



## Do green neighbourhoods promote urban health justice?

For the past 30 years, a search for social and health justice has shaped many cities in North America and Europe. Residents of these cities have mobilised to address the effects of neighbourhood disinvestment, pollution, harmful land uses, and low-quality green spaces on health. In cities such as Leipzig or Barcelona, these movements have transformed neighbourhoods. However, while green amenities are important selling points for attracting high-income populations, the resulting increased property values shape a new conundrum, embodied in the exclusion and displacement associated with so-called green gentrification.<sup>1</sup>

Urban health justice requires a more complex approach than simply claiming that more green space means better health. Greening—designing and implementing green space and green infrastructure—especially large-scale, top-down, or privately-financed greening, is changing from a perceived public health good with widespread benefits, including decreased chronic stress and cardiovascular disease,<sup>2</sup> to becoming a threat to urban health justice. It is thus essential for researchers to understand the full range of pathways by which greening can affect health if the aim is to create green and healthy cities for all.<sup>3</sup>

First, researching equity in access to green spaces and infrastructure (so-called distributional justice) requires going beyond traditional environmental epidemiology methods—for example, by examining the health effects of access to green space within 400 m of someone's home, or how the normalised difference vegetation index (an indicator of greenness via satellite imagery) is distributed in the city and adjusting models for socioeconomic status, race, or ethnicity. This new

approach also requires considering how interactional justice (degree to which the identity, preferences, and needs of people affected by decisions are recognised and treated with dignity) and procedural equity (the fairness of the processes) shape who truly benefits from green investments.<sup>4,5</sup> Indeed, past experiences of discrimination and violence in green spaces, together with perceptions (such as insecurity) influence if and how people use parks, and affect their health.

Understanding urban health justice in the context of greener neighbourhoods requires new mixed-methods and multidisciplinary studies that bring together theories and data from environmental epidemiology, ecology, sociology, geography, and urban planning. This approach acknowledges that not only might the effects of urban greening on health be different for different populations, but also that the health effects of different modes of urban greening might vary by socioeconomic status, levels of civic engagement, or other socio-cultural norms (ie, those associated with race, ethnicity, or age groups)<sup>6</sup> or by green space size, type, or quality.

Second, data about the benefits of green amenities come from semi-experimental or cross-sectional studies, with possible participant selection bias (ie, healthier or wealthier residents). There is thus a need for case control or longitudinal cohort studies that examine processes associated with green gentrification and consider how different planning processes (eg, top-down decisions or processes inclusive of vulnerable populations), urban greening interventions (eg, large infrastructures vs small parks), and neighbourhood built environments (ie, housing, transit, security, and crime) differentially affect health, especially over time. Also, the effects of urban greening on health might depend on people's ability to resist displacement. All these factors should be considered in studies on urban greening and health.

There needs to be closer collaboration between urban public health and social scientists to develop new measures and metrics and help connect results on urban health equity closer to policy and planning needs. Research efforts to understand the complex interplay between existing social vulnerabilities, gentrification, and urban greening are essential to urban health justice.

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