

OVERVIEW

Traditionally, green infrastructure is a type of stormwater management practice designed to protect, restore, or mimic the natural water cycle. This includes green roofs, trees, rain gardens, landscaping, and permeable pavement. However, green infrastructure can also serve as an approach to interconnected networks of green spaces that conserves natural ecosystem values and functions and provides associated benefits to human populations. The Conservation Fund's Green Infrastructure Work Group defines green infrastructure as "our nation's natural life support system — an interconnected network of waterways, wetland, woodlands, wildlife habitats, and other natural areas; greenways, parks and other conservation lands; working farms, ranches and forests; and wilderness and other open spaces that support native species, maintain natural ecological processes, sustain air and water resources, and contribute to the health and quality of life for America's communities and people."

Green infrastructure principles can be applied on different scales and provide a range of environmental benefits that in turn can influence health outcomes. Specifically, incorporating green infrastructure principles into the development of public parks can be an instrumental tool to promote equitable health outcomes by increasing access to green spaces.

HOW IT WORKS

While health outcomes are often linked to genetics and quality of healthcare, built environment also plays a critical role in determining health outcomes. Designing parks that incorporate green infrastructure or adding green infrastructure to existing parks in traditionally underserved communities can improve health equity through multiple channels. Parks that include green infrastructure can address disparities in access to physical activity spaces and improve health outcomes by creating environments that foster increased opportunities for physical activity. Green infrastructure

is also linked to improved air quality and decreased levels of stress.

HEALTH BENEFITS

Increased Opportunities for Exercise

Research shows that the role of the built environment is important for encouraging physical activity because individuals who live closer to sidewalks and parks are more likely to exercise. Traditionally, underserved communities and communities of color tend to have lower levels of access to opportunities to exercise. Residents of neighborhoods with green infrastructure tend to be more physically active, and better access to parks and other green spaces is associated with positive health outcomes, including lower risk levels of obesity.

The Trust for Public Land led an effort to renovate parks in underserved communities in San Francisco. One of the renovation activities included landscaping. Physical activity for children and adults was found to increase significantly.

Air Quality Improvement

Green infrastructure projects in parks can be a powerful element of a larger strategy for air quality improvement. At all implementation levels, green infrastructure helps to clean stormwater, which affects public health. In urban areas, trees remove air pollution that is linked to respiratory conditions and cardiovascular disease.

Positive Mental Health Outcomes

Access to parks and green infrastructure can also improve mental health by promoting a greater sense of well-being and lower levels of stress. These spaces indirectly produce positive health outcomes because they are conducive to social support, which influences well-being and stress.

In Chicago, residents of neighborhoods with a large amount of green infrastructure reported less stress

(Continued on back)

HOW IT WORKS (CONT'D)

than residents living in neighborhoods with less green infrastructure.

In addition to improving positive health outcomes, green infrastructure also confers social and economic benefits. Research suggests that low-income communities and communities of color tend to exhibit lower levels of social capital. Access to parks with green infrastructure promotes opportunities for building social capital through social interactions. Parks that include green infrastructure also provide these communities with economic opportunities such as employment and workforce development activities related to green infrastructure activities.

IMPACTS IN N.C. TO DATE

Greenways in Greenville, N.C.

At the community level, an example of applying green infrastructure principles includes linking greenways to existing parks. Greenways are linear parks where people can walk, jog, ride bicycles, and enjoy nature. In Greenville, the construction of the Greenville Greenways began in the spring of 2015 and was completed in early 2017. The Greenville Greenways connect a network of trails to form a recreational loop for residents to access throughout the city.

Unique Considerations for North Carolina

Linking green infrastructure efforts to state and community programs can provide an informative framework for green space development. However, research around parks that include green infrastructure is primarily informed by examples from urban areas. North Carolina has a considerable rural population (almost 2.2 million people live in rural counties). The unique context of rural spaces and populations should be considered when deploying green infrastructure across the state. To address North Carolina's diverse

ADDITIONAL RESOURCES

Great Urban Parks Campaign Briefing Papers: Planning for Equity in Parks with Green Infrastructure — <https://www.nrpa.org/siteassets/gupc-briefing-paper-planning-equity-parks.pdf>

Green Infrastructure, Ecosystem Services, and Human Health — <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4555311/>

Physical Activity, Park Access and Park Use among California Adolescents — <http://healthpolicy.ucla.edu/publications/Documents/PDF/parkaccesspb-mar2013.pdf>

The Value of Green Infrastructure — https://www.cnt.org/sites/default/files/publications/CNT_Value-of-Green-Infrastructure.pdf

Green Infrastructure: Smart Conservation for the 21st Century — <http://www.sprawlwatch.org/greeninfrastructure.pdf>

geographic and demographic landscape, partnership should be forged among government agencies, nonprofits, foundations, and other organizations that are representative of the communities that the green spaces will serve. These partnerships should consider barriers such as associated costs and fees, proximity, and versatility when developing parks that include green infrastructure.

— *Written by Mackenzie Summers*