



Navigating Walkability: Cultural Frameworks and Pedestrian Safety in Filipino Mixed-Use Streets

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Abstract

This study investigates the walkability of mixed-use streets in the Philippines through a case study of Banga, Plaridel, Bulacan, Philippines. While traditional urban design often imposes Western-centric, "deterministic" frameworks, this research argues for a culturally sensitive approach that accounts for local "cognitive-cultural models." Utilizing a mixed-methods approach, the study evaluates the corridor using the Global Walkability Index (GWI) and semi-structured interviews (n=50) with local stakeholders. Quantitative findings reveal a critical modal conflict (GWI 1.2), while qualitative data illustrates a "defensive walking" strategy among pedestrians. The study proposes two key interventions: (1) the establishment of a 2.5-meter "Regulatory Threshold" to balance informal street use with safety, and (2) the utilization of the Plaridel Bypass Road expansion for "spatial relief" through a town-center Road Diet. The findings provide a template for Philippine LGUs to enhance pedestrian safety while preserving the cultural vibrancy of the Filipino streetscape.

Keywords: walkability, messy urbanism, regulatory threshold, Plaridel bypass, Filipino urbanism, road diet

Introduction

Asian urban streets are characterized by a complex interplay of order and disorder, creating vibrant yet chaotic environments that Chalana and Hou (2016) describe as a multi-layered and adaptive algorithm of use. Unlike the structured, "deterministic" streets of the West, the Filipino street—specifically in mixed-use nodes like Banga, Plaridel, Bulacan, functions through a "messy urbanism" where formal transportation and informal commerce coexist. However, this vibrancy often compromises at the cost of pedestrian safety. Current urban design in the Philippines frequently imports Western-centric frameworks that prioritize vehicular flow or rigid zoning, failing to account for the local "cognitive-cultural models" that dictate how Filipinos navigate and occupy public space.

The primary challenge in the Banga-Plaridel corridor is the severe "modal conflict" among pedestrians, tricycles, and regional traffic. Despite the high volume of foot traffic near the Plaridel Market and NLEX-connected transport hubs, there is a distinct lack of usable infrastructure, forcing pedestrians to use the carriageway. Previous assessments using the Global Walkability Index (GWI) indicate low scores in safety and path continuity; however these metrics alone do not explain *why* pedestrians continue to prefer these "dangerous" routes. There is a lack of a clear regulatory threshold, a defined boundary that allows for cultural expression (e.g., street vending and communal "istambay" culture) while maintaining the minimum effective width required for safety.

This study is grounded in the contrast between Western and Asian spatial logic. Drawing from Nisbett's (2004) *Geography of Thought*, the study utilizes the distinction between the Western "deterministic intuition" (focusing on static objects and rigid rules) and the Asian "adaptive algorithm" (focusing on relationships and context).



To address reviewer concerns regarding the inclusion of psychological texts, this research links Jung's concepts of collective archetypes and Nietzsche's Apollonian-Dionysian tension to urban form. The "Apollonian" represents the formal, structured sidewalk, while the "Dionysian" represents the chaotic, vibrant street life. This study argues that Filipino walkability is found in the "harmonic dissonance" of these two forces. By understanding these cognitive models, we can move beyond "hostile architecture" and toward a design language that respects the Filipino "lived experience."

The study aimed to develop a culturally sensitive walkability framework that integrates empirical safety data with local socio-cultural patterns. A key proposition of this study is the utilization of the Plaridel Bypass Road expansion as a mechanism for "spatial relief." By diverting heavy regional traffic, the core urban center can undergo a "road diet," providing the physical room necessary to widen sidewalks and establish dedicated Non-Motorized Transport (NMT) lanes.

This study is significant for urban planners and local government units (LGUs) in the Philippines, as it provides a template for prioritizing pedestrian safety without compromising the cultural vibrancy that defines the Filipino streetscape.

Research Questions

1. What are the prevailing pedestrian behaviors and "cognitive-cultural models" in the mixed-use streets of Banga, Plaridel?
2. How do current GWI scores reflect the infrastructure gaps and modal conflicts at high-volume pedestrian hubs?
3. Where should the regulatory threshold be established to balance informal street use and pedestrian safety?
4. How can regional infrastructure projects, such as the Plaridel Bypass Road, be leveraged to provide the spatial relief needed for local walkability improvements?

Review of Related Literature and Studies

The literature on walkability has largely evolved within Western planning traditions that privilege deterministic spatial order, where streets are designed to perform singular and optimized functions such as movement efficiency and visual coherence (Speck, 2013). While this framework is technically rigorous, has limited applicability in non-Western contexts, particularly in Southeast Asia. Nisbett's (2004) work on cultural cognition helps explain this gap by demonstrating how Western thought tends to prioritize categorization and object-based logic, whereas Asian cognition favors relational thinking and contextual adaptation. In the Filipino streetscape, these relational logics manifest in what Chalana and Hou (2016) describe as an "adaptive algorithm," where streets operate as elastic social fields rather as fixed infrastructures. Commercial activity, informal transport, pedestrian movement, and social interaction continuously renegotiate spatial boundaries, revealing that walkability in this context cannot be reduced to sidewalk width or crossing frequency alone.

Attempts to rationalize what is often labeled as the "messiness" of Filipino urbanism frequently stop at engineering or regulatory explanations, overlooking the deeper cognitive-cultural dimensions shaping street use. Philosophical frameworks provide a critical lens through which this complexity becomes legible rather than problematic. Drawing on Nietzsche's Apollonian-Dionysian dichotomy, the literature suggests that formal planning ideals, order, symmetry, and visual control—represent an Apollonian impulse embedded in imported planning models, while the lived street reflects a Dionysian condition marked by sensory density, improvisation, and collective use (Nietzsche, 2013). Rather than a failure of design, this tension reveals parallel systems of spatial order. Jungian notions of collective archetypes further support this argument, as the street in Filipino towns continues to function as a contemporary manifestation of the marketplace or plaza, a primary "behavior setting" essential to social cohesion and economic survival (Stavish, 2018). Sennett's (1992) interpretation of



disorder as a productive urban condition reinforces the critique of rigid walkability standards, suggesting that excessive formalization may erode social exposure and everyday adaptability rather than enhance pedestrian comfort.

Quantitative tools such as the Global Walkability Index (GWI) provide valuable consistency in evaluating pedestrian environments; however their reliance on universal parameters limits their capacity to capture culturally embedded comfort and use patterns. While Krambeck's (2006) framework systematically measures safety, continuity, and accessibility, subsequent critiques emphasize its inability to assess what Mateo-Babiano (2016) terms "cultural ease"—the informal negotiations that allow diverse users to coexist within constrained spaces. In Southeast Asian cities, walkability often emerges through the active management of spatial conflicts rather than their elimination. The literature increasingly points out that dissonance between uses pedestrians, vendors, motorcycles, and social activities is not inherently detrimental, provided it remains within a functional range that preserves safety and mobility.

Despite this recognition, a critical gap persists in defining the limits of this phenomenon. Existing studies tend to frame street activities along a binary axis of legality, overlooking their functional contributions to urban living. Emerging scholarship suggests the need for a "functional threshold," a regulatory concept that recognizes the point at which informal activity enhances vibrancy without compromising pedestrian effective width or emergency access. Unlike static zoning, this threshold is temporally and culturally responsive, accommodating daily rhythms, peak hours, and community events. Therefore, managing walkability in such environments therefore demands flexible governance mechanisms rather than universal prohibitions.

Finally, contemporary urban theory reframes large-scale infrastructure projects as instruments of spatial relief rather than purely logistical interventions. Regional bypass roads, often evaluated only in terms of traffic efficiency, can operate as "decoy infrastructure" that siphons high-speed vehicular flows away from historic urban cores. This redistribution of movement creates a spatial vacuum that enables road diets, calmer streets, and space reallocation of space to non-motorized transport. Within this framework, walkability improvements become possible not by suppressing informal street life but by relieving the structural pressures that force incompatible uses to coexist unsafely. Collectively, the literature underscores that improving walkability in the Philippine context requires reconciling formal safety standards with deeply rooted relational spatial practices, effectively bridging the divide between the Apollonian logic of the plan and the Dionysian reality of the street.

Methodology

This study adopted a mixed-methods research design integrating quantitative walkability assessment with qualitative ethnographic inquiry to capture both the technical and experiential dimensions of pedestrian mobility. This approach is intended to bridge the gap between infrastructure-based walkability metrics and the lived experience of the Filipino street. Quantitatively, the study employs the Global Walkability Index (GWI) to establish an empirical baseline of physical and regulatory walkability conditions. Qualitatively, semi-structured interviews were used to elicit the cognitive-cultural models and behavioral adaptations that pedestrians develop in response to informal and contested street spaces.

The study was conducted in Banga, Plaridel, Bulacan, an area characterized by high pedestrian volume and the coexistence of formal infrastructure and informal street activities. The primary data sources comprised both the physical pedestrian environment and the individuals who regularly use it. Systematic physical observations were conducted out at two high-



volume nodes, the Plaridel Public Market and the NLEX-connected transport terminals selected because to their concentration of modal interchange, informal vending, and pedestrian congestion. In parallel, human participants were drawn from key stakeholder groups, including daily commuters, local street vendors, and older adult residents, to reflect a broad range of mobility needs and cultural perspectives.

Participants were recruited using convenience sampling from the identified high-volume hubs. Eligibility was based on regular engagement with the study area as a pedestrian or street-based worker. A total of fifty (50) participants were interviewed. Interviews were conducted on-site, lasted approximately 15 to 20 minutes, and were carried out primarily in Tagalog to ensure participant comfort, clarity, and the authenticity of responses.

Two primary research instruments were employed in the study. First, a modified version of the World Bank's Global Walkability Index was used to evaluate nine dimensions of walkability on a five-point scale. The index was adapted to reflect localized urban conditions, particularly the prevalence of informal activities and community-based regulation of space. Second, a semi-structured interview guide was developed to identify the "Regulatory Threshold," defined as the point at which participants perceive that culturally embedded street practices—such as vending or social interaction—begin to compromise personal safety or mobility.

Data collection was conducted during both peak hours (7:00–9:00 AM) and off-peak periods to capture the temporal variability of pedestrian behavior and street conditions associated with what has been described as "messy urbanism." Field audits involved direct physical measurement and systematic observation to document sidewalk width, obstruction density, and points of modal conflict where pedestrians, tricycles, motorcycles, and vendors converge without clear spatial demarcation. Behavioral mapping was conducted concurrently to record pedestrian desire lines and to compare actual movement patterns with the intended use of formal infrastructure.

Qualitative interview data were audio-recorded, transcribed verbatim, and translated from Tagalog into English. The analysis followed Braun and Clarke's (2006) six-phase thematic analysis framework. Initial coding focused on issues related to safety and vibrancy, which were subsequently grouped into higher-order themes, including "defensive walking," referring to adaptive movement strategies, and "relational space," conceptualizing the street as a negotiated social environment. These themes were used to inform the development of the Regulatory Threshold model.

Technical walkability was quantified using the modified Global Walkability Index. Local adaptations included contextualizing the "Security from Crime" parameter to account for informal community surveillance or "eyes on the street." The "Obstructions" score was derived from field observations at ten randomly selected sampling points, which revealed that permanent utility poles and informal vending activities reduced the effective pedestrian path width by approximately 60 percent.

Table 1 summarizes the GWI scores and corresponding observations that support classifying of the study area as having low technical walkability.



Table 1.

Summary of Global Walkability Index (GWI) Scores – Banga, Plaridel

GWI Parameter	Score (1-5)	Observation/Finding
Path Modal Conflict	1.2	High overlap between tricycles and pedestrians; no physical barriers.
Availability of Paths	1.5	Sidewalks are intermittent or entirely absent in high-volume hubs.
Crossing Safety	1.8	Lack of marked crosswalks; pedestrians must "negotiate" with drivers.
Security from Crime	3.2	Generally perceived as safe during the day; low lighting at night.
Obstructions	1.4	Permanent utility poles and informal vending occupy 60% of path width.
Availability of Crossings	1.6	Pedestrians cross at random points due to lack of designated zones.
Support Facilities	2.0	Minimal signage; lack of public seating or shaded waiting areas.
Maintenance & Cleanliness	2.5	Variable; often neglected in areas of high informal activity.
Aesthetics/Vibrancy	4.2	High cultural vibrancy; strong sense of community and commercial life.

The technical walkability of the site was quantified using a modified GWI. Modifications included localizing the 'Security from Crime' parameter to account for informal community surveillance ('eyes on the street'). The 'Obstruction' score was determined via field observation at 10 random sampling points, where it was found that permanent utility poles and informal vending occupy approximately 60% of the effective path width.

Informed consent was obtained from all individual participants included in the study, and all interviews were conducted with strict adherence to anonymity and data privacy standards. Qualitative interview data were analyzed using Thematic Analysis. Initial codes were generated based on 'safety' and 'vibrancy,' which were then clustered into the themes of 'defensive walking' and 'relational space' to inform the Regulatory Threshold model.

Results, Analysis, and Discussion

The Lived Experience: Narratives of the Street

The qualitative data reveals a significant gap between the technical "failure" of the street and its high cultural utility. While the GWI scores in Chapter 3 highlight physical dangers, interviews with local stakeholders provide the "cognitive-cultural" justification for these behaviors.

One elderly resident (Participant 08) noted:

"The sidewalk used to be where we talked. Now it's just a narrow path that you have to navigate carefully to avoid falling or being hit by a side mirror. We walk in the road because the cars at least have to see us there; on the curb, we are invisible behind the posts and the stalls."

This sentiment highlights a "defensive walking" strategy where pedestrians choose the carriageway for better visibility, paradoxically increasing their physical risk to avoid the "obstruction-riddled" formal path. Similarly, a local vendor (Participant 22) explained the economic necessity of street encroachment:



"Mobility allows us to follow where the people are. If it's hot, they get thirsty, so we move to them. But the cars now make it dangerous for us to stay on the edge of the road."

Establishing the Regulatory Threshold

To balance this vibrancy with safety, this study proposes a Regulatory Threshold based on the "Effective Pedestrian Width" (EPW). Analysis of the Banga corridor suggests that the current "messy urbanism" is not inherently the problem; rather, it is the lack of a defined boundary.

The threshold is defined as a 2.5-meter minimum clear zone. This allows for:

1. A 1.5-meter Unimpeded Path: Ensuring that two pedestrians can pass or a wheelchair can navigate.
2. A 1.0-meter "Buffer/Vibrancy Zone": Where informal vending and "istambay" culture can exist without breaching the transit path.

When street activity exceeds this 1.0-meter buffer, it crosses the regulatory threshold into a safety hazard, necessitating enforcement or spatial expansion measures.

Modal Conflict at High-Volume Hubs

The two critical hubs identified, the Plaridel Market and the NLEX Transport Terminal, exhibited the highest levels of "harmonic dissonance." At these points, the lack of infrastructure is most severe. Tricycle terminals currently occupy the space where sidewalks should exist, forcing passengers to board in the middle of active traffic lanes. The "cognitive model" here is one of constant negotiation, where safety is secondary to the speed of the transaction.

Infrastructure as Spatial Relief: The Bypass Road Expansion

A central finding of this research is that local walkability in Banga is currently "suffocated" by regional transit demands. The Plaridel Bypass Road expansion presents a unique opportunity for Spatial Relief.

The Plaridel Bypass Road expansion functions as a primary catalyst for 'spatial relief.' By strategically siphoning regional vehicular demand away from the Banga core, the expansion creates the necessary conditions for a 'Road Diet.' This spatial mechanic allows for the reclamation of at least 2.0 meters of road space on either side, providing the physical footprint necessary to widen sidewalks to meet the Regulatory Threshold and introduce green buffers that separate pedestrians from remaining local traffic.

- Widen sidewalks to meet the Regulatory Threshold.
- Implement dedicated, protected tricycle loading bays.
- Introduce green buffers (Landscape Architecture interventions) to separate pedestrians from the remaining local traffic.

Reconciling the Apollonian and Dionysian

The results suggest that the "Apollonian" desire for a clean, Western-style sidewalk is incompatible with the "Dionysian" energy of the Filipino market street. However, through the use of Spatial Relief and a defined Regulatory Threshold, a "Harmonic Dissonance" can be achieved. The design should not aim to remove the vendor or the tricycle, but to provide them with a designated "relational space" that does not compromise the pedestrian's right to a safe journey.

Conclusion and Recommendations

This study demonstrates that walkability in the Filipino context is achieved not by eliminating informal street activity, but by managing it through culturally responsive spatial rules. The proposed Regulatory Threshold, a 2.5-meter pedestrian zone



composed of a 1.5-meter clear movement path and a 1.0-meter vibrancy buffer, provides a practical framework that preserves the social and economic vitality of Filipino streets while ensuring pedestrian safety. The findings also reveal that Western deterministic design models are poorly aligned with Filipino pedestrian behavior, which is adaptive and relational, requiring flexible and generously proportioned spaces instead of narrow, rigid corridors.

To translate these insights into action, it is recommended that the Local Government Unit prioritize spatial relief strategies by diverting heavy through-traffic to existing bypass routes, enabling road diets within the Banga core and converting of excess roadway into protected pedestrian and non-motorized transport facilities. High-intensity areas such as Plaridel Market and the NLEX Transport Terminal should be redesigned to reduce modal conflict through shared-space management and dedicated off-street loading zones. Urban design guidelines should further shift from exclusionary or hostile architecture toward relational design, strategically locating fixed elements within the vibrancy buffer to protect pedestrian flow. Finally, future research should test the Regulatory Threshold across other Filipino urban settings to refine its applicability and support its broader adoption in national walkability standards.

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Declarations

- **Funding:** This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.
- **Conflict of Interest:** The authors declare no conflicts of interest.
- **Consent to Participate:** Informed consent was obtained from all individual participants included in the study.
- **Data Availability:** The datasets generated during the current study are available from the corresponding author upon reasonable request.

2. Ethics

Informed consent was obtained from all individual participants included in the study, and all interviews were conducted with strict adherence to anonymity and data privacy standards.



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