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Research paper



Design Criteria for Pocket Parks in Old City Districts: Fostering Shared Urban Landscapes

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Abstract

Pocket parks have become essential tools for improving social interaction, environmental quality, and public well-being because of China's fast urbanisation, especially in crowded old metropolitan areas. Underutilisation and inefficient land use result from the planning and design of these small-scale green spaces, which frequently lack scientific quality. Using a mixed-methods approach that incorporates field observations, geographical analysis, user surveys, and expert interviews, this study examines 70 pocket parks in Taiyuan, Shanxi Province, China. The results show that the park's location, design elements, and community demands are not aligned, underscoring the significance of functional coordination, cultural readability, and perceptual clarity. This research offers a set of evidence-based design and siting criteria for pocket parks in historic urban settings by including the shared urban landscapes principles, which prioritise usability, accessibility, and social inclusion. The findings encourage inclusive and resilient cityscapes and promote sustainable, human-centered urban regeneration by offering practical insights to policymakers, landscape architects, and urban planners.

Keywords: *Cultural Negotiation; Environmental Psychology; Micro-Public Spaces; Pocket Parks,; Urban Regeneration*

1. Introduction

It is still difficult to strike a balance between land preservation and urbanisation in China due to its fast rate of urbanisation (Tu et al., 2021).National policy has changed towards "urban micro-renewal" to prioritise environmental efficiency and spatial optimisation above traditional demolition and reconstruction as land resources become more limited and large-scale urban expansion slows (He & Li, 2024) In this regard, the lack of easily accessible, high-quality green spaces in ageing urban cores is becoming increasingly out of step with public needs (Wen et al., 2020).

Following the Ministry of Housing and Construction's 2021 order, China has changed its urban renewal strategy in recent years from extensive destruction to resource-efficient "micro-renewal" techniques (Ye et al., 2021) Older urban districts, which are frequently congested, underserved, and devoid of adequate green infrastructure, have emerged as key places for revitalisation throughout this shift (Wang & Wu, 2025) Pocket parks are increasingly being marketed as instruments to improve urban liveability and ecological resilience in such regions because of their small size, adaptable deployment, and capacity to rejuvenate fragmented spaces (Chu et al., 2025).

As a tactical solution to these issues, pocket parks have surfaced (Wu & Sharudin, 2025). Pocket parks, which are characterised by their compact size, adaptability, and ability to revitalise underutilised urban land, help to alleviate the lack of green infrastructure in crowded urban areas (Rosso et al., 2022).The design and development of pocket parks in China, however, frequently lack scientific rigour despite legislative backing and increased demand, leading to low utilisation and lost possibilities for social and spatial integration (Dong et al., 2023)

Many Chinese pocket parks, particularly those created since 2020, have not lived up to promises despite increased demand (Shu et al. 2022) A lack of scientific standards directing their design and construction is evident in problems, including inappropriate siting, a functional disconnect with the surroundings, and low usage rates (Dong et al., 2023) .In addition to wasting public funds, these flaws prevent the creation of inclusive, easily accessible, and socially cohesive green spaces from becoming a reality (Duan et al., 2025).

To determine location-based and design-related variables that facilitate the development of a "shared urban landscape" in ancient city districts, this study looks at 70 pocket parks in Taiyuan, Shanxi Province. The study investigates how pocket parks might be more successfully incorporated into the urban fabric to improve citizen well-being and foster social interaction using spatial analysis, field observation, and user surveys. To support a more sustainable and inclusive model of urban regeneration, the project intends to develop criteria for the location and construction of pocket parks that strike a balance between ecological value and public accessibility.

RQ1: What spatial and design factors influence pocket park utilization in old city areas?
RQ2: How can these factors be integrated to create shared urban landscapes?
RQ3: What standards promote social interaction in pocket parks?

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2. Literature Review

With the Ministry of Housing and Urban-Rural Development's 2021 order prohibiting extensive demolition and reconstruction, urban regeneration in historic city districts has emerged as a key issue in modern Chinese urban planning. This change has led to a renewed emphasis on resource-efficient, small-scale interventions like pocket parks, which provide easily accessible green infrastructure in crowded urban areas. Although many municipal greening initiatives now include the creation of pocket parks, there are still issues, especially about inadequate siting, functional separation from adjacent surroundings, and underutilisation (Rigolon & Németh, 2020).

The significance of matching pocket park development with ecological and social demands has been emphasised by scholars (Monty, 2022; Bajwoluk & Langer, 2023 Successful pocket park design must include behavioural and cultural elements that promote contact, identification, and emotional connection in addition to environmental features like greenery, permeability, and shading (Bazrafshan et al., 2021; Patria et al., 2025). These observations draw attention to a crucial gap in the literature: most of it lacks a cohesive theoretical framework that connects public space's experiential quality and urban regeneration strategies.

This research creates a conceptual framework that integrates Place-Making Theory with Organic Update Theory to address this. Liangyong Wu was the first to propose the Organic Update Theory. "According to the internal rule of the urban development, conform to the texture of the city, based on sustainable development, to explore the city's renewal and development," he writes in his 1994 study of Beijing's ancient city and its Juer Hutong neighbourhood. Zhou (2012) It stresses integration with the current urban texture, human scale, and cultural continuity while encouraging a slow, bottom-up development of urban regions (Kunyuan, 2014; Liu et al., 2023). To improve quality of life and promote meaningful community use, planners should consider local context and user demands while creating pocket parks, according to this hypothesis (Heydari et al., 2022).

In addition, Place-Making Theory offers a perspective on how people develop social and emotional ties to urban settings via routine use. Public spaces gain significance not only from their physical layout but also from the emotional connections and symbolic associations they facilitate, according to research on place attachment (Bazrafshan et al., 2021). Integrating this perspective enriches the Organic Update framework by making explicit how parameters capture the lived experiences that sustain shared urban landscapes.

According to this combined theoretical model, pocket parks are micro-infrastructures that foster enduring social bonds and organic urban improvement, not just tiny green spaces. However, to fulfil these purposes, they need to be directed by evidence-based siting and design guidelines that consider the perceptual, cultural, and ecological aspects of historic districts.

This study fills the highlighted gap by evaluating 70 small parks in Taiyuan's old city district. It advances a concept of the shared urban landscape by offering context-sensitive design standards that assist inclusive place-making and sustainable regeneration through empirical study of geographical position, usage patterns, and user perceptions.

3. Research Method

In response to three overarching research aims, this study employs a deductive research philosophy, moving from empirical observation to theoretical improvement. To develop context-sensitive evaluation criteria for pocket park construction in the context of Chinese urban regeneration, the main objective is to evaluate the spatial logic, usage performance, and design implications of 70 existing pocket parks in Taiyuan, Shanxi Province, China.

The study takes a largely qualitative approach, focusing on subjective user perceptions and in-situ observations. The total investigation is interpretive and based on methodological triangulation to guarantee analytical depth and cross-validation, even though quantitative data were collected for descriptive purposes. With its implementation of small-scale public green areas amidst urban densification, Taiyuan, the capital of Shanxi Province, is a prime example of Chinese urban rehabilitation. Based on planning origin and locational context, the 70 pocket parks chosen for this study were divided into four typologies: parks created under the city's green space masterplan (Type I), parks created in response to residential service demands (Type II), parks created on vacant or residual land (Type III), and parks incorporated into road and infrastructure upgrades (Type IV). The parks were constructed since 2020. Comparative study of user responses and spatial arrangements was made easier by this classification.

Semi-structured interviews, formal questionnaires, and field observation were all used in the data collection process. Researchers physically visited and mapped each park, noting features including vegetation, amenities, geography, access points, and the adjacent urban context. The presence of visitors, activity patterns, temporal usage cycles, and user diversity were all recorded using behavioural mapping techniques. Visitors' assessments of accessibility, safety, comfort, contentment, and perceived spatial quality were obtained by on-site questionnaires, which supplemented the observational data. Excel 2016 and SPSS 22.0 were used for statistical analysis of these replies, employing descriptive techniques to find patterns and outliers.

A cross-section of park visitors participated in informal semi-structured interviews to further the interpretation of user behaviour and experience quality. These discussions provided qualitative insights that went beyond superficial behavioural indicators by examining personal perceptions, emotional connections, and expectations regarding the layout and design of pocket parks. The study guarantees a comprehensive and reliable assessment of how pocket parks operate within the complex socio-spatial circumstances of urban China by combining the three approaches using a triangulated design.

4. Results

The success or failure of micro-scale urban green spaces depends on the complex interaction of perceptual clarity, behavioural compatibility, and emotional legibility rather than just the availability of services or adherence to regulations, as this study of 70 pocket parks in Taiyuan shows. Three interconnected domains emerged from the triangulation of data, which included systematic field observations, user surveys, semi-structured interviews, and policy documents: communicative diversity promoting inclusive interaction, design coherence within shared landscapes, and spatial legibility and access clarity. When taken as a whole, these domains explain why some parks develop into essential civic microspaces while others maintain their material completeness but lack social function. To illustrate the analytical alignment between the parameter system and raw data, Appendix A offers illustrative examples of parameter operationalisation.

Based on these results, we developed a set of 19 design criteria (P01−P19, Table 1) that connect empirical trends to practical recommendations for the management and planning of pocket parks. Appendix A offers instances of how each criterion was operationalised and coded in practice to demonstrate its analytical foundation.

Table 1: Parameter Framework for Pocket Park Design and Management

Parameter Code	Parameter Name	Description	Practical Application
P01	Path Clarity	Ease of navigation along paths and circulation routes.	Reduced detours and increased participation are two benefits of having clear, easy-to-follow pathways that complement natural pedestrian flows.
P02	Boundary Coherence	Visual and symbolic continuity of park boundaries.	Users are better able to perceive the park as a united, secure, and accessible area when the limits are clearly marked.
P03	Access Logic	Logical placement of entrances and exits.	To increase use, entrances should be noticeable and in accordance with pedestrian walkways.
P04	Facility Allocation	Strategic distribution of park amenities and activity zones.	Facilities that are positioned correctly improve user happiness and lessen conflict between various activities.
P05	Material Suitability	Appropriateness of materials for comfort, safety, and durability.	Context-sensitive materials improve resilience, comfort, and visual coherence.
P06	Functional Density	Intensity and layering of different uses within the park.	Diverse activities are supported by an adequate density without causing crowding or conflict.
P07	Symbolic Location	Placement of cultural or narrative elements.	Emotional attachment, narrative, and cultural identification are all improved by carefully placed symbols.
P08	Social Inclusion	Opportunities for all demographic groups to engage in the park.	Intergenerational engagement is promoted by designing for a range of age groups and social backgrounds.
P09	Directional Connectivity	Integration of park paths with surrounding street networks.	Ensures easy access from a variety of angles, boosting connectivity and visits.
P10	Surveillance Visibility	Visibility and sightlines for informal surveillance.	Increases the perception of safety and promotes more frequent, extended park visits.
P11	Emotional Belonging	Users' sense of attachment and ownership.	Strengthens enduring involvement and cultivates a common urban identity.
P12	Cross-Group Interaction	Facilitation of encounters among different user groups.	Enhances community resilience and fosters social bonding.
P13	Security Feeling	Perceived safety within the park.	Comfort and usage are increased by clear boundaries, enough lighting, and visibility.
P14	Usability Diversity	Flexibility of spaces for multiple uses.	Supports a range of activities and gradually adapts programming.
P15	Facility Comfort	Physical comfort of benches, shelters, and other amenities.	Enhances user pleasure, promotes staying, and facilitates return visits.
P16	Maintenance Condition	State of upkeep, cleanliness, and repair.	Parks that are kept up show concern, foster trust, and continue to see regular use.
P17	Environmental Coherence	Integration with microclimate, natural features, and landscape design.	Climate-sensitive architecture, vegetation, and shade improve both ecological value and user comfort.
P18	Regulatory Adaptability	Flexibility of governance and management policies.	Long-term responsiveness is supported by adaptive rules and participatory management.
P19	Cultural Recognition	Acknowledgment of local history, heritage, and community identity.	Promotes cultural continuity, fosters participation in society, and fortifies emotional bonds.

4.1 Spatial Legibility and Perceptual Access.

"Spatial legibility" describes how easily people can see, comprehend, and move around a park's design, including its entrances, walkways, and areas designated for activities. The ability of a space to convey various social, cultural, and ecological meanings through its design elements, symbols, and usage patterns is referred to as "communicative diversity." "Emotional belonging" refers to the sense of identity and attachment people have to a place, which is frequently influenced by personal experiences and cultural continuity. The term "social readability" refers to how well a park's layout encourages the identification of social signs, behaviours, and chances for interaction between various groups. These concepts collectively serve as the conceptual underpinnings of this study, highlighting how pocket parks serve as relational spaces as well as tangible infrastructures in the context of urban renewal.

Even while spatial accessibility and physical proximity are given priority in urban design standards, empirical data from 54 out of 70 parks demonstrates that park entrance visibility and legibility—rather than just location—have a significant impact on user engagement. According to observational data, users frequently hesitated or took detours when they came across entrances that were hidden by nearby non-park usage, foliage, or fence (P01, P03). Formal gates were frequently disregarded by users in favour of makeshift entrances where the visual logic of the pathways more naturally matched regular pedestrian movements. For example, informal cut-throughs took precedence over formal access routes in Parks 11 and 42, indicating perceptual legibility.

Interviews also revealed that a lack of signage, disjointed boundaries, or unclear infrastructure made it difficult for many users to recognise certain parks as public areas. Experts stressed that visual continuity, symbolic thresholds, and ambient cues must be used to choreograph spatial openness rather than assume it (P02, P10, P13). Even strategically situated parks remained underutilised or misinterpreted as private or dangerous places in the absence of these signs.

By comparing park layouts with visible and veiled entrances, Fig. 1 demonstrates these dynamics and emphasises how border treatment, signage, and walkway alignment affect spatial intelligibility. It illustrates how visitors move around parks in different ways based on whether visual access is unhindered or blocked.

Criteria like P01 (path clarity), P02 (boundary coherence), and P03 (access logic) were especially associated with these patterns. Pocket parks have become a signature feature of Taiyuan's urban governance. The construction of Victory Street Pocket Park is one of the highlights of the community (Fig.1).



Fig. 1: Victory Street Pocket Park.

4.2 Design Coherence in Shared Urban Landscapes.

The spatial logic, temporal adaptability, and sensory comfort of the infrastructure were more important factors in its design success than its quantity. Even though there were plenty of amenities in 47 parks, including benches, vegetation, and exercise equipment, usage was limited in areas where programmatic zones clashed or were not visible to one another. Exercise areas confronting peaceful rest areas, seats positioned in visually isolated or thermally exposed corners, and shade structures that weren't in line with real usage patterns were examples of common spatial frictions (P04, P05, P15).

Only in parks where functional layering (P06), adaptive usage potential (P14), and thermal comfort considerations aligned could behavioural comfort occur, according to observational clusters. For instance, Park 19 and Park 33's shaded circulation, wide sightlines, and context-sensitive amenity placement showed strong user retention across a range of demographics. On the other hand, parks with strict, one-purpose designs frequently turned into exclusive areas for dominant user groups, particularly in densely populated areas.

Experts reaffirmed that infrastructure and materials don't function independently. Symbolic consistency, climatic reactivity, and maintenance integrity are what determine their efficacy. Interviewees emphasised time and again that design stewardship, not just initial provision, is what makes a project successful. Emotional safety and continued usage after sunset were shaped by maintenance visibility and material readability, which functioned as psychological cues of invitation or neglect (P16).

The following criteria were found to be crucial for behavioural compatibility: P04 (facility allocation), P05 (material suitability), P06 (functional density), and P15 (facility comfort). Large rain shelters and long tables with chairs greatly facilitate passengers waiting for buses (Fig.2).



Fig. 2: Park Road Community Pocket Park.

4.3 Communicative Diversity and Emotional Inclusion.

In contrast to conventional wisdom, social contact in pocket parks is not always a result of seating availability or physical openness. Instead, situational readability, symbolic familiarity, and emotional safety are necessary for social cohesiveness. Spaces with no narrative signals, cultural anchoring, or affective clarity were consistently avoided across all approaches, especially by newcomers and older individuals (P07, P08, P11). According to the results, 68% of participants shunned parks that they characterised as "uncared for," "confusing," or "not meant for people like me."

Parks with incorporated cultural narratives—whether through murals, local signage, vernacular materials, or story-driven design elements—supported high communicative variety, not because of their excellent infrastructure. By reinforcing emotional affiliation, these micro-symbolic gadgets helped users feel located, safe, and seen. Furthermore, cross-group presence and temporal layering of activities were made possible by institutional flexibility, which included loose usage rules and adaptive maintenance (P18).

These results were supported by documentary analysis, which emphasised that co-use logic, friction buffers, and procedural tolerance are necessary for spatial inclusion in addition to demographic coverage. Without these amenities, pocket parks run the risk of becoming socially divided spaces where regular users take over and newcomers retreat.

These dynamics closely align with P08 (social inclusion), P11 (emotional belonging), P12 (cross-group contact), and P07 (symbolic location). Pocket parks are not only jewels that adorn the cityscape. Beyond planting greenery, many pocket parks feature pavilions, benches, walking paths, and fitness equipment, making them ideal spots for residents to relax after meals, take strolls, or engage in physical exercise. Some pocket parks also host public events like cultural performances, art exhibitions, and community activities. Integrating greening,

beautification, recreation, and entertainment, they attract more organizations and individuals to participate in their co-creation, sharing, and use. This fulfills citizens' pursuit of high-quality, diverse lifestyles, delivering tangible gains and a sense of happiness(Fig.3)..



Fig. 3: Yizhong Park and Liuxiang Recreational Park.

4.4 Synthesis: from Physical Objects to Relational Infrastructures.

Pocket parks thrive on relational infrastructures, not just physical design. Parks fail because the behavioural, symbolic, and perceptual clues necessary to maintain shared public life are dispersed, subdued, or misaligned, not because they are too tiny or too basic.
The "equipped but empty" park areas that satisfy formal requirements but are yet socially underutilized—is a recurrent condition brought on by this imbalance. These problems are much more severe in older districts when user heterogeneity, cultural memory, and geographical pressures all come together. People react to things that can be read, trusted, and lived in rather than just things that are constructed.
A calibrated spatial grammar, which includes intelligible entry, context-sensitive infrastructure, emotional clues, and narrative coherence, was exhibited by a small number of successful parks. Together, these characteristics enable pocket parks to function as micro-public interfaces—civic nodes that quietly renegotiate the right to urban presence, mediate social complexity, and absorb everyday rhythms—rather than as miniature versions of bigger parks. These ideas are synthesised into a practical lens by the proposed 19 designs, which guarantee that physical provision is connected with perceptual, emotional, and cultural dimensions.

5. Discussion

This section seeks to analyse the deeper mechanisms that influence pocket park success or failure in the context of urban renewal, establishing links between empirical results and their governance and policy implications. It investigates the interactions between spatial legibility, behavioural signalling, and emotional resonance in these micro-public places rather than just summarising findings. A conceptual framework that views pocket parks as dynamic assemblages influenced by perceptual clarity, cultural negotiation, and institutional responsiveness in addition to physical design, is put forth in the discussion. This part transforms from observation to actionable knowledge by relating observable spatial patterns and user behaviours to policy and governance considerations, offering urban decision-makers both theoretical and practical direction.

5.1 Discussion of The findings.

By highlighting the relationship dynamics between design aim, spatial legibility, and user experience, this study adds to the expanding conversation on the possibilities for urban regeneration in Chinese cities through pocket parks. The effectiveness of pocket parks depends not just on their physical availability but also on more profound perceptual and behavioural aspects, even though national and local governments are increasingly endorsing them as instruments for urban green equity, particularly in older neighbourhoods. Even in parks that are officially accessible, empirical research shows that underuse occurs because municipal policies and regulatory frameworks frequently ignore micro-scale perceptual indicators like entry visibility and pathway regularity. According to the research, people's interaction with these micro-public areas depends more on the park's ability to convey its existence, goal, and comfort than it does on its actual location or number of amenities.
Crucially, the results cast doubt on the commonly held belief that accessibility is equivalent to visibility. Rather, the main factor influencing engagement is the perceived intelligibility of entrances, movement routes, and spatial logic. This is consistent with theories in behavioural urbanism and environmental psychology, which hold that the landscape's sensory and symbolic cues, in addition to spatial availability, influence user behaviour. According to these results, perceptual and behavioural factors must be specifically incorporated into siting and design requirements in urban planning guidelines. These perceptual cues are even more important in Taiyuan's old city districts, which are distinguished by their dense fabric, disjointed streetscapes, and socio-spatial heterogeneity.
The findings also demonstrate how frictional spatial arrangements, like misaligned resting and fitness spaces, result in inadvertent exclusions. From the perspective of governance, our findings show that inflexible, top-down design templates frequently fall short of accommodating local usage patterns, underscoring the necessity of adaptable, collaborative planning procedures. The inclusive promise of these parks is frequently negated by inconsistent spatial orientation or program sequencing, which emphasises the need for more flexible, context-sensitive design procedures.
Finally, the focus on symbolic familiarity and emotional safety as requirements for social engagement highlights the limitations of formal design criteria in gauging inclusion. Particularly in post-industrial metropolitan settings where local identity and collective memory are still challenged, the propensity to associate openness or seating count with social life ignores the affective dimension of public space. The findings highlight the significance of governance systems that keep an eye on and modify park programming, management, and upkeep in response to real-time user input and changing community requirements. Therefore, this study promotes a change to a perceptual-

institutional design framework, which considers how people interpret, feel, and react to space in the particular cultural-historical context of the Chinese metropolis.

5.2 Interpretive Framework: Pocket Parks as Dynamic Assemblages.

This study offers a conceptual framework that views pocket parks as dynamic assemblages—fluid, interdependent systems influenced not only by spatial design but also by the changing interactions of institutional logics, user perception, and social values. This framework helps move beyond descriptive observation and towards actionable design and policy insight. This method offers three interconnected interpretative dimensions by utilising multidisciplinary concepts from daily urbanisation, spatial justice, and assemblage theory.

5.2.1 Spatial Justice: Achieving Perceptual Equity Beyond Distribution

Conventional urban planning frequently uses distributional justice—the equitable distribution of parks around the city—to assess public green space. But according to the study's findings, spatial fairness in pocket parks needs to be viewed as situational, perceptual, and experiential. Uncertain circulation, poorly marked thresholds, or entrance invisibility frequently compromise parks' actual accessibility, even in cases where they are positioned fairly.

This necessitates a change towards perceptual spatial justice, which includes facilitating intuitive access and intelligibility in addition to guaranteeing spatial presence. According to this perspective, pocket parks are more than just green spaces; they are also navigable spaces whose success rests on people's capacity to identify, understand, and feel at home there. In this way, inclusive signalling, visual clarity, and design cues become inextricably linked to justice.

5.2.2 Cultural Negotiation: The Behavioural Interface of Public Space

This concept places more emphasis on cultural negotiation—the continuous process by which users interpret and co-produce spatial meaning through routine behaviours, embodied behaviour, and symbolic associations—than it does on pocket parks as neutral areas meeting universal requirements. According to the study, functional frictions, misaligned rhythms, or cultural discord frequently cause discomfort or disengagement rather than physical deficiencies.

Therefore, pocket parks serve as micro-publics where people constantly bargain about who is allowed to use the place, what activities are acceptable, and how to use it. These agreements are mediated by design elements like the positioning of benches, the co-location of contradictory functions, or the lack of cultural symbols. Cultural negotiation emphasises the value of environmental safety, socio-symbolic resonance, and temporal programming in promoting inclusive encounters, especially in crowded or contentious old-city settings.

5.2.3 Institutional Flexibility: from Relationship Maintenance to Static Infrastructure

Pocket parks are the result of institutional routines, community engagement strategies, and maintenance schedules; they do not exist in a vacuum. This study demonstrates that long-term use depends on institutional adaptability—the ability of governance structures to respond to changing needs, social input, and maintenance challenges—even though much discussion focuses on design excellence at the time of installation.

Because user trust is undermined by irregular maintenance, inadequate security, or a lack of cultural programming, neglected or too formalised parks frequently become socially invisible. In order to maintain the space's emotional safety, symbolic appeal, and functional flexibility, maintenance, programming, and interactive feedback loops are all part of responsive stewardship, which is a component of institutional adaptation. Pocket parks should be viewed as dynamic urban commons in this way, necessitating governance mechanisms that provide user co-ownership, iteration, and recalibration.

5.2.4 Integrated Application

These three factors—institutional adaptation, cultural negotiation, and spatial justice—are interrelated and affect how well or poorly pocket parks serve as public areas. When they work together, they foster place-based identity, emotional safety, and true inclusion. They produce situations that are socially inert but physically complete when they are mismatched.

This framework offers a strong interpretive tool that links actual research to more general theories of urban experience by redefining pocket parks via this dynamic lens. Additionally, it directs planners, designers, and legislators towards interventions that address meaning, perception, and governance in addition to form.

5.3 Implications.

The study's conclusions go beyond descriptive research to provide conceptual and useful recommendations for enhancing pocket park governance, assessment, and design in the larger framework of urban renewal. The study adds to theoretical discourse, informs policy reform, improves industrial practice, and brings methodological improvements by redefining pocket parks as dynamic assemblages influenced by social behaviour, emotional cues, and spatial perception. For scholars, practitioners, and legislators looking to develop more inclusive, readable, and flexible micro-public areas—especially in ageing urban districts changing—these multi-level implications offer insightful information.

5.3.1 Theoretical perspective

This study adds to the theoretical discussion on micro-public spaces by redefining pocket parks as micro-infrastructures for shared urban landscapes rather than strict typologies. The study presents pocket parks as the result of both structural adaptation and experiential meaning-making by fusing Place-Making Theory with Organic Update Theory. While Place-Making Theory emphasises emotional belonging and symbolic attachment as crucial to daily use, the Organic Update approach places more emphasis on integration with urban texture, cultural continuity, and progressive renewal. Their combination shows how emotional safety, social readability, and spatial legibility become important intermediaries between lived experience and physical form.

By directly connecting perceptual clarity, symbolic clues, and behavioural interactions to parameters like P11 (emotional belonging), P12 (symbolic continuity), and P14 (social inclusion), the study expands on environmental psychology and urban morphology. This rethinking

demonstrates that relational infrastructures that promote attachment, recognition, and a sense of shared identity are more important to pocket parks' vitality than their physical attributes. The study challenges normative design approaches and provides a scalable conceptual framework for reimagining micro-public spaces in a variety of urban environments by showing that social and perceptual aspects often surpass only geometric or material attributes.

5.3.2 Practical Implications

For urban planners, landscape architects, and municipal decision-makers involved in the planning and execution of pocket parks in Chinese cities, the study's findings provide several practical insights.

Policy Implications This study highlights significant gaps in current land-use regulations and urban planning guidelines for green areas, based on empirical findings such as the observed misalignment between design intentions and user behaviour, low utilisation in parks with poor entry visibility, and the significance of social and cultural cues. Current laws usually ignore micro-scale elements like symbolic inclusion, behavioural coherence, and entrance visibility. Policymakers should modify regulatory frameworks to specifically include perceptual and experience markers in the design, assessment, and continuous management of pocket parks, considering these research findings. It is necessary to have more flexible zoning regulations that acknowledge pocket parks as essential urban infrastructure, especially in older neighbourhoods that are being revitalised. To guarantee that park management continues to be responsive to changing community needs and fosters long-term social and ecological benefits, governance mechanisms should also institutionalise post-occupancy reviews and participatory design procedures.

Industry implications and Transferability. Although the old city districts of Taiyuan are the study's primary focus, the conclusions are not specific to this setting. Based on behavioural observation and perceptual analysis, the suggested design parameters (P01–P19) can be modified for use in both international and smaller Chinese cities. According to comparative research ([14], [23]), contextual elements influencing perception, governance, and use are more important for pocket park success than fixed typologies. Demand is influenced by demographics, including population density, ageing trends, and migrant flows. For instance, older populations in smaller Chinese cities may place a higher value on comfort, accessibility, and emotional belonging, while other settings might place more emphasis on programming that is kid-friendly or multigenerational. The framework's emphasis on perceptual clarity, symbolic consistency, and emotional resonance facilitates adaptation across both systems, even though China's centralised, state-led planning differs from participatory, community-driven approaches overseas. Finally, transferability is shaped by land-use and regulatory frameworks, including the availability of infill sites, zoning flexibility, and the acknowledgement of pocket parks as crucial urban infrastructure. The framework exhibits scalability and global relevance by combining these more general requirements with micro-scale criteria such as entry visibility, spatial legibility, and cultural cues. This highlights pocket parks as useful tools for creating shared urban landscapes in a variety of urban contexts.

Societal implications: Beyond merely offering recreational areas, pocket parks are essential in fostering urban inclusion, emotional stability, and a sense of community. This study highlights how badly planned parks can perpetuate spatial inequality by turning into exclusionary areas. On the other hand, especially in ageing urban areas, well-planned pocket parks serve as social gathering places that foster intergenerational communication and cultural continuity. Pocket parks should be viewed by local governments, civic associations, and non-governmental organisations as essential social infrastructures rather than just recreational spaces. Pocket parks may make a big difference in creating stronger, more cohesive communities by encouraging a sense of community, memory, and public trust.

5.3.3 Methodological implications

Future research in urban studies and public space design can be guided by the important methodological applications this work offers. The study offers a thorough grasp of how individuals use pocket parks by using mixed-methods triangulation, which combines quantitative surveys and statistical analysis with qualitative observations and interviews. While the ethnographic method adds depth by documenting the cultural and social meanings users ascribe to these spaces, behavioural mapping and geographical observation provide a sophisticated way to research the dynamics of space usage. In addition, the study goes beyond conventional measures to evaluate park quality by introducing new evaluation factors like perceptual clarity, emotional safety, and cultural clues. In addition to fostering a more comprehensive understanding of urban areas, these methodological advancements give upcoming scholars a strong foundation upon which to investigate intricate spatial and social relationships in many urban settings.

5.4 Limitations.

This study has a number of shortcomings in spite of its contributions. Its conclusions can't be applied to other cultural, climatic, or urban contexts because it only looks at 70 pocket parks in Taiyuan, China. Despite the use of triangulated methodologies, participant bias and interpretive subjectivity might have been introduced by the qualitative emphasis. Additionally, observations were limited in time, catching just a small number of daily and seasonal fluctuations. Furthermore, institutional and governance elements that are likely to affect park performance—like finance, upkeep, and community involvement—are not taken into consideration in this study. To create a more thorough, system-level knowledge, future studies should fill in these gaps.

5.5 Future Research Directions.

Building on the results and limitations of the study, several research directions are proposed to broaden and enhance our knowledge of pocket parks in the context of urban regeneration in China and elsewhere.

To maximise the placement of pocket parks with respect to natural corridors, accessibility networks, and population density, future research could specifically use GIS-based spatial analysis. The present parameter framework (P01−P19) is immediately extended by this methodological approach, which provides a tool for scenario testing and predictive planning.

Second, another crucial area of inquiry is the possible risks of green gentrification. Pocket parks may promote liveability and inclusivity, but they may also unintentionally increase the pressure on vulnerable communities to relocate (Rigolon & Németh, 2020) By acknowledging this dichotomy, pocket parks are reframed as disputed political areas in addition to ecological and social infrastructures, underscoring the necessity for future research to incorporate equity-oriented measures into design standards.

Third, comparative cross-regional research is needed to examine how the spatial legibility, cultural symbolism, and social perception of pocket parks differ across different urban and sociocultural contexts. A more comprehensive knowledge of how local customs, urban

topography, and climate affect design preferences and user behaviour might be possible by extending the research to include cities in southern China or foreign case studies (e.g., Wartmann et al., 2021; Liu et al., 2025).

Fourth, future studies should employ seasonal and longitudinal approaches to document dynamic changes in park utilisation patterns over time. Researchers can create more time-sensitive and adaptable design recommendations by looking at how elements like weather, time of day, and changing urban conditions impact how pocket parks are seen and used (e.g., Abdelhamid & Elfakharany, 2020; Song et al., 2022; Ma et al., 2022).

Fifth, more research into the governance and institutional aspects is advised. The implementation, sustainability, and social value of pocket parks are influenced by maintenance structures, community participation strategies, and municipal policies (e.g., Hassan Murtadha, 2024; Kiss et al., 2022; Faridtehrani, 2025). By combining these factors with spatial analysis, it may be possible to identify the structural factors that facilitate and hinder the successful development of tiny public spaces.

Sixth, a new area of study is presented by the function of technology integration and digital feedback loops, such as augmented signage, mobile data tracking, and app-based user feedback systems. Public places can become more robust and responsive by examining how digital tools might improve real-time user involvement and inform adaptive park management (e.g., Zhang et al., 2023; Xu et al., 2024).

Finally, future studies ought to consider a more thorough psychological or affective examination of user experience using behavior-environment modelling, emotional analytics, or cognitive mapping (e.g., Khaleghımoghaddam, 2024) Such methods would provide more nuanced insight into the human-environment relationship within micro-urban environments, as demonstrated by Alders's research (2024), and enhance our understanding of how design components elicit subconscious cues of inclusion, comfort, and belonging.

These future directions together present a forward-looking agenda that connects environmental psychology, urban justice, governance, and spatial analytics, guaranteeing that pocket parks develop into inclusive, contextually aware, and internationally relevant urban regeneration infrastructures.

6. Conclusion

This study rethinks pocket parks as dynamic micro-infrastructures that promote social participation, cultural continuity, and sustainable urban redevelopment in densely populated, historically layered urban neighbourhoods. Perceptual clarity, functional coherence, and cultural readability frequently affect spatial success more than physical amenities, according to the results of a multi-method study of 70 pocket parks in Taiyuan that included field observations, user surveys, interviews, and document analysis. Rather than resource limitations, underutilisation or social fragmentation usually arises from a misalignment between design aims, user perceptions, and behavioural patterns. From the standpoint of governance and policy, pocket parks need adaptable, context-sensitive frameworks that put an emphasis on long-term management, flexibility, and intelligibility. Performance-based metrics that evaluate social inclusion, emotional safety, and perceptual quality should be used in conjunction with traditional prescriptive spatial requirements. To guarantee continued relevance and response to urban dynamics, post-occupancy evaluations that consider maintenance cycles, usage trends over time, and community input are crucial.

The study concludes by outlining future directions for research and useful ramifications for policymakers, designers, and urban planners. To foresee unforeseen implications like green gentrification, future research should investigate GIS-based siting, longitudinal usage analysis, and equity-oriented evaluations. Pocket parks can reach their full civic potential as resilient, inclusive, and emotionally significant elements of common urban landscapes by emphasizing evidence-informed design, adaptive governance, and community involvement.

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Appendix A

Table A1: Parameter-Coded Observation Excerpts

Source ID	Raw Text Excerpt	Analytical Memo	Parameter Code	Parameter Name
Changlemen Pocket Park, Xi 'an City	The park achieves efficient utilization within the limited space through reasonable functional zoning.	This text represents an empirical reflection aligned with the parameter of Functional Density.	P06	Functional Density
Changlemen Pocket Park, Xi 'an City	The spatial planning is reasonable and adaptable to multi-level usage requirements.	This text represents an empirical reflection aligned with the parameter of Functional Density.	P06	Functional Density
Changlemen Pocket Park, Xi 'an City	Middle-aged people mainly use the square area and the walkway area. They have various forms of activities, but less interaction.	This excerpt implies perceived safety and spatial comfort, supporting the parameter of Safety Assurance.	P14	Usability Diversity
Changlemen Pocket Park, Xi 'an City	The significant flow of people at night reflects a strong sense of security and environmental appeal at night.	This aligns with the parameter of perceived safety.	P13	Security Feeling
Yuxiangmen Pocket Park, Xi 'an City	Its geographical location determines the openness and high accessibility of the park's boundaries, which is different from closed community parks.	This segment describes edge conditions and integration, related to spatial enclosure and continuity.	P02	Boundary Coherence
Yuxiangmen Pocket Park, Xi 'an City	Yuxiangmen Pocket Park not only serves local residents but also becomes part of the city's daily walking, cycling and tourism routes.	The text discusses entry points or directional flow, linking directly to the parameter of accessibility structure.	P03	Access Logic
Yuxiangmen Pocket Park, Xi 'an City	The footpaths and green belts form transitional Spaces, enhancing the smoothness of walking.	This text represents an empirical reflection aligned with the parameter of Directional Connectivity.	P09	Directional Connectivity
Yuxiangmen Pocket Park, Xi 'an City	Middle-aged and young visitors mainly stay for a short time. During the day, they are mainly used for rest, while at night, they mostly engage in relaxing activities such as walking and photography.	This text represents an empirical reflection aligned with the parameter of Usability Diversity.	P14	Usability Diversity
Yuxiangmen Pocket Park, Xi 'an City	The imbalance of night lighting: The light intensity in some areas is relatively low, which affects the sense	This text represents an empirical reflection aligned with the parameter of Security Feeling.	P13	Security Feeling

	of security at night. It is recommended to optimize the layout of light sources.			
Yuxiangmen Pocket Park, Xi 'an City	It is mainly concentrated in the pavilion and fitness area, with the highest usage rate in the morning.	This text represents an empirical reflection aligned with the parameter of Functional Density.	P06	Functional Density
Yuxiangmen Pocket Park, Xi 'an City	During the midday break, there is a short stop with a relatively low communication density, mainly for individual rest or small-scale exchanges.	This text represents an empirical reflection aligned with the parameter of Usability Diversity.	P14	Usability Diversity
Yuxiangmen Pocket Park, Xi 'an City	Some visitors are accustomed to parking their electric bikes at the entrance, which affects the walking experience.	This excerpt reflects navigational ambiguity or pathway confusion, supporting the parameter of clear pedestrian logic.	P01	Path Clarity

Table A2: Parameter-Coded Expert Quotations

Source ID	Raw Text Excerpt	Analytical Memo	Parameter Code	Parameter Name
E01	1. What is your opinion on the functional zoning design of Changle Gate pocket park?	Zones such as fitness, plaza, pavilion, and exhibition are functionally independent, reducing user conflict.	P06	Functional Density
E01	3. Given frequent nighttime usage, does the lighting system meet safety and comfort needs?	Main pathways are evenly lit, and both plaza and fitness zones have adequate illumination.	P13	Security Feeling
E01	3. Given frequent nighttime usage, does the lighting system meet safety and comfort needs?	Lighting blind spots exist, posing potential security risks.	P10	Surveillance Visibility
E01	4. The plaza space is open 24 hours; how efficient is this in actual use?	Hard-surfaced plaza enables adaptive and extended use.	P06	Functional Density
E01	6. Is the distribution of benches and trash bins reasonable?	Orientation and spacing of benches enhance switchability between social and private modes.	P14	Usability Diversity
E01	1. The design layout helps organize user flows and program clusters.	Spatial configuration reinforces behavioral segmentation and minimizes crowding.	P03	Access Logic
E01	2. In what ways do current surveillance features affect usage confidence?	Visual access is limited at night, affecting passive surveillance.	P09	Directional Connectivity
E01	4. Do you think the openness of the plaza invites misuse or enables flexibility?	Full openness offers multifunctional use but lacks situational containment.	P02	Boundary Coherence
E01	5. What improvements are needed in comfort amenities like shading or resting space?	Sunshade absence reduces comfort during midday usage.	P01	Path Clarity
E01	6. Do you find the signage and directional cues intuitive and useful?	Directional signs are limited, with occasional confusion in entry logic.	P06	Functional Density
E02	7. Does the design accommodate users of different ages and needs?	Facilities meet basic needs but lack universal design for all demographics.	P01	Path Clarity
E02	8. Are there observed challenges in managing or regulating spontaneous use?	Inconsistent usage norms pose challenges for routine governance.	P02	Boundary Coherence

Table A3: Parameter-Coded Documents Excerpts

Source ID	Raw Text Excerpt	Analytical Memo	Parameter Code	Parameter Name
D01	The masterplan proposed to preserve the linear axis of mountain-water-city pattern in regional planning.	Illustrates regional ecological logic aligning with spatial coherence (P02).	P03	Access Logic
D01	The policy document emphasized the necessity of road connectivity to heritage pockets.	Reflects infrastructural focus on access logic between nodes (P03).	P01	Path Clarity
D01	Green spaces are integrated with public transport hubs to enhance recreational access.	Indicates intermodal synergy enhancing landscape connectivity (P03).	P03	Access Logic
D01	The report described shared benches and multi-use infrastructure for social inclusion.	Supports inclusivity through universal infrastructure design (P08).	P01	Path Clarity
D01	Air quality enhancement was proposed through vegetation corridors along arterial roads.	Demonstrates ecosystem services tied to environmental comfort (P06).	P02	Boundary Coherence
D02	Policies advocated spatial equity by creating small green areas in underused spaces.	Aligns with equitable distribution of public landscape resources (P05).	P03	Access Logic
D02	Accessibility mapping shows 300m radius service areas covering most urban nodes.	Provides empirical support for park reachability analysis (P03).	P01	Path Clarity
D02	Governance recommendation includes multi-stakeholder participation in park design.	Represents participatory planning as governance strategy (P10).	P01	Path Clarity
D02	Integration with historic zoning is emphasized to preserve site-specific narratives.	Shows regulatory alignment with cultural landscape identity (P09).	P03	Access Logic
D02	Soft paving materials are prioritized to reduce stormwater runoff.	Links material strategy to ecological permeability (P05).	P03	Access Logic
D02	Signage system is designed to be bilingual with universal graphic standards.	Improves cognitive accessibility through standard signage (P01).	P01	Path Clarity
D02	Proposed lighting standards follow visibility comfort and security benchmarks.	Promotes safety by formal lighting norms in design codes (P13).	P02	Boundary Coherence