



cityhealth

AN INITIATIVE OF

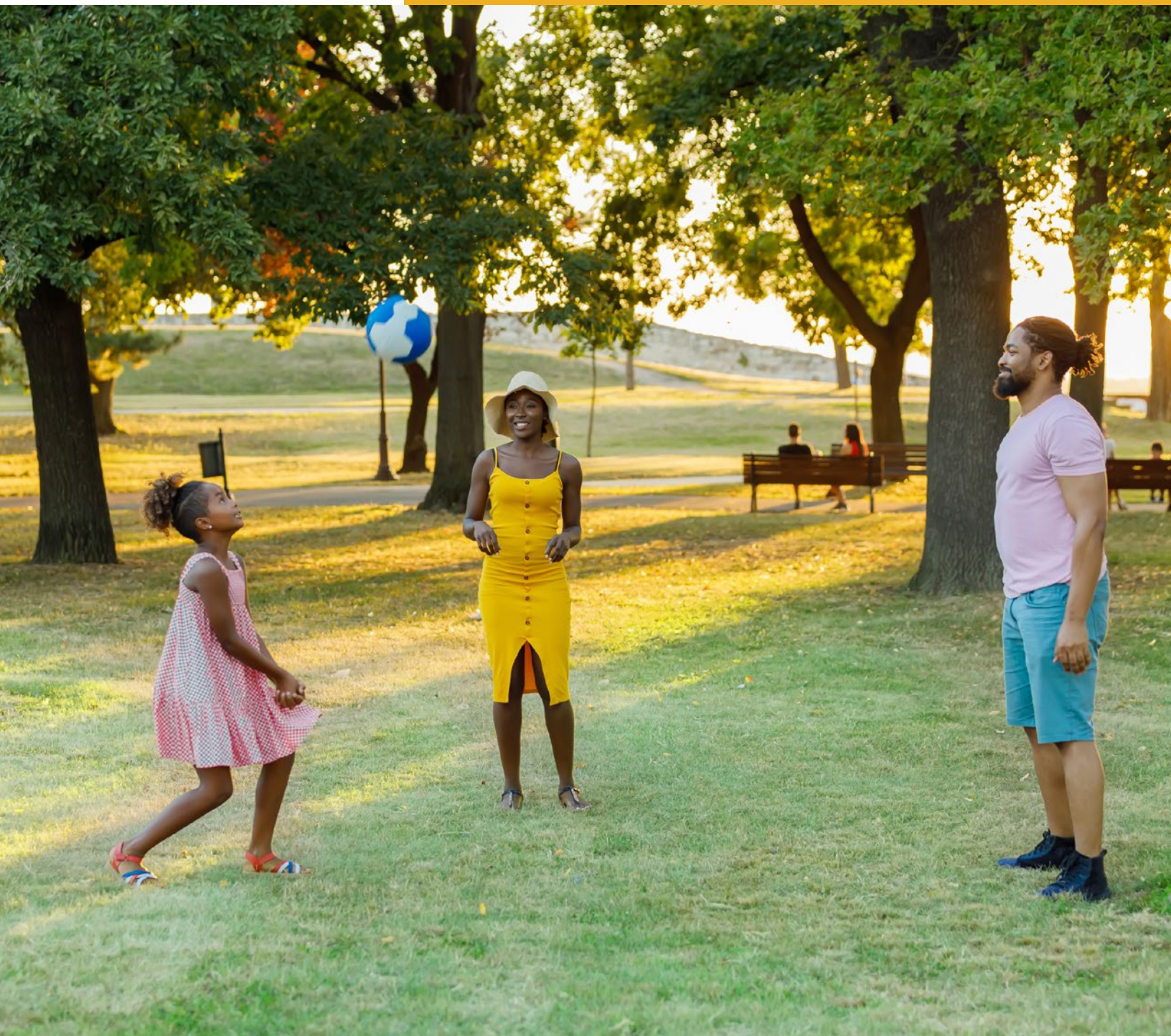
the de Beaumont Foundation + Kaiser Permanente



10-Minute Walk

Greenspace In American Cities

How Access to Parks and Nature Can
Improve Health and Well-being



CityHealth, an initiative of the de Beaumont Foundation and Kaiser Permanente, works to advance a package of tried and tested policy solutions to ensure all people in our largest cities have access to healthy choices. Together with visionary city leaders, CityHealth helps cities adopt policies that can make their communities healthy and resolve critical health disparities – now and decades down the road. Learn more at cityhealth.org.

Trust for Public Land is a national nonprofit that works to connect everyone to the benefits and joys of the outdoors. Trust for Public Land’s 10-Minute Walk program engages city leaders to close the park equity divide so that every resident has access to a quality park or green space within a 10-minute walk of home. The 10-Minute Walk program calls on U.S. mayors and policymakers to address cities’ most pressing needs around health, resilience, environmental protection, economic development, and community building through parks, and provides the resources needed to create and support park systems that drive equitable, healthy, thriving communities. Learn more at 10minutewalk.org.



AN INITIATIVE OF

the de Beaumont Foundation + Kaiser Permanente

cityhealth.org



10-Minute Walk

10minutewalk.org



Greenspaces — from parks to trails to public commons — are essential for individual and community health. Spending time in nature improves overall well-being, including both mental and physical health.¹ Greenspaces also have the potential to make a significant impact on entire communities by promoting physical activity, facilitating social interaction, and reducing risk factors for certain chronic diseases.² They can also play an important role in adapting to the effects of a changing climate.³

Despite these well-documented benefits, 100 million people in the U.S. — including 28 million children — do not have access to close-to-home parks.⁴ In many cities, parks are not distributed, funded, maintained, or programmed equitably.⁵ Communities of color have 43% less park acreage than white neighborhoods.⁶ Parks in low-income areas tend to be smaller and feature less programming than those in more affluent areas.⁷ Natural urban features other than parks, such as tree canopy cover, are also inequitably distributed in cities across the U.S. Neighborhoods that were subjected to redlining — the discriminatory lending practice beginning in the 1930s that denied home loans to residents of minority and low-income neighborhoods — continue to have less tree cover.⁸ This greenspace equity divide means that millions of U.S. residents, and often those in neighborhoods facing multiple other health, economic, and environmental challenges, have limited access to parks and their benefits.

Disparities in park access are in part the result of years of land use priorities and decisions, discriminatory policies and practice, and decades of insufficient funding for parks and infrastructure.⁹ Policy and investment



100 million people in the U.S. — including 28 million children — do not have access to close-to-home parks.

can be used to address the historical legacy and ongoing racism that lay the groundwork for the park equity divide, and in turn improve the built environment and lead to beneficial health outcomes. However, many of the needed policies — and the health and health equity benefits they could deliver — are less understood and under-implemented in cities across the nation.

There is a significant — and urgent — opportunity for local policy action to chart a new, greener, and healthier future for all. Equity must be central to this work, with a focus on investing and improving access in communities with the widest disparities. Leaders must prioritize action and investment in neighborhoods that have been historically underserved.

To support and accelerate this work, CityHealth, an initiative of the de Beaumont Foundation and Kaiser Permanente, partners with Trust for Public Land (TPL) to work with cities across the country to promote greenspace policy solutions that help ensure all families have access to public land, nature, and their many benefits to health and quality of life. As described in this report, CityHealth and TPL have outlined an evidence-backed policy solution that can provide city leaders with a clear roadmap for how they can tap into greenspace to help improve health outcomes.



Greenspace & Health Benefits

Greenspace access is essential to improve health and well-being throughout communities. The presence of these spaces has significant benefits and evidence suggests that just two hours per week in nature is associated with increased health and well-being.¹⁰ The research on the connection between greenspace, health, and well-being is both increasing and long-standing.

One seminal study on the connection between nature and health was released almost 40 years ago. It found that patients who had a view of nature outside of their window had faster recovery after surgery and needed less pain medication than those facing a brick wall.¹¹ This disparity, which happened by random circumstance in room assignment, occurs all too often in our daily lives as a result of disinvestment in specific neighborhoods and communities.



Extreme heat kills more people in the U.S. than any other weather-related hazard, accounting for 10,527 deaths between 2004–2018.

This disinvestment is apparent in the way greenspaces are distributed in our communities. Parks in lower-income and non-white neighborhoods are often less programmed, less well-maintained, and poorly connected to the surrounding neighborhoods.¹² Health outcomes also fare worse in these under-resourced communities that lack adequate greenspace.

One way city leaders and communities can work to address these health disparities is by prioritizing and investing in greenspaces such as parks and urban tree canopy. By providing space for physical activity, opportunities for residents to access nature, and space for social interaction — all significant predictors of psychological health — as well as by protecting environmental quality, greenspace has tremendous potential for improving health.¹³ And, many of the factors that make parks beneficial — from building social capital, to providing exposure to greenery, to cooling urban neighborhoods — are interconnected in the way they improve health for individuals and communities.

Greenspaces Promote Physical Activity

Parks and greenspaces promote physical activity, and physical activity has far-reaching benefits for health. It improves quality of life and reduces the risk of many chronic health conditions such as heart disease, osteo-



Neighborhoods with parks can be as much as **6°F cooler**.

porosis, depression, and type 2 diabetes.¹⁴ A recent review of literature found that physical activity was associated with a 13% reduction in mortality rates among more than 27,000 study participants, benefiting those with and without existing medical conditions.¹⁵ Physically active people sleep better. Being physically active for even short periods of time — such as a 10-minute walk — can improve memory.¹⁶ Among children, physical activity improves bone health. Among older adults, it reduces the risk of falls and fall-related injuries.¹⁷

A large body of scientific literature points to modification of the built environment as a strategy to increase physical activity. Many studies suggest that proximity to parks, greenspace, and tree cover is associated with greater levels of physical activity.^{18,19} Multi-site studies have also found that individuals living in areas with the greatest density of park space were the most likely to be physically active.²⁰

In addition to proximity, context-specific design and investing in renovation influence visits to parks and participation in physical activity in parks.²¹ Park facilities such as walking trails, outdoor gyms, and sports fields promote physical activity.²² For children, natural features, opportunities for creative play, and a variety of structures promote physical activity.^{23,24} Programmed activities such as gardening programs, organized sports, community gardening, and yoga classes, as well as active outreach and marketing efforts, also promote physical activity in parks.^{25,26} In a study in San Francisco, parks that had been renovated saw more than twice the number of users upon reopening, as well as significant increases in physical activity and energy expended in the parks. Though research is still emerging, degree of greenness (which can include the presence of tree canopy) has been shown to increase park use, especially for elderly visitors.

Environmental Protection via Greening

As cities deal with pervasive environmental challenges, a changing climate, and extreme weather,

public greenspaces can concurrently address hazards such as heat-related illness, flooding, and air quality.

One of the most significant environmental challenges today is extreme heat. On average, extreme heat kills more people in the U.S. than any other weather-related hazard, accounting for 10,527 deaths between 2004–2018.²⁷ This is especially relevant in cities, which are subject to the urban heat island effect, and where parks and greenspace can provide cooling. Neighborhoods with parks can be as much as six degrees Fahrenheit cooler than those without.²⁸ The climate benefit of parks can extend as far as a half-mile from their boundaries, helping cool neighborhoods and reduce heat stress for residents.²⁹ Parks and greenspaces can also result in significant cost savings: a 2016 study found that cooling by urban trees across the U.S. reduced energy bills by \$538.6 million.³⁰

Severe weather, with extreme rainfall, is also increasing in frequency and intensity with climate change.³¹ Cities are looking for new ways to provide a safe environment for residents, and the green infrastructure that is often incorporated into parks can also promote environmental resilience. Green infrastructure is a construction and engineering practice that uses a variety of tools to absorb, delay, and treat stormwater. These tools can range from permeable pavement and trees to green roofs and beyond. Green infrastructure filters 95% of stormwater pollutants and reduces runoff by 90%, preventing flooding in risk-prone areas.³² A TPL survey of America's 100 largest cities found that 76% of cities are leveraging parks to reduce stormwater runoff, 20% are relying on parks for carbon sequestration, and 80% are using parks to reduce urban heat.³³

Air pollution is a pervasive health hazard in cities — the product of motor vehicles, combustion sources such as generators and furnaces, industrial operations, and other sources. Moreover, climate change contributes to worsening air quality; for example, the production of ozone is driven by heat.³⁴ This is consequential — especially when considered through a health equity lens — as, among other outcomes, air pollutants and heat exposures are linked to increased risk of preterm births and low birth weight, especially among Black mothers.³⁵ Lack of greenspace is also associated with increased mortality and greater exposure to air

pollution, which can affect lung function and health outcomes such as asthma and other chronic diseases.³⁶

Research suggests that urban vegetation — especially trees — can reduce air pollution. While this benefit is best documented for particulate matter, the impact of urban vegetation may extend to other pollutants as well.³⁷ The level of benefit (and the avoidance of disbenefits such as allergenic pollen production) depends on species selection, street morphology, and other factors.^{38,39}

Noise is also a pervasive health hazard in cities. It results from many of the same sources as air pollution — the operation of engines and industrial processes, as well as from a range of other activities like construction and sirens. Excessive noise exposure is hazardous, threatening cardiovascular health,⁴⁰ mental health,⁴¹ and other outcomes. Parks and greenspace not only temper high noise levels,⁴² but they also provide restorative sounds such as birdsongs that may themselves promote health and well-being.⁴³

Exposure to Nature and Mental Health

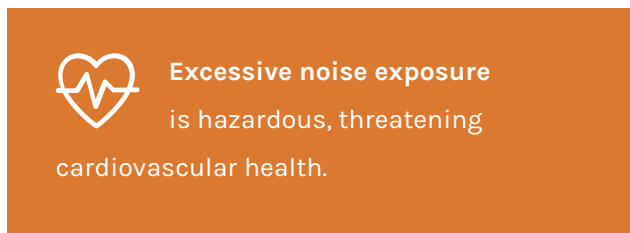
Mental health is a complex and nuanced challenge facing local communities.⁴⁴ Though many Americans experienced related challenges prior to 2020, the pandemic exacerbated mental health challenges, such as those related to anxiety and depression — making mental health one of today’s most urgent issues.⁴⁵

The response to the mental health crisis appropriately focuses on access to essential health care and other support services. The environment, however, can provide under-recognized benefits for people living with a mental health challenge. Access to nature near one’s home is linked to less stress and fewer mental health challenges.⁴⁶ For example, one study in New York City found that people who live closer to a park experienced better mental health while getting more physical activity.⁴⁷ Other studies suggest that simply walking or sitting in a park for as little as 10 minutes can improve one’s mood.⁴⁸

In numerous studies, exposure to nature — measured by proximity to an urban park and green vegetation — has been associated with protective effects on depression, including among participants living in lower socioeconomic areas.⁴⁹ For example, researchers

who used neuroimaging to assess the effect of nature on the brain found that exposure to greenspace reduced risk factors for mental illnesses, including those for depression and anxiety.⁵⁰

In Wisconsin, a state-wide, population-based health survey found that a 25% increase in neighborhood tree canopy was associated with a decrease in depression scores based on a commonly used clinical instrument.⁵¹ Similarly, a study of U.S.-based long-term care facilities found that tree canopy was associated with fewer



Excessive noise exposure
is hazardous, threatening
cardiovascular health.

depressive symptoms, suggesting that greenspace could play an important role in protecting against or preventing depression.⁵² In Philadelphia, researchers found that greening vacant lots decreased feelings of depression by 41.5%, with pronounced effects among individuals living below the poverty line.⁵³

Exposure to greenspaces is impactful for all age groups, which have experienced health consequences from the pandemic in differing and significant ways. Researchers have found that a 20-minute guided walk in a park increased concentration among children with attention deficit disorder.⁵⁴ A study looking at park access and children’s mental health during the COVID-19 pandemic found reported park access was associated with fewer behavioral challenges — such as emotional conduct, hyperactivity, and peer-relationship problems — for adolescents.⁵⁵ A review of 21 studies also found significant evidence of the positive impact of greenspace exposure on emotional and behavioral problems, and suggested providing greenspace access as an important intervention and investment for children’s and adolescent mental health.⁵⁶ Studies suggest that greenspace is associated with lower odds of psychological distress.⁵⁷ Among older adults, the “greenness” of a community has been associated with decreased risk of hospitalizations from Alzheimer’s disease and related dementias.⁵⁸

Emerging Research: Social Impacts, Safety, and Health Equity

There is an interconnection between physical health, environmental health and resilience, and mental health factors. Furthermore, community cohesion, agency, and safety are factors that influence health outcomes. Parks play a unique role in this intersection, and emerging research continues to explore these connections.

Greenspaces and Increasing Social Connections

Connections among people — variously framed as social networks, social capital, sense of community, or simply social connectedness — are essential to human well-being, and are strong predictors of health.⁵⁹ Conversely, social isolation and loneliness are toxic, increasing the risk of early death and a wide range of mental and physical disorders.^{60,61} This became eminently clear during the pandemic, when social distancing led to social isolation for many, especially afflicting communities of color.⁶² For example, Black populations had a nearly 30% higher likelihood of disconnectedness than other racial groups.⁶³ In recognition of this, the U.S. Surgeon General has called for a National Strategy to Address Social Connection.⁶⁴

The Surgeon General's recent advisory on loneliness points to parks as a key piece of "social infrastructure" that promotes interaction and connection.⁶⁵ Living close to high-quality parks is associated with a sense of community, social cohesion, and social capital.⁶⁶ In a Baltimore study, researchers reviewed the connection between tree canopy and social capital, which they defined as "the shared knowledge, norms, rules and networks that facilitate collective experience within a neighborhood." Their research found that areas with more tree canopy also featured higher levels of social capital.⁶⁷ In a national survey of diverse, low-income parents with young children, park satisfaction (a measure of park quality), together with neighborhood walkability and safety from crime, were strongly linked with social capital.⁶⁸ Greenspaces can also create stronger social ties among older adults, a group of people that is particularly vulnerable to isolation.⁶⁹

Parks are also "third places" outside the home and the workplace where people gather for social activities.⁷⁰ During the pandemic, park users reported higher



visitation to natural areas and urban forests as well as greater appreciation of these spaces. The pandemic led to new park users and in many places increased use of parks and natural spaces, especially by women.^{71,72}

Greenspace and Increasing Public Safety

Emerging research suggests a relationship between greenspace and crime prevention, including gun violence. Safety, and perceptions of safety, also influence mental health.⁷³ Safety is being explored as an influence on park use, which is key to maximizing many of the physical and mental health benefits discussed previously.⁷⁴

While this research is still nascent, six greenspace and gun violence studies have found that as greenspace increased or improved, gun violence decreased.⁷⁵ One of these — a landmark, city-wide randomly controlled trial of 'cleaning and greening' interventions in Philadelphia — found the greening intervention was associated with a 13.3% reduction in overall crime in neighborhoods below the poverty line. The study also found a 29.1% reduction in gun violence, a 21.9% reduction in burglary, and a 30.3% reduction in nuisances in these same neighborhoods. Perceptions of safety improved commensurately; people living near greened lots reported a 36.8% reduction in perceptions of crime and a 57.8% reduction in safety concerns about going outside.⁷⁶ Studies in multiple cities have found that more tree canopy is associated with lower crime



rates — a finding replicated in Portland, Chicago, and Baltimore.^{77,78,79}

Of course, public safety depends on much more than just parks and greenspace. For example, the level of neighborhood street activity, and circumstances in surrounding neighborhoods, also play a role in both crime and perceptions of crime.^{80,81} But nearby nature — by strengthening the neighborhood social fabric, by directly reducing aggressive behavior, and/or through other mechanisms — seems to reduce crime and aggression. Emerging evidence increasingly supports the role of parks and greenspace in reducing urban crime.^{82,83}

Greenspace as Changing Underlying Urban Conditions for Health and Health Equity

The significant health disparities experienced in the U.S. are driven by a complex range of economic, social, and environmental factors. Many of these disparities have been driven by years of decision-making and discrimination.⁸⁴ For instance, one discriminatory land use practice is redlining, which has resulted in decades of health impacts for residents. A research review focused on the health effects of redlining found that gunshot injuries, asthma, and several chronic illnesses were more common in neighborhoods that have experienced redlining.⁸⁵ Additionally, residents of low-income neighborhoods are more prone to chronic disease, increased mortality, and a lower life expectancy.⁸⁶



Greenspace policies can offer an outsized public health return-on-investment as people who lack access to nature can benefit most from improved park and greenspace access.

To address these health disparities, there is an increasing call for interventions that focus on creating more equitable societies and, as a key part of this, transforming cities so that neighborhoods provide equitable access to parks and greenspaces as key resources for health and well-being. Greenspace policies can offer an outsized public health return-on-investment as people who lack access to nature can benefit most from improved park and greenspace access. Known as the “equigenic effect” — where access to nature benefits lower economic status groups relatively more than higher economic status groups — the phenomenon can reduce health disparities between poor and affluent.⁸⁷ First demonstrated in a 2008 study of mortality in England, the equigenic effect has since been confirmed with respect to many health outcomes, from hypertension to mental health to neonatal mortality, and for both racial and socioeconomic disparities.^{88,89,90,91,92}

CASE STUDIES

The evidence of a beneficial relationship between nature and health supports municipal efforts to expand access to high-quality greenspaces. Policies and practices that address disparities in both park access and health outcomes begin with collecting data that document these disparities. It is important to document not only proximity to parks and greenspace, but also disparities in access (e.g., through transit routes) and in the parks themselves — their budgets, amenities, conditions, and programming. These data can inform actions to address disparities, such as siting new parks and planting street trees in neighborhoods that lack them, allocating budgets for park repairs and maintenance, and programming according to greatest need. Setting concrete targets, such as the 10-minute walk goal, and tracking progress toward these targets, is critical.

The following case studies present practices and policy approaches to drive equitable park access and investment. These case studies are a geographically diverse sample that showcase how cities are using planning and policy to increase greenspace equity.

These examples reveal a continuum of system change, from making greenspace a policy priority, to finding funding strategies, to using equity data to inform decision-making processes. The case studies of Portland, Oregon and Pittsburgh, Pennsylvania highlight how these cities are making explicit policy commitments to improving park access, and both cities have also committed to advancing access in underserved areas. The examples in Minneapolis, Minnesota and Baltimore, Maryland show how local leaders have embedded equity principles into policy and spending. The examples below also highlight investments and, in some cases, new funding that has been created or allocated to support implementation of park equity goals and policy.



The 10-Minute Walk® Commitment

Trust for Public Land's 10-Minute Walk® Program works to support cities to advance park equity work by identifying, supporting, piloting, and sharing high-impact policies and practices that will accelerate the creation of quality parks and close the park equity divide. The 10-Minute Walk Commitment is a national call to action by Trust for Public Land to ensure that everyone in U.S. cities has access to a quality park or greenspaces within a 10-minute walk of home. As a mayor or local leader, making the 10-Minute Walk® Commitment demonstrates a city's dedication to expanding safe and equitable access to parks and greenspaces, as a key way of improving residents' quality of life. Since 2017, over 300 city leaders have made the 10-Minute Walk Commitment, a pledge and demonstration of their commitment to improving access to high-quality, close-to-home parks for all residents.



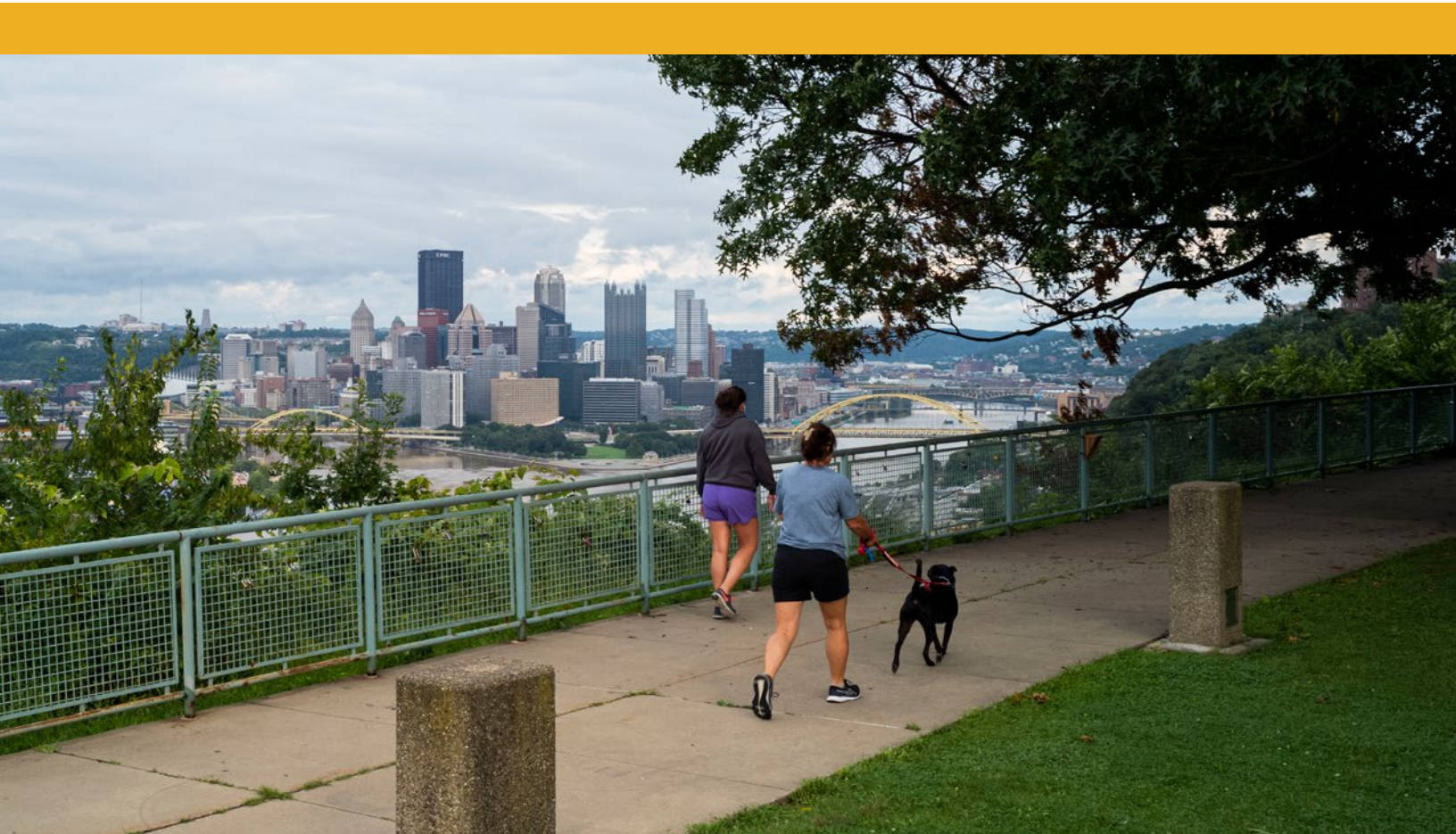
■ THE CITY OF PORTLAND, OREGON FORMALIZED 10-MINUTE WALK GOALS

The City of Portland made the 10-Minute Walk Commitment in 2017, and in Portland’s 2020 master plan, the city set a goal to provide a park or natural area within a half-mile of every household in Portland.⁹³ This goal is made explicit in the city’s *Healthy Parks, Healthy Portland Framework*, which was developed to drive investment and service decisions in the city.

Currently, park access disparities are particularly visible in the eastern part of the city, where nearly 2 in 5 households do not have access to a park or natural area within a half-mile of home. Recognizing these inequities in the park system, the city developed the *Healthy Parks, Healthy Portland Framework* plan that solicits input from the community to inform strategy and

investments, and provide services, parks, and facilities equitably to all residents. Building on information gathered, *Healthy Parks, Healthy Portland* is piloting the “Decision Support Tool” to enable data-supported decisions using demographic service area measures and a racial equity lens.⁹⁴

This work is making a difference. Since 2017, Portland has increased the percentage of residents that have access to a park within a 10-minute walk of home from 85.7% to 90.2 percent.⁹⁵ In 2020, voters also approved a levy to fund parks in the city, which is expected to generate \$48 million annually for five years.⁹⁶



■ THE CITY OF PITTSBURGH, PENNSYLVANIA'S 10-MINUTE WALK COMMITMENT

The City of Pittsburgh has made explicit commitments to parks. One of former Mayor William Peduto's priorities was to provide all residents with access to equitable, economically thriving, safe, and healthy communities, and increasing access to high-quality parks is a strategy to move the needle toward this goal. Through policy, funding, and community engagement efforts to address park equity, Pittsburgh is making access to high quality parks for all residents a reality.

In 2018, former Mayor Peduto signed on to TPL's 10-Minute Walk commitment. Following this, the city launched initiatives to include park access goals in city documents, provide funding, and engage community members in parks planning. For example, the city embedded the goal of providing all residents parks access within a 10-minute walk of home into OnePGH, the city's first comprehensive resiliency strategy. The city also created the "OnePGH Fund" to provide

funding to support key initiatives. For example, with a grant from TPL's 10-Minute Walk Partnership Fund, the OnePGH Fund supported the local Hazelwood Greenway Stewardship Group's efforts to bring green-space access to the 5,000 residents who live in that area and to establish a platform for investment in the city's greenways system to pilot stewardship activities, community engagement, and public-private partnerships.

Leveraging other public dollars, the Pittsburgh Parks Conservancy has also pledged to raise matching funds, and in partnership with the city, conduct a listening tour to learn what residents, especially those living in underserved neighborhoods, would want to improve about their parks. The mayor and city's prioritization of parks helped enable a parks tax that voters approved in 2019.⁹⁷ The tax is estimated to raise \$10 million annually for parks.⁹⁸



■ THE CITY OF MINNEAPOLIS, MINNESOTA'S COMMITMENT TO EQUITY IN INVESTMENTS

Minneapolis' park system provides close-to-home greenspace access to almost all city residents, but park quality varies widely by neighborhood. The inconsistency of park quality is largely due to the inequitable distribution of the city's greenspace investments.

To address this, the Minneapolis Park and Recreation Board (MPRB) developed equity-based criteria to help guide the investment and prioritization of future capital projects. These criteria are codified in a city ordinance that directs the local capital improvement program. The criteria evaluate a park's "community characteristics" (*i.e.*, socioeconomic and demographic data) and the park's overall condition. Parks are scored, ranked, and prioritized for capital projects based on their performance against these criteria. Over time, project selections shift to reflect priorities

determined by the equity-based criteria. For example, in 2017, Peavey Park was ranked number 10 among Minneapolis parks most in need of investment due in part to high rates of racially concentrated poverty, high density, high youth population, and high crime statistics.

Using these equity-based criteria, the city has directed more than \$50 million to rehabilitation and capital projects since 2017.⁹⁹ By 2021, after the completion of capital projects in Peavey Park, its ranking dropped to 31st on the same list of parks in need of investment, enabling investment in other high-priority park spaces.¹⁰⁰



■ THE CITY OF BALTIMORE, MARYLAND'S EQUITY-BASED CAPITAL IMPROVEMENTS

The City of Baltimore's Recreation and Parks Department (BCRP) has been working to develop and implement a capital improvement program that targets investment in areas with concentrations of people of color and low-income households.

Baltimore, like many cities in the U.S., has struggled with a long history of systemic inequities due to historical redlining and inequitable investment practices resulting in disinvestment on the city's west and east sides. Areas with higher rates of violence and vacancy, and hotter temperatures, also lack walkable, quality park spaces.¹⁰¹ As Baltimore works towards making the city more equitable for all residents, the city has established an Equity in Planning Committee to examine the Department of Planning's role in contributing to inequities and develop recommendations for how to address them. One of the first recommendations

was to assess the equity of the Baltimore Capital Improvement Program.

BCRP has incorporated and modified the Planning Commission's criteria for project prioritization, which includes weighted values for projects that promote equity. The Recreation and Parks Department prioritizes capital projects using a ranking system with weighted values for projects that promote equity.¹⁰²

In addition to Baltimore's equity driven capital investment model, Mayor Brandon Scott recently announced a \$120 million vision for the city's Parks & Recreation system with a \$41 million allocation from the American Rescue Plan Act dedicated to addressing the systemic disinvestment in recreation centers. The equity-based capital improvement planning model set forth by BCRP will ensure that investments are made in areas that have been historically under-resourced.

Considerations for Adopting Strong Greenspace Policies

CITYHEALTH GREENSPACE POLICY CRITERIA



Access

- ✓ Is there a policy or formalized planning goal (i.e., city-council adopted or ratified) to achieve 100% park access within a 10-minute walk for all residents by 2040?^{107,108}
- OR*
- ✓ Is there a policy or planning goal (i.e., city-council adopted or ratified) to increase tree canopy coverage with a specific measurable goal and a specific time frame?



Quality

- ✓ Bronze criteria must be met
- AND
- ✓ Is the city's public spending on parks and greenspace above the median U.S. per capita spending adjusted for the local cost of living?



Equity

- ✓ Bronze and Silver criteria must be met
- AND
- ✓ Does the city's 10-minute walk policy or goal or the city's tree canopy goal prioritize underserved and disinvested neighborhoods based on racial and/or economic equity, and/or data-driven park need?

Greenspace has well-documented effects on health and is a critical component of vibrant neighborhoods, community well-being, and climate resilience. Cities looking to adopt greenspace policies should consider three key goals: improving access, increasing investment, and addressing equity.

Park Access Policies



Click [HERE](#) to see which cities earned greenspace medals in CityHealth's latest assessment.

Across the country, cities are using policy and planning goals to promote urban tree canopy and park access for residents. Access to a park within a 10-minute walk has become a common measurement tool used by city leaders and practitioners to focus their park planning. Similarly, cities are recognizing tree canopy for its ability to promote health, vitality, and climate resilience.

The 10-minute walk is representative of “close-to-home” access and translates to a half-mile route between a key destination (such as someone’s

residence) and a park. The 10-minute walk metric is based on the average distance most people are willing to walk to reach a destination and has become the standard to determine and ensure that people have nearby access to greenspace.

Not only does proximity affect the use of a space, but many of the benefits described in this report are maximized by ensuring a given space is located within ready reach of communities. For example, while there are a wide range of ways that people interact with nature — from looking at pleasing views, to living near trees and parks, to actively spending time in natural environments — close proximity to park spaces impacts readily available exposure to nature and is shown to influence their use.¹⁰³ In addition, distribution, siting, and proximity of greenspaces impact environmental benefits, such as heat reduction and absorption of stormwater.

Adopting a 10-minute walk goal and a tree canopy goal is a realistic and feasible way for a city to ensure that its planning work promotes access to greenspace for its residents. Furthermore, the 10-minute walk metric ensures that greenspace exists as cities and communities change — whether they densify or transform in other ways — and helps prepare for a future of resilient, healthy communities.



Investment Policies

The 10-minute walk and tree canopy goals can help to ensure equitable access to greenspace. But access alone does not maximize benefits to communities. Greenspace quality impacts the “performance” of the space and what benefits the community experiences. For instance, even when neighborhoods have greenspace close to home, underinvested greenspaces may become underutilized or, if not maintained or activated, could be seen as community liabilities rather than assets.

Studies have also shown parks to be a cost-effective health promotion intervention and that they can result in overall cost savings due both to the avoided economic burden of physical inactivity and to improved mental health.¹⁰⁴ Unfortunately, the trend of park spending is not keeping up with demand or need and is often not reflective of the economic value that parks provide via health benefits.¹⁰⁵

A city’s public spending on parks reflects local priorities and is a key indicator of the city’s ability to build quality spaces, design and provide for culturally and community-specific needs, and ensure well-maintained parks for city residents. Measuring a government’s spending on parks and greenspace can serve as a proxy for assessing the quality of a city’s greenspace, with higher spending often correlating to higher overall quality.

Equity Policies

Both health and greenspace disparities are, in part, driven by a complex mix of economic, social, and environmental factors. The policies and practices that have created and upheld these disparities have in turn been driven by discrimination and racism. Addressing these disparities requires that equity be explicitly considered in policy change.

Even when cities have access goals in place (*e.g.*, 10-minute walk and/or tree canopy) and are investing in parks, equity must be prioritized. Greenspace policies should include equity goals that consider key local, social, and economic factors.¹⁰⁶ When a city incorporates equity language into its goal, it demonstrates a commitment to addressing the underlying factors that have led to lower-quality greenspace in under-invested communities.

CityHealth Greenspace Policy Criteria

CityHealth’s policy criteria for greenspace are oriented to these three factors: access, quality, and equity. These criteria build on each other, such that the city must meet the bronze criteria before advancing to silver, and must achieve silver status before earning gold.

In CityHealth’s 2022 policy assessment, 20 cities received gold, 13 silver, and 14 bronze medals for their

greenspace policies. Cities that have received medals span across all geographies, diverse populations, and political affiliations. As cities continue to evolve and local leaders prioritize health, equity, and quality of life, greenspace is an essential strategy to prioritize and act upon. Greenspace is one clear policy solution that can help improve health and well-being within cities across the country.

Conclusion

From improving mental and physical health, to addressing climate change and social connectedness, parks and greenspaces are effective interventions in some of today's most-pressing health challenges. The growing body of research shows that they are essential infrastructure, benefitting the physical and mental health of residents and the resiliency of communities. While the benefits of high-quality, close-to-home parks and greenspaces are vital to community health, resilience, and social cohesion, significant disparities

persist among those who have and those who lack access to these important spaces.

City leaders are in the unique position of tackling the challenge of this park equity divide from a policy perspective, ensuring that the decisions made in their cities increase park access, investment, and equity. As city leaders continue to invest in key administrative priorities, including the recovery and creation of thriving cities, prioritizing access, investment, and equity in greenspaces is key to protecting and promoting economically sustainable, healthy, and resilient communities.

CityHealth and TPL have charted out clear policy recommendations for cities to help them optimize their greenspace for health outcomes. City leaders across America can use this explicit and achievable roadmap for leveraging the tremendous benefits of greenspaces to reduce health disparities for local communities and protect the long-term viability of their cities.



References

- 1 Frumkin H, Bratman GN, Breslow SJ, et al. Nature Contact and Human Health: A Research Agenda. *Environ Health Perspect.* 2017;125(7):075001. doi:10.1289/EHP1663
- 2 Frumkin H, Bratman GN, Breslow SJ, et al. Nature Contact and Human Health: A Research Agenda. *Environ Health Perspect.* 2017;125(7):075001. doi:10.1289/EHP1663
- 3 Trust for Public Land. The Heat Is On | The Trust for Public Land. 2020. Accessed March 30, 2023. <https://www.tpl.org/the-heat-is-on>
- 4 Trust for Public Land. Parks and an Equitable Recovery. Trust for Public Land. May 27, 2021. Accessed March 30, 2023. <https://www.tpl.org/parks-and-an-equitable-recovery-parkscore-report>
- 5 Rigolon A. A complex landscape of inequity in access to urban parks: A literature review. *Landsc Urban Plan.* 2016;153:160-169. doi:10.1016/j.landurbplan.2016.05.017
- 6 Trust for Public Land. The Power of Parks to Address Climate Change. Trust for Public Land. Accessed February 22, 2023. <https://www.tpl.org/parks-address-climate-change-report>
- 7 Eldridge M, Burrowes K, Spauster P. Investing in Equitable Urban Park Systems. Urban Institute. 2019. Accessed March 30, 2023. https://cityparksalliance.org/wp-content/uploads/2019/07/Equity_and_Parks_Funding_7.16.19.pdf
- 8 Nowak DJ, Ellis A, Greenfield EJ. The disparity in tree cover and ecosystem service values among redlining classes in the United States. *Landsc Urban Plan.* 2022;221:104370. doi.org/10.1016/j.landurbplan.2022.104370
- 9 NRPA. Equity in Parks and Recreation: A Historical Perspective. NRPA. May 1, 2021. Accessed March 30, 2023. <https://storymaps.arcgis.com/stories/5727e40084614c559bf0440dc5a21f7f>
- 10 White MP, Alcock I, Grellier J, et al. Spending at least 120 minutes a week in nature is associated with good health and wellbeing. *Sci Rep.* 2019;9(1):7730. doi:10.1038/s41598-019-44097-3
- 11 Ulrich RS. View through a window may influence recovery from surgery. *Science.* 1984;224(4647):420-421. doi:10.1126/science.6143402
- 12 Eldridge M, Burrowes K, Spauster P. Investing in Equitable Urban Park Systems. Urban Institute. 2019. Accessed March 30, 2023. https://cityparksalliance.org/wp-content/uploads/2019/07/Equity_and_Parks_Funding_7.16.19.pdf
- 13 Javelle F, Laborde S, Hosang TJ, Metcalfe AJ, Zimmer P. The Importance of Nature Exposure and Physical Activity for Psychological Health and Stress Perception: Evidence From the First Lockdown Period During the Coronavirus Pandemic 2020 in France and Germany. *Frontiers in Psychology.* 2021;12. doi:10.3389/fpsyg.2021.623946
- 14 2018 Physical Activity Guidelines Advisory Committee. 2018 Physical Activity Guidelines Advisory Committee Scientific Report. Washington, DC: U.S. Department of Health and Human Services.
- 15 Posadzki, P., Pieper, D., Bajpai, R. et al. Exercise/physical activity and health outcomes: an overview of Cochrane systematic reviews. *BMC Public Health.* 2020;(20):1724
- 16 Suwabe K, Byun K, Hyodo K, Soya H. Rapid stimulation of human dentate gyrus function with acute mild exercise. *Biological Sciences.* 2018;115(141). doi: 10.1073/pnas.1805668115
- 17 Ibid.
- 18 Eichinger M, Titze S, Haditsch B, et al. How are Physical Activity Behaviors and Cardiovascular Risk Factors Associated with Characteristics of the Built and Social Residential Environment? *PLoS One.* 2015;10(6):e0126010.
- 19 Pretty J, Peacock J, Sellens M, et al. The Mental and Physical Health Outcomes of Green Exercise. *Int. J. Environ. Health Res.* 2005; 5(5):319–37. doi:10.1080/09603120500155963
- 20 Roux AVD, Evenson KR, McGinn AP, et al. Availability of Recreational Resources and Physical Activity in Adults. *Am. J. Public Health.* 2007;97(3):493–99. doi:10.2105/AJPH.2006.087734.
- 21 Padial-Ruz R, Puga-González E, et al. Determining Factors in the Use of Urban Parks That Influence the Practice of Physical Activity in Children: A Systematic Review. *Int. J. Environ. Res. Public Health.* 2021;18(7); doi:10.3390/ijerph18073648
- 22 Hernández ED, Cobo EA, Cahalin LP, Seron P. Impact of structural-level environmental interventions on physical activity: A systematic review. *Int Arch Environ Occup Health.* 2023. doi: 10.1007/s00420-023-01973-w.
- 23 Cohen DA, Talarowski MR, Han B, et al. Playground design and physical activity. *Am J Preventive Med* 2023;64(3):326-333. DOI: 10.1016/j.amepre.2022.10.012
- 24 Padial-Ruz R, Puga-González ME, Céspedes-Jiménez Á, Cabello-Manrique D. Determining factors in the use of urban parks that influence the practice of physical activity in children: A systematic review. *Int J Environ Res Public Health.* 2021;18(7). doi: 10.3390/ijerph18073648.
- 25 Xu Y, Wheeler SA, Zuo A. The effectiveness of interventions to increase participation and physical activities in parks: a systematic review of the literature. *Int J Environ Res Public Health.* 2022;19(19). doi: 10.3390/ijerph191912590.
- 26 Hunter RF, Cleland C, Cleary A, Droomers M, Wheeler BW, Sinnett D, et al. Environmental, health, wellbeing, social and equity effects of urban green space interventions: A meta-narrative evidence synthesis. *Environ Int.* 2019;130:104923. doi: 10.1016/j.envint.2019.104923.
- 27 Vaidyanathan A. Heat-Related Deaths — United States, 2004–2018. *MMWR Morb Mortal Wkly Rep.* 2020;69. doi:10.15585/mmwr.mm6924a1
- 28 Trust for Public Land. The Heat Is On | The Trust for Public Land. 2020. Accessed March 30, 2023. <https://www.tpl.org/the-heat-is-on>

- 29 Urban Climate Lab at Georgia Institute of Technology. Benefits of GI for Heat Mitigation and Emissions Reductions in Cities. Trust for Public Land; 2016. Accessed April 19, 2021. <https://www.tpl.org/wp-content/uploads/2023/05/Benefits-of-Green-Infrastructure.pdf>
- 30 Heris M, Bagstad KJ, Rhodes C, et al. Piloting urban ecosystem accounting for the United States. *Ecosyst Serv.* 2021;48:101226. doi:10.1016/j.ecoser.2020.101226
- 31 U.S. Environmental Protection Agency. Climate Change Indicators: Weather and Climate. U.S. EPA. Accessed March 30, 2023. <https://www.epa.gov/climate-indicators/weather-climate>
- 32 Center for Watershed Protection. Review of the Available Literature and Data on the Runoff and Pollutant Removal Capabilities of Urban Trees. Center for Watershed Protection; 2017. Accessed April 19, 2021. <https://owl.cwp.org/mdocs-posts/review-of-the-available-literature-and-data-on-the-runoff-and-pollutant-removal-capabilities-of-urban-trees/>
- 33 Trust for Public Land. The Power of Parks to Address Climate Change. Trust for Public Land. Accessed February 22, 2023. <https://www.tpl.org/parks-address-climate-change-report>
- 34 Orru H, Ebi KL, Forsberg B. The interplay of climate change and air pollution on health. *Curr Envir Health Rep* 2017;4:504-513. <https://doi.org/10.1007/s40572-017-0168-6>
- 35 Bekkar B, Pacheco S, Basu R, DeNicola N. Association of Air Pollution and Heat Exposure With Preterm Birth, Low Birth Weight, and Stillbirth in the US. *JAMA Netw Open.* 2020;3(6). doi:10.1001/jamanetworkopen.2020.8243
- 36 Rojas-Rueda D, Nieuwenhuijsen MJ, Gascon M, Perez-Leon D, Mudu P. Green spaces and mortality: a systematic review and meta-analysis of cohort studies. *Lancet Planet Health.* 2019;3(11):e469-e477. doi:10.1016/S2542-5196(19)30215-3
- 37 Diener A, Mudu P. How can vegetation protect us from air pollution? A critical review on green spaces' mitigation abilities for air-borne particles from a public health perspective - with implications for urban planning. *Sci. Total Environ.* 2021;796:148605. doi:10.1016/j.scitotenv.2021.148605
- 38 Miao C, Li P, Yu S, Chen W, He X. Does street canyon morphology shape particulate matter reduction capacity by street trees in real urban environments? *Urban Forestry & Urban Greening.* 2022;78:127762. doi: <https://doi.org/10.1016/j.ufug.2022.127762>.
- 39 Barwise Y, Kumar P. Designing vegetation barriers for urban air pollution abatement: a practical review for appropriate plant species selection. *npj Climate and Atmospheric Science.* 2020;3(1):12. doi: 10.1038/s41612-020-0115-3.
- 40 Münzel T, Kröller-Schön S, Oelze M, Gori T, Schmidt FP, Steven S, et al. Adverse cardiovascular effects of traffic noise with a focus on nighttime noise and the new WHO noise guidelines. *Ann Rev Public Health.* 2020;41(1):309-28. doi: 10.1146/annurev-publhealth-081519-062400.
- 41 Lan Y, Roberts H, Kwan M-P, Helbich M. Transportation noise exposure and anxiety: A systematic review and meta-analysis. *Environmental research.* 2020;191:110118. doi: <https://doi.org/10.1016/j.envres.2020.110118>
- 42 Margaritis E, Kang J. Relationship between green space-related morphology and noise pollution. *Ecological Indicators.* 2017;72:921-33. doi: <http://doi.org/10.1016/j.ecolind.2016.09.032>
- 43 Uebel K, Marselle M, Dean AJ, Rhodes JR, Bonn A. Urban green space soundscapes and their perceived restorativeness. *People and Nature.* 2021;3(3):756-69. doi: <https://doi.org/10.1002/pan3.10215>
- 44 Protecting Youth Mental Health: The U.S. Surgeon General's Advisory [Internet] - PubMed. Accessed March 12, 2023. <https://pubmed.ncbi.nlm.nih.gov/34982518/>
- 45 COVID-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide. Accessed March 12, 2023. <https://www.who.int/news/item/02-03-2022-covid-19-pandemic-triggers-25-increase-in-prevalence-of-anxiety-and-depression-worldwide>
- 46 van den Berg AE, Maas J, Verheij RA, Groenewegen PP. Green space as a buffer between stressful life events and health. *Soc Sci Med* 1982. 2010;70(8):1203-1210. doi:10.1016/j.socscimed.2010.01.002
- 47 Orstad SL, Szuhany K, Tamura K, Thorpe LE, Jay M. Park Proximity and Use for Physical Activity among Urban Residents: Associations with Mental Health. *Int J Environ Res Public Health.* 2020;17(13). doi:10.3390/ijerph17134885
- 48 Meredith GR, Rakow DA, Eldermire ERB, Madsen CG, Shelley SP, Sachs NA. Minimum Time Dose in Nature to Positively Impact the Mental Health of College-Aged Students, and How to Measure It: A Scoping Review. *Front Psychol.* 2020;10. doi:10.3389/fpsyg.2019.02942
- 49 Sarkar C, Webster C, Gallacher J. Residential greenness and prevalence of major depressive disorders: a cross-sectional, observational, associational study of 94 879 adult UK Biobank participants. *Lancet Planet Health.* 2018;2(4):e162-e173. doi:10.1016/S2542-5196(18)30051-2
- 50 Bratman GN, Hamilton JP, Hahn KS, Daily GC, Gross JJ. Nature experience reduces rumination and subgenual prefrontal cortex activation. *Proc Natl Acad Sci.* Published online June 24, 2015. doi:10.1073/pnas.1510459112
- 51 Beyer KMM, Kaltenbach A, Szabo A, Bogar S, Nieto FJ, Malecki KM. Exposure to Neighborhood Green Space and Mental Health: Evidence from the Survey of the Health of Wisconsin. *Int J Environ Res Public Health.* 2014;11(3):3453-3472.
- 52 Browning MHEM, Lee K, Wolf KL. Tree cover shows an inverse relationship with depressive symptoms in elderly residents living in U.S. nursing homes. *Urban For Urban Green.* 2019;41:23-32. doi:10.1016/j.ufug.2019.03.002
- 53 South EC, Hohl BC, Kondo MC, MacDonald JM, Branas CC. Effect of Greening Vacant Land on Mental Health of Community-Dwelling Adults: A Cluster Randomized Trial. *JAMA Netw Open.* 2018;1(3):e180298. doi:10.1001/jamanetworkopen.2018.0298

- 54 Taylor AF, Kuo FE. Children with attention deficits concentrate better after walk in the park. *J Atten Disord*. 2009;12(5):402-409. doi:10.1177/1087054708323000
- 55 Hazlehurst MF, Muqueeth S, Wolf KL, et al. Park access and mental health among parents and children during the COVID-19 pandemic. *BMC Public Health*. 2022;22(800). doi: 10.1186/s12889-022-13148-2
- 56 Vanaken G, Danckaerts M. Impact of Green Space Exposure on Children's and Adolescents' Mental Health: A Systematic Review. 2018;15(12):2668. doi: 10.3390/ijerph15122668
- 57 Astell-Burt T, Feng X. Association of Urban Green Space With Mental Health and General Health Among Adults in Australia. *JAMA Netw Open*. 2019;2(7):e198209. doi:10.1001/jamanetworkopen.2019.8209
- 58 Klomp maker JO, Laden F, Browning MHEM, et al. Associations of Greenness, Parks, and Blue Space With Neurodegenerative Disease Hospitalizations Among Older US Adults. *JAMA Netw Open*. 2022;5(12):e2247664.
- 59 Holt-Lunstad J. Social connection as a public health issue: the evidence and a systemic framework for prioritizing the "social" in social determinants of health. *Ann Rev Public Health*. 2022;43(1):193-213. doi: 10.1146/annurev-publhealth-052020-110732.
- 60 Luo, Y, Hawkey, LC, Waite, LJ, Cacioppo, JT. Loneliness, health, and mortality in old age: A national longitudinal study. *Social Science and Medicine*. 2012;74(1):907-914. doi: 10.1016/j.socscimed.2011.11.028
- 61 Holt-Lunstad J, Steptoe A. Social isolation: An underappreciated determinant of physical health. *Current Opinion in Psychology*. 2022;43:232-7. doi: 10.1016/j.copsyc.2021.07.012.
- 62 Pai N, Vella SL. COVID-19 and loneliness: A rapid systematic review. *Austral New Zeal J Psychiatr*. 2021;55(12):1144-56. doi: 10.1177/00048674211031489.
- 63 Jacobs M, Ellis C. Social Connectivity During the COVID-19 Pandemic: Disparities among Medicare Beneficiaries. *J Prim Care Community Health*. 2021;(12):21501327211030135. doi:10.1177/21501327211030135
- 64 New Surgeon General Advisory Raises Alarm about the Devastating Impact of the Epidemic of Loneliness and Isolation in the United States. U.S. Department of Health and Hman Services. Accessed May 15, 2023. <https://www.hhs.gov/about/news/2023/05/03/new-surgeon-general-advisory-raises-alarm-about-devastating-impact-epidemic-loneliness-isolation-united-states.html>
- 65 New Surgeon General Advisory Raises Alarm about the Devastating Impact of the Epidemic of Loneliness and Isolation in the United States. U.S. Department of Health and Hman Services. Accessed May 15, 2023. <https://www.hhs.gov/about/news/2023/05/03/new-surgeon-general-advisory-raises-alarm-about-devastating-impact-epidemic-loneliness-isolation-united-states.html>
- 66 Social Cohesion - Healthy People 2030 | Health.gov. n.d. Health.gov. <https://health.gov/healthypeople/priority-areas/social-determinants-health/literature-summaries/social-cohesion#:~:text=Social%20cohesion%20refers%20to%20the>
- 67 Holtan MT, Dieterlen SL, Sullivan WC. Social Life Under Cover: Tree Canopy and Social Capital in Baltimore, Maryland. *Environ Behav*. 2015;47(5):502-525. doi:10.1177/0013916513518064
- 68 Mullenbach LE, Larson LR, Floyd MF, Marquet O, Huang J-H, Alberico C, et al. Cultivating social capital in diverse, low-income neighborhoods: The value of parks for parents with young children. *Landscape and Urban Planning*. 2022;219:104313. doi: <https://doi.org/10.1016/j.landurbplan.2021.104313> .
- 69 Kweon BS, Sullivan WC, Wiley AR. Green Common Spaces and the Social Integration of Inner-City Older Adults. Published 1998. Accessed January 28, 2021. <https://journals.sagepub.com/doi/10.1177/001391659803000605>
- 70 Jeffres LW, Bracken CC, Jian G, Casey MF. The Impact of Third Places on Community Quality of Life. *Appl Res Qual Life*. 2009;4(4):333-345. doi:10.1007/s11482-009-9084-8
- 71 Grima N, Corcoran W, Hill-James C, Langton B, Sommer H, Fisher B. The importance of urban natural areas and urban ecosystem services during the COVID-19 pandemic. *PLOS ONE*. 2020;15(12):e0243344. doi:10.1371/journal.pone.0243344
- 72 Morse JW, Gladkikh TM, Hackenburg DM, Gould RK. COVID-19 and human-nature relationships: Vermonters' activities in nature and associated nonmaterial values during the pandemic. *PLOS ONE*. 2020;15(12):e0243697. doi:10.1371/journal.pone.0243697
- 73 Levine Einstein K, Glick DM, Palmer M. 2022 Menino Survey of Mayors: Economic Opportunity, Poverty & Well-being. Boston University Initiative on Cities. Accessed April 3, 2023. https://www.surveyofmayors.com/files/2023/04/2022-Menino-Survey_Poverty-Safety-Report_Final.pdf
- 74 Lapham SC, Cohen DA, Ward P. How important is perception of safety to park use? A four-city survey. *Urban Studies*. 2016;53(12). doi:10.1177/0042098015592822.
- 75 Shepley M, Sachs N, Sadatsafavi H, Fournier C, Peditto K. The Impact of Green Space on Violent Crime in Urban Environments: An Evidence Synthesis. *Int J Environ Res Public Health*. 2019;16(24):5119. doi:10.3390/ijerph16245119
- 76 Branas CC, South E, Kondo MC, Hohl BC, Bourgois P, Wiebe DJ, et al. Citywide cluster randomized trial to restore blighted vacant land and its effects on violence, crime, and fear. *Proceedings of the National Academy of Sciences*. 2018. doi: 10.1073/pnas.1718503115.
- 77 Schusler T, Weiss L, Treering D, Balderama E. Research note: Examining the association between tree canopy, parks and crime in Chicago. *Landscape and Urban*

- Planning*. 2018;170(Supplement C):309-13. doi: <https://doi.org/10.1016/j.landurbplan.2017.07.012>
- 78 Burley BA. Green infrastructure and violence: Do new street trees mitigate violent crime? *Health & Place*. 2018;54:43-9. doi: <https://doi.org/10.1016/j.healthplace.2018.08.015>
- 79 Troy A, Morgan Grove J, O'Neil-Dunne J. The relationship between tree canopy and crime rates across an urban-rural gradient in the greater Baltimore region. *Landscape and Urban Planning*. 2012;106(3):262-70. doi: <http://dx.doi.org/10.1016/j.landurbplan.2012.03.010>
- 80 Schertz KE, Saxon J, Cardenas-Iniguez C, Bettencourt LMA, Ding Y, Hoffmann H, et al. Neighborhood street activity and greenspace usage uniquely contribute to predicting crime. *npj Urban Sustainability*. 2021;1(1):19. doi: 10.1038/s42949-020-00005-7.
- 81 Boessen A, Hipp JR. Parks as crime inhibitors or generators: Examining parks and the role of their nearby context. *Social Science Research*. 2018;76:186-201. doi: <https://doi.org/10.1016/j.ssresearch.2018.08.008>
- 82 Shepley M, Sachs N, Sadatsafavi H, Fournier C, Peditto K. The impact of green space on violent crime in urban environments: An evidence synthesis. *Int J Environ Res Public Health*. 2019;16(24):5119. doi: 10.1177/1524838015576412.
- 83 Bogar S, Beyer KM. Green space, violence, and crime. *Trauma, Violence, & Abuse*. 2015;17(2):160-71. doi: 10.1177/1524838015576412.
- 84 Yearby R, Clark B, Figueroa J. Structural Racism in Historical and Modern US Health Care Policy. *Health Affairs*. 2022;41(2). <https://www.healthaffairs.org/doi/10.1377/hlthaff.2021.01466>
- 85 Lee EK, Donley G, Ciesielski TH, Gill I, Yamoah O, Roche A, Martinez R. Health outcomes in redlined versus non-redlined neighborhoods: A systematic review and meta-analysis. *Social Science & Medicine*. 2022 (294). doi: 10.1016/j.socscimed.2021.114696.
- 86 U.S. Department of Health and Human Services. Healthy People 2030: *Poverty Literature Summary*. Accessed March 31, 2023. <https://health.gov/healthy-people/priority-areas/social-determinants-health/literature-summaries/poverty#:~:text=Across%20the%20lifespan%2C%20residents%20of,mortality%2C%20and%20lower%20life%20expectancy,&text=Children%20make%20up%20the%20largest%20age%20group%20of%20those%20experiencing%20poverty>
- 87 Rigolon A, Browning M, McAnirlin O, Yoon HV. Green Space and health equity: A systematic review on the potential of green space to reduce health disparities. *Int J Environ Res Public Health*. 2021;18(5). doi: 10.3390/ijerph18052563.
- 88 Wang R, Xu S-L, Xiao X, Yang L, Lu Y, Dong G-H, et al. Exposure to eye-level greenspace reduces health inequalities of high blood pressure: A gender difference perspective. *Hygiene and Environmental Health Advances*. 2022;1:100001. doi: <https://doi.org/10.1016/j.heha.2022.100001>
- 89 Kondo MC, McIntire RK, Bilal U, Schinasi LH. Reduction in socioeconomic inequalities in self-reported mental health conditions with increasing greenspace exposure. *Health & place*. 2022;78:102908. doi: <https://doi.org/10.1016/j.healthplace.2022.102908>
- 90 Kihal-Talantikite W, Padilla CM, Lalloué B, Gelormini M, Zmirou-Navier D, Deguen S. Green space, social inequalities and neonatal mortality in France. *BMC Pregnancy and Childbirth*. 2013;13. doi: 10.1186/1471-2393-13-191.
- 91 Mitchell R, Popham F. Effect of exposure to natural environment on health inequalities: an observational population study. *The Lancet*. 2008;372:1655 - 60.
- 92 Lu Y, Chen L, Liu X, Yang Y, Sullivan WC, Xu W, et al. Green spaces mitigate racial disparity of health: A higher ratio of green spaces indicates a lower racial disparity in SARS-CoV-2 infection rates in the USA. *Environment International*. 2021;152:106465. doi: <https://doi.org/10.1016/j.envint.2021.106465>
- 93 Parks 2020 Vision. City of Portland. 2020. Accessed March 27, 2023 <https://www.portland.gov/sites/default/files/2020/ppr-2020-vision.pdf>
- 94 An Overview of Portland Parks & Recreation Decision Support Tool. Portland Parks & Recreation. Accessed March 27, 2023. <https://www.portland.gov/sites/default/files/2022/decision-support-tool-slide-deck-final.pdf>
- 95 2010 - 2022 City park Facts Data Tables. Trust for Public Land. Accessed May 15, 2023. <https://www.tpl.org/parkserve/downloads>
- 96 Parks Local Option Levy | Portland.gov. Accessed March 27, 2023. <https://www.portland.gov/parks/parks-levy>
- 97 Tax Descriptions. n.d. City of Pittsburgh. Accessed March 27, 2023. <https://pittsburghpa.gov/finance/tax-descriptions>
- 98 Controversial Parks Tax Passes in City of Pittsburgh, but Not Everyone Is on Board. 2020. WPXI. December 29, 2020. <https://www.wpxi.com/news/top-stories/controversial-parks-tax-passes-city-pittsburgh-not-everyone-is-board/ZOTATCE7DBA6DHY33LOXVUT3VU/>
- 99 NPP 20 - The 20-Year Neighborhood Park Plan, 2021 Annual Report. Minneapolis Park & Recreation Board. May 2022. <https://www.minneapolisparcs.org/wp-content/uploads/2022/05/mprb-2021-NPP20-annual-report-ada-final.pdf>
- 100 NPP 20 - The 20-Year Neighborhood Park Plan, 2021 Annual Report. Minneapolis Park & Recreation Board. May 2022. <https://www.minneapolisparcs.org/wp-content/uploads/2022/05/mprb-2021-NPP20-annual-report-ada-final.pdf>
- 101 A Rising Tide: Social Equity in Baltimore's Parks | Social Equity | Parks and Recreation Magazine | NRPA. <https://www.nrpa.org>. Accessed March 27, 2023. <https://www.nrpa.org/parks-recreation-magazine/2019/november/a-rising-tide-social-equity-in-baltimores-parks/>
- 102 Baltimore City Recreation & Parks' CIP Narrative Introduction FY 2023-208. Baltimore City Recreation and Parks. Accessed, March 27, 2023. <https://planning.baltimorecity.gov/sites/default/files/BCRP%20CIP%20Narrative%20Introduction%20FY%202023-2028.pdf>
- 103 Moran MR, Rodríguez DA, Cotinez-O'Ryan A, Miranda JJ. Park use, perceived park proximity, and neighborhood characteristics: Evidence from 11 cities in

- Latin America. *Cities*. 2020;105. doi: 10.1016/j.cities.2020.102817
- 104 Wilson J, Cariñanos P. The Economic Value of Health Benefits Associated with Urban Park Investment. *Int J Environ Res Public Health*. 2023;20(6):4815. doi:10.3390/ijerph20064815
- 105 Mowen AJ. Local Government Officials' Perceptions of Parks and Recreation. National Recreation and Park Association. 2017. <https://www.nrpa.org/contentassets/7761bd47adb142aaa62b19d00500fea3/local-officials-report.pdf>
- 106 Moran MR, Bilal U, Dronova I, *et al*. The equigenic effect of greenness on the association between education with life expectancy and mortality in 28 large Latin American cities. *Health Place*. 2021;(72):102703. doi:10.1016/j.healthplace.2021.102703
- 107 Cities with 100% or 99% access but no access policy did meet the Bronze criteria.
- 108 While 2050 is a common timeframe among city goals and park practice, we identified 2040 as our timeframe due to the pressing need to improve community health in the US.



cityhealth

AN INITIATIVE OF

the de Beaumont Foundation + Kaiser Permanente

cityhealth.org



@CityHealthOrg



@City_Health



@CityHealth-Org