

# STREETS FOR CHILDHOOD: RETHINKING URBAN SPACES FOR CHILDREN'S SAFETY, INTERACTION, AND SOCIAL LIFE

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## ABSTRACT

Children's everyday experiences in cities reveal the quality, inclusiveness, and safety of urban environments. As the most vulnerable users of public space, their ability to move, play, and interact becomes a key indicator of a healthy and livable city. This research aims to formulate urban spaces that cater to children aged 4 to 18 years, enabling better intercommunication, interplay, and social participation within neighborhoods. The study examines the need and importance of children-inclusive spaces and investigates how existing urban environments influence children's perception, behavior, and sense of belonging. By analyzing everyday activity cycles, it explores how time, spatial configuration, and environmental quality shape children's interaction with public spaces, and how these spaces can be redesigned to support growth, independence, and safety. It further evaluates current conditions to identify gaps in social life, accessibility, and livability. Using a neighborhood-level approach, the research focuses on medium-density residential and mixed-use zones in Bengaluru. A detailed study of Chamrajpete—an older, planned, and transforming settlement—serves as the base model to understand children's spatial experiences and identify shortcomings in existing infrastructure. Observations highlight issues such as the lack of child-friendly design, poorly structured physical components, restricted mobility, and safety concerns. Through place-making tools, participatory observation, and spatial analysis, the study proposes design recommendations to create safe, playful, and socially vibrant environments. Emphasis is placed on improving pedestrian networks, enhancing passive and active engagement, and revitalizing streets as accessible and livable spaces for children. Ultimately, the research shows that cities designed for children become safer and healthier for all, offering a transformative framework for inclusive and resilient urban neighborhoods.

**KEYWORDS:** Child-Friendly Urban Design, Neighborhood Streets, Urban Mobility and Safety, Public Space and Play, Inclusive Place-Making.

## INTRODUCTION

### • Children as measures of urban quality

Cities are lived environments shaped by everyday movement and social interaction, not only physical infrastructure. Among urban users, children are one of the most vulnerable yet revealing groups; their ability to move independently, play, and engage with neighborhood spaces is a key indicator of urban quality, inclusiveness, and safety (UNICEF, 2018; WHO, 2020). Environments that exclude children often marginalize other vulnerable users. Rapid urbanization has placed increasing pressure on neighborhood streets, particularly in cities of the Global South. By 2050, nearly 70% of the global population will live in urban areas, with children forming a significant share (United Nations, 2019). In India, children constitute almost 39% of the population, highlighting the importance of their everyday urban experiences (UNICEF India, 2021). Yet, streets are increasingly prioritized for vehicles and commercial activity, reducing walkability, safety, and informal play. Children perceive cities differently from adults, with safety closely linked to traffic conditions, visibility, and social activity (Lynch, 1977; Karsten, 2005). Unsafe crossings, congested junctions, and limited open spaces restrict independent mobility and are associated with reduced well-being (Gill, 2007; Chatterjee, 2018). As streets become vehicle-dominated, opportunities for play and interaction diminish (Appleyard, 1981; Gehl, 2010). Grounded in child-friendly city frameworks (UNICEF, 2018; United Nations, 2015), this study examines through a child-centered lens, arguing that streets

Chamrajpete, Bengaluru, to reframe street design through a child-centered lens, arguing that streets designed for childhood foster inclusive and livable neighborhoods.

### • Literature & theoretical framework: children, streets, and urban life

The concept of child-friendly urban environments has gained increasing attention within urban planning, public health, and social policy discourses. However, despite growing recognition at the policy level, the translation of child-centric principles into everyday neighborhood design particularly streets remains limited, especially in dense urban contexts of the Global South. This section establishes the theoretical foundations of the study by drawing from child-friendly city frameworks, theories of play and child development, and scholarship on streets as social infrastructure.

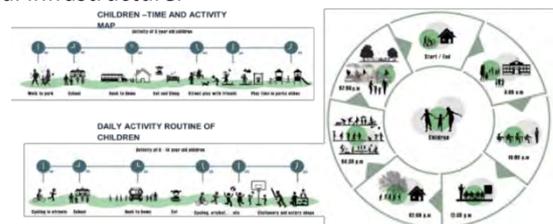


Figure 1: Children's Daily Time-Activity Patterns in the Neighborhood, Source: Author's own illustration based on field observations (Jagdale, 2025).

Figure 1 illustrates daily activity routines of children aged 4–14 years, showing movement between home,

school, streets, and neighborhood spaces, and highlighting the role of streets in shaping everyday mobility and play.

### • **Child-Friendly Cities and Global Policy Frameworks**

The UNICEF Child-Friendly Cities Initiative (CFCI) defines a child-friendly city as one that ensures children's rights to safety, participation, play, and access to public space within their everyday environments (UNICEF, 2018). Rather than focusing solely on designated play areas, the framework emphasizes neighborhoods and streets as primary settings for daily life. Similarly, the World Health Organization's Healthy Cities approach highlights walkable, safe, and socially supportive environments as essential for well-being across age groups (WHO, 2020). These principles are reinforced by Sustainable Development Goal 11, which promotes inclusive, safe, and resilient cities (United Nations, 2015). Although SDG 11 does not explicitly address children, scholars argue that children's mobility and access to public space serve as sensitive indicators of success at the neighborhood scale (Malone, 2013). However, implementation often remains fragmented, with child-friendliness treated as a welfare concern rather than a spatial and design-driven agenda.

### • **Children, Play, and Everyday Urban Space**

Play is essential to children's cognitive, physical, and social development, particularly informal and unstructured play that occurs in streets, thresholds, and residual spaces (Gill, 2007). Such everyday environments foster creativity, social interaction, and spatial awareness but are increasingly restricted by traffic dominance, safety concerns, and the privatization of public space. Children perceive and navigate cities differently from adults, constructing mental maps based on proximity, familiarity, and freedom of movement rather than formal boundaries (Lynch, 1977). Studies show that independent neighborhood mobility strengthens children's confidence and sense of belonging, while unsafe crossings and fragmented pedestrian infrastructure limit autonomy and increase dependence on adults (Karsten, 2005; Chatterjee, 2018).

### • **Streets as Social Infrastructure**

Streets are the most accessible public spaces in cities and historically supported movement, play, commerce, and social interaction. Appleyard (1981) showed that lower traffic volumes strengthen social life, while Gehl (2010) argues that human-scale streets encourage lingering and informal use. For children, streets link home, school, and play spaces, and child-friendly environments with slower traffic and active edges support independent mobility and intergenerational interaction (Tonucci, 2005). Streets prioritizing vehicles, however, marginalized children and fragment neighborhood life.

### • **Towards a Child-Centric Urban Design Framework**

Synthesizing these strands of literature, this study adopts a child-centric urban design framework that positions children as active users of public space. Streets are

understood as social and play environments rather than solely mobility corridors, highlighting that designing for children's safety, interaction, and play can create inclusive and livable neighborhoods. This framework directly informs the analysis and interventions proposed for Chamrajpete.

## **RESEARCH AIM, OBJECTIVES, QUESTIONS, AND HYPOTHESIS**

Urban design research addressing children's needs must move beyond abstract advocacy and clearly define the spatial, social, and behavioral dimensions under investigation. Building on child-friendly city frameworks and the understanding of streets as social infrastructure, this research is structured around a focused aim, supported by defined objectives, research questions, and a testable hypothesis. Such clarity is essential to translate policy-driven ideals into spatially grounded design interventions (Malone, 2013; Chatterjee, 2018).

### • **Research Aim**

The primary aim of this research is to formulate urban spaces that cater to children aged 4 to 18 years, enabling intercommunication, play, and social participation within neighborhood environments. The study positions everyday streets and public spaces as key settings for children's mobility and interaction, rather than limiting child-friendly design to isolated recreational facilities (UNICEF, 2018).

### • **Research Objectives**

This research aims to understand the need and importance of child-inclusive spaces within urban neighborhoods, with particular emphasis on streets and public open spaces as everyday environments for movement and social interaction. It seeks to assess existing physical and social conditions of public spaces to identify gaps affecting children's safety, accessibility, and social life. The study further analyses children's daily activity cycles and movement patterns in relation to time, spatial configuration, and environmental quality. It evaluates the role of streets in supporting accessible and liveable environments for children and other vulnerable users, and develops design recommendations that create safe, playful, and socially vibrant public spaces through place-making interventions.

### • **Research Questions**

This study addresses the following questions:

- What role do child-friendly spaces play in enhancing neighborhood quality and public life?
- How do children perceive and respond to their surroundings, and how does urban design influence their experience?
- How can redesigning streets improve safety, health, and social interaction for children?
- How can place-making transform distress spaces into child-friendly environments?
- How can neighborhood interventions reduce disparities in children's public life?

- **Research Hypothesis**

The research hypothesizes that the configuration and quality of the urban environment are decisive in enabling neighborhoods to function as child-friendly spaces. Streets and public spaces designed for children's safety, independent mobility, and play are expected to foster inclusive and socially cohesive environments for all users (Tonucci, 2005; WHO, 2020).

## **METHODOLOGY & RESEARCH DESIGN**

This research adopts a qualitative, spatial, and neighborhood-scale urban design methodology to examine how everyday urban environments influence children's mobility, play, and social interaction. The approach translates children lived experiences into spatial insights and design interventions, aligning with child-centric planning frameworks (Malone, 2013; UNICEF, 2018). A case-based, exploratory approach was employed, combining spatial analysis, behavioral observation, and place-based mapping. The study prioritizes everyday environments—streets, junctions, thresholds, and open grounds—over formal recreational spaces to understand how children negotiate safety, access, and play within real neighborhood conditions (Lynch, 1977; Chatterjee, 2018). The research progressed through contextual spatial analysis, movement-based observation, and design-led interpretation to ensure proposals were grounded in empirical evidence (Gehl, 2010). Data collection included spatial mapping of land use, building heights, road hierarchy, educational institutions, playgrounds, and public transport infrastructure to identify activity generators. Children's pedestrian routes were mapped through observation, focusing on home-school journeys and play routes, and overlaid with traffic patterns, vendor locations, and junction conditions to identify conflict zones (Appleyard, 1981). Time-based observations documented daily and weekly activity cycles, particularly in key spaces such as Eidgah Maidan, revealing temporal variations in use (Gehl, 2010). Analysis was conducted through a child-centric lens focusing on safety, accessibility, continuity of movement, visibility, and play opportunities. Place-making principles were applied to reinterpret conflict zones as potential social and play spaces, informing design strategies such as vendor reorganization, pedestrian prioritization, traffic calming, and play-integrated streets (Tonucci, 2005; Project for Public Spaces, 2016; WHO, 2020).

## **PRECEDENT & CASE STUDIES: CHILD-FRIENDLY URBAN MODELS**

Precedent studies provide a grounded understanding of how child-friendly urban principles operate within real spatial and socio-cultural contexts. Rather than serving as idealized models, the selected case studies are examined as learning frameworks demonstrating how neighborhood streets and public spaces can support children's safety, mobility, and social interaction. Two case studies—Banani in Dhaka, Bangladesh, and neighborhood street interventions in Eindhoven, the

Netherlands—inform strategies relevant to dense, mixed-use urban settings such as Chamrajpete.

- **Banani, Dhaka – Child Mobility in a Dense Urban Context**

Banani is a planned residential neighborhood that has evolved into a dense mixed-use district, facing challenges of traffic congestion, pedestrian safety, and loss of open spaces (Kabir & Parolin, 2012). Recent initiatives have focused on improving pedestrian continuity and walkability, particularly around schools and residential clusters. Interventions such as widened footpaths, controlled crossings, and green buffers have enhanced perceived safety and supported children's independent movement (UNICEF, 2018). The case highlights that child-friendly mobility depends less on large open spaces and more on the continuity, legibility, and safety of everyday routes.

- **Eindhoven, Netherlands – Streets as Play and Social Spaces**

Eindhoven represents a contrasting context where streets are intentionally designed as social and play spaces through traffic calming, shared streets, and play streets prioritizing pedestrians over vehicles (Karsten & van Vliet, 2006). Integration of play elements, reduced vehicular speeds, and active street edges enables everyday, informal use, promoting independent mobility and social cohesion (Gehl, 2010).

- **Comparative Inferences**

Despite contextual differences, both cases emphasize street-level interventions, pedestrian prioritization, and integration of play into everyday movement networks. While Eindhoven benefits from stronger regulation, Banani demonstrates the effectiveness of incremental, context-sensitive interventions. These lessons—continuity, safety at crossings, spatial flexibility, and social integration—directly inform the identification of intervention zones and design strategies for Chamrajpete.

## **SITE SELECTION PROCESS: BENGALURU**

Selecting an appropriate study area is essential for translating child-friendly urban principles into spatial and design-based interventions. This study adopts a comparative site selection process to identify a neighborhood that reflects the spatial, social, and infrastructural complexities of Indian cities. Bengaluru was selected as the broader context due to its rapid growth, mixed land-use patterns, and increasing pressures on neighborhood streets and public spaces (Bhat & Ranganathan, 2016).

### **Rationale for Site Selection**

Neighborhoods representing **older settlements, planned layouts, and transforming areas** within Bengaluru were compared to understand how historical evolution and spatial structure influence everyday mobility and social life (Moudon, 1997). The selection focused on areas where children's movement and interaction are actively negotiated within dense public spaces. Key criteria included residential density, presence of schools, availability of open spaces, street hierarchy, pedestrian

infrastructure, traffic intensity, and visibility of informal activity—factors known to affect children's independent mobility (Appleyard, 1981; Karsten, 2005).

### Comparative Evaluation and Selection of Chamrajpete

Four neighborhoods were evaluated across these parameters. Planned layouts showed clearer infrastructure but limited informal play opportunities, while transforming areas exhibited fragmented pedestrian networks and vehicular dominance. Older neighborhoods, despite congestion challenges, demonstrated strong social networks, mixed-use patterns, and active street life, offering richer contexts for studying children's everyday spatial interactions (Gehl, 2010). Based on this analysis, **Chamrajpete** was selected as the study area. As an older, planned, and continuously transforming neighborhood, it exhibits medium to high density, mixed land use, and a fine-grained street network. The presence of multiple educational institutions and open grounds generates high child movement, while traffic, informal vending, and congestion create visible safety challenges. These conditions position Chamrajpete as an appropriate **base model** for examining embedded, neighborhood-scale child-friendly design interventions (UNICEF, 2018).

### URBAN EVOLUTION, MORPHOLOGY & PHYSICAL STRUCTURE OF CHAMRAJPETE

Understanding children's interaction with urban space requires close examination of the historical evolution and physical structure of the neighborhood in which these interactions occur. Urban morphology shapes not only movement patterns and land-use distribution but also the everyday spatial experiences of children, influencing their safety, autonomy, and opportunities for social interaction (Moudon, 1997). Chamrajpete's layered evolution provides a critical context for analyzing how historical planning decisions continue to affect present-day street life and public space use.

#### Historical Evolution of Chamrajpete

Understanding children's interaction with urban space requires examining the historical evolution and physical structure of the neighborhood, as urban morphology shapes movement patterns, land use, and everyday spatial experience (Moudon, 1997). Chamrajpete's layered evolution provides critical context for understanding present-day street life and public space use. Figure 2 traces the historical growth of Bengaluru and the emergence of Chamrajpete as an early planned neighborhood, highlighting changes in settlement pattern, road networks, and urban expansion over time.

**Source:** Author's own illustration based on historical maps and secondary sources (Jagdale, 2025). Developed as an early planned extension of Bengaluru, Chamrajpete originally followed a defined grid with residential plots and neighborhood-scale open spaces. Over time, densification, plot subdivision, and conversion to mixed-use have produced a hybrid urban form, strengthening social and economic activity while increasing pressure on streets used daily by children (Bhat & Ranganathan,

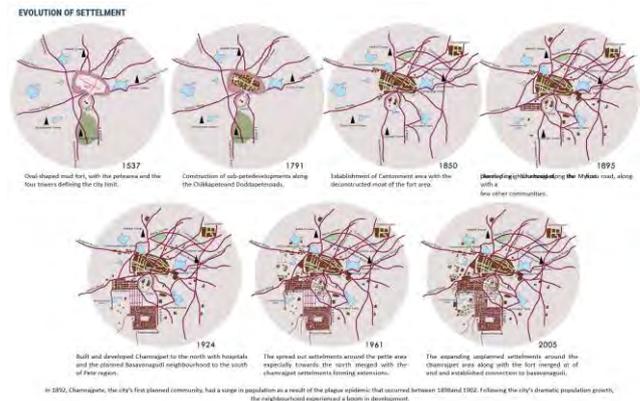


Figure 2: Historical Evolution of Bengaluru and Chamrajpete

2016). The neighborhood exhibits a highly mixed land-use pattern with low- to mid-rise buildings, generating continuous street activity. While this supports visibility and informal surveillance beneficial to children's safety (Jacobs, 1961), encroachments and lack of setbacks reduce effective pedestrian space, creating conflicts between movement and social use. Chamrajpete's street hierarchy comprises primary, secondary, and tertiary roads. Children primarily use secondary and tertiary streets for daily movement, which offer potential for walkability but are compromised by inadequate pedestrian infrastructure and traffic spillover (Appleyard, 1981). Key landmarks such as schools, religious institutions, and Eidgah Maidan function as activity nodes shaping temporal use patterns, reinforcing the importance of streets and junctions as interfaces between mobility and social life (Gehl, 2010).

### CHILDREN'S EVERYDAY LIFE IN CHAMRAJPETE: ACTIVITY, MOBILITY & RISK

Children's everyday interaction with urban space is shaped by school journeys, informal play, and neighborhood movement. In Chamrajpete's dense mixed-use environment, streets function simultaneously as mobility corridors, social spaces, and economic zones, making children's activity patterns critical for identifying spatial risks and intervention opportunities (Lynch, 1977; Karsten, 2005). Figure 3 illustrates the relationship between schools, playgrounds, played streets, pedestrian and vehicular movement, and traffic intensity, identifying key mobility corridors and priority areas for child-friendly street interventions.



Figure 3: Children's Movement, Play, Traffic, and Mobility Patterns in Chamrajpete Source: Author's own

illustrations based on field survey and spatial mapping (Jagdale, 2025).

### Activity Generators and Temporal Use

Chamrajpete contains a high concentration of schools and pre-university colleges, generating predictable peaks of child movement during arrival and dispersal hours. Many institutions lack safe drop-off zones and pedestrian buffers, forcing children to navigate traffic-dominated streets—conditions observed widely in Indian cities (Chatterjee, 2018). Limited formal playgrounds lead children to appropriate streets and open grounds for play, with Eidgah Maidan functioning as a key multi-temporal public space. Time-based observations reveal shifting patterns of movement and play across the day, highlighting the need for flexible, multi-use public spaces (Gehl, 2010).

### Mobility Networks and Risk Zones

Mapping of pedestrian routes reveals strong desire lines connecting homes, schools, bus stops, and play areas, often intersecting with high-traffic roads. This overlap exposes children to unsafe crossings and traffic conflicts, reducing independent mobility (Appleyard, 1981; Tonucci, 2005). Risk is concentrated at junctions where traffic, parking, and informal vending converge, leaving inadequate pedestrian space. These conflicts stem from spatial mismanagement rather than informality itself, informing targeted design interventions that balance livelihoods with child safety.

### IDENTIFICATION OF CRITICAL ISSUES & OPPORTUNITY ZONES

The analysis of Chamrajpete’s spatial structure and children’s everyday movement reveals that risks and constraints are not uniformly distributed across the neighborhood but are concentrated at specific locations, times, and interfaces. Identifying these **critical issues and opportunity zones** is essential for directing focused, child-centric design interventions rather than broad, non-specific improvements (Gehl, 2010).

#### Key Spatial Issues

Analysis of Chamrajpete reveals that risks to children are concentrated at specific locations and times rather than evenly distributed, making targeted, child-centric interventions essential (Gehl, 2010). A key issue is the lack of child-sensitive street design along routes connecting homes, schools, bus stops, and play areas, where discontinuous footpaths and unsafe crossings restrict independent mobility (Appleyard, 1981; Tonucci, 2005). Junctions occupied by informal vending and parking further reduce clear pedestrian space, forcing children onto carriageways. These conflicts arise from poor spatial organization rather than informality itself (Jacobs, 1961; Chatterjee, 2018). Limited formal play spaces also push children to use streets lacking safety support. At the same time, secondary and tertiary streets with high child movement and lower traffic, along with junctions near schools and transit nodes, present strong opportunity zones. Reframing these locations as social and play spaces forms the basis for focused design interventions.

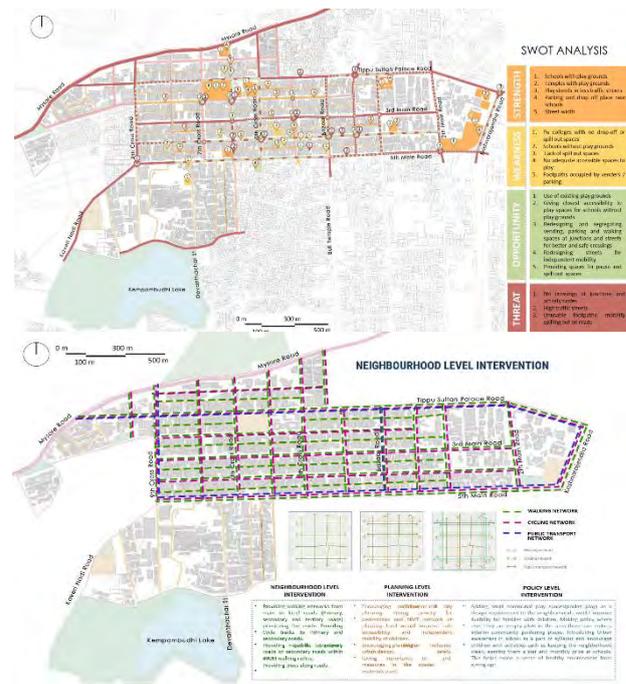


Figure 4: SWOT Analysis and Neighbourhood-Level Child-Friendly Interventions in Chamrajpete, Source: Author’s own illustration based on field analysis and design proposals (Jagdale, 2025).

Figure 4 combines a spatial SWOT analysis of child-friendly conditions with proposed neighborhood-level mobility and public space interventions, highlighting strategies to improve safety, accessibility, and everyday movement for children.

### DESIGN INTERVENTIONS – STREETS FOR CHILDHOOD

The proposed interventions translate analysis into child-centric street design strategies that prioritize everyday streets and junctions as safe, interactive public environments (Gehl, 2010). Key interventions include reorganizing junctions occupied by informal vending and parking through designated vending zones, preserving livelihoods while reclaiming safe pedestrian space (Jacobs, 1961; Chatterjee, 2018). Secondary and tertiary streets with high child movement are redesigned as low-speed pedestrian-priority corridors using traffic calming, continuous footpaths, and shared-street cues to support independent mobility (Appleyard, 1981; Tonucci, 2005). Selected streets are reconfigured as play streets, enabling informal play and social interaction. Together, these strategies demonstrate that streets designed for children function as inclusive social infrastructure, enhancing safety and livability for all users (WHO, 2020).

Figure 5 shows design interventions that activate in-between street spaces for play, social interaction, and everyday use.



Figure 5: 'Between Spaces' – Child-Friendly Street Interventions  
Source: Author's own illustration (Jagdale, 2025).

## DISCUSSION – DESIGNING FOR CHILDREN, DESIGNING FOR ALL

Findings from Chamrajpete reaffirm that **children are sensitive indicators of urban quality**. Unsafe crossings, fragmented pedestrian paths, congested junctions, and lack of play spaces reflect broader structural imbalances in street design. Addressing these conditions for children simultaneously improves accessibility and comfort for other vulnerable users, including the elderly and persons with disabilities (WHO, 2020). The study demonstrates that child-friendly design does not require large-scale redevelopment. Targeted, neighborhood-scale interventions—such as reorganizing vendor zones, pedestrian prioritization, traffic calming, and integrating play into streets—can significantly enhance everyday urban life. This supports Jacobs' (1961) argument that vibrant streets emerge from balanced coexistence of movement, commerce, and social activity. Temporal analysis further highlights the importance of flexible public spaces that accommodate school movement, play, and community use across the day (Gehl, 2010). By foregrounding children's movement and perception, the research reframes urban mobility as a social and spatial experience. The Chamrajpete model demonstrates how child-centric street design can act as a catalyst for inclusive neighborhood life (Tonucci, 2005; UNICEF, 2018).

## SCALABILITY & REPLICABILITY

The interventions proposed for Chamrajpete are intended as a scalable framework applicable to similar dense, mixed-use neighborhoods. As an older, planned, and transforming settlement, Chamrajpete serves as a representative base model for many Indian urban areas. The framework's strength lies in its incremental and low-impact approach, focusing on reconfiguring existing streets and junctions rather than introducing new infrastructure. Emphasis on secondary streets, school-adjacent junctions, and everyday movement routes ensures adaptability across varying urban morphologies. Integrating informal economic activity enhances social acceptance and long-term sustainability (Jacobs, 1961; Gehl, 2010; Bhat & Ranganathan, 2016).

## CONCLUSION

This research demonstrates that children's everyday experiences provide a powerful lens for evaluating urban livability. In Chamrajpete, risks faced by children arise from street designs prioritizing vehicular movement over social life. Mapping activity patterns and risk zones establishes a clear link between spatial configuration and children's mobility and well-being. The study argues that designing streets for children is not a specialized agenda, but a foundational strategy for inclusive and humane cities. Streets that support children's independent mobility and play become safer and more welcoming for all users (Gehl, 2010; UNICEF, 2018; WHO, 2020). By positioning Chamrajpete as a base model, the research offers a replicable framework for transforming neighborhood streets into shared spaces of collective urban life. By positioning Chamrajpete as a base model, this research contributes a replicable framework for Indian cities, demonstrating how streets for childhood can become streets for collective urban life.

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