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Developing a Structured and Context-Sensitive Walkability Indicator Framework for Philippine Urban Streets

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Abstract: *Urban walkability is essential to promoting sustainable, equitable, and inclusive mobility, especially in rapidly urbanizing regions like the Philippines. However, existing walkability indices often overlook local conditions and indirect environmental or socio-economic influences. This study identifies and validates 40 walkability indicators through a systematic literature review of 34 studies from both global and Philippine contexts. These indicators are thematically clustered into six dimensions: Infrastructure, Socio-Economic, Environmental, Accessibility, Safety, and Connectivity. Each theme reflects a distinct facet of urban mobility and pedestrian experience. The resulting Structured Indicator Framework addresses both direct and indirect impacts on walkability and aims to support future efforts in walkability assessment, planning, and policymaking tailored to the Philippine urban environment.*

Keywords: Walkability; Urban Mobility; Pedestrian Indicators; Philippine Cities; Sustainable Transport

1. INTRODUCTION

Urban mobility is not solely defined by vehicular traffic. It also depends on how easily and safely people can move on foot. Walkability refers to the degree to which the built environment supports and encourages walking by offering accessible, safe, connected, and comfortable pedestrian infrastructure [1]. A highly walkable city fosters public health, environmental sustainability, and inclusive economic development. It also promotes a more equitable urban experience for vulnerable groups such as children, the elderly, and persons with disabilities [2]. As cities strive to meet the goals of sustainable urban development, particularly those outlined in SDG 11 on Sustainable Cities and Communities, walkability becomes a foundational element of inclusive growth. In the Philippine context, walkability is increasingly significant due to rapid urbanization. The Philippine Statistics Authority (2020) [3] reports that 47% of the country's population now lives in urban areas, and this number is expected to continue growing. However, urban expansion has often occurred alongside car-centric development, inadequate land-use planning, and the proliferation of informal settlements. These conditions contribute to environments where walking is uncomfortable and unsafe because of narrow or obstructed sidewalks, unregulated street vending, poor lighting, and weak enforcement of pedestrian rights [4]. As cities become more congested and fragmented, ensuring safe and equitable walkability is not only a transportation issue but also a concern of public safety and social inclusion. To address these concerns, various countries have developed walkability indices that evaluate and improve pedestrian environments. Global tools such as Walk Score, the Pedestrian Level of Service (PLOS), and the Asian Walkability Index assess walkability through factors such as proximity to destinations, land-use diversity, connectivity, and infrastructure conditions [2, 5]. In the Philippines, some localized studies have adopted or adapted these tools.

Recent studies across Philippine cities have shown a growing interest in pedestrian infrastructure and urban walkability. For instance, Mañago et al. (2025) [6] developed a fifteen-minute city index in Pasig City using walkability scores integrated with age-specific population data. Their research highlights how walkability can guide equitable access to services, but its focus was mainly on proximity-based indicators and spatial reach. In Cebu, Mayo and Taboada (2021) [4] used a system dynamics approach to analyze the impact of road maintenance investment on commuter safety, illustrating the long-term value of pedestrian-focused infrastructure but centering on system-wide transport effects rather than walkability-specific metrics. Meanwhile, in Cagayan de Oro City, Go et al. (2017) [7] evaluated pedestrian conditions at six signalized intersections using Pedestrian Level of Service (PLOS) metrics. Their work addressed infrastructure performance but did not fully incorporate environmental, socio-economic, or user perception factors. Despite the increasing attention to walkability, there remains a significant gap in available tools that fully capture the pedestrian experience in Philippine cities. Many existing indices overlook indirect but influential elements. These factors influence not only the physical act of walking but also a person's perception of safety, comfort, and accessibility. Most current frameworks treat indicators as isolated metrics without organizing them into broader categories that reflect their interconnections and influence across urban systems [8]. Moreover, sectoral assessments such as that of Lucero et al. (2022) [9] highlight how public demand, safety, and volume of pedestrians are commonly prioritized by local transport professionals in Metro Manila, suggesting a strong alignment between public perception and the need for integrated pedestrian frameworks. This study responds to these gaps by developing a comprehensive and context-sensitive framework of walkability indicators tailored to Philippine urban streets. Through a systematic

review of global, regional, and local literature, the study identifies indicators that capture both direct influences, such as infrastructure quality and pedestrian facilities, and indirect influences, including social, environmental, and perceptual factors that affect walking behavior. These indicators are organized into six thematic domains: Infrastructure, Socio-Economic, Environmental, Accessibility, Safety, and Connectivity. This thematic structure provides a multidimensional understanding of walkability that reflects the complex realities of urban environments in the Philippines. The resulting framework is designed to support urban planners, policymakers, and researchers in developing evidence-based, inclusive, and pedestrian-centered walkability assessment tools. By emphasizing both the physical and perceived aspects of the walking experience, the framework contributes to the creation of more equitable, sustainable, and mobility-friendly urban systems in Philippine cities.

2. IDENTIFICATION OF WALKABILITY INDICATORS

Walkability indicators are measurable attributes of the built and social environment that influence the ease, safety, comfort, and attractiveness of walking. According to Forsyth (2015) [10], walkability reflects how conducive a space is for walking based on infrastructure, land use, safety, accessibility, and aesthetics. These indicators are essential in assessing how urban settings can support sustainable, healthy, and equitable mobility options, particularly in developing countries like the Philippines where non-motorized transport often competes with inadequate infrastructure.

2.1 Indicator identification through literature review

To develop a robust framework of walkability indicators applicable to the Philippine urban context, a systematic literature review was conducted following a structured approach. This process involved identifying, evaluating, and synthesizing peer-reviewed academic publications and technical studies from repositories such as ScienceDirect, ResearchGate, Google Scholar, and Scopus. The aim was to extract existing walkability indicators, examine their definitions, applications, and measurement units, and determine their contextual relevance to Philippine cities.

The strategy employed combinational keyword search (see Table 1) to ensure comprehensive coverage of both global and locally grounded literature. The review targeted studies published between 2010 and 2025, focusing on pedestrian infrastructure, urban mobility, transport planning, and walkability frameworks in developing countries. Philippine-based studies were prioritized to ensure cultural, geographic, and socioeconomic relevance, while studies from other Southeast Asian and Latin American countries with similar urban characteristics were also considered for benchmarking.

Table 1. Keywords and Derivatives Used in the Literature Review

| Keyword | Derivatives/Synonyms |
|---------|----------------------|
|---------|----------------------|

| | |
|-------------------------------|--|
| <i>Walkability</i> | Walkable, pedestrian-friendly, pedestrian mobility |
| <i>Walkability Indicators</i> | Urban indicators, pedestrian indicators |
| <i>Urban Infrastructure</i> | Sidewalks, pedestrian pathways, street features |
| <i>Pedestrian Safety</i> | Road safety, crime risk, traffic hazard |
| <i>Accessibility</i> | Access to destinations, ease of movement |
| <i>Connectivity</i> | Interconnection, network link, route connection |
| <i>Public Transport</i> | Transport access, last-mile connectivity |
| <i>Environmental Factors</i> | Noise, pollution, air quality, green spaces |
| <i>Informal Settlements</i> | Slums, urban poor areas, low-income housing |
| <i>Street vendors</i> | Informal economy, vending impact, sidewalk vendors |
| <i>Inclusive mobility</i> | PWD access, universal design, accessible walkways |

2.2 Criteria for indicator selection

The selection of walkability indicators was guided by six criteria adapted from the indicator framework of Opon and Henry (2019) [11] and Joung et al. (2012) [12], ensuring both contextual relevance and methodological rigor:

- Measurable – Indicators must be quantifiable through field observation, geospatial data, or survey tools.
- Relevant – Each indicator must directly relate to walkability dimensions.
- Understandable – Indicators must be easily interpretable by stakeholders with varying technical backgrounds.
- Reliable/Usable – Indicators must be based on clear definitions and established methodologies, allowing consistent application.
- Data Accessible – Required data must be obtainable from field audits, government sources, or open datasets.
- Long-term Oriented – Indicators must remain relevant amid evolving urban development and planning priorities.

3. WALKABILITY INDICATORS

3.1 Walkability Indicators List

This section presents a consolidated list of 40 walkability indicators that were systematically identified through a literature review. These indicators represent a comprehensive blend of physical infrastructure elements, socio-economic considerations, environmental conditions, safety features, accessibility aspects, and connectivity factors, all of which were consistently cited contextual relevance to Philippine urban conditions, considering the recurring themes and urban challenges highlighted in both international and local publications. The resulting list (see Table 2) reflects the multidimensional and context-sensitive nature of walkability in Philippine cities and serves as a foundational framework for developing a localized walkability assessment model that influence pedestrian experiences in Philippine urban streets. Each indicator is

assigned a unique code (W1 to W40) and is presented with its definition, contextual relevance, and reference

Table 2. Walkability Indicators

| <i>Indicators</i> | Code | Direct (D)/Indirect(I) | Definition/Description | References | Relevance |
|--|------|------------------------|---|------------|---|
| Access to key destinations | W1 | Indirect | Proximity to schools, hospitals, and work areas. | [13,14] | Supports daily walking by improving access to essential services. |
| CCTV surveillance adequacy | W2 | Indirect | Monitors areas to deter crime and enhance safety. | [15] | Boosts security perception, especially at night. |
| Street lighting adequacy | W3 | Direct | Lights pedestrian paths for nighttime safety. | [16] | Reduces crime/accident risk; promotes evening walking. |
| Ambient noise levels | W4 | Indirect | Measures traffic and activity-related noise exposure. | [17,18] | Affects comfort and health; high levels may deter walking. |
| Availability of shortcuts | W5 | Direct | Paths that reduce walking distance. | [19] | Enhances route efficiency and connectivity. |
| Route clarity and signage | W6 | Direct | Ensures clear navigation with visible signs. | [20,21] | Improves orientation and user confidence. |
| Economic value of street vending | W7 | Indirect | Evaluates vending's effect on economic activity and walkways. | [22] | Supports vibrancy; may obstruct pedestrian space. |
| Covered walkways/shelters | W8 | Direct | Offers weather protection for walkers. | [23] | Promotes walking in various weather conditions. |
| Pedestrian traffic density | W9 | Indirect | Measures foot traffic as a proxy for activity and safety. | [24] | High density improves surveillance and commercial engagement. |
| Proximity to public transport | W10 | Direct | Distance from walking paths to transport access points. | [25] | Enhances multimodal links and last-mile walking. |
| Pedestrian accident history | W11 | Indirect | Records past pedestrian incidents to flag risk areas. | [26] | Guides planners in identifying unsafe zones for intervention. |
| Impact of informal settlements | W12 | Indirect | Assesses how informal areas affect walking conditions. | [27] | Often linked to poor or unsafe pedestrian infrastructure. |
| Informational signage | W13 | Direct | Assesses signs for wayfinding and safety guidance. | [21] | Improves navigation and safety awareness. |
| Access to parks and open spaces | W14 | Indirect | Measures green space availability supporting walkability. | [18] | Promotes recreational walking and improves urban livability. |
| Link to other transport modes | W15 | Indirect | Assesses pedestrian connection to public transport systems. | [28] | Enables multimodal travel and improves mobility. |
| Road network interconnection | W16 | Direct | Evaluates links between walkways and road networks. | [13,14] | Enhances route options and reduces travel time. |
| Lane width and number | W17 | Direct | Assesses how road design affects pedestrian crossing. | [4] | Wider roads increase crossing difficulty and risk. |
| Pedestrian path length and coverage | W18 | Direct | Measures sidewalk length and connectivity. | [29] | Ensures continuous and accessible walking routes. |
| Mixed-use developments | W19 | Indirect | Combines land uses to reduce travel distance. | [6,13] | Encourages walking by clustering destinations. |
| Pathway drainage | W20 | Direct | Evaluates drainage to prevent walkway flooding. | [30] | Improves safety and walkability in wet conditions. |
| Perceived safety from crime | W21 | Indirect | Reflects how secure pedestrians feel. | [15,16,31] | Higher safety perception promotes walking, especially at night. |
| Marked crosswalk presence and visibility | W22 | Direct | Assesses clarity and visibility of pedestrian crossings. | [7,32] | Enhances safety at intersections and mid-block zones. |
| Obstructive elements (fences, walls) | W23 | Direct | Assesses physical barriers along pedestrian paths. | [14] | Limits accessibility and disrupts continuity. |
| Informal vendors' impact | W24 | Direct | Evaluates vendor placement on walkways. | [33] | May support vibrancy or hinder movement depending on space use. |
| Law enforcement presence | W25 | Indirect | Observes patrols or visible policing along routes. | [15,34] | Enhances safety and deters criminal activity. |

| | | | | | |
|----------------------|-----|----------|---|------|---|
| Trees and vegetation | W26 | Indirect | Measures greenery along walking routes. | [18] | Improves comfort and walkability in tropical areas. |
|----------------------|-----|----------|---|------|---|

Table 2. (continuation)

| Indicators | Code | Direct (D)/Indirect(I) | Definition/Description | References | Relevance |
|-----------------------------------|------|------------------------|---|--------------|---|
| Proximity to intersections | W27 | Indirect | Distance of walkways from major intersections. | [35] | Helps assess pedestrian-vehicle conflict risk. |
| Traffic emissions exposure | W28 | Indirect | Measures exposure to pollutants near sidewalks. | [17,36] | Poor air quality discourages walking. |
| Accessibility features for PWDs | W29 | Direct | Includes ramps and tactile paving. | [37] | Supports inclusive and accessible design. |
| Pedestrian safety features | W30 | Direct | Infrastructure like guardrails and bollards. | [7] | Reduces risk from nearby vehicular traffic. |
| Pedestrian facility satisfaction | W31 | Indirect | User-reported satisfaction with walking infrastructure. | [38] | Indicates overall usability and infrastructure quality. |
| Pedestrian-vehicle separation | W32 | Direct | Assesses physical separation of walkways from traffic. | [39] | Reduces conflict and improves pedestrian safety. |
| Sidewalk continuity | W33 | Direct | Assesses uninterrupted sidewalk networks. | [24,29,40] | Encourages seamless and accessible pedestrian travel. |
| Sidewalk surface quality | W34 | Direct | Assesses smoothness and absence of tripping hazards. | [41] | Affects comfort and safety, especially for PWDs and older adults. |
| Sidewalk width | W35 | Direct | Minimum space for comfortable pedestrian movement. | [24,29] | Supports pedestrian volume and mobility aid use. |
| Signalized crossings | W36 | Direct | Availability and function of pedestrian signals. | [7,21] | Enhances crossing safety and reduces conflict. |
| Street gradient and curvature | W37 | Direct | Measures slope and bends in walkways. | [42] | Steep or curving paths may deter walking or reduce safety. |
| Vehicle speed and volume | W38 | Direct | Traffic speed and density near pedestrian zones. | [35] | Higher levels increase pedestrian risk and discomfort. |
| Pedestrian and vehicle visibility | W39 | Direct | Evaluates sightlines between pedestrians and drivers. | [7,16,35,43] | Poor visibility increases accident risk, especially at night. |
| Waste bins and cleanliness | W40 | Indirect | Availability of waste bins and cleanliness of walkways. | [44] | Enhances environmental quality and user comfort. |

source. The indicators are also categorized based on their type of influence as either direct or indirect.

Providing each indicator's definition, relevance, and reference citation enhances transparency and supports practical applications in planning, policy, and research. Dizdaroglu (2017) [45] emphasizes that indicator-based assessments are essential tools that guide decision-making and sustainability planning. Clear and well-structured indicators improve usability and communication across different stakeholder groups. Similarly, Krambeck (2006) [46] highlighted that a systematic presentation of walkability indicators, complete with definitions and contextual relevance, is critical for both local and international applications. Zuniga-Teran et al. (2017) [8] further noted that organizing indicators into meaningful clusters improves understanding of how urban form influences pedestrian behavior and mobility policies.

3.2 Direct vs. Indirect Relationship of Walkability Indicators

Walkability indicators can be broadly categorized into direct and indirect impacts based on how they influence pedestrian experience. Direct indicators are those that immediately affect the physical act of walking by altering the environment in which pedestrians move. These

elements directly influence safety, accessibility, and pedestrian comfort [10, 47]. In contrast, indirect indicators influence walkability by shaping perceptions, contextual conditions, or urban dynamics that affect the decision to walk [8, 48].

Out of the 40 walkability indicators analyzed in this study, 23 indicators (57.5 percent) were classified as having a direct impact, while 17 indicators (42.5 percent) were identified as indirect (see Fig. 1). This distribution highlights the predominance of tangible, physical, and design-related factors in shaping walkable environments. However, the substantial share of indirect indicators also reflects the importance of socio-environmental and perceptual dimensions, such as perceived safety, ambient noise, and access to green spaces, which play a critical role in shaping the walking experience.

The finalized set of walkability indicators is systematically grouped into six thematic dimensions: Infrastructure, Socio-Economic Factors, Environmental Conditions, Accessibility, Safety, and Connectivity. This classification is based on established frameworks and methodologies from previous studies in urban walkability and sustainable mobility [8, 10, 49, 50]. The thematic approach allows for a holistic, multidimensional understanding of walkability and reflects both physical

and socio-environmental factors relevant to pedestrian mobility in urban Philippine contexts.

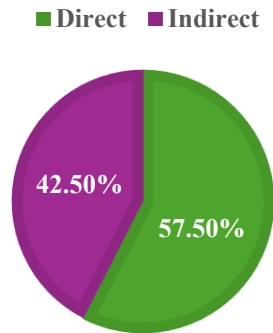


Fig. 1. Direct vs. Indirect Relationship of Walkability Indicators.

4. STRUCTURED INDICATOR FRAMEWORK FOR URBAN WALKABILITY

4.1 Walkability Indicator Framework Overview

The Structured Walkability Indicator Framework (see Fig. 2) clusters walkability attributes into six overarching themes. Rather than relying solely on traditional taxonomies, this study adopts a contextualized clustering approach inspired by frameworks from Zuniga-Teran et al. (2017) [8], Opon and Henry (2019) [11], and other urban mobility studies. This method categorizes indicators not only by function but also by their perceived and empirically supported impact on pedestrian usability, comfort, and safety, tailored to the realities of Philippine urban environments.

Each theme encapsulates a specific domain of walkability. Infrastructure Indicators assess the physical features of pedestrian environments. Socio-Economic Indicators capture the interaction between pedestrian experiences and economic or social factors. Environmental Indicators reflect health and livability conditions. Accessibility Indicators evaluate equitable access, particularly for vulnerable groups. Safety Indicators focus on actual and perceived security, while Connectivity Indicators examine how well pedestrian networks link destinations and routes. This clustering offers a systematic lens to guide urban audits, planning interventions, and spatial analysis in walkability mapping and index computation.



Fig. 2. Structured Walkability Indicator Framework

4.2 Infrastructure Indicators

Infrastructure indicators form the backbone of walkability by evaluating the physical features that enable or hinder pedestrian movement. In Philippine cities where pedestrian planning is often overlooked, these elements are critical.

The first group of indicators focuses on sidewalk design and quality. These include sidewalk width (W35), sidewalk surface quality (W34), and sidewalk continuity (W33). Sufficient width accommodates pedestrian volume and mobility aids, while smooth, unobstructed sidewalks reduce trip hazards and support accessibility. Continuous pathways encourage uninterrupted travel. In Cebu City, KOHa (2022) [24] reported that wider and well-maintained sidewalks directly contributed to higher pedestrian volumes, supporting findings from national urban audits [40, 41].

Pedestrian crossing infrastructure plays a vital role in ensuring safe road interactions. The presence and visibility of marked crosswalks (W22) and signalized pedestrian crossings (W36) help establish clear pedestrian priority, especially in high-traffic areas. These are further supported by pedestrian safety features (W30) such as bollards or guardrails that buffer pedestrian areas from vehicles [7, 21].

The next set of indicators relates to road geometry and intersections. Lane width and number (W17) and street gradient and curvature (W37) influence the perceived and actual safety of walking. Wider, multi-lane roads and steep or curving segments often increase pedestrian risk. Similarly, proximity to intersections (W27) is a factor, as intersections with high turning volumes are often hotspots for pedestrian-vehicle conflicts [4, 35, 42].

Visibility and lighting conditions are assessed through street lighting adequacy (W3) and pedestrian and vehicle visibility (W39). Poorly lit streets and obscured sightlines have been linked to increased nighttime pedestrian accidents and reduced sense of safety [16, 43].

Lastly, environmental comfort is addressed through waste bins and cleanliness (W40) and informational signage (W13). Clean, well-maintained environments promote a more pleasant walking experience, while proper signage improves orientation and helps pedestrians make informed decisions about their route [21, 44].

Together, these thirteen infrastructure indicators capture the essential components of a walkable built environment. Maharjan et al. (2018) [51] emphasized that compact and well-designed urban infrastructure, including these features, improves walkability and reduces motorized transport dependence. Their relevance in Philippine urban streets makes them fundamental for any localized walkability assessment.

4.3 Socio-Economic Indicators

Socio-economic indicators reflect how urban life and economic activity influence walkability. The economic value of street vending (W7) and the impact of informal vendors (W24) highlight both the economic benefits and spatial challenges of informal commerce. In Tacloban City, vendors enhanced street vibrancy but sometimes obstructed pedestrian flow [22, 33].

Pedestrian traffic density (W9) indicates active and socially engaged streets, while mixed-use developments

(W19) encourage walking by clustering residential and commercial areas, as seen in Pasig City [6, 24]. In contrast, the impact of informal settlements (W12) reflects barriers to walkability in underserved communities lacking basic infrastructure [27].

Perception-based indicators such as perceived safety from crime (W21) and pedestrian facility satisfaction (W31) offer insight into how users experience public spaces. Low perceived safety or dissatisfaction with infrastructure often reduces walking frequency, especially at night [31, 38].

These indicators emphasize that walkability depends not only on physical design but also on economic vitality, social safety, and user satisfaction within urban communities.

4.4 Environmental Indicators

Environmental conditions influence walkability by shaping pedestrian comfort, safety, and health. Exposure to traffic emissions (W28) and ambient noise levels (W4) reduce walkability in dense urban corridors. In Metro Manila, elevated PM2.5 levels and noise pollution near major roads and terminals pose serious risks and discomfort [17, 36].

Natural elements improve walking conditions. Trees and vegetation (W26) offer shade, lower urban heat, and enhance air quality, while access to parks and open spaces (W14) encourages recreational walking and promotes wellbeing [18].

Functional infrastructure also contributes to walkability. Pathway drainage (W20) is essential to prevent flooded or slippery walkways during rainy seasons, as documented in Davao City [30]. Similarly, covered walkways and shelters (W8) protect pedestrians from sun and rain, ensuring year-round usability [23].

These six indicators highlight the need for a healthy, climate-resilient pedestrian environment. Integrating environmental design into urban planning promotes comfort and encourages more sustainable and walkable streets.

4.5 Accessibility Indicators

Accessibility indicators measure how easily people, including vulnerable groups, can navigate urban spaces. Accessibility features for PWDs (W29) such as ramps and tactile pavements are vital for persons with disabilities (PWDs). Despite the Accessibility Law (BP 344 in the Philippines), a study in Cainta, Rizal found that many pedestrian crossings and sidewalks lacked these basic features, limiting mobility for persons with disabilities [37].

Proximity to public transport (W10) stops is another key factor. In Metro Manila, only 24% of residents live within walking distance of transit, showing a disconnect between housing and transport access [25].

Improving links to other transport modes (W15) such as intermodal terminals enhance mobility across cities. Studies on the Road-RoRo (Roll-on/Roll-off) system in the Philippines, which allows seamless transfers between road and sea transport, highlight how coordinated infrastructure supports smooth movement [28].

Additionally, availability of shortcuts (W5) and route clarity and signage (W6) improve navigation and reduce travel time. In Cebu and Cagayan de Oro, Philippines these features were found to significantly enhance

walkability [20]. Accessibility ensures inclusive, efficient, and user-friendly walkable environments.

4.6 Safety Indicators

Safety indicators are essential in walkability as they address risks from both traffic and crime.

Vehicle speed and volume (W38) strongly influences pedestrian safety. High-speed, multilane roads near transit areas have been linked to increased pedestrian fatalities in Metro Manila [35]. The risk is further reduced by pedestrian-vehicle separation (W32), such as barriers or designated walkways, which help prevent collisions. In Marikina City, the lack of dedicated pedestrian lanes placed non-motorized users at greater risk [39].

Law enforcement presence (W25) plays a role in deterring both traffic violations and crime. In Dipolog City, gaps in enforcement reduced pedestrian confidence in road safety [34]. Supporting this, CCTV surveillance adequacy (W2) enhances both real-time monitoring and crime prevention. A study in Nueva Ecija recommended strategic camera placement for improved public safety [15].

Lastly, pedestrian accident history (W11) uses past incident data to identify high-risk areas, guiding evidence-based interventions for improving safety [26]. These indicators collectively ensure safer pedestrian environments and reduce barriers to walkability in Philippine cities.

4.7 Connectivity Indicators

Connectivity indicators evaluate how well pedestrian pathways are linked to key destinations and surrounding networks, ensuring ease and continuity of movement.

Access to key destinations (W1) such as schools, workplaces, and hospitals is a strong motivator for walking. Studies show that walkability increases when essential services are located nearby [13]. Road network interconnection (W16) also plays a key role; dense and direct road grids improve pedestrian flow by minimizing detours and travel time [14].

Another important factor is the length and coverage of pedestrian pathways (W18). In the case of Marcos Highway, researchers identified the need for continuous and well-maintained sidewalks to support uninterrupted walking [29].

Lastly, obstructive elements (W23) such as fences and walls can hinder access, even in otherwise well-connected areas. Removing these physical barriers supports smoother, more direct pedestrian travel [14].

Together, these indicators highlight that strong, integrated pedestrian networks are essential for enabling efficient and accessible urban mobility.

5. CONCLUSION

This study presents a comprehensive and context-sensitive list and a framework of walkability indicators specific for Philippine urban streets. Through systematic literature review and thematic structuring, 40 indicators were identified and classified into six key dimensions: Infrastructure, Socio-Economic, Environmental, Accessibility, Safety, and Connectivity. The resulting framework captures both direct and indirect influences

on pedestrian mobility, reflecting the multidimensional nature of walkability. By organizing indicators into functional themes, the framework enhances interpretability and supports its potential use in walkability audits, spatial analysis, and urban planning initiatives. Ultimately, this work lays a foundation for developing localized walkability indices and supports efforts toward more inclusive, equitable, and pedestrian-friendly urban environments in the Philippines.

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