

Spatial Justice in Contested High-Density Commercial Corridors

Batool Nisma K.M.^{1,*}, Roshni K.V.²

Abstract

Urban streets in high-density commercial areas function as crucial spaces of livelihood, mobility, and social interaction, yet these are also spaces of constant contestation. Engaging claims between street vendors, pedestrians, vehicles, and authorities often result in unequal distribution and access to space, leading to recurring conflicts and negotiations. This research explores these dynamics through the lens of 'spatial justice,' coined by Edward Soja. Grounded in the theoretical frameworks of Edward Soja, Henri Lefebvre, David Harvey, and others, the study focuses on spatial justice and fair distribution of space as the central core in micro urban spaces such as streets, plazas, and urban squares, with a descriptive analytical research method. Further, a methodological framework including a Spatial Justice Test (SJT) matrix has been developed specifically for assessing spatial justice in dense commercial streets. The findings from the primary study on T. Nagar, one of South India's most vibrant yet congested retail hubs, revealed substantial spatial inequities among diverse users, high conflict zones at peak hours, 80% of vendors reporting livelihood insecurities, and 75% of pedestrians stating accessibility barriers. Using a structured SJT framework, the research interprets everyday street conditions and user experiences into measurable justice domains, enabling identification of justice gaps and highlighting how these gaps unfairly affect vulnerable users such as women, elderly pedestrians, and street vendors within the same shared street.

Keywords: Spatial justice, high-density commercial streets, contested spaces, informal vendors, inclusivity

INTRODUCTION

High-density commercial streets in Indian cities represent some of the most vibrant yet contested forms of urban public spaces. They function simultaneously as economic corridors, social arenas, and mobility and accessibility routes, where different users, such as street vendors, retailers, pedestrians, delivery vehicles, auto, Uber drivers, and residents, compete for access within limited spatial boundaries [1]. These spaces reflect both livelihood opportunities and spatial inequalities. The constant negotiations

between formal and informal activities, such as street vending versus pedestrian flow and commerce versus circulation, often lead to spatial conflicts, inequitable distribution of the public realm, and sometimes exclusion of some users, raising questions of fairness in how urban space is distributed and governed. The rapid urban transformation of Indian cities, driven by modernization, urban beautification, and commercialization, has marginalized informal users in favor of regulated and formalized public spaces. These everyday spatial negotiations emphasize the need to understand justice not only as an economic or social concern but also as a spatial condition that determines who occupies, controls, and benefits from urban space [2].

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This study contributes a street-scale Spatial Justice Test (SJT) framework that translates theoretical principles of spatial justice into measurable parameters for high-density commercial streets.

What is Spatial Justice?

As Edward Soja [2] describes, spatial justice refers to the equitable and fair distribution of public resources and rights across space, and equitable access to public spaces, while also recognizing the spatial dimension of exclusion or inequality. It highlights that justice is essentially spatial, as it concerns who gets access and who is excluded [2].

High-Density Commercial Streets/Precincts

High-density commercial streets refer to urban retail corridors characterized by extreme pedestrian flows, concentrated commercial activity, and competing spatial demands from vendors, vehicles, and formal retail establishments. While they portray vibrant and economic vitality, they also exhibit spatial conflicts, congestion, and governance challenges [1].

Research Question

The research is framed around the following research question: “How can the concept of spatial justice be applied to understand and reimagine high-density commercial streets like T. Nagar in Chennai, where multiple/diverse users, specifically street vendors, pedestrians, and vehicles, continuously negotiate limited public space?”

LITERATURE REVIEW AND BACKGROUND STUDY

Urban Context

High-Density Commercial Streets as Contested Public Realm

Indian commercial streets are concurrently social arenas, economic corridors, and mobility channels. They accumulate and densify retail intensity, informal vending, and pedestrian and vehicular flows within limited right-of-way, producing constant coexistence and friction among diverse users [1]. Spatial transformation and traffic efficiency paradigms have often prioritized traffic flow and visual order, overshadowing slow, small-scale, and informal uses that actually generate street vitality [3, 4]. In such public corridors, who gets to flow, dwell, commercialize, and operate by claiming edges is shaped not only by design but also by management, regulation, and everyday negotiation. This places the equity of spatial allocation, rather than mere functionality, at the core of understanding these streets [2, 5].

The implication of this research is that street quality cannot merely be measured based on mobility and technical standards but should also consider space distribution and equity among different users and user experience in civic participation in street decision-making, alongside ensuring adequate comfort, safety, and accessibility for all.

Governance and Growth on Street Vending in India

Street vending has long offered essential goods and livelihoods, creating micro-economies along pedestrian corridors. Across Indian cities, vendors occupy sidewalks, road edges, and transport nodes, providing low-cost services to many people, particularly the working poor, while negotiating precarious relations with the civic authorities and public [6]. Historically governed through temporary tolerance and periodic eviction, national policy has shifted toward rights-based recognition with the National Policy on Urban Street Vendors (2009) and the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014. The act mandates Town Vending Committees (TVCs), spatial surveys, vending zones, and ID cards. However, implementation gaps persist with indefinite zoning, vendor representation, and enforcement centered on either relocation or removal rather than integration.

Simultaneously, pedestrianization and smart city upgrades have enhanced pavements, lighting, and crossings. However, they frequently take on informal characteristics unless vending is intentionally integrated through design, time regulation, or managed allocation [7]. This ongoing tension between

regulatory order, streetscape aesthetics, and livelihood equity positions dense commercial streets as critical arenas for examining procedural and distributive justice in practice.

Theoretical Perspectives on Space, Justice and Street Life

The research integrates six theoretical strands that collectively explain how streets are produced, organized, contested, and experienced, forming the basis for deriving parameters for assessing spatial justice at the street level.

Edward Soja–Spatial Justice

Edward Soja centers on spatial justice, focusing on the equitable distribution of resources, services, access, and rights across space, as well as the capacity to recognize and address injustices in urban areas [2].

Socio-spatial Dialectic

The socio-spatial dialectic means that society and space constantly shape each other. This is a two-way relationship in which society produces space, while space actively influences society. Consequently, urban arrangements can reproduce inequality unless they are redesigned deliberately with justice in mind [2].

Spatial Turn

This means bringing space as the center of analysis, not treating it as a neutral background. Therefore, it is a shift in a way of thinking that puts space at the center of justice debates, alongside society and time [2]. The focus shifts to: “Where does justice/injustice happen? Who gets access to what spaces? and who is excluded?”

A street is considered just when safety, access, and the right to occupy space are fairly distributed. It is not fair when the rules, design, or enforcement systematically exclude certain users, such as vendors, the elderly, and women. Soja insists on the need for operational tools to identify and address such inequities in urban areas and promote spatial justice.

Environmental Justice

This examines how resources, environmental burdens, and risks are distributed unevenly across space, often along lines of marginalized people [2]. Disadvantaged communities are more likely to face pollution, inadequate services, and hazardous living conditions, reflecting broader socio-spatial injustice. Likewise, this also falls on street users when coming to the accessibility, comfort and safety unequally distributed among different users.

Henri Lefebvre–Production of Space and Right to the City

Lefebvre argued that space is socially produced, functioning not as a neutral container but as an outcome of social relations, power, and everyday practices [8]. He differentiated between spatial practices (lived routines and flows), representations of space (plans and maps), and representational spaces (experiential space of users). The right to the city is the collective right to participate in the production of urban space [9].

Implications for Streets

Footpaths and street edges are constantly produced by everyday practices such as vending, resting, or lingering, as much as through formal design. Therefore, a just street should enable appropriation (use) and participation (voice) by those who engage with it daily, including street vendors, pedestrians, vehicles, and other users, rather than being determined solely by retailers, planners, and authorities.

Lefebvre frames spatial justice through the “right to the city” and the production of space. Justice is making urban space democratic, not monopolized. [9].

David Harvey–Social Justice

Harvey connects urban spatial form to political and economic structures, highlighting how urbanization frequently channels benefits to powerful actors while externalizing costs onto less privileged groups [5].

Accumulation by Dispossession

The concept of accumulation by dispossession describes how public assets and informal rights are later enclosed or privatized to enable capital accumulation [10]. Therefore, beautification, pedestrian plazas, and efforts to impose order can accidentally dispossess informal livelihoods if not explicitly designed to accommodate them. Achieving justice requires both redistributive and procedural interventions, not only aesthetic upgrades.

Jane Jacobs–Diversity, Small Blocks and “Eyes on the Street”

Jacobs argued that mixed uses, short blocks, and active frontages generate safety and vitality by providing “eyes on the street.” Fine-grained retail and constant casual surveillance make streets lively and safer.

Thus, street vending and pedestrians add vibrancy and surveillance if pedestrian permeability and frontage accessibility are maintained properly. Conversely, over-widened carriageways and long blocks disrupt the micro-scale urban ecology that sustains commerce and sociability.

Jan Gehl–Public Life: Necessary, Optional and Social

Jan Gehl describes streets as public life habitats to cater to the needs of a 5 km/h city, where people walk, look, meet, and linger [3]. Streets can support three layers of activities if the micro conditions are appropriate:

- Necessary (must do) includes commuting, deliveries, shopping;
- Optional (choice-based) includes strolling, pausing, window-shopping, and leisure activities;
- Social (co-presence/interaction) includes chatting, playing, vending; etc.

The shift from necessary to optional + social happens when the street environment satisfies all Gehl’s 12 quality criteria: protection, comfort, and enjoyment [4].

Principle

A street that moves people gets necessary activity; a street that encourages people to stay for reasons of safety, comfort, and pleasure can get optional activity and social activity with micro-commerce and interactive spaces.

- *Protection*: People must feel physically and psychologically safe—slow traffic, buffers, safe crossings, good lighting, and eyes on the street.
- *Comfort*: Continuous, barrier-free walking; places to pause and sit; step-free routes and basic amenities.
- *Enjoyment*: Microclimate (shade, trees), human-scale frontages, visual interests and opportunities [4].

Vikas Mehta–Sociable Streets, Territoriality and Management

Mehta demonstrates that sociability in streets arises from design + management + everyday practices. He identifies three forms of sociability—passive, fleeting, and enduring—and links them to territoriality, stay durations, and fine-grain convenience [1].

Small conveniences (shade, ledges, micro-seating, and food carts produce staying and social interactions), street management practices, including cleanliness, flexible delivery schedules, and vendor allocation, are equally crucial in shaping sociability as the spatial geometry itself.

The idea of spatial justice has its philosophical foundations in theories of social justice articulated by John Rawls and Amartya Sen. Rawls defines justice as fairness, emphasizing the equitable distribution of rights, opportunities, and basic goods under conditions of equality [11].

Sen extends this notion by claiming that justice should focus on the opportunities of individuals to realize their capabilities and well-being [12]. In urban contexts, they apply it to the space of justice, such as equal accessibility, participation, and recognition within the public and built environment.

Spatial justice is a fundamental or derivative notion, and it is not the necessary quality of space but how institutions treat their subjects. They identify five spatial factors: space as a factor, a target, an asset, a domain, and a precinct, indicating the need for clear concepts when applying justice principles to space. As they explain, spatial justice is achieved when institutional arrangements across spatial scales achieve principles of fair access and fair treatment [13].

A way to make abstract principles of spatial justice operational in urban planning and policy is based on measurable spatial analogs of principles of distributive justice (justice in the distribution of resources and welfare, including equality, need, merit, and entitlement). Transparency in distributing amenities and opportunities ensures ethical consistency in planning. Justice, in this sense, is pursued through explicit distributive reasoning and accountability in spatial policy [14].

Street vending configurations promote energy, safety, and inclusiveness in Ahmedabad, with vending patterns highly correlated with land use and street typologies. They argue that justice in this sense is met by recognizing informal economies as part of the public sphere. Borah [15] considers the reciprocal relationship between urban design and human behavior, identifying six dimensions—morphological, perceptual, social, visual, functional, and temporal—that shape public engagement [16].

‘A Planner’s quest for identifying spatial (in)justice in local communities’, (2023) paper by Russell M. Smith et al. [17]. develops a quantitative Spatial Justice Index (SJI) for urban census tracts in North Carolina, USA.

Drawing from Soja’s spatial justice framework, this study applies principal components analysis to variables across public and cultural goods, services, economic opportunities, and healthy environments measured by spatial density, proximity, diversity, and connectivity. The results emphasize that dense, mixed-use, well-connected developments promote higher spatial justice, offering planners a tool to identify and address geographic inequalities [17].

Research Gap

Despite the substantial theoretical grounding provided by Soja [2], Lefebvre [8, 9], and Harvey [10, 5], and despite empirical advances by Feitosa et al. [14] and Smith et al. [17] in operationalizing spatial justice, a clear gap remains in translating these principles to the scale of the everyday street in Indian high-density commercial corridors. Feitosa et al. [14] worked at the level of planning policy and institutional accountability, while Smith et al. [17] applied a quantitative SJI across census tracts using secondary spatial data. Neither framework is designed to be applied through direct, field-based observation of a single street or corridor, and neither addresses the specific negotiations between vendors, pedestrians, and vehicles that define Indian commercial streets. Deore and Lathia [16] and Borah [15] examined street level dynamics in Ahmedabad but did not propose a structured, scorable framework for assessing justice.

This study addresses this gap by developing the SJT, a street-scale, field-applicable matrix that translates the theoretical principles of spatial justice into five measurable categories and associated sub-parameters. Unlike existing frameworks, the SJT is designed to be assessed directly on-site through observation, mapping, and user response, making it usable by planners and researchers working at the

scale of an individual street or precinct rather than a city-wide dataset. This forms the primary contribution and novelty of the present study.

RESEARCH METHOD

This study follows a mixed-method approach to examine how spatial justice is manifested and negotiated within high-density commercial streets, focusing on T. Nagar, Chennai, as the case area. The research addresses the research objectives through theoretical study, literature review, field mapping, spatial observation, and user-based assessment for framework development. The study draws from theories of Lefebvre, Soja, Harvey, Jacobs, and Gehl, linking justice to everyday urban experience and the rights of all users. Primary data collection included surveys, mapping, field observations, and semi-structured interviews with vendors, pedestrians, and shop owners to understand patterns of access, uses, negotiations, and concerns in the contested public streets.

The study is limited by its convenience-based sample of 58 respondents, its focus on two street segments rather than the entire precinct, and single researcher scoring, which introduces some subjectivity despite a fixed rubric.

The descriptive analytical research method was adopted to assess spatial justice dynamics within T. Nagar's commercial corridors. Central to the methodology is the street SJT matrix, an evaluative framework through five measurable parameters tailored for high-density commercial streets, derived from the literature and theoretical framework.

These parameters translate abstract justice principles into five spatial justice categories; each associated with a specific justice lens:

- Right to access and inclusion
- Right to visibility and coexistence
- Right to equitable participation
- Right to quality and safety for all
- Right to equitable infrastructure and mobility

Each justice lens is operationalized through measurable urban design parameters and sub-parameters, allowing spatial justice to be assessed empirically on-site (Table 1).

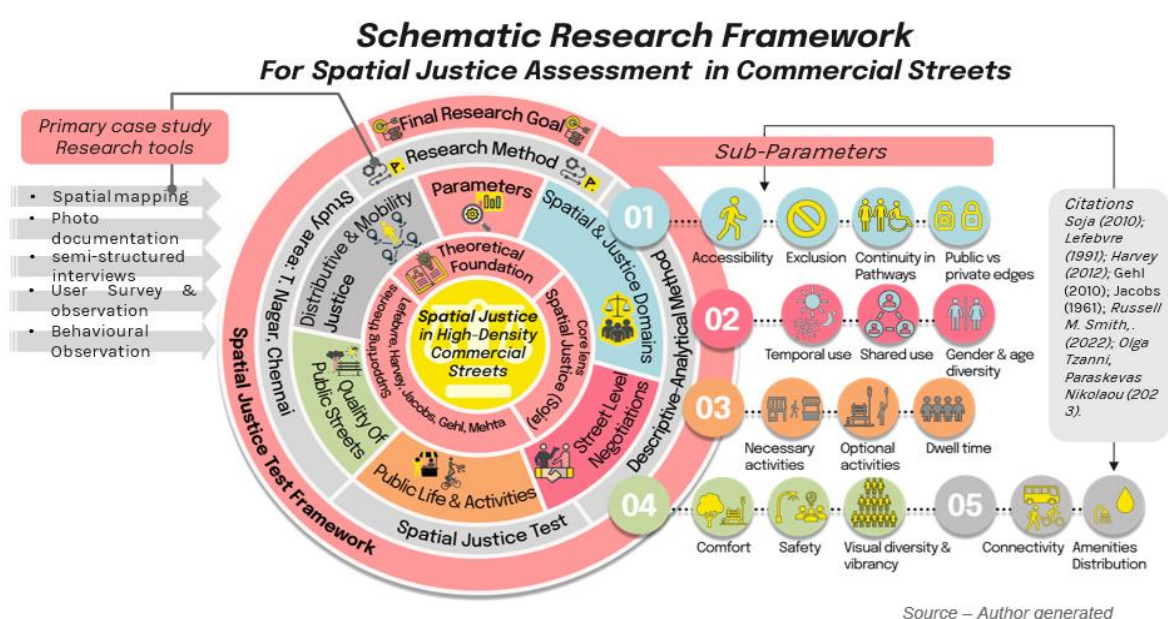


Figure 1. Research framework.

Table 1. Synthesis of parameters.

Spatial justice category	Sub-parameters	Measurable indicators
1. Spatial and justice domains [2, 8, 5]	1. Accessibility of streets and crossings 2. Presence of exclusionary practices/restrictions 3. Continuity of pedestrian pathways 4. Public vs private edge usage	Number and spacing of pedestrian crossings “No vending”, “no parking” signs, or restricted zones limiting certain users. Presence of Continuous walkways—no gaps/obstructions/barrier free Percentage of street edge open for public movement vs privatized edges
2. Street level negotiations [2, 8]	1. Temporal use of space (day/night/festive variation) 2. Shared use among vendors, pedestrians, and vehicles. Gender and age diversity of users	User mapping across time Ratio of vending area to pedestrian and vehicular area gender and age impact among vendors and pedestrians
3. Public life and activities [3, 4]	1. Presence of necessary activities (shopping, vending) 2. Opportunities for optional and social activities. Dwell time and interaction density	Count of shops, stalls, and vending hotspots Number of shaded or sitting areas encouraging stay Duration people spend in different street segments and major crowd accumulation points
4. Quality of public streets [1, 3, 4]	1. Comfort (shade, seating, sanitation) 2. Safety (streetlights, visibility); visual diversity and vibrancy	Quality of pedestrian and vendor experience Number of active streetlights, visibility factors Variety of open and active shopfronts, signage, vendor stalls along the street, diversity of people
5. Distributive and mobility justice [17, 18]	1. Connectivity to public transport and key facilities. Even distribution of basic amenities	Distance or walking time to nearest bus stops, stations Availability and proximity of basic amenities (toilets, dustbins, drinking water, seating) across street segments for all users

The above research framework (Figure 1) is used to identify how everyday spatial practices, negotiations, and interactions among diverse users shape the lived experience of justice in contested commercial streets, providing direction for socially just and equitable urban streets.

Justification of the Five SJT Parameters

The five SJT categories and parameters, as elaborated in Table 1, were derived through a synthesis of the six theoretical strands discussed in the literature review. Spatial and justice domains draw primarily from Soja’s [2] concept of equitable distribution and Lefebvre’s [8, 9] right to the city. Street Level Negotiations draws from Harvey’s [5] account of contested urban space and Soja’s socio-spatial dialectic [2]. Public life and activities are grounded in Gehl’s [4] classification of necessary, optional, and social activities. Quality of Public Streets draws from Gehl [4], Jacobs [3], and Mehta [1], particularly Mehta’s emphasis on comfort, safety, and sociability. Distributive and mobility justice are grounded in the distributive justice principles of Rawls [11] and Sen [12], as applied to spatial access and infrastructure.

Each category was cross-checked against the empirical frameworks proposed by Feitosa et al. [14] and Smith et al. [17] to ensure that the parameters remained measurable and field-applicable rather than purely theoretical. The parameters were further refined through preliminary site visits to T. Nagar, where categories that could not be observed or scored consistently on-site were revised or merged. This process of literature derivation followed by field-based refinement forms the basis of the framework’s content validity.

DATA COLLECTION

Case Area: T. Nagar, Chennai

The site area is located in T. Nagar, Chennai, Tamil Nadu, one of the city’s prominent high-density commercial districts (Figure 1). This study focuses specifically on the North Usman Road stretch and Ranganathan Street, two of the most prominent and intensively active commercial corridors in the city.

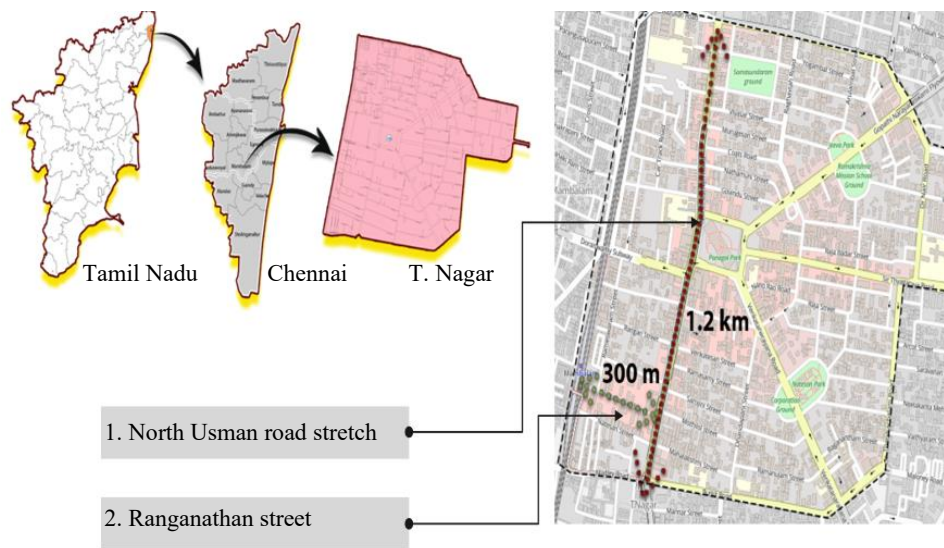


Figure 2. Site area.

T. Nagar functions as a major retail hub, attracting diverse user groups, including residents, commuters, shoppers, street vendors, and visitors from across the city and region. North Usman Road serves as a key arterial street with high traffic volumes, formal retail establishments, and significant pedestrian movement. In contrast, Ranganathan Street operates as a predominantly pedestrian-oriented narrow street, known for its dense concentration of retail shops, informal vending, and extremely high footfall, especially during peak hours and festive seasons. Frequent negotiations between diverse users make this an appropriate and critical site for examining the production, experience, and contestation of spatial justice in high-density commercial streets, enabling a detailed assessment of spatial justice through the application of the SJT framework.

The area is structured around key arterial roads: N. Usman Road, Pondy Bazaar, and Thyagaraya Road, lined with large textile and jewelry showrooms, informal vending clusters, and small eateries. Its mixed-use character produces overlapping public and private domains where vendors, pedestrians, and vehicles often negotiate and contest the space. The continuous retail frontage with high footfalls and narrow streets, such as Ranganathan Street, results in a vibrant yet congested urban fabric.

Diverse User Group

- Street vendors—thousands of informal vendors occupying edges, shopfront spillovers, and sidewalks
- Pedestrians and delivery vehicles
- Formal commercial/retail establishments
- Workers and residents
- Auto-rickshaws

Current Situation and Problems Statement

- Vendors—usually depend on footpaths/sidewalks for their livelihoods.
- Pedestrians need the same space for movement and accessibility.
- Auto stands occupy the same edge adjacent to the pedestrian pathway.
- Most of the research/projects focus on traffic, vending regulation, or vendor relocation.

Only a few studies examine who gains access and who is excluded, and how governance reinforces inequalities. Street space is not shared fairly; pedestrians lack safe space, while vendors lose their space, and current solutions do not resolve these conflicts, as shown in Figure 3.



Figure 3. Image showing Ranganathan Street with a bustling crowd and vibrancy.

Sample Size

The sample size for the primary data collection was 58 respondents, comprising 33 pedestrians, 20 street vendors, two auto-rickshaw drivers, one traffic police personnel, and two local shop owners. The sample represents key users actively engaged in the everyday negotiation of space and livelihood along N. Usman Road and Ranganathan Street, which helps in understanding diverse user experiences, concerns, and conflicts.

Respondents were selected through convenience and purposive sampling, targeting users actively present and engaged in everyday activities along the two street segments during data collection. Given the descriptive analytical and field-based nature of this study, a sample of 58 respondents was considered sufficient to capture a representative range of user experiences across the key user groups present on-site, particularly pedestrians and vendors who form the largest and most directly affected user categories.

ANALYSIS

The vending distribution and density mapping revealed a high concentration of street vending activity along Ranganathan Street and at key nodes along N. Usman Road (Figure 4), particularly under the flyover and along wider footpath edges (Figure 5). Vendors were observed in three dominant spatial patterns: clustered vending under the flyover (Figure 6), temporary vending structures (Figure 8) along footpath edges, and scattered vending (Figure 9) along pedestrian pathways as mapped in Figure 7.

High-density vending hotspots coincide with areas of intense pedestrian flow, transit access points, and commercial frontages, expressing a strong relationship between pedestrian movement, commercial frontages, and informal livelihoods. While vending spots contribute to the vibrancy and livelihood generation, their uneven spatial distribution also intensifies conflicts related to pedestrian mobility.

These patterns highlight the everyday negotiation of space and underscore the role of informal economies in shaping spatial justice dynamics within the commercial street environment.



The SJT employs a three-point system to evaluate the degree of spatial justice across identified parameters and sub-parameters. Each sub-parameter is assessed based on on-site observation, mapping, and user responses and is assigned a score accordingly.

Indicates a severe lack of justice in spatial conditions, including restricted access, unsafe and discontinuous pedestrian movement, or inequitable distribution of space and amenities.

Represents partially adequate conditions where access and use are possible, but justice is present in an uneven distribution and has gaps in some aspects.

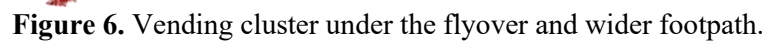
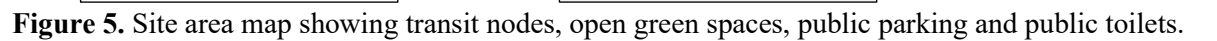




Figure 7. Spatial concentration of informal vending and pedestrian conflict zones.



Figure 8. Temporary vending structures along footpath edges.



Figure 9. Scattered vending along footpath edges.

Table 2. SJT matrix evaluation of T. Nagar streets.

1 Spatial and justice domains	Score (1–3)
Accessibility and crossings—Number, spacing, and safety of pedestrian crossings	2
Exclusionary practices—Signage, fencing, displacement	3
Continuity of pathways—Barrier-free walkways, maintenance	1
Public vs private edge usage—Percentage of street edge open to public	3
2 Street level negotiations	
Temporal use of space—Day/night/activity variation	2
Shared use—Ratio of vending/pedestrian/vehicular area	2
Gender and age diversity—Representation of diverse users	3
3 Public life and activities	
Necessary activities—Shops, stalls, vending density	3
Optional/social activities—Presence of interaction zones	1
Dwell time and interaction—Duration and intensity of use	2
4 Quality of public streets	
Comfort—Shade, seating, sanitation	1
Safety—Lighting, visibility, traffic safety	1
Visual diversity—Vibrancy, active edges, mixed users	3
5 Distributive and mobility justice	
Connectivity to public transport—Walking time to bus stops	3
Even distribution of amenities—Availability across segments	1

Just

Reflects inclusive, equitably accessible spatial conditions that support safe movement, public use, and shared space.

This approach ensures comparative assessment across street segments and parameters, translating qualitative spatial experience into a structured and measurable justice evaluation.

The following scoring within the SJT matrix was carried out by the author through triangulation of survey responses, interview insights, on-site observation, and comparative case analysis (Table 2).

The spatial and justice domain category records a moderate justice score of 2.25, interpreted through the right to access and inclusion, indicating partial openness but uneven pedestrian equity. Although public edge usage is high and supports vibrant economic activity, gaps exist in safe and continuous pedestrian movement, as clearly captured in Figure 10.

The street level negotiation category records a moderate justice score of 2.33, interpreted through the right to visibility and coexistence, indicating active but contested sharing of street space (Figures 11 and 12).

The public life and activities category records an overall justice score of 2.0, interpreted through the right to equitable participation, indicating an active yet functionally limited public realm.

The quality of public streets category shows a low justice score of 1.67, interpreted through the right to quality and safety, indicating significant deficiencies in everyday street conditions. Overall, the streets, visual and spatial quality, and vitality are not supported by basic comfort and safety infrastructure, undermining equitable public space experience.

The distributive and mobility justice category records a moderate score of 2.0, interpreted through the right to equitable infrastructure and mobility. Although connectivity to public transport scores as just, the area lacks even distribution of amenities, scoring unjust 1. This imbalance shows how mobility access is not matched by equitable infrastructure provision.

The street segments taken for study show a moderate level of spatial justice with many supportive conditions but still have gaps in quality and equitable space allocation and other parameters.



Figure 10. Ranganathan street space negotiation and diversity of shoppers.



Figure 11. Service road shared by multiple users. N. Usman Road.

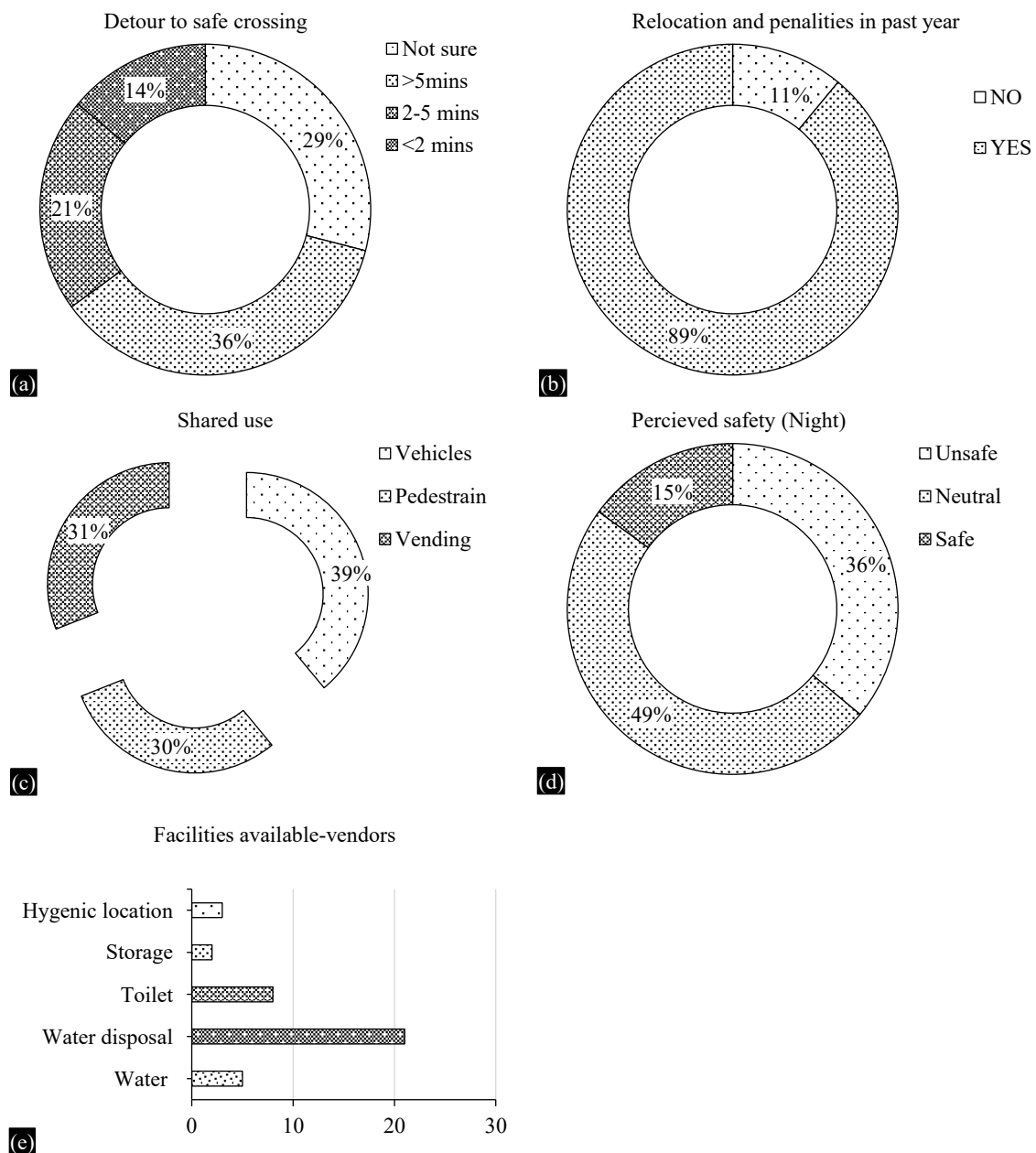


Figure 12. (a)–(e) Charts showing the survey and interview responses.

Table 3. Mean SJT score for each of the five categories.

Category	Mean score (out of 3)
Spatial and justice domains	2.25
Street level negotiations	2.33
Public life and activities	2.00
Quality of public streets	1.67
Distributive and mobility justice	2.00

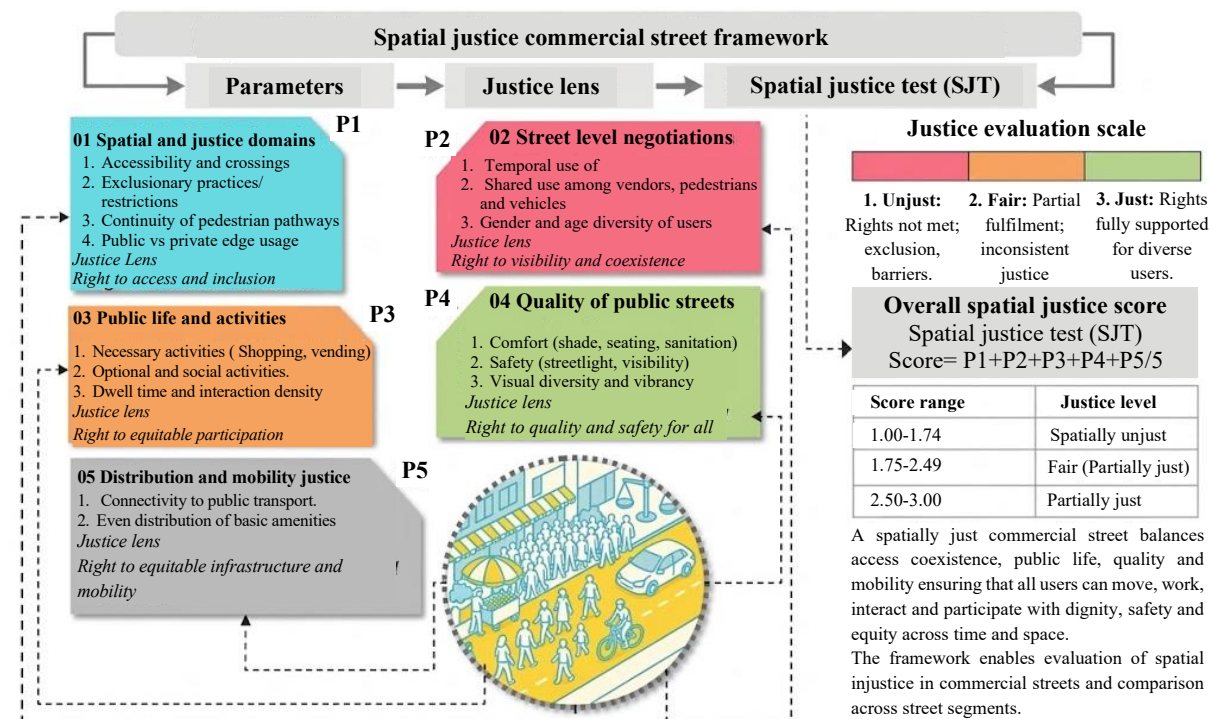
**Figure 13.** Spatial Justice Test (SJT) framework for dense commercial streets.

Table 3 summarizes the mean SJT score for each of the five categories, calculated from the sub-parameter scores presented in Table 2.

Overall Spatial Justice Score: 2.03/3-Fair (Partially Just)

The overall SJT score of 2.03 out of 3 represents the mean of these five category scores. The standard deviation across categories is approximately 0.26, indicating relatively consistent, moderate levels of justice across categories, with quality of public streets scoring notably lower than the others. This is further supported by the survey findings, where 80% of vendors reported livelihood insecurity, and 75% of pedestrians reported accessibility barriers, both of which align closely with the low scores recorded for comfort, safety, and continuity of pathways within the quality of public streets and Spatial and Justice Domains categories. This indicates that while the commercial streets in T. Nagar exhibit strong activity, accessibility, and economic vibrancy, spatial justice is unevenly realized across parameters.

Validity of Survey and Scoring Methodology

To ensure reliability, each sub-parameter was scored against the fixed three-point rubric described above, with defined criteria for unjust, fair, and just conditions established prior to fieldwork. This reduced the scope for inconsistent scoring across street segments and site visits. Scoring was carried out by a single researcher, which is acknowledged as a limitation; however, each score was cross-checked through triangulation of survey responses, semi-structured interview insights, and repeated on-site observation across multiple visits, rather than relying on a single data source.

The content validity of the SJT framework (Figure 13) is supported by its direct derivation from established theoretical positions [1–5, 8, 11, 12]. Construct validity was strengthened by ensuring that each sub-parameter corresponded to an observable, measurable indicator rather than an abstract or subjective judgment, as shown in the measurable indicator's column of the framework table (Table 1).

Issues Identified

1. Vendor–pedestrian–vehicle conflicts are frequent.
2. Elderly people and women report difficulty navigating crowd pressure.
3. Blocked footpaths.
4. Auto drivers negotiate parking spots informally.
5. No designated social or interaction spaces.
6. Unsafe perception at night.
7. High-density vending under flyover vs scattered vending on footpaths creates imbalance.
8. No formal recognition or vending space allocation.

Overall, the findings underscore the need for design and governance interventions that improve quality, safety, and dignity without undermining commercial activity.

Comparison with Similar National and International Studies

When compared with existing empirical work on spatial justice, the moderate overall score recorded for T. Nagar (2.03 out of 3) reflects patterns similar to those observed by Deore and Lathia [16] in Ahmedabad, where street vending configurations were found to enhance vibrancy and inclusivity even as formal infrastructure remained uneven. This suggests that the coexistence of high activity and infrastructural gaps identified in this study is not unique to T. Nagar but may be a broader characteristic of Indian high-density commercial streets.

Internationally, Smith et al.'s [17] SJI for census tracts in North Carolina found that dense, mixed-use, and well-connected areas tend to score higher on spatial justice, a finding broadly consistent with this study, where categories linked to commercial density and public transport connectivity scored comparatively higher than categories linked to comfort and safety infrastructure. However, the SJT framework differs methodologically from Smith et al.'s approach, relying on direct field observation and user response rather than secondary spatial data, which allows it to capture everyday negotiations and conflicts that a purely quantitative, tract-level index cannot.

CONCLUSIONS

This research outlines the examination of how spatial injustice is produced, negotiated, and experienced within high-density commercial streets, where competing demands for movement, safety, public life, and livelihoods converge within limited urban space. The study demonstrates that high-density commercial streets, such as T. Nagar, Chennai, often function as fair environments where access, activity, and vibrancy coexist with gaps in safety, inclusive design, and quality.

By developing and applying the SJT framework, this study offers a structured, field-based method for translating everyday street conditions into measurable justice outcomes, revealing where and how spatial justice is unevenly experienced across different user groups.

Importantly, the research reveals that spatial injustice does not arise solely from the absence of infrastructure but from how space is regulated, allocated, and negotiated. Exclusionary practices, lack of sheltered vending zones, lack of quality in amenities, and poorly managed interfaces between pedestrians, vehicles, and vendors contribute to inequities in daily life. In parallel, the presence of informal negotiations, adaptive use of space, and vibrant street economies grants us opportunities for more just and inclusive street design.

Practical Implications for Planners and Policymakers

This SJT framework equips designers and planners with a diagnostic and decision-making tool to identify justice deficits and prioritize interventions aligned with a street justice lens. Specifically, low-scoring parameters such as even distribution of amenities and continuity of pedestrian pathways can directly inform street redesign audits and detailed project reports prepared by municipal authorities. The framework can also support TVCs constituted under the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014, by providing an evidence-based method to identify where vending zones, pedestrian infrastructure, and amenities should be allocated to reduce conflict rather than displace informal livelihoods. For policymakers, the SJT offers a replicable, field-based method to move beyond traffic- and beautification-focused street upgrades toward interventions that explicitly account for equity among all user groups.

While this study focused specifically on T. Nagar, the SJT framework is designed to be adaptable to other high-density commercial corridors facing similar patterns of contestation between formal and informal users, such as Chandni Chowk in Delhi, Commercial Street in Bangalore, and Crawford Market in Mumbai. Since the five categories are derived from broadly applicable theoretical principles rather than context-specific conditions, the framework could also be relevant to informal-dominant commercial streets in other South Asian or Global South cities facing comparable governance and infrastructure challenges. However, the specific sub-parameters and measurable indicators may require calibration to local vending patterns, regulatory context, and street typology before the framework is applied elsewhere.

Achieving spatial justice in high-density commercial streets in today's world requires not only physical redesign but also inclusive governance, recognition of informal livelihoods, and a commitment to inclusive street design as public spaces that serve all users equitably with dignity.

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