parking, consider how the provision of parking can affect the use of more active modes of travel such as walking, bicycling, and public transit.
- Provide parking for people with disabilities.

PARKS, OPEN SPACES, AND RECREATIONAL FACILITIES

- Design open spaces as part of large-scale developments, or locate buildings near open, public spaces.
- Make bicycle and pedestrian routes to parks and public spaces safe and visible.
- When planning a new development, aggregate open space in one large area rather than dispersing into smaller pieces.
- Where possible, provide residents with access to open space within a ten-minute walk.
- In the design of parks or open spaces, provide paths, running tracks, playgrounds, sports courts, and drinking fountains.
- Locate new projects near existing public and private recreational facilities and encourage development of new facilities, including indoor activity spaces.
- When designing offices and commercial spaces, provide exercise facilities or walking paths nearby.

- Design parks, open spaces, and recreational facilities to complement the cultural preferences of the local population and to accommodate a range of age groups.
- Create partnerships with organisations to sponsor and maintain green spaces and gardens.

CHILDREN'S PLAY AREAS

- Design courtyards, gardens, terraces, and roofs that can serve as outdoor spaces for children's play.
- When designing playgrounds, include ground markings indicating dedicated areas for sports and multiple use.
- Preserve or create natural terrain in children's outdoor play areas.
- Provide lights on sidewalks and active play areas to extend opportunities for physical activity into the evening.
- In the design of parks and playgrounds, create a variety of climate environments to facilitate activity in different seasons and weather conditions.
- Provide physical activity facilities for children and youth in schools.
- Design new school physical activity facilities to potentially allow for public use outside of school hours.

PUBLIC PLAZAS

- Create attractive plaza spaces that are well-maintained.
- Locate public plazas along popular pedestrian streets.
- Locate plazas near transit stops.
- Make plazas accessible to bicyclists.
- Create plazas that are level with the sidewalk.
- Design plazas that allow for diverse functions.
- Design plazas to accommodate use in a variety of weather conditions.
- Seek partnerships with community groups to maintain and programme plazas.

GROCERY STORES AND FRESH PRODUCE ACCESS

- Develop full-service grocery stores within walking distance in all residential neighbourhoods.
- Introduce farmers' markets as a complement to grocery stores.
- Provide safe walking and bicycle paths between densely populated areas and grocery stores and farmers' market sites.
- Design grocery store layouts and parking to accommodate pedestrians, cyclists, automobiles, and loading trucks safely and conveniently. Provide infrastructure such as bicycle parking and drinking fountains.

STREET CONNECTIVITY

- In large-scale developments, design well-connected streets with sidewalks and keep block sizes relatively small.
- Where current connectivity of the sidewalks and streets on a building site is poor, provide pedestrian paths through existing blocks.
- Avoid creating pedestrian over- and underpasses that force walkers to change levels.
- Maintain dedicated pedestrian and bicycle paths on dead-end streets to provide access even where cars cannot pass.
- Minimise addition of mid-block vehicular kerb cuts on streets with heavy foot traffic.
- Design vehicular driveways and ramps to minimise contact between cars and pedestrians.

TRAFFIC CALMING

- Design roads to be the minimum width and to have the minimum number of lanes practical.
- Incorporate traffic calming street additions such as kerb extensions, medians, and raised speed reducers.
- Consider other physical design measures where appropriate, for example:
 - Horizontal deflections such as curved roadway alignments
 - Vertical deflections such as raised intersections or crossings
 - Traffic diverters, roundabouts, and mini-traffic circles
 - Signal phasing plan with a protected left-turn lag phase
 - “Yield to Pedestrian” signs
 - Avoidance of slip lanes and wide kerb radii

DESIGNING PEDESTRIAN PATHWAYS

- Create a buffer to separate pedestrians from moving vehicles using street furniture, trees, and other sidewalk infrastructure.
- Provide seating, drinking fountains, restrooms, and other infrastructure that support increased frequency and duration of walking.
- Provide exterior lighting along streets and outdoor paths.
- Include trees and objects of visual interest on streets and sidewalks.
- Make sidewalk widths consistent with their use.
- Provide for enhanced pedestrian crossings both at mid-block and at intersections.
- Construct kerb extensions along sections of the sidewalk that tend to attract greater pedestrian congestion.
- When designing large urban-scale developments, create on-site pathways as extensions to public sidewalks.
- Create or orient paths and sidewalks toward interesting views.
- Provide marked, measured walking paths on sites as part of a wayfinding system targeted to pedestrians and bicyclists.
- Make streets and paths universally accessible. Create:
 - Paths that are smooth, sufficiently wide, and that have kerb cuts and turning radii adequate for a wheelchair or walker.
 - Paths with auditory crossing signals, adequate crossing times, clear signage, visible access ramps, and connections to walking, cycling, and public transit routes.

PROGRAMMING STREETSAPES

- Incorporate temporary and permanent public art installations into the streetscape.
- Organise pedestrian-oriented programmes, such as charity walks and vehicular street closures, that make wide avenues available for walking and bicycling.
- Increase the number of outdoor cafés to enhance street activity.

BICYCLE NETWORKS AND CONNECTIVITY

- Design interconnected bikeways and establish a backbone network of unbroken through routes across all five boroughs of New York.
- Make links between bicycling and transit.
- On bikeways, include signposts providing bicyclists with directions, distances, and times to various destinations.

BIKEWAYS

- Use on-street markings or signage to visually reinforce the separation of areas for bicyclists and motorists.
- Where conditions warrant, separate bikeways and vehicular traffic lanes with physical demarcations.
- Expand existing bikeways where use has exceeded capacity.
- Pay special attention to the treatment of bikeways at intersections and other points where the street form changes, in order to mitigate potential visibility issues and turning conflicts.
- Avoid potential conflicts between cyclists and opening car doors—for example, by widening parking lanes where appropriate.
- Further develop Greenways—alternative routes that are integrated into the regional park system.
- Consider shared-use paths in areas with viewing attractions.

BICYCLING INFRASTRUCTURE

- Provide adequate facilities for bicyclists to park along their route or at a final destination.
- Designate bicycle-specific crossings and signals to organise the movements of pedestrians, cyclists, and motorists at busy intersections.
- Construct bicycle rails along outdoor stairways, such as those on “step streets”.
- Explore bicycle-sharing programmes to increase access to bicycles for both city residents and visitors.