Accessibility of Urban Greenways Transformed from Brownfields Based on Public Health

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Sustainable urban development emphasizes people-centredness and concerns public health, with a major goal of ensuring that residents have equitable access to greenways (Fabos, 1995). In this context, greenways transformed from brownfields in urban revitalization have become critical spatial carriers for improving the quality of life and well-being of urban residents (WTO, 1946). People's likelihood of visiting these greenways depends on their appeal and ease of access. Specifically, walking is the most basic, equitable, and healthy way to reach them (Huang & Lin, 2023).

The study adopts GIS network analysis to analyse the accessibility and service capacity of greenways. The GIS network analysis is a method for calculating the accessibility of open spaces under certain resistance values based on real urban road networks. This method is grounded in graph theory and operations research, mainly used for optimal allocation of resources and shortest path search. Furthermore, using the Beijing-Zhangjiakou Railway Park in Beijing greenways as a case study, walking routes from nearby residences to the parks are acquired through open-source data. These routes were mapped to reasonably reflect the pedestrian environment. The online Baidu Map is employed to search for geographic data including park entrances, residential building POIs, and walking routes. Referring to the principle of the 15-minute community-life circle, walking distances of 5, 10, and 15 minutes are defined to measure the park's service areas.

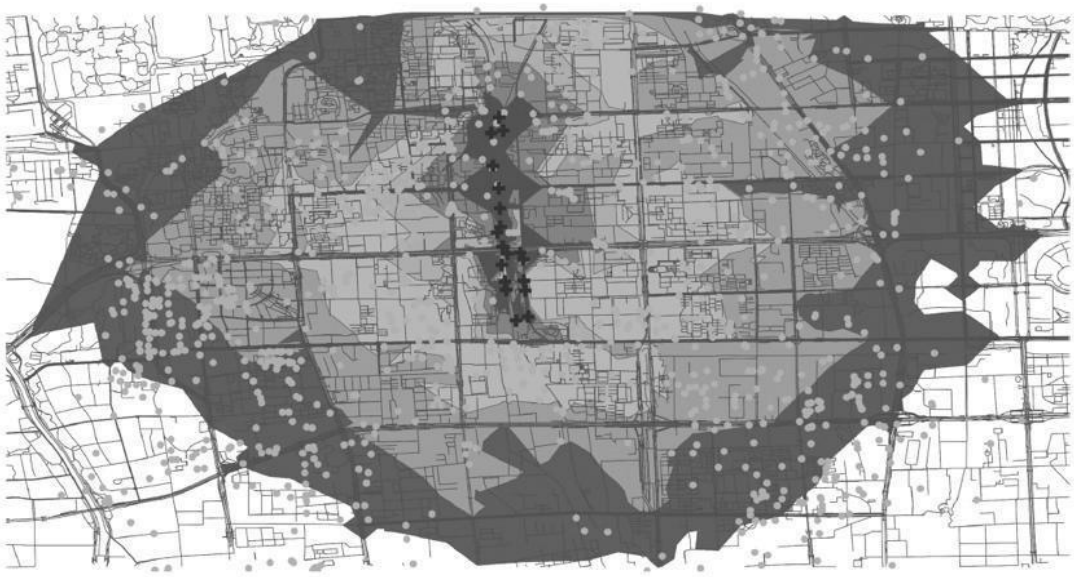

Figure 1. The distribution of Beijing-Zhangjiakou Railway Park service area, elaborated by the author.

Ultimately, the study found that the park's service area is evenly spread in nearly all directions (Figure 1). The distribution of residential building POIs within the 5 to 15 minute different

access times of the park is also even, which indicates that this greenway is closely connected to citizens' daily lives with more possibilities of physical activities for their health. In conclusion, this study will contribute to the equitable and sustainable development of synergistic relationships between urban greenways and human uses. This effort aims to promote public health improvement at both theoretical and practical levels.

community and urban forestry.

References

Fabos, J. G. (1995). Introduction and overview: The greenway movement, uses, and potentials of greenways. *Landscape and Urban Planning, 33*(1-3), 1-13.

World Health Organization. (1946). *Constitution of the World Health Organization. Retrieved from http://apps.who.int/gb/bd/PDF/bd47/EN/constitution-en.pdf?ua=1*

Huang, W., & Lin, G. (2023). The relationship between urban green space and social health of individuals: A scoping view. *Urban Forestry & Urban Greening, 84*, 10-20.

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Mengyixin Li is an associate professor in the School of Architecture and Urban Planning at Beijing University of Civil Engineering and Architecture, and a trustee of Landscape Research Group in the UK. Her research focuses on green open spaces, post-industrial landscapes, and cultural landscapes. Her latest book is entitled *Large-Scale Urban Parks on Post-Industrial Sites in Contemporary Urban Landscape Conceptions* (MDPI, 2023).