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A Comparative Analysis on Pedestrian Experience in Metro Manila Mixed- Use Developments

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Abstract
Urban pedestrian crossings in Philippine cities are often addressed through reactive infrastructure, such as pedestrian overpasses, which frequently neglect natural walking paths and compromise safety. This study evaluated pedestrian intersections' walkability in Taguig, Makati, and Ortigas using the Global Walkability Index and the Perceived Walkability Framework. Field observations and participant surveys identified pedestrian priorities, revealing that convenience and time are primary considerations, while intersection design strongly influences mobility choices. Intersections perceived as preferable were associated with greater safety, accessibility, and comfort. The findings stress the need to transition from vehicle-centered to pedestrian-oriented streetscapes and offer actionable recommendations for inclusive, sustainable, and resilient urban planning.

Keywords: Walkability, Streetscapes, Pedestrian, Mixed- Use Developments

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1.0 Introduction

Metro Manila, the capital region of the Philippines, serves as a major center for economic activity, cultural diversity, tourism, and education (Esteban & Lindfield, 2017). Recognized as one of the fastest urbanizing regions in Asia, it currently ranks 14th among the world's 20 megacities (Regmi, 2017). The region's primary central business districts (CBDs)—Bonifacio Global City (BGC), Ortigas Center, and Makati Central Business District—form the economic core, accommodating commerce, finance, and industry (Arranz IV, 2024; Philippines Daily Inquirer, 2019; Remo, 2023). Each district contributes a unique combination of business, lifestyle, and culture, collectively shaping Metro Manila's urban landscape (Reyes, 2016).

With the continuing expansion of Metro Manila, these CBDs are anticipated to remain central to the development of commerce, sustainability, and community life in the Philippines. However, rapid urbanization has introduced significant challenges, particularly regarding mobility and pedestrian accessibility. A substantial proportion of the region's population consists of daily commuters and working-class individuals (Asian Development Bank, 2014). For these individuals, pedestrian walkability—defined as the ease and safety of walking within an area (Kumari & Mohanty, 2024)—is not simply a convenience but an essential requirement.

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Walking is a fundamental mode of transport, serving as the primary link between public transit and final destinations. It promotes health, lessens environmental pollution, and improves community cohesion. According to the International Bank for Reconstruction and Development (ITDP) of the World Bank Group, walking is essential for basic mobility and offers recreational opportunities (ITDP, n.d.). Despite these benefits, pedestrian walkability is frequently neglected in Philippine urban planning and budgeting.

Recently, BGC, Ortigas, and Makati have steadily prioritized the pedestrian experience. Developers and local government units (LGUs) have adopted measures to enhance sidewalks, lighting, and accessibility in response to the significant volume and diversity of users. These projects correspond with global trends that position walkable, pedestrian-oriented environments as fundamental to environmentally sustainable urban development. Scholars and practitioners have developed various indices and frameworks created to evaluate walkability in pedestrian environments. Krambeck (2006) introduced the Global Walkability Index, which ranks cities worldwide based on safety, security, and convenience, providing urban planners with a standardized assessment tool. In addition, the Perceived Walkability Framework highlights subjective experiences, acknowledging that pedestrian satisfaction is influenced by perceptions of safety, accessibility, and aesthetic quality, as well as infrastructure (Kim et al., 2023).

Together, these schemes enable a complete analysis of walkability by combining objective measures with lived experiences. Applying them to Metro Manila's CBDs gives insights into how local conditions—traffic patterns, zoning laws, building codes, sidewalk width, and street lighting—shape pedestrian mobility.

This study examines selected districts within Bonifacio Global City, Makati CBD, and Ortigas Center to determine how these areas facilitate or hinder pedestrian movement and experience. Through this evaluation, the research addresses unique local conditions and analyzes the influence of design elements and regulatory systems on walkability.

The study also seeks to establish parameters that can inform policy and guide urban planners, developers, and LGUs in promoting pedestrian-oriented environments. The research is guided by the following objectives:

- To conduct a comparative study of streetscape walkability experiences in Bonifacio Global City, Makati Central Business District, and Ortigas Center using the Global Walkability Index and the Perceived Walkability Framework.
- To develop context-specific parameters for assessing streetscape walkability within mixed-use developments.

The findings of this research are expected to contribute to academic conversations on urban design and mobility, while supplying practical guidance for decision-makers and practitioners. For cities, real estate developers, and LGUs, the study reveals the significance of walkable environments in upholding economic vitality and public health. Walkability isn't solely an aesthetic or recreational consideration; it is a fundamental factor in developing inclusive, resilient, and sustainable cities (Baobeid et al., 2021). Furthermore, the paper stresses the role of mixed-use zoning in advancing walkability. BGC, Makati, and Ortigas integrate residential, commercial, institutional, and office spaces, thereby forming environments where walking is both necessary and feasible. Analysis of these districts yields insights pertinent to other metropolitan areas in the Philippines and internationally. Litman (2025) stresses the multiple benefits of walkability, like mobility, cost savings, land use efficiency, community livability, public health, and equity, and argues that traditional transport planning undervalues walking and proposes more comprehensive evaluation methods. Gómez and López (2021) link pedestrian-oriented spaces to improved physical health, lessened traffic congestion, and enhanced social interaction. In global cities such as Singapore (Liow and Sam, 2023), Tokyo (Sorensen, 2001), and New York (Speck, 2012), walkability is recognized as a key metric of metropolitan livability. In the Philippine context, however, research on walkability remains limited, regularly overshadowed by concerns regarding vehicular traffic and infrastructure growth.

This study considers this gap by examining pedestrian experiences in Metro Manila's CBDs. It builds upon international frameworks and adapts them to local conditions, thereby contributing to both global and local scholarship.

2.0 Literature Review

Research on walkability has sought to evaluate the effectiveness of streets in supporting pedestrian movement and to identify the determinants shaping this experience. Krambeck's (2006) Global Walkability Index represents a considerable contribution, providing a global ranking of cities based on pedestrian safety, security, and convenience. The main advantage of the index is its simplicity, which facilitates its application throughout diverse contexts. However, Krambeck identified several limitations: (1) the concept of walkability lacks a universally accepted definition, may lead to misreadings; (2) the index relies heavily on field data collection, making it resource-intensive; and (3) the simplified methodology, while practical, reduces solidity and may limit its usefulness for investment and policy guidance. The framework follows a multi-stage process, beginning with survey refinement and continuing through data collection and analysis. In spite of these limitations, the index is recognized for its flexibility, which facilitates adaptation to a range of pedestrian studies and extends toward broader mobility and transport research.

Recent research has increasingly examined perceived walkability in the built environment, highlighting the importance of microscale urban design elements that directly shape pedestrian experiences. The Perceived Walkability Framework identifies five key dimensions: accessibility, convenience, visual comfort, safety, and climate adaptation. Together, these dimensions shape how pedestrians evaluate their walking environment, showing both general and situation-specific environmental effects. While certain built environment features consistently affect walkability, their effects are moderated by local conditions and cultural norms.

Together, these designs offer separate yet complementary approaches for evaluating pedestrian infrastructure. The Global Walkability Index emphasizes scalable, quantitative comparisons among cities and is based on objective metrics. In contrast, the Perceived Walkability Framework focuses on end users' subjective experiences and individual perceptions. Integrating both models is

especially valuable for analyzing crossing infrastructure, where the relationship between measurable factors and personal perceptions determines effectiveness. Since pedestrians are the primary beneficiaries, their perspectives are important for meaning.

Despite these advancements, significant research gaps remain. Many existing frameworks overlook contextual factors such as cultural norms, legal structures, and policy environments, which can substantially influence walkability outcomes. Dealing with these gaps requires future studies to move beyond generalized measures and incorporate localized dimensions. This approach ensures that walkability assessments are comprehensive and responsive to the diverse realities of city environments.

3.0 Methodology

A qualitative research design utilizing a multi-faceted approach was implemented to examine the factors influencing walkability and the pedestrian experience. The methodological model combined objective metrics, systematic site observations, and participant feedback to enable an extensive review of urban streetscapes.

Key streetscape crossings within a mixed-use development serving as the city's central business district were selected based on specific infrastructure parameters (Table 1). This approach assured the inclusion of representative urban contexts. Sites were chosen to display both shared characteristics and distinct differences, enabling meaningful comparison. Selection criteria were confirmed through site visits and field observations.

Table 1. Crosswalk Selection Criteria

Selection Criteria	BGC	Makati	Ortigas
Type of Pedestrian Infrastructure	On- Grade	Underground	Elevated
Identified as Main Road Intersection	/	/	/
Varied Type of Users	/	/	/
Peak Pedestrian Volume	/	/	/

Fieldwork utilized a modified version of the Global Walkability Index, originally developed by the World Bank (Table 2), and specifically adapted for the Philippine context. This adaptation incorporated local conditions, cultural practices, and government standards, resulting in a rigorous, contextually appropriate assessment framework. Observations were guided by a structured checklist that examined pedestrian infrastructure, traffic conditions, and environmental integration. Elements, including street furniture, signage, lighting, traffic signals, and landscaping, were systematically evaluated for their contributions to both practical use and atmosphere. Accessibility was emphasized, notably concerning provisions for individuals with special needs. Safety and security were assessed through analysis of physical features and perceived levels of protection. The wider environmental context was considered, with particular attention to sustainability practices and the assimilation of natural elements. Pedestrian patterns were documented to capture movement, comfort, and engagement with the space.

Table 2. Summary of Global Walkability Index

Component		Variable
Safety and Security	1	Proportion of Road Accidents that resulted in pedestrian fatalities (most recent year avail)
	2	Walking path modal conflict
	3	Crossing safety
	4	Perception of security from crime
	5	Quality of motorist behavior
Convenience and Attractiveness	6	Maintenance and cleanliness of walking paths
	7	Existence and quality of facilities food blind and disabled persons
	8	Amenities (e.g., coverage, benches, public toilets)
	9	Permanent and temporary obstacles on walking paths
	10	Availability of crossings along major roads
Policy Support	11	Funding and resources devoted to pedestrian planning
	12	Presence of relevant urban design guidelines
	13	Existence and enforcement of relevant pedestrian safety laws and regulations
	14	Degree of public outreach for pedestrian and driving safety and etiquette
Safety and Security	1	Proportion of Road Accidents that resulted in pedestrian fatalities (most recent year avail)
	2	Walking path modal conflict
	3	Crossing safety
	4	Perception of security from crime
	5	Quality of motorist behavior

(Source:) Global Walkability Index, Krambeck's (2006)

Additionally, a Pedestrian Experience Survey was administered using the perceived walkability framework proposed by Ye et al. (2024). Random sampling was used to select a diverse group of adult participants (aged 18 and above) who frequently visited the study areas. This approach guaranteed that the findings reflected immediate experiences and incorporated a range of demographic perspectives. Merging of these research components enabled the study to capture both measurable aspects of pedestrian infrastructure and subjective perceptions of city navigation. Triangulation analysis was used to cross-check and validate findings from field

observations and survey results. This process generated subtle insights into the selected sites, stressing the interplay among physical design, environmental conditions, and lived experience.

The combination of site selection, systematic field observation, and participant surveys provided significant evidence regarding the determinants of walkability. The results are intended to inform urban planning and policy development by providing evidence-based recommendations for pedestrian-oriented environments. Ultimately, the research supports the development of walkable, comfortable, and accessible metropolitan areas in the Philippines, adding to broader objectives of inclusion, sustainability, and urban resilience.

4.0 Findings

4.1 The Site

The study identified three distinct streetscape areas, each characterized by divergent approaches to pedestrian circulation and infrastructure design. Bonifacio Global City (BGC), Makati Central Business District (CBD), and Ortigas Center (Figure 1) were chosen for their similarities as intersections in heavy urban networks and their differences in pedestrian infrastructure. The sites emphasized three typologies: on-grade intersection crosswalks, underground crossings, and elevated walkways, all representing the district's unique urban philosophy. As shown in Figure 2, the BGC site at McKinley Parkway and 32nd Street demonstrates the district's emphasis on large-scale, on-grade crosswalks. Makati's Ayala Avenue–Paseo de Roxas underpass (Figure 3) represents the CBD's expansive underground walkway system. Ortigas Center' s Elevated Plaza (Figure 4) features the district's integration of elevated pedestrian infrastructure with green design principles.

Fig. 1: Location Map of the Selected Intersections in Ortigas Center, Bonifacio Global City (BGC) and Makati Central Business District.
(Source:) Photo c/o Google Earth 2024.

4.2 Field Observations

Across all three sites, safety measures were consistently present, with CCTV surveillance and stationed marshals ensuring pedestrian security. Ortigas Center distinguished itself further by incorporating a dedicated kiosk staffed by security personnel, reinforcing its

emphasis on safety. Environmental integration varied across the districts. At BGC's McKinley Parkway–32nd Street crosswalk, refuge islands and planting strips enhanced both design and environmental quality. In Makati, greenery was limited to above-ground planting strips, while the underground underpass lacked softscape elements, resulting in limited environmental integration. Ortigas Center' s Elevated Plaza, however, stood out as a model of environmental design, with its circular dome allowing natural light to pass through to the intersection below, denoting a deliberate effort to harmonize built and natural environments.

Fig. 2: Photos of Intersection in McKinley Parkway cor. 32nd Ave., Bonifacio Global City.

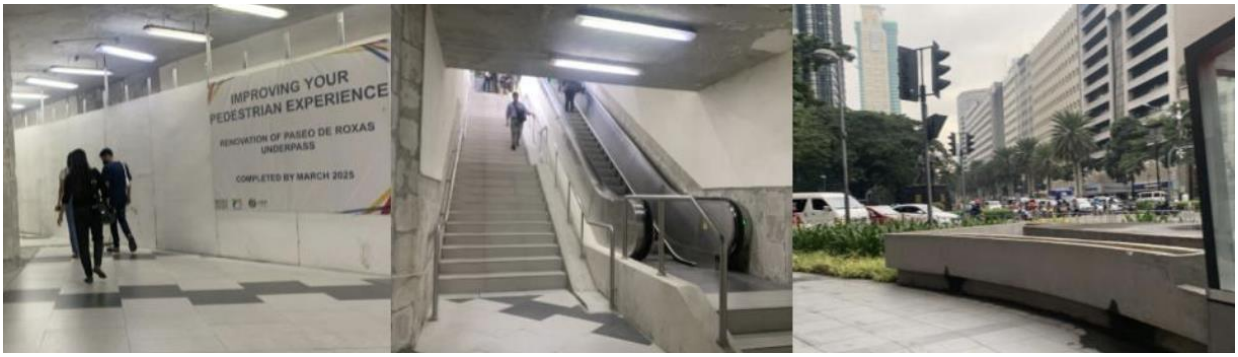

Fig. 3: Photos of Ayala Ave. cor. Paseo De Roxas Underground Walkway, Makati Central Business District.
Fig. 4: Photos of the Ortigas Elevated Plaza, Ortigas Center, Pasig City.

These built differences directly influenced pedestrian patterns and experience. In BGC, the proximity of the crosswalk to commercial, educational, and office establishments generated dynamic pedestrian flow, with people navigating the intersection efficiently under well-regulated signals. In Makati, the enclosed underpass provided a more comfortable experience, shielding users from the weather and vehicular traffic, and artificial air conditioning further enhanced comfort. Ortigas Center's Elevated Plaza created a leisurely atmosphere, encouraging lingering and social interaction through seating and shaded canopies. Observations showed that pedestrians across all sites often walked individually, in pairs, or in small groups, frequently using mobile phones while moving through the spaces. This pattern emphasizes the casual, responsive nature of pedestrian movement in these urban contexts.

4.2 Participant Survey Evaluation

To complement field observations, a Pedestrian Experience Survey was conducted with 65 participants across the three study sites (Table 3 and Table 4). The respondent profile was largely composed of individuals aged 22–32 years (69.23%) and predominantly private company employees (86.15%), indicating that the sample reflects active urban users who regularly navigate these districts for work and daily activities. This demographic composition provides relevant insight into walkability conditions experienced by working-age commuters in high-density business areas.

Table 3. Summarized Table of Respondents by Age

Selection Criteria	BGC	Makati	Ortigas
Total	**17**	**39**	**9**
22-32	12	32	1
33-44	4	7	8
45-49	1	0	0

Table 4. Summarized Table of Respondents by Occupation

Occupation	BGC	Makati	Ortigas	Total	%

Total	**17**	**39**	**9**	**65**	**100**
Student	1	1	0	2	3.08
Entrepreneur	1	0	0	1	1.54
Private Company Employee	15	34	7	56	86.15
Government Employee	0	2	2	4	6.15
NGO Employee	0	1	0	1	1.54
Retired	0	1	0	1	1.54

The survey assessed perceptions of safety and security, visual comfort, cleanliness, accessibility, and pet-friendliness. As presented in Table 3, the results indicate variation across the three locations. BGC recorded the highest scores across all evaluated criteria, including safety (3.76), visual comfort (3.88), cleanliness (4.24), accessibility (3.71), and pet-friendliness (4.00), resulting in the highest overall mean score (3.92). Makati and Ortigas Center obtained lower overall mean scores of 3.22 and 3.27, respectively. While both locations showed comparable ratings in safety and visual comfort, Makati recorded the lowest accessibility score (2.03), followed by Ortigas (2.44). Ortigas received higher ratings for pet-friendliness (3.67), while both locations had lower cleanliness scores than BGC.

Table 5. Summarized Table of Respondents Evaluation

Occupation	BGC	Makati	Ortigas
Safety & Security	3.76	3.74	3.33
Cleanliness	4.24	3.62	3.33
Visual Comfort	3.88	3.56	3.56
Accessibility	3.71	2.03	2.44
Pet-friendliness	4.00	3.13	3.67
Overall Mean Score	**3.92**	**3.22**	**3.27**

Taken together, the results indicate that variations in infrastructure typologies correspond to differences in pedestrian experience across the selected districts. The presence of at-grade crosswalks, underground passages, and elevated walkways reflects distinct approaches to pedestrian circulation, which are associated with differences in safety, accessibility, environmental conditions, and observed movement patterns. The findings also reflect variations in environmental integration and inclusiveness across the sites, as captured through the evaluated criteria.

5.0 Discussion

The triangulated analysis shows that differences in walkability are influenced more by the extent to which infrastructure facilitates accessibility and mobility efficiency than by the presence of safety precautions. While safety ratings remain relatively consistent across all sites (Table 3), differences in accessibility scores indicate that the inclusion and simplicity of navigation exert a greater influence on the overall pedestrian experience.

The difference in accessibility ratings, particularly the lower values observed in Makati and Ortigas compared to BGC (Table 3), demonstrates that infrastructure design has a substantial impact on usability. This finding reinforces the argument that walkability is determined not only by the physical presence of infrastructure but also by the effectiveness with which systems accommodate diverse users, including persons with disabilities. These results correspond with conceptual perspectives that identify ease of access and convenience as central factors in pedestrian decision-making (Alfonzo, 2005).

The results further emphasize the limitations of grade-separated pedestrian systems. Although these systems may enhance traffic management and protect the environment, they impose additional spatial and cognitive demands that can diminish perceived ease of movement. This is apparent in the lower overall mean scores for Makati (3.22) and Ortigas (3.27) compared to BGC (3.92). These outcomes are consistent with current literature, which emphasizes that accessibility, continuity, and explicitness are key determinants of pedestrian decision-making and overall walkability (Alfonzo, 2005; Baobeid et al., 2021).

Furthermore, environmental quality appears to play a complementary rather than a determining role. Higher ratings for visual comfort and pet-friendliness do not necessarily translate into greater overall walkability when accessibility constraints persist. These observations indicate that although experiential qualities can enhance pedestrian environments, they cannot offset architectural limitations in connectivity and equity.

To summarize, the analysis underscores the need to expand conventional walkability frameworks to include efficiency and availability as primary dimensions. The research shows that pedestrian-oriented design should prioritize direct, continuous, and integrated movement systems to achieve more balanced walkability outcomes in dense city settings.

6.0 Conclusion and Recommendations

This study compared streetscape walkability experiences in Bonifacio Global City, Makati Central Business District, and Ortigas Center using the Global Walkability Index and the Perceived Walkability Framework, and developed context-specific parameters for assessing walkability in mixed-use developments. The findings show clear differences across the three districts, indicating that walkability is a context-sensitive phenomenon determined by infrastructure quality, cultural expectations, and socioeconomic conditions. Bonifacio Global City's relatively high scores reflect deliberate investments in pedestrian-oriented design and management. In contrast, Makati and Ortigas continue to meet challenges, including fragmented sidewalks, car-centric planning, and inconsistent maintenance. These contrasts highlight the limitations of global frameworks when applied in isolation and underscore the need for locally specific parameters that reflect the actual conditions of Metro Manila's diverse urban contexts. For many commuters, walkability is not simply a lifestyle amenity but a regular necessity linked to economic productivity, health, and equity. This positions pedestrian-centric streetscapes as both a design imperative and a social justice concern.

Several recommendations arise from the results. First, walkability should be institutionalized as a core principle in urban planning, with localized parameters such as safety, convenience, time efficiency, and equity integrated into design guidelines for mixed-use developments. Second, infrastructure improvements are urgently needed in Makati and Ortigas to address fragmented sidewalks, unsafe crossings, and inadequate maintenance, while also incorporating context-specific features such as shade, weather resilience, and pet-friendly amenities. Third, equity ought to be prioritized by improving pedestrian conditions in areas serving working-class commuters and vulnerable groups, ensuring that streetscapes are inclusive for children, the elderly, and persons with disabilities. Fourth, walkability must be recognized as a sustainability strategy that decreases reliance on individual vehicles, lowers emissions, and promotes healthier urban ecosystems through green infrastructure and climate-adaptive design. Fifth, subsequent studies should expand to include field observations during varied weather conditions, continuous pedestrian networks, and technological tools such as GIS, mobile applications, and sensor-based monitoring to gather real-time pedestrian experiences. Finally, multidisciplinary collaboration among urban designers, public health experts, sociologists, and environmental scientists can deepen understanding of walkability's broader impacts on physical activity, social inclusion, and ecological robustness.

In conclusion, this study shows that a comparative evaluation informed by local parameters can yield useful insights for urban development. The case of Bonifacio Global City illustrates the revolutionary potential of purposeful design and management, while the experiences of Makati and Ortigas point up the critical need for reform. Refining methodologies, expanding comparative assessments, and endorsing pedestrian-centric policies can help Metro Manila become a more comfortable, sustainable, and humane metropolis, where walking is recognized as the most fundamental and democratic form of mobility.

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