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Designing Small Urban Green Spaces for Equity: A Framework for Environmental Justice

Nasim Sadraei Tabatabaei
Department of Civil Construction-Architectural and Environmental Engineering
University of L'Aquila, Italy
nasim.sadraeitabatabaei@graduate.univaq.it
https://orcid.org/0000-0003-0856-2852

Abstract
Small urban green spaces, or pocket parks, are increasingly pivotal to environmental justice within rapidly densifying cities, yet their design shortcomings can perpetuate inequalities for marginalised populations. This study conducts a scoping review of 120 peer-reviewed articles (2015–2024) to elucidate how specific physical design elements influence equitable access for children, older adults, disabled people, and ethnic minorities. Guided by PRISMA protocols, we extracted quantitative evidence on accessibility barriers, spatial metrics, and sociodemographic correlates. Five interrelated equity dimensions emerged: spatial distribution, socioeconomic status, housing price, park quality, and demographic change. Evidence shows that inadequate entrance design, poor lighting, and deficient furniture compound locational disadvantage, diminishing perceived safety and willingness to visit. Conversely, well-maintained pocket parks within a 400-metre walk can offset broader green-space deficits, foster social cohesion, and deliver co-benefits for local climate-mitigation efforts. We synthesise these insights into a practitioner-oriented framework linking distributive and procedural justice to micro-scale design decisions. The framework equips planners and policymakers to create inclusive, resilient pocket parks that advance Sustainable Development Goals on health, equality, and urban well-being while maximising biodiversity and long-term public value.

Keywords: urban green spaces, pocket parks, equitable design, environmental justice, urban parks.

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1. Introduction

1.1 Background and Context

It is highly likely that the proportion of the world's population living in cities will increase to 60 percent by 2030, and this trend could surge to 70 percent by 2050 (Sun et al., 2023). This rapid urbanisation in large cities has increased environmental equity challenges, especially in allocating land for small urban spaces (Zong et al., 2024). For urban residents, accessibility to green spaces significantly increases health, improves social life, and delivers environmental benefits. A key challenge in urban studies is the creation of green spaces, which are vital for enhancing the quality of life in cities (Douglas et al., 2017; Hosseinimand et al., 2021). The link between green spaces and their impact on a healthy lifestyle has gained more attention in recent years. Being close to nearby urban green spaces is an important factor that encourages people to remain active, thereby enhancing positive behaviour (Byrne, 2012; Douglas et al., 2017; Gascon et al., 2016). While many studies highlight the relationship between large urban parks and their influence in good health, few address how the physical design elements of "small urban green spaces," or "pocket parks" have an impact on equity related issues for marginalized groups. This paper aims to address the gap by investigating five design elements, offering a framework to urban planners.

Urban parks, both small and large, are essential as they foster overall public health and play a pivotal role in maintaining a connection with nature (Lin et al., 2019; Richardson et al., 2010). While terms like "urban green spaces," "green spaces," "public open spaces," and "parks" can often be used interchangeably, there may be minor differences in their meanings. In general, they can be considered synonyms when discussing environmental and recreational opportunities within urban environments

(Lee et al., 2015). The study of public health usually focuses on urban parks since they contribute to enhancing public health, community engagement, and general wellness by providing convenient environments (Davern et al., 2017). Accordingly, urban green spaces that are easily accessible to people can enhance residents' use. Building a large urban park within densely populated areas is strenuous, therefore small urban green spaces that are also inclusive can be a practical solution (Gavrilidis et al., 2019).

This study explores the elements and characteristics of small urban parks from marginalized groups' perspectives through the lens of environmental justice which highlights the unfair distribution of environmental facilities (Rutt & Gulsrud, 2016). Particularly, physical design issues, such as walkability problems due to improper access points, inadequate lighting and furniture, and insufficient entrances, are key challenges. It revolves around environmental justice theoretically which can be understood through two factors, namely: fair distribution of facilities such as allocation of accessible parks and inclusive planning. These factors can influence how physical elements can contribute or hinder the access of marginalized groups.

To prioritize marginalized groups, including low-income communities, elderly, children, ethnic groups, people with disabilities, and migrants, it is necessary to focus more on their needs even by excluding the ordinary people, challenge aesthetic ideas, and focus more on the practical issues (Piazzoni et al., 2024). These people often lack the autonomy to have an impact on planning decisions when facing a problem (Holifield et al., 2018). These inequalities result in improper access to different spaces for marginalized groups facing various challenges. As mentioned earlier, improper physical elements in a park can lead to lower-quality green spaces or 'rundown' areas, which often contribute to experiencing unsafe areas and ultimately discouraging specific groups from visiting them (Rosso et al., 2011).

The 2030 Agenda for Sustainable Development has drawn attention on human rights. Accordingly, every society faces several challenges, and marginalised groups must be protected. It forms a concept of equality, justice, inclusion, and rights for all, specifically the most vulnerable (Atapattu et al., 2021). With respect to that, it is still uncovered which specific requirements are valued by different visitors in the context of the urban environments (Naghibi et al., 2024).

The term Environmental justice has existed for a long time however, the problems it refers to are still extremely critical today. These problems can affect anyone, but not equally. Some people may suffer more than others for instance, marginalized groups. Originally, environmental justice mainly referred to pollution and waste problems but over time it became more extensive to also contain industrialization, energy consumption, food, and unequal public policies that can influence vulnerable people or maybe have an impact on future generations. The basic definition of Environmental Justice is how the problems are distributed and can be classified into concrete situations where these people are affected, and it can be an activism outlook for political issues. Since the meaning has gone through transformations it can be a paramount debate to evaluate who deserves Environmental Justice? (Holifield et al., 2018).

1.2 Problem Statement and Research Gap

Given the important link between access to green spaces and public health, an essential question arises: How do physical design limitations in small urban green spaces influence the accessibility of marginalized groups? the need for an equitable environment has mostly been acknowledged in theory rather than in practice.

Physical barriers can hinder usage, particularly for children, women, and elderly (Rosso et al., 2011). Sometimes, physical elements are also linked with social conditions, for example, locating a park in a particular neighborhood can negatively impact impoverished communities leading to high rents (Jennings, 2018).

Equitable access not only ensures environmental justice but also aligns with the United Nations' Sustainable Development Goals (SDGs) (He et al., 2023). Addressing above-mentioned problems is paramount since marginalized groups often receive less attention in planning. Understanding these social factors leads to inclusive planning (Forde, 2024). This study will identify the impact of physical

design elements of small urban green spaces on the equitable access of marginalized groups, based on a scoping literature review of 120 peer-reviewed papers, providing a conceptual framework for urban planners and policymakers to promote the equity and inclusivity of small urban parks towards a more sustainable future and urban policy development.

1.3 Size of Parks

large forests located on the outskirts of cities are often popular destinations for recreational activities, and physical activity (Peschardt et al., 2012) while smaller inner-city parks serve as daily interaction spaces for residents. Building on this idea, various classification systems exist—mostly developed during the 1970s and early 1980s— that categorize green spaces by their main function and the scale they serve (e.g., citywide, district, neighborhood) (Van Herzele & Wiedemann, 2003). By providing greenery within a short walking distance from home, small parks play a significant role in urban infrastructure. As populations grow and green space becomes limited, policymakers increasingly value small urban green spaces where there is an opportunity for community engagement, relaxation, community engagement and relaxation. However, their design is key to their success (Shahhosseini et al., 2014). Various factors influence park use. Perhaps the most essential requirement is the presence of urban green spaces (Lee et al., 2015). According to Van Herzele and Wiedemann (2003) , there should be standards for park size and distance from homes (Van Herzele & Wiedemann, 2003). These standards are based on MIRA-S 2000, the minimum standards for urban green spaces developed by the Swedish National Board of Housing, Building and Planning (Boverket) (Table 1).

Table 1: Minimum standards for urban green spaces (MIRA-S 2000).

Functionality of urban green spaces	Maximum distance from home (m)	Minimum surface (ha)
Residential green	150	
Neighbourhood green	400	1
Quarter green	800	10 (PARK: 5ha)
District green	1600	30 (park: 10 ha)
City green	3200	60
Urban forest	5000	>200 (smaller towns) >300 (big cities)

(Source: Van Herzele & Wiedemann, 2003)

1.4 Objectives

Some environmental and physical features within parks, such as accessibility, walking paths, water elements, and lighting, can directly affect visitors' use and satisfaction (Giles-Corti et al., 2005; Wang et al., 2022). Some studies have investigated these factors and their impact on visitors' satisfaction. In the case of small parks, sometimes satisfaction depends on spatial elements such as safety and cleanliness (Gozalo et al., 2019). Users can have different expectations of a place. For example, different age groups such as senior residents rely mostly on suitable furniture, families with children usually look for a safe playing area, and cyclists may require more suitable paths. Prior studies mostly focused on the relationship between satisfaction and small urban parks or, more commonly, large urban parks. Recently, attention has focused on small urban parks as they are an important element of the urban ecosystem (He et al., 2023). Accessibility, a key element of environmental justice, is often considered as a moral issue (Wolch et al., 2014). Distance and safety are two main factors influencing whether or not people actually use these green spaces. Among these, walking distance from home has been influential in most cases. People who live nearby are more likely to use green spaces on a daily basis, with usage decreasing as distance increases.

Following this scenario, each type of urban green space should be located within a specific distance from homes (Van Herzele & Wiedemann, 2003). Park accessibility can be measured by its proximity and convenience"

Wordiness and repetition. For instance, a distance of 0.5 km or being within a 5-minute walking distance of a park can be regarded as optimal for accessibility for a neighborhood park (Lee et al., 2015). This study aims to evaluate the physical elements of small urban parks and their impact on accessibility for marginalized groups.

The paper is classified into the following sections: the introduction indicates the problems and the relationship with environmental justice, section two, material and methods, revolves around the data collection and methodology, section three, results, presenting main findings, section four, discussion, discusses the findings and their implications in design, and the last section concludes by offering actionable recommendations.

2. Materials and Methods

A scoping literature review was selected to explore existing studies, with a focus on equity in small urban green spaces. It aims to investigate the relationship between physical design elements and their impact on equitable access for the marginalized population following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement method (Page et al., 2021). It aims to provide a general overview of urban green spaces, with particular attention to small urban green spaces. This involved reviewing a wide range of scientific documents. A systematic literature review enables researchers to analyse a research question with an unbiased approach. In this method, it is possible to consider many articles and identify gaps. However, some bias is inevitable because of personal decisions while choosing the articles and filtering them. This method simplifies the process, making the general outcomes easier to understand for readers (O'Brien & Fitzgerald, 2023).

For the primary part, a structured search was performed using advanced search method in the Web Of Science and Scopus databases, since these two databases are among the most reliable (Elshaboury et al., 2022; Gumusburun Ayalp & Anaç, 2024). For this research, the selected keywords were put inside the Boolean operators, and for each database, this search was conducted separately in each database using the following keyword combination: ("Small urban green spaces" OR "pocket parks" OR "small parks" OR "small green spaces" OR "urban parks") AND ("Physical barriers" OR "design barriers" OR "accessibility" OR "walkability" OR "urban furniture") AND ("Environmental justice" OR "social equity" OR "inequality" OR "equity" OR "social justice") (excluding terms such as 'biodiversity' and 'large parks'). The search was limited to scientific English articles published from 2015 to 2024, aligned with the United Nations' Sustainable Goals (SDGs) adoption date, with no other restrictions. The search process was conducted on 20/01/2025 and yielded 315 articles.

The results were imported into EndNote 2021, where duplicates were removed. Subsequently, the titles and abstracts of the remaining 231 articles were analyzed, leading to the elimination of those outside the scope of the study. Finally, 174 articles were analyzed in detail. For the inclusion and exclusion criteria, all papers that were not peer-reviewed, focused on large or national parks, or focused on thermal comfort within parks, or focused on perceived accessibility were excluded. After an in-depth analysis of the 174 articles, 54 articles were removed as they were either not closely related to the research scope or not accessible in full. The remaining 120 articles were selected for the final review.

This review focused on quantitative studies investigating the key role of physical elements in urban green spaces. In this paper, qualitative approaches were not included as this research approach can be challenging in some cases. Although this method provides detailed results, it can be prone to some subjectivity based on the researchers' interpretation. This method involves researchers' emotions, field interpretations, and their social background, respondents' reluctance to disclose their identity, the complexity of data collection, and researcher bias when reporting the incidents. In addition, data replication is usually limited, since they will not be able to acquire the same results when processing data (Mwita, 2022).

The PRISMA diagram below (Figure 1) shows the process of selection and elimination. This method of scoping literature review enables researchers to identify the physical elements in small urban green spaces that influence marginalized populations, providing a conceptual framework for future research. This method identified five criteria forming the foundation for equity-oriented design, which will be discussed in the next section.

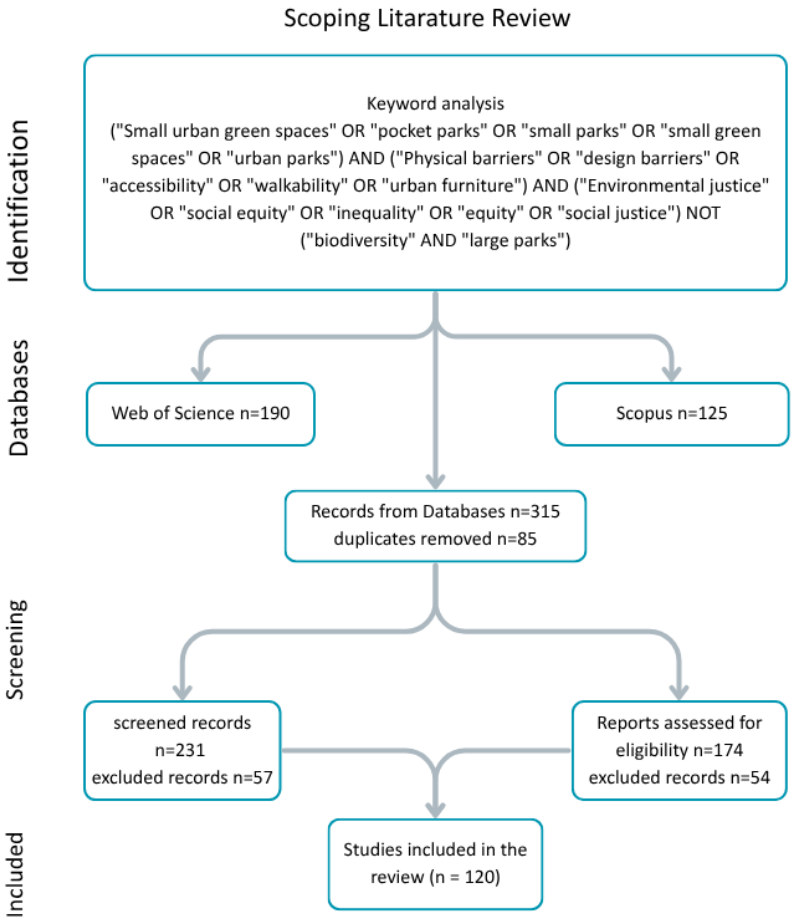

Figure 1. PRISMA diagram structure.

3. Results

This study mainly emphasises the importance of access to urban green parks and their connection with various factors such as spatial, socioeconomic, and quality-related principles within parks. Equity is an essential principle when discussing access to green spaces, and it is primarily intertwined with park location, who visits them, and the types of activities they support. The study reveals that access to urban green spaces is influenced by five key factors, including spatial distribution, socioeconomic status, housing price, race and ethnicity, and the quality and type of parks. The key findings related to these factors are as follows:

3.1 Spatial distribution

Different urban planning strategies lead to different outcomes; studies show that parks are not distributed evenly, most of them are usually located in inner urban areas with greater access for wealthier residents and usually with efficient urban planning compared to suburban areas (Heo et al., 2021; Huang et al., 2024; Kim et al., 2024; Liao & Furuya, 2024; Mehrian et al., 2022; Shi et al., 2023; Williams et al., 2020).

3.2 Socioeconomic status

Economic background is a very important criterion influencing access to green spaces, with wealthier families benefiting from better quality parks. This also relates to the quality and size of parks. Families with higher incomes usually live in the vicinity of large parks with better quality and facilities (Basu & Nagendra, 2021; Büyükagaçci & Arisoy, 2024; Hoffimann et al., 2017). Conversely, some studies show that lower-income families may also have better access to parks, although the quality is lower (Liu et al., 2022).

3.3 Housing price

there is a strong correlation between housing prices and park access, highlighting the fact that affluent neighbourhoods often have better access to parks but residents living on the edges of the city experience less access (Chang et al., 2019; Chen et al., 2024; Li et al., 2022; Xing et al., 2020; Yang et al., 2024; Yu et al., 2024; Yu et al., 2020).

3.4 Race and Ethnicity and different age groups

According to some studies, there is a correlation between limited accessibility and minority groups, such as Black people or those with migration backgrounds (Schüle et al., 2019). These groups usually have less access to quality parks and most of the time they are prone to experience crime (Park & Guldmann, 2020; Rigolon, 2016; Williams et al., 2020; Yan et al., 2024). Also, a term usually ignored is disability. The World Health Organization defines disability in terms of how someone can recover from disasters. Disability must be considered in environmental justice because it has an influence on other factors such as race, and poverty (Atapattu et al., 2021). In addition, most studies highlight that elderly people have limited access to parks, and their needs are usually underestimated (Li & Wang, 2024; Li et al., 2019; Liu et al., 2022; Park & Guldmann, 2020). In a study by Xing and Liu, (Xing et al., 2018), it was analysed that different age groups such as elderly and children, were more likely to experience inequalities. In addition, according to a research study, children's ability to access urban green spaces is influenced by physical barriers and concerns regarding safety. Thus, the standard minimum distance to a park may not be enough for many primary school-aged children. This focuses on the importance of small green spaces located in a walking distance of people's homes—especially for children and people with mobility limitations. Since these small urban parks are difficult to evaluate by size standards, no specific surface area is usually defined for them (Van Herzele & Wiedemann, 2003).

3.5 Park quality and type

However, accessibility is not defined solely by distance. Even though parks may be accessible, Elements like poor maintenance, safety issues, and social dynamics can also discourage use (Liu et al., 2017). In some cases, according to some researchers even a small park may be more influential than the bigger parks (Van Herzele & Wiedemann, 2003). Distribution of parks around wealthy neighbourhoods often correlates with better maintenance, safety, and high social interactions (Li et al., 2022; Mears et al., 2019). Park size is an important component to consider since it positively correlates with the occurrence of several crimes (Zhang et al., 2021). However, in a study by (Mullenbach et al., 2022) it is indicated that safety and social cohesion have a direct relationship with park satisfaction. There are also some disparities in the size of parks, leading to inequalities. Low-income and minor groups usually have access to small parks that are fewer in number. For example, in some affluent neighbourhoods, people have access to much larger and better-quality parks compared to others. This creates inequalities because higher park quality leads to greater well-being for the people (Chen et al., 2020). Some studies indicate that park size matters, as small parks are less appealing to young people (Tian et al., 2017; Xing et al., 2020) on the other hand, older generations prefer parks within walking distance of their homes (Wang et al., 2023; Yan et al., 2024). Park quality is correlated with social connections according to some studies, meaning that when a park is in a good and preferred condition, it is highly likely that people will interact more there (Almohamad et al., 2018).

4. Discussion

The scoping literature review in this study revealed five themes that influence equitable access to small urban green spaces, namely: spatial distribution, socioeconomic status, housing price, park quality, and race and ethnicity. These themes were among the most frequently mentioned in relation to environmental justice, though there is a lack of analysis regarding their implications in design. The first theme, spatial distribution, was the most frequently mentioned theme related to accessibility. There is a correlation between higher accessibility and the distribution of parks in inner urban neighborhoods compared to suburban areas. This means that people living in the peripheral zones of cities usually lack access to quality parks. This reflects issues of distributive justice, where the location of urban green spaces hinders specific groups from achieving environmental benefits within parks.

Socioeconomic conditions can also influence inequality. People with higher economic status tend to live in the neighborhoods with short walking distances to neighborhood parks. Housing prices also correlate with the type of park in terms of quality. Low-income neighborhoods usually lack access to well-maintained parks within the area. Well-maintained parks tend to increase the value of the surrounding residential areas. This further highlights the significant role of social inequalities.

The other theme refers to the quality of parks such as physical design features; proper furniture, adequate lighting, and walking paths which can act as barriers to accessibility. some groups, such as women, the elderly, and people with disabilities face several mobility and safety problems because of improper physical design features. Designing inclusive public areas requires understanding the needs of different user groups.

Demographic patterns require more attention, as some age groups, such as children or senior residents require special design considerations. However, small urban green spaces often lack these features, discouraging these groups from visiting.

Although existing data mainly focuses on the general population, there remains a gap in the relationship between the physical design features and equity where the specific needs of marginalized populations are emphasized. Equitable access to small urban green spaces should be prioritized and should also consider distributive justice and inclusivity. Inclusive design should reflect the involvement of marginalized populations and more explicitly, procedural justice in decision-making, integrating these factors in the design, management, and planning process of small urban parks to enhance their success.

There are some studies that explored secondary factors such as transportation methods (Luo et al., 2022; Shu et al., 2024; Wang et al., 2015; Wang et al., 2021) which can substantially transform the access time depending on the different transportation means that are available. Regarding these aspects this study underscores the significance of the integration of these factors into the planning process.

Results from the studies indicate that urban green spaces play a key role in promoting environmental justice and social equity. To ensure equitable access to urban parks, it is vital to consider spatial distribution alongside other elements of physical design. Small urban green spaces can be influential in combating the inequalities faced by low-income families since these communities often reside near small urban parks (Dobbs et al., 2023; Hoffimann et al., 2017). However, the lack of attention to their distribution and maintenance could exacerbate the existing inequalities. Studies highlight that ethnic communities usually experience spatial and at the same time physical barriers causing them to experience environmental injustices more than others. Although the abovementioned themes are essential in terms of equity, other factors also need to be prioritized to address the gaps. Policy makers and urban planners need to consider the requirements of different demographic groups and apply them in the planning process. This can support more balanced and inclusive design

5. Conclusion

Studies suggest that smaller, well-maintained parks are mainly used for social and cultural purposes—such as sightseeing, art, or staying in contact with people—making them valuable public spaces (Van Herzele & Wiedemann, 2003). Small urban green spaces can be influential due to the benefits they offer. Ensuring fair access to these parks remains an ongoing challenge and requires strategic planning. Despite

their small size, ensuring equitable access to these parks remains an ongoing challenge requiring a multidimensional outlook.

This study used a scoping literature review of 120 peer-reviewed articles and explored the impact of physical design elements on the equitable access of marginalized populations. The results of the study highlight five key elements, namely: spatial distribution, socioeconomic status, housing prices, park quality, ethnic and race minorities. While urban green spaces can be influential in terms of equity, this idea is more often evident in theory than in practice. In response, this study offers a conceptual framework for urban planners, policymakers, and architects.

In order to create inclusive urban green spaces that meet the needs of people, it is important to integrate the requirements of marginalized populations into the planning practices. Therefore, this study highlights the significance of equitable green spaces and the application of distributive and procedural justice. Merging environmental justice with spatial and physical components shapes the basis of equitable access. Addressing disparities regarding the distribution, proximity, and accessibility for a variety of populations requires inclusive design of small green spaces. Most studies focus on large green spaces, and small green spaces are often neglected despite their vital impact on marginalised populations. This study aims to contribute to the literature by proposing a framework to assess design factors and equity in small urban green spaces where there is limited data in the subject. Future research could test the framework in different urban contexts and investigate how specific design elements influence park usage among marginalized populations.

This study offers actionable plans and recommendations for urban planners, landscape architects, and policymakers to create more inclusive environments by:

5.1 Enhanced accessibility

Urban planners need to pay more attention to accessibility standards since it has the maximum impact on the use of parks. They also need to pay more attention to the location of urban green spaces by employing proper design skills, including walkable paths, visible entrances, and proper furniture to assist people with different characteristics, such as the elderly or children. Spatial elements should always be considered to meet the needs of diverse users.

5.2 Enhance community engagement

There should be a focus on participatory design methods in order to increase community engagement and social cohesion among visitors. Planners and policymakers should involve locals and marginalized groups in the decision-making process when designing for people. This approach not only creates social cohesion but also fosters better maintenance by users, as it creates a sense of belonging within the community.

5.3 Ensure sustainable outcomes

This kind of decision-making can provide a resilient and long-term outcome in terms of the development of green spaces and boost their longevity. This will support their role in enhancing public health and developing urban resilience in a broader outlook.

Recommendations for Future Research

Future studies can explore the needs of one specific marginalized group such as children, the elderly, and people with disabilities to better address their ongoing challenges. User-centered frameworks can assess spatial, physical, and social implications. For instance, children mainly require playing areas, safe walkable paths, and age-appropriate playing tools which are usually neglected in small parks. These comprehensive principles can serve a wider range of users, especially in densely urbanized areas. In addition to that, future studies should also consider the long-term influence of maintenance activities on equity.

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References

Almohamad, H., Knaack, A. L., & Habib, B. M. (2018). Assessing Spatial Equity and Accessibility of Public Green Spaces in Aleppo City, Syria. *Forests*, *9*(11), 22, Article 706. https://doi.org/10.3390/f9110706

Atapattu, S. A., Gonzalez, C. G., & Seck, S. L. (2021). Intersections of environmental justice and sustainable development: Framing the issues. https://doi.org/10.1017/9781108555791

Basu, S., & Nagendra, H. (2021). Perceptions of park visitors on access to urban parks and benefits of green spaces [Article]. *Urban Forestry and Urban Greening*, *57*, Article 126959. https://doi.org/10.1016/j.ufug.2020.126959

Büyükagaçci, S. B., & Arisoy, N. (2024). Social Sustainability in Urban Parks: Insights from Alaeddin Hill Park, Konya. *Sustainability*, *16*(22), 15, Article 9697. https://doi.org/10.3390/su16229697

Byrne, J. (2012). When green is White: The cultural politics of race, nature and social exclusion in a Los Angeles urban national park. *Geoforum*, *43*(3), 595-611. https://doi.org/10.1016/j.geoforum.2011.10.002

Chang, Z., Chen, J., Li, W., & Li, X. (2019). Public transportation and the spatial inequality of urban park accessibility: New evidence from Hong Kong [Article]. *Transportation Research Part D: Transport and Environment*, *76*, 111-122. https://doi.org/10.1016/j.trd.2019.09.012

Chen, S. L., Sleipness, O., Xu, Y. N., Park, K., & Christensen, K. (2020). A systematic review of alternative protocols for evaluating non-spatial dimensions of urban parks [Review]. *Urban Forestry & Urban Greening*, *53*, 15, Article 126718. https://doi.org/10.1016/j.ufug.2020.126718

Chen, Z., Liu, Q., Li, M., & Xu, D. (2024). A New Strategy for Planning Urban Park Green Spaces by Considering Their Spatial Accessibility and Distributional Equity [Article]. *Forests*, *15*(3), Article 570. https://doi.org/10.3390/f15030570

Davern, M., Farrar, A., Kendal, D., & Giles-Corti, B. (2017). Quality green space supporting health, wellbeing and biodiversity: A literature review. *The National Heart Foundation of Australia, March*, 1-61.

Dobbs, C., Vásquez, A., Alegría, V., & Cifuentes-Ibarra, M. (2023). Assessing multiple dimensions of distributional justice: Access, biodiversity and landscape structure of green spaces for multiple social groups of the Metropolitan Region of Santiago de Chile. *Urban Forestry & Urban Greening*, *84*, 10, Article 127948. https://doi.org/10.1016/j.ufug.2023.127948

Douglas, O., Lennon, M., & Scott, M. (2017). Green space benefits for health and well-being: A life-course approach for urban planning, design and management. *Cities*, *66*, 53-62. https://doi.org/10.1016/j.cities.2017.03.011

Elshaboury, N., Al-Sakkaf, A., Mohammed Abdelkader, E., & Alfalah, G. (2022). Construction and demolition waste management research: A science mapping analysis. *International journal of environmental research and public health*, *19*(8), 4496. https://doi.org/10.3390/ijerph19084496

Forde, S. (2024). Spatial intersectionality and transformative justice as frameworks for equitable urban planning in divided and post-conflict cities. *Cities*, *147*, 104796. https://doi.org/10.1016/j.cities.2024.104796

Gascon, M., Triguero-Mas, M., Martínez, D., Dadvand, P., Rojas-Rueda, D., Plasència, A., & Nieuwenhuijsen, M. J. (2016). Residential green spaces and mortality: a systematic review. *Environment international*, *86*, 60-67. https://doi.org/10.1016/j.envint.2015.10.013

Gavrilidis, A. A., Niță, M. R., Onose, D. A., Badiu, D. L., & Năstase, I. I. (2019). Methodological framework for urban sprawl control through sustainable planning of urban green infrastructure. *Ecological indicators*, *96*, 67-78. https://doi.org/10.1016/j.ecolind.2017.10.054

Giles-Corti, B., Broomhall, M. H., Knuiman, M., Collins, C., Douglas, K., Ng, K., Lange, A., & Donovan, R. J. (2005). Increasing walking: how important is distance to, attractiveness, and size of public open space? *American journal of preventive medicine*, *28*(2), 169-176. https://doi.org/10.1016/j.amepre.2004.10.018

Gozalo, G. R., Morillas, J. M. B., & González, D. M. (2019). Perceptions and use of urban green spaces on the basis of size. *Urban Forestry & Urban Greening*, *46*, 126470. https://doi.org/10.1016/j.ufug.2019.126470

Gumusburun Ayalp, G., & Anaç, M. (2024). A comprehensive analysis of the barriers to effective construction and demolition waste management: A bibliometric approach. https://doi.org/10.1016/j.clwas.2024.100141

He, M., Wu, Y., Liu, X., Wu, B., & Fu, H. (2023). Constructing a multi-functional small urban green space network for green space equity in urban built-up areas: A case study of Harbin, China. *Heliyon*, *9*(11). https://doi.org/10.1016/j.heliyon.2023.e21671

Heo, S., Nori-Sarma, A., Kim, S., Lee, J. T., & Bell, M. L. (2021). Do persons with low socioeconomic status have less access to greenspace? Application of accessibility index to urban parks in Seoul, South Korea. *Environmental Research Letters*, *16*(8), 18, Article 084027. https://doi.org/10.1088/1748-9326/ac12f1

Hoffimann, E., Barros, H., & Ribeiro, A. I. (2017). Socioeconomic Inequalities in Green Space Quality and Accessibility-Evidence from a Southern European City. *International Journal of Environmental Research and Public Health*, *14*(8), 16, Article 916. https://doi.org/10.3390/ijerph14080916

Holifield, R., Chakraborty, J., & Walker, G. (2018). *The Routledge handbook of environmental justice*. Routledge, Taylor & Francis Group London, UK:. https://doi.org/10.1016/j.landurbplan.2018.05.026

Hosseinimand, N., Yaghoobi, M., Shahhosseini, H., & Javan Forouzandeh, A. (2021). Evaluation of qualitative-perceptual components of green spaces in promoting the sense of satisfaction and vitality of the residents of the surrounding areas (Examples of Elgoli Park and Valiasr Park in Tabriz). *Geography and Planning*, *25*(77), 61-79. https://doi.org/10.22034/gp.2021.41603.2693

Huang, Y., Hong, X., Zheng, Y., Zhang, Y., & Li, Z. (2024). Assessment and optimization of spatial equity for urban parks: A case study in Nanjing, China [Article]. *Ecological Indicators*, *166*, Article 112449. https://doi.org/10.1016/j.ecolind.2024.112449

Jennings, V. (2018). Inequities in quality urban park systems: An environmental justice investigation of cities in the United States. https://doi.org/10.1016/j.landurbplan.2018.05.026

Kim, E. K., Yoon, S., Jung, S. U., & Kweon, S. J. (2024). Optimizing urban park locations with addressing environmental justice in park access and utilization by using dynamic demographic features derived from mobile phone data. *Urban Forestry & Urban Greening*, *99*, 13, Article 128444. https://doi.org/10.1016/j.ufug.2024.128444

Lee, A. C. K., Jordan, H. C., & Horsley, J. (2015). Value of urban green spaces in promoting healthy living and wellbeing: prospects for planning. *Risk management and healthcare policy*, 131-137. https://doi.org/10.2147/RMHP.S61654

Li, C. Y., & Wang, J. R. (2024). Using an age-grouped Gaussian-based two-step floating catchment area method (AG2SFCA) to measure walking accessibility to urban parks: With an explicit focus on elderly. *Journal of Transport Geography*, *114*, 16, Article 103772. https://doi.org/10.1016/j.jtrangeo.2023.103772

Li, Z., Liang, Z., Feng, L., & Fan, Z. (2022). Beyond Accessibility: A Multidimensional Evaluation of Urban Park Equity in Yangzhou, China [Article]. *Isprs International Journal of Geo-Information*, *11*(8), Article 429. https://doi.org/10.3390/ijgi11080429

Li, Z., Wei, H., Wu, Y., Su, S., Wang, W., & Qu, C. (2019). Impact of community deprivation on urban park access over time: Understanding the relative role of contributors for urban planning [Article]. *Habitat International*, *92*, Article 102031. https://doi.org/10.1016/j.habitatint.2019.102031

Liao, Y. H., & Furuya, K. (2024). A Case Study on Children's Accessibility in Urban Parks in Changsha City, China: Developing an Improved 2SFCA Method. *Land*, *13*(9), 18, Article 1522. https://doi.org/10.3390/land13091522

Lin, W., Chen, Q., Jiang, M., Zhang, X., Liu, Z., Tao, J., Wu, L., Xu, S., Kang, Y., & Zeng, Q. (2019). The effect of green space behaviour and per capita area in small urban green spaces on psychophysiological responses. *Landscape and urban planning*, *192*, 103637.

Liu, B. X., Tian, Y., Guo, M., Tran, D., Alwah, A. A. Q., & Xu, D. W. (2022). Evaluating the disparity between supply and demand of park green space using a multi-dimensional spatial equity evaluation framework. *Cities*, *121*, 20, Article 103484. https://doi.org/10.1016/j.cities.2021.103484

Liu, W. P., Chen, W. J., & Dong, C. L. (2017). Spatial decay of recreational services of urban parks: Characteristics and influencing factors. *Urban Forestry & Urban Greening*, *25*, 130-138. https://doi.org/10.1016/j.ufug.2017.05.004

Luo, S. J., Jiang, H. P., Yi, D. S., Liu, R. H., Qin, J. H., Liu, Y. S., & Zhang, J. (2022). PM2SFCA: Spatial Access to Urban Parks, Based on Park Perceptions and Multi-Travel Modes. A Case Study in Beijing. *Isprs International Journal of Geo-Information*, *11*(9), 19, Article 488. https://doi.org/10.3390/ijgi11090488

Mears, M., Brindley, P., Maheswaran, R., & Jorgensen, A. (2019). Understanding the socioeconomic equity of publicly accessible greenspace distribution: The example of Sheffield, UK. *Geoforum*, *103*, 126-137. https://doi.org/10.1016/j.geoforum.2019.04.016

Mehrian, M. R., Miandoab, A. M., Abedini, A., & Aram, F. (2022). The Impact of Inefficient Urban Growth on Spatial Inequality of Urban Green Resources (Case Study: Urmia City). *Resources-Basel*, *11*(7), 9, Article 62. https://doi.org/10.3390/resources11070062

Mullenbach, L. E., Larson, L. R., Floyd, M. F., Marquet, O., Huang, J. H., Alberico, C., Ogletree, S. S., & Hipp, J. A. (2022). Cultivating social capital in diverse, low-income neighborhoods: The value of parks for parents with young children. *Landscape and urban planning*, *219*, 10, Article 104313. https://doi.org/10.1016/j.landurbplan.2021.104313

Mwita, K. M. (2022). Strengths and weaknesses of qualitative research in social science studies. *International Journal of Research in Business and Social Science*, *11*(6), 618-625. https://doi.org/10.20525/ijrbs.v11i6.1920

Naghibi, M., Farrokhi, A., & Faizi, M. (2024). Small Urban Green Spaces: Insights into Perception, Preference, and Psychological Well-being in a Densely Populated Areas of Tehran, Iran. *Environmental Health Insights*, *18*, 11786302241248314. https://doi.org/10.1177/11786302241248314

O'Brien, T., & Fitzgerald, J. (2023). Universal Design for Learning (UDL): Creating a Fairer System for All. LEARN,

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., & Brennan, S. E. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *bmj*, *372*. https://doi.org/10.1136/bmj.n71

Park, Y., & Guldmann, J. M. (2020). Understanding disparities in community green accessibility under alternative green measures: A metropolitan-wide analysis of Columbus, Ohio, and Atlanta, Georgia. *Landscape and urban planning*, *200*, 15, Article 103806. https://doi.org/10.1016/j.landurbplan.2020.103806

Peschardt, K. K., Schipperijn, J., & Stigsdotter, U. K. (2012). Use of small public urban green spaces (SPUGS). *Urban forestry & urban greening*, *11*(3), 235-244. https://doi.org/10.1016/j.ufug.2012.04.002

Piazzoni, F., Poe, J., & Santi, E. (2024). What design for urban design justice? *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, *17*(3), 379-400. https://doi.org/10.1080/17549175.2022.2074522

Richardson, E., Pearce, J., Mitchell, R., Day, P., & Kingham, S. (2010). The association between green space and cause-specific mortality in urban New Zealand: an ecological analysis of green space utility. *BMC public health*, *10*, 1-14.

Rigolon, A. (2016). A complex landscape of inequity in access to urban parks: A literature review [Review]. *Landscape and urban planning*, *153*, 160-169. https://doi.org/10.1016/j.landurbplan.2016.05.017

Rosso, A. L., Auchincloss, A. H., & Michael, Y. L. (2011). The urban built environment and mobility in older adults: a comprehensive review. *Journal of aging research*, *2011*(1), 816106. https://doi.org/10.4061/2011/816106

Rutt, R. L., & Gulsrud, N. M. (2016). Green justice in the city: A new agenda for urban green space research in Europe. *Urban forestry & urban greening*, *19*, 123-127. https://doi.org/10.1016/j.ufug.2016.07.004

Schüle, S. A., Hilz, L. K., Dreger, S., & Bolte, G. (2019). Social Inequalities in Environmental Resources of Green and Blue Spaces: A Review of Evidence in the WHO European Region [Review]. *International Journal of Environmental Research and Public Health*, *16*(7), 15, Article 1216. https://doi.org/10.3390/ijerph16071216

Shahhosseini, H., Kamal, M., Maulan, S., Rashidi, A., & Dibazar, F. (2014). *Influence of non-visual factors on visual preferences of visitors to small urban parks in Tabraz, Iran* Universiti Putra Malaysia].

Shi, J. R., Guo, Q. Y., Lv, Q. W., & Zhao, X. M. (2023). From accessibility of traffic to accessibility of service: the spatial analysis of N-minute service circle of urban park system. *Journal of Asian Architecture and Building Engineering*, *22*(6), 3680-3702. https://doi.org/10.1080/13467581.2023.2172345

Shu, D., Peng, Y., Zhang, Z., Shi, R., Wu, C., Gan, D., & Li, X. (2024). Distance Decay of Urban Park Visitation: Roles of Personal Characteristics and Visitation Patterns [Article]. *Forests*, *15*(9), Article 1589. https://doi.org/10.3390/f15091589

Sun, F., Zhang, J., Yang, R., Liu, S., Ma, J., Lin, X., Su, D., Liu, K., & Cui, J. (2023). Study on microclimate and thermal comfort in small urban green spaces in Tokyo, Japan—A case study of Chuo Ward. *Sustainability*, *15*(24), 16555. https://doi.org/10.3390/su152416555

Tian, Y. H., Jim, C. Y., & Liu, Y. Q. (2017). Using a Spatial Interaction Model to Assess the Accessibility of District Parks in Hong Kong. *Sustainability*, *9*(11), 14, Article 1924. https://doi.org/10.3390/su9111924

Van Herzele, A., & Wiedemann, T. (2003). A monitoring tool for the provision of accessible and attractive urban green spaces. *Landscape and urban planning*, *63*(2), 109-126. https://doi.org/10.1016/S0169-2046(02)00192-5

Wang, D., Brown, G., & Liu, Y. (2015). The physical and non-physical factors that influence perceived access to urban parks. *Landscape and urban planning*, *133*, 53-66. https://doi.org/10.1016/j.landurbplan.2014.09.007

Wang, P., Han, L., & Mei, R. (2022). An impact asymmetry analysis of small urban green space attributes to enhance visitor satisfaction. *International Journal of Environmental Research and Public Health*, *19*(5), 2922. https://doi.org/10.3390/ijerph19052922

Wang, S. Q., Wang, M. S., & Liu, Y. (2021). Access to urban parks: Comparing spatial accessibility measures using three GIS-based approaches. *Computers Environment and Urban Systems*, *90*, 13, Article 101713. https://doi.org/10.1016/j.compenvurbsys.2021.101713

Wang, Z., Yan, G., & Wang, S. (2023). Fairness Evaluation of Landscape Justice in Urban Park Green Space: A Case Study of the Daxing Part of Yizhuang New Town, Beijing [Article]. *Sustainability (Switzerland)*, *15*(1), Article 370. https://doi.org/10.3390/su15010370

Williams, T. G., Logan, T. M., Zuo, C. T., Liberman, K. D., & Guikema, S. D. (2020). Parks and safety: a comparative study of green space access and inequity in five US cities. *Landscape and urban planning*, *201*, 18, Article 103841. https://doi.org/10.1016/j.landurbplan.2020.103841

Wolch, J. R., Byrne, J., & Newell, J. P. (2014). Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'. *Landscape and urban planning*, *125*, 234-244. https://doi.org/10.1016/j.landurbplan.2014.01.017

Xing, L., Liu, Y., Wang, B., Wang, Y., & Liu, H. (2020). An environmental justice study on spatial access to parks for youth by using an improved 2SFCA method in Wuhan, China [Article]. *Cities*, *96*, Article 102405. https://doi.org/10.1016/j.cities.2019.102405

Xing, L. J., Liu, Y. F., & Liu, X. J. (2018). Measuring spatial disparity in accessibility with a multi-mode method based on park green spaces classification in Wuhan, China. *Applied Geography*, *94*, 251-261. https://doi.org/10.1016/j.apgeog.2018.03.014

Yan, L. J., Jin, X. Y., & Zhang, J. Q. (2024). Equity in park green spaces: a bibliometric analysis and systematic literature review from 2014-2023 [Review]. *Frontiers in Environmental Science*, *12*, 16, Article 1374973. https://doi.org/10.3389/fenvs.2024.1374973

Yang, Z., Fang, H. Y., Wei, G. Y., Mo, J. Y., Gao, X. H., & Zhang, S. M. (2024). An assessment of urban park accessibility using multi-source data in Hefei, China: A social equity perspective. *Land Degradation & Development*, *35*(11), 3627-3641. https://doi.org/10.1002/ldr.5156

Yu, S. Q., Hu, S. X., Ren, Y. J., Xu, H., & Song, W. X. (2024). Leverage Effect of New-Built Green Spaces on Housing Prices in a Rapidly Urbanizing Chinese City: Regional Disparities, Impact Periodicity, and Park Size. *Land*, *13*(10), 17, Article 1663. https://doi.org/10.3390/land13101663

Yu, S. Q., Zhu, X. G., & He, Q. (2020). An Assessment of Urban Park Access Using House-Level Data in Urban China: Through the Lens of Social Equity. *International Journal of Environmental Research and Public Health*, *17*(7), 19, Article 2349. https://doi.org/10.3390/ijerph17072349

Zhang, R., Zhang, C. Q., Cheng, W., Lai, P. C., & Schüz, B. (2021). The neighborhood socioeconomic inequalities in urban parks in a High-density City: An environmental justice perspective. *Landscape and urban planning*, *211*, 9, Article 104099. https://doi.org/10.1016/j.landurbplan.2021.104099

Zong, M., Xu, G., & Yanai, S. (2024). Building local partnership through community parks in Central Tokyo: perspectives from different participants. *Frontiers in Sustainable Cities*, *6*, 1445754. https://doi.org/10.3389/frsc.2024.1445754