From Space to Place: Assessing Public Space Transformations Through a Walkability Lens

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Abstract. Creating walkable and liveable urban environments requires more than mere technical improvements to infrastructure. The transformation of underused and traffic-dominated streets into vibrant public spaces is a response to pressing urban challenges. Interventions such as the augmentation of green space and the promotion of active ground-floor utilisation of buildings contribute to the revitalisation of neighbourhoods while supporting local commerce and social interaction. The present paper proposes a refined evaluation framework that extends earlier walkability metrics by incorporating an expanded set of criteria tailored to central urban areas. Drawing on expert interviews and field surveys in Budapest's Palace Quarter, the study recalibrates the relative importance of the criteria of *infrastructure*, *traffic* and *personal safety*, *accessibility*, *integrated design*, and *attractiveness*. The findings indicate that while *infrastructure* and *safety* remain fundamental components, *perceived attractiveness*—shaped by greenery, aesthetics, and street-level vitality—emerges as the decisive factor in successful public space transformation. The results emphasise the significance of interdisciplinary approaches that integrate spatial planning, design, and user experience, which are essential for ensuring the evolution of urban public spaces from functional corridors into genuinely liveable places.

Keywords: walkability · urban spaces · public space reallocation · evaluation methodology

1 Introduction

Urban liveability has become a central concern in research and policy, particularly in relation to sustainability, mobility transitions, and public health. Walking, both as a *mode of transport* and as a *social activity*, has gained renewed attention because urban design that prioritises pedestrians can reduce reliance on private cars, lower emissions, improve physical activity, and strengthen community life [1].

Across several European cities, historic centres have undergone major functional change, shifting from traditional residential neighbourhoods toward areas dominated by cultural, administrative, commercial, and tourist uses [2]. This transformation has

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often reduced their attractiveness for long-term residents and contributed to suburbanisation, which in turn increases car-based commuting and challenges the compact-city ideal. These trends highlight the importance of proximity, mixed land use, and access to essential services within walkable distances. Yet achieving such conditions in dense central districts remains difficult: although these areas often rate highly in terms of accessibility and density, they may lack other qualities essential to liveability, such as greenery, aesthetic appeal, or a vibrant social atmosphere.

To address this gap, the study redefines the Walkability Index [3] for dense central urban contexts. The methodology is refined through the addition of new criteria and recalibrated indicator weights derived from expert interviews. Its practical application is demonstrated through a Budapest case study, alongside a discussion of wider methodological and policy implications.

2 Literature Review

Public spaces are of fundamental importance to urban liveability. Early works by Whyte [4] and Appleyard [5] showed that street design shapes social interaction and neighbourhood quality, framing streets as *social spaces rather than traffic corridors.* Later studies broadened this view: Carmona [6, 7] stresses *governance*, *culture*, and *inclusivity* alongside form, while Venerandi et al. [8] highlight *connectivity*, *land-use mix*, and *pedestrian comfort*, findings supported by evidence from cities such as Dubai [9] and by Middleton's [10] conception of walkability as a *living experience.*

Walkability remains widely used yet contested. Forsyth [1] notes definitions range from spatial metrics to experiential qualities, while Dovey and Pafka [11] propose the density–mix–access (DMA) model to link built form and activity, underscoring operational challenges. Methods likewise diverge: objective indicators (e.g., block size, connectivity) contrast with subjective perceptions of safety and comfort [12]. Gehl and Svarre [13] bridge this gap through systematic observation connecting spatial and experiential factors.

Limitations of universal metrics are evident in central districts, where density and service access may suggest walkability, but a lack of greenery or comfort can reduce use. Jacobs [2] emphasises 'eyes on the street' and active ground floors as vital yet often overlooked elements, highlighting the need for context-specific approaches.

3 Methodological Framework

The Walkability Index is structured around five main dimensions: *pedestrian infrastructure*, *transport and personal safety*, *integration into the transport network*, *accessibility*, and *attractiveness* [14]. Each criterion group contains several criteria, amounting to thirty-nine in total.

Each criterion is evaluated on a five-point scale, with the *assessment guided by detailed descriptions* to ensure consistency and fairness. The application of weighted scores resulted in the production of sub-indices for each dimension. The method can be

applied comprehensively to *identify deficiencies or weak points* in pedestrian infrastructure. Secondly, it can be employed in a more limited capacity by utilising the sub-indices to *evaluate a specific domain.*

The application of the Walkability Index in central urban areas revealed several shortcomings. For example, the *presence of pedestrian crossings* or the *accessibility of public transport stops* contributed only a minimal amount of explanatory power in compact districts that were already well-served by such infrastructure or that were almost insignificant due to the minimal through traffic. While *accessibility* is undoubtedly a salient issue, the findings revealed significant homogeneity, with a visible absence of effective differentiation between high- and low-quality public spaces. Conversely, *attractiveness* was underrepresented in terms of both the number of criteria and their assigned weights. This is a noteworthy observation, particularly considering the importance of attractiveness in shaping the pedestrian experience [15].

The refined framework, therefore, introduced new criteria and omitted others. The updated methodology incorporated an evaluation of *conflicts involving micromobility*, thereby acknowledging their expanding role and the associated risks in a dense urban environment. The *quality and image of green space* were incorporated to capture the importance of greenery for comfort and visual appeal. The aspects of a *favourable ground-floor street frontage* and the *presence of attractive shops and services* were also integrated. Finally, measures were introduced to facilitate *pedestrian-friendly land use*, with the aim of capturing functional aspects of comfort.

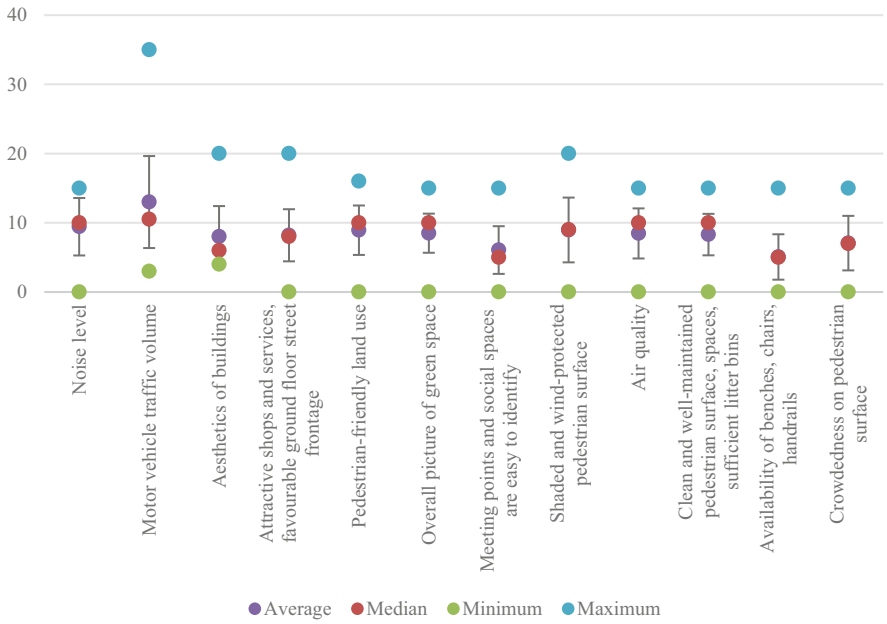

Fig. 1. Results of the attractiveness-related criteria based on the expert interviews (on a scale 0 to 100)—source: own editing

In contrast, criteria concerning *public transport stops* and *pedestrian crossings* were eliminated, as these measures were found to be usually available and thus offered minimal differentiation within the specified case study context. This refinement better aligned the methodology with the distinctive needs of central urban areas.

To ascertain the relative importance of the criteria, 30 experts from the fields of academia, consultancy, and transport planning participated in structured interviews. Each participant was requested to allocate 100 points among the specified criteria within each criterion group and among all five criteria groups. The implementation of a forced-choice system effectively mitigated the occurrence of uniformly high ratings, thereby facilitating the identification of priorities. (Fig. 1 presents the ranking results of the attractiveness-related criteria group.) We consider a panel of 30 experts to be sufficient, since most studies that rely on expert elicitation (e.g., those that apply the AHP method) typically consult fewer experts.

The analysis indicated that pedestrian *infrastructure*, *transport and personal safety* remained of the utmost importance. However, an increase in the importance of *attractiveness* relative to *accessibility* was observed. The results of the expert interviews also demonstrated that, while *accessibility* has been widely addressed by modern standards, the level of *attractiveness* of urban spaces varies widely, and often determines the actual usability and popularity of said spaces.

4 Case Study: Budapest's Palace Quarter

The Palace Quarter, located in Budapest's 8th district, serves as a prime example of the challenges and opportunities presented by central urban areas. The area has historically been home to members of the aristocracy, as well as to intellectuals and cultural institutions. In the modern era, however, it functions as a *dense, mixed-use neighbourhood*, comprising residences, universities, and heritage buildings.

Despite recent investments, the Quarter is confronted with numerous challenges. The process of *gentrification* has resulted in a shift in the social composition of the neighbourhood, with the *deterioration of buildings* having a detrimental effect on the local environment and aesthetic quality of the area. Furthermore, there is a *paucity of green spaces*. In recent decades, several interventions have been implemented with the aim of improving pedestrian safety and convenience. These include the widening of sidewalks, the introduction of traffic calming measures, and the creation of pedestrian-priority streets. Nevertheless, the Quarter continues to grapple with the delicate balance between heritage preservation, liveability, and mobility needs.

Between 14 and 28 November 2024, on-site surveys were conducted in 30 public spaces. Both sides of each street section were treated as separate units, resulting in a total of over one hundred infrastructure elements assessed and documented, with each segment undergoing evaluation against the comprehensive set of refined criteria.

5 Results and Findings

The analysis of expert interviews revealed consistent patterns. Experts asserted that *infrastructure* is fundamental, with particular emphasis on the effective width, continuity, and surface quality of sidewalks. It is also important to note that the significance

of *transport and personal safety* was recognised not only in relation to motor vehicle conflicts, but increasingly in relation to *micromobility*. Whilst *integration* was identified as being of significance for the purpose of establishing connectivity within a compact area, it resulted in a limited degree of differentiation. It was acknowledged that *accessibility* was of essential importance; however, it was generally considered to be usually addressed, thus having a less significant impact on the overall evaluation. The final component under consideration was *attractiveness*, which was regarded as the most variable and decisive dimension. As posited by experts in the field, perceptions of walkability are influenced by factors such as *greenery*, *building aesthetics*, *shading*, and *ground-floor activity*. This finding is in accordance with the conclusions of Carmona [7] and Dovey and Pafka [11].

The on-site survey provided further confirmation of these insights. The quality of *infrastructure* was found to be generally robust, particularly in streets that had undergone reallocation. The *safety* of the routes was satisfactory, however, there were several locations where conflicts with micromobility tools were documented. *Integration* was found to be a significant factor in distinguishing between reallocated and non-reallocated streets, with the outcomes demonstrating a clear advantage for the first. *Accessibility* produced relatively uniform results, indicative of widespread compliance with accessibility standards.

Attractiveness displayed the greatest variability (Fig. 2). In the assessment, streets exhibiting active ground-floor commercial activities, renovated buildings, and a prevalence of green spaces attained high ratings. Conversely, streets confronted with degradation, monotonous land use patterns, or the lack of green spaces exhibited substandard performance. It has been demonstrated that even the reallocation of public spaces has, on some occasions, engendered only a moderate degree of walkability. *This indicates that physical interventions alone are inadequate to engender vibrancy.*

The Aggregated Walkability Index scores exhibited a comparable trend. Most reallocated streets were awarded good or excellent ratings, whilst arterial border roads with significant traffic volume and deficient pedestrian infrastructure received some of the lowest ratings. *The discrepancy between overall scores and attractiveness sub-indices highlighted the necessity of incorporating perceptual and qualitative dimensions into the evaluation process.*

The findings of the expert interviews and surveys suggest that *physical attractiveness plays a significant role in determining walkability*. While infrastructure and safety are necessary foundations, they alone cannot guarantee lively and inviting streets. Consequently, it is imperative for central urban areas to *prioritise enhancing visual quality, ground-floor vitality, and greenery, in conjunction with implementing technical improvements.*

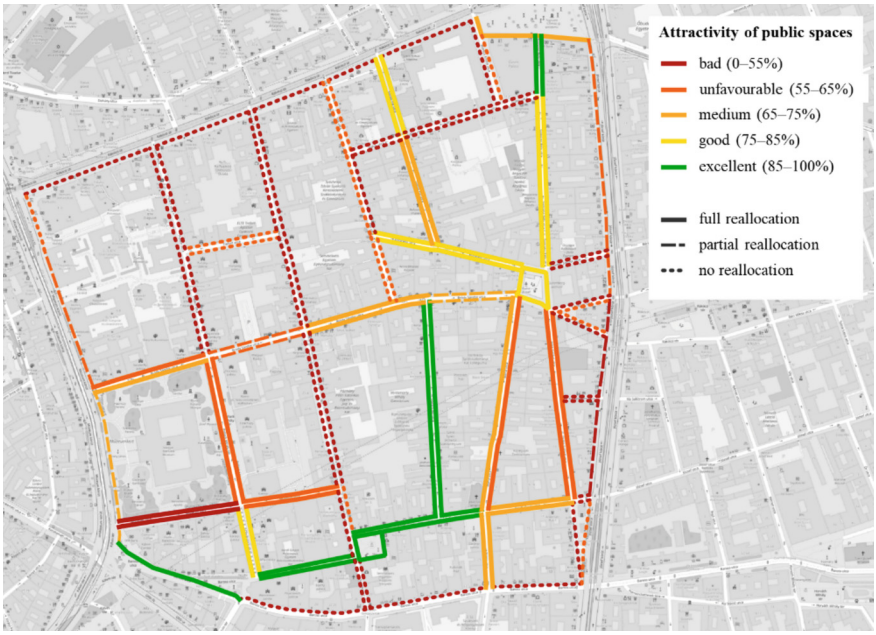

Fig. 2. The public spaces' attractiveness sub-index in the Palace Quarter—source: own editing

6 Discussion

6.1 Policy Implications

The findings carry clear implications for policy and practice. Investments in sidewalks, road crossings, and lighting are indispensable, but they are insufficient without parallel attention to aesthetics, greenery, and land use. It is therefore incumbent upon urban planners to integrate mobility projects with heritage renovation, ground-floor diversification, and community-oriented initiatives. In the absence of such integration, interventions risk producing spaces that are technically satisfactory but socially underwhelming [6].

The case of the Palace Quarter demonstrates that enhancing walkability is as much about social and cultural dimensions as about physical infrastructure. To create a genuine sense of vibrancy, it is essential to encourage local commerce, support cultural uses, and engage residents in the planning process. It is therefore *fundamental that policy moves beyond the technical domain into the social and economic spheres* [16].

6.2 Theoretical Reflections

The recalibration of the Walkability Index aligns with theoretical debates in urbanism. As demonstrated in Jacobs [2], there is a direct correlation between diversity and active frontages and the heightened importance of attractiveness. Gehl's call [15] for human-centred cities also reflects the realization that aspects such as comfort, aesthetics, and social interaction cannot be neglected. Carmona [7] contends that public spaces should be designed to do better, a principle also supported by the case study.

The study lends further support to the notion that *walkability is a multidimensional concept, incorporating both objective and subjective elements.* It necessitates *integrated approaches* that consider aesthetics, social practices, and user perceptions alongside infrastructure and safety.

6.3 Methodological Contribution

From a methodological perspective, the refined Walkability Index provides a more sophisticated instrument for assessing central urban contexts. The Index was expanded to include the dimension of public spaces' attractiveness, and its weights were recalibrated to better capture the nuances of the pedestrian experience. The method was employed to analyse the results of a field survey conducted in a downtown quarter of Budapest, Hungary. The method can be applied both *ex-ante*, to evaluate planned projects, and *ex-post*, to assess implemented ones.

It is important to note that the methodology is not universally applicable. It is essential that the weights be *adapted to local conditions* and that the criteria also *undergo a supervisory process* when applied in a markedly different context. The concepts of *attractiveness* and *accessibility* are subject to variation according to cultural and socio-economic contexts. Nevertheless, the framework provides a valuable basis for comparative analysis and for tailoring interventions to specific neighbourhoods.

7 Conclusions

Following the introduction of new criteria and the recalibration of weights through expert interviews, this reconsidered walkability assessment framework better captures both infrastructural and perception-based dimensions of pedestrian experience.

The case study in Budapest demonstrates that walkability is not determined solely by baseline infrastructure or safety standards. While these elements are necessary preconditions, the results indicate that attractiveness plays a decisive role in shaping actual pedestrian experience. *Streets that meet technical requirements but lack visual interest or social vitality perform significantly worse in overall walkability, suggesting that conventional assessments may overestimate pedestrian friendliness in central areas if experiential factors are underweighted.*

These findings have broader implications for urban policy and planning. Improving walkability in inner-city environments requires an integrated approach that extends beyond just technical interventions. To be effective, walkability strategies must incorporate policies that target heritage conservation, promote green spaces, improve the quality of public spaces and support local economic activity. *Walkability, therefore, should be understood as a cross-sectoral objective situated at the intersection of transport planning, urban design, social policy, and community development.*

Future research should test the transferability of the proposed methodology across different urban contexts to assess its robustness and comparative potential. Incorporating residents' perceptions through participatory methods would further strengthen the framework. In addition, longitudinal applications could provide insight into how changes in urban form and policy interventions influence pedestrian behaviour and perceptions over

time. Such extensions would support the continued refinement of walkability assessment tools and enhance their relevance for creating safe, accessible, attractive, and genuinely liveable cities.

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