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Barcelona. Livable Cities

The Urban Experience: From Social Policy to Design

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INTRODUCTION

Barcelona. Livable Cities

The Urban Experience: From Social Policy to Design

Barcelona is seen as one of the world's most livable cities. Ranked particularly high for its renowned cultural scene, lifestyle, architecture, outdoor parks and beaches, it is also Europe's third most progressive city for start-ups. Supporting alternative modes of work through its Workation program, it is also attracting entrepreneurs with the digital nomad's visa. However, it is also a city that suffers from unaffordable housing, uncontrolled tourism, noise pollution and over density. It has a high cost of living, has experienced gentrification and has pockets of social deprivation. In such contradictions and paradoxes, it is a microcosm of cities the world over – a place where notions of 'livability' are far from consistent.

How Barcelona, or any other city, responds to this situation is complicated, and often contested. For architects and urbanists, affordable housing may be a question of planning. For sociologists, improvements to the built city are community concerns. For health professionals, air pollution relates to public wellbeing. For environmental activists, urban density is a resource issue. For cultural theorists, the arts and tourism are matters of heritage. For the business sector they are issues of finance. For engineers, transport may be a question of infrastructure. For residents, it's a question of equity and access.

Using the city of Barcelona as an example then, the papers in these conference proceedings explore how cross-disciplinary readings of cities the world over shed light on what makes the places we inhabit 'livable'. They encourage debates around community participation; research projects on design and planning; investigations into urban infrastructure and case studies on smart cities. They offer critiques on accessibility and social justice, examinations of local and migrant cultures, and studies of transport, urban heritage, public health…. and more. This particular volume focuses on questions of art, community, social and health-wellbeing issues.

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DYNAMIC LIVEABILITY: INTEGRATING CULTURAL HERITAGE AND MODERN INFRASTRUCTURE IN URBAN DESIGN

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INTRODUCTION

Urban liveability has become one of the most significant concerns in planning discourse in the twenty-first century. As rapid urbanisation reshapes landscapes, cities must grapple with how to sustain environments that are not only efficient and technologically advanced but also socially inclusive, culturally vibrant, and environmentally resilient. Global policy frameworks such as the UN-Habitat "New Urban Agenda" emphasise that liveability encompasses more than physical infrastructure; it includes social cohesion, cultural heritage, and the quality of daily life.[1] Yet dominant global indices of liveability—such as the Economist Intelligence Unit (EIU) Global Liveability Index and the Mercer Quality of Living Survey—tend to privilege infrastructural provision, healthcare, and security, often underplaying intangible characteristics like cultural vitality and heritage.[2]

Scholars such as Henri Lefebvre have argued that the "right to the city" goes beyond access to services; it entails the ability of inhabitants to shape, preserve, and engage with the symbolic meanings of urban space.[3] Similarly, Jane Jacobs' critique of mid-twentieth-century planning reminds us that the vibrancy of a city lies in its dense networks of street life, informal exchange, and human interaction.[4] In this sense, liveability is both tangible and intangible—a dynamic balance between physical improvements and the preservation of socio-cultural vibrancy.

This study argues that urban liveability must be conceptualised as a dynamic phenomenon, shaped simultaneously by technological and infrastructural advancement on the one hand, and cultural heritage, community life, and inclusivity on the other. By examining Delhi's evolution, this research seeks to address a central question: How can cities integrate cultural heritage and modern infrastructure in ways that enhance, rather than diminish, liveability? By foregrounding the intangible dimensions of urban life, it challenges technocratic notions of progress and advocates for cities that are not only efficient but also meaningful, rooted, and resilient.

CONCEPTUAL FRAMEWORK: UNDERSTANDING LIVEABILITY

In mainstream planning, liveability often denotes the availability of infrastructure, mobility, and services.[5] However, sociologists, anthropologists, and geographers have emphasised that liveability must also capture the **quality of everyday life**—the textures of social interaction, memory, identity, and cultural expression.[6]

Theoretical Perspectives

Henri Lefebvre's influential formulation of the **"right to the city"** situates urban life as a space of both material and symbolic production. For Lefebvre, urban residents are not passive recipients of infrastructure but active producers of meaning and space.[7] This idea has been expanded in debates around urban citizenship, where access to cultural heritage, festivals, and public rituals is seen as integral to belonging. Richard Florida's notion of the **"creative class"** underscores how cultural vibrancy attracts talent and drives economic growth, linking liveability to competitiveness.[8] Jane Jacobs' enduring insights emphasise the importance of **diverse, mixed-use neighbourhoods** where street life and informal encounters foster safety and community.[9] These theoretical strands converge on a key point: **cities thrive when they balance tangible infrastructure with intangible cultural life**.

Intangible Cultural Heritage

UNESCO has advanced the idea of **intangible cultural heritage** (ICH), which includes traditions, performing arts, rituals, and culinary practices.[10] Applied to cities, this concept suggests that urban liveability cannot be measured solely by roads or housing stock but must also value **festivals, crafts, cuisines, and everyday cultural practices** that shape identity and cohesion.

Liveability Indices and Their Limits

Global rankings such as the EIU Global Liveability Index or Mercer's Quality of Living Survey have shaped popular and policy understandings of what makes a city liveable. These indices usually evaluate stability, healthcare, environment, education, and infrastructure.[11] Yet they have been criticised for reflecting the priorities of expatriates and global investors, neglecting inequalities, informal settlements, and cultural distinctiveness.[12]

Towards a Holistic Framework

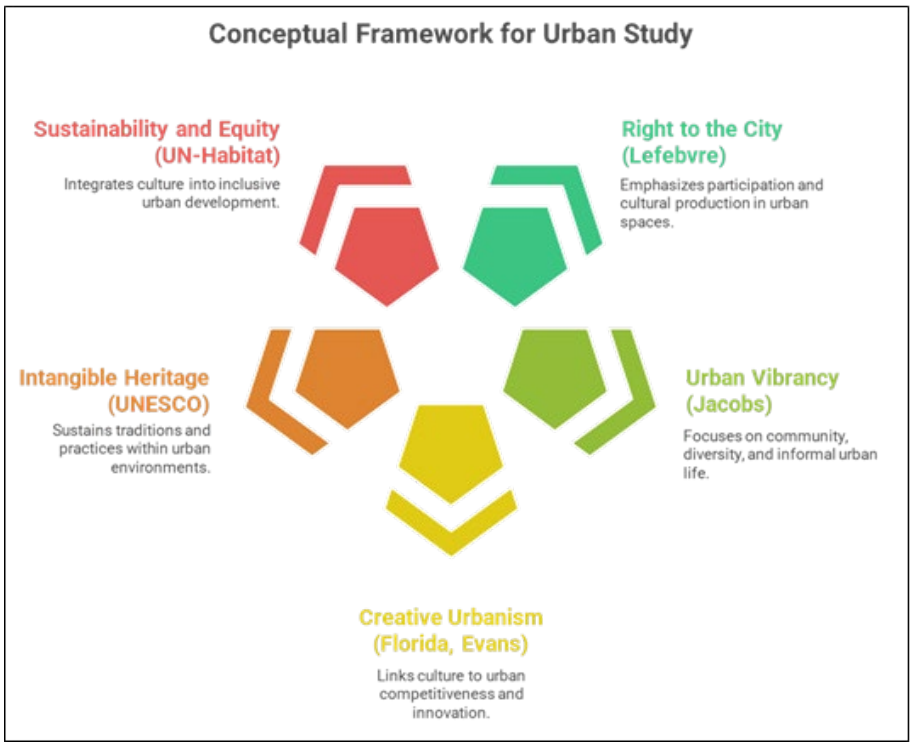

Figure 1. Conceptual framework for Urban Study

Recent scholarship calls for a **holistic understanding** of liveability, linking sustainability, inclusivity, and cultural vitality. UN-Habitat stresses that the sustainable city is one where residents can "lead dignified, productive, and creative lives."[13] Scholars such as Evans argue for **cultural planning**, integrating heritage and creativity into development strategies.[14]

DELHI AS A LIVING CITY—HERITAGE, MODERNITY, AND URBAN GROWTH

Delhi epitomises the paradoxes of urban liveability in the Global South: a city of immense cultural richness, layered histories, and rapid modernisation, yet also facing acute environmental, social, and infrastructural challenges.

Historical Continuities and Urban Fabric

Delhi's liveability is inseparable from its history. The walled city of **Shahjahanabad**, built in the seventeenth century, was not only a Mughal capital but also a cultural hub where markets, mosques, havelis, and caravanserais created a dense urban fabric.[15] While many havelis have declined, spaces like **Chandni Chowk** still function as vibrant markets, sustaining culinary traditions and crafts. Scholars note that this continuity of activity, even amidst congestion, gives Delhi a distinct sense of urban vitality.[16]

Colonial interventions added another layer. The creation of **Connaught Place** (1930s) as a commercial hub introduced a radial design reflecting British planning ideals. Today, Connaught Place

remains a symbolic centre, integrating corporate offices, cinemas, and cafes.[17] Post-independence, the expansion of **New Delhi** as the political capital further shaped the city's identity, embedding monumental avenues alongside administrative complexes.

Cultural Diversity and Festivals

Delhi's social fabric is marked by extraordinary diversity. Festivals such as **Diwali, Eid, Holi, and Christmas** are celebrated at city-wide scales, transforming streets and public spaces into sites of collective joy.[18] The city's culinary scene—from Mughlai cuisine in Old Delhi to cosmopolitan eateries in South Delhi—offers another layer of intangible liveability.[19]

Infrastructure and Mobility

Infrastructural improvements, particularly the **Delhi Metro**, have been transformative, launched in 2002, the metro now spans over 390 kilometres.[20] Scholars argue that its success lies in high-quality design, efficiency, and affordability, qualities rarely seen in Indian public transport.[21]

Other infrastructural projects include the **Indira Gandhi International Airport**, upgraded for the 2010 Commonwealth Games, and expanded expressways like the Delhi-Meerut and Delhi-Gurgaon corridors.[22] Yet these developments often coexist with infrastructural deficits. The **Yamuna River**, for instance, remains ecologically degraded despite multiple clean-up efforts.[23] Thus, Delhi demonstrates how infrastructure can enhance liveability but also highlights the fragility of ecological systems under pressure.

Public Spaces and Green Infrastructure

Despite its congestion, Delhi hosts significant public and green spaces. The **Lodhi Gardens**, combining Mughal tombs with landscaped greenery, serve as a model of heritage-integrated urban space where residents walk, jog, and socialise.[24] The **India Gate lawns** are another democratic space, where citizens gather for leisure and protests alike.[25] Initiatives such as the **Lodhi Art District** show how cultural interventions can revitalise neighbourhoods and foster community engagement.[26] These examples illustrate how liveability emerges not only from planned parks but also from creative adaptations of urban fabric.

Urban Growth and Peripheries

Delhi's liveability is also shaped by its rapid metropolitan expansion. The rise of **Gurgaon and Noida** as satellite cities has reconfigured the National Capital Region (NCR), offering gated communities, IT hubs, and malls.[27] While these areas provide modern amenities, they have also produced socio-spatial fragmentation, with sharp divides between elite enclaves and informal settlements.[28] Migrant workers, essential to Delhi's economy, often live in precarious housing lacking basic services.[29] This uneven distribution of liveability underscores the need to view Delhi not as a homogeneous entity but as a patchwork of contrasting experiences.

Challenges and Resilience

The city often ranks among the most polluted in the world, with hazardous air quality levels affecting health and liveability.[30] Traffic congestion, despite metro expansion, continues to strain daily life.[31] Yet residents exhibit remarkable resilience which points to a crucial insight: liveability in Delhi is less about perfection and more about the **capacity of cultural and social systems to absorb shocks** and maintain vitality.

BALANCING DEVELOPMENT AND HERITAGE PRESERVATION

Delhi's Heritage under Pressure

Historic neighbourhoods such as **Shahjahanabad** and areas around the **Yamuna River** face pressures from congestion, commercialisation, and ecological degradation.[32] Many historic **havelis** in Old Delhi have decayed or been replaced by utilitarian structures, eroding the built heritage that once defined the city's cultural richness.[33] The recent **Chandni Chowk pedestrianisation project** represents a mixed response: while it enhances walkability and reduces traffic, critics argue that over-standardisation risks sanitising the organic vibrancy of the area.[34] Similarly, riverfront "beautification" schemes have often prioritised spectacle over ecological and cultural sensitivity, displacing informal settlements and ritual practices associated with the Yamuna.[35]

Comparative Case Studies

In **Seoul**, the restoration of the **Cheonggyecheon stream** in the early 2000s is often cited as a successful example of integrating ecological revitalisation with urban amenity.[36] By removing an elevated highway and creating a pedestrian-friendly corridor, Seoul reconnected the city with its natural and cultural past. Yet scholars caution that the project also displaced low-income populations, illustrating the trade-offs inherent in heritage-led renewal.[37]

In **Istanbul**, rapid real estate development and tourism pressures have altered neighbourhood life, leading UNESCO to warn of risks to the city's World Heritage status.[38] Similar dynamics appear in **Barcelona**, where efforts to revitalise the Gothic Quarter have boosted tourism and global image but also triggered **gentrification** and loss of local community life.[39] These cases show that while heritage can be a driver of liveability, mismanaged preservation can lead to social exclusion.

The Delhi case suggests that **heritage-sensitive urban design** must avoid two extremes: neglect (leading to decay) and over-commercialisation (leading to displacement or loss of authenticity). Policies should aim at **adaptive reuse**, integrating old structures into contemporary functions while safeguarding community use.

COMMUNITY AND EQUITY IN URBAN LIVEABILITY

In Delhi, the coexistence of elite enclaves, middle-class colonies, and informal settlements reveals stark inequalities in liveability. Yet these communities also demonstrate how grassroots agency contributes to resilience and inclusion.

Resident Welfare Associations and Middle-Class Agency

Delhi's middle-class colonies are often governed by **Resident Welfare Associations (RWAs)**, which manage waste collection, security, and neighbourhood aesthetics.[40] While RWAs contribute to improving local liveability, scholars argue that they also reinforce exclusivity by erecting gates, restricting street vendors, and marginalising informal workers.[41] This reflects the dual nature of community engagement: it can empower citizens but also entrench socio-spatial divides.

NGOs and Civil Society

Groups like the **Hazards Centre** and **Centre for Science and Environment (CSE)** advocate for environmental justice, housing rights, and inclusive planning.[42] Campaigns for clean air, for example, have mobilised citizens across class lines, pressuring governments to implement pollution controls and adopt measures such as odd-even traffic rationing.[43] These interventions demonstrate how organised community engagement can shape urban policy in ways that enhance liveability for all.

Informal Communities and Resilience

The largest share of Delhi's population, however, resides in **slums, resettlement colonies, and unauthorised neighbourhoods** which often lack formal recognition and basic services, yet they sustaining vibrant social networks that provide support in times of crisis.[44] During the COVID-19

pandemic, local community kitchens and mutual aid initiatives in informal settlements exemplified how grassroots solidarity can mitigate urban vulnerability.[45] Scholars argue that recognising these forms of resilience is crucial for a more inclusive definition of liveability.

Towards Socially Inclusive Liveability

Policies must actively include marginalised groups, enabling them to participate in shaping urban futures. Practices such as **participatory budgeting**, pioneered in cities like Porto Alegre, Brazil, offer models for engaging diverse residents in decision-making.[46] For Delhi, embedding equity into urban planning means recognising that liveability is not only about spaces and infrastructure but also about **who has the right to access, shape, and benefit from the city**.

TOWARDS A HOLISTIC FRAMEWORK FOR DYNAMIC LIVEABILITY

The "Dynamic Livability" Model

Rather than privileging one pillar, the model posits that urban liveability thrives when these dimensions evolve **in dialogue**, balancing short-term needs with long-term cultural and ecological sustainability.[47]

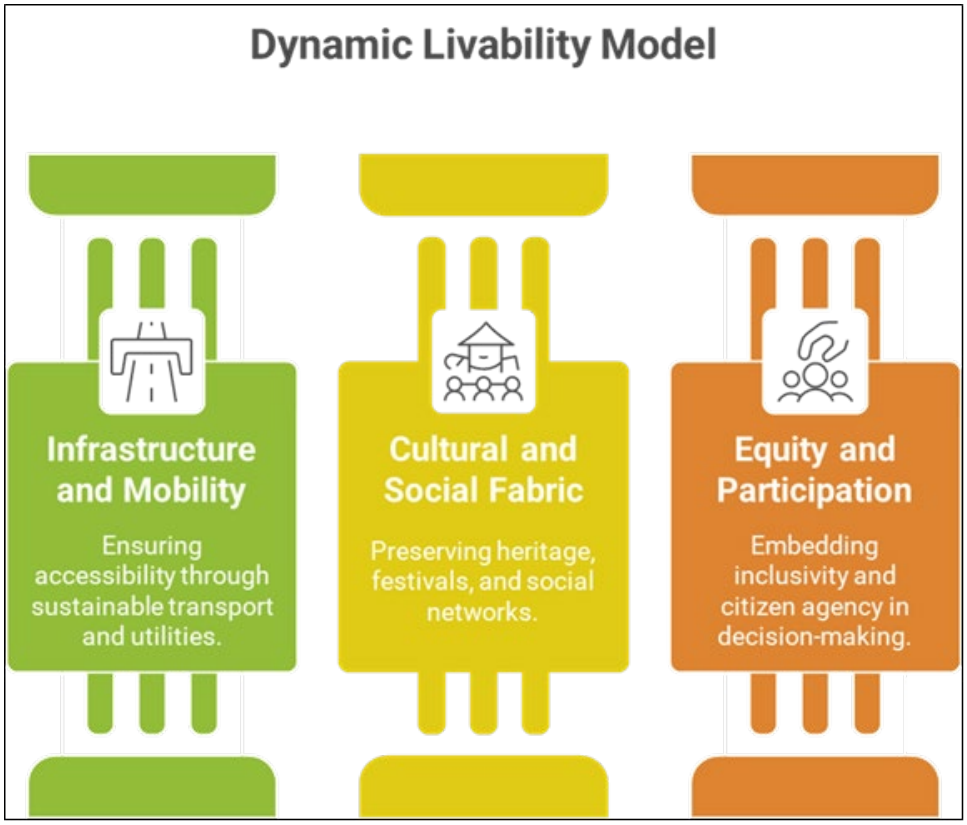

Figure 2. Pillars of Dynamic Livability Model

Policy Tools and Strategies

Globally, urban planners have developed instruments to operationalize integrative frameworks. The **UNESCO Historic Urban Landscape (HUL) approach** encourages planners to integrate cultural heritage into broader urban development strategies.[48] Similarly, the **New Urban Agenda**, adopted at Habitat III, advocates for inclusive, participatory, and culturally sensitive urbanisation.[49]

The success of the **Seoul Cheonggyecheon project** and **Curitiba's transport-oriented planning** demonstrate how ecological, cultural, and infrastructural considerations can be harmonised.[50] For Delhi, adapting such tools might involve embedding cultural mapping within transport planning or ensuring slum redevelopment includes provisions for sustaining social networks. By drawing lessons from both global best practices and local innovations the city has the opportunity to pioneer a planning framework that reconciles growth with cultural vitality. This requires not only political will but also institutional reforms that place liveability, rather than mere growth, at the centre of urban governance.[51]

DELHI AS A LIVING LABORATORY

The Multilayered Urban Fabric

Delhi's built environment is a palimpsest of Mughal, colonial, and post-independence planning legacies. The **Red Fort, Lutyens' Delhi, and Connaught Place** illustrate successive attempts to shape the city's identity.[52] Yet each layer also created socio-spatial exclusions, from colonial segregation to the displacement linked with twentieth-century development schemes.[53] Contemporary master plans (such as MPD-2041) seek to integrate these legacies while preparing for future growth, but they often remain top-down and technocratic, leaving gaps in community participation.[54]

Mobility and Connectivity as Experiments

Widely regarded as one of India's most successful public transport projects, it has expanded accessibility, reduced commute times, and set new standards for urban mobility.[55] Yet issues of last-mile connectivity and affordability mean that benefits are unevenly distributed. Informal transport modes such as auto-rickshaws and e-rickshaws remain vital, highlighting the need for multimodal planning that acknowledges diverse user groups.[56]

Public Spaces and Cultural Vibrancy

The **Lodhi Gardens** provide a model of heritage-integrated green space, offering both leisure and historical engagement. Similarly, **India Gate lawns** serve as a democratic public arena where people of diverse backgrounds gather.[57] Such events, however, also strain infrastructure, exposing gaps in crowd management and environmental sustainability.[58]

Delhi as a Prototype for Global South Cities

As a rapidly urbanising metropolis in the Global South, Delhi's experiments resonate beyond India. Its struggles with pollution, congestion, and housing parallel those of **Jakarta, Cairo, and Lagos**.[59] At the same time, its innovations in metro development, heritage walks, and public-private partnerships offer transferable lessons. Urban theorists suggest that cities like Delhi, with their hybridised infrastructures and cultural pluralism, are forging "alternative modernities" distinct from Western urbanisation trajectories.[60]

CONCLUSION – RETHINKING DYNAMIC LIVABILITY

This study has explored how urban liveability is shaped by the interplay between **infrastructure, cultural heritage, and community engagement**, using Delhi as both a case study and a broader lens. The analysis shows that liveability cannot be defined in purely material or technological terms; it is also sustained by **intangible qualities**—memory, identity, and social cohesion—that give cities meaning and vibrancy.

Infrastructure and mobility improvements demonstrate the potential of technology to enhance accessibility and reduce congestion while revealing the need for integration with informal networks and equitable access.[61] Heritage conservation illustrates how cultural richness enhances urban experience. However, without sensitivity to community needs, heritage-led development risks displacement or commodification. Community engagement, from Resident Welfare Associations to informal settlement networks, shows that liveability is deeply social, though marked by inequalities that planners must address.

Toward a Holistic Approach

The concept of **Dynamic Livability** underscores that these three domains—infrastructure, cultural heritage, and community equity—must evolve together. Planning frameworks should resist the temptation of one-dimensional solutions, whether technocratic smart-city visions or purely conservationist approaches. Planning frameworks must embrace the **complexity and hybridity** of urban life, particularly in rapidly growing Global South cities.[62] International tools such as UNESCO's Historic Urban Landscape approach and the UN's New Urban Agenda offer guiding principles, but they must be grounded in local realities.

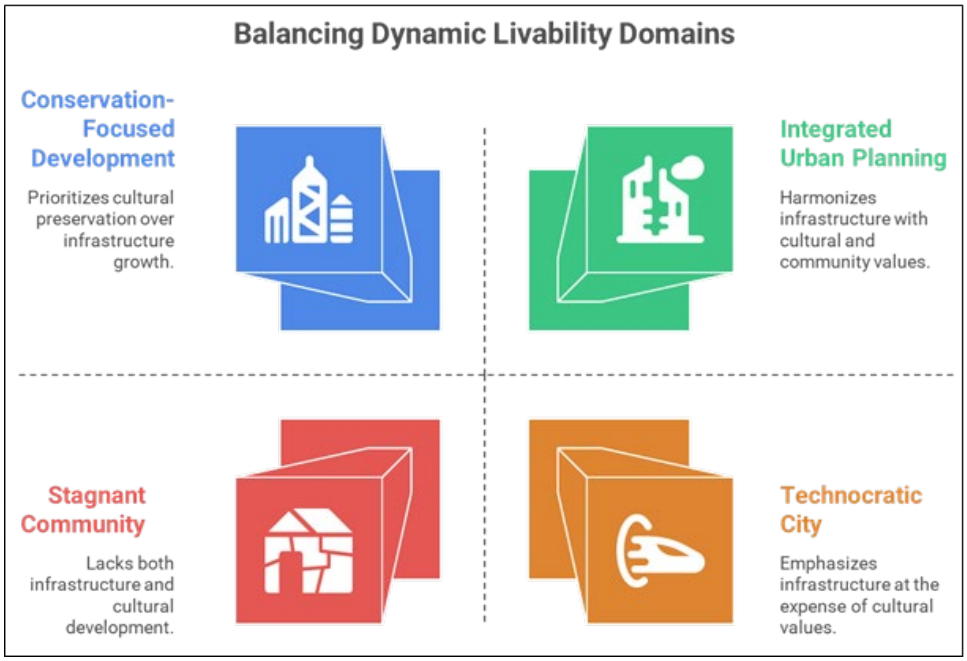

Figure 3. Balancing Dynamic Livability Domains

Delhi exemplifies both the challenges and opportunities of forging liveable cities in the twenty-first century. Its contradictions—heritage and high-rises, gated enclaves and informal settlements, pollution crises and vibrant festivals—make it a **microcosm of urban futures**. If Delhi can successfully integrate development with heritage and inclusivity, it can serve as a model for cities across Asia, Africa, and Latin America facing similar tensions.

Liveability is not a static endpoint but a **dynamic process**—a negotiation between past and future, growth and preservation, individual aspirations and collective belonging. By centering cultural vibrancy and social equity within urban planning, cities can foster resilience and inclusivity, ensuring they remain not just habitable but truly **liveable** for generations to come.[63]

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BARCELONA'S URBAN HERITAGE: EXPLORING THE INTERSECTION OF ARCHITECTURE, TRADITIONS, AND EUROPEAN CULTURAL ROUTES

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INTRODUCTION

Barcelona's urban heritage embodies both distinctive architectural features and profound cultural depth, with Modernist architecture standing as its most emblematic cultural symbol. From the late nineteenth to the early twentieth century, under the impetus of industrialisation and social transformation, architects such as Antoni Gaudí, Lluís Domènech i Montaner, and Josep Puig i Cadafalch, employing unique formal languages and craftsmanship, combined with a strong sense of regional cultural identity, collectively shaped the city's distinctive Modernist landscape.[1] These architectural legacies not only stand out for their artistry and innovation but have also left a lasting imprint on the spatial configuration, urban character, and cultural identity of the city.

Within the framework of European heritage protection, the Art Nouveau Network—as a transnational cultural route—links Art Nouveau architectural nodes across different countries and cities, constructing a shared narrative and communicative platform.[2] For Barcelona, this not only provides an international stage for presenting its Modernist architectural heritage but also injects new momentum into the safeguarding and revitalisation of local cultural traditions.

Taking Barcelona as the case study, this article examines, through the perspectives of spatial analysis and heritage studies, the interactions between Catalan traditions, Modernist architectural heritage, and the Art Nouveau Network. It explores the spatial logic of Modernist heritage distribution, its institutionalised protection pathways, and its mechanisms of dissemination within a transnational network. By scrutinising the Barcelona experience, the study aims to reveal the dual embeddedness of architectural heritage between local traditions and European cultural routes, while offering theoretical insights and methodological references for future heritage conservation and the construction of cultural routes.

THE EMERGENCE AND DEVELOPMENT OF EUROPEAN CULTURAL ROUTES

In the aftermath of the Second World War, Europe faced the dual challenges of urban reconstruction and the repair of cross-border relations, giving rise to integrationist thinking. The signing of the European Cultural Convention in 1954 marked the institutional beginning of cultural cooperation under the Council of Europe. The Convention emphasised the harmonisation of differences and the building of a shared identity through the joint safeguarding of cultural heritage, laying the institutional and value foundations for the concept of "cultural routes".

In the 1960s, the Council of Europe's expert group L'Europe continue first proposed that tourism should be employed to uncover and connect heritage across multiple countries, thereby promoting cultural exchange, interreligious dialogue, and landscape protection. By the 1980s, as regional integration deepened, Europe's demand for the integration of cultural resources and coordinated territorial development became increasingly urgent. The protection of isolated heritage sites was insufficient to meet these objectives, and the connective role of linear cultural corridors such as railways and waterways was recognised. The concept of "cultural routes" was formally introduced in 1980, defined as transnational or multi-regional routes organised around common themes that reflect shared historical, artistic, cultural, and social characteristics.

In 1987, the Council of Europe launched the European Cultural Routes programme, designating the Santiago de Compostela Pilgrim Routes as the first cultural route and thereby initiating its practical development. The first decade served as an exploratory phase: despite shortcomings in governance and funding, continuous recognition of new routes enabled experience to accumulate, progressively establishing their roles in tourism, heritage protection, and cross-border cooperation.[3] The adoption of Resolution Res(98)4 on the Cultural Routes of the Council of Europe in 1998 clarified evaluation criteria, modes of cooperation, and network-building standards, while also establishing the European Cultural Routes Committee, thus advancing the institutionalisation of the programme.[4]

Since the turn of the twenty-first century, the framework has matured steadily. The adoption of Resolution CM/Res(2010)53 establishing an Enlarged Partial Agreement on Cultural Routes refined the concept and organisational structure, securing funding through member-state contributions and extending geographical scope by admitting non-member participants. The agreement was consolidated in 2013, leading to thematic diversification and network expansion. As of 2025, forty-nine cultural routes have been certified, spanning more than sixty countries and involving over 3,000 organisations. Covering a wide range of fields, they form a trans-regional, multi-stakeholder heritage network that combines heritage protection with economic revitalisation, social cohesion, and the dissemination of shared values. Within this framework, the Art Nouveau Network has emerged as an important cultural route, offering Barcelona a transnational platform for the presentation and collaboration of its Modernist architectural heritage, thereby underscoring its local value.

THE MULTI-LEVEL GOVERNANCE SYSTEM OF EUROPEAN CULTURAL ROUTES

The cultural routes framework, led by the Council of Europe and underpinned by Resolution CM/Res(2013)67, operates through a certification mechanism, evaluation standards, and action plans, forming a multi-level governance system spanning European, national, regional, and local levels. The European Institute of Cultural Routes (EICR) plays a pivotal role in coordination and evaluation, conducting annual and triennial assessments to ensure alignment between strategic goals and practical implementation.[5]

As illustrated in Figure 1, at the national level, governments provide policy, legal, and financial support to secure the legitimacy and stability of cultural routes. At the regional and local levels—where implementation takes place—authorities and communities not only manage heritage nodes and develop interpretative systems but also integrate cultural routes into urban planning, tourism development, and community strategies, thereby reconciling heritage conservation with socio-economic growth.

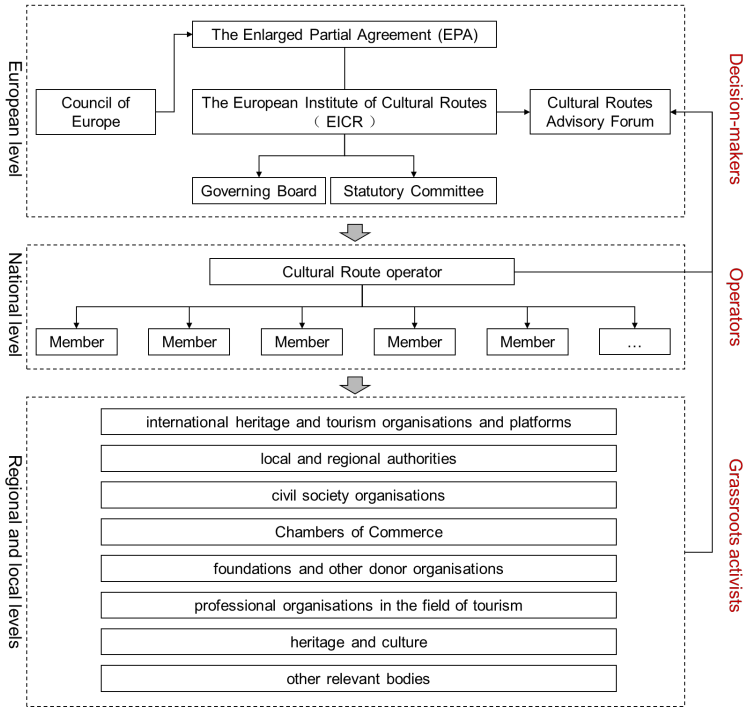

Figure 1. Multi-level governance system of the European Cultural Routes

Rather than imposing a uniform blueprint, the framework requires each route to submit regular action plans and budget reports, subject to systematic evaluation. This "strategic framework + local autonomy" model offers flexibility, allowing for thematic diversity and the expression of regional distinctiveness. The EICR further promotes the formation of thematic working groups among regional governments, using surveys and data collection to strengthen interactions between local actors and route networks, thus enhancing the embedding of routes within local policy systems. Overall, the governance model achieves organic integration between institutional frameworks and local initiatives through vertical linkages and horizontal collaboration.[6]

THE INSTITUTIONAL CONSTRUCTION AND DISCURSIVE STRATEGIES OF THE ART NOUVEAU NETWORK

The Art Nouveau Route was officially certified by the Council of Europe in 2014 and is operated by the non-profit organisation Réseau Art Nouveau Network (RANN), headquartered in Brussels. Since its establishment in 1999, RANN has promoted research, conservation, and international cooperation on Art Nouveau heritage. It currently brings together over thirty members from sixteen countries, including local governments, academic institutions, cultural organisations, and tourism entities, thus forming a cross-sectoral and multi-stakeholder collaborative network. As shown in Figure 2, the Art Nouveau Route spans a wide geographical area across Europe, connecting diverse cities and regions associated with this heritage.

Figure 2. Geographical scope of the Art Nouveau Route

RANN's governance structure combines top-down and bottom-up characteristics:
Central level: comprising the Board, Secretariat, Scientific Committee, and Mediation Committee, which provide strategic direction, academic evaluation, and cross-border coordination.
Local level: member cities manage heritage nodes, spatial integration, and public participation.
Collaborative level: universities, research bodies, and NGOs supply interdisciplinary expertise for heritage protection and dissemination.
Discursively, RANN adopts a highly structured spatial representation. Textual analysis of official documents and promotional materials reveals the frequent use of core terms such as "The Network", "Art Nouveau", and "The Route", highlighting "network collaboration" and "route construction" as operational pillars. References to "The Council", "The Scientific Committee", and "The Exchange" reveal its institutional logic of multidimensional governance. As illustrated in Figure 3, a word cloud visualises the most frequent terms, emphasising the prominence of institutional and spatial concepts. As shown in Figure 4, the semantic network demonstrates strong clustering around concepts such as "rann", "network", "institution", and "project", illustrating the parallel emphasis on institutional mechanisms and spatial nodes.

Figure 3. Word cloud of core terms in RANN's official documents and promotional materials

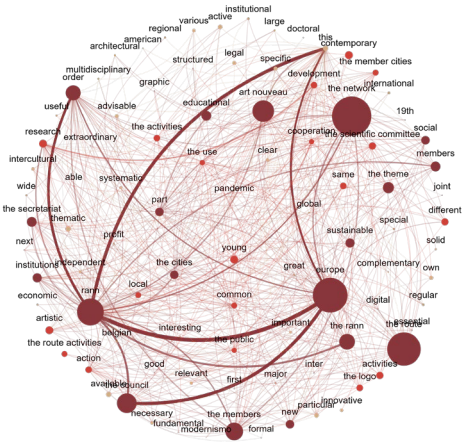

Figure 4. Semantic network of terms in RANN's official texts

However, this discursive framework exhibits a notable representational bias: RANN heavily relies on the works of "star architects" such as Antoni Gaudí as route identifiers. Iconic sites such as the Sagrada Família and Casa Milà are repeatedly highlighted as visual anchors, while Modernist buildings embedded in community fabrics with strong local character remain relatively marginalised in institutional discourse. This symbolic emphasis strengthens brand recognition but risks diminishing spatial diversity and continuity.

In terms of communication, RANN enhances public engagement through initiatives such as World Day of Art Nouveau, multilingual social media campaigns, VR tours, and interactive exhibitions. It further reinterprets Art Nouveau in contemporary terms of "eco-aesthetics", "cultural identity", and "urban sustainability", thereby extending its social relevance. Unified visual branding consolidates its recognition and institutional standing within the global cultural heritage network.

OVERVIEW OF MODERNIST ARCHITECTURAL HERITAGE WITHIN THE CATALAN TRADITION

Barcelona is the epicentre of Catalan Modernism, whose architectural heritage enjoys global acclaim. At the turn of the twentieth century, with industrialisation, urban expansion, and the Catalan cultural revival, Modernist architecture reached its zenith. Characterised by structural innovation, naturalistic ornamentation, and symbolic detail, it combined artisanal craftsmanship with creative reinterpretations of local traditions, becoming integral to the city's identity.[7]

As shown in Figure 5, spatially, Modernist architecture is concentrated in the Eixample and Ciutat Vella districts, closely linked to Ildefons Cerdà's late nineteenth-century grid plan. Passeig de Gràcia and its environs constitute the densest showcase, with kernel density analysis revealing a high-density core at its intersection with Avinguda Diagonal, alongside secondary hotspots in the northwest. Overall, the distribution forms a "dense centre—sparse periphery" pattern, reflecting both the socio-cultural and economic hubs of the period and the guiding influence of the urban network on architectural clustering and stylistic dissemination.[8]

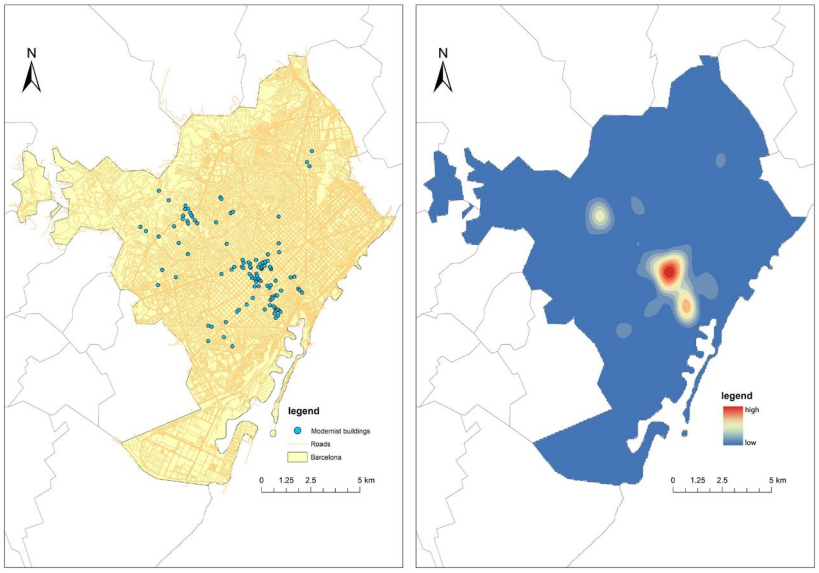

Figure 5. Distribution and kernel density analysis of Modernist architecture in Barcelona

Heritage classification reveals a multi-layered structure ranging from international to local. World Heritage Sites, such as the Sagrada Família, Casa Batlló, Casa Milà, and the Palau de la Música Catalana—masterpieces of Gaudí and Domènech i Montaner—form the backbone of the cultural network. Locally significant heritage, densely concentrated in particular districts, includes residential, commercial, and social buildings that shape community identity. Additionally, unlisted historical buildings, though lacking formal status, retain scholarly and mnemonic value, broadening the conception of heritage towards the city's wider cultural assets. [9]

Functionally, Modernist heritage encompasses religious, residential, commercial, civic, and leisure facilities, deeply embedded in everyday urban life. These sites serve as both visual landmarks and vehicles of daily and public culture: the Sagrada Família embodies global religious significance whilst hosting local Catholic rituals;[10] Park Güell doubles as a cityscape and venue for concerts and gatherings; residential icons such as Casa Milà and Casa Batlló remain entwined with domestic life, festive practices, and artisanal traditions. Architecture and tradition interact here, simultaneously preserving cultural symbolism and sustaining continuity through social practice.[11]

In sum, Barcelona's Modernist heritage demonstrates a "dense centre—sparse periphery" distribution, with a multi-scalar typology ranging from global landmarks to community buildings. Closely aligned with historical networks and local cultural traditions, this configuration produces a distinctive "surface-network" structure within the Art Nouveau Network, diverging from the conventional "linear corridor" model. By linking landmark nodes, dense urban districts, and multifunctional sites, the entire city is integrated into a cohesive cultural framework—simultaneously amplifying the radiating influence of iconic sites and foregrounding the embeddedness and everyday significance of community heritage.

BARCELONA WITHIN THE ART NOUVEAU NETWORK: A PARADIGM OF HERITAGE INTEGRATION AND TRANSNATIONAL COOPERATION

As the core repository of Catalan Modernist heritage, Barcelona has been an active member of the Art Nouveau Network since 2007, represented institutionally by the Institute of Urban Landscape and Quality of Life. Compared with other member cities, its strength lies not only in the number and renown of its buildings but also in the diversity of heritage types and the breadth of spatial

distribution. Within this framework, the Art Nouveau Network integrates Barcelona's heritage into a composite network balancing monumental and everyday elements, encompassing religious, residential, commercial, and educational types. From iconic landmarks such as the Sagrada Família and Casa Milà to community-embedded buildings, these form the structural backbone of the urban cultural landscape. They are simultaneously works of art and engineering and locally contextualised expressions of Art Nouveau, functioning as spatial mediators of tradition and identity, while supporting scholarship, exhibition, and public education.

Operationally, Barcelona is not merely a heritage node but also an active producer of knowledge and cultural governance. In the early phases of the network, it provided high-quality photographic archives and publications that established a visual repository for international scholarship. It has subsequently shared conservation expertise and curatorial practices through exhibitions, academic conferences, and educational initiatives, thereby facilitating cross-city cultural exchange and capacity-building. Furthermore, through thematic collaborations such as "Art Nouveau and Society" and "Art Nouveau and Ecology", Barcelona has contributed to reinterpreting Modernist heritage in contexts of social transformation and sustainable development, broadening its relevance in academic and policy discourses.

This deep engagement has generated multifaceted effects. Culturally, initiatives such as World Day of Art Nouveau have enhanced public awareness and appreciation of Modernist architecture. Economically, cultural tourism products such as the Art Nouveau Pass connect dispersed heritage nodes into comprehensive itineraries, extending visitor stays and stimulating related industries. In terms of conservation, the introduction of international standards and technical know-how has improved restoration quality and urban planning, reinforcing historical continuity and cultural integrity. Most importantly, the Art Nouveau Network provides Barcelona with a platform linking local traditions to transnational frameworks—delivering funding and project opportunities, raising international visibility, and promoting intergenerational cultural identity through education and research. This positions Barcelona as a paradigm of networked cultural urbanism within Europe.

CONCLUSION

This study has examined Barcelona's Modernist architectural heritage within the Art Nouveau Network, highlighting its roles and implications. Spatially, its "dense centre—sparse periphery" distribution, from world-renowned landmarks such as the Sagrada Família and Casa Batlló to community-level buildings, constructs a cultural landscape that integrates monumental and everyday dimensions. This structure reinforces cultural identity whilst underpinning both conservation and tourism development. Institutionally, the Art Nouveau Network situates Barcelona's heritage within a broader European context, enhancing its global influence and renewing conservation principles and practices.

Yet, the study also reveals limitations inherent to the cultural routes model, notably its "symbolic bias" and "dependence on iconic nodes". The overemphasis on Gaudí's masterpieces sidelines community-level heritage and everyday traditions, thus undermining diversity and continuity. Barcelona's experience illustrates that cultural routes should not merely showcase architectural achievements but serve as strategic pathways for cities to reassert identities on the global stage, with the critical challenge being to balance global dissemination with local rootedness.

For other historic cities, several lessons can be drawn. First, narratives should move beyond landmark-centric approaches by integrating multi-scalar heritage into coherent systems of "spatial integrity and traditional continuity". Second, transnational platforms must be deeply aligned with local planning and safeguarding policies to prevent the detachment of traditions from lived contexts. Third, cultural branding should embrace pluralism, drawing on community-based narratives. Finally,

education and digital technologies should be employed to stimulate youth and public participation, ensuring the sustainability of traditions and cultural routes alike. In conclusion, Barcelona's practices at the intersection of architecture, traditions, and cultural routes offer a model for heritage conservation and cultural transmission that can inform historic cities worldwide.

NOTES

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"HAKKEI" POLICIES IN JAPAN – MUNICIPAL CULTURAL PRESERVATION OF EIGHT GREAT VIEWS AND LOSTING LANDSCAPES

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INTRODUCTION

Hakkei is a style of landscape appreciation that originated in ancient China. It is said to have been established in the 10th century, when the Northern Song painter Song Di depicted eight scenic views of the Xiaoxiang region in present-day Hunan Province as landscape paintings. The scenic motifs—such as *Clearing Mist*, *Evening Bell*, *Night Rain*, *Evening Glow*, *Returning Sails*, *Autumn Moon*, *Descending Geese*, and *Evening Snow*—became prototypes for later Hakkei selections.[1]

This cultural practice was introduced to Japan around the 13th century,[2] and numerous Hakkei were subsequently designated throughout the country, with the Ōmi Hakkei, selected by Konoe Nobutada,[3] being one of the most famous examples. Hakkei also served as subjects for works by renowned artists such as Utagawa Hiroshige, becoming widely familiar to the general public.[4]

The significance of Hakkei must also be considered from an international perspective. Cultural background has been shown to exert a strong influence on aesthetic preferences; for example, Taoxi Yang et al.[5] demonstrated that Westerners tend to prefer Western paintings, while Chinese tend to favor Chinese paintings, reflecting the role of cultural context in landscape evaluation. Meanwhile, Jie He[6] argued that in today's globalized world, Eastern and Western aesthetics are not oppositional or exclusive, but rather complementary, and that their fusion provides new directions for humanity's shared pursuit of beauty. From this perspective, revisiting Hakkei, which has had a profound cultural impact in East Asia, holds important value not only for deepening the understanding of landscape domestically but also for fostering intercultural dialogue on a global scale.

Building on this broader context, research on Hakkei was actively conducted in Japan about 20 years ago, when studies in the field of landscape were flourishing, and it was approached from diverse perspectives.

Ishidate and Watanuki[7] sought to reveal the scenic elements of Traditional Hakkei of the pre-Showa period in order to clarify the characteristics of Japanese Hakkei. Tanaka et al.,[8] through a nationwide survey, revealed the locations, dissemination, conceptual transformations, and expansion of landscape evaluation concerning Hakkei. Furthermore, Nogami[9] conducted analyses and questionnaire surveys on the Traditional Kanazawa Hakkei, pointing out that the Hakkei-style method of landscape appreciation remains effective for interpreting contemporary landscapes. These studies focused on individual Hakkei and regional characteristics. However, while research on Hakkei has made little

progress in the approximately 20 years since, during the same period modern Hakkei have been designated in various regions,[10] often initiated by local governments, with citizens' votes or selection committees choosing from local landmarks and tourist sites. This suggests that the situation surrounding Hakkei has changed. Building upon these points, this research investigates Modern Hakkei in order to clarify their current state and significance. Figure 1 below is a photo of the Modern Kanazawa Hakkei,[11] which was selected by approximately 12,000 votes in 2008.

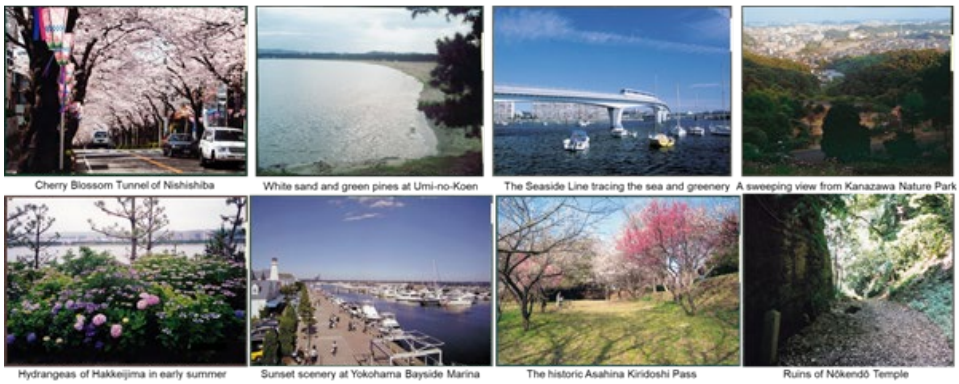

Figure 1. Modern Kanazawa Hakkei[11]

Based on the above, in this research, Hakkei designated between the Kamakura period and the Taisho era (1185–1926) are defined as "Traditional Hakkei," while those designated after the beginning of the Showa era (1926–) are defined as "Modern Hakkei."

OBJECTIVES

This research focuses on the Japanese Modern Hakkei. It aims to clarify whether the culture of Hakkei has contributed to the spread of "preservable" landscapes. In addition, it examines their institutional positioning and their spatial and cultural characteristics. Finally, this study proposes approaches for preservation and utilization that can strengthen regional attractiveness, sustain cultural continuity, and support local community revitalization.

Methodology

To address these objectives, this research employed a multi-method approach, with each method designed to correspond to a specific research aim. Interviews with local governments were conducted to understand the institutional positioning and policy context of Modern Hakkei. Archival research was used to trace the historical transitions in Hakkei designations. Surveys of municipalities were undertaken to clarify the selection processes and current conditions of Modern Hakkei. Finally, spatial location and scenic component analysis was applied to identify and categorize the spatial and cultural characteristics of the selected sites.

Interviews

An interview survey was conducted with two municipalities—Ota City in Tokyo and Hiratsuka City in Kanagawa Prefecture—that are actively engaged in landscape-related initiatives. In each municipality, the respondents were officials responsible for urban planning and town development who were directly involved in landscape management. The interviews covered topics such as the current state of Modern Hakkei from an administrative perspective, public awareness of Modern Hakkei, and possible future approaches for their utilization. The interviews served also as a preliminary for the questionnaire.

Online Search Survey

The online search survey used the nationwide Hakkei list published in the National Institute for Environmental Studies research report "*Distribution of Hakkei and Recent Research Trends*."[12] From the approximately 1,133 Hakkei entries listed, online searches were conducted to extract those designated by municipalities as policy measures after the start of the Showa era, thereby classifying them as Modern Hakkei. The searches targeted official websites of municipalities and local tourism associations. The Modern Hakkei identified in this process served as the research subjects of this study.

Furthermore, this research included only designations composed of 12 or fewer locations. The rationale for this is that when the number of selected sites is close to eight—as in the case of Ten Views or Twelve Views—the significance and weight attributed to each location are similar to those of Hakkei, making them suitable for comparison. In contrast, designations such as One Hundred Views, where the number of selected sites is substantially larger, attribute meaning and weight to each location in a fundamentally different way from Hakkei and were therefore excluded.[13]

Questionnaire Survey

The purpose of the questionnaire survey was to clarify the circumstances of the *Modern Hakkei* designation and their current status. The survey was conducted over a two-week period starting on November 15, 2024. The targets were municipalities or tourism associations responsible for *Modern Hakkei* identified in the online search survey (see Table 1).

Name of Hakkei	Location	Region	Survey Response	Photo Availability
Muroran Hakkei	Muroran City, Hokkaido	Hokkaido	○	○
Torizaki Hakkei	Mori Town, Hokkaido	Hokkaido	○	○
Yoichi Hakkei	Yoichi Town, Hokkaido	Hokkaido	○	○
Shiretoko Hakkei	Shari Town, Hokkaido	Hokkaido		○
Kanko Jikkei	Akkeshi Town, Hokkaido	Hokkaido		○
Shibetsu Kanko Jikkei	Shibetsu Town, Hokkaido	Hokkaido		○
Yamada Hakkei	Yamada Town, Iwate	Tohoku	○	○
Yamagata Shigai Jikkei	Yamagata City, Yamagata	Tohoku	○	
Nagasawa Hakkei	Funagata Town, Yamagata	Tohoku	○	
Inawashiro Hakkei	Inawashiro Town, Fukushima	Tohoku	○	○
Mito Hakkei	Mito City, Ibaraki	Kanto	○	○
Tokai Junikei	Tokai Village, Ibaraki	Kanto	○	○
Yoshimi Hakkei	Yoshimi Town, Saitama	Kanto	○	○
Itabashi Jikkei	Itabashi Ward, Tokyo	Kanto	○	○
Chofu Hakkei	Chofu City, Tokyo	Kanto	○	○
Fussa Jikkei	Fussa City, Tokyo	Kanto		○
Kiyose Jikkei	Kiyose City, Tokyo	Kanto	○	○
Kanazawa Hakkei	Yokohama City, Kanagawa	Kanto	○	○
Miura Peninsula Hakkei	Yokosuka City, Kanagawa	Kanto	○	○
Hiratsuka Hakkei	Hiratsuka City, Kanagawa	Kanto	○	○
Zama Hakkei	Zama City, Kanagawa	Kanto	○	○
Otsuki Shurei Fugaku Junikei	Otsuki City, Yamanashi	Chubu	○	○
Mishima Hakkei	Mishima City, Shizuoka	Chubu	○	○
Biwako Hakkei	Shiga Prefecture	Kinki	○	○
Hirakata Hakkei	Hirakata City, Osaka	Kinki	○	○
Miyama Jikkei	Ibaraki City, Osaka	Kinki		○
Neyagawa Hakkei	Neyagawa City, Osaka	Kinki	○	○
Daito Hakkei	Daito City, Osaka	Kinki	○	
Shijonawate Hakkei	Shijonawate City, Osaka	Kinki		○
Sumoto Hakkei	Sumoto City, Hyogo	Kinki	○	○
Sanda Hakkei	Sanda City, Hyogo	Kinki		○
Yamato-Takada Hakkei	Yamato-Takada City, Nara	Kinki		○
Susami Hakkei	Susami Town, Wakayama	Kinki		○

Table 1. Modern Hakkei Included in this Research

We surveyed 33 municipalities/tourism associations; 24 valid responses were received. The survey items included: (Q1) the method of designation for *Modern Hakkei*; (Q2) the number of voters at the time of selection; (Q3) the composition of the selection committee; (Q4) the key considerations during designation; (Q5) the reasons for these considerations; (Q6) the availability of photographs at the time of designation; (Q7) the plans or systems related to *Modern Hakkei*; (Q8) public awareness of *Modern Hakkei*; (Q9) the town development initiatives related to *Modern Hakkei*; and (Q10) the future perspectives on *Modern Hakkei*. Questionnaires were sent by fax and returned by fax or Google Form.

Spatial Location Analysis

The spatial location analysis examined the types of sites selected as *Modern Hakkei*. First, the names of the individual sites designated as *Modern Hakkei* were reviewed and categorized according to location type—for example, rivers, parks, or temples/shrines. Next, these individual locations were grouped into broader categories to determine which types of locations are more likely to be selected. For instance, a category such as "water-related sites" would include rivers, seas, and waterfalls.

Scenic Component Analysis

The aim of the scenic component analysis was to identify the preferred scenic components in *Modern Hakkei*. Photographs of Modern Hakkei were obtained from the official websites of municipalities or tourism associations that were marked as having photos in the "Photo Availability" column of Table 1. Following the classification method used in Table 2[14] from Tsushima City, Aichi Prefecture, scenic elements were divided into nine categories, based on a 3×3 framework combining spatial forms (point, linear, areal) with thematic types (natural, historical–cultural, living–industrial).

	Point	**Linear**	**Areal**
Natural	Ponds, islands, large rocks, waterfalls, tall trees, old trees, natural monuments	Rivers, coastlines	Flatlands, mountain ranges, large lakes, seas, extensive forests
Historical / Cultural	Shrines, temples, historic buildings, old buildings, old wells, structures, ruins, historic sites, ships, landing places (sites)	Historical townscapes (along roads), roads, canals	Historical townscapes (castle towns, etc.), urban development areas completed over 50 years ago
Living / Industrial	Public buildings, stations, bus terminals, airports, bridges, parks, old factories (breweries, saw-tooth roofs, etc.), fish farms, distinctive buildings	Major roads, shopping districts, railways, high-voltage power lines (towers)	Clusters of farmland, clusters of residential areas, industrial and logistics zones, commercial areas around stations, roadside shopping malls

Table 2. Classification of General Landscape Elements

With the inclusion of an "exceptional" category for features such as festivals and the exclusion of viewpoint elements, a total of ten categories were used. The presence of these elements in each image was quantified, and hierarchical cluster analysis was conducted on the resulting data. A dendrogram was then produced to group the sites based on similarities in scenic elements. Finally, the analysis examined which groups were most frequently selected in each region, identifying any regional differences or patterns.

Research Findings

Interviews

Ota City is home to Hakkeizaka, a place name that preserves the memory of the Traditional Hakkei but has not been designated as a Modern Hakkei. Although the original landscapes of the Traditional Hakkei have largely been lost due to urban development, the legacy of their scenic value continues to influence planning. In the current redevelopment of the Hakkeizaka district, the municipality has shown a conscious awareness of scenic quality, seeking to balance functionality with the preservation of views. While the physical form of the Traditional Hakkei no longer remains, stories and associations connected to it are still remembered and passed down by long-time residents familiar with the area.

Hiratsuka City contains both the Traditional Hakkei, believed to have been designated in the Meiji era, and the Modern Hakkei, designated in 1982 (Showa 57) to commemorate the 50th anniversary of the city's establishment. The interviews revealed that the purpose of the Modern Hakkei of Hiratsuka was to identify scenic spots that would serve as a source of pride for local residents. In other words, the Modern Hakkei was not intended primarily to attract outside tourists, but rather to highlight places familiar and meaningful to citizens. However, more than 40 years after their designation, public awareness of the Modern Hakkei has significantly declined, and few people now recognize them. In the Kizawa district of Hiratsuka, however, a new set of Modern Hakkei known as the Kizawa Hakkei was designated in 2015 through collaboration among government, industry, academia, and citizens,[15] although it does not appear in Table 1 as it was not listed in the nationwide Hakkei list (NIES report).[16] This case demonstrates the emergence of Modern Hakkei at a community scale, motivated by a desire to "preserve and nurture landscapes for future generations."

Building on these case studies, the findings from the interview survey were utilized in designing the subsequent questionnaire. In Ota City, the memory of the Traditional Hakkei has fostered a strong awareness of scenic preservation in the context of redevelopment. In Hiratsuka City, the Modern Hakkei were intended to highlight familiar places that serve as a source of pride for citizens, and in recent years a new set of Hakkei has also been designated through collaboration among government, industry, academia, and residents. These insights were reflected in the questionnaire items concerning the methods and actors involved in the designation (Q1–3), the considerations and reasons at the time of designation (Q4–5), public awareness and links with town development (Q8–9), and the future perspectives of Modern Hakkei (Q10).

Online Search Survey

Using the nationwide Hakkei list (NIES report),[17] approximately 1,133 Hakkei entries were investigated through online searches. Of these, only 67 (about 6%) were found to be listed on the official websites of municipalities or local tourism associations. Narrowing the focus to those designated after the start of the Showa era, the number of Modern Hakkei decreased to 33, representing about 3% of the total. These 33 Modern Hakkei correspond to those shown in Table 1. Geographically, most of them were concentrated in Hokkaido, the Kanto region, and the Kinki region where Japan is divided into eight major areas. Furthermore, a large proportion of these Modern Hakkei were designated in the latter half of the Showa era (1926–1989). This tendency may be attributed to the transformations of landscapes caused by wartime disruption and subsequent urban development, which created new scenery that were then selected as Modern Hakkei.

Questionnaire Survey

The survey results are shown in Table 3 below. In the results presented below, 'n' denotes the number of valid responses.

Q1, Method of designation for Modern Hakkei (n=24)
- Selection by vote of local residents (n=1) - Selection by a screening committee including experts (n=3) - Selection by administrative departments (n=0) - Combination of the above methods (n=16) - Others (e.g., Chamber of Commerce) (n=4) (For example, in some cases, the process combined residents' voting to nominate candidate sites with subsequent expert evaluation to finalize the Modern Hakkei.)
Q2, Number of voters at the time of selection (n=9)
- Maximum number of votes: 11,454 (Neyagawa City) - Minimum number of votes: 222 (Muroran City)
Q3, Composition of the selection committee(n=10)
・**Government and Education Representatives**: City council chairs, members of boards of education, and teachers from municipal elementary and junior high schools. ・**Scholars and Experts**: University professors, researchers, specialists in regional resources, urban landscape advisors, and local historians. ・**Cultural and Arts Groups**: Cultural property organizations, art associations, and literary/arts groups such as painting circles, haiku and senryū associations, and photography federations. ・**Economic and Community Organizations**: Chambers of commerce, business associations, and community promotion councils. ・**Citizen Representatives**: Citizens selected through public recruitment.
Q4, Key considerations during designation (n=17, multiple responses allowed)
- Attachment to the local community (n=8) - Preservation of cultural properties (n=6) - Conservation of the natural environment (n=6) - Tourism (n=5) - Other factors, such as residential environment (n=4)
Q5, Reasons for these considerations (n=10)
・**Preservation of Nature and Scenery (n=4)** : Several municipalities emphasized conserving natural environments and passing down local landscapes to future generations. ・**Cultural and Historical Continuity (n=3)** : Some aimed to highlight unique local identities and preserve historically meaningful landscapes as part of community building and long-term urban development. ・**Reflection of Citizens' Opinions (n=2)** : In certain cases, residents' votes and heartfelt opinions were strongly respected in the selection process. ・**Tourism and Urban Planning Perspective(n=1)** : Others selected sites mainly for tourism promotion and integration into broader urban planning strategies.
Q6, Availability of photographs at the time of designation
At the time of selection, very few photographs of the newly designated Hakkei were preserved.
Q7, Plans or systems related to Modern Hakkei (n=7)
・**Yamada Hakkei**: All sites are included in the Sanriku Fukko National Park. ・**Mito Hakkei**: All sites are included in the Mito City Landscape Plan. ・**Mishima Hakkei**: All sites are included in the Landscape Planning Area. ・**Daito Hakkei (Iimoriyama / Iimori Castle Ruins)**: Included in the Preservation and Utilization Plan as a National Historic Site. ・**Kiyose Jikkei**: All sites are included in multiple frameworks, such as Tokyo Metropolitan Green Conservation Areas, Tokyo Metropolitan and Municipal Tangible Cultural Properties, and the New Tokyo Hundred Views. ・**Chofu Hakkei**: All sites, including Jindaiji Temple and Jindai Botanical Park, are included in frameworks such as Priority Areas for Landscape Formation, Scenic Promotion Districts, and General Landscape Areas.
Q8, Public awareness of Modern Hakkei (n=20)
・Awareness is high (n = 5)

・Awareness is low (n = 7) ・Overall awareness is low, but awareness of individual sites is high (n = 6) ・Awareness is lower among younger people and higher among older people (n = 2)
Q9, Town development initiatives related to Modern Hakkei (n=10)
・Tourism Associations - Inawashiro Modern Hakkei: Development of travel products, walking events - Chofu Hakkei: Spring Hakkei tours, "Nukumori" tours, fireworks festival - Hiratsuka Hakkei: Photo rally (touring and photographing the Hakkei sites) **・Local Governments** - Yamada Hakkei (Yamada Town): Walking events, geopark activities - Itabashi Jikkei (Itabashi Ward): Walking tours for local residents - Neyagawa Hakkei: Establishment of new walking courses incorporating the Modern Hakkei **・Railway Companies** - Hirakata Hakkei (Keihan Electric Railway): Health walking map - Tokai Village Junikei (JR East): Walking events **・Private Organizations** - Yamagata City Jikkei (Taxi Company): Tourist course planning - Daito Hakkei (Daito–Miyoshi Nagayoshi Association): Historical PR events (focused on Miyoshi Nagayoshi and Iimoriyama Castle) - Daito Hakkei (Yamabiko): Volunteer tourism guide activities
Q10, Future perspectives on Modern Hakkei(n=17)
・Use of Hakkei as Tourism Resources and PR (n=6) ・No Plans for Re-selection (n=4) ・Mention of Possible Re-selection or Review (n=2) ・Fostering Civic Identity and Attachment (n=3) ・Outreach to Foreign Tourists and Wider Audiences (n=2)

Table 3. Questionnaire Survey Results

Spatial Location Analysis

As shown in Figure 2, the most frequently selected sites for the Modern Hakkei are temples and shrines, followed by parks and rivers.

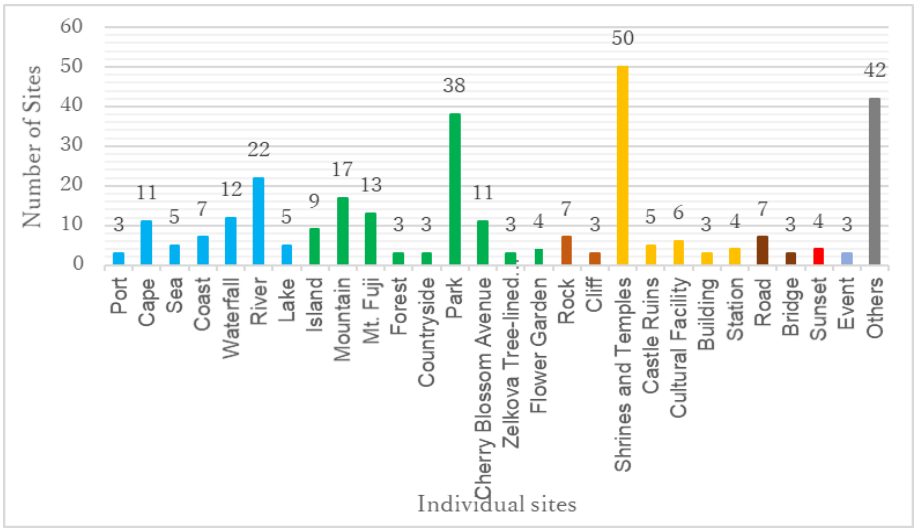

Figure 2. Individual Selection Sites for the Modern Hakkei

Furthermore, when categorized, as shown in Figure 3, the largest group consists of green-related locations. This is followed by water-related sites and historical-cultural sites, which account for nearly the same proportion.

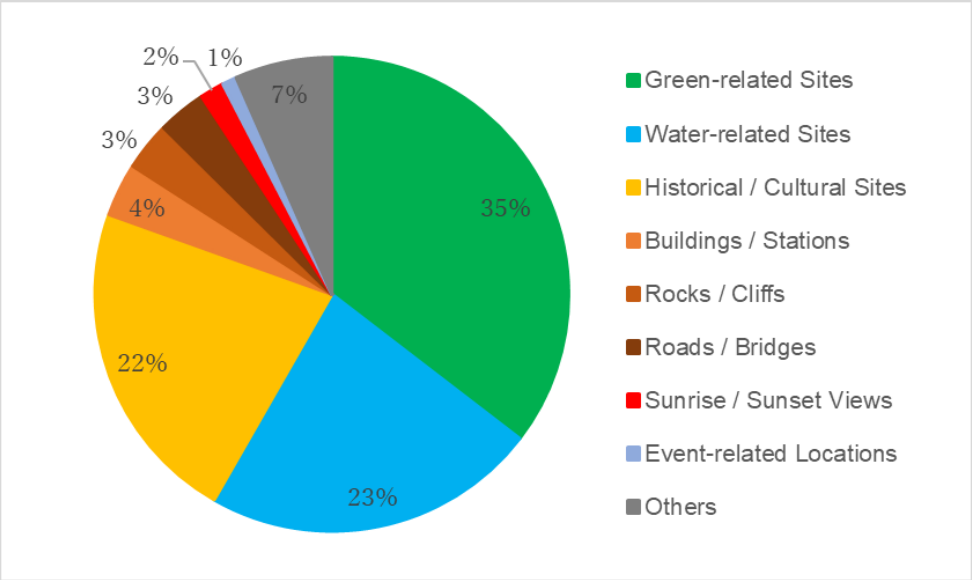

Figure 3. Classification of Modern Hakkei Selection Sites

Scenic Component Analysis

According to Figure 4, the scenic components of the Hakkei are most frequently natural elements, followed by everyday–industrial elements and historical–cultural elements. From the perspective of spatial form—points, linear, and areal—the most frequent are points, indicating that the Modern Hakkei primarily emphasize individual "sites."

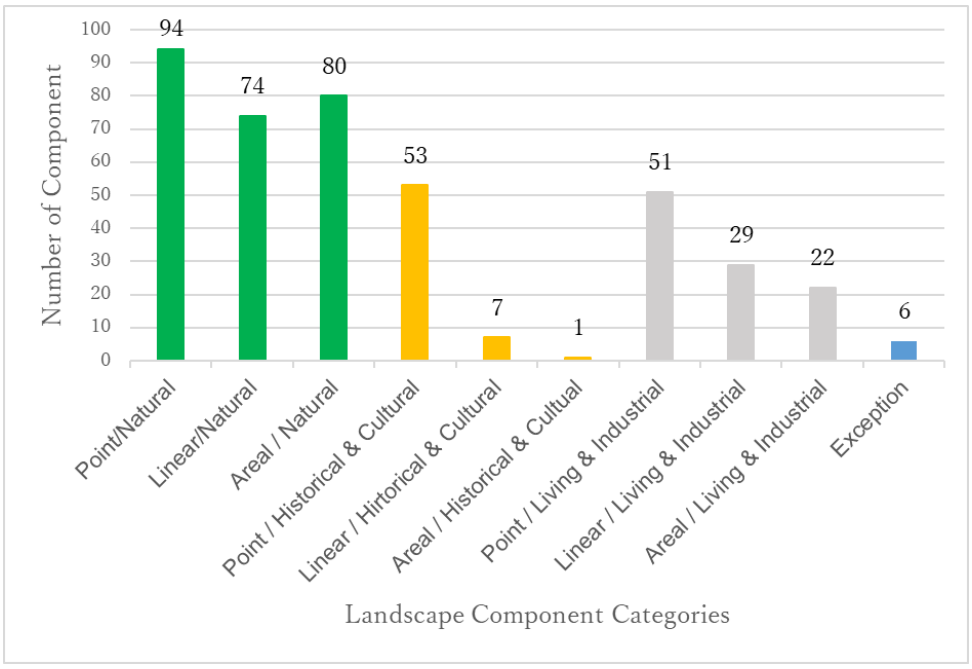

Figure 4. Hakkei Landscape Components

Using the quantified data obtained from the scenic component analysis, a hierarchical cluster analysis was conducted, resulting in seven distinct groups. The division into seven clusters was adopted because the dendrogram showed clear separation between groups while maintaining internal consistency, making this level the most interpretable. Their characteristics are shown in Table 4 below, and examples of each group are presented in Figure 5.

Group 1 (n=23)	Comprised almost exclusively of point/natural and areal/natural elements.
Group 2 (n=49)	Primarily point/natural, with some areal/natural and point/historical–cultural elements.
Group 3 (n=38)	Centered on point/historical–cultural, with some linear/natural and point/everyday–industrial elements.
Group 4 (n=36)	Characterized by point/everyday–industrial and areal/natural, with additional point/natural elements.
Group 5 (n=42)	Mainly areal/natural, but also includes linear/natural and areal/everyday–industrial elements.
Group 6 (n=29)	Dominated by linear/natural and linear/everyday–industrial, with minor point/natural and point/historical–cultural elements.
Group 7 (n=43)	Primarily linear/natural, but also includes point/natural, point/everyday–industrial, linear/historical–cultural, and some exceptions.

Table 4. The Seven Groups in the Dendrogram

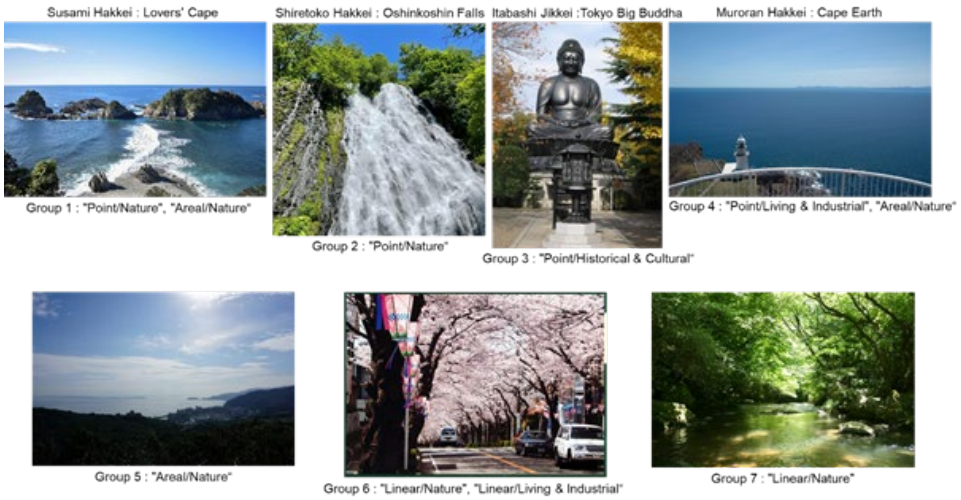

Figure 5. Examples of Seven Groups[18]

Regional distributions of these groups were also observed (see Table 5).
- Hokkaido: Group 5 was most prevalent, followed by Groups 2 and 4.
- Kanto: Group 3 was dominant, followed by Groups 6 and 2.
- Kinki: Group 7 was most frequent, followed by Groups 4 and 5.

	Hokkaido	Tohoku	Kanto	Chubu	Kinki
Group1	11.5%	37.5%	2.0%	20.0%	7.1%
Group2	21.2%	12.5%	15.7%	50.0%	14.3%
Group3	0.0%	25.0%	26.5%	0.0%	10.0%
Group4	17.3%	0.0%	13.7%	0.0%	18.6%
Group5	36.5%	0.0%	9.8%	5.0%	17.1%
Group6	5.8%	6.3%	18.6%	5.0%	7.1%
Group7	7.7%	18.8%	13.7%	20.0%	25.7%
Total	52	16	102	20	70

Table 5. Percentage Distribution of Modern Hakkei Views Groups by Region

DISCUSSION

Through the use of interviews, online searches, and questionnaire surveys, this research has clarified the current situation and challenges of the Modern Hakkei.

The purposes of designation (Q4) were diverse, including tourism promotion, environmental conservation, and the fostering of local pride, and the selection processes involved a wide range of actors, such as municipalities, chambers of commerce, scholars, and citizens (Q3). This stands in contrast to Traditional Hakkei, which were designated by powerful figures, such as feudal lords, court nobles, painters, or poets.[19] The results of the questionnaire (Q1–5) and interviews also revealed that these different backgrounds have produced distinct forms of Hakkei, depending on the region.

The spatial location analysis also revealed that temples and shrines were most frequently selected, reflecting their role as historical and symbolic sites within communities, while parks were the next most common, valued as places of everyday experience and memory for citizens. The strength of Hakkei lies in their ability to balance the integration of such different narrative elements. Furthermore, even in urban areas, shrine groves and parks were often chosen, and scenic component analysis showed that trees and vegetation were frequently counted as scenic elements. This confirms that greenery tends to hold a significant weight, reflecting the cultural value placed on nature and, particularly in urban contexts, the narrative importance of preserving trees and vegetation as symbols of continuity amid changing landscapes.

The scenic component analysis highlighted regional characteristics. In Hokkaido, Groups 5, 2, and 4—which emphasize natural elements—were most common. In particular, Group 5, with its linear and areal elements, suggests that Modern Hakkei in Hokkaido emphasize expansive natural landscapes. In the Kanto region, Groups 3, 6, and 2 were most frequent. Groups 3 and 2 strongly featured point-based elements, with Group 3 highlighting historical–cultural aspects, while Groups 6 and 2 incorporated natural and everyday–industrial elements, indicating a balance of multiple aspects within point-based landscapes. In Kinki, Group 7 was most frequent, followed by Groups 4 and 5, collectively emphasizing linear elements and showing a distinct spatial character compared to Hokkaido and Kanto. These results suggest that institutional conservation should not be uniform nationwide but should instead be adapted to regional characteristics.[20]

On the other hand, although there are some Modern Hakkei that are relatively well recognized, many cannot be considered highly recognized (Q8). Among younger generations in particular, awareness is low, and even where individual scenic sites or tourist resources are well known, few people recognize them as a coherent set of “Hakkei.” While some efforts have been made to preserve Hakkei within institutional frameworks, such as the Natural Parks Act, the Act on Protection of Cultural Properties,

the Landscape Act, and urban scenic districts (Q7), as well as to utilize them through events or tourism promotion (Q9), the problem of low recognition remains. This indicates the need to reconsider both institutional frameworks and event-based approaches surrounding Hakkei.

CONCLUSION

The findings of this study reveal that Modern Hakkei were established for diverse purposes—such as tourism promotion, environmental conservation, and the fostering of local pride—and that their selection involved a wide range of actors, including municipalities, chambers of commerce, scholars, and citizens. These backgrounds have contributed to shaping regionally distinctive forms of Hakkei. At the same time, recognition of the Modern Hakkei has declined over the decades since their designation, particularly among younger generations, who often recognize the individual scenic sites but not the unified concept of "Hakkei." As a result, the integrative power of Hakkei has not yet been fully realized.

Nevertheless, the analyses also revealed that Hakkei possess unique potential by weaving together diverse narrative elements—such as the historical and symbolic significance of temples and shrines and the personal, experiential meaning of parks—thus balancing different dimensions of local identity. The frequent emphasis on greenery and natural elements further reflects both the richness of Japan's natural environment and the cultural tendency to value and cherish nature.

Drawing on these insights, we propose that the revitalization of Modern Hakkei should proceed through two complementary approaches: (i) institutional frameworks for conservation adapted to regional landscape characteristics; and (ii) narrative-based strategies to engage citizens and visitors alike. Such narrative methods may include walking routes connecting the eight sites, thematic guide maps, cultural–historical storytelling, and the use of digital media or social networking platforms. We further suggest that the content of these approaches should be tailored to policy goals, providing accessible historical explanations for tourists while offering deeper contextual information for local residents to strengthen attachment and continuity.

In sum, this research positions the Modern Hakkei not only as "preservable landscapes" but also as a "living cultural framework" that can foster identity, continuity, and engagement within contemporary communities. At the same time, the research is limited in scope to Japan, with surveys and analyses confined to domestic cases; future research should expand comparative perspectives by examining how similar practices of "landscape selection" are evolving in other regions of East Asia and beyond. In this sense, the Modern Hakkei can also serve as a valuable case for international discussions on cultural landscapes, heritage preservation, and community engagement in the 21st century.

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AMERICAN HILTON HOTEL'S CONTRIBUTION TO POSTWAR ARCHITECTURAL AND URBAN MODERNISATION IN IRAN

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INTRODUCTION

Contemporary architectural historiography remains constrained by conceptual and methodological limitations, particularly in treating modernization within Cold War and postcolonial contexts. Despite efforts to provincialize Eurocentric narratives, such as Eisenstadt's *Multiple Modernities,*[1] Bhabha's *Hybrid Modernity,*[2] and Appadurai's *Global Cultural Flows,*[3] dominant paradigms still depict modernism as a linear diffusion from West to non-West. This reductionist view frames non-Western modernization as belated imitation, obscuring the contested and negotiated ways modernity was materially and ideologically constructed.[4] Although recent scholarship reconceptualizes modern architecture as globally entangled and shaped by transnational exchange, the literature often remains fragmented, privileging stylistic readings of iconic buildings over the infrastructural, institutional, and political systems that enabled them.[5] This problem is acute in Cold War studies, where binaries such as capitalist versus socialist urbanism oversimplify the hybrid, ambiguous, and friction-laden trajectories that emerged in contested settings.[6] Within this context, the worldwide spread of Hilton Hotels offers a critical lens on how architecture functioned as both mechanism and performance of Cold War modernism. Conceived by Conrad Hilton as embodiments of American capitalism and internationalism, Hiltons were explicitly framed as "weapons against Communism."[7] Enabled by U.S. foreign aid, corporate partnerships, and elite local sponsorships, they acted as "soft infrastructures,"[8] embedding mid-century American modernist aesthetics, spatial logics, and technologies in cities across the Global South and Cold War aligned capitals.[9] Yet outcomes were never uniform. Corporate templates projected efficiency, affluence, and consumer modernity, through curtain walls, prefabrication, climate control, and verticality,[10] but their local realization became sites of negotiation. As Bozdoğan shows for Turkey, Hiltons were hybrid constructions where global branding met local traditions, imported technologies were adapted domestically, and ideological projection encountered cultural resistance.[11] Still, scholarship often isolates Hiltons as monuments rather than embedding them within broader processes of diplomacy, urban change, and socio-political contestation.[12]

The Royal Tehran Hilton (1962) crystallizes these dynamics as a case of Cold War modernization in Iran. Conceived amid geopolitical rivalry, the hotel embodied a nexus of U.S. soft power, oil-led development, and the Shah's White Revolution.[13] As Tehran's first modern high-rise, it was both an icon of International Style modernism and a declaration of alignment with the West. Yet its significance transcended form: it actively shaped political narratives, economic infrastructures, and

cultural identities. Local actors such as Mohsen Froughi and Heydar Ghiaï mediated global corporate models within national frameworks, underscoring the need to interpret modernization as a dynamic trajectory spanning phases of pre-design and geopolitical formation, architectural design and construction, and post-occupancy adaptation and symbolic reinterpretation. During the Pahlavi era, state investment in universities, ministries, museums, and luxury hotels sought to reimagine Tehran as a cosmopolitan capital.[14] Architects hybridized International Style geometries with Persian motifs—courtyards, iwans, lattices—producing works that were both modern and nationally inflected.[15] This hybridity illustrates Bhabha's notion of "colonial mimicry,"[16] where buildings appeared locally adapted yet remained structurally tethered to foreign supply chains. At the same time, the Hilton operated as what Pratt terms a "contact zone,"[17] a space where Cold War ideologies, global development agendas, and local sociopolitical frameworks intersected. In this sense, the Tehran Hilton was not a neutral monument but an active agent in Iran's postwar modernization, functioning as an architectural landmark, an urban mechanism, and a geopolitical instrument.

Methodologically, this study employs a processual, multi-scalar framework that treats modernization as an unfolding sequence rather than a fixed event. It applies phase-based process tracing across three stages: (1) pre-design and geopolitical formation, examining the political-economic and social conditions shaping the project's inception; (2) architectural design, construction, and operational life, analyzing negotiations between international corporate templates and local practice along with institutional forces shaping form and function; and (3) post-construction transformation and symbolic re-inscription, investigating how the building adapted to shifting socio-political realities and ideological narratives. The study integrates archival-document analysis of primary materials, including *Ettelā'āt* reports, *Shahrdāri-hā* magazine, Majles debates and statutes from the "Mashrūteh" archives, diplomatic cables in *FRUS*, and records of state visits and conferences, combined with critical readings of design programs, construction narratives, operational standards, and legislative discourse.

Cold War Modernization and the Role of Hilton Hotels

The expansion of Hilton Hotels during the postwar era must be understood within the broader context of Cold War modernization, where architecture functioned as a potent geopolitical instrument rather than a mere stylistic phenomenon. Rather than embodying a unified aesthetic, Cold War modernity served as a carrier of political allegiance, technological prowess, and developmental aspirations.[18] Architecture became a deliberate tool of cultural diplomacy, deployed to assert ideological dominance amid the bipolar tensions separating the United States and the Soviet Union.[19] Parallel to this political contestation, the rapid rise of global tourism, from 25 million arrivals in 1950 to 278 million in 1980, manifested this ideological expansion, with airports, highways, and hotels embodying infrastructural expressions of global modernity.[20] During 1949–1975, Hilton Hotels proliferated worldwide, crystallizing architecture's dual role as both tangible infrastructure and symbolic power.[21] Conceived by Conrad Hilton as "Little Americas," these properties exported U.S. consumer culture, standardized luxury, and technological modernity to strategically significant sites.[22] Their locations were often symbolic: the Berlin Hilton (1958) signified capitalist resilience within a divided city, the Cairo Hilton (1959) asserted American presence in Nasser-era Egypt, and the Tokyo Hilton (1963) reaffirmed U.S. alliances in Asia. As Wharton noted, Hiltons were "weapons against Communism,"[23] with Cull highlighting their semi-diplomatic role where banquets, cultural exhibitions, and intelligence activities intertwined commerce and statecraft.[24] Thus, Hilton Hotels operated as "soft infrastructures," entities neither wholly commercial nor purely governmental but critical nodes in America's modernization agenda.[25]

Architecturally, Hilton Hotels manifested a dialectic between standardization and localization. Their corporate design embraced repetition, technological spectacle, and operational efficiency to project a homogenized image of American affluence.[26] However, local architects often infused these projects with symbolic references to national heritage, producing hybrid architectural forms negotiating between global corporate modernism and domestic cultural traditions.[27] This tension underscored Hilton's dual function as both an agent of cultural hybridization and an instrument of U.S.-dominated standardization. The urban impacts of Hilton developments further affirmed their geopolitical significance: these projects catalyzed new highways, airports, leisure zones, and upscale districts, steering urban development toward elite and diplomatic enclaves.[28] In many locales, Hilton Hotels institutionalized novel planning regimes, redefined land values, and reshaped symbolic urban geographies. They operated as embedded nodes within transnational urban networks capable of transforming not only physical form but also social relations.[29] Crucially, Hiltons crystallized the ambivalence of modernization in geopolitical borderlands—promising cosmopolitan lifestyles with modern amenities like air conditioning, international cuisine, and consumer comforts[30] while reinforcing exclusivity and social hierarchies. Their clientele predominantly consisted of foreign elites and business travelers, and their construction often displaced local populations, reproducing class stratification.[31] These contradictions embodied Cold War modernity's hybridity—formally innovative yet structurally dependent, socially exclusive yet ideologically universal. The broader scholarly consensus emphasizes that Cold War architecture transcended mere aesthetics or functional shelter; it was a literal language of power and ideological performance through which superpowers asserted authority, prosperity, and political allegiance.[32]

The Royal Tehran Hilton

Design and Pre-construction Phase

Iran's geopolitical position and oil reserves during World War II drew increased U.S. attention after the Allied 1941 invasion revealed the country's vulnerability and strategic value.[33] This set the stage for deeper U.S. engagement in Iran's modernization, most notably after the 1953 CIA- and MI6-backed coup that ousted Prime Minister Mohammad Mossadegh following his nationalization of the Anglo-Iranian Oil Company.[34] The Shah's subsequent White Revolution (1963), emphasizing land reform, educational expansion, and industrialization—projected an image of Western-style progress that entrenched elite interests and widened social divides, fueling opposition from religious groups and leaders such as Ayatollah Khomeini.[35] In this arch-modernization context, Tehran was reimagined much like Istanbul under Menderes: an urban laboratory for national ambitions.[36] The Plan Organization, established in 1949 with World Bank and Ford Foundation support, channelled American-driven modernization into symbolic projects—dams, airports, luxury hotels—rather than redistributive investment.[37] By the Second Development Plan (1955–1962), budgets disproportionately favoured urban-industrial mega-projects, including the Royal Tehran Hilton. U.S. documents confirm coordination between military aid and prestige works like the Hilton, promoted as a tool to "anchor Iran to the Free World."[38]

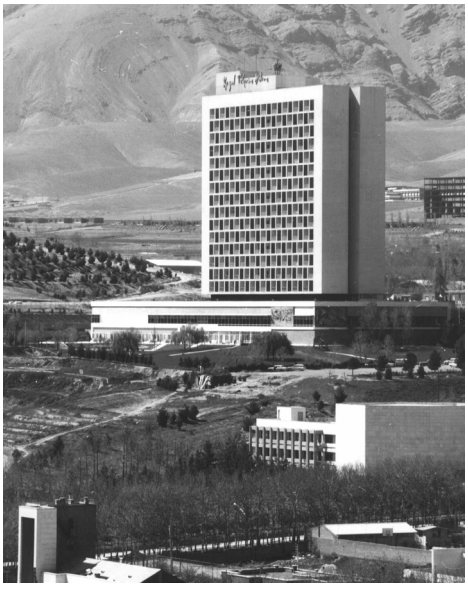

Figure. 1. (Left) Royal Tehran Hilton appeared in Hilton Hotels' 1962 annual report. In this depiction, the Hilton was presented as a symbol of Iran's modernization, set against a backdrop of traditional transport motifs, veils and customary dress, and references to Iran's historical myths. (Hilton Hotels' 1962 annual repor).

Figure. 2. (Right) Royal Tehran Hilton in 1960s (National Archives of Iran, No. 431303)

The process leading to construction predated Hilton's involvement. As early as 1950, Ettelā'āt reported plans for a 300-bed "grand hotel" in north Tehran for foreign delegations and traders.[39] By 1955, a joint Municipality–Pahlavi Estates scheme, backed by Ex-Im Bank credit, expanded aspirations to 400 rooms, with American firms named low bidders.[40] In 1958, the Pahlavi Foundation assumed sponsorship and relocated the project to state land near the Exhibition Grounds, shifting it from the central grid to the emerging northern corridor, amplifying its urban impact.[41] Consulting architects Mohsen Froughi, Ali Sadegh, and Heydar Ghiai provided local expertise, while by late 1959 an operating agreement with Conrad Hilton rebranded the project the "Royal Hilton Tehran." Iranian designs were reviewed in London to align with Hilton International standards, exemplifying Cold War institutional layering.[42] This institutional layering was typical of Cold War hospitality megaprojects: Local architects (Froughi, Ghiai, Sadegh), an international franchise architect (Raglan Squire), and British contractor (Cementation) each played intertwined roles, balancing national prestige with global hotel branding.[43] The final program, announced in early 1960, specified 15 floors, 270–300 rooms, convertible ballrooms, multiple restaurants, retail units, a 24-hour café, bar, pool, and conference facilities, promoted as "one of the finest Hiltons worldwide."[44] Groundbreaking occurred in April 1960. At its 1962 inauguration, Shahrdārī-hā magazine listed the Hilton as Tehran's tallest high-rise, alongside NIOC, Bank-e Kar, and Plasco.[45] Crucially, the project's primacy was codified through legislation: a 70,000 m² land transfer from the Exhibition Grounds to the Pahlavi Foundation, a one-off customs exemption for imported building systems and furnishings, and the Law on Tehran Flood Diversion and Continuation of Kennedy Avenue to Hilton Hotel, explicitly tying hazard mitigation and traffic engineering to prestige tourism.[46] The Royal Tehran Hilton thus emerged as both a symbol and an instrument of the Shah's modernization strategy, anchored in international alliances but shaped by the complexities of late-Pahlavi state-building.

Construction and Operational Phase

The Royal Tehran Hilton operated under a renewable franchise contract that exemplified the institutional complexity of Cold War modernization projects. Realized in two phases—the West Tower (1962) with steel encased in concrete and the East Tower (1972) with reinforced concrete—the complex offered a mixed program of rooms, a grand ballroom/convertible conference hall, specialty dining, retail, and leisure, strategically located along Tehran's north–south urban axis near the Exhibition Center and sport facilities.[47] Its royal opening in 1962 established prestige with specifications of £31.5 million, 15 floors, 261 rooms, 27 state suites, shops, three restaurants, two private dining halls, a ballroom convertible to an 800-seat conference hall, and a 24-hour café with a "soda spring," making it Iran's tallest building and national showcase.[48] The architectural program maximized the sloped site through landscaping: entrances and parking were placed to the north, guest rooms faced the Alborz Mountains, leisure amenities like pools and tennis courts were sited to the southwest, and service areas were directed toward the southern slums.[49] Construction deployed advanced but dependency-reinforcing solutions, including mashrabiya-inspired aluminum screens requiring anodized tooling available only from U.S. suppliers until 1978, and Pittsburgh steel that exceeded Iran's seismic requirements to fulfill U.S. Steel export quotas rather than safety considerations.[50] The Hilton's standardized ballroom-banquet-conference configuration, divisible halls, service spines, and back-of-house logistics translated U.S. corporate modernization into a plug-and-play diplomatic machine, minimizing protocol risk while maximizing televisual legibility.[51] Its architectural features actively encoded Cold War strategies: basement parking was built to NATO specifications for potential munitions storage; in-room radios were preset to Armed Forces Network channels; and its 12-meter-high lobby ceiling exceeded that of the nearby Soviet Embassy by three meters - proportioned to overshadow.[52] The Hilton's standardized ballroom-banquet-conference configuration, divisible halls, and back-of-house logistics translated U.S. corporate modernization into what functioned as a diplomatic machine, minimizing protocol risks while maximizing televisual legibility for international audiences. During its operational phase, this cosmopolitan showcase anchored northern Tehran's urban expansion while displacing thousands and creating privileged enclaves that reinforced labor inequities, embodying what Harvey (1989, 121) characterizes as "spatial fixes",[53] mechanisms for absorbing surplus Western capital through tied construction contracts while reproducing uneven socio-economic development in the host context.

Post-construction and Transformation Phase

The 1979 Islamic Revolution marked a decisive rupture in the life of the Royal Tehran Hilton, transforming it into the Esteghlal ("Independence") Hotel. Revolutionaries removed key furnishings, including Warren Platner's iconic steel-and-glass lobby chairs, cocktail bars, abstract artworks, and English signage, replacing them with religious motifs that erased the Hilton's Western symbolism in a comprehensive act of ideological cleansing.[54] Yet beneath these surface changes, the hotel's technical core HVAC, elevators, and structural grids, all imported under U.S. patents remained intact, illustrating Therborn's paradox of "peripheral modernities," where selective cultural hybridization coexisted with reliance on foreign technologies.[55] Hilton-trained chefs and staff were retained until 1982 to maintain service standards for diplomatic events such as OPEC banquets, underscoring contradictions between revolutionary symbolism and geopolitical pragmatism.[56] Renovations carried out between 1983 and 1987 preserved the modernist structural framework but layered new ideological content upon it, demonstrating architecture's capacity for symbolic re-inscription without physical demolition.[57]

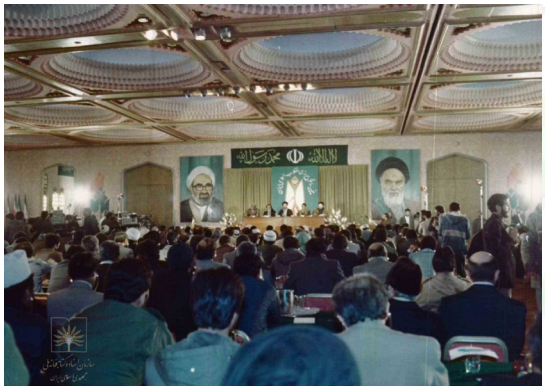

Figure. 3. (Left) The anniversary ceremony of the victory of the Islamic Revolution of Iran in the hall of the Esteghlal Hotel (formerly Hilton), 1983 (National Archives of Iran, No. 1820)
Figure. 4. (Right) Royal opening of the Hilton Hotel, 1962 (National Archives of Iran, No. 639)

During the 1960s and early 1970s, land values near the Hilton doubled, reinforcing a privileged northern belt for elites and international visitors that was spatially insulated from southern Tehran.[58] The hotel's workforce further exposed socio-economic divides: most employees commuted long distances from "khak-e sifid" slum districts to serve a predominantly foreign and military clientele.[59] Though Hilton offered relatively advanced benefits, such as literacy programs and dental insurance, these were unevenly distributed and failed to resolve labor grievances.[60] Clerical opposition, led by Ayatollah Khomeini, condemned the Hilton as a locus of moral corruption, with his 1971 Nowruz sermon denouncing its galas as "nakedness parading under crystal chandeliers."[61]
The hotel's geopolitical significance was further underscored by more than a hundred CIA meetings held between 1965 and 1978, including crucial oil negotiations preceding the 1973 price hikes.[62] After the Revolution, its expansion reflected Iran's shifting geopolitical alignments. The third tower, completed in 1992 with Chinese prefabricated panels, embodied Iran's post-Cold War economic turn toward Asia, while later technological updates, such as Huawei smart room system integration in 2018, firmly embedded the Esteghlal within Sino-global technology and capital networks.[63] Its pre-revolutionary function as Tehran's premier diplomatic venue, hosting major international conferences and state visits, transitioned into a platform for the Islamic Republic's diplomatic initiatives and anti-imperialist rallies, preserving geopolitical centrality while serving fundamentally altered political purposes.[64] This continuity amid change affirms Wharton's notion of architecture as "malleable symbolism": a Hilton once emblematic of American hegemony could, without structural demolition, be reinscribed as a monument to revolutionary independence.[65]

CONCLUSION

Viewed through the three analytical phases—design and inception, construction and operation, and post-construction transformation—the Royal Tehran Hilton emerges not merely as a hotel but as a geopolitical artifact, a cultural symbol, and an urban catalyst whose legacies continue to shape Tehran's architectural identity and socio-spatial dynamics. As Tehran's first skyscraper, it introduced International Style verticality that inspired later developments such as the Arya-Sheraton, Intercontinental, and Laleh Hotels, while its strategic siting in the affluent northern corridor reinforced socio-spatial segregation and exclusion. Pre-1979, it embodied Cold War cultural diplomacy, dependency structures, and elite cosmopolitanism, simultaneously promising modernization while deepening displacement, land speculation, and labor stratification. Post-1979, reconstituted as the Esteghlal, it was stripped of overt Western iconography yet structurally tethered to modernist systems, exemplifying architecture's resilience as a cultural and geopolitical text. Together, these cases affirm

the validity of dependency theory and peripheral modernities in explaining non-Western modernization: Western technologies imposed structural reliance, hybrid motifs sustained the illusion of localization, and successive regimes reinscribed buildings with shifting ideological meanings. Ultimately, the Royal Tehran Hilton encapsulates the contradictions of twentieth-century modernization in contested geopolitical contexts: simultaneously imported and adapted, universal and hybrid, symbolic and functional. Its biography from Cold War "containment architecture" to revolutionary relic and, later, hybrid global asset underscores that architectural modernization is not a fixed achievement but an ongoing cycle of inscription, erasure, and reinvention through which Iran's contested modernity continues to be negotiated.

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PERFORMING THE MARGINS: HOMELESSNESS, URBAN SPACE, AND POPE.L'S *TIMES SQUARE CRAWL* (1978)

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INTRODUCTION

Public art and performances in the city are powerful tools for shaping how we understand and inhabit urban life. Their significance lies precisely in their ability to collaborate with public space, giving form to the unseen, unnoticed, or misunderstood dimensions of history, memory, and social experience. This is exactly what the late African American artist Pope.L accomplished with his seminal 1978 performance *Times Square Crawl a.k.a. Meditation Square Piece*. Crawling through the streets of New York City's Times Square in a thrifted business suit on his hands and knees, he asked passersby to look down and confront the homeless bodies and experiences that are typically excluded not only from view, but from discourse.

Although *Times Square Crawl* has been widely studied for its artifice and aesthetics, its explicit engagement with homelessness—a pressing issue in late 1970s New York—has been largely overlooked. This gap is striking given the performance's historical proximity to the city's housing crisis, which was exacerbated by deinstitutionalization policies that displaced thousands of mentally ill and vulnerable individuals onto the city's streets. Drawing on Michel Foucault's account of how Western societies redirect fears of illness and deviance, and Samira Kawash's notion of homelessness as "placelessness," this paper re-situates *Times Square Crawl* as an enactment of paradox: A body forced to move through a city with nowhere to go. I ultimately argue that *Times Square Crawl* must be understood not only as a performance of endurance and capitalist critique, but as a historically grounded intervention into the politics of systemic poverty and urban neglect.

The Aesthetics and Artifice of *Times Square Crawl*

Variously described as a visual artist, educator, wordsmith, sculptor, and performance artist,[1] William Pope.L—known simply as Pope.L—explored human connections with the social through what he termed "have-not-ness."[2] This phrase references a lack, holes and voids, disruptions in space and experience that by their very nature only reveal parts of themselves. Recognizing "have-not-ness" as a site of potentiality, his interdisciplinary works typically question the unseen by viscerally visualizing or positioning his body *within* states of lack. This nuanced approach makes Pope.L's works poignant commentaries on systems of power and exclusion, which always refer to a through-line of questioning: What is available to the Black body? As such, his works have been widely studied for their incisive commentaries on racial and class politics in America, with *Times Square Crawl* being no exception.

This was Pope.L's first 'crawl,' his most famous serious of public performances in which he moved slowly, often painfully, and always laboriously on all fours through mostly urban spaces across the world. Some of these crawls were similarly staged as solo performances of the streets of New York, while others were executed in more isolated settings,[3] and others still were enacted as collective performances.[4] By repositioning the body to ground level, Pope.L's crawls accentuate a grueling horizontality, aligning him with the exhausted and overlooked. The act disrupts pedestrian flow to challenge the dominance of upright, vertical mobility by drawing attention to the bodies that are typically excluded from that realm.[5] Thus what unites these performances are not their locations, but a common purpose: To implicate the socio-economic politics of space.

Appropriately, many of his most celebrated crawls responded directly to issues of homelessness in New York, most notably *Tompkins Square Crawl* in 1991, and *The Great White Way: 22 miles, 9 years, 1 street*, in which the artist crawled the entire length of Broadway between 2001 and 2009.[6] This makes *Times Square Crawl* doubly inaugural; not only was it Pope.L's first crawl, but the subversive performance was explicitly conceived in response to the rapid increase of homeless and impoverished individuals in New York City as a result of insidious policy shifts in the late 1970s.

Figures 1-5. Pope.L, "Times Square Crawl a.k.a. Meditation Square Piece," 1978. Credit: The Museum of Modern Art, New York, NY. (https://www.moma.org/collection/works/292281)

Taking himself to and placing himself on the streets was therefore a potent choice, as was his attire. As seen in the five photographs that compromise the performance's only visual documentation (Figures 1-5), he wore a brown business suit with yellow socks, leather oxfords, and a swatch of yellow fabric pinned to the back of his jacket.[7] So rather than don himself in the dirty or tattered clothing generally associated with the homeless experience, he consciously selected clean business attire as costume. His combination of act and dress eloquently complicates the oft-cited narrative that people are unhoused simply because they are unemployed.

Originating with American anthropologist Oscar Lewis in 1959 and gaining traction in academic and political discourse during the 1970s, such self-perpetuating "culture of poverty" rhetoric blames poverty on classist stereotypes like generational laziness, poor work ethic, and inherited behavioral deficiencies.[8] Pope.L, however, negated this narrow logic by visualizing the complex layers of discrimination and systemic inequalities that disadvantage many while benefiting a select few, indicating a deeply intersectional understanding of the condition of poverty as well as homelessness. Reflecting on his process nearly three decades later in 2006, he noted that he began crawling "in response to the steady increase of street people occupying the sidewalks of New York City, the community's refusal to recognize this calamity, and my coming to terms with this lifestyle as an ongoing problem within my immediate family."[9]

Raised as a lower-class Black American whose youth was marked by food and housing insecurity, Pope.L witnessed many of his relatives go through periods of homelessness—including his brother, aunt, and two uncles. Though scholars have been quick to acknowledge this background, his interest in homelessness, and/or draw attention to the socio-political events that inspired later crawls,[10] most focus on the artifice and aesthetics of *Times Square Crawl* rather than the specific circumstances that motivated Pope.L in 1978.[11] Incredibly, there is no dedicated study that places his maiden crawl in conversation with the American deinstitutionalization policies that radically transformed New York City's streets in the 1970s.

Remembering America's Deinstitutionalization Policy

Deinstitutionalization was a post-war American policy reform that sought to shift mental health care from inpatient to outpatient modes of treatment. Operating on a three-part plan, the goals were to first reduce the number of institutionalized patients, secondly to restrict new admissions, and, finally, to shift care to smaller community-based services.[12] Even though American deinstitutionalization was first enacted in the 1950s with the introduction of antipsychotic drugs (which made lofty promises to treat mental illness in the privacy of the home), the policy really took off in 1963 with President Kennedy's Mental Retardation Facilities and Community Centers Act.[13] This was a federal law that granted funding for the construction of community health centers that would optimistically service between 75,000 to 200,000 people per catchment area.[14] The end goal was always to reduce the number of people in institutional care by 50%, which, in the end, was successful. In New York state, for instance, psychiatric beds dropped by 50,000 or two-thirds between 1968 and 1978.[15] Unfortunately, the problems arose at step three: With little to no community-based services established in the state, there was a huge population of ex-patients in need of care with nowhere to go. To grasp the magnitude of this transition for those forced to experience it, we must pause on what long-term institutionalized 'care' meant in this moment.

The history of the mental institution or asylum is an old and fascinating one. French philosopher Michel Foucault contributes a seminal treatise on the subject with *Madness and Civilization: A History of Insanity in the Age of Reason* (1965), in which he problematizes how Western society conceived of and treated the condition of 'madness' from the Middle Ages to the modern era.[16] Tracing the marginalization of the poor, unemployed, and historically 'mad,' Foucault reveals how

madness was not only redefined as mental illness subject to medical treatment, but ultimately defined in opposition to reason. Moreover, he chronicles how the mental institution emerged as a way to safely remove those afflicted by madness from society.[17] Historicizing the total degeneration of autonomy for the mad or mentally ill subject, Foucault explains that: "For this new reason which reigns supreme in the asylum, madness does not represent the absolute form of contradiction, but instead a minority status, an aspect of itself that does not have the right to autonomy, and can live only grafted onto the world of reason."[18]

Foucault's work imparts several important insights for this study. Namely, madness is a socio-ideological construction that works to define which behaviors are deemed acceptable in the public sphere. Furthermore, there is a deeply ingrained and fundamentally classist prejudice bound to madness and mental illness in the Western psyche that unequivocally influences how it is treated. And finally, the 'out of sight, out of mind' mentality that justified the existence of mental institutions in the first place is precisely what allowed abuse against some of society's most vulnerable populations to flourish—and under the rationale of protection, at that. Indeed, that the mental institution was a space of abuse rather than sanctuary garnered significant attention as America's deinstitutionalization policies began to take shape.

Policy, Public Perception, and the Making of Homelessness in New York

By the mid- to late-20th century, American medical professionals had become increasingly alarmed by the corrupted state of mental institutions. Expressing their concern with deinstitutionalization in a 1978 issues of *Scientific American*—published the same year as *Times Square Crawl* took place—American psychiatrists Ellen Bassuk and Samuel Gerson acknowledged that "the network of state mental hospitals, once proud tribute to an era of reform, had largely turned into a bureaucratic morass to which patients were interned, often neglected, and sometimes abused."[19] A few years earlier in 1972, American journalist Geraldo Rivera publicly exposed such settings. Airing on WABC-TV, ABC's flagship network in New York, Geraldo's sensational TV documentary "Willowbrook: The Last Great Disgrace" reported on Staten Island's Willowbrook State School—a state-supported institution for children with intellectual disabilities.[20] Rivera's documentary vehemently condemned the student's deplorable living conditions in shockingly visual and visceral detail. In several *New York Times* articles published around this time, Willowbrook appeared in the same sentence as deinstitutionalization, indicating that environments like these became linked with the impetus to deinstitutionalize.[21]

It is important to keep in mind, however, that deinstitutionalization additionally obliterated the routines to which these patients had become accustomed. And no matter how dubious those routines were, there was no structure in place to facilitate a smooth or healthy transition into the 'freedom' of every-day societal living; nor was there thought given to how society would react. Decrying the repercussions of deinstitutionalization in 2001, for instance, American psychiatrists Richard Lamb and Leona Bachrach—who had supported the policy earlier in their careers—wrote that "these persons may now be too disorganized to extricate themselves from living on the streets except by exhibiting blatantly bizarre or disruptive behavior that leads to their being taken to a hospital or jail."[22] This is but one of many examples from the medical community that locate a direct relationship between deinstitutionalization, homelessness, and criminalization.[23]

Between 1978 and 1988, several Letters to the Editor and full-page articles published by *The New York Times* demonstrate an acute awareness and understanding of these very same links. Variously written by medical professionals, community activists, and anonymous citizens, these opinion pieces express a palpable anxiety about the influx of homeless people in the city's streets and public venues; many also acknowledge the policy's unfortunate clash with New York's housing crisis.[24] For

example, community activist Anna B. Dutka writes in 1983 that the "increasing numbers of mentally ill and physically ill-nourished, filthy and frequently abusive persons" from the failed deinstitutionalization policy shift "has coincided with the lowest vacancy rate in our history."[25]

There were other insidious policies that collaborated with deinstitutionalization to exacerbate homelessness and the visibility of mentally ill and displaced individuals on New York's streets. Take, for example, Single Room Occupancy Hotels, or S.R.O.s. Despite being defined by their lamentable conditions,[26] they were vital resources for lower-income individuals and families. However, municipal policies like J-15 incentivized landlords to refurbish S.R.O.s into apartment buildings and increase rents with attractive tax cuts and government funding.[27] As per citizen Edward A. Gargan in 1983, "since 1970, 87 percent of the city's S.R.O. units have disappeared, according to data by the Community service society."[28] Cuts and policies like these made it difficult, if not impossible, for the lower-classes to find private places to live—especially Black Americans and, of course, the recently deinstitutionalized.

As evidenced by the concerns of middle- and upper-class professionals who frequently wrote such Letters to the Editor, the housing crisis was a serious problem in New York throughout the 1970s and 1980s. Though it was a gravely intimate issue of shelter and security for many, others considered it more a matter of nuisance and public safety. In 1978, citizen Donald Light Jr. noted that residents of S.R.O.s are frequently "ex-mental patients who are being 'dumped' on the city streets," before immediately conflating them with other tenants like "old people, petty criminals, addicts, alcoholics, and assorted transients who all share two characteristics: *Nobody wants them and they are poor*."[29] Another anonymous writer from 1981 describes the homeless as "ragged and unwashed denizens of sidewalks, doorways and passenger terminals […] tragic people, strange and unclean rather than violent, they inspire more hysteria than pity, vastly complicating the politics of helping them."[30]

This small authorial snapshot from *The New York Times* betrays a general attitude towards homeless people, rather than the *condition* of homelessness, that is rather telling: Each writer is quick to stigmatize and otherize the homeless based on appearances and behaviors that are inextricably tied to class. However, the anonymous writer makes an exceptional observation when noting the contradictory feelings inspired by the homeless. That is, they identify a tension located in the homeless stereotype that makes the problem it represents difficult to address.

Deconstructing the Homeless Stereotype

Foucault begins his history of *Madness and Civilization* in the Middle Ages, where he locates a connection between attitudes towards madness and the disappearance of leprosy. In his introduction to the 1965 English translation of the book, Dr. José Barchilon uses this discovery to explain Foucault's argument through the figure of the scapegoat: "As the madman replaced the leper, the mentally ill person was now a subhuman and beastly scapegoat."[31] This compelling statement indicates a throughline of voids that ideological constructions of human subjects work to fill. When leprosy disappeared, where was Western society meant to direct centuries worth of anxiety attached to the physical illness? Foucault insists this fear was projected onto the mad. And with the onset of scientific, economic, and political revolutions in the Modern Era, he again contends that these anxieties were passed on, this time to the mentally ill. Applying the same argument to deinstitutionalization, it could be assumed that iterations of the same societal fears were dumped onto the homeless. However, this case presents a significant mutation; the homeless do not exist in private confinement, but nakedly in public space.

This is therefore the paradox of homelessness, which American author Samira Kawash has helpfully termed 'placelessness.'[32] In her view, the homeless body is fundamentally contradictory; because it is fleshy and material, it demands physical space, yet societal discourse and political action work

tirelessly to render these individuals invisible or abject with endless attempts to spatially evict them. [33] The homeless existence thus becomes constrained and compressed within a "geography of containment."[34] Importantly, Kawash locates a violence within this containment characterized by a material and "inexorable chain of loss that spirals inwards toward the body"—that is, a loss deeply tied to a constate of movement due to the irony of spatial denial.[35]

For the homeless body that Kawash describes, place is not fixed or stable, but shifting, "emerging and disappearing as circumstances change."[36] Beyond space, homelessness is attached to visible and behavioral signifiers. Eclipsing race, gender, and even sex, the homeless are distinguished by "other attributes such as dirty or disheveled clothing, the possession of carts or bags of belongings, and particular activities such as panhandling and scavenging."[37] They are defined by the traits of their economic stature—their class position—and the fact that they are forced to live and perform what should be private acts in public. Thus the homeless body represents a failure to comply with the sanctioned performances of citizenship and public space. Where Kawash identified the irony of placelessness, Pope.L's *Times Square Crawl* embodies it.

CONCLUSION

In revisiting *Times Square Crawl*, it becomes clear that Pope.L was not only engaging with race and class, but issuing a searing critique of how cities, especially their citizens, respond to those made structurally vulnerable by state neglect. While he has noted that his "crawl pieces were never only about the homeless, [they] were also about those with homes," his choice to crawl through Times Square renders visible the bodies that have been most violently excluded from the archive, from city sidewalks, and public concern.[38] Against the backdrop of deinstitutionalization and New York's housing crisis, this *Crawl* beautifully articulates the exhaustion and paradox of placelessness: That street folk are forced to move through the city with nowhere to go, accentuating the gaping holes left by haphazard policies, classist urban planning, and social indifference.

Pope.L's performance thus makes tangible the lived consequences of systemic poverty and the structural forces that criminalize and marginalize unhoused individuals. By embodying these realities, *Times Square Crawl* not only deconstructs stereotypes surrounding homelessness and mental illness but intervenes in the broader politics of urban space and public responsibility. It also points to a pressing need: We must approach public art not merely as symbolic expression, but as a form of spatial testimony. In doing so, we might better recognize performances like Pope.L's for what they are; as interventions that confront us with the material consequences of exclusion, and as urgent invitations to imagine more accountable urban futures.

NOTES

[1] For example, see Martha Wilson and William Pope.L, "William Pope.L." BOMB, no. 55 (1996): 50.
[2] William Pope.L, Stuart Corner, Danielle A. Jackson, Adrienne Edwards, Martine Syms, Malik Gaines, et al., *member: Pope.L* (New York, New York: Museum of Modern Art, 2019), 16.
[3] Such as *Snow Crawl* (1991-2001) in Lewiston, Maine.
[4] Such as *Conquest* (2019), which included 100 participants crawling from New York City's Greenwich Village to Union Square. Hillarie M. Sheets, "Pope.L's Group Crawl: Protest, Pathos, Provocation," The New York Times, September 22, 2019, https://www.nytimes.com/2019/09/22/arts/design/popel-crawl-whitney-moma.html.
[5] Many scholars, including Pope.L himself, discuss the significance of Pope.L's shift from vertical to horizontal in his crawls. Margaret Winslow, "Pope.L: The Body and Its Void," Art Journal 79, no. 4 (2020): 133, doi: 10.1080/00043249.2020.1814074; Alisia Chase, "Learning to Be Human: An Interview with William Pope.L," Afterimage 33, no. 4 (2006): 21; Martyna Ewa Majewska, "Composting the Monument: Pope.L, Police, and the Trouble With Representation." Visual Arts Research 48, no. 1 (2022): 107, doi: 10.5406/21518009.48.1.09.
[6] *How Much Is That Nigger In The Window a.k.a. Tompkins Square Crawl* (1991) took place around the perimeter of Tompkins Square Park in New York City's East Village, and transpired in "response to the park's closure by Mayor David N. Dinkins after the 1988 riots by homeless and squatter groups who sheltered there," and *The Great White Way: 22 miles, 9 years, 1 street* (2001-2009) likewise "decried the alarming growth of New York's homeless population and the community's refusal to acknowledge the problem." Glenn D. Lowry, "Foreward," in *member: Pope.L* (New York, New York: Museum of Modern Art, 2019), 16-17.
[7] The yellow fabric attached to Pope.L's suit jacket connects *Times Square Crawl* to another performance the artist did that same year, titled *Thunderbird Immolation a.k.a. Meditation Square Piece* (1978). This performance was staged on a sidewalk outside a building in New York's SoHo neighborhood, and consisted of Pope.L sitting silently on a large yellow cloth, intermittently dousing himself with a combination of Thunderbird (a cheap, fortified wine) and/or pop until he was asked to leave. New York-based curator Adrienne Edwards has read this performance as a racialized critique of self-control in the west. Adrienne Edwards, "Waiting for a light: *Thunderbird Immolation a.k.a. Meditation Square Piece*" in *member: Pope.L*: 38-43.
[8] Nana Osei-Kofi, "Pathologizing the Poor: A Framework for Understanding Ruby Payne's Work," *Equity and Excellence in Education* 38, no. 4 (2005): 368-369, doi: 10.1080/10665680500299833; Ray McDermott and Shirin Vossoughi, "The culture of poverty, again," Studies in Migration, Integration, Equity, and Cultural Survival 14, no. 2 (2020): 61, doi: 10.1080/15595692.2020.1733960.
[9] Chase, "Learning to be Human": 21.
[10] Glenn D. Lowry, "Foreword," in *member: Pope.L*, 16-18; Jessica Maxwell, "William Pope.L: *Landscape + Object + Animal*," Nka Journal of Contemporary African Art 28 (2011): 129-151, doi: 10.1215/10757163-1266774; Didier Morelli, "Forms Follows Action: Performance In/Against the City in New York and Los Angeles (1970-1985)." PhD diss. Northwestern University (2021): 102; Jori Finkle, "Pope.L Makes Statements About Fringes," The New York Times, March 2014, https://www.nytimes.com/2015/03/22/arts/design/william-popel-makes-statements-from-the-fringes.html; Philip Kennicott, "William Pope.L Stands Up for His Art, Even When He's Crawling," The Washington Post, January 5, 2002, https://www.washingtonpost.com/archive/lifestyle/style/2002/01/06/william-popel-stands-up-for-his-art-even-when-hes-crawling/640de325-c93d-4391-8082-a560fe852423/.
[11] For example, Majewska, "Composting the Monument": 106-112; Catherine Wood, *Performance in Contemporary Art* (Tate Publishing: London, 2018), 76-77.
[12] Richard Lamb and Leona Bachrach, "Some Perspectives on Deinstitutionalization," Psychiatric Services 52, no. 8 (2001): 1039-1040. doi: 10.1176/appi.ps.52.8.1039.
[13] Ellen L. Bassuk and Samuel Gerson. "Deinstitutionalization and mental health services," Scientific American 238, no. 2 (1978): 47, doi: 10.1038/scientificamerican0278-46.
[14] Bassuk and Gerson, "Deinstitutionalization and mental health services": 48.
[15] Stephen Eide, "Systems Under Strain: Deinstitutionalization in New York State and City." Manhattan Institute (November 28, 2018). Accessed September 4, 2025. https://manhattan.institute/article/systems-under-strain-deinstitutionalization-in-new-york-state-and-city
[16] Michel Foucault, *Madness and Civilization: A History of Insanity in the Age of Reason*, trans. Richard Howard (New York: Pantheon Books, 1965).
[17] Foucault, *Madness and Civilization*, 66-68.
[18] Foucault, 252.

[19] Bassuk and Gerson, “Deinstitutionalization and mental health services”: 47.
[20] “Geraldo Rivera’s 1972 expose of Willowbrook State School.” *Pennhurst Memorial and Preservation Alliance*, accessed September 4, 2025. http://www.preservepennhurst.org/default.aspx?pg=1642.
[21] For example, Francix X. Clines, “About Somers: Beyond Institutions and ‘Deinstitutionalization.” *The New York Times* (14 April 1979): 22.
[22] Lamb and Bachrach, “Some Perspectives on Deinstitutionalization”: 1041.
[23] Stephen Eide, “Systems Under Strain,” 2018.; Fred E. Markowitz, “Psychiatric Hospital Capacity, homelessness, and Crime and Arrest Rates.” *Criminology* 44, no. 1 (2006): 45-72, doi: 10.1111/j.1745-9125.2006.00042.x; Corianna Barrett Lain, “The Road to Hell is Paved with Good Intentions: Deinstitutionalization and Mass Incarceration Nation.” *William and Mary Law Review* 65, no. 4 (2024): 893-948.
[24] Refer to Appendix A.
[25] Anna B. Dutka, “Reopen Institutions For the Mentally Ill.” *The New York Times* (12 November 1983): 22.
[26] For example, see Donald Light Jr., “Helping the ‘Dumped.’” *The New York Times* (5 July 1978): A17.
[27] Brian J. Sullivan and Jonathan Burke. “Single-Room Occupancy Housing in New York City: The Origins and Dimensions of a Crisis.” *CUNY Law Review* 17, no. 1 (2013): 122, doi: 10.31641/clr170104.
[28] Edward A. Gargan, “Ducking for Cover Over the Homeless.” *The New York Times* (27 November 1983): E7.
[29] Emphasis added. Donald Light Jr. “Helping the ‘Dumped.’” *The New York Times* (5 July 1978): A17.
[30] Anonymous, “Hysteria and the Homeless.” *The New York Times* (31 August 1981): A16.
[31] José Barchilon, “Introduction” in *Madness and Civilization* by Michel Foucault (New York: Pantheon Books), vii.
[32] Samira Kawash, “The Homeless Body.” *Public Culture* 10, no. 2 (1998): 327-329, doi: 10.1215/08992363-10-2-319.
[33] Kawash: 323.
[34] Kawash: 329-330.
[35] Kawash: 331.
[36] Kawash: 334.
[37] Kawash: 324.
[38] Chase, “Learning to be Human”: 22.

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SITES OF THE HABITUS: PLACE TO SPACE – CITY TO CITY

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INTRODUCTION

"In the Balearic Isles. Last summer,
What gives value to travel is fear. It is the fact that, at a certain moment, when we are so far from our own country (a French newspaper acquires incalculable value. And those evenings when in cafes you try to get closer to other men just to touch them with your elbow), we are seized by a vague fear, and an instinctive desire to go back to old habits. This is the most obvious benefit of travel. At that moment we are febrile but also porous."
Albert Camus, May 1935 *In: Selected Essays and Notebooks* (1979)[1]

Winchester School of Art

From 1992 to 1993, I studied Winchester School of Art's MA European Fine Art (Fig.1) which followed on the heels of the 1992 Barcelona Olympics. The course was divided between a 9-month studio residency in Barcelona culminating in three months in Winchester in preparation for a graduate exhibition, which was the culmination of the course. Initially I worked between artist studios and workshops in Barra de Ferro in Barcelona's Gothic quarter, and a studio complex at the city's outskirts in what was still a largely undeveloped Poblenou. Both locations are important as they are emblematic of Barcelona's contemporary identity, and the cultural and architectural investment and redevelopment, which established what became the city's post-Olympiad legacy.
Arriving in a taxi from Barcelona's El Prat Airport in the autumn of 1992, I was dropped off at the corner of Carrer de la Princessa and Carrer dels Assaonadors. Here, I was due to meet a group of fellow students who were temporarily housed in apartments in Carrer de la Blanqueria. At this time Blanqueria was very much unreconstructed in its claustrophobic and somewhat foreboding gauntlet of buildings, dating from the 18th century and earlier, along its narrow, and sometime heroin-needle-strewn thoroughfare. This belied the grandeur of the courtyard entrance and setting upon crossing the threshold. As a cohort we eventually dispersed and settled in different parts of the city. I moved into a flat in a residential neighborhood on Carrer de Sant Antoni Maria Claret near to a basketball court and a local Cinema Napols showing films dubbed in Catalan and subtitled in Spanish.

Figure 1. Cian Quayle, C-type, Colour 6 x 4, enprint, Barcelona 1992/93 (Carrer de Sant Antoni Maria Claret)

This sojourn marks an intersection in my practice and development as an artist, which was enriched by a succession of chance meetings and encounters with artists and individuals (historically and contemporaneously in the work of Antoni Tapies in his use of base and degraded everyday materials and things incorporated in his paintings and printmaking and Japanese printmaker Masafumi Yamamoto), sensory impressions (the intensity of light upon first emerging from the underground station at El Poblenou; things purloined (Albert Camus's *Selected Essays and Notebooks*); or otherwise left behind (a trunk of personal belongings), objects and things found and picked up on the streets of the city (exquisite early 20th century, hand-scripted, ledgers I wish I'd kept), and at its outskirts (a basket-woven object of unidentified function). During my postgraduate studies I concentrated my practice in printmaking in a move away from painting. This change in direction foreshadowed the beginning of a more earnest photographic practice. In Barcelona this initially took the form of Xerographic (Xerox photocopy) transfer of photographic images from magazines, books and collected ephemera combined in printmaking (monoprints, lithographs and photo-etchings). These processes provided a way of transforming and carrying away the indexical trace of events (seen or witnessed), alongside the experience and encounter with people, place and things between one place and another in relation to ideas of place and artist journeys.

PLACE TO SPACE

The opportunity to revisit the city via a deconstructed archive of my previous visits has provided the opportunity to reconfigure a collection of fragments and impressions in print, indexed and rendered in photographs, as well as imprinted on the mind. The photographs in this paper documented the experience of the city as it was first encountered and photographed in 1992, and later revisited at the end of the century in 1999, alongside material tests, off-prints and ephemera which form part of what at the time was a nascent archive or impromptu, inventory of materials. The images which follow provide a snapshot on my walking, note making and collecting in the city alongside artworks made at the same time.

Figure 2. Antoni Tapies, Matalàs, Paint and assemblage on bronze, 58 x 110 x 71 cm, 1987
https://museutapies.org/en/the-collection/works/?o=270

Figure 3. Cian Quayle, Untitled, Sugar-lift etching with chine-collé, 12 x 23.5 cm, 1993

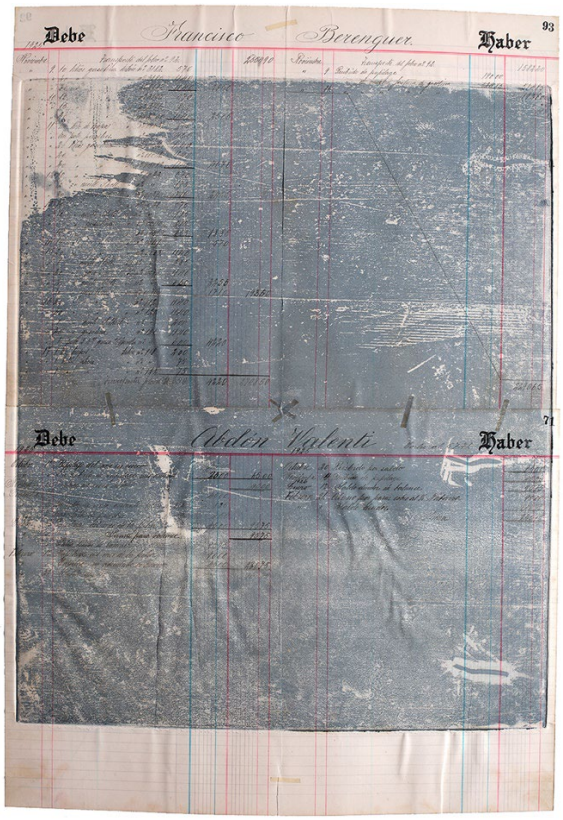

Figure 4. Cian Quayle, Untitled (Berenguer and Valenti), Lithograph and etching, 43 x 62 cm, 1993

As such this paper is a montage of recollections, reflections and fragments, in text and image, for which I have taken my cue primarily from French philosopher and phenomenologist Michel de Certeau's essay *The Practice of Everyday Life* (1984),[2] Dutch architect and architectural theorist Rem Koolhaas's writing in *The Generic City*[3] and his later essay 'Junkspace'.[4] As part of an extended study and by varying degrees of relevance, but outside the scope of this essay, I would also cite Paul Auster's *City of Glass* (1985)[5] and its episode of flaneur-like, derive, André Breton's *Nadja* (1928)[6] and the search for connection and lost love; Alan Robbe-Grillet's *Topology of a Phantom City* (1976)[7] in its dream-like/nightmarish, eroticized, evocation of space, and to a lesser extent Emmanuel Levinas, 'The Trace of the Other' (1963)[8] and the epiphany of recognition in the faces of those encountered. My research has also been informed by novelist Colm Tóibín's *Homage to Barcelona* (1990)[9] and art historian Robert Hughes' *Barcelona* (1992)[10] both published around the same time as my first visit to the city. Preparing the materials for this paper has reactivated research and practice, which longer term will more fully explore the significance of each of these writers' relationship with the space of the city.

Each of the texts listed above is characterized, by the means, as Michel de Certeau has it, that in both a metaphorical and elliptical way: "the reader slips into the author's space"[11] to develop a personal and in my practice, a visual language, which manifests the experience and encounter of the city: "concentrated above all on the uses of space, on the ways of frequenting or dwelling in a place […] making it possible to live in them by the plural mobility of goals and desires – an art of manipulating and energising,"[12] In Chapter 7 Walking Practices de Certeau establishes the correlation between speech and walking as practices of *place* and *space*: "The act of walking is to the urban system what the speech act is to language or to the statements uttered."[13] In their everyday articulation, and the act of walking as a practice of *place* in its fixity, is transformed into *space* in the fluidity of everyday experience: In Chapter IX Spatial Stories *"Spaces and "Places"* de Certeau differentiates his definition of the use of these terms and their meaning: "At the outset, I shall make a distinction between space (*espace*) and place (*lieu*) that delimits a field." De Certeau construes place as what is already established, known or 'proper' in its "stability". Conversely, he goes on to suggest that: 'A *space* exists when one takes into consideration vectors of direction, velocities and time variables. Thus, space is composed of intersections of mobile elements. It is in a sense actuated by the ensemble of movements deployed within it. Space occurs as the effect produced by the operations that orient it, situate it, temporalise it, and make it function in a polyvalent unity of conflictual programs or contractual proximities. […] modified by the transformations caused by successive contexts."[14]

It is the activation of space in the way it is enacted or in speech verbalized in the moment of its utterance or "enunciation." De Certeau makes the following definitive statement in relation to the urban environment: *In short space is a practiced place.* Thus, the street geometrically defined by urban planning is transformed into a space by walkers [….] i.e. a place constituted by a system of signs."[15]

I am interested in writing, cinema and art practices, which bear the mark of the places in which they were made and the city and landscape as a psychological entity. In my practice the transformation of "place" to "space" is embodied in artworks, which simultaneously document things found and collected, as well as photographed and the intimate, (proximate) experience of those encountered. Photography ultimately takes on a greater significance as a means of carrying or transporting those things from one place to another.

Figure 5. Cian Quayle, C-type, Colour 6 x 4 inch, enprint, Barcelona, 1999

Through the pedestrian act of walking and the transformation of spatial signifiers identified *en route* Michel de Certeau has provided theoretical as well as practice-based paradigms in relation to artist journeys which were investigated in my PhD thesis *Inventory for a Reverse Journey – Photographic Image and Found Object.*[16] Having made reference to Charlie Chaplain's use of his walking cane as a prop – as well as quoting Roland Barthes in the following, de Certeau defines the *walker's practice of place and space* (author emphasis and italics) as follows: "And if on the one hand he only actualizes a few of the possibilities fixed by the constructed order (he goes only here, not there), on the other he increases the number of possibilities (for example, by creating shortcuts and detours) and prohibitions (for example, he forbids himself to take paths generally considered accessible or even obligatory). He thus makes a selection. "The user of a city picks out fragments of a statement in order to actualise them in secret."[17]

Rem Koolhaas: The Generic City and *Junkspace*

In an oscillation between *Inside* and *Outside* De Certeau's 'speech' act of walking the city as a process of "enunciation" is contrasted with Rem Koolhaas's conception of *The Generic City* and the cocooned, interiority of generic, architectural sites which he characterizes as 'Junkspace'.

My arrival in Barcelona coincided with Rem Koolhaas research which led to the publication of *The Generic City* (1995) in which he writes: "Sometimes an old, singular city, like Barcelona, by

oversimplifying its identity, turns Generic. It becomes transparent, like a logo."[18] Koolhaas no doubt noted the many different forms of architectural commission which the Olympics spawned and the way that they become a form of corporate branding that any event of the magnitude and transformation of the Olympics sucks in. In his essay "The Generic City: Retroactive Manifestoes for Global Cities of the 21st Century" (2008) Esra Akan observes that in 1993, Rem Koolhaas travelled 360.000 kilometres and spent 305 nights in hotels extensively recording his travels and findings in *The Generic City*. Akan evokes the practice of "traveller architects" who found their lodestar in Koolhaas, leading to a network of collaboration, parallel and subsidiary projects spawned by Koolhaas's research and the work of the OMA (Office for Metropolitan Architecture).

Figure 6. Cian Quayle, C-type, Colour 6 x 4, enprint, Barcelona 1992-1993
(Olympic Swimming Pool, Piscina Municipal de Montjuic)

Akan characterizes Koolhaas' practice as an itinerant one drawing on the experience of what is learned from place to place located in: "[…] the impulse of the meticulous diary keeper. Everything is worth recording in this case. Small vernacular buildings, buildings with no name. Randomly created irregular streets are no less collectible than monuments with an aura and 'what unites Koolhaas's depiction of these cities is the fact that inhabitants in all of them have come up with creative ways of living in cultures of congestion and, especially, with forms of unspecific and unstable buildings.'[19]

Figure 7. Cian Quayle, Photogrid, Collage of four C-type, Colour 6 x 4, enprints, Barcelona, 1992-1993

Figure 8. Cian Quayle, Photogrid, Collage of four C-type, Colour 6 x 4, enprints, Barcelona 1992-1993

Figure 9. Eugène Atget, Rue St. Rustique, March. Paris, France, 1922 (Printed 1956) Library of Congress: https://www.loc.gov/item/92511170/.

Walter Benjamin and Eugène Atget

Akan's description of the observation and documentation of the everyday and our vernacular surroundings carries the echo of celebrated German, Literary Theorist Walter Benjamin's analysis of the great Parisian photographer Eugène Atget (1857 - 1927). In *Little History of Photography* (1931) Benjamin describes the way in which Atget traversed Paris and its environs undertaking commissioned work but at the same time, exploring and seeing the city photographically and poetically, as part of his personal experience and in its essence a Surrealist encounter embodied in Atget's process and photographs:

"He [Atget] looked for what was unremarked, forgotten, cast adrift. And thus, such pictures, too, work against the exotic, work against the romantically sonorous names of cities; they suck the aura out of reality like water from a sinking ship,—What is aura, actually? A strange weave of space and time: the unique appearance or semblance of distance, no matter how close it may be.

Atget almost always passed by the "great sights and so-called landmarks." What he did not pass by was a long row of boot lasts; or the Paris courtyards, where from night to morning the handcarts stand in serried ranks; or the tables after people have finished eating and left, the dishes not yet cleared away—as they exist by the hundreds of thousands at the same hour.

It is these achievements that Surrealist photography sets the scene for a salutary estrangement of man from his surroundings. It gives free play to the politically educated eye, under whose gaze all intimacies are sacrificed to the illumination of detail."[20]

Atget's photographs have ensured that these spaces and their use could never be forgotten. De Certeau also refers to the act of *passing-by* which in his context highlights what the mapping of cities omit in their representation of the way in which places are unselfconsciously navigated on a daily-basis, and how these rituals, in their "habitus,"[21] are simultaneously shaped by the built environment, and potentially forgotten: "Surveys of routes miss what was: the act of passing by. The operation of walking, wandering, or 'window shopping', that is the activity of passers-by, is transformed into points that draw a totalizing and reversible line on a map. […] These fixations constitute procedures

for forgetting. The trace left behind is substituted for the practice. It exhibits the voracious property that the geographical system has of being able to transform into legibility, but in doing so causes a way of being in the world to be forgotten"[22]

Figure 10. Cian Quayle, Photogrid, Collage of four C-type, Colour 6 x 4, enprints, Barcelona 1992-93

At the turn of the century Koolhaas expanded on his initial manifesto *The Generic City* in his 2002 essay *Junkspace*. In a dense, stream of consciousness, meditation spun out in an inventory of metaphorical allusions Koolhaas rails against the non-identity and formlessness, the indefinability of Non-entity. Koolhaas offers up his correlation of the nature of *space* and *place* in a switching of positions in the use of terms but like de Certeau it is what is erased and subsequently forgotten that is at stake:

"Because of its tenuous viability Junkspace has to swallow more and more program to survive; soon, we will be able to do anything anywhere. We will have conquered place. At the end of Junkspace, the Universal? Through Junkspace, old aura is transfused with new luster to spawn sudden commercial viability: Barcelona amalgamated with the Olympics, Bilbao with the Guggenheim, Forty-second Street with Disney, God is dead, the author is dead, history is dead, only the architect is left standing … an insulting evolutionary joke… A shortage of masters has not stopped a proliferation of masterpieces." Koolhaas's cites the Barcelona Olympics and his concern for how the cities might be stripped of their identity and humanity in the development of what he cynically describes as "Masterpieces" driven by a "consistent typology: it's mission to intimidate, most of its exterior surfaces bent, huge percentages of its square footage dysfunctional, its centrifugal components barely held together by the pull of the atrium, dreading the imminent arrival of forensic accounting. Junkspace strives to achieve an: Erosion Instead of public life, Public Space: what remains of the city once unpredictable has been removed … Space for 'honoring', 'sharing,' 'caring,' 'grieving,' and 'healing' … civility imposed by an overdose of serif."[23]

CONCLUSION

Koolhaas's iconoclastic, critique of architectural folly pointedly highlights the worst excesses, which are the symptom of huge corporate budgets and grants generated by World Fairs, Expositions and Olympiad events and the way in which all inevitably drain the life and aura out of cities. Barcelona like other great cities retains its historic grandeur and a grittiness inflected by 21st century migration and displacement. The impact of over-tourism has seen the cost of rental and property prices increase to such an extent as properties are bought up by global travel companies at the expense of cheap rents. Consequently, the countercultural, inhabitation of place and space, which otherwise enriches and nourishes the cultural identity of any city is ultimately suppressed.

In the *The Generic City* Koolhaas reflects on corporate redevelopment and urban planning which elides what is undesirable and what lies outside of "Junkspace". The everyday activities of displaced, deprived and disenfranchised residents in barrios within the heart of the city, in-between, at the edge, or on the periphery of the city continue to persist in their transformative practices. How is the space of the city understood beyond the footfall of *over-tourism* through its resident inhabitants and transients whose transformations are not those of self-aggrandizing, architectural-reification, but those of making one's way in the midst 21st century regeneration and gentrification; A lived-experience enriched by multi-cultural identities, whether hybridized or marginalised. In reflecting upon a practice-based, experience and perspective as an artist, traced in the fragmentary experience of being somewhere, contributes to other ways of understanding of "place" and "space" and its everyday transformation.

NOTES

[1] Albert Camus, “Sketches for a Self Portrait,” in *Selected Essays and Notebooks* (1964), trans. Philip Thody (Middlesex: Penguin Books 1979), 23
[2] Michel de Certeau, *The Practice of Everyday Life*, trans Steven F. Rendell (Berkeley and Los Angeles: University of California Press, Ltd.)
[3] Rem Koolhaas, *The Generic City* (New York: Monacelli Press, Inc. 1995)
[4] Rem Koolhaas, “Junkspace,” October Vol. 100, Obsolescence (2002):175–190
[5] Paul Auster, “City of Glass,” in *The New York Trilogy*, (London: Faber and Faber 1987): 1–90
[6] André Breton, *Nadja* (1928), trans. Richard Howard (New York: Grove Press, 1960)
[7] Alain Robbe-Grillet, *Topology of a Phantom City*, trans. J.A. Underwood (New York: Grove Press, 1977)
[8] Emmanuel Levinas, “The Trace of the Other,” in *Deconstruction in Context (Literature and Philosophy)*, ed. Mark C. Taylor, excerpt trans. A. Lingis (Chicago and London: University of Chicago Press, 1986): 345–399
[9] Colm Tóibín, *Homage to Barcelona* (London: Picador 2025)
[10] Robert Hughes, *Barcelona* (London: The Harvill Press, 2001)
[11] de Certeau, General Introduction, xi
[12] de Certeau, General Introduction, xii
[13] de Certeau, Part III Spatial Practices, Chapter VII, Walking in the City, 97
[14] de Certeau, Chapter IX Spatial Stories, *“Spaces” and “Places,”* 117
[15] de Certeau, Chapter IX Spatial Stories, *“Spaces” and “Places,”* 117
[16] Cian Quayle, Inventory for a Reverse Journey - Photographic Image and Found Object: An Investigation of Travel and Material Transformation as a Paradigm of Artist’s Practice, PhD Thesis, University of the Arts London https://ualresearchonline.arts.ac.uk/view/creators/Quayle=3ACian=3A=3A.html
[17] de Certeau, Part III Spatial Practices, Chapter VII, Walking in the City, 98
[18] Koolhaas, *The Generic City*, 1250
[19] Esra Akan, “The Generic City: Retroactive Manifestoes for Global Cities of the 21st Century,” *Perspecta*, Vol.41 (2008): 146
[20] Walter Benjamin, “Little History of Photography,” in *Walter Benjamin Selected Writings, Volume 2, Part 2, 1931 - 1934*, trans. Rodney Livingstone and others. (Cambridge Massachusetts and London: Harvard University Press), 518–519
[21] Pierre Bourdieu, “The Cult of Unity and Cultivated Differences”, in *Photography – A Middle-brow Art*, translated by Shaun Whiteside. (Oxford: Polity Press, 1990), 13–72
[22] de Certeau, Part III Spatial Practices, Chapter VII, Walking in the City, *2. The chorus of idle footsteps*, 97
[23] Rem Koolhaas, “Junkspace,” 184

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BIG DATA AND MINOR LITERATURE: BETWEEN SMART CITY AND DOLLY CITY

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INTRODUCTION

One hundred years ago, Robert Park and his colleagues wrote: "We are mainly indebted to writers of fiction for our more intimate knowledge of contemporary urban life."[1] In this paper, we express our gratitude to such fiction writers for the criticism their work can offer on urban digitalization, and particularly on the field of "smart cities." This paper continues Nathansohn's previous work,[2] which presents a reading of Italo Calvino's *Invisible Cities* as a potential inspiration and warning for smart city stakeholders, thanks to its intellectual, methodological, and imaginative prose, and complements it with Maayan's exploration of community-oriented pedagogies and activist education that offers an alternative to big-data-driven approaches to the city.[3]

The term "smart city" refers to the integration of digital applications into urban spheres supposedly to improve efficiency, governmentality, sustainability, and convenience.[4] The smart city field is based on the desire to digitally code everything that happens in a city, from its infrastructure to the behavior of its residents and the interactions between them. Such digital coding is followed by algorithmic processing that allegedly yields better outcomes than our own processing when it comes to running cities and predicting their futures. And we are told it is objective, faster, and smarter.

Like rich ethnographies, urban novels describe human characters and their social interactions in ways that portray urban wisdom, or better, the urban cultural algorithm, defined as "an implicit formula that maintains its residents' collective practices and the changes they undergo."[5] While many social actors in both the field of smart city and the urban novels express the desire for coding the urban scene, some urban novels reveal the un-codable character of urban life, the chaotic nature of cities, which does not surrender to the order demanded by digital coding machines. Such is the case of "Biotope," "Dolly City," and "Textile," three urban novels by the Tel-Avivian author Orly Castel-Bloom. In these novels, the city is already smart and will never be smart. It is already smart because its residents practice their urban cultural algorithms; It will never be smart in the digital sense of smartness, for exactly the same reason.

The criticism that such urban novels can offer on the field of "smart cities" will be presented here by using Gilles Deleuze and Félix Guattari's concept of "Minor Literature,"[6] drawn from their analysis of Franz Kafka's writing. Our main theoretical argument here is that in the context of urban digitalization and big data, urban novels can be regarded as Minor Literature that dismantles technopolitical forms of domination. In other words, such urban novels present minor-data literature, which is different than "small data"[7] due to its opposition to power, and can be read as criticism of the smart city industry, with its digital algorithms and artificial intelligence.

Deleuze and Guattari present three features of what they call minor literature: (1) it de-territorializes language; (2) everything in it is political; and (3) everything in it takes on a collective value.[8] They also add that "a minor literature doesn't come from a minor language; it is rather that which a minority constructs within a major language."[9] In smart city terms, minor literature is constructed by urban dwellers who use data, which is not necessarily coded by digital algorithms and AIs, but nonetheless carries similar features of identifying, coding, and cataloguing. Here, for example, is how the narrator describes an urban street in the opening of *Textile*, Castel-Bloom's story of a disintegrating family anchored in a Tel-Avivian neighborhood:

The light from the decorative street lamps joined the soft beams shining from amid the vegetation of the flourishing front gardens, which were all the same: three lemon cypresses, another three or five Thai ficuses, and one strange and unfamiliar tree that had shed its leaves and whose trunk was covered by thick, short thorny growths with hard, menacing points.

Taller and more prominent than these plants was a kind of slender palm whose large, feathery fronds looked as if they were bursting from a fountain with a low-pressure jet. This palm—which had been imported at the end of the nineties, was called a coconut palm (Syagrus romanzoffiania) even though it bore no relation to the edible coconut fruit—required very little water, while its rapid and imperious growth produced results of a cunning and historically helpful nature: it gave rise to the impression that the suburb of Tel Baruch North had not been established yesterday or the day before, but had been there for years. As the tall, flourishing coconut palms proved.

The suburb of Tel Baruch North was special, very different from the undistinguished sister suburbs surrounding it, and although it had been set up in the blink of an eye and was completely new—it proclaimed seniority and permanence, even if life itself was fleeting. An impressive achievement that explained the high price of the apartments.[10]

This rich description is a minor act of coding and cataloguing that allows the narrator to analyze the linguistic-economic context of the neighborhood. Such a cultural algorithm, which is based on an attempt to identify (not always successfully), to categorize, and to find similarities and differences, is different from the technopolitical perspective of a digital algorithm in both process and goals. While digital coding aims to be ubiquitous and future-oriented, minor acts of coding are partial, focused on the present, and are culturally and historically conscious.

Minor literature in urban novels expresses the logic of the cultural algorithms that exist simultaneously, correspondingly, conversely, above, and below the digital algorithms, which represent a majoritarian logic. Here is an expression of how such a cultural algorithm works in *Biotope,* a novel by Castel-Bloom where she humorously focuses her microscope on the margins, fear, and poverty of a contemporary metropolis:

As I arrived in front of the building that shares the same parking lot with our building (them on the right and us on the left), an elderly resident with a hunched back asked me not to cross through the Dubnov Building but to go around it.

"But I live here," I told her, pointing to my sun-drenched apartment. "Living here or living there are not the same thing, sir. Here, you're on Shaul HaMelekh Avenue and you get all the soot in your face. I'm a resident of Dubnov Street."

Now I knew: they were Dubnovians, and in a state that upholds the rule of law, a distinction had to be made between them and the residents of Shaul HaMelekh Avenue.[11]

The cultural algorithm of urban residents is based on their habitual practice of identifying and classifying interactions, objects, humans, and non-humans. When value is added to this data, it enables them to consider various attitudes and practices. Such cultural algorithms undermine the majoritarian model by being flexible and dynamic. This encounter between neighbors expresses one of the "minor moments," which, according to Zehavi, usually "pass in the blink of an eye and yield to

the ongoing major moments. But minor politics, micropolitics, grasps on to these moments and tries to reinforce them in order to mitigate the violence that rules over the vast majority of instances."[12] A minor moment such as this one may speak the logic of "the rule of law," but the law is redrawn in unexpected ways, emptying it of legality and returning it to lawlessness.

In the following excerpt from *Biotope*, the main character describes the behavior of French tourists. Here, with the coding and classifying presented by the main character, the novel de-territorializes the language of big data. It highlights the mundane, quotidian cultural algorithms of urban residents: a coding from below, which re-symbolizes smartness.

We know they're there because of the towels hanging on their balconies, because as soon as they land and drop off their suitcases, they rush to the beach to tan their pale skin. After a few hours of turning red, they return, take a shower, and hang their towels out to dry. I've never seen any laundry drying there other than towels, which are always white.

After a few days, they're well-tanned but never reach the tan of the homeless, which is one or two degrees lower than that of the black-skinned workers from Sudan or Eritrea who work in Ibn Gvirol's restaurants. An untrained eye can easily mistake a sunburned homeless person for an African worker. When in doubt, I recommend observing what the person in question carries with them. It goes without saying that a homeless person can also have black skin, but not in this part of the city. Those people are found in the southern part of the city.[13]

In Dolly City, an earlier novel by Castel-Blum, which follows, with dark humor, the maternal nightmares of a resident of a futuristic-primitive metropolis, the main character presents a re-territorialization of the majorist language to a degree that highlights the absurdity of the actual practice of coding and classifying. Or better – the uncodability of urban life.

McMillan spread a map of Dolly City on the muddy pavement, and for the first time in my life, I looked down on things from above. What can I say about the things I looked down on? I accorded them all due respect.

McMillan pointed to the Wells of Despair, the Lakes of Fear, the Swamps of Boredom, and the Canyons of Mannerism, and all those arrows signifying people's migration patterns.[14]

Dolly City's main character is a minor character. Although she seems to live in the center of her city, she has her own unique way of interpreting it, pushing the concept of living in a city to its ever-extending limits. This character echoes Michel de Certeau's "unrecognized producers" who use the vocabularies of established languages and syntaxes, but nonetheless travers the systems they infiltrate by becoming "poets of their own affairs, trailblazers in the jungle of functionalist rationality."[15] They trace "'indeterminate trajectories' that are apparently meaningless, since they do not cohere with the constructed, written, and prefabricated space through which they move. They are sentences that remain unpredictable within the space ordered by the organizing techniques of systems."[16] Such minor characters "repeatedly bring about becomings that unceasingly unravel and reweave the social fabric."[17] According to Zehavi, "everyone has minorial potential,"[18] and minor politics is a site of encounter between "singular and identity-less characters."[19] As the next excerpt shows, the de-territorialization that such minor characters can offer breaks conventional, majorist, big-data-ist conceptions and functions.

Suddenly a light flashed in the black sky and I thought, here goes, Dolly, gallons of water will come pouring down on your head again. But I was wrong. Additional flashes of light revealed a cloudy sky covered with hundreds, maybe thousands of gray and black French Air Force planes. The descendents of the Gauls, the comrades and successors of Saint-Exupery, had arrived with their most up-to-date weapons to wipe out the inhabitants of Dolly City, and thousands of animals were parachuted down, dogs and jackals and foxes infected mainly with rabies, but also with typhus and other serious diseases. The animals spread through the city like swarms of locusts, and people began

to vomit and fall twitching to the ground, and all kinds of youth movements began setting up field hospitals, and heralds walked around requesting doctors from all ethnic communities to present themselves for job interviews. I said to myself, Dolly, this is your big day, everyone's sick, everyone's dying. I ran to the job interview. I got the job.[20]

According to Deleuze and Guattari, everything in minor literature is political. Each individual intrigue, they write, is forced to connect immediately to politics: "The individual concern thus becomes all the more necessary, indispensable, magnified, because a whole other story is vibrating within it."[21] These stories make the statistics behind big-data algorithms irrelevant, because, as de Certeau notes, it "can tell us virtually nothing about the current in this sea theoretically governed by the institutional frameworks that it in fact gradually erodes and displaces."[22] Moreover, in Dolly City, the main character is presented as someone who cannot cope with the data overflow created by the city, which leads her to doubt her own senses.

I didn't sleep at night. First of all, the trains and the expressway drove me crazy. Over the years, the population of Dolly City grew and it filled up with all kinds of nonentities and subhumans, who demanded more and more means of transport, more and more roads and railways. For lack of space, new roads and railways were built one on top of the other, and the terrible noise of the trains became such an integral part of my being that sometimes I thought it was a figment of my imagination.

And yet every time I thought so, I got up to make sure. To make sure again. And again, and again. Until I was absolutely, absolutely, absolutely certain that the trains I saw down below, the colliding cars, the commotion of the modern world, were really and truly there. The echo took over my life to such an extent that I was unable to distinguish it from the original sound.[23]

Digital sensors, too, know very little and cannot interpret the data they produce and collect.[24] By having similar doubts, Dolly City's main character opens for us the possibility to follow suit and question the "sensor society,"[25] where information is received, processed, and produced by digital sensors, then fed into digital algorithms. By dismantling technopolitical forms of domination, such minor politics opens possibilities for "another consciousness and another sensibility,"[26] and "allow for deviant creatures, singular voices, to encounter one another."[27]

The third feature of minor literature according to Deleuze and Guattari is that "everything in it takes on a collective value."[28] They argue that in Kafka's "The Trial," the letter K "no longer designates a narrator or a character but an assemblage that becomes all the more machine-like, an agent that becomes all the more collective because an individual is locked into it in his or her solitude."[29] But for smart city criticism, it seems counter-productive to interpret Dolly City as a generic city rather than a particular case of an imagined city. In a capitalist market, smart city products must treat all cities equally and cannot be tailored to each city's specific characteristics. Therefore, to allow for criticism of the concept of "smart city," urban novel should focus on the features, characters, interactions, and moments that make it difficult, if not impossible, to normalize, unify, and standardize cities.

At night, when I couldn't sleep, I would go out to the balcony and try to pull myself together. Dolly City lay below me in all its chaos and ugliness. Dolly City, a fragmented city, a crosshatched city, one motherfucking city.

I tried to ignore the terrible noise of the metropolis, the clatter of the machines, the screeching and rattling of the traffic, which behaved as if Dolly City belonged to it. Cable cars, steam engines, express trains, ships, trams, airplanes, automobiles, trucks, motorbikes—they all crossed each other's routes, colliding with each other, freaking me out, making me frantic.[30]

This description of Dolly City reads like that of many other cities. Such collective representation not only fails to allow criticism of smart city features, but it also calls for an urgent, smart solution to the urban chaos. However, we can also read it as a description of an already-smart city, one in which all its technologies fail in achieving their stated goals.

As an urban anthropologist, as she sometimes presents herself,[31] Castel-Blum points to the urban-cultural algorithm and to its meeting points with the subjectivities of the city dwellers. This subjectivity includes the intertwining of the public and private spaces; the personal routine of residents-as-experts, who use big-data categories in their everyday small-data coding practices; the sociocultural mechanisms of discipline and control which no CCTV could replace or monitor; the affects of the urban multisensorial space; the senses of belonging, estrangement, clarity and hallucination, which every attempt to control them creates a new, unexpected twist in the urban plot.

"Dolly City," "Biotope," and "Textile" present the general logic of data coding, internalized by urban residents, and produced by them in original, dynamic, and reflexive manners. Intentionally or otherwise, such minor characters present alternatives, and teach us that "we all also have minorian potential. Minoracy is not a lofty ideal that only the uniquely virtuous are able to attain. It is embedded in us all, though usually lies dormant."[32]

The individual's desire to live in a truly smart city reminds us of the drive in the technology industry, as well as in governance, for order, control, and prediction. However, while technology companies focus on marketing the imagined potential success of their products, the characters in Orly-Castel Bloom's urban novels mainly present the urban becoming, with its minor characters, minor moments, and minor politics, despite all the attempts to make it smart.

ACKNOWLEDGMENTS

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NOTES

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[2] Regev Nathansohn, "Invisible Smart Cities," in *Invisible Cities and the Urban Imagination*, ed. Benjamin Linder (Cham: Palgrave Macmillan, 2022).
[3] Sagy Maayan, "Home is Where the Heart Lies: Learning, Research, Creation, and Action in Culture," *Studies in Education*, 24 (2024): 397–411.
[4] See Vito Albino, Umberto Berardi, and Rosa Maria Dangelico, "Smart Cities: Definitions, Dimensions, Performance, and Initiatives," *Journal of Urban Technology* 22, no. 1 (2015): 3-21, https://doi.org/10.1080/10630732.2014.942092; Federico Caprotti, "Spaces of Visibility in the Smart City: Flagship Urban Spaces and the Smart Urban Imaginary," *Urban Studies* 56, no. 12 (2019): 2465–79, https://doi.org/10.1177/0042098018798597; Rob Kitchin, "The Timescape of Smart Cities," *Annals of the American Association of Geographers* 109, no. 3 (2019): 775–90, https://doi.org/10.1080/24694452.2018.1497475.
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[6] Gilles Deleuze and Félix Guattari, *Kafka: Toward a Minor Literature* (Minneapolis: University of Minnesota Press, 1986).
[7] Rob Kitchin, *Critical Data Studies: An A to Z Guide to Concepts and Methods* (Cambridge: Polity Press, 2025), 222.
[8] Deleuze and Guattari, *Kafka,* 16-17.
[9] Deleuze and Guattari, 16.
[10] Orly Castel-Bloom, *Textile*, trans. Dalya Bilu (New York: The Feminist Press, 2013), 9-10.
[11] Orly Castel-Bloom, *Biotope* (Tel Aviv: Hakibbutz Hameuchad Publishing House, 2022), 51.
[12] Ohad Zehavi, "Minoracy," *Mafte'akh: Lexical Review of Political Thought* 1e (2010), 47.
[13] Caste-Bloom, 52.
[14] Orly Castel-Bloom, *Dolly City*, trans. Dalya Bilu (Champaign, IL: Dalkey Archive Press, 2010), *85-86*.
[15] de Certeau, *The Practice of Everyday Life* (Berkeley: University of California Press, 1984), 34.
[16] de Certeau, 34.
[17] Zehavi, 39.
[18] Zehavi, 44.
[19] Zehavi, 44.
[20] Castel-Bloom, *Dolly City*, 106-107.
[21] Deleuze and Guattari, *Kafka,* 17.
[22] de Certeau, *The Practice of Everyday Life*, 34.
[23] Castel-Bloom, *Dolly City*, 37.
[24] Jessa Lingel, "What Does a Sensor Know?" *Dialogues on Digital Society* 1, no. 2 (2025): 206–9, https://doi.org/10.1080/1369118x.2020.1766534.
[25] Mark Andrejevic and Mark Burdon, "Defining the Sensor Society" *Television & New Media* 16, no. 1 (2015): 19-36, http://doi.org/10.1177/1527476414541552.
[26] Deleuze and Guattari, *Kafka,* 17.
[27] Zehavi, *Minocracy*, 44.
[28] Deleuze and Guattari, *Kafka,* 17.
[29] Deleuze and Guattari, 18.
[30] Castel-Bloom, *Dolly City*, 29.
[31] See Elad Bar Noy, "Orly Castel-Bloom: 'When I turned to realism, they didn't like it. They wanted me crazy, psychotic. But how much is possible?'" *Ynet+*, October 30, 2022, https://www.ynet.co.il/entertainment/article/bjvbbnr4i.
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ROLE OF FAMILY INSTITUTION IN REALISING A LIVABLE CITY

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INTRODUCTION AND THE BACKGROUND

The concept of a '*livable city'* has evolved beyond a simple measure of urban amenity to encompass a holistic framework of social, economic, and environmental factors. A city's livability is determined by its ability to provide residents with a high quality of life, which includes affordable access to the essential services like health, education, transport and communication. It is also expected that the inhabitants will have easy access to the entertainment and shopping under a resilient and competitive environment.[1] Academic literature identifies several core components that collectively define a livable community: robust public and alternative transportation networks, including walking and cycling infrastructure; access to affordable and appropriate housing; and the availability of social and community features that promote well-being and civic engagement.[2] Furthermore, livability is intrinsically linked to environmental sustainability, demanding green infrastructure and policies that mitigate climate change risks and improve air and water quality.[3]

The Multifaceted Concept of a Livable City

Traditional metrics and policy frameworks, while focusing on these tangible elements, often overlook the psychological and social dimensions of urban life. A livable city, as a human-centered ecosystem, also depends on emotional and psychological factors, such as feeling safe, socially connected, and having high life satisfaction.[4] While the public discourse on urban planning and policy often emphasizes physical infrastructure and economic vitality, a critical analysis reveals a more fundamental, yet under-recognized, pillar to realize a livable city is the '*family institution*'. Strangely, these two aspects often adversely impact one-another. In fact, modern and technological infrastructure makes people less dependent on others and that is how such developments result in isolation of individuals and thereby weakening of community feeling and the need of togetherness. Modernization has taken the path of industrialization and it has resulted in weakening the capacity of sources that can provide emotional support to the individuals.

A livable city must therefore balance the infrastructural development with the sense of community living. Success of community living can be best gauged by analyzing the strength of family institution in a society. Family is the primary resource that provides emotional support to any individual.[5] Unfortunately, the modern civilized world is yet to acknowledge the utility of the family institution that often gets compromised very easily to provide 'justice' to individuals. But the fact that most

often, such a 'justice' makes the same individual vulnerable to mental depression[6] in the absence of emotional support, gets overlooked. To make a society livable, efforts must be made to keep the institution of family alive and flourishing. Lack of emotional support to individuals can make their lives miserable.[7] Since machines and gadgets are completely incapable of providing such a support to individuals, the institutions of family and community must be helped by the policymakers to get flourished.

This paper presents a compelling argument that the family serves as the cornerstone of social resilience and well-being. To establish the same, a survey was carried out under this research and analysis of the same has been presented here with logical conclusion.

The Under-Acknowledged Role of Family

The emotional requirement of humans has been realized in several studies[8] and the support that family institution can provide[9] in this context has also been highlighted in these studies.[10] However, these research results have not been able to get the desired focus and attention of the policymakers who have done much less than desirable, to strengthen the family institution.

Future Career Resolution Report by INDEED carried out a survey on 6126 employees including 2507 from India.[11] Nearly four in five (78 per cent) stating they aim to prioritize family time with spouses, children and parents over career advancement in 2025. Employees want less stress and more focus on mental well-being while being in well-paid jobs that they enjoy and offer flexibility for family and personal interests.

'Family time is far more important than other aspects of life for most Americans' - this was the conclusion published on May 26, 2023 made in a survey carried out by the Pew Research Centre.[12] About three-quarters of U.S. adults (73%) rate spending time with family as one of the most important things to them personally, regardless of how much time they actually devote to it.

Using data from the European Values Study and World Values Survey made in 2024, it was shown that a large majority of people worldwide declare family to be important in their lives. This share is above 80% in every country except six.[13] According to this finding, only a small percentage of people say they find family 'not very important' or 'not important at all'. This was published on June 19, 2024 as reported by Bastian Herre.

The focus on large-scale urban systems—from public transport to zoning regulations—can obscure the profound impact of the family on an individual's daily life and a city's overall health. To fill up this gap, this paper focuses on making an assessment of the role, influence and impact of family institution on individuals. To make the study worthwhile for the policymakers, the study is planned to compare three different social institutions in this context – The Family, The Community and The State. While policy makers have been traditionally focused to strengthen Community and State (Government), it has preferred individuals over the interest of family institution. The next few sections would gradually explain the survey with the intent of the questionnaire and then presents the analysis and conclusion.

METHODOLOGY

This academic article synthesizes the quantitative and qualitative findings from a comprehensive survey analysis to help the policymakers in reappropriating their focus on different aspects of a livable city. The survey employed a structured percentage-allocation methodology to quantify the level of support respondents received from the following three primary social institutions:

The Family

The Community

The State.

The questionnaire is designed to compare the performance of these three institutions by individuals to arrive at a fare assessment. To carry out this task, a survey was designed through a Google form and respondents were asked to compare the performance of the above three social institutions in following five different scenarios:
Scenario 1: During COVID
Scenario 2: During the event of Natural Disaster
Scenario 3: During the phase of Depression
Scenario 4: During the phase of enjoyment
Scenario 5: An overall assessment
For example, the three questions related to the scenario 1 were:
A. What is the percentage of strength and support that you as an individual received from the FAMILY to face the COVID pandemic crisis?
B. What is the percentage of strength and support that you as an individual received from the COMMUNITY (SOCIETY) to face the COVID pandemic crisis?
C.What is the percentage of strength and support that you as an individual received from the GOVERNMENT sources to face the COVID pandemic crisis?
Along with the instruction that - Assign percentages in the LAST three questions (A, B, C) such that they add up to 100%

SURVEY AND ANALYSIS

Making use of the data collected through the survey, a comprehensive survey analysis is done to examine the critical role of family institutions in providing support systems across various life scenarios, with specific implications for urban policy-making and livable city planning. This study collected responses from 98 participants to understand the balance between individual freedoms and family institution preservation in the context of urban governance and social policy development.
This multi-dimensional survey approach provides crucial insights into how citizens perceive and rely on different support systems, particularly the family institution, which forms the foundation of social resilience in urban environments.

Demographic Analysis of The Sample

Out of the 98 respondents the sample comprised of 54 females (55.1%) and 44 males (44.9%), with 62 married individuals (63.3%), 29 unmarried (29.6%), and 7 separated/divorced respondents (7.1%). Age distribution included 32 respondents each in the 20-30 and 30-40 age brackets (32.7% each), 30 in the 40-60 bracket (30.6%), and 4 over 60 years (4.1%).

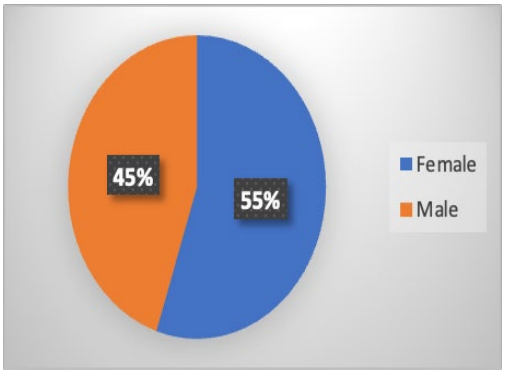

Figure 1a. Demographic analysis of Respondents: Gender related

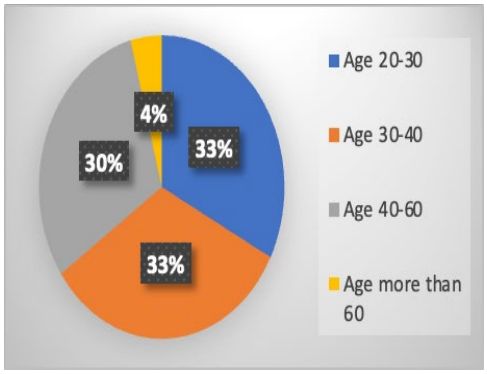

Figure 1b. Demographic analysis of Respondents: Age related

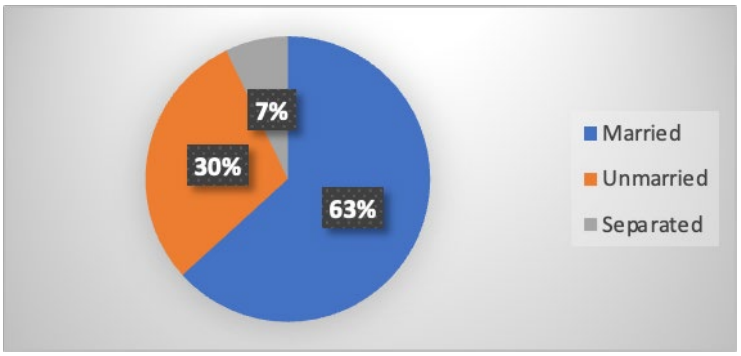

Figure 1c. Demographic analysis of Respondents: Marital status related

Data was collection through percentage allocation questions where respondents distributed support percentages across family, community, and government institutions, ensuring totals equaled 100% for each scenario. This methodology enabled precise quantification of institutional preferences and dependencies across different life circumstances, providing robust data for policy analysis and recommendations. The next section presents scenario-wise discussion of the collected responses.

Data Cleaning

Some of the respondents had chosen percentages in each category separately that resulted in a total that exceeded 100%. In such cases, the percentages were redistributed proportionately while cleaning the data before using them for analysis.

SCENARIO-WISE ANALYSIS OF RESPONSES

Scenario 1: Support Systems During COVID Pandemic Crisis

Response Data

Family support averaged 40.7%, community support 28.0%, and government support 31.3% across all respondents during the pandemic.

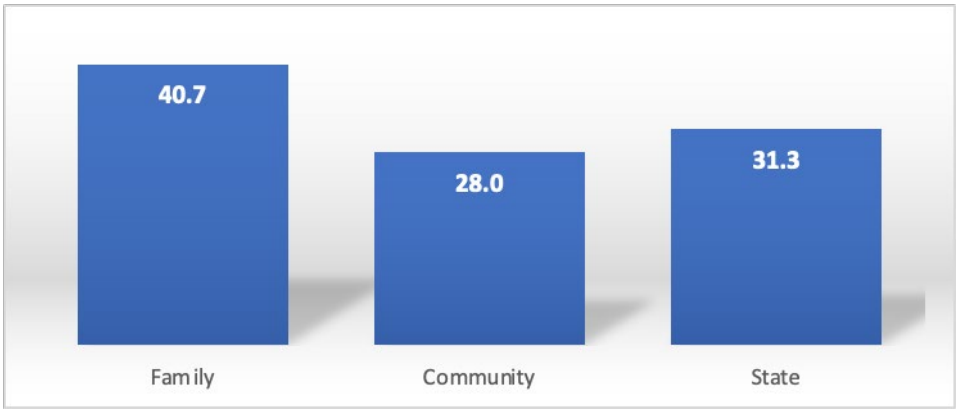

Figure 2. Support in Percentages during COVID

Interpretation

The highest reliance on family institutions during the COVID crisis demonstrates their fundamental role as primary support systems in urban communities. This pattern reflects the resilience and adaptability of family structures in providing emotional, financial, and practical support during unprecedented social disruptions.

Implications

The data reveals that even during a global pandemic requiring coordinated government response, citizens maintained strongest confidence in family-based support systems. This suggests that effective urban policies must acknowledge and strengthen family institutions rather than assume government or community programs can adequately substitute for family support networks.

Balance

While individual autonomy remains important, the pandemic data indicates that policies potentially weakening family structures could inadvertently reduce societal resilience during crises.

Scenario 2: Support Systems for Natural Disaster Preparedness

Response Data

Family support confidence averaged 41.6%, community support 27.4%, and government support 31.0% for natural disaster scenarios.

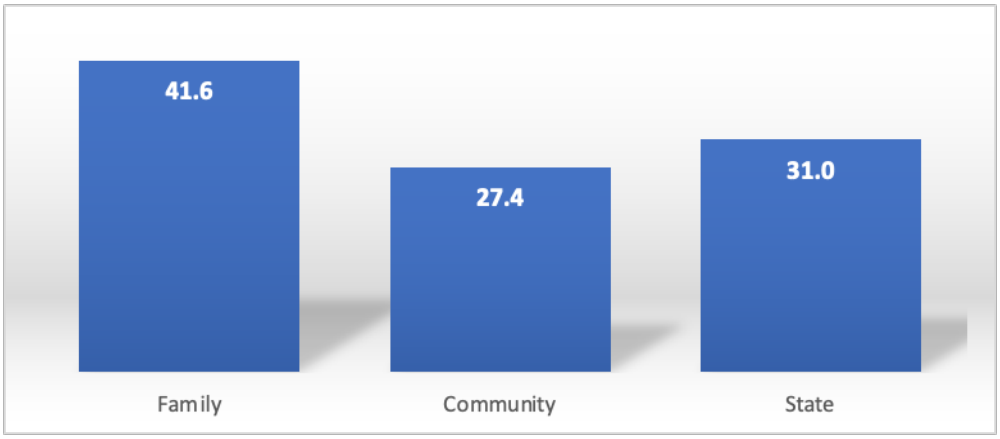

Figure 3. Support in Percentages During Natural Disaster

Interpretation

The highest reliance on family support for natural disasters (41.6%) demonstrates that families are perceived as the immediate response system for localized emergencies. This pattern is particularly relevant for urban planning in disaster-prone areas.

Implications

Urban disaster preparedness policies must recognize that families serve as first responders and primary support networks. City planning should facilitate family-based disaster response rather than solely focusing on institutional emergency services.

Balance

While community and government disaster services remain essential, the data suggests that policies should prioritize maintaining family cohesion and proximity in urban design.

Scenario 3: Support Systems for Mental Health and Depression

Response Data:

Family support for depression averaged 48.6%, community support 26.0%, and government support 25.4%, representing the highest family dependency rate across all scenarios.

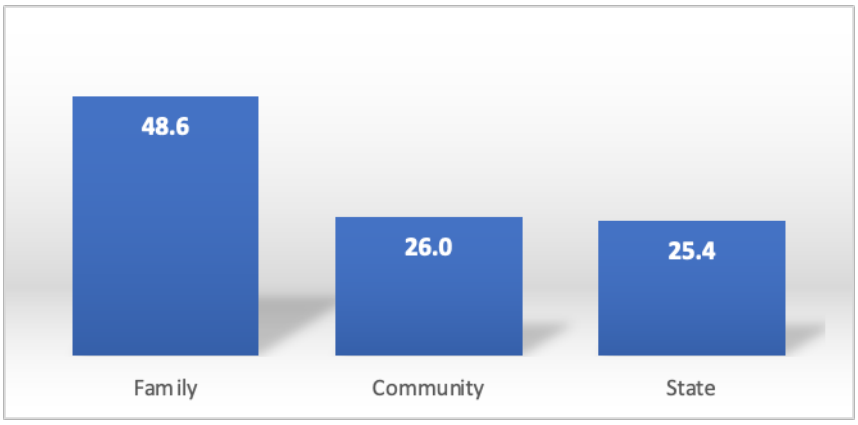

Figure 4. Support in Percentages during Depression

Interpretation

Mental health support shows the strongest family dependence, indicating that emotional and psychological well-being remains fundamentally rooted in family relationships. This finding has profound implications for urban mental health policies and social services planning.

Implications

Urban policies affecting family stability directly impact community mental health outcomes. Housing policies, work-life balance regulations, and social service design must consider their effects on family cohesion and availability for mental health support.

Balance

While professional mental health services and community support programs are crucial, the 48.6% family dependence rate suggests that policies undermining family stability could significantly worsen urban mental health outcomes. Individual autonomy in seeking mental health support should be balanced with maintaining strong family support networks.

Scenario 4: Satisfaction During Moments of Achievement and Enjoyment

Response Data:

Family satisfaction during positive moments averaged 43.3%, community satisfaction 27.9%, and workplace satisfaction 28.7%, showing the highest family preference across all scenarios.

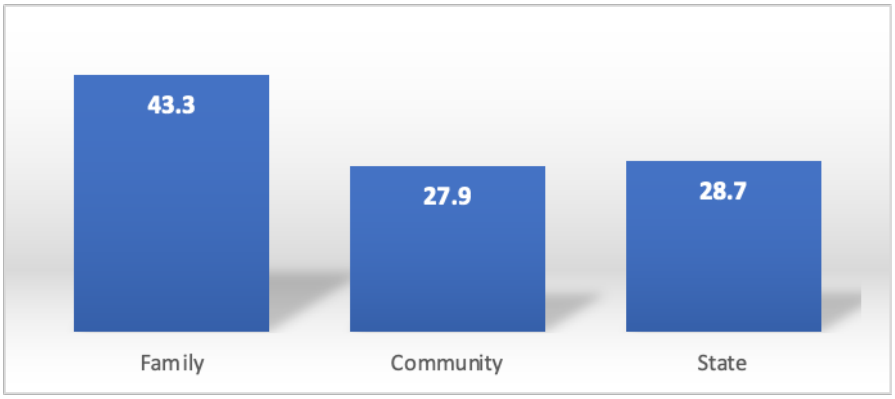

Figure 5. Support in Percentages during Enjoyment

Interpretation
The preference to the family for sharing achievements and joy with family (43.3%) has a clear edge over other counterparts and thus demonstrates that family institutions provide not only crisis support but also enhance life satisfaction and celebration. This finding suggests that family relationships contribute fundamentally to urban quality of life and personal fulfillment.

Implications
Livable city policies should recognize that family relationships significantly impact citizens' happiness and life satisfaction. Urban design, work policies, and social programs should facilitate family bonding and celebration rather than inadvertently creating barriers to family engagement during positive life events.

Balance
While individual achievement and autonomy are important values, the data suggests that personal fulfillment remains strongly connected to family relationships.

Scenario 5: Overall Life Importance Allocation
Response Data:
Family importance averaged 42.7%, community importance 29.1%, and government importance 28.2%, demonstrating consistent prioritization of family institutions across all demographic groups.

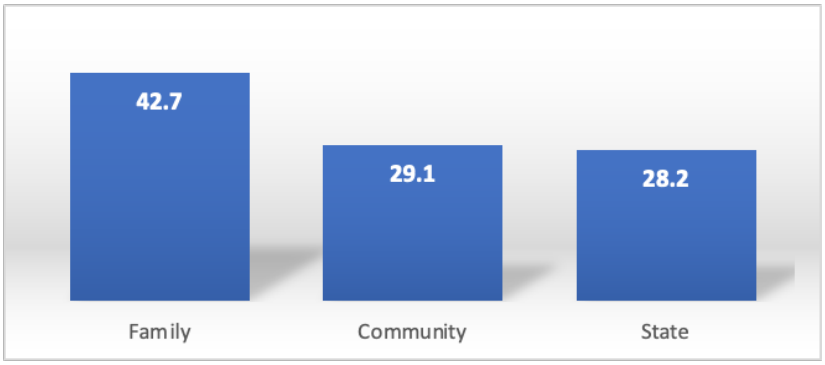

Figure 6. Support in Percentages overall

Interpretation
The highest allocation of life importance to family (42.7%) across overall scenarios confirms that family institutions remain the cornerstone of personal identity, meaning, and social organization in urban contexts. This fundamental prioritization transcends specific crisis scenarios and represents core value systems.

Implications
Urban policies must recognize that citizens fundamentally organize their lives around family relationships. Housing, transportation, employment, education, and social service policies should be evaluated based on their impact on family stability and cohesion rather than treating family as one among many social institutions.

Balance
While respecting individual choices and diverse family structures, policymakers must acknowledge that the overwhelming majority of citizens prioritize family relationships.

POLICY IMPLICATIONS

To help the policymakers in getting a clear direction from this analysis, demography wise opinion has been presented by considering all the scenarios in a combined manner.

Demographic analysis of support expectations

Following graph indicates the importance of family as reported by different sections of the society to ensure that there is no section that has a chance of getting impacted adversely if policymaking starts giving proper attention to these findings.

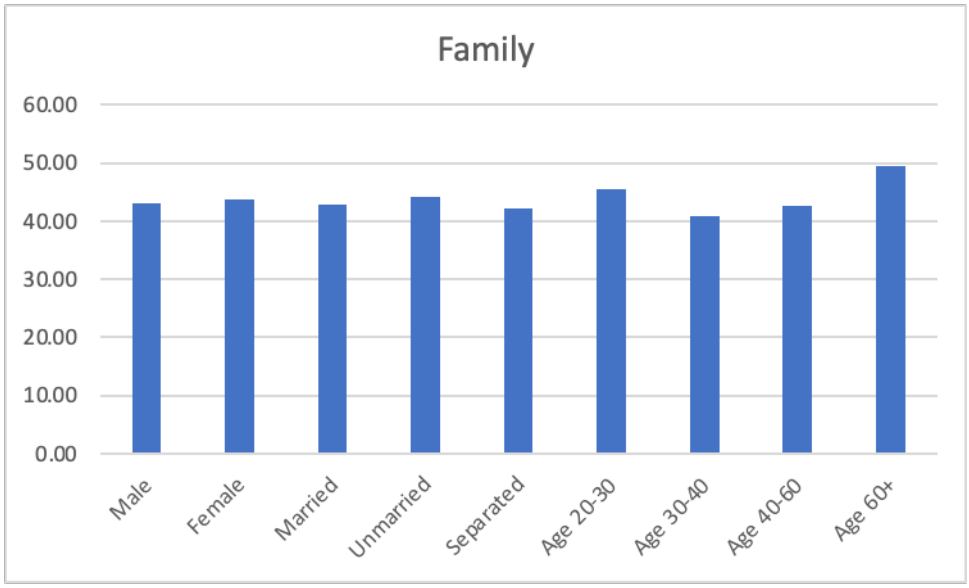

Figure 7. Average Importance of the Family by different sections in percentages

It is clear from the above chart that the importance of family institution is felt by all sections of the society separately that varies primarily between 40% to 50%.

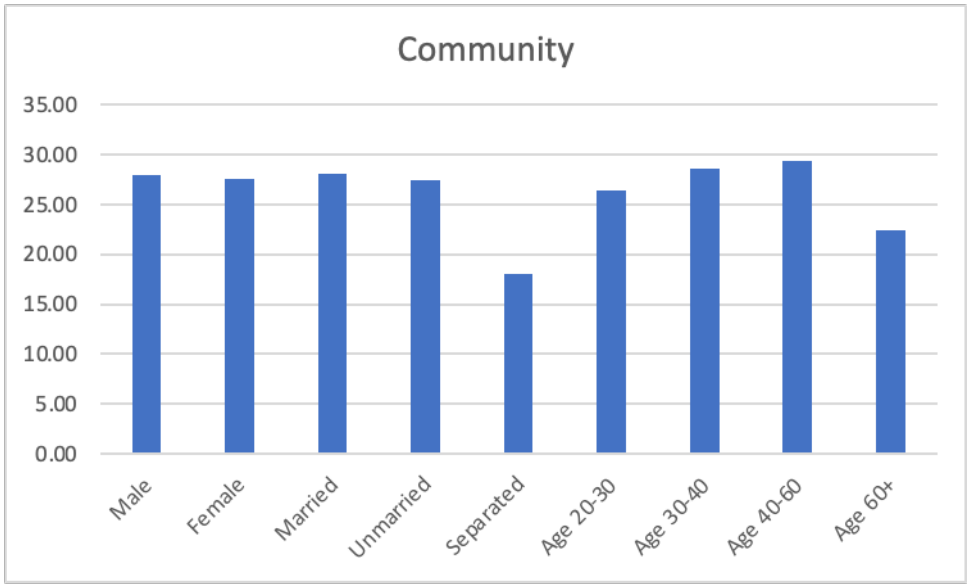

Figure 8. Average Importance of the Community by different sections in percentages

The above chart clearly highlights the importance of family institution as it is felt by all sections of the society separately that varies primarily between 20% to 30% which is at least 25% lower than the importance of family institution.

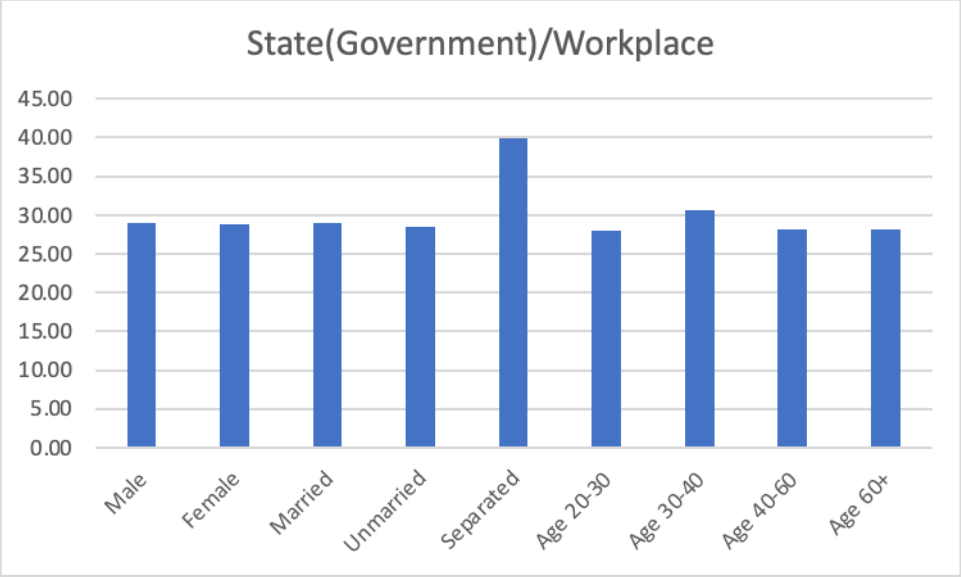

Figure 9. Average Importance of the State (Government) by different sections in percentages

Clearly, the above chart hints at the importance of family institution that is felt by all sections of the society separately and it varies slightly less than 30%. Now that is clearly 25% lower than the importance of family institution. A higher level of importance to the state as felt by the separated individuals is understandable in the same context.

The survey data thus presents compelling evidence that family institutions serve as the primary foundation of social support, crisis resilience, and life satisfaction across diverse urban populations. With family support consistently averaging above 40% across all scenarios and leaving other institutions lagging behind by around 25%, a clear direction can be drawn from the analysis for the policymakers.

Policy Advantages and Disadvantages Assessment:

Policies that strengthen family institutions demonstrate clear advantages in terms of social resilience, cost-effectiveness, and alignment with citizen values. However, policymakers must balance these benefits against ensuring individual freedoms, protecting vulnerable individuals within family systems, and maintaining social progress toward equality and inclusion.

The data suggests that the policies that are potentially weakening family structures - such as introducing ease in getting divorce, allowing weakly bonded families of live-in couples or allowing extra-marital affairs - require careful assessment of their broader social costs. While individual autonomy and diverse family structures deserve protection and support, the overwhelming citizen preference for family-centered support systems suggests that policy frameworks should strengthen rather than undermine these foundational social institutions.

ON THE POSSIBLITY OF BIASES IN THE DATA

The sample size of 98 is small for the analysis that it aims for. However, the consistency with which the opinions of varied sections of the respondents have been reported in this survey suggests that there is a little scope of any conclusion very different from this one. This confidence comes from the fact that similar opinions have been reported over different gender and age groups. Despite this, the need to carry out this research on a larger scale remains desirable, that could not be done here in the absence of any funding support.

Further, all the respondents in this survey belonged to an area around the city of Delhi, the capital of India. It would be difficult to rule out a regional bias in the outcome and will always be interesting to carry out this survey with the respondents across the globe. However, surveys on similar issues in the past even in European and other West countries assure that the conclusions will not be far away from what has been arrived in this paper.

Since the survey has been done through a Google form, and therefore a bias in favor of educated, middle-class section will be difficult to rule out. But, it must also be acknowledged that this section happens to be the largest section in the present society across the world.

CONCLUSION

This analysis of the data collected through the survey provides substantial evidence that the family institution is an essential, yet often overlooked, resource for urban livability. The survey data demonstrates that family is the primary source of emotional support and life satisfaction for urban residents, acting as a crucial buffer during crises and a source of joy in times of achievement. The findings reveal a fundamental disconnect between the social priorities of citizens, who overwhelmingly value family, and the policy metrics of urban governance, which traditionally focus on economic and infrastructural outputs.

Based on this evidence, a new approach to urban policy is warranted, one that recognizes the irreplaceable social functions of the family and actively seeks to strengthen this institution. The following recommendations are provided for policymakers and urban planners:

Implement Family Impact Assessments:

All urban policies, from zoning regulations to transportation initiatives, should undergo systematic evaluation of their potential effects on family stability, cohesion, and support capacity before implementation. This ensures that policy decisions are aligned with the fundamental values of the people they are meant to serve.

Re-center Governance on Social Well-being:

The success of a city should be measured not just by economic and infrastructural metrics but by social indicators that prioritize and measure family cohesion and well-being. By recognizing the family as the central unit of urban planning, cities can create policy frameworks that foster true resilience, equity, and happiness.

The path to truly livable cities lies not in choosing between individual freedom and family institutions, but in creating policy frameworks that strengthen family support systems while protecting individual rights. The evidence strongly suggests that a city's livability is fundamentally tied to the health and resilience of its families, an irreplaceable function that cannot be adequately substituted by government or community programs.

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BEYOND THE MULTI-LEVEL PERSPECTIVE: LEVERAGING SYSTEMS MAPPING FOR A GENDER-EQUITABLE CYCLING FUTURE

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INTRODUCTION

The rationale for shifting towards increased active travel is multifaceted. The growing urgency to address climate change, achieve sustainability goals, and improve public health supports intensified efforts to understand and promote active travel practices. In Glasgow, cycling remains the least prevalent form of active travel, when compared to walking and wheeling, despite well-documented environmental and health benefits.[1] In Glasgow, only 2.4% of journeys are made by bicycle, and cycling uptake is unequal across genders,[2] reflecting diversity issues in other low cycling contexts. Scholars argue for a gender-specific approach to avoid reproducing and perpetuating social inequalities.[3] This paper, therefore, engages in sustainable transitions research to explore how cycling uptake can be accelerated with a particular focus on gendered experiences and needs, seeking to address two research questions: 1) What are gender-specific barriers and opportunities to cycling in Glasgow? 2) How can we use these insights to work towards a gender-equitable cycling future? A gender-equitable cycling future, in this paper, refers to increasing women's participation in cycling to match that of their male counterparts. Using the Multi-Level Perspective (MLP) as a foundational approach,[4] expert elicitation is employed to explore perceived gender-specific barriers and opportunities. The findings are then compared to existing literature and the added benefits of using the MLP are discussed. However, to fully address the second research question, the paper argues that an expansion of the MLP with systems thinking is required to understand the interconnectedness between the opportunities and barriers to cycling and to identify actionable ways of working towards a gender-equitable cycling future.

The Multi-Level Perspective (MLP)

The MLP is a framework in sustainable transitions research which conceptualises that complex, non-linear, sociotechnical transitions occur through the interplay of dynamics at three heuristic levels: the landscape, regime and niche level. The regime level will be the focus on this paper. The regime level refers to the established rules, practices and beliefs that underpin cycling.[5] The niche level refers to a space where innovation, experimentation, and alternative practices emerge, which can advance, change or challenge the regime level. Practices, innovations or technologies at the niche level, differ from the regime level, as they are not yet mainstream or institutionalized.[6] The landscape level

situates the regime (here cycling in Glasgow) within a wider context. It accounts for long-term, macro trends and policies (e.g., Glasgow's Net Zero target) that can put pressure onto the regime to change. Different transition pathways exist in the MLP literature, but, as shown in Figure 1, the most suitable for understanding a transition in cycling, is the reconfiguration pathway. The reconfiguration pathway theorises that changes at the regime level occur due to exogenous pressures from the landscape level, which destabilises the regime level and requires reorganisation. During times of destabilisation, windows of opportunity for niche innovation are created. Niche innovations can break through and be adopted into the regime level if they are able to address challenges and shortcomings at the regime level.[7] Over time, the regime will both change internally and adopt different niche innovations, and thus evolve into a new cycling regime. To answer the research questions, this paper will focus on better understanding the regime level. First, by identifying the gender-specific barriers and opportunities which shape the regime level. Secondly, by outlining an approach to identify which areas of the regime level can be changed to work towards a gender-equitable cycling future. The landscape and niche level will not be covered in this paper.

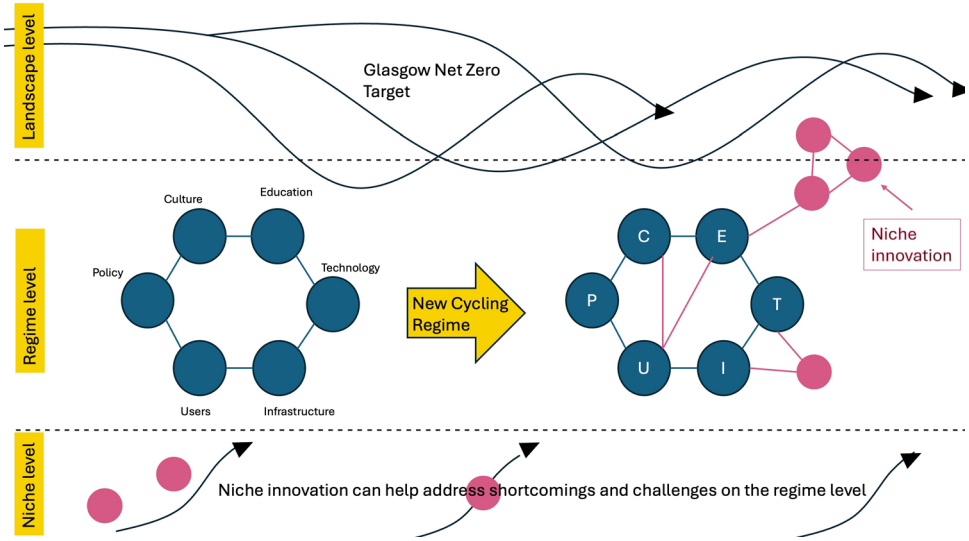

Figure 1. The reconfiguration pathway under the MLP shows how the regime level changes internally and also adopts niche innovation (highlighted in pink)

METHODS

This paper used expert elicitation and thematic coding to identify gender-specific barriers and opportunities to cycling in Glasgow through three conceptual levels of the MLP. Data collection took place in August and September 2024 and engaged 32 experts-by-profession who work on promoting cycling in Glasgow. Fourteen participants joined an in-person workshop; eighteen participants, due to preference or availability, opted for an individual interview. As shown in Figure 2, participants were purposively sampled and had diverse professional backgrounds. The gender balance was nearly 50:50, with slightly more women participating than men and one nonbinary person (n=17 vs n=14 vs n=1).

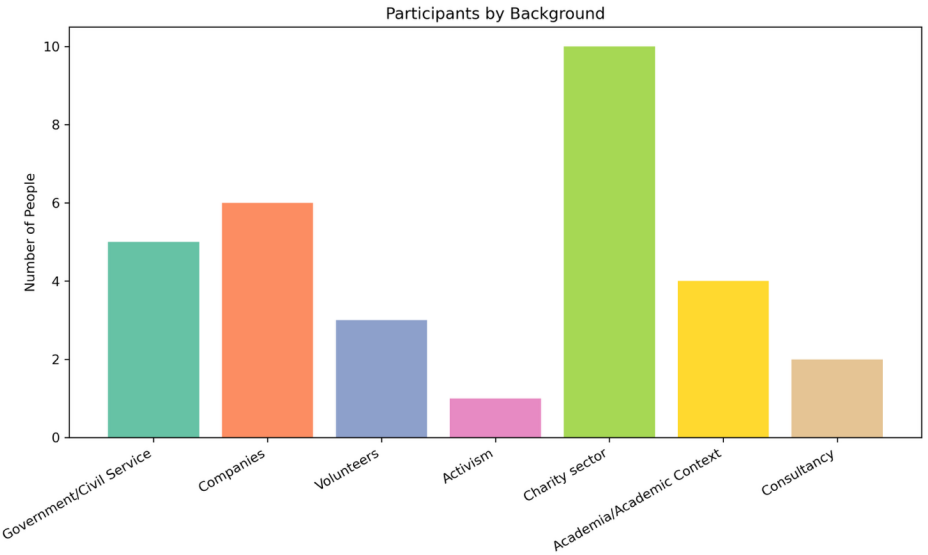

Figure 2. An overview of the professional background of the workshop and interview participants

Workshops were held at the University of Glasgow and lasted three hours; interviews were conducted either online or in-person and lasted between 45 minutes to one hour. Participants were asked about their future vision for cycling in Glasgow, and about gender-specific barriers and opportunities to increase cycling amongst women. The workshops also used visual tools to help facilitate discussion. Both workshops and interviews were audio-recorded, transcribed and thematically coded by the first author (KM) using NVivo software; coding was verified by a second reviewer (EL). The visual outputs from the workshops were photographed and used in the analysis. All participant extracts were anonymised using pseudonyms and any identifiable data removed.

FINDINGS

The expert elicitation identified a range of gender-neutral and gender-specific barriers and opportunities to cycling in Glasgow, which were categorised under the MLP framework. Only the gender-specific barriers and opportunities at the regime level will be explored in more detail below. Table 1 below gives an overview of the gender-specific barriers and opportunities, from the most to the least mentioned.

Rank	Barriers	Description	Supporting primary data
1	Safety (incl. personal safety)	Safety, although important to all genders, has been identified to have a higher impact on women than men. Views on personal safety diverged. Some experts identified dark evening and unlit routes as gender-specific barriers, whereas Darlene (see quote) outlined that, in comparison to other means of transport, cycling may be the best option for women with regards to personal safety from harassment.	Bob: "Yeah I'm very aware of that [the gender gap]. I'm very, very aware of, for example, I know neighbours and women let's say 50 or 60 [years old] who are perfectly capable of cycling, tell me they desperately want to cycle. But I will not cycle because it's too frightening." Achilles: "If you if the city was to introduce more cycle lanes and they were well designed, then more people will feel safe cycling. Um, and I would hope that more women would feel safe cycling." Hephaestus: "There's obviously things as we come into dark evenings and so on. Again, you need to think about personal safety, about how comfortable do women and girls feel cycling in the dark at night compared to males." Darlene: "Actually women, able bodied women, that have access to a bike, actually feel safer when cycling when they get home at night. […] Actually to know how I get home, I don't have to queue up in the air for a taxi with drunken guys or I don't know who has to be on my, on my train."
2	Confidence	Lack of confidence is a more prevalent barrier for women than men.	Hephaestus: "Women and girls are less confident to ride a bike. From my experience, again, a lot of men are very confident, if not overly confident they can do everything on a bike, whereas women tend to be the complete opposite that a lot of them really shy away."
3	Ethnic differences	In some cultures, women are not encouraged or allowed to cycle which means it is often not an option they consider.	Daphne: "The countries that they come from, they weren't allowed to, um, so they'd never been on a bike, even as in, like, girl, even as a young girl. Yeah. So it's good because you see the transformation of people and the kind of joy that they have when they can, they realise they can cycle."

4	Maintenance skills	Gaining maintenance skills has been identified as a gender-specific barrier, with traditional gender norms meaning women are less likely to be encouraged to learn mechanical skills. Some female participants also described being treated by bike mechanics as if they have no knowledge.	Hera: "That I think, you know women, trans, non-binary people have not been like, we're not encouraged to do those things and to learn those skills as like kids and when we're growing up in the same ways that that men are. […] I still have the experience of walking into a bike shop and having people talk to me like I don't know anything. And it's like I was literally a bike mechanic."
5	Cycling is for men	Cycling is often perceived as a male-activity not something that women do.	Aphrodite: "Yeah. So women weren't allowed, weren't included in the Olympics cycling until 1984, I think. Yeah. So that's my lifetime. You know, I had, I had 14 years grown up where, you know, I couldn't see myself represented at the Olympics and cycling events. And so that's obviously had an effect on, you know who, who is seen as a cyclist?" Agrippina: "I didn't see a single girl cycling to school. That's anecdotal, but that's typical. When you look down at the bikes, anybody come in cycling into school, parking up the bike, it'll all be boys."
6	Beauty	Beauty standards (including not wanting to get sweaty and hot, and feeling pressure to arrive at work or school looking well turned out) can deter women from cycling.	Atlas: "Uh, like beauty standards I guess. Um, so how that can impact like, the kind of expectations there. Um, so, like, you know, your expectations of, like, what you're supposed to look like when you arrive at work, um, will impact whether or not you think you can cycle to work." Aphrodite: "I don't want to get hot and sweaty. […] I don't want to wear the helmet because it'll spoil my hair. […] I want to wear high heels. You know, that that might be something, you know, important for somebody."
7	Teenage girls drop off	The challenge of keeping teenage girls engaged in cycling is an important barrier towards a gender-equitable cycling future.	Hephaestus: "Probably early teenage years, you know, high school years, that there's a real drop off in in teenage girls, you know, for again, lots of different

			reasons. Into puberty, they start getting more body conscious. They don't like wearing tight Lycra in front of boys." Hera: "…parents that are more cautious with their kids, if their kids are girls, they're more worried about them, they're less likely to, like, let them go on like nighttime, bike rides. If they're a girl. And so, I think that can also be a barrier."
Rank	Opportunities	Description	Supporting primary data
1	Role models	Female role models represent opportunities to encourage more women to cycle.	Sibille: "More like visible role models. […] Right. I think Anna Richardson was a really great I, I don't know if you come across her, but she was a councillor. […] she practiced what you preach. Yeah. She cycled to the city chambers like. Yeah. She always had her bike. She always had her cycling helmet."
2	Women-only settings	Women-only activities can provide a safer environment for women to ask questions and learn about cycling.	Hephaestus: "I think where we've seen women and girls specific cycling activities, I think there's been a real want and a real need for these activities to happen as well."
3	Peer support		Agrippina: "a lot of the girls gave us an insight into what it was that was stopping them cycling to school or undertaking cyclotron. A lot of it was around about the well, my pals not doing it. Why I don't want to be the only one doing it"

Table 1. All gender-specific barriers and opportunities from the expert elicitations, description and supporting primary data.

Discussion

These gender-specific barriers and opportunities to cycling in Glasgow align with the broader literature. Numerous studies have found similar barriers with women displaying higher risk aversion than men, with perceived safety risk frequently exceeding actual risk.[8] Prati[9] further noted that safety concerns extend beyond fear of injury and traffic to include worries about bullying, verbal abuse, and street harassment. Similar sentiments were echoed by study participant Raidun (female): *"It's hard to know [what solicited road rage and harassment] because I'm often just cycling alone. You never know. Is there someone who doesn't like cyclists or is it someone who doesn't like women, you know? I've definitely been shouted at […] on a busy road."*. Other research has also identified beauty and dress standards as barriers for women cycling.[10] A previous study conducted in Glasgow by Motherwell[11] found that there is an exclusionary perception of who constitutes a cyclist. However, in their study cycling was associated with being a middle-class activity. Thus, this paper adds

understanding that there is also a gendered perception of who cycling is for. A particularly high barrier to cycling identified in this paper was ethnic differences, as identified in many other studies.[12] However, experts did not explain the underlying reasons and the implications of ethnic differences for cycling. For a better understanding this barrier needs to be explored more. It is interesting to note, that except for safety, all gender-specific factors are of socio-cultural nature and require socio-cultural solutions.

The gender-specific opportunities identified in this paper are also all socio-cultural. The importance of role models found in this paper was also identified in a systematic literature review by Pearson.[13] However, this paper found that role models are important for all women to encourage them to cycle more, whereas Pearson's results highlighted the potential benefit of parents acting as role models for their children. Further, this paper expands current understanding of gender-specific opportunities by highlighting that uptake women-only settings and peer support are particularly important.

This paper is the first, to best knowledge of the authors, to have used the MLP framework to explore the gender gap in cycling. Doing so has allowed this paper to not only explore the gender-specific barriers and opportunities to cycling in Glasgow, but to conceptualise their importance for a transition towards a gender-equitable cycling future. The analysis provides a broad overview of the key barriers and opportunities which expert stakeholders deem important to increase cycling uptake amongst women in Glasgow. However, the MLP framework has clear limitations as it primarily prioritizes barriers and opportunities based on the frequency with which experts identify them but does not provide an assessment of the relative significance of these variables in terms of their potential systemic influence on other factors, despite the practical understanding that such elements are interdependent rather than isolated. The MLP is a useful framework to gain a better understanding of gender-specific barriers and opportunities, while failing to identify leverage points for change and providing an understanding of cascading effects if a change was undertaken. To address these limitations, this paper suggests expanding the MLP with systems thinking.

Leveraging Systems Thinking

A system is a set of elements working together to fulfil a function or purpose,[14] in this case, a cycling regime which fulfils the function of allowing people to travel, in a healthy and sustainable and active way from point A to point B. Systems thinking is a holistic approach to try and understand a system by first defining it and then exploring how it works and what interventions can change, control or constrain it.[15] Rather than optimising individual components, systems thinking focuses on improving the relationship between elements.[16] Through understanding the interconnectedness between the barriers and opportunities identified, it is then possible to not only observe trends and patterns in cycling regime, but to understand interdependencies, root causes system behaviour and leverage points for change.[17]

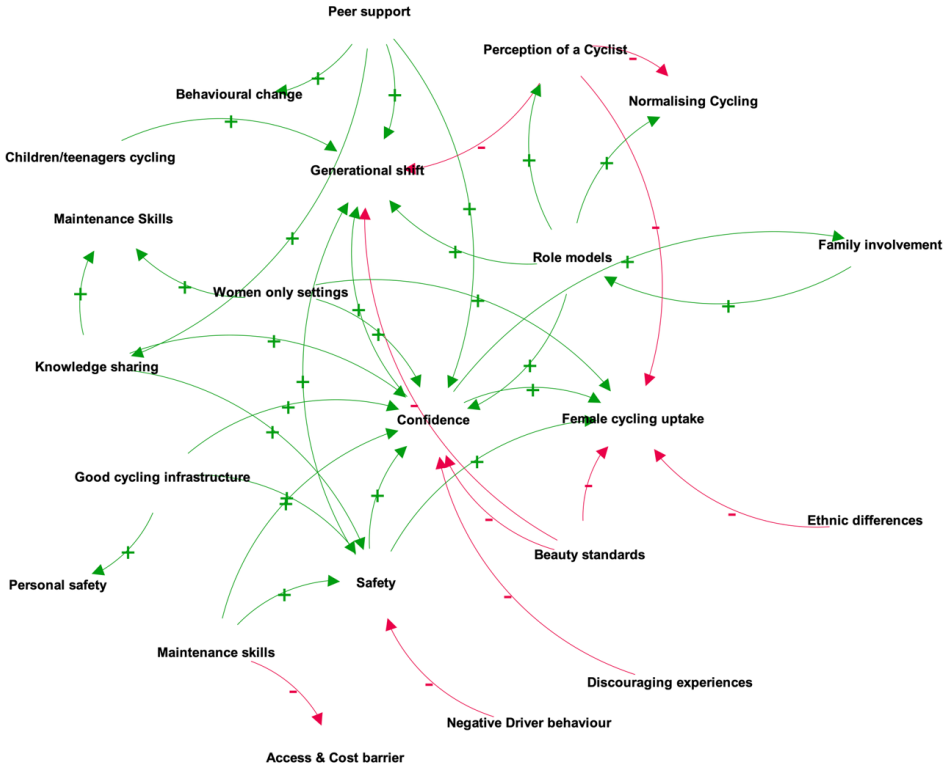

Figure 3. Systems map of all gender-specific barriers and opportunities identified in this study

Systems maps serve as a visual tool to translate and communicate the complex interrelations understood through systems thinking. Figure 3, is a system map which represents the expert-identified gender-specific barriers and opportunities from the MLP, as well as their causal interconnections and links to other gender-neutral variables. This system map was constructed through reviewing the barriers and opportunities identified under the MLP within the original workshop and interview transcripts. The data was reviewed for evidence of influence and causality between different barriers and opportunities experts talked about. If original primary data evidence suggested a causal relation between two variables this was documented, including the supporting primary data as well as the direction (i.e., does X influence Y or vice versa?) and polarity (positive or negative) of the causal relationship. Through reviewing all gender-specific and gender-neutral variables, an edge list, which provides the backbone of a system map was constructed. The visual system map is hereby never a depiction of an objective reality but provides insight into how experts understand the problem and causality within the cycling regime. This is also called their "mental model".[18]

Translating and expanding findings from the MLP into systems maps serves two purposes. It allows to visualize experts' understanding of how different factors influence women's cycling uptake. Under the MLP framework the biggest gender-specific barrier to cycling was understood to be safety. Achille's quote in Table 1 already shows that this safety barrier can be mitigated by constructing more cycle lanes. However, once all data was translated and displayed in a systems map, it became clearer how safety is related and situated in comparison to other gender-specific and gender-neutral factors. For instance, Figure 3 shows that safety is negatively influenced by negative driver behaviour, but can be increased through building better cycling infrastructure, improving the safety of bicycles through increasing maintenance skills, and knowledge sharing which will allow women to know more about maintenance, but also how to plan safer journeys. The systems map also shows that experts assume that the improvement of safety will have a positive effect on female cycling uptake, confidence and

help foster a generational shift towards increased cycling. This example showed, how systems thinking can help expand our understanding of safety as a key barrier to cycling.
Second, a structure analysis of the systems map, can help answer the second research question by suggesting areas in the system where intervention and change can be most beneficial to a gender-equitable cycling future. Network analysis measures, which can be used to analysis systems map, can advance our understanding of different properties related to each barrier and opportunity. Using indegree and outdegree and eigenvector centrality measures, amongst a plethora of other possible measures, can help advance the understanding of possible ways of working towards a gender-equitable cycling future. For example, a factor influenced by many others is generally harder to shift than one with fewer dependencies. This is where measuring the indegree (number of incoming causal links, which can be understood as dependency) and outdegree (number of outgoing causal links, which can be understood as influence) can suggest how easy or complex an intervention in a specific area will be and the possible effect on other areas of the system map. Extreme cases of measuring indegree and outdegree (centrality) are drivers and receivers. Drivers are not influenced by any other variables in the system but have impact on other variables. Thus, they are assumed to be relatively easy to change and their impact will depend on the number of outgoing links. For this systems map, gender-specific drivers are peer support, role models and changing beauty norms. Receivers, on the other hand, have no influence on the system, as they have no outgoing nodes, but dependent on other variables in the system. The more incoming nodes a receiver has the harder it will be to change it, with no cascading effect throughout the rest of the system once change has been obtained. Expanding the MLP with systems thinking allows for a better understanding of the properties of each system variable, to trace possible pathways through the system map by following causal connection paths and to identify otherwise hidden feedback loops, self-reinforcing patterns[19] which can either reproduce, cyclical negative or positive effects on cycling uptake. Feedback loops are often the reason interventions fail, if underlying negative feedback loops are not addressed. One such feedback loop can be seen in Figure 3. It showcases a feedback loops which produces a positive feedback as experts assume that increased family involvement in cycling will lead to more role models within families, which have been identified to have a positive influence on women's confidence cycling and, again, lead to more family involvement in the future. This indicates that if cycling is successfully incorporated as a family activity, the associated change may be long-term as it will be reproduced through this feedback loop.
In summary, expanding the MLP with systems thinking and mapping, allows the researcher to understand the causal interconnectedness between the different barriers and opportunities identified in the MLP framework. This is useful in understanding the possible effect and effort required to change certain variables, to trace possible cascading effects through the system and to understand feedback loops, which, if left unaddressed, reinforce negative patterns and behaviour. Using indegree, outdegree, and Eigenvector centrality can also be used to identify leverage points for change.

CONCLUSION

This paper uses the MLP as a foundational approach to elicit gender-specific barriers and opportunities for women cycling in Glasgow. Workshops and interviews with 32 experts-by-profession found a variety of barriers and opportunities, most of which were socio-cultural. More barriers than opportunities were identified, which can be seen in previous studies which have found similar barriers, but expanded less on possible opportunities for change. However, using the MLP alone limits our understanding of how to foster a transition towards a gender-equitable cycling future and where intervention would be most effective. A clear argument for expanding the MLP with systems thinking is made and some system analysis measures are introduced which can serve as a

starting point to explore areas for possible intervention, causal effects thereof and through further work, possible pathways for increasing cycling amongst women in Glasgow. Finally, the paper provides concrete example of how to translate data obtained using the MLP as a data collection framework into a systems map.

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PEOPLE, TIME, SPACE. NETWORKED JUSTICE IN SMART CITIES

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INTRODUCTION

Smart cities face significant challenges as they integrate advanced technologies to enhance urban living, sustainability, resilience and the well-being of their residents. While these cities propose innovative solutions to urban issues such as environmental threats, transport, housing or waste management, the interconnectedness of people, time and space within smart urban contexts is often overlooked. Technology reshapes physical spaces, redefines interactions and alters how individuals transform and engage with their surroundings, as well as how they experience time within urban systems. Although spatial justice is crucial in urban planning, focusing on the equitable distribution of space and physical resources, it inadequately addresses the digital and temporal dimensions that are increasingly vital in contemporary urban life.

This paper explores Networked Justice as a new interpretative framework for addressing limitations of spatial justice in smart cities by integrating temporal, digital and experiential dimensions as key factors for equitable urban development. Drawing on paradigms from Barcelona and Amsterdam, it demonstrates how this concept can overcome limitations in existing planning models and advance sustainable and inclusive urban futures.

Smart City Challeges

Cities are the central drivers of human development and urban sustainability, grounded in principles of community interdependence and equitable resource distribution. However, they increasingly confront complex challenges, including rapid urbanization, rising population density, climate-related uncertainties and extreme events, as well as widening socio-economic disparities. In response, smart city initiatives are emerging as potential solutions to these contemporary urban challenges, by enhancing our collective ability to plan and respond. At the core of the smart city concept are technological innovation, multi-level governance and the practice of co-creation. The collaborative approach ensures that diverse perspectives and needs are addressed, fostering innovation, resilience and inclusive transformation.[1] By integrating co-creation mechanisms, smart cities can not only harness the collective intelligence of their populations but also promote equity, accessibility, and a sense of belonging.[2] The integration of digital technologies redefines the ways in which urban environments are governed, experienced, and navigated. These technological transformations hold the potential to improve efficiency, connectivity and responsiveness in urban systems. However, they also risk reinforcing pre-existing social and spatial inequalities—or producing new forms of exclusion,

particularly for marginalized populations who may lack access to digital infrastructure, adequate connectivity or the necessary digital literacy to fully participate in these emerging urban paradigms.
While conventional models of spatial justice emphasize equitable access to urban space and resources, they often overlook critical dimensions such as digital exclusion, asynchronous modes of participation and the layered complexities of technologically mediated urban life. This highlights the need for a more integrated framework that addresses the socio-technical dimensions of urban inequality and reflects the evolving nature of participation in digitally networked cities.
This research acknowledges there are specific limitations concerning citizen participation within smart city initiatives and seeks to identify the systemic barriers that limit inclusive engagement. In response, it aims to develop a new interpretive framework to support more equitable and participatory urban planning. The study is grounded in primary data collected through semi-structured interviews with implementation researchers involved in Living Labs in Barcelona (i2CAT) and Amsterdam (AMS Institute). This empirical foundation is complemented by secondary data drawn from a diverse range of sources, including academic literature, policy reports, web-based materials, and publications from civil society organizations.

Barriers Against Participation in Smart Cities

The implementation of citizen participation models is shaped by a range of factors, including institutional frameworks, governance structures, technological accessibility, and socio-economic conditions.[3]
Technological Factors: Technological factors play a critical role in shaping inclusive participation in smart city initiatives. These include the availability and equitable access to digital infrastructures, varying levels of digital literacy and technical aptitude, language barriers, concerns over data privacy and security—particularly regarding third-party access—and the use of biased or non-representative data that may reinforce existing inequalities.[4]
Social factors: Social factors also significantly influence citizen participation in smart city initiatives. These include individual perceptions and attitudes toward participation (ranging from willingness to skepticism or disinterest) as well as demographic inequalities[5] that may lead to the exclusion of specific population segments. Additionally, competing time demands related to work, caregiving responsibilities, and social obligations can further limit individuals' capacity to engage in participatory processes.
Institutional factors: Institutional factors also pose significant challenges to inclusive participation in smart city initiatives. These include widespread distrust of governmental authorities,[6] limited or unstable funding for participatory programs, and inadequate institutional support for addressing the needs of marginalized groups. Physical barriers—such as those faced by persons with disabilities or elderly individuals with cognitive impairments—alongside broader social exclusions affecting homeless individuals, displaced populations, migrants, and indigenous communities, further constrain equitable engagement in urban planning processes.
Together, technological, social, and institutional factors create overlapping barriers that limit meaningful citizen participation in smart cities. Addressing these challenges requires a holistic approach that not only ensures equitable access to digital tools and resources but also fosters trust, accommodates diverse needs, and removes systemic obstacles to inclusion.

Spatial Justice in Smart Cities

The theoretical foundation of spatial justice, as articulated by scholars such as Harvey,[7] Young,[8] Soja,[9] and Fainstein,[10] is built upon three interrelated dimensions as illustrated in Figure 1:[11] distributive justice, which concerns the equitable allocation of benefits and burdens; procedural

justice, which emphasizes fairness in decision-making processes; and recognitional justice, which involves acknowledging and valuing the diverse needs, interests, and ideals of different social groups.

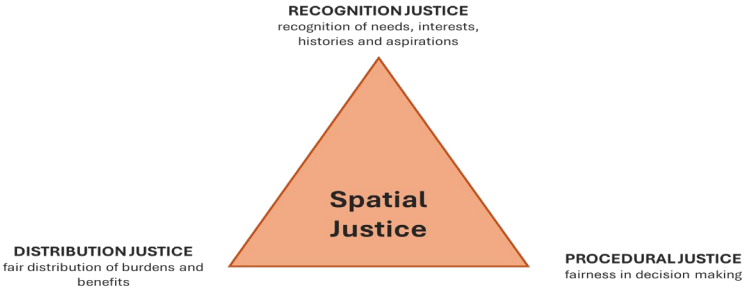

Figure 1. Spatial Justice System, Source: Centre for the Just City, What's Spatial Justice, https://just-city.org/

While this framework has significantly advanced understandings of justice in urban contexts—particularly in relation to the distribution of resources and access to physical space remains limited in capturing key dynamics that characterize contemporary urban life. These include temporal constraints (e.g., who has the time to participate and when are they able to do so?), digital accessibility (e.g., who has the means and skills to engage through online platforms?), and processual dynamics (e.g., who can influence and shape urban development, and by what mechanisms?). These dimensions are critical, as they reflect the three fundamental questions that should be posed in every urban project seeking to be genuinely inclusive: Who participates? When do they participate? How is participation made possible?

These limitations reveal the need to move beyond traditional spatial justice frameworks toward a more comprehensive understanding of justice in contemporary urban environments. As cities become increasingly shaped by digital infrastructures, asynchronous forms of participation and complex socio-technical processes, there is a growing necessity for a framework that accounts for the interplay between physical, digital, temporal, and experiential dimensions of urban life. In this context, the concept of Networked Justice emerges as a critical lens through which we can address these evolving forms of inclusion and exclusion in smart cities.

Networked Justice. New lens for more inclusive urban transformation

As has already been mentioned, the limitations of spatial justice frameworks, though foundational for analyzing urban inequality, have become increasingly evident in the context of digitally mediated urban life. Key dimensions such as temporal accessibility (e.g., who has the time to participate and when?), digital inclusion (e.g., who can engage online?) and processual agency (e.g., who gets to shape urban development and how?) remain under-theorized within traditional frameworks. These questions are not peripheral; they are central to understanding how citizen participation works within smart city initiatives.

To address these gaps, this chapter introduces the concept of networked justice—a theoretical framework that responds to the evolving nature of urban life shaped by digital infrastructures, asynchronous forms of engagement, and hybrid (physical-digital) spatial experiences. Networked justice expands the scope of spatial justice by integrating technological, temporal, and experiential dimensions into the analysis of urban inequality, participation, and transformation.

In the framework of networked justice smart cities are grounded in the dynamic interplay of People, Time, and Space, mediated by Technology. Thus, citizen participation in smart cities is not solely about physical distribution or access to technology, but about how people experience, navigate, shape and are shaped by environments across multiple temporal and spatial layers. This includes the ability to participate at different times (asynchronous or on-demand engagement), across digital and physical platforms, and from diverse socio-economic and cultural positions. It also focuses on experience—the lived quality of participation—as it relates to actual influence over decision-making processes, the meanings individuals attach to both physical and digital urban spaces, and the ways in which technology shapes their everyday interactions with the city.

Based on a participation-driven approach to smart city development, it emphasizes the importance of empowering individuals and communities to use physical and digital infrastructures to enhance their well-being, exercise agency and engage in democratic processes. Importantly, networked justice does not conceive the city as a static outcome, but rather as a hybrid and evolving space, shaped by ongoing, relational processes that emerge through the continuous interaction of citizens, institutions, technologies, and urban environments over time.

According to Figure 2 smart city process is based on three key dimensions: People, Time, and Space. Experience is depicted as a distinct yet interconnected element that emerges from the interaction of these dimensions—it reflects how individuals live and feel their place across time and space. Technology holds the central role as the foundation and connective tissue that shapes, enables, and transforms all dimensions. This highlights the central role of technology in smart cities, while maintaining a clear focus on human experience alongside spatial and temporal aspects.

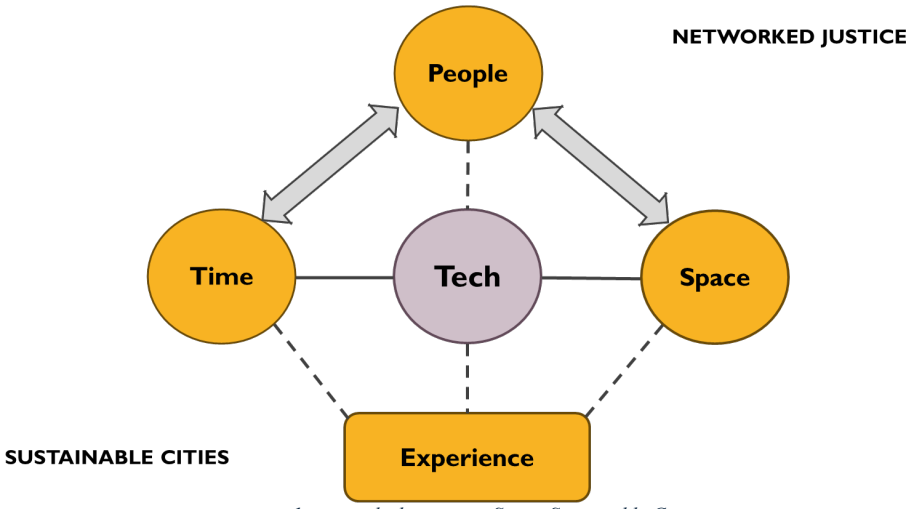

Figure 2. Networked Justice in Smart-Sustainable Cities

Technology in the context of smart cities is not neutral; it both shapes and is shaped by human behavior. Equitable digital access requires robust infrastructure, high-speed internet, open data platforms and inclusive digital tools, available to all residents, regardless of socio-economic status. Digital platforms play a vital role in enabling diverse communities to participate in decision-making processes, amplifying voices often excluded from governance. Central to this is data justice, which ensures the ethical use of information through transparency, privacy protection, and citizen control over digital footprints.

People lie at the heart of networked justice, with participation as the primary driver of equitable urban development. This means facilitating urban inclusivity by designing spaces and tools that reflect varied cultural and social needs, enabling meaningful engagement across diverse communities. It also

involves recognizing a hybrid right -people's agency to transform and reshape both physical and digital urban environments through sustained action and the production of meaning. Valuing and integrating local knowledge becomes essential for fostering governance that is both equitable and context sensitive.

Time is not a neutral backdrop to urban life but an active force shaping access and participation. Justice-oriented urban design must respond to urban rhythms, ensuring that spaces, services, and resources are accessible beyond standard hours to accommodate different life patterns. Real-time feedback mechanisms allow cities to dynamically adjust services based on live data, reducing inequities in distribution and delays for underserved communities. Futureproofing- embedding resilience, adaptability and fairness into the design of cities- ensures long-term sustainability in the face of social, environmental, and technological change.

Space in smart cities is increasingly hybrid, shaped by both physical environments and digital infrastructures. This physical-digital nexus blurs boundaries, making equitable access to both domains essential. For instance, inclusive design might involve creating apps for non-tech-savvy users or offering offline alternatives for those without reliable digital access. Space also functions as experience, influencing behavior, identity and everyday life through the interplay of design, culture, and technology. Recognizing intersectionality is crucial, as spatial and digital inequalities often overlap with other forms of exclusion based on gender, disability or income. Ultimately, access as justice underscores that equitable access to both public and digital spaces determine who can participate, express themselves, and shape the city.

Experience highlights the lived perception and emotional engagement with urban environments. This involves lived experience—how people interact with their surroundings daily, shaped by culture, memory, and identity. Perception and meaning influence whether individuals feel included in or excluded from the city. Drawing from environmental psychology, user-centered design ensures that urban spaces and technologies respond to the diverse needs, feelings and identities of their users. Finally, inclusive engagement prioritizes how people experience the city, ensuring that urban planning and technological interventions are empathetic, human-centered and oriented toward genuine inclusion.

By integrating these five dimensions, networked justice offers a comprehensive framework for understanding and addressing inequality in smart cities—one that is sensitive to structural, temporal, spatial, digital, and experiential factors shaping urban life.

From Principles to Practice: Pathways to Networked Justice

To advance networked justice in smart cities, governance must move beyond treating inclusion as a procedural checkbox and instead embed equity as a guiding principle across digital, spatial, temporal, and experiential dimensions. This shift requires a deep commitment to designing systems and processes that are participatory, transparent, and responsive to diverse needs.

KEY RECOMMENDATIONS	WHY IT MATTERS
Investing in Inclusive Co-Creation	Engages marginalized and digitally excluded groups, ensuring smart city initiatives reflect diverse voices and real needs.
From Consultation to Transformation	Moves beyond tokenism, empowering citizens to actively co-develop and develop urban solutions, increasing legitimacy and impact.
Leveraging Technology for Equity	Uses AI and open-source tools to improve accessibility and transparency, bridging digital divides and building trust.
Embedding Temporal Flexibility	Recognizes diverse life rhythms and work schedules, making participation and services accessible beyond standard hours.
Bridging the Physical–Digital Divide	Ensures equitable access to both physical spaces and digital platforms, including offline options for those without reliable connectivity.

Table 1. Recommendations for Networked Justice

Embedding networked justice in smart city governance requires ongoing commitment, reflexivity and collaboration among diverse stakeholders. The pathways outlined in Table 1 emphasize that inclusion must be proactive, intersectional, and dynamic addressing not only who participates but how, when and through which means as it is shown in Figure 3 By shifting from tokenistic consultation to meaningful co-creation, leveraging equitable technology and recognizing diverse temporal and spatial realities, cities can move toward governance models that are truly just and capable of shaping sustainable urban futures.

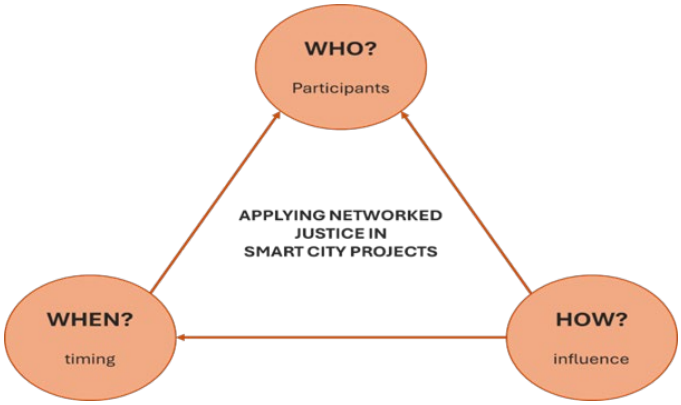

Figure 3. Key Questions for Networked Justice

From Spatial Justice to Networked Justice

Following the practical recommendations for advancing networked justice, it is important to clarify how this emerging framework builds upon and extends traditional understandings of spatial justice. The comparative board shown in Table 2 highlights key differences and continuities between the two concepts, illustrating how networked justice integrates digital, temporal, and experiential dimensions to address the complexities of contemporary urban life. This comparison provides a clearer foundation for applying networked justice in smart city governance and research.

SPATIAL JUSTICE	NETWORKED JUSTICE
Focus on fair distribution of resources & urban spaces	Goes beyond physical space
Emphasizes access to housing, transport and green space	Adds temporal, digital and experiential dimensions
Often centers on static, place-based inequalities and infrastructural distribution.	Acknowledges how people interact with both physical and virtual infrastructures
Focuses on procedural fairness in urban planning and policy	Highlights the role of technology-mediated participation and data ethics.
Strong legacy in urban geography and planning	Emphasizes relational and processual aspects of justice across time and networks.
	Addresses justice in digitized, smart urban environments
As cities become more digitized, justice accounts for Who participates, When and How- across physical and digital spaces. This is where networked justice begins.	

Table 2. Spatial & Networked Justice Comparative Table

CONCLUSION: NETWORKED JUSTICE AS AN ETHICAL IMPERATIVE

Networked justice offers a comprehensive framework for understanding and addressing the multifaceted inequalities inherent in smart city development. By centering on the interconnected dimensions of technology, people, time, space and experience, it moves beyond the physical focus of spatial justice to embrace the dynamic and hybrid realities of contemporary urban life. Embedding [1]this framework into smart city governance demands ongoing commitment to inclusive co-creation, equitable digital access and attention to diverse temporal and spatial needs. Practitioners and policymakers must continually ask three critical questions to every project: Who is participating? When can they engage? And how do they influence urban development?

This ongoing research, based on semi-structured interviews, will continue to develop by incorporating further insights on engagement models for smart cities. Practitioners are encouraged to develop participatory tools and governance models that are flexible, adaptive, and designed around the lived experiences of all urban residents. Future research should also explore the operationalization of networked justice across different cultural and political contexts, examining how local knowledge and community agencies can be amplified through emerging technologies. Ultimately, advancing networked justice is key to realizing smart cities that are not only innovative but genuinely equitable and democratic.

NOTES

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[2] Taewoo Nam and Theresa A. Pardo, “Smart City as Urban Innovation: Focusing on Management, Policy, and Context,” in Proceedings of the 5th International Conference on Theory and Practice of Electronic Governance, New York, NY, USA, September 26–29, 2011, 185–94.
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[9] Edward W. Soja, Seeking Spatial Justice (Minneapolis: University of Minnesota Press, 2010).
[10] Susan S. Fainstein, The Just City (Ithaca: Cornell University Press, 2010).
[11] Centre for the Just City, What’s Spatial Justice, Centre for the Just City, TU Delft, accessed August 27, 2025, https://just-city.org/

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TRACING JOHANNESBURG: THE INCOMPLETE CITY

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INTRODUCTION

Johannesburg is a city like no other – fragmented, layered, and suspended between its colonial legacy as the 'City of Gold'[1] and its aspirational branding as a 'world-class African City.'[2] Johannesburg is also a microcosm of global cities grappling with urban tensions between wealth and poverty, power and dispossession, and livability and decay. I read Johannesburg as an *incomplete city*. Incomplete does not mean 'unfinished' developmentally, but a present unreconciled with past and future fantasies. The city is temporally suspended between the colonial/apartheid past and a precarious neocolonial present. To live in this suspension is to encounter the residues of decades-long structural neglect, even post-apartheid, materialised in everyday infrastructural breakdown.

Johannesburg emerged from the discovery of gold in 1886; its fractured urban order is a residue of apartheid.[3] The city was built to serve mining capital through racialised labour, compounds and segregation.[4] Post-1994, this extractive legacy was overlaid with democratic aspirations: eGoli rebranded as a 'world-class African city', offering a vision, anchored through a sequence of planning frames promising an integrated, inclusive, globally competitive city.[5,] Yet as has been long observed, 'world-class' redevelopment often displaces basic needs and reproduces inequality,[6] condensing into securitised enclaves rather than everyday livability across street level city spaces.[7]

Arguably, there has been more consistency and translation of policy into development to manage infrastructural crisis, yet spatial justice concerns remain unaddressed.[8] The city remains unevenly serviced and socially fragmented, with infrastructural maintenance as a patchwork reaction to crisis rather than intentional planning. Johannesburg's aspirational narratives, therefore sit uneasily with longer histories that continue to be lived.[9]

The Precarious Present

Johannesburg, in its present, is a city in crisis as represented across media storylines, but also as it is lived in the ordinary material sense. The infrastructures that sustain everyday life rupture on the city surfaces: potholes, burst pipes and taps running dry, alongside repeated service interruptions. Long familiar to historically marginalised lives, these disruptions now interrupt middle class lives. This infrastructural crisis has become a shared reality, thus harder to disavow.

This extractive economy remains visible at the surface of the city. As Mbembe and Nuttall observe, the city is staged through shopfronts and facades – displays that perform modernity while concealing below the toil of underclass labour that makes such aesthetics possible,[10] and the infrastructural systems that become pronounced when they fail.

Infrastructure, far from neutral, materially reflects inequality and poverty. Even post-democratic redress initiatives in the city informal settlements were set at low service standards.[11] This condition

has now become visible as multiple suburbs across the city have become habituated to prolonged water and electricity crises and chronic under-maintenance.[12] More recently, there have been threshold moments, including downtown road collapse,[13] and a series of fatal fires in hijacked buildings[14] that signalled the seriousness of systemic failure.

As Paul N. Edwards argues, infrastructural systems are naturalised in the background: roads, pipes and sewers, even buildings, function as "the connective tissues and circulatory systems of modernity", hardly noticeable, yet visible primarily through breakdown.[15] This visibility-through-failure provides a key entry point for reading Johannesburg's present condition.

In this paper, I draw on Lacanian thought to read the city as a structure – a 'social-body' – through which shared anxieties, desires and losses find expression. In this register, infrastructural ruptures are approached metonymically, as symptoms through which the city 'speaks' what ordinarily remains unseen.[16]

These ruptures can be understood as the speech of a social unconscious that generate a distinct affective atmosphere. Crises in Johannesburg are not experienced as discrete "events," but as an ongoing condition shaping everyday existence. Lauren Berlant describes this atmosphere as an impasse: a stretched-out present marked by endurance and improvisation, and with no clear resolution or future sense.[17] In Johannesburg, this impasse takes the form of "crisis ordinariness" which has long structured the peri-urban, township and inner-city life through deferred provision of housing, water and electricity.

Johannesburg's present thus sits between two tired narratives: a city collapsing into decay, and one that continues to be shaped by colonial and apartheid legacies. Through media reports, the citizenry heeds to crises headlined as "event," and as events repeat, they become part of a recurring interruption within the impasse of the present.

I attend to three public scenes in this register, derived from journalistic texts. I read them alongside their captions, and simultaneously, and against them, to trace what remains outside the dominant story to surface the unconscious of the city.

THE CITY'S UNCONSCIOUS

I read the city at the surface, where ruptures, adaptations, stasis and routines repeat. Urban space, increasingly understood as relational and practiced[18], I approach here through psychoanalytic lens that attends to affect and the unconscious[19]. The city body, accordingly, can be understood as speech articulated in spatial arrangements, where repeated scenes of infrastructural breakdown suggest what has not yet settled into meaning. From this position, I draw on the concepts of trace and lamella.

Trace

In a Lacanian sense, trace is the debris or ruins left behind as a surface that structures something missing:[20] a gap in what is otherwise expected or secured. Kaja Silverman extends this idea to the visual field, describing trace as what marks absence in the images itself.[21] I read these recurrences as the city body's speech.

Lamella

Whilst trace marks what is missing, lamella refers to what refuses to disappear. For Lacan, lamella is the mythic "undead" of the libido – an indestructible remainder that persists beyond death and beyond the symbolic order.[22] Drawing on recent spatial and ecological extensions, I use lamella to think about the persistence of life and matter beyond human systems of meaning.[23] In relation to Johannesburg, lamella evokes a force that insists beyond repair, and therefore escapes fantasies of coherence.

READING JOHANNESBURG'S STORYLINES

I approach the city in this exploratory study through how it is represented in dominant news storylines. The corpus consists of photo-stories and captions published by Daily Maverick (2021–2024), located through targeted searches around sustainability and disaster.[24]

Across the broader corpus, Johannesburg is repeatedly figured through bodily metaphors of collapse and survival, evident in terms such as "life support", "lifeblood," "heartbeat," "amputation," and "resuscitation." I read these scenes with a focus on metonym, attending to residues of images and fragments of meaning beyond these metaphorical tropes. From this broader corpus, I draw on three scenes that highlight the failure of infrastructure, materially and symbolically, and where improvised continuance stands in place. At these points of rupture, trace and lamella emerge as useful analytic registers that articulate the city as a speaking social body.

I draw on Silverman's account of trace as that which structures absence in the visual field. Reading alongside Lacan, I offer a surface reading of the unconscious by attending to objects, captions, spatial arrangements across the corpus. I read both within the journalistic frame, and outside of it, curious to what remains outside that escapes full narration.

ANALYTIC SCENES

In the three scenes presented below, the bucket, a taken-for-granted object, reappears in different forms: as a receptacle holding water where the resource has become scarce, as a makeshift response to the failures of maintenance, and as a behind-the scenes tool framed within a heritage artwork. The bucket repeats across scenes in varying capacities – whether to carry, contain or support. Structurally, it compensates for absence, marking a gap where what was once held in place has slipped.

Scene 1: Burdened Care

In the first scene, there is a view onto a residential street in Soweto, with the title, "Navigating water scarcity".[25] The image captures residents navigating scarcity through everyday improvisation – a pattern long familiar in Johannesburg's townships, but which the article frames as "not just a future concern – it's a present reality" for the city as a whole.

Figure1. "Residents of Dube and Meadowlands fetch water on 15 March 2024 in Soweto, South Africa" (Photo: Gallo Images / Fani Mahuntsi, Daily Maverick, 25 Sept 2024) Reproduced under fair use; permissions pending.

Figures move down a residential street. Foregrounded are two adults who share the handle of a bright red bucket, whilst others carry bottles and bags, and a child walks beside them. Shot from behind, the frame reads as a return from an alternate source. The caption names the place (Dube and Meadowlands in Soweto), the scene evoked as ordinary everyday. Among Daily Maverick readers, it

evokes a familiar picture of 'making do', presenting not as an event but the monotone of crisis ordinariness.

The caption evokes a sense of neighbourliness and collective unity. Yet the scene also performs "making do" as routine everyday. The bucket takes the place of underground pipes and the circulation of water through it, now manualised and labored. It appears precisely where pipes do not – bodies doing the work of keeping things going. As trace, it reveals the point where a system meant to hold everyday life together has ruptured. A familiar motif of structural neglect in townships is evident, where residents remain suspended, while anticipating the promise of essential services. The absence of infrastructural provision, and governance of care, is thus managed through a tempo of ordinary coping rather than infrastructural provision.

The article title reads: "Navigating water scarcity",[26] but scarcity here is not a headline event but an ongoing rhythm of ordinary coping in place of infrastructural gaps. Moving from the improvisations of daily life outside, the next scene turns to the formal architecture of heritage. Here, the bucket reappears and, to those unfamiliar with the city's present crises, appears oddly out of place inside one of Johannesburg's oldest civic landmarks, the ninety-year-old Central Library.

Scene 2: Suspension

This scene opens inside Johannesburg's Central Library, once a civic anchor for study and education, now shuttered due to disrepair (see Figure 2). As reported in "Central Library Shutdown: Joburg blows $25 million on roof repairs, gutters, and pipes" (Daily Maverick, 7 Feb 2023),[27] the historic institution has been closed since May 2021 after safety concerns, with the children's section repeatedly spotlighted as emblematic of the loss. Heritage activists have since pressed for its reopening.

Figure 2. "Empty buckets collect water leaking from the roof at the Johannesburg Library on 22 August 2024." (Photo: Felix Dlangamandla), Daily Maverick, 27 August 2024). Reproduced under fair use.

Against this backdrop, a quiet, yet unsettling scene is depicted in the photograph. The library lies vacant, with its mahogany shelves lined with books, and remnants of dust settle on parquet floors. A white bucket stands centres the frame, as it sits beneath a roof leak. The caption reads, "Empty buckets collect water," reads paradoxical yet aptly captures the absurdity across scenes. In Scene 1 water was depicted as scarce; here it appears as excess. The overflow, the outcome of neglected

maintenance, gives utility to the bucket as it becomes enrolled as a makeshift vessel to contain the systemic failures that has seeped into the institution.

Within the library's interior, the children's section is foregrounded. Black plastic sheeting is draped over the glass-fronted bookshelves (see Figure 3). The effect evokes a protective, yet spectral mood. While the coverings suggest preservation, they also evoke entombment. The books are suspended from circulation due to the library's closure. Buckets and plastic sheeting together produce a vocabulary of stand-ins: improvised acts that delay loss, yet are almost futile given their lack of durability.

Figure 3. "Plastic sheets cover bookshelves at the Johannesburg Library." (Photo: Felix Dlangamandla, Daily Maverick, 27 August 2024.). Reproduced under fair use.

Repair is anticipated but indefinitely deferred; as a result, loss is neither resolved nor fully acknowledged. The affect is melancholic rather than mournful, where loss is held in place, rather than worked through. What is suspended is not only infrastructure, but a futurity itself: where children's books are meant to circulate but they remain encased.[28]

Across these scenes, the bucket repeats as trace – a surface sign of surrogate care, hold everyday life together in temporary and fragile ways. Meanwhile, responsibility for municipal care of a heritage building remains suspended.

In the next scene, the bucket reappears within a different register altogether; not as a vessel to manage scarcity or to contain, but folded into the frame of art itself.

Scene 3: Melancholy

The previous scene evokes a temporal state of suspension, while this scene hints at melancholia. The image, drawn from the Daily Maverick article "Johannesburg Art Gallery 'can't survive' another season of ruin and rain, heritage experts warn mayor" (18 November 2024),[29] shows a nineteenth-century studio portrait of sculptor G. F. Watts at work on Physical Energy (1891), from the Lady Phillips–Sir Hugh Lane Collection.

Figure 4. "A rainstorm and resulting storeroom flood in 2018 caused water damage to several paintings, including this one by Philip Burne-Jones, and required the gallery staff to rescue the work in the middle of the night. (Photo: Daily Maverick, 18 November 2024).

This portrait highlights the heritage artwork as an ordered process. The painting depicts a studio with the sculptor and stallion, framed by the apparatus of art-making – the ladder, hoists, and scaffold. The work beckons the onlooker as witness to process of art, which, as the caption suggests, is situated in a historical moment, and here the tools are viewed as key to this artistic production.

As trace the scene, looking away from the centre to the floor of the image, a bucket appears, inconspicuous. Here, the bucket is not assigned the place of improvised response. Instead, it features as part of the process of making art, where labour is presented as central to the curated image.

This image is unsettled when read alongside the caption. A world of stability and order is placed under threat by elements outside the frame. Damage is attributed to a 2018 flood, as gallery staff are called to "rescue the work in the middle of the night." The scene evokes outrage, settling into a melancholic temporality in which loss is anticipated and suspended at the same time, as the headline signals a warning issued to the city's mayor. Metonymically, we can trace this residual object of care, from inside the frame outward and chronologically, from heritage to the present. What becomes audible is a melancholic lament.

Across these scenes, the bucket register shifts from bodily survival to temporary custodial suspension, and finally to melancholic residue. Read metonymically, its recurrence traces improvised continuance across survival, preservation and loss. As an ordinary object, it marks the absence of infrastructural, systemically held by governing structures. It leaves bodies waiting, which resonates with what Berlant describes as cruel optimism.[30]

Read metonymically, the bucket appears as trace – that ordinary object marking a repeated failure of something missing. Yet the bucket, alongside the actors both visible and invisible to the scene, marks the improvised "making do" by which the city life goes on. Even where the bucket does its work, something exceeds it — an insistence that escapes capture, repair, or symbolic closure. Despite breakdown, suspension and melancholy, life's vitality continues beyond structure. In Lacanian terms, lamella as excess remainder of life that persists, in spite of symbolic disrepair, may be apt to highlight the city's endurance. In Johannesburg's present tense, this stubborn life force speaks unconsciously through improvised continuance.

CONCLUSION

Johannesburg's present tense is one of symbolic and material breakdown held in tension with everyday endurance and adaptation. The city sits in suspension – a stasis-in-motion – caught between two enduring fantasies: Egoli, the city of gold, and the 'world-class African city.' Its historic design as an extractive, segregated space set the stage for today's crises, while post-apartheid governance has allowed them to become chronic. In this setting, infrastructure as the foundation of Johannesburg's modernity, announces itself mostly through absence, interruption, or collapse. Within the cracks and improvised acts, something persists without being fully spoken. Perhaps these point to residues of extraction, dispossession, or decades of neglected care that recur across scenes of breakdown and survival. Or perhaps, beyond these dominant narratives, trace persists as the remnants of a story not yet spoken.

This paper attempted to move beyond treating these conditions as isolated failures or evidence of inevitable decay, but adopted a witnessing stance toward Johannesburg's unfolding present tense. To do so was to resist resolution, explanation or closure. Instead, it attends to the ordinary scenes, small objects and improvisations; thereby, reading moments of breakdown where stand-ins recur as sites where city-body speaks through rupture. The bucket, in this sense, can be read as trace – a substitute for an absent infrastructure of governance. Metonymically, it signals the remains outside dominant storylines of the city. Continuance here resists stable meaning, whether we frame this as resilience, endurance or struggle.

From this perspective, Johannesburg is neither fully collapsed nor thriving. At the same time, it is a place where things do not quite hold, yet life continues unevenly, as an ongoing negotiation. Following Mbembe and Nuttall,[31] the city emerges as an urban crucible where failure and success are indeterminate. Might incompleteness itself be an expression of postcolonial urbanism, where cities in becoming, are entangled in crisis ordinariness as part of a suspended continuity? Through recurring stand-ins traced across the scenes, we come to see where responsibility shifts from state provision to bodies historically positioned to absorb the infrastructural burden.

To listen for the symptom is to resist the comfort of a consoling metaphor, especially when the metonym keeps returning. To read psychoanalytically is to ask not what the city is, but from where it speaks – and how. As Kaja Silverman reminds us, the trace interrupts closure, revealing what cannot be fully represented.[32] Attending to these traces is a way of witnessing what persists at the surface, even when it resists narrative coherence.

Holding to this present tense resists both aspiration and catastrophe. It asks us to remain with the city's unfinished speech, neither mourning it into nostalgia nor propelling it prematurely into futurity. The grammar proposed here is provisional: trace marks where symbolic forms of care fail to hold, while lamella shows life's persistence even in its absence.[33] Held together, they invite neither redemption nor collapse, but a different imaginary where new possibilities might surface.

To frame Johannesburg as an 'incomplete city' is to acknowledge its layers of unfinished business.[34] The task is not to lament lack nor celebrate endurance. Rather, it is to witness incompleteness itself as an ethical condition of becoming – one that loosens the hold of fantasy as structuring guarantee, and holds us within the demand of responsibility as the city goes on.

NOTES

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[2] City of Johannesburg, Annual Performance Report 2003/04—Introduction (Johannesburg: City of Johannesburg, 2005), 4, PDF, "the City has progressed even further along the path to become a world-class African city," accessed September 6, 2025, https://joburg.org.za/documents_/Documents/2004567/Annual%20Performance%20Report%20200304%20Issued%20March%202005/introduction.pdf.

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[5] City of Johannesburg, 2030: Growth and Development Strategy (2002); CoJ, Growth and Development Strategy 2040 (2011); CoJ, Spatial Development Framework 2040 (2016). 5–6; This futurity materialised through mega-events, such as the 2010 FIFA World Cup precincts, and transport infrastructure projects (Rea Vaya BRT, Gautrain) fast-tracked to meet the expectations of unity, prosperity and 'lasting legacy'. See for example: South African Government, "Gautrain: A New Era in Public Transport," media statement, June 9, 2010, https://www.gov.za/news/media-statements/gautrain-new-era-public-transport-09-jun-2010..

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[7] Martin J. Murray, City of Extremes, 327; Philip Harrison, Graeme Gotz, Alison Todes, and Chris Wray, "Materialities, Subjectivities and Spatial Transformation in Johannesburg," in Changing Space, Changing City: Johannesburg after Apartheid, ed. Philip Harrison, Graeme Gotz, Alison Todes, and Chris Wray (Johannesburg: Wits University Press, 2014), 2–39; Alison Todes, "The Impact of Policy and Strategic Spatial Planning," in Changing Space, Changing City: Johannesburg after Apartheid, ed. Philip Harrison, Graeme Götz, Alison Todes, and Chris Wray (Johannesburg: Wits University Press, 2014), 83-100.

[8] Todes, "The Impact of Policy," 83.

[9] Achille Mbembe and Sarah Nuttall, "Writing the World from an African Metropolis," Public Culture 16, no. 3 (2004): 359-361.

[10] Achille Mbembe and Sarah Nuttall, "Writing the World from an African Metropolis," Public Culture 16, no. 3 (2004): 363–64.

[11] See, for example, Patrick Bond, "World-City Transformation or Neoliberal Commodification? Johannesburg's Infrastructure and Basic Services," in Public Problems – Private Solutions? Globalizing Cities in the South, ed. Klaus Segbers, Simon Raiser, and Krister Volkmann (Berlin: Freie Universität Berlin, 2005).

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[14] Michelle Banda. "Another Fire at 'Hijacked' Joburg CBD Building Leaves Four Dead in Echo of Usindiso Disaster", August 25, 2024. https://www.dailymaverick.co.za/article/2024-08-25-joburg-cbd-fire-leaves-4-dead-in-tragic-echo-of-usindiso-disaster/.

[15] Paul N. Edwards, "Infrastructure and Modernity: Force, Time, and Social Organization," in Modernity and Technology, ed. Thomas J. Misa, Philip Brey, and Andrew Feenberg (Cambridge, MA: MIT Press, 2003), 186–87.

[16] For Jacques Lacan, the unconscious insists as repetitions and substitutions rather than in buried content. I used 'rupture' here to name those points where the the city's surface fails to hold and something surfaces as repetition. See Jacques Lacan, The Four Fundamental Concepts of Psychoanalysis, ed. Jacques-Alain Miller, trans. Alan Sheridan (New York: W. W. Norton, 1978), esp. 20–30, 49–55.

[17] Lauren Berlant, Cruel Optimism (Durham, NC: Duke University Press, 2011), 4-5.

[18] Doreen Massey, For Space (London: Sage, 2005), 9–12; Michel de Certeau, The Practice of Everyday Life, trans. Steven Rendall (Berkeley: University of California Press, 1984), 91–110.
[19] Pile, The Body and the City, 11–15.
[20] Jacques Lacan articulates this idea in Seminar V, where he describes how every act of speech leaves behind "debris or ruins" that produce a remainder that returns as trace through excluded signifiers. I understand trace here as a surface mark of absence, not as buried content. See Jacques Lacan, The Seminar of Jacques Lacan, Book V: Formations of the Unconscious, trans. Russell Grigg (Cambridge: Polity Press, 2017).
[21] Kaja Silverman, The Threshold of the Visible World (New York: Routledge, 1996), 13–15.
[22] Jacques Lacan, The Four Fundamental Concepts of Psychoanalysis, ed. Jacques-Alain Miller, trans. Alan Sheridan (New York: W. W. Norton, 1978), 197–198.
[23] The editors of the Lamella special section in Psychoanalysis, Culture & Society extends this concept into psycho-ecological critique, where lamella becomes a way of thinking about life's persistence beyond systems of meaning and representation. See Hilda Fernandez-Alvarez and Lucas Pohl, "Lamella: Perspectives on Psycho-Ecological (Non)Relations," Psychoanalysis, Culture & Society 27, no. 1 (2022): 1–3, https://doi.org/10.1057/s41282-022-00295-z.
[24] To derive the corpus I targeted searches in Daily Maverick using "Johannesburg sustainability," which yielded pieces on governance, infrastructure, and service delivery. Hyperlinks and cross-references within these articles, however, lead to a broader set of texts on collapse, abandonment, and decay, as related to fires, building failures, and infrastructural breakdowns. Together these terms framed sustainability and disaster as linked storylines through which the city is narrated.
[25] Logan Munsamy, "Navigating Water Scarcity: Johannesburg's Efforts to Balance Rising Demand with Dwindling Supply," Daily Maverick, September 25, 2024, https://www.dailymaverick.co.za/article/2024-09-25-navigating-water-scarcity-johannesburgs-efforts-to-balance-rising-demand-with-dwindling-supply/.
[26] Logan Munsamy, "Navigating Water Scarcity".
[27] Ferial Haffajee, "Central Library shutdown: Joburg blows R25m on roof repairs, gutters and pipes," Daily Maverick, August 27, 2024, https://www.dailymaverick.co.za/article/2024-08-27-central-library-shutdown-joburg-blows-r25m-on-roof-repairs-gutters-and-pipes/.
[28] At the time of finalising this article, the library's reopening was announced. Mail & Guardian reported it as triumphant, and signalled a full reopening after five years of closure. See Aarti Bhana, "Johannesburg Library to Fully Reopen in a Few Days," Mail & Guardian, August 6, 2025, https://mg.co.za/news/2025-08-06-johannesburg-library-to-fully-reopen-in-a-few-days/. The Daily Maverick offered a more cautious tone, noting its reopening as partial given ongoing upgrades. See Bheki C. Simelane, "After five year shutdown, Johannesburg City Library set for partial reopening," Daily Maverick, February 26, 2025, https://www.dailymaverick.co.za/article/2025-02-26-from-closure-to-cooperation-johannesburgs-library-on-track-for-partial-reopening-amid-upgrades/. The City of Johannesburg's newsroom, by contrast, provided an ornate depiction: "in style" as an "intersection of history, heritage, and hope," and "from history to the future." See City of Johannesburg, "From History to the Future: Joburg City Library Reopens in Style," City of Johannesburg Newsroom, August 9, 2025, https://joburg.org.za/media_/Newsroom/Pages/2025-News-Articles/From-history-to-the-future-Joburg-City-Library-reopens-in-style.aspx.
[29] Ferial Haffajee, "Johannesburg Art Gallery 'Can't Survive' Another Season of Rain, Experts Warn," Daily Maverick, November 18, 2024, https://www.dailymaverick.co.za/article/2024-11-18-johannesburg-art-gallery-cant-survive-another-season-of-rain-experts-warn/.
[30] Lauren Berlant, Cruel Optimism (Durham, NC: Duke University Press, 2011), 4–5
[31] Achille Mbembe and Sarah Nuttall, "Writing the World from an African Metropolis,"
[32] Kaja Silverman, The Threshold of the Visible World (New York: Routledge, 1996), 158–62.
[33] Stephen Frosh, Psychoanalysis Outside the Clinic: Interventions in Psychosocial Studies (Basingstoke: Palgrave Macmillan, 2010), esp. 12–15, on the provisional, interpretive stance of psychosocial reading.
[34] Achille Mbembe and Sarah Nuttall, Writing the World from an African Metropolis, 347–72.

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CHICKEN DUST: REFRAMING PUBLIC SPACE THROUGH FILMIC STORYTELLING

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"The insertion into film studies of methods taken from other disciplines, including linguistics, psychoanalysis, anthropology, and semiotics. Some of these 'disciplines' were themselves hybrids, already crossing disciplinary boundaries…
In such instances, film is not even the final target of enquiry, but part of a wider argument about representation – the social process of making images, sounds, signs, stand for something – in film or television odd as this might sound, what emerges is a body of approaches to film that is rich when applied to film but which is not confined to the analysis of film. In effect, film theory becomes part of the wider field of disciplines and approaches which came to be called 'cultural studies."[1]

INTRODUCTION

Using film, this work examines activities on a specific sidewalk bay in Johannesburg, located along Louis Botha Avenue, one of the city's primary pedestrian and vehicular thoroughfares. The presence of a chicken outlet capitalizes on the sidewalk extension formed by the road's curvature. It has transformed into a public space engineered by and for individuals in transit, while also accommodating those who linger. This urban microcosm presents an opportunity for a nuanced examination of what I term "the twilight zone" – the emerging, yet officially uncategorized, valuable public space in a southern metropolis that exists between legally sanctioned activities and those that violate local bylaws. Through a filmic analytical framework, this text elucidates the fundamental elements contributing to the 'livability' of emerging 'twilight' public spaces. Narratives of key stakeholders — including Fish, Fungai, Mduduzi, Pastor Theo, Thomas, and Vimal — who comprise a local business collective, are foregrounded as principal agents of change, and caretakers of the public good. Set in the previously white zone area of Orange Grove, their story unfolds against a complex historical backdrop of a landscape undergoing profound transformation.

Structure

This text builds on the epigraph by examining how filmic storytelling can deepen our understanding of livability in precarious urban environments. As a cultural study exploring new spatial and temporal realities, it delineates three primary components. The first is the film premise, which articulates the overall intent and structure. The second is the location, Louis Botha Avenue, which provides historical context for the current narrative. Finally, the third involves the chicken outlet, whose

operational details, along with those of the broader neighborhood network, play a vital role in spatial development. Additionally, the paper and film highlight the importance of montage in complex spatial narrative structures and explore its potential as an alternative analytical tool within the realm of urban design.[2] Both forms extend "the need to rethink entrenched narratives about Africa and the place of African agency in knowledge production as a way of tackling the enduring legacies of epistemic imperialism."[3]

BUILDING UP A CITY IMAGE

Premise

"Chicken Dust (2025)" is a 15-minute film that exemplifies a multifaceted environment serving diverse functions, including commerce, habitation, ownership and a sense of belonging, along the sidewalk of one of Johannesburg's major movement arteries. Often unrecognized or deemed undesirable by legal authorities, the fluid expansion of the sidewalk emerges as a critical locus within an ongoing discourse surrounding individual agency, community participation, and collective activism, all of which strive to reimagine urban spaces as viable public entities. Through montage, the film articulates the operational and spatial innovations that epitomize the urban qualities of "twilight intelligence," a concept that reveals a cultural orientation and, while not entirely rejecting the status quo, adeptly navigates beyond conventional regulations and norms. Situated within blueprints of a colonial spatial context paired with 20th-century apartheid legislation that remains inhospitable to local populations, *twilight intelligence* encapsulates diverse local forms of insurgency, resistance and adaptive strategies. Twilight operations function as an undercurrent to large-scale governmental initiatives that frequently encounter implementation challenges.

The narrative of *Chicken Dust* weaves together the rich tapestry of contemporary local community life, yielding insights into the structural constraints that inform these emerging urban transformations. Created through a montage of three films: 'Sidewalk Braai,'[4] 'Bhanis Cycles,' and 'who's the landlord,' the visual composition is supported by an animation flythrough, drone shots, and text slides to unfold the activities that take place at the sidewalk bend. *Chicken Dust* as discourse invites the critical examination of existing design and planning policies that are often misaligned with existing realities, as captured in this work, which served as empirical research within a completed PhD submission.[5] Ultimately, the work advocates for a more profound inquiry into alternative modalities of public space utilization, which is essential for fostering the development of more livable urban environments. Louis Botha Avenue is a site where ways of utilizing public space otherwise are explored.

Louis Botha Avenue's Temporality

The film opens with text that contextualizes Louis Botha Avenue's bend historically, dating back to 1876, to underscore the significance of the current change in this location. Today's artery originated as an ox-wagon track. It developed into a main route connecting the agricultural land south of the Witwatersrand ridge to the newly established and growing urban area in the north.[6] This northern region includes Pretoria (see Figure 1), the capital of the South African Republic (ZAR), established after the British annexed the Afrikaners from the Cape.[7] The avenue begins at the top of Randjelaagte, a triangular piece of undeveloped government land[8] situated between the suburbs of Hillbrow and Berea. It curves northeast, marking the boundaries of historical Witwatersrand farmland, with Klipfontein to the north and Doornfontein to the south.

Upon descending from the elevated Houghton Estate ridge, the avenue traverses the Lemoen Spruit (also known as the Orange Grove Spruit), a historically significant natural barrier. At the foot of this

ridge, the Lemoen Plaas, a former agricultural estate, functioned as a rest stop for travelers en route between Johannesburg and Pretoria. This area, initially designated as Alexandra Estate, evolved into the Orange Grove neighborhood in 1904. As the route progresses, it arcs gently to the north, continuing its trajectory towards Pretoria.

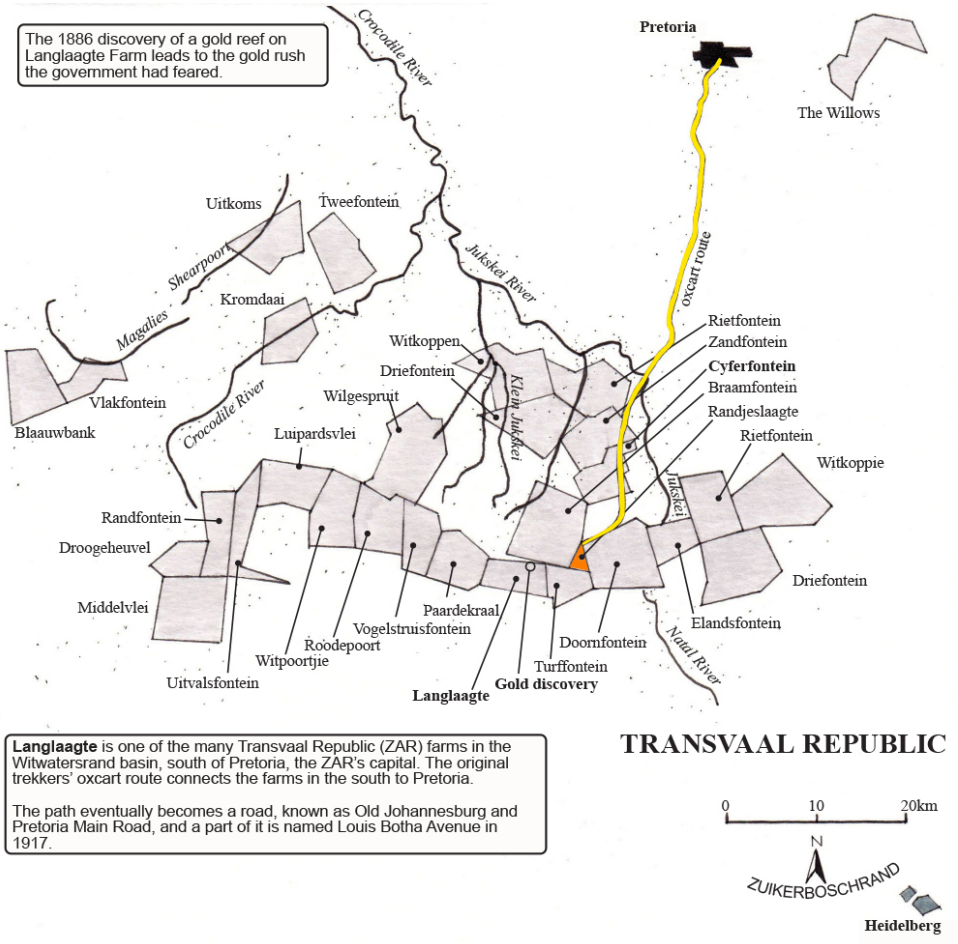

Figure 1. The ox-wagon path connecting the Republic's farms to the capital, Pretoria

In 1917, the avenue was named in honor of Louis Botha, a significant political and military figure during the Boer War who served as both Prime Minister and General.[9] Botha's administration was marked by racist ideologies that enforced strict apartheid between black and white individuals, with exceptions made only when black labor was deemed necessary to support the interests of the white population. The long-lasting legacy of discrimination from this period has profoundly impacted space and time and social dynamics. Moreover, its segregationist effects continue to resonate in contemporary society. This situation highlights the enduring influence of historical events on present-day realities, despite official attempts to override past blueprints, such as the (Transport) Corridors of Freedom or Inner-City Managed Lanes Projects.[10] The Corridors of Freedom, an inclusive Transit-Oriented Development project, saw the City of Johannesburg responsible for providing the necessary infrastructure. At the same time, its success rested on private developers delivering affordable housing along the designated corridors.[11]

Within this context, the establishment known as *Chicken Dust* emerges as a poignant symbol of the socio-political complexities. It highlights the people that Botha discriminated against, showcasing

how they have creatively utilized the bend in Louis Botha Avenue, transforming the Orange Grove curve into a vibrant community hub.

Chicken Dust

The establishment that the film (and this paper) borrows its name from is a vibrant sidewalk eatery located at the intersection of Louis Botha Avenue and 8th Street, overseen by local entrepreneur Fish. Despite its modest dimensions of just 2 square meters, this micro-establishment has become a popular gathering spot, especially at the end of the month and lively weekend evenings. The extended bend of the sidewalk creates an inviting outdoor dining area, filled with the enticing aroma of meat grilled over an open flame, which attracts a diverse crowd.

The sidewalk restaurant is part of a tight-knit set of commercial outlets. Adjacent to *Chicken Dust*, Family Needs Supermarket serves as a crucial community hub. The strategic positioning of *Chicken Dust* between the supermarket and the Exclusive Hair Saloon, where hair artist Fungai works, fosters a mutually beneficial relationship. Fungai's clientele, drawn from various parts of the city, often indulge in Fish's offerings while waiting for their appointments, particularly during the bustling month-end rush, enhancing local community connections.

Further down the avenue, in close contact with Fish, albeit in a different service industry, M.R. Mirror and Glass showcases a distinctive selection of used furnishings, followed by Bhanis Cycles, where Mduduzi is employed under the ownership of Vimal. Mduduzi, a resident of the neighboring high-density suburb Hillbrow, brings his exceptional craftsmanship to the business, while Vimal adds a familial touch, having inherited Bhanis Cycles from his father.

With *Chicken Dust* as the initial center of attention, the film zooms in on illustrative moments of the everyday along this short stretch of road, showing how it is the sum of these individuals and their spatial, economic and cultural agency that embodies the transformation of public spaces along Louis Botha Avenue. They reflect resilience and social interaction amid the historical complexities of the area's evolution from a predominantly residential neighborhood to a bustling commercial hub.

Film as Social Practice and Insurgent Analysis

In essence, *Chicken Dust* focuses on 'a sidewalk's extension along Louis Botha Avenue' as a collective urban design process that is organically developing. Using the concept and technique of montage, it merges three films to provide a slice of subaltern sidewalk activities in Orange Grove (Figure 2), combining documentary film, animation techniques, and text.

Sidewalk Braai (2018)

Sidewalk Braai is a short film that captures a "slice of life" depicting the nighttime activities of residents in Orange Grove. These events take place on a sidewalk area along the eastern side of Louis Botha Avenue, specifically between 8th and 9th Streets. Set on a Saturday night in April, the film, with its artistic portrayal, depicts Fish as he oversees his sidewalk business in Orange Grove. It highlights his spatial use in accordance with Jane Jacobs' idea of the "sidewalk ballet."[12] *Sidewalk Braai* presents a close-up of Fish as he interacts with his workers and ensures the seamless operation of his enterprise.

Bhanis Cycles (2018)

This film chronicles Vimal's journey as he opens his bicycle store, located just two doors down from Fish's establishment, and follows his experiences throughout the day. It provides a brief introduction to Mduduzi, who is employed at the store. As the story progresses, Vimal shares a voiceover reflecting on the evolution of his once-cherished venture, the significance of his location along Louis

Botha Avenue, and the profound and devastating impact that the recent road upgrades — The Corridors of Freedom initiative by the city — have had on his business.

Who's the landlord (2018)

Who's the landlord introduces us to a diverse array of characters, each with their own unique and intriguing business ventures. Nestled between Bhanis Cycles and Family Needs Supermarket, we encounter Pastor Theo, who operates a church downstairs behind the hair salon where Fungai rents a mirror, while maintaining an office upstairs in the building. We are also introduced to Fish and Thomas, who have their own distinct enterprises. These four protagonists share insights into their self-perceptions and the relationships between their businesses and their location along Louis Botha Avenue, piquing our curiosity about their potential for success.

Figure 2. Twilight Sidewalk Bay along Louis Botha Avenue in Orange Grove

In *Theory of the Film: Character and Growth of a New Art*, Béla Balázs asserts that film is a distinct art form with its own visual language, capable of uncovering the 'soul' and 'inner life' of characters through close-up shots. He highlights how this medium can surpass the limitations of written expression by utilizing body language and facial expressions to deliver a direct and comprehensive portrayal of human emotions.

Balázs also emphasizes the transformative potential of film theory, aiming to lay a strong groundwork for understanding and advancing cinema as a unique art form. He believes that through the study of film theory, we can gain a deeper understanding of the expressive capabilities of film and use this knowledge to push the boundaries of the art form.[13]

On the street, life is analyzed through the lens of a framework in which it unfolds and is documented at a rate of 24 frames per second. Here, film serves as a nuanced medium that captures this experience. Individuals and their micro-architectures, situated within confined spaces, reflect the

intricacies of their environment, mirroring the dynamic evolution of spatial practices (Figure 2). This bottom-up push not only challenges oppressive authority but also underscores the creativity inherent in DIY urbanism, while simultaneously highlighting its limitations.

Montage as a Way of Framing Lived Realities

In *Chicken Dust,* the assembly of stories (montage) into a single narrative[14] body enhances Balázs' theory of visual associations, thereby creating new meaning through sequences and their inherent relationality. Balázs argues for the use of the word (and practice of) montage as opposed to the term "editing." He states that this "French expression 'montage'" is "far more adequate and impressive, for it means 'assembly' and that is really what happens in editing. The shots are assembled by the editor in a predetermined order, in such a way as to produce by the very sequence of frames a certain intended effect, much as the fitter assembles the parts of a machine to turn these disjointed parts into a power-producing, work-performing machine."[15]

As an analytical approach, assembly in filmmaking involves multiple stages and argues for the value of connotation over predetermined categorization and labelling. From idea to actuality, making a film involves off-site and on-site engagement. This production typically takes into account elements such as the idea, location scouting, equipment, actors, crew, and budget. In total, these stages enable a much richer exploration of the phenomenon because observation occurs at multiple scales, and in this instance, within the frame. Here, the frame represents two dimensions: 1) perception; 2) a data field. Frame assembly (framing) is a complex process that merges the imaginary and the real, art and life. It is formed by narrative compositionality,[16] extending Heidegger's merging of art (work) and artist (maker: scriptor/editor/producer), and constructs a "sensuous apprehension of lived experience" (aesthetics).[17]

This merging of art and life (work and aesthetics) symbolizes and allegorizes, effectively recreating the experience. Heidegger argues that this makes "public something other than itself" and "manifest[s] something other."[18] This manifestation represents subaltern survival practices and other [in]visibilities that are part of and take place in *the twilight zone*; effectively, they are manifestations of an "emergence of new urban colonial relations."[19] Envisioned in frames, [framing] the "slow encroachment of the ordinary"[20] aesthetically displays "a silent, patient, protracted, and pervasive advancement of ordinary people on the propertied and powerful to survive hardships and better their lives."[21] In totality, frames are a "reflective interval"[22] between what is imagined and what is real; they require the active engagement of the viewer to make sense of what is and what they think of *what is*.

Minh-ha also underscores "meaning" in the frame that "can neither be" emphasized, "nor denied." Its enclosing boundary and field stress "the interval between apertures and creating a space in which meaning remains fascinated by what escapes and exceeds it."[23] Simone and Pieterse reaffirm Minh-ha's claim that "details 'leak' from the frame. Urban life is replete with secretion – things overflowing their boundaries and things being hidden away, kept from use or made secret."[24] Storytelling unfolds and leaks through-composed frames by a collaboration between inside-outside' scriptors.' This process of storytelling, involving both the actors who live the twilight phenomena and the spatial experts, as well as "artist" and "designer" specialists, is a fascinating aspect of frame assembly.[25]

Without rejecting their metaphoric amplification, frames [re]present the making of… mise en scène and discourse to enable novel spatial, temporal realities and consequences. To be read interpretively, mise en scène signifies the scriptor's expertise in what happens in the frame.[26]

Figure 3. The building on the corner of Louis Botha Avenue and 8th Street in Orange Grove

Representing Local Forms

According to Hillier and Hanson, "spatial order is one of the most striking means by which we recognize […] the cultural differences between one social formation and another, that is, differences in the ways in which members of those societies live out and reproduce their social existence."[27] Cities are spatial phenomena with geometries that facilitate access, encounters, and the transfer of knowledge. As Hillier and Hanson argue, strong ties exist between people, space, and culture. Hence, streets play two seminal roles at any given time and place: as a form, they structure the city, and as a space, they represent distinctive social relations. *The twilight zone*, as a special extension of the street in a particular local context (Figure 3), situates itself at the intersection of form and space, adding a degree of livability that has not been previously recorded or named.

Chicken Dust's background location, Orange Grove, provides insight into a part of the city's daily life. The assembled recordings offer opportunities to learn from entrepreneurs who respond to space and movement. With the larger area officially under redevelopment, linked to the transformative potential of the (Transport) Corridors of Freedom or Inner-City Managed Lanes project mentioned earlier in the text, the different narratives offer an excellent opportunity to relate ongoing planning/design processes to actual realities, and a potential counterpoint to top-down imaginaries.

According to the Mayoral Committee Member for Transport, Councilor Christine Walters, ease of movement for residents was a crucial part of the City's Growth and Development Strategy 2040.[28] She said this prompted the development of the Corridors of Freedom, multimillion-rand investments in cycling and pedestrian lanes, and the extension of the Rea Vaya Bus Rapid Transit (BRT) system. Additionally, the City's Transport Department noted that some of the advantages of managed lanes include higher travel speeds, which reduce time spent on the road; greater access to work and leisure centres; efficient use of resources; on-time performance and reliability; and improved air quality and decreased greenhouse gas emissions associated with traffic congestion. The City of Joburg's official website stated that in a move to provide high-quality, safe, accessible, affordable, and environmentally friendly public transport, the city would conduct a feasibility study on managed lanes in several inner-city streets. Managed lanes were intended to prioritize public transportation and pedestrians.

The twilight zone, while reliable in its performance and service delivery, expands time and adds a degree of sociability and small-scale economic benefits that might well override theoretical ideas of efficiency in a context that deals with overcoming obstacles on a day-to-day basis.

Chicken Dust represents the challenges faced by Johannesburg's planners in navigating the informal rules and desires of its citizens.[29] It underscores the transformative potential of establishing a shared

language, which can effectively bridge the gap between urban design and the realities of city inhabitants. Traditional methods often rely on a technicist and rational approach. In contrast, this project advocates for using film as a social practice and insurgent analysis to inform urban planning better, inspiring a new way of thinking and planning. Moreover, as noted by Lury, emphasizing the act of "making"[30] not only empowers designers to reconsider the material and semiotic dimensions of their work but also encourages them to explore new possibilities.

Image creation requires the ability to adjust tone and timbre, as well as distinguish between silence and noise, and recognize resonance and vibration. Narrative making serves to entertain, educate, and inform. "Stories contain knowledge readily put to use in the world …" and "do not simply contain knowledge; they are … the knowledge …"[31] Moving into cultural studies, in storytelling, the conjunction of 'story' and 'telling' demonstrates various associations between story as a medium for telling and the telling of story as a medium. And so, storytelling, with its power to oppose,[32] to merge knowledge types based on analytical scientific reasoning (epistēmē), practical craft know-how (technē), and ethical wisdom (phronēsis), provides a fascinating insight into visible and invisible networks and how their underlying forces may evolve.

CONCLUSION

The narratives developed through this filmic approach aim to articulate the lived experiences of individuals in South Africa's urban spaces, particularly those in marginalized sectors such as street entrepreneurs. These stories not only highlight individual circumstances but also reflect broader socio-economic conditions that demand urgent attention to alleviate poverty. Rooted in anti-colonial and anti-racist perspectives, *Chicken Dust* highlights the detrimental effects of historical disparities in knowledge and understanding on urban development processes, emphasizing the responsibility and commitment required to address these issues.

By employing a narrative-led methodology, *Chicken Dust* seeks to challenge established paradigms in urban design, ultimately aiming to bridge the gap between designers and user needs. An example of this approach is illustrated in the analysis of street modifications in Orange Grove that encourage diverse forms of appropriation. This project operationalizes Lury's theoretical framework through various 'making' structures that incorporate interdisciplinary narrative inquiry methods, fostering a sense of empowerment and motivation among designers.

NOTES

[1] Graeme Turner, “Film as Social Practice” (London and New York: Routledge. 2009), 59.
[2] In her article “Complicity Through Montage: A Call for an Intercultural Approach to Ethnographic Filmmaking,” Alexandrine Boudreault-Fournier emphasizes the emergence of various experimental ethnographic forms—including polyphonic, dialogical, collaborative, participatory, reflexive, autobiographical, and indigenous texts. These innovative approaches directly address concerns related to colonial history and aim to challenge and rectify the unequal dynamics between “Us and Them,” (2020), 170.
[3] Nathan Andrews and Nene Ernest Khalema, “Re-Storying African (Studies) Pedagogies: Decolonizing Knowledge and Centering Black Agency?” In: Andrews, N., Khalema, N.E. (eds) *Decolonizing African Studies Pedagogies. Political Pedagogies*. (Palgrave Macmillan: Cham. 2023), 2.
[4] In South Africa, the term ‘braai’ denotes a lively social gathering where friends and family unite to cook meat over an open flame, typically using wood or charcoal. Originating from Afrikaans, it represents more than just grilling; it is a cherished tradition that promotes a sense of community. Much like an American barbecue, a braai offers a selection of marinated meats alongside various side dishes, all enjoyed in a festive atmosphere filled with laughter and companionship.
[5] Solam Mkhabela, “Urban Scripting: audio-visual forms of storytelling in Urban design and planning: the case of two activity streets in Johannesburg,” Thesis Submission, https://wiredspace.wits.ac.za/items/93edc812-78b2-4865-98ba-fd470ab2b8e4, (Johannesburg. Wits 2023).
[6] Solam Mkhabela, “Alexandra: A Backstory.” (Johannesburg: Jacana Media, 2024), 7.
[7] Leonard Thompson, “A History of South Africa.” (New Haven: Yale University Press, 2000), 88.
[8] Keith Beavon, “Johannesburg: The Making and Shaping of the City.” (Pretoria: University of South Africa Press, 2004), 23.
[9] *South African History Online*, Louis Botha [website], https://sahistory.org.za/people/louis-botha, (accessed 5 September 2025).
[10] The Corridors of Freedom and Inner-City Managed Lanes project represents a collaborative effort that provides a significant opportunity for urban planners, city officials, transportation authorities, and stakeholders to align ongoing planning and design processes with the realities of urban living. This initiative encompasses a strategic network of transport corridors linked to mixed-use development nodes, prioritizing higher-density housing while emphasizing inclusivity and equity. In Johannesburg, the Inner-City Managed Lanes initiative, spearheaded by the City of Johannesburg, enhances the Rea Vaya Bus Rapid Transit (BRT) system. Its objective is to improve traffic flow and public transportation by establishing dedicated lanes for buses and minibus taxis. Furthermore, the initiative aims to convert specific streets into lanes exclusively reserved for public transport or managed traffic.
[11] Philip Harrison, Margot Rubin, Alexandra Appelbaum, and Romain Dittgen, “Corridors of Freedom: Analyzing Johannesburg’s Ambitious Inclusionary Transit-Oriented Development.” In: Planning Research, 39(4) (2019), 460.
[12] Calling for complex sidewalk activities, in *The Life and Death of Great American Cities* (1961), Jane Jacobs argues that “Under the seeming disorder of the old city, wherever the old city is working successfully, is a marvelous order for maintaining the safety of the streets and the freedom of the city. It is a complex order. Its essence is intricacy of sidewalk use, bringing with it a constant succession of eyes. This order is all composed of movement and change, and although it is life, not art, we may fancifully call it the art form of the city and liken it to the dance — not to a simple-minded precision dance with everyone kicking up at the same time, twirling in unison and bowing off en masse, but to an intricate ballet in which the individual dancers and ensembles all have distinctive parts which miraculously reinforce each other and compose an orderly whole. The ballet of the good city sidewalk never repeats itself from place to place, and in any once place is always replete with new improvisations. The stretch of Hudson Street where I live is each day the scene of an intricate sidewalk ballet.”
[13] Béla Balázs, “Theory of Film (Character and Growth of a New Art).” (London: DENNIS DOBSON LTD, 1952).
[14] Lila Abu-Lughod’s article “Writing Against Culture” advocates for the exploration of narrative ethnographies that emphasize specific contexts, contributing to the established tradition of writing based on fieldwork (1991), 146.
[15] Béla Balázs, “Theory of Film (Character and Growth of a New Art).” (London: DENNIS DOBSON LTD, 1952), 118.
[16] Rose Gillian, “Visual Methodologies: An Introduction to Researching with Visual Methods.” (Los Angeles: SAGE Publications, 2016).
[17] Martin Heidegger, “Basic Writings.” (New York: Routledge Classics, 2011), 133.

[18] Martin Heidegger, “Basic Writings.” (New York: Routledge Classics, 2011), 91.
[19] Martin Heidegger, “Basic Writings.” (New York: Routledge Classics, 2011), 152.
[20] Asef Bayat, “Un-civil society: The politics of the ‘informal people.’” In: *Third World Quarterly*, 18(1) (1997), 57.
[21] Asef Bayat, “Un-civil society: The politics of the ‘informal people.’” In: *Third World Quarterly*, 18(1) (1997), 57.
[22] Trinh Minh-ha, “When the Moon Waxes Red: Representation, Gender and Cultural Politics.” (New York: Routledge, 1991), 48.
[23] Trinh Minh-ha, “When the Moon Waxes Red: Representation, Gender and Cultural Politics.” (New York: Routledge, 1991), 49.
[24] AbdouMaliq Simone and Edgar Pieterse, “New Worlds: Inhabiting Dissonant Times.” (Cambridge: Polity Press, 2017), 94).
[25] Edgar Pieterse, “Unlocking political potentialities.” In: Michele Lancione and Colin McFarlane, eds. *Thinking Global Urbanism: Essays on the City and its Future*. (London: Reutledge_2021), 194-5.
[26] David Bordwell, Kristin Thompson and Jeff Smith, “Film Art: An Introduction.” (New York: McGraw-Hill Education, 2020).
[27] Bill Hillier and Julienne Hanson, “The social logic of space.” (Cambridge: Cambridge University Press, 1984), 27.
[28] Documents relating the city’s Growth and Development Strategy (GDS 2040) can be located on the city’s portal:https://joburg.org.za/documents_/Pages/Key%20Documents/Joburg%202040%20GDS/Joburg-2040-GDS.aspx
The ‘Corridors of Freedom’ project is a strategic series of transport arteries linked to mixed-use development nodes with higher-density accommodation and supposedly geared to inclusion and equity.
[29] Philip Harrison, “On the Edge of Reason: Planning and Urban Futures in Africa.” In: *Urban Studies*, 43(2) (2006): 319—335.
[30] The Social Life of Methods as Epistemic Objects: Interview with Celia Lury, Celia Lury, Martín Tironi and Renato Bernasconi (23 November 2020).
[31] Leonard Webster and Patricie Mertova, “Using Narrative Inquiry as a Research Method: An Introduction to Critical Event Narrative Analysis in Research, Teaching and Professional Practice.” (London: Routledge, 2007), 20).
[32] Molly Andrews, “Introduction: Counter-Narratives and the Power to Oppose.” In: Narrative Inquiry, 12(1) (2002): 1—6.

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REVITALIZING DOWNTOWN FRAMINGHAM THROUGH THE LENSES OF IMMIGRANT ENTREPRENEURS

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INTRODUCTION

Urban downtown areas across the United States face ongoing challenges of economic vitality and community identity. This study investigates how immigrant entrepreneurs experience and contribute to downtown renewal through a mixed-methods analysis combining quantitative demographic analysis with participatory visual methodology in downtown Framingham, Massachusetts.

Using 5-year American Community Survey Public Use Microdata Sample (PUMS) data for the Framingham & Marlborough PUMA, we find that foreign-born residents demonstrate significantly higher rates of self-employment (14.0%) compared to native-born residents (8.8%). This elevated entrepreneurship occurs among a population with distinctive characteristics including lower formal educational credentials, recent immigration experiences, and significant language barriers. These patterns align with the concept of the ethnic economy (Light and Gold),[1] in which entrepreneurship is sustained through co-ethnic networks, shared labor, and culturally specific markets that circulate resources largely within immigrant communities.

The appropriate assessment of immigrants' perceptions of urban settings ultimately determines the effectiveness of urban policies, the promotion of social justice, and the relationships between populations in ethnic enclaves and the broader receiving society.[2] In this context, understanding how cultural symbols and references shape an individual's sense of place and belonging becomes crucial for effective public policy. The use of this mixed method approach is critical for truly understanding the realities of this population in the urban setting of Framingham, Massachusetts.

LITERATURE REVIEW

The challenges and opportunities facing immigrants in destination countries are widely explored in the research literature across overlapping fields such as economics, geography, sociology, anthropology, and urbanism. Contributions focus on the role of social ties,[3] labor markets and entrepreneurship in destination countries,[4] the sense of place,[5] and the spatial concentration in gateway cities.[6]

The sense of place, in particular, has emerged as a key component in studies of migrant groups, shedding light on how immigrants attribute meaning to both tangible and intangible aspects of their environment. According to Gupta and Ferguson, remembered places have served as symbolic anchors of community for immigrants, who use memory of place to construct their new lived world

imaginatively. "*Homeland* in this way remains one of the most powerful unifying symbols for mobile and displaced peoples, though the relation to homeland may be very differently constructed in different settings."[7]

The elements that shape the sense of place are inherently subjective, and qualitative methods, including Photovoice have become an important approach in the challenging task of measuring how immigrants perceive their new settings, and how they feel they belong to it. Photovoice is a technique of Community-Based Participatory Research (CBPR) developed in the 1990s by Wang and Burris from the University of Michigan.[8] It consists of engaging the community to photograph their perceptions about a certain theme that is previously chosen. Data collection through photography has been applied to enhance understanding on themes of interest to anthropologists and urbanists, including studies on the connections between housing insecurity, physical activity, and health,[9] as well as on teenagers' urban mobility.[10]

In qualitative research, the use of visual images has emerged as a powerful and increasingly recognized method for exploring the complexities of human experience. Far from being neutral representations of reality, images are deeply embedded in cultural contexts and power dynamics. As Gillian Rose asserts, "visual images are never innocent; they are always constructed through complex cultural codes and power relations."[11] This perspective challenges researchers to critically engage with visual materials as supplementary data, but also as the main source of data. Furthermore, visual methodologies offer a participatory dimension that reconfigures traditional research hierarchies. Claudia Mitchell emphasizes that "visual methods democratize the research process by shifting power towards participants, enabling them to frame their own experiences and perspectives."[12]

While PhotoVoice has demonstrated its value across diverse research contexts, its application becomes particularly significant when addressing the documented challenges immigrants face in participating in urban planning processes. Research consistently shows that immigrant voices are often marginalized or entirely absent from traditional planning engagement, with urban planners frequently failing to adapt their practices to accommodate meaningful participation by immigrant and refugee communities.[13] Standard public engagement processes create multiple barriers for immigrants, including language difficulties, unfamiliarity with civic participation norms, limited time availability, and in some cases, distrust of government processes stemming from experiences in countries of origin. Arts-based participatory methods have emerged as promising alternatives for addressing these exclusionary practices, offering immigrant communities opportunities to document their lived experiences, communicate complex spatial relationships, and translate community knowledge into formats accessible to decision-makers.[14] This intersection of visual methodology and inclusive planning practices positions PhotoVoice as a democratic intervention that enables immigrant entrepreneurs to articulate their sense of place and community needs in ways that traditional planning processes often overlook or inadequately capture.

METHODOLOGY

Mixed-Methods Design

This study employs a convergent parallel mixed-methods design, collecting and analyzing quantitative and qualitative data simultaneously before integrating findings during interpretation. This approach makes it possible to leverage the strengths of both quantitative demographic analysis and qualitative participatory research to develop a comprehensive understanding of immigrant entrepreneurship in downtown Framingham. The quantitative component provides the broader demographic and economic context that situates the lived experiences captured through PhotoVoice, while the qualitative findings illuminate the cultural and emotional dimensions that statistical data alone cannot reveal.

Quantitative Analysis: PUMS Data

We analyzed 5-year American Community Survey Public Use Microdata Sample (PUMS) data (2019-2023) for the Framingham & Marlborough Public Use Microdata Area (PUMA). Using these data, we created comparative analyses of foreign-born and native-born entrepreneurs across multiple dimensions including employment status, industry concentration, educational attainment, age distribution, English-speaking ability, place of birth patterns, and years since immigration.

For the purposes of this study, entrepreneurs are defined as individuals reporting "Self-employed in own not incorporated business" or "Self-employed in own incorporated business" as their class of worker. Self-employment is the most commonly used proxy for entrepreneurship due to data accessibility, though it has been criticized for being both too narrow (not all entrepreneurs are self-employed) and too broad (not all self-employed are entrepreneurs).[15] The analysis included all employed civilians aged 16 and older in the Framingham & Marlborough PUMA.

PhotoVoice Methodology

The photovoice project was conducted with the intent to explore how Downtown Framingham business owners experience and express their identity, culture, and sense of community. Participants were invited from among business owners established along Concord Street and Hollis Street, including those located on the perpendicular Irving Street. The study's focus area is intersected by the tracks of the commuter rail.

Participants were asked to photograph responses to three specific questions that guided their visual storytelling (Figure 1).

Question 1: What parts of your storefront make it feel most like your own space—something that reflects who you are and what your business stands for?
Question 2: What features on your street make you feel most connected to the life and rhythm of Downtown Framingham?
Question 3: What places in your neighborhood give you the strongest feeling that you are part of a community here?

Figure 1. PhotoVoice Questions.

These questions provide understanding on how certain features of the street contribute to a shared urban rhythm that fosters a sense of belonging in the downtown environment and disclose the specific places in the neighborhood that contribute to a strong sense of community. The data collection process faced notable challenges. While 14 business owners signed informed consent forms, only 6 ultimately participated. Many store employees declined to grant access to researchers, often citing concerns related to immigration. This hesitation underscores the vulnerabilities present within the community. The six businesses that did participate represented a diverse cultural mix, as well as different business segments.

Business Segment	Brazil	Colombia	Ecuador	Total
Beauty and Self Care	2			2
Eatery	1	1	1	3
Grocery	1			1
Total	4	1	1	6

Table 1. Participants in PhotoVoice.

While limited in number of participants, the methodological approach provides a vivid snapshot of the values and cultural references present in the downtown business landscape.
The researchers' approach to inviting participants served as a preliminary method of data collection, functioning as an informal, non-structured interview that offered early insights into participants' perspectives and experiences. These initial conversations, though not formally recorded, allowed the researchers to begin understanding the participants' cultural contexts and motivations. Additionally, continued contact through WhatsApp played a key role in the research process by enabling follow-up communication. This platform allowed participants to clarify the underlying meanings of specific images and provide further context, which contributed to the interpretation of visual data and supported the researchers in drawing more accurate and nuanced conclusions.

QUANTITATIVE CONTEXT: IMMIGRANT ENTREPRENEURSHIP IN THE FRAMINGHAM AREA

Self-Employment Patterns by Nativity

Foreign-born workers in the Framingham & Marlborough PUMA demonstrate significantly higher self-employment rates compared to native-born workers. The data reveals that 14.0% of foreign-born workers are self-employed (9.6% not incorporated + 4.4% incorporated) compared to 8.8% of native-born workers (6.0% not incorporated + 2.8% incorporated)—representing a 59% higher rate of entrepreneurship among immigrants. This pattern aligns with national trends documented by the Bureau of Labor Statistics, which found that foreign-born workers are more likely to be self-employed than native-born workers, with a 7.6% unincorporated self-employment rate for foreign-born compared to 6.1% for native-born workers.[16]

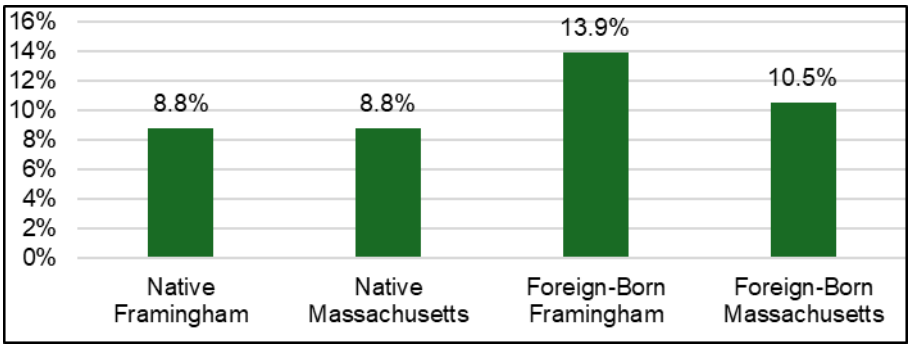

Figure 2. Rate of Self-Employment by Nativity. Source: Authors' analysis, U.S. Census ACS PUMS 2019-2023

Industry Concentration Differences

The industries attracting immigrant versus native-born entrepreneurs reveal markedly different patterns. Foreign-born entrepreneurs show particularly high concentrations in construction (23.5% vs. 11.8% native-born), administrative and support services (23.4% vs. 8.0% native-born), and other services (18.1% vs. 13.7% native-born). Notably, within administrative services, 23.4% work specifically in services to buildings and dwellings compared to just 5.9% of native-born entrepreneurs. In contrast, native-born entrepreneurs concentrate heavily in professional, scientific, and technical services (21.3% vs. 4.6% foreign-born), suggesting different pathways to entrepreneurship based on educational credentials and market access.

INDUSTRY (NAICS CODE)	Native		Foreign born	
	Framingham & Marlborough PUMA	Massachusetts	Framingham & Marlborough PUMA	Massachusetts
Construction (23)	**11.8%**	**15.5%**	**23.5%**	**17.8%**
Retail Trade (44-45)	**4.8%**	**6.4%**	**5.7%**	**6.8%**
Transportation and Warehousing (48-49)	**6.2%**	**3.0%**	**9.6%**	**10.1%**
Professional, scientific, and technical services (54)	**21.3%**	**19.7%**	**4.6%**	**9.8%**
Administrative and support services (56)	**8.0%**	**6.1%**	**23.4%**	**11.2%**
Services to Buildings and Dwellings (5617)	5.9%	3.9%	23.4%	10.0%
Health care and social assistance (62)	**9.7%**	**10.1%**	**8.9%**	**10.3%**
Social Assistance (624)	1.3%	2.7%	5.8%	4.6%
Accommodation and food services (72)	**5.2%**	**3.3%**	**1.1%**	**5.6%**
Other services (except public administration) (81)	**13.7%**	**10.2%**	**18.1%**	**13.6%**
Selected Industries Total	**80.7%**	**74.2%**	**94.9%**	**85.2%**

Table 2. Self-Employed Workers by Industry (NAICS) and Nativity % of all Self-employed by Region. Source: U.S. Census Bureau, 2019-2023 American Community Survey 5-Year Public Use Microdata Sample (PUMS), Framingham & Marlborough PUMA, Massachusetts.

Educational and Demographic Patterns

The educational profiles reveal a striking paradox: 65% of foreign-born entrepreneurs have high school education or less (32% less than high school + 33% high school/GED), compared to only 21% of native-born entrepreneurs. Conversely, 50% of native-born entrepreneurs hold bachelor's degrees or higher, compared to just 23% of foreign-born entrepreneurs. This pattern suggests that entrepreneurship may serve as an alternative pathway to economic mobility when traditional credentialed employment faces barriers. Our findings suggest that in areas with significant language barriers and credential recognition challenges, entrepreneurship may provide opportunities for lower-educated immigrants that exceed those available to similarly educated native-born workers.[17]

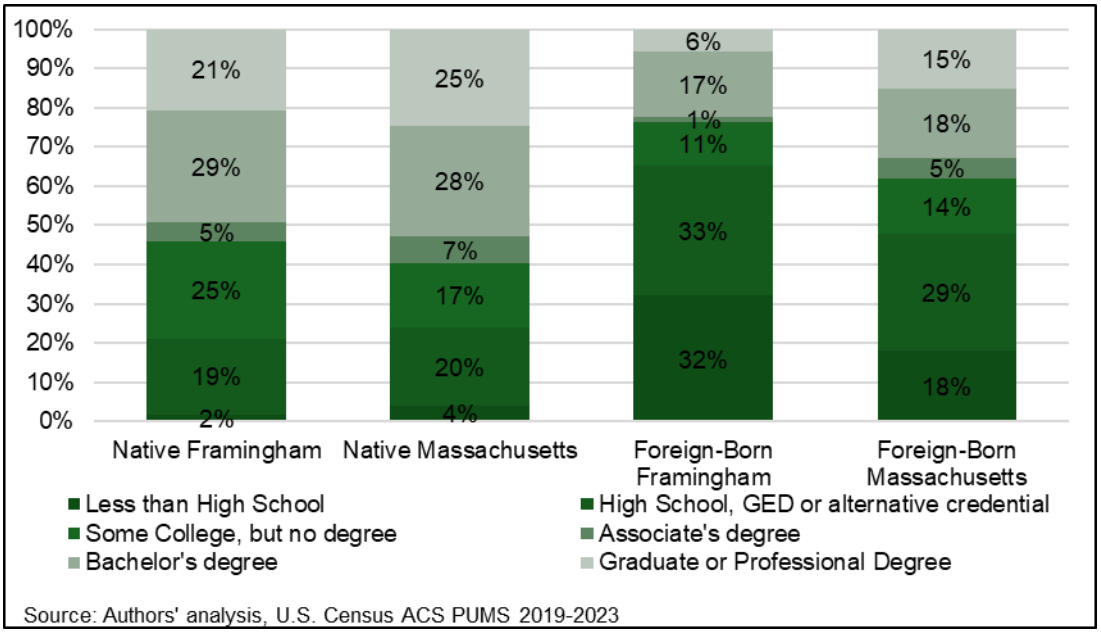

Figure 3. Educational Attainment of the Self-Employed.

Age distributions show foreign-born entrepreneurs clustering in prime working years (31-50), while native-born entrepreneurs have broader age representation including higher proportions in older age categories. Specifically, 48% of foreign-born entrepreneurs are between ages 31-50 compared to 34% of native-born entrepreneurs, suggesting that immigrants pursue entrepreneurship during their most economically active years.

AGE RANGE	Native		Foreign-born	
	Framingham & Marlborough PUMA	Massachusetts	Framingham & Marlborough PUMA	Massachusetts
Under 21 years old	2%	3%	1%	3%
Between 21 and 30	10%	7%	9%	15%
Between 31 and 40	18%	14%	22%	26%
Between 41 and 50	16%	17%	26%	30%
Between 51 and 60	27%	24%	25%	18%
Between 61 and 70	18%	23%	12%	7%
Between 71 and 80	8%	9%	4%	1%
Over 80 years old	1%	2%	1%	0%

Table 3. Self-Employed Workers by Age and Nativity.
Source: U.S. Census Bureau, 2019-2023 American Community Survey 5-Year Public Use Microdata Sample (PUMS), Framingham & Marlborough PUMA, Massachusetts.

Gender patterns remain relatively consistent across nativity, with slight male majority in both groups. Both foreign-born (58% male) and native-born (55% male) entrepreneurs show similar gender distributions, indicating that entrepreneurship attracts men and women at comparable rates regardless of nativity.

GENDER	Native		Foreign-born	
	Framingham & Marlborough PUMA	Massachusetts	Framingham & Marlborough PUMA	Massachusetts
Male	55%	59%	58%	54%
Female	45%	41%	42%	46%

Table 4. Self-Employed Workers by Age and Nativity.
Source: U.S. Census Bureau, 2019-2023 American Community Survey 5-Year Public Use Microdata Sample (PUMS), Framingham & Marlborough PUMA, Massachusetts.

Language and Cultural Context

English-speaking abilities provide crucial context: only 7% of foreign-born entrepreneurs speak English as their only language, 44% speak English "not well" or "not at all" (29% + 15%). This contrasts sharply with 83% of native-born entrepreneurs speaking only English. The limited English proficiency among nearly half of foreign-born entrepreneurs may both create barriers to traditional employment and open opportunities for serving co-ethnic markets with specialized language and cultural needs.

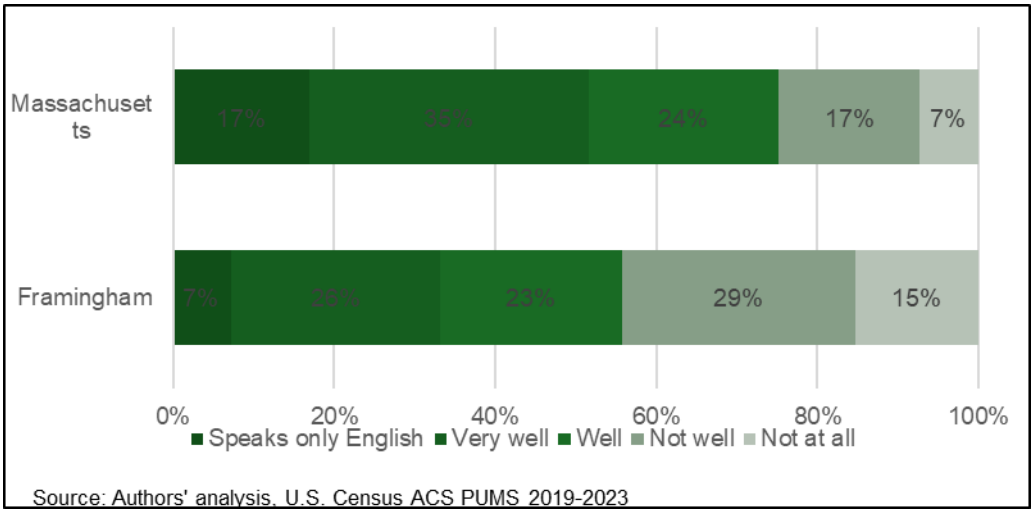

Figure 4. Foreign-Born Self-Employed Workers by Ability to speak English.

Regional origins show 82% of foreign-born entrepreneurs come from the Americas and Caribbean, with much smaller Asian (6%) and European (7%) representation. This geographic concentration from Latin America and the Caribbean creates the demographic foundation for culturally-specific businesses serving Spanish-speaking and Portuguese-speaking communities in the Framingham area.

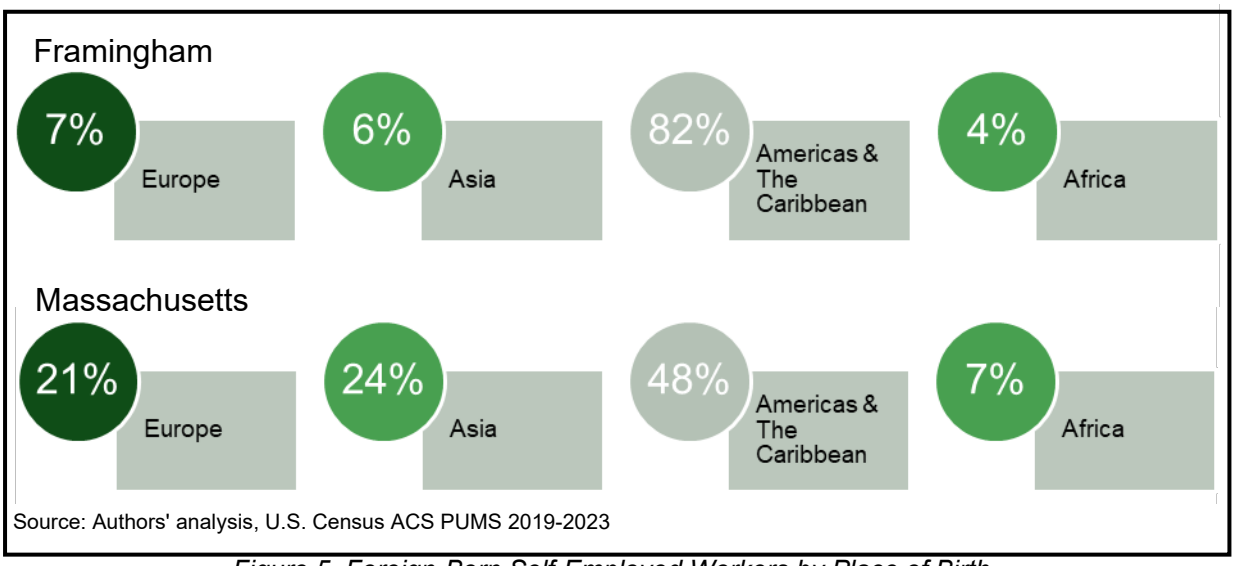

Figure 5. Foreign-Born Self-Employed Workers by Place of Birth.

Immigration timing reveals 48% arrived since 2010, indicating relatively recent arrival patterns. The high proportion of recent immigrants suggests that entrepreneurship serves as a relatively rapid pathway to economic establishment, with many starting businesses within their first decade in the United States.

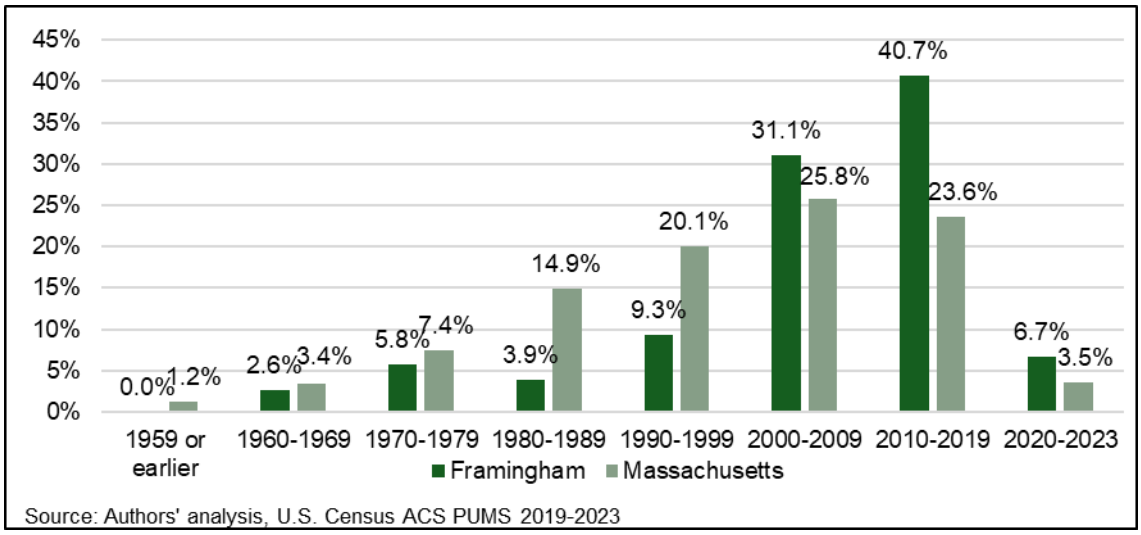

Figure 6. Foreign-Born Self-Employed Workers by Year of Entry.

Economic Outcomes and Income Distribution

The income patterns among self-employed workers reveal significant disparities between foreign-born and native-born entrepreneurs. Foreign-born entrepreneurs show higher concentration in lower income brackets, with 72.7% earning $50,000 or less annually compared to 49.4% of native-born entrepreneurs. Conversely, native-born entrepreneurs are more likely to achieve higher income levels, with 23.6% earning over $100,000 compared to only 10.7% of foreign-born entrepreneurs. This income gap reflects the broader patterns of educational differences and industry concentration, suggesting that while entrepreneurship provides economic opportunities for immigrants, it may not immediately close income disparities with native-born business owners.

INCOME RANGE	Native		Foreign-born	
	Framingham & Marlborough PUMA	Massachusetts	Framingham & Marlborough PUMA	Massachusetts
$0 and below	1.8%	3.3%	4.3%	5.1%
Between $1 and $25,000	27.6%	27.9%	35.9%	33.5%
Between $25,001 and $50,000	20.0%	22.1%	32.5%	27.9%
Between $50,001 and $75,000	16.9%	13.8%	12.1%	11.9%
Between $75,001 and $100,000	10.2%	10.3%	4.4%	7.4%
Between $100,001 and $125,000	9.8%	5.0%	1.3%	3.4%
Between $125,001 and $150,000	2.3%	3.8%	4.4%	2.4%
Between $150,001 and $200,000	3.1%	4.3%	0.9%	2.7%
Between $200,001 and $250,000	3.6%	2.2%	0.2%	1.2%
Between $250,001 and $300,000	0.3%	1.2%	2.3%	0.8%
Between $300,001 and $400,000	1.1%	2.5%	0.8%	1.3%
Between $400,001 and $500,000	0.0%	1.4%	0.5%	0.9%
Between $500,001 and $1,000,000	3.4%	2.1%	0.3%	1.4%
More than $1,000,000	0.0%	0.2%	0.0%	0.0%

Table 5. Self-Employed Workers by Total Person's Income and Nativity.
Source: U.S. Census Bureau, 2019-2023 American Community Survey 5-Year Public Use Microdata Sample (PUMS), Framingham & Marlborough PUMA, Massachusetts.

PHOTOVOICE FINDINGS: LIVED EXPERIENCES

The quantitative patterns documented above provide essential context for understanding the lived experiences captured through PhotoVoice methodology. The six participating businesses reflect the broader immigrant entrepreneur population: originating primarily from the Americas (Brazil, Colombia, Ecuador), operating in retail and service sectors, and representing the demographic concentrations identified in our data analysis.

The Photovoice project revealed several key elements that shape how downtown business owners perceive and experience their environment. A recurring theme among participants was the significance of structures and features that bring energy and movement to the area. Notably, the City Hall building, the commuter rail, and the intersection where Main Street crosses the train tracks were often cited as symbols of downtown's dynamism. One participant remarked, "I like the city hall building, it is majestic and reminds me that I am part of downtown. I enjoy looking at it." These physical landmarks serve not only practical and visual functions but also provide a sense of rootedness and identity.

"The City Hall Building is beautiful and I like to be close to it. Stepping out of my store and being able to see it makes me feel that I am part of Downtown".

"The train passing by brings life to our storefront"

"I like this building that I see from my storefront. It looks commercial and makes me feel part of downtown."

Figure 7. Sense of Place from Downtown Landmarks.

The emphasis on institutional landmarks takes on deeper meaning when considered alongside our quantitative findings. For entrepreneurs who may face questioning of their belonging due to recent immigration (48% arrived since 2010) or language barriers (44% speak English less than "very well"), proximity to symbols of civic authority provides validation of their place in the downtown business community.

Ethnic businesses emerged as important contributors to feelings of belonging among business owners. A participant who photographed the ethnic grocery store across from their establishment shared, "I feel part of the local community when I go to the ethnic store." These culturally specific businesses act as social and emotional anchors, reinforcing community connections and cultural identity within the broader urban landscape.

"I like to see this grocery store from my storefront. It sells everything I need from my home country and makes me feel that I am represented here".

Figure 8. Sense of Place from Ethnic Store.

This emphasis on ethnic businesses reflects the quantitative reality of regional concentration—82% of foreign-born entrepreneurs originate from the Americas and Caribbean, creating the critical mass necessary for culturally-specific businesses to thrive and serve as community anchors.

Another common theme involved the strong personal connection owners felt toward their storefront signage, especially logos. Every respondent who completed the activity included a photo of their business signage, highlighting its role as a symbolic and visual representation of their work and identity. As one business owner put it simply, "I love my logo. It was carefully designed and embodies all my expectations with my business through a symbol that denotes power and resilience and letters in golden color" This sentiment illustrates how branding elements are not just marketing tools but deeply meaningful symbols for the owners themselves.

The attention to business signage gains additional significance considering that 65% of foreign-born entrepreneurs have high school education or less. For entrepreneurs who may face skepticism about their qualifications, carefully designed signage serves as visual assertion of professionalism and belonging.

"My logo expresses my resilience and expectations."

Figure 9. Sense of Place from Business Visual Identities.

Other visual elements that appeared repeatedly in the photographs included menu boards and interior furniture, which reflect the aesthetics of each space. These details give insight into the individuality of each business and how owners curate their environments to express their brand and culture. Although participants highlight these elements within their stores, they do not emphasize their importance from the perspective of facades, windows, or storefronts. The logos on their signages are highlighted as a reason for pride and resilience, even though they do not necessarily carry strong cultural references or symbols related to each participant's countries of origin.

Figure 10. Sense of Place from Store Ambience.

Participants' sense of belonging is demonstrated not only through the cultural elements they preserve in their businesses—such as the use of traditional colors, culturally significant furniture, and heritage-based products—but also through their recognition of a shared belonging fostered by the presence of other immigrant communities from diverse cultural backgrounds. This coexistence of multiple cultures creates an environment where diversity itself is underscored as a unifying force, reinforcing each group's sense of inclusion and identity within the broader community. The multicultural landscape does not dilute individual cultural expressions, but instead amplifies feelings of connection and foster a collective sense of belonging.

The photovoice experience was significantly enriched by the informal conversations that took place during the process of obtaining informed consent from local business owners. These interactions often led to spontaneous and meaningful exchanges in which participants shared their personal perceptions of downtown, offering valuable qualitative insights beyond the photographs themselves. For example, one participant asked, "Can I photograph another store? The grocery store across the street [from my business] is what makes me feel mostly part of downtown. I can find products from my home country there and also products of other countries. This reminds me of my family and also the vibrant area we are in, representing different countries." Another participant remarked, "Can I photograph just cars? They remind me of how vibrant this area is." Such remarks highlighted the deep emotional and cultural connections participants had with the space, adding nuance and depth to the study's findings.

DISCUSSION: QUANTITATIVE PATTERNS AND LIVED EXPERIENCES

The convergence between our quantitative findings and PhotoVoice themes reveals how immigrant entrepreneurship functions as both economic strategy and cultural expression. While the PUMS data documents significantly higher self-employment rates among foreign-born residents despite lower formal educational credentials and recent arrival, the PhotoVoice methodology illuminates the cultural and emotional dimensions driving these patterns.

The educational paradox—where 65% of foreign-born entrepreneurs succeed with high school education or less—is illuminated through participants' emphasis on cultural knowledge, community connections, and resilience rather than formal credentials. Their businesses serve specialized markets that may be overlooked by more formally educated entrepreneurs lacking cultural competency. The income data showing that 72.7% of foreign-born entrepreneurs earn $50,000 or less suggests that while entrepreneurship provides economic opportunity, it may initially offer modest financial returns compared to native-born entrepreneurs, highlighting the importance of non-monetary motivations such as cultural expression and community building documented in our PhotoVoice findings.

The quantitative finding that 44% of foreign-born entrepreneurs speak English less than "very well" gains deeper meaning through PhotoVoice documentation of community networks and culturally-specific businesses. Rather than representing only barriers, these patterns indicate market opportunities where entrepreneurs serve Spanish-speaking customers and provide culturally familiar products and services.

The research challenges faced during PhotoVoice recruitment, where many potential participants cited "concerns related to immigration," reflects the broader vulnerabilities of a population where nearly half arrived since 2010 and significant proportions face language barriers. Yet these same characteristics drive the entrepreneurial patterns documented quantitatively.

IMPLICATIONS FOR DOWNTOWN REVITALIZATION

This mixed-methods analysis reveals that immigrant entrepreneurship in downtown Framingham operates through both economic integration and cultural preservation. The quantitative documentation of higher self-employment rates (14.0% vs. 8.8%) among foreign-born residents, combined with

PhotoVoice evidence of their commitment to downtown identity and community building, indicates that immigrant entrepreneurs represent an existing resource for revitalization efforts.

The industry concentration patterns—with foreign-born entrepreneurs highly represented in construction, administrative services, and other services—suggest their businesses provide essential functions that support downtown infrastructure and maintenance. Simultaneously, the PhotoVoice emphasis on cultural businesses and institutional landmarks reveals how immigrant entrepreneurship creates authentic diversity that contributes to downtown vibrancy. This vibrant atmosphere, rather than visual cues, emerged as the primary factor fostering a sense of inclusion and identity among participants, underscoring the significance of lived, multisensory experiences in shaping how communities relate to place.

The participation of local business owners revealed a strong and deeply rooted connection to the rhythm and diversity of downtown life. Their sense of belonging was shaped less by visual symbols such as building facades or storefront signage, and more by the dynamic, everyday experiences that characterize the area—constant pedestrian and vehicle traffic, the sounds of multiple languages being spoken, and the availability of foods representing a range of cultural backgrounds.

Policy implications include recognizing that lower formal education credentials do not indicate lower business capability, supporting multilingual business development services, and understanding that immigrant entrepreneurship involves integration into downtown economic life while maintaining cultural distinctiveness.

CONCLUSION

This mixed-methods study demonstrates how immigrant entrepreneurship contributes to downtown revitalization through documented higher rates of business ownership combined with place-making activities that create cultural anchors and community connections. The convergence of quantitative patterns and lived experiences reveals entrepreneurship serving not just individual economic needs but broader community functions that benefit downtown vitality. The demographic profile of immigrant entrepreneurs in Framingham reveals both challenges and opportunities that should inform revitalization strategies.

The research suggests that downtown revitalization efforts should recognize and support immigrant entrepreneurship as an existing resource rather than a potential challenge. The concentration of foreign-born entrepreneurs in certain industrial sectors demonstrates their essential role in downtown infrastructure and maintenance, while their regional origins create the demographic foundation for the vibrant multicultural business ecosystem documented through PhotoVoice. The businesses provide essential downtown functions while creating spaces where diversity becomes "a unifying force" contributing to community belonging and downtown identity.

Beyond these substantive findings, this research demonstrates the value of participatory visual methodologies in democratizing the policy-making process and amplifying voices that are often marginalized in traditional civic engagement. The PhotoVoice methodology proved particularly effective in enabling immigrant entrepreneurs to articulate their experiences and perspectives in ways that transcend language barriers and conventional participation formats. Given that nearly half of foreign-born entrepreneurs face significant language barriers, visual storytelling methods become even more crucial for inclusive policy development. Public officials and urban planners would benefit significantly from incorporating techniques like PhotoVoice to better understand the needs, preferences, and untapped potential of constituents whose voices may not be prevalent in standard public forums. The artistic and visual nature of this approach not only captures nuanced community knowledge but also creates more inclusive pathways for meaningful participation in planning

processes. For immigrant communities facing multiple barriers to civic engagement visual storytelling methods offer powerful alternatives while producing actionable insights for policy development.

Policy implications should account for the demographic realities revealed in this study: supporting multilingual business development services, recognizing that educational credentials do not determine entrepreneurial capability, and understanding that recent immigrants (48% arrived since 2010) may need different support structures than established communities. The income disparities suggest opportunities for targeted interventions that could help immigrant entrepreneurs scale their businesses while preserving the cultural authenticity that contributes to downtown vibrancy.

For urban planning and revitalization purposes, the more abstract elements that sustain the rhythm of a diverse downtown stood out as more important in promoting a sense of belonging than explicit symbols such as flags, colors, or shapes associated with diverse cultural backgrounds. In this sense preserving diversity itself is more important than preserving the visual elements that merely reflect it. For Downtown Framingham, this includes preserving not only landmarks and iconic buildings, such as the train station and the City Hall, but also transit patterns, pedestrian traffic, urban density, and the business diversity from an ethnic perspective. Together, they contribute to the sense of belonging among those who live, shop, and run businesses in the area.

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COOKING OPPORTUNITIES: FOOD, MIGRATION AND URBAN LIVABILITY

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INTRODUCTION

Barcelona is frequently celebrated as a model of urban livability. Global rankings consistently highlight its high quality of life, sustainable infrastructure, and cultural vibrancy. In 2024, for example, the Resonance Consultancy Report ranked it the eighth most livable city in the world, citing its bike-friendly infrastructure, cultural vibrancy, and dynamic startup economy. [1]

But such glowing assessments can oftentimes mask stark inequalities. For migrants, particularly those from the Global South, access to the benefits that underpin these rankings is often limited. Structural barriers, such as precarious employment, housing insecurity, and the absence of legal protections constrain many from fully participating in the city's social and economic life. These vulnerabilities are magnified for undocumented individuals, who face heightened risks of exclusion and exploitation.[2] In this way, Barcelona embodies a paradox: celebrated internationally for its livability, the actual experience of the city remains profoundly uneven.

Food becomes a useful lens to examine these tensions: migrants sustain Barcelona's kitchens, markets, and tourism, yet are often excluded from the very narratives of urban conviviality they help generate. Mescladís arises within this gap, offering a counter-model of hospitality rooted in dignity, recognition, and opportunity. Founded in 2005, the organization operates at the intersection of food, migration, and urban life. It can be understood as a micro-urban intervention, demonstrating how grassroots hospitality initiatives can open alternative pathways to belonging and visibility.

Insights from ongoing ethnographic research, conducted through participant observation since 2023 and semi-structured interviews with students, staff, diners, and collaborators through 2024-2025, highlight how Mescladís creates spaces where people can interact, learn from one another, and connect across social, cultural, and economic differences.

Migration in Barcelona: Context and Tensions

International migration to Barcelona is a relatively recent phenomenon, accelerating in the late 1990s and especially the 2000s, when Spain's economic boom and successive migratory regularization processes drew large numbers of newcomers. Until then, Spain was largely a country of emigration rather than immigration. Today, however, migration is central to Barcelona's demographic makeup. As of 2025, 35.4% of residents were born abroad, making migrant populations a defining force in the city's growth and identity, and an essential lens for understanding both its present and future.[3]

Distribution of Barcelona's Population by Place of Birth (1997-2025)

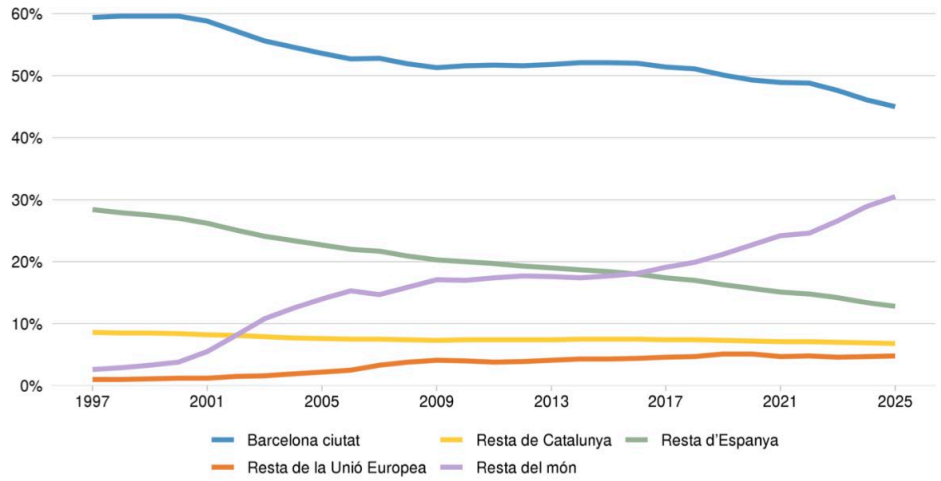

Figure 1. Migrant population of Barcelona by origin. Source: Ajuntament de Barcelona, La població de Barcelona el 2025, 25.

As Figure 1 illustrates, migrants are also the only demographic segment still experiencing growth.
Yet for many, especially those without legal status, life in the city is shaped by informality and exclusion. Although precise figures are difficult to establish, data consistently show a strong link between irregular administrative status and informal employment. Migrants without residence or work permits face significant barriers to accessing the formal labor market and are therefore pushed into precarious, unregulated jobs.
The scale of this vulnerability has grown in recent years. According to Càritas Diocesana de Barcelona, more than half (55%) of the people they assisted in 2023 lacked a work permit, over twice the proportion recorded in 2017.[4] The Ajuntament de Barcelona and CCOO (Workers' Commissions) report comparable figures.[5] In this context, informal and unstable employment is not an exception but often the only survival strategy available.
Furthermore, the absence of formal work and contracts also often translates into an inability to access stable housing, as rental agreements typically require proof of employment. For undocumented migrants in particular, reliance on informal labor not only heightens vulnerability to exploitation but also reinforces cycles of precarious living, from overcrowded flats to unregulated rentals and squatted spaces.
This exclusion extends beyond the economic sphere to social life. As scholars such as Edward Said and Stuart Hall have argued, processes of "othering" position migrants as cultural outsiders whose presence is marked as unfamiliar, and at times threatening.[6] In Barcelona, a city with a relatively recent history as a migrant-receiving society, such perceptions reinforce cycles of marginalization, shaping access to work, housing, and ultimately belonging.
Nonetheless, migrants continue to play a vital role in sustaining Barcelona's economy, especially in hospitality, care work, and food culture, while often remaining socially and institutionally marginalized.[7] This tension raises the questions: livability for whom? Who is permitted to feel at home, to participate fully, and to imagine a future in the city?

Food as Infrastructure

Food studies scholarship often approaches food as a symbolic medium of culture, identity, and memory. As Fabio Parasecoli notes, immigrants cope with the dislocation and disorientation of new environments by recreating a sense of place through food production, preparation, and consumption, both at the personal and interpersonal levels. These practices transform anonymous and threatening settings into culturally meaningful places that blur the apparent dichotomy between the global and the local.[8]

Historian Jeffrey Pilcher argues food can also be seen as an infrastructure: a material and institutional system composed of technologies, supply chains, spaces, and regulations that both enable and constrain what people eat. Thinking through this lens allows us to see food not only as a cultural expression but also as a socio-economic mechanism.[9]

Building on Parasecoli's insights and Pilcher's take, food can be conceptualized as both symbolic and material: a field where cultural reproduction intersects with economic survival and urban belonging. Restaurants, kitchens, and food initiatives thus have the potential to function as hubs where adaptation and cultural visibility converge.

This duality positions grassroots culinary projects as potential sites of urban transformation, where marginalized groups exercise what Henri Lefebvre terms the "right to the city," or the collective capacity to shape urban space not only as consumers of infrastructure but as active producers of its social and cultural life.[10] Projects like Mescladís exemplify this dynamic, showing how food-based initiatives can contest exclusion and reconfigure the city through new cultural and spatial forms.

MESCLADíS: MISSION, STRUCTURE, AND PROGRAMS

Founded in 2005 by Martín Habiague, Mescladís is more than a restaurant or training center; it is a productora social, a social enterprise combining economic activity with cultural and social initiatives to promote coexistence, justice, and the right to migrate with dignity. Unlike traditional NGOs, it sustains itself through a hybrid model, operating across five spaces in Eixample, Born, Montjuïc, Gràcia, and Nou Bostik, alongside a catering business and event rentals. These sites function both as economic engines and public-facing spaces where migration and cultural diversity are actively shared.

Its mission seeks sustainability across social, economic, environmental, and emotional dimensions. Work is structured around creating meaningful experiences, building skills, opening economic opportunities, and fostering cultural connections. Together, these principles frame Mescladís as a living ecosystem where training, employment, and cultural production intersect.

Cuinant Oportunitats and Empleadis

Cuinant Oportunitats (Cooking Opportunities) provides migrants with professional cooking and service training, psychosocial support, and hands-on experience. Each year, around 190 participants, primarily migrants and refugees at risk of social exclusion, receive instruction in culinary and hospitality skills. Participants choose a specialization in cooking or front-of-house service and complete up to 360 hours of practical training within Mescladís' restaurants, events, and workshops, followed by 120-hour internships in other Barcelona restaurants.

These internships often lead to formal job contracts, which are crucial for accessing arraigo social, the legal process allowing undocumented migrants to regularize their status after two years of residence. Approximately 60 students follow a dual-track formation combining technical training with legal and psychosocial support, providing personalized guidance and the internship contract needed for regularization.

A complementary initiative, Empleadís, connects graduates of Cuinant Oportunitats with socially responsible hospitality businesses, ensuring that placements uphold fair labor standards and

sustainability criteria. Graduates are matched with HORECA businesses that prioritize dignified work and sustainable practices, while those businesses gain access to trained, values-driven employees.

A Grassroots Initiative in the Culinary World

For many participants, these initiatives offer more than professional development; they provide pathways to visibility, confidence, and community, helping them assert their place in Barcelona's social and economic life. The program functions not only as skills training but also as infrastructural support, linking participants to employers and guiding them through the networks required for stable, recognized work.

As one participant reflected, "Before Cuinant Oportunitats, I didn't know how to get a real contract. Now I not only have the skills, but I also understand how the restaurants work, how to apply for a job properly, and even my rights as a worker."[11]

This testimony highlights how the program creates both material and social pathways into employment, demonstrating that access to the labor force is inseparable from the infrastructures, training, mentorship, and legal support that enable it.

Drawing on Pilcher's ideas of food as infrastructure, Cuinant Oportunitats and Empleadís reveal how kitchens, restaurants, and internships serve not only as training spaces but also as institutional bridges.[12] They have the potential to transform precarious and invisible labor trajectories into recognized forms of participation in the urban economy, while also embodying Parasecoli's insight into food as a medium of belonging.[13]

Cultural Programming at Mescladís

Alongside its training and labor integration programs, Mescladís advances a series of cultural initiatives that conceptualize food, whether migrant-born or Catalan, as a vehicle of dialogue, recognition, and intercultural mediation. Among these are Convit/e, a socio-gastronomic platform that integrates public events, workshops, and a biannual magazine addressing themes such as sustainable food systems, migration, and artistic practice; Talleres del Món, participatory workshops in which migrants transmit culinary knowledge from their countries of origin; and Massa Mare, an experimental project that intertwines gastronomy, art, and critical reflection through collaborations with cultural institutions and multidisciplinary artists.

These initiatives foreground the value of participants' trajectories and culinary knowledge, creating spaces of cohesion and collective learning. By making migrant recipes visible in public settings, Mescladís' cultural programming embodies its dedication to convivencia (living together), complementing the organization's economic and social work with platforms for recognition and intercultural dialogue.

In a cultural landscape where migrant voices remain largely absent from Catalonia's mainstream institutions, Mescladís intervenes as a space of inclusion, asserting that Barcelona's diversity must be acknowledged and made visible. As founder Martín Habiague reflects, this work advances "a vision of what Barcelona actually is…a diverse city that must embrace its diversity rather than resist it."

Echoing Henri Lefebvre's notion of the "right to the city," these programs show how cultural participation is not peripheral but central to urban belonging. Migrants become not only workers in the hospitality industry but also cultural authors, actively shaping Barcelona's identity.[14]

LA MEVA RECEPTE: CULINARY STORYTELLING AS INFRASTRUCTURE

That same ethos underpins La Meva Recepta, a hands-on module within Cuinant Oportunitats that often feeds into the creation of cultural initiatives. Each student selects a recipe tied to their migratory or cultural journey, documents it, and guides peers through its preparation. In this workshop, personal culinary heritage becomes a point of connection, learning, and mutual recognition.

Recipes from La Meva Recepta are integrated into Mescladís' rotating midday restaurant menus, shared in public workshops, and compiled in a collective cookbook published after each training cycle, extending the reach of participants' culinary and cultural knowledge to locals and tourists alike.

Some recipes even move onto the fixed menu, while others inspire new ventures. For example, a kefta recipe from a French-Moroccan student in a La Meva Recepta workshop was later featured on the restaurant menu and included in the collective cookbook before evolving into KFTA Club, the student's independent pop-up business now circulating through cafés and cultural spaces across the city.

La Meva Recepta demonstrates how food operates simultaneously as memory, authorship, and infrastructure. What begins as a cooking exercise becomes a space of visibility and belonging, where participants affirm: "This made me feel seen… I exist. I come from somewhere. My story matters."

Through Convit/e, La Meva Recepta, and public-facing events, food becomes a vehicle for migrants to act as storytellers and creators of urban culture. A collaborative project with the Teatre Lliure, La Meva Recepta de Fantàstic Ramon, exemplifies this approach: students translated emotions and ideas from the stage into dishes reflecting values of alterity and coexistence, which they then presented to the cast in a shared act of reflection. As one participant put it:

"Coexisting is not about dissolving into the other but learning to share the same space. Each ingredient preserves its character, memory, and way of being in the world… diversity transforms without losing its essence, giving depth and life to both what we cook and who we are."

Feedback from diners underscores this dynamic. One guest explained: "Mescladís is a meeting point. It's where I learn about other cuisines and cultures." Another noted, "the midday menu is a way to get to know other food cultures… I've discovered recipes from Chile to Morocco and beyond."

These examples reveal how recipes foster new forms of entrepreneurship and intercultural visibility, extending individual stories into the fabric of the city. Ultimately, La Meva Recepta demonstrates the power of food as infrastructure: transforming individual recipes into platforms for recognition, participation, and urban belonging. From the public's point of view, Mescladis isn't just a restaurant or event; it acts as a platform for cultural exchange, recognition, and co-creation. In a city where migrants are often excluded from dominant narratives, Mescladís' approach fosters dialogue, visibility, and a reimagining of urban belonging, enriching Barcelona's cultural fabric.

By May 2025, Mescladís had hosted 17 La Meva Recepta-based workshops, engaging over 240 community members across five neighborhoods.[15]

PROGRAM IMPACT AND FINANCIAL SUSTAINABILITY

Mescladís' impact is measurable in social, economic, and cultural terms. In 2024, 20 editions of Cuinant Oportunitats were held, achieving a 75% program completion rate (compared with over 82% in previous years[16]). Of those entering the Empleadís pipeline, 95% completed the internship program, and 70% have already secured employment.Over the same period, Mescladís organized 244 cultural activities, engaging more than 4,557 participants, produced two editions of the Convit/e magazine, and established three structured programs in partnership with high schools and universities across Barcelona.[17]

Financially, Mescladís maintains a high degree of independence: in 2024, 71% of funding came from its restaurant and catering activities, 2% from private contributions, and the remaining 27% from

public subsidies (of which 8% came from private sources and 92% from local, regional, and EU funding).[18]

The program's success rates illustrate its effectiveness not only as a training hub but also as a stabilizing force in migrant trajectories. Its cultural initiatives further position food as a medium of exchange and recognition, extending its impact beyond employment. Its financial autonomy reinforces independence from state funding and allows Mescladís to extend support to undocumented participants, addressing gaps left by public institutions. This model allows the organization to include participants in irregular administrative situations without the limitations often imposed by public funding. In this sense, its financial structure itself can be seen as an infrastructural intervention, ensuring continuity, autonomy, and permeability.

FROM TRANSACTIONAL TO TRANSFORMATIONAL HOSPITALITY

Mescladís offers a counter-model to the dominant hospitality industry in Barcelona, which has long been shaped by mass tourism, standardized service, and precarious labor. Where many training programs simply prepare migrants for entry into low-wage jobs, Mescladís adopts a transformational approach that engages the whole person. Trainees receive not only technical instruction but also psychosocial support, legal assistance, and mentorship, recognizing that meaningful integration requires more than employability.

Partnerships with employers are carefully curated: placements only occur with businesses that commit to fair wages, decent contracts, and values-aligned practices. If these conditions are not met, the placement does not happen, an ethical stance that resists exploitative industry conventions and begins to shift expectations within the sector. As of July 2025, all employees at Mescladís del Pou are former alumni, and many other alumni work across Mescladís' other locations and initiatives. Several alumni now lead kitchens and dining rooms, creating circular growth and long-term pathways of inclusion.[19]

As one restaurant owner reflected about hiring a graduate, what stood out was not only technical ability but "his commitment to doing things well; he always wants to give more." This added value, she noted, stemmed from the transversal skills developed at Mescladís: resilience, adaptability, and a sense of shared responsibility. In this way, hospitality is reframed not as a service transaction, but as a practice of care, recognition, and justice.

CONCLUSIONS AND IMPLICATIONS FOR URBAN LIVABILITY

This case study illustrates that urban livability cannot be measured solely through infrastructure or economic indicators. True livability also hinges on recognition, belonging, and the ability to participate fully in the social and cultural life of the city. For migrants, especially those facing structural and legal precarity, these elements are often inaccessible, but food provides a unique and powerful avenue to bridge that gap.

At Mescladís, food operates as a transversal medium that simultaneously fosters economic, emotional, and cultural integration. It offers concrete pathways to employment and legal stability, while also creating spaces of visibility, dialogue, and mutual recognition. Through training, internships, and cultural programs, migrants gain skills, confidence, and a platform to share their stories, asserting their presence in the city not only as workers but as cultural agents and co-creators of urban life.

Beyond material and cultural inclusion, the emotional dimension is equally significant. Cooking, serving, and sharing food allows participants to reclaim dignity, build trust, and connect across differences, turning previously marginalized spaces into sites of belonging. Culturally, food becomes a conduit for storytelling, memory, and intercultural exchange, embedding migrant experiences into the everyday life of Barcelona.

Mescladís is not a one-size-fits-all solution, nor can it alone dismantle systemic barriers, but it offers a compelling, scalable model for reshaping urban life from the ground up, demonstrating how livability can be made more accessible through interventions that link economic inclusion, cultural recognition, and social support. By rooting hospitality in ethics, sustainability, and care, it demonstrates that grassroots initiatives can expand the meaning of urban livability: creating cities that are not only functional and attractive, but inclusive, participatory, and emotionally resonant.

If cities are to be truly livable, the central question must be: livable for whom, and through what practices, such as inclusive culinary and cultural initiatives, can this livability be realized?

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ARTIFICIAL INTELLIGENCE AND BLOCKCHAIN FOR SUSTAINABLE URBAN GOVERNANCE: A POLICY INTEGRATION PERSPECTIVE

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INTRODUCTION

Urban governance systems worldwide face unprecedented challenges in the 21st century. With approximately 4.4 billion people living in urban areas as of 2024, and projections indicating that 68% of the global population will reside in cities by 2050, the pressure on municipal governments to deliver efficient, transparent, and responsive services has intensified dramatically.[1] Traditional governance models, many of which were designed for smaller populations and simpler administrative requirements, are increasingly inadequate for managing the complexity of modern urban environments.

The convergence of Artificial Intelligence (AI) and Blockchain technologies presents transformative opportunities for urban governance. AI offers capabilities for automated decision-making, predictive analytics, and personalized service delivery, while Blockchain provides immutable record-keeping, enhanced transparency, and decentralized trust mechanisms.[2] Together, these technologies can address fundamental challenges in urban governance including efficiency, transparency, accountability, and citizen engagement.

Contemporary urban challenges extend beyond mere service delivery to encompass complex issues of sustainability, equity, and democratic participation. Climate change pressures, resource constraints, and growing citizen expectations for responsive governance create an environment where traditional administrative approaches prove insufficient.[3] The integration of AI and Blockchain technologies offers potential solutions through enhanced data processing capabilities, improved transparency mechanisms, and more efficient resource allocation systems.

This research addresses three critical questions in contemporary urban governance. First, how can AI and Blockchain technologies be effectively integrated into existing urban governance frameworks? Second, what are the measurable impacts of such integration on administrative efficiency, citizen satisfaction, and transparency? Third, what factors determine successful implementation of these technologies in diverse urban contexts?

The primary objective is to provide empirical evidence of AI and Blockchain applications in urban governance through detailed case study analysis, offering insights for policymakers and urban planners considering similar digital transformations. By examining successful implementations, this study contributes to the growing body of knowledge on digital government transformation while providing practical guidance for future initiatives.

LITERATURE REVIEW

Digital Transformation in Public Administration

The concept of digital government has evolved from simple service digitization to comprehensive transformation of governance processes.[4] Early e-government initiatives focused primarily on moving paper-based processes online, but contemporary approaches emphasize citizen-centricity, service integration, and data-driven decision making.[5] This evolution reflects a broader shift from government-centric to citizen-centric service design, fundamentally altering the relationship between state and citizen.

Welch et al. identified four dimensions of digital government evolution: catalogue (information provision), transaction (service delivery), vertical integration (linking different levels of government), and horizontal integration (connecting different agencies).[6] Recent research suggests a fifth dimension: intelligent governance, characterized by AI-powered automation and predictive capabilities.[7] This progression toward intelligent governance represents a qualitative shift from reactive to proactive government services.

The transformation process involves more than technological adoption; it requires fundamental organizational change, new governance models, and revised citizen-state relationships.[8] Successful digital transformation initiatives demonstrate that technology alone is insufficient without corresponding changes in organizational culture, processes, and leadership approaches. The integration of AI and Blockchain technologies accelerates this transformation by enabling new forms of automated decision-making and transparent record-keeping that were previously impossible.

Blockchain Technology in Public Administration

Blockchain technology's application in governance extends beyond its original cryptocurrency context to address fundamental challenges in public administration. The technology's distributed ledger approach enables secure, transparent, and immutable record-keeping without requiring central authority control.[9] This characteristic addresses longstanding challenges in public record integrity, inter-agency data sharing, and citizen trust in government institutions.

Three primary blockchain applications in government have emerged: identity management, record keeping, and smart contracts for automated compliance.[10] Identity management applications enable citizens to control their personal data while providing secure authentication for government services. Record keeping applications ensure data integrity and provide audit trails for government decisions and transactions. Smart contracts automate compliance processes and reduce administrative overhead while ensuring consistent application of rules and regulations.

Empirical studies have demonstrated blockchain's potential for reducing corruption through enhanced transparency,[11] improving supply chain transparency in public procurement,[12] and building citizen trust in government institutions.[13] However, implementation challenges include scalability limitations, energy consumption concerns, and the need for substantial technical infrastructure investments. These challenges require careful consideration in implementation planning and may influence the choice of blockchain platforms and architectures.

The integration of blockchain technology in governance also raises important questions about data privacy, democratic accountability, and the balance between transparency and confidentiality. While blockchain's transparency features can enhance public trust, they must be implemented in ways that protect sensitive information and maintain appropriate levels of privacy for both citizens and government operations.

Artificial Intelligence in Urban Governance

Artificial Intelligence applications in urban governance span multiple domains including traffic optimization, public safety prediction, resource allocation, and citizen service automation.[14] Machine learning algorithms can process vast datasets to identify patterns invisible to human analysts, enabling proactive rather than reactive governance approaches. This capability represents a fundamental shift from traditional administrative approaches that rely primarily on historical precedent and reactive problem-solving.

The application of AI in governance enables predictive analytics that can anticipate citizen needs, identify potential problems before they occur, and optimize resource allocation based on data-driven insights.[15] For example, AI systems can analyze traffic patterns to optimize signal timing, predict infrastructure maintenance needs based on usage patterns, and identify citizens who may benefit from specific social services based on demographic and behavioral data.

Successful AI implementations in government typically follow a phased approach beginning with internal process optimization, progressing to citizen-facing applications, and ultimately enabling predictive governance capabilities.[16] This progression allows organizations to build technical capacity and citizen trust gradually while demonstrating value at each stage of implementation.

Critical success factors for AI implementation in governance include data quality, algorithmic transparency, and maintaining human oversight to ensure democratic accountability.[17] The challenge of algorithmic bias and the need for explainable AI systems are particularly important in government contexts where decisions affect citizen rights and welfare. Ensuring that AI systems operate fairly and transparently requires ongoing monitoring, regular audits, and clear governance frameworks for AI deployment.

Integrated AI-Blockchain Approaches

The integration of AI and Blockchain technologies in governance represents an emerging area with limited empirical research but significant theoretical potential. Blockchain can provide the secure, transparent data foundation that AI systems require for training and operation, while AI can enhance blockchain systems through automated smart contract execution and intelligent data analysis.[18] This synergy creates opportunities for governance applications that leverage the strengths of both technologies.

The combination addresses several challenges that each technology faces individually. Blockchain's transparency can make AI decision-making more accountable and auditable, while AI's processing capabilities can help manage the computational and data management challenges associated with blockchain implementation. Together, they enable new forms of automated governance that maintain transparency and accountability while achieving significant efficiency gains.

However, the integration also creates new challenges related to system complexity, interoperability, and governance. Managing integrated AI-Blockchain systems requires sophisticated technical expertise and careful attention to system design to ensure that the benefits of integration outweigh the added complexity.

METHODOLOGY

Research Design and Philosophical Approach

This study employs a comparative case study methodology, selected for its appropriateness in examining complex, real-world phenomena where boundaries between the phenomenon and context are not clearly evident.[19] The approach allows for in-depth analysis of implementation processes, outcomes, and contextual factors that influence success. Case study methodology is particularly

suitable for understanding "how" and "why" questions related to contemporary phenomena over which researchers have little control.
The research adopts a pragmatic philosophical approach, recognizing that understanding complex socio-technical phenomena like digital government transformation requires multiple perspectives and methods. This approach enables the integration of quantitative performance data with qualitative insights about implementation processes and contextual factors.

Case Selection Criteria and Rationale

Two cases were selected using theoretical sampling principles to maximize learning opportunities and enable analytical generalization. The selection criteria included documented integration of both AI and Blockchain technologies, availability of performance data spanning multiple years, different scales of implementation to enable comparison, and geographic diversity within the European context to control for certain institutional variables while allowing for meaningful differences.
Case 1, South Tyrol's Digital Transformation Initiative, represents a targeted, sector-specific application of blockchain technology in regional governance with emerging AI integration. This case provides insights into incremental implementation approaches and the challenges of multilingual governance environments. Case 2, Estonia's E-Governance Model, exemplifies comprehensive national digital transformation with extensive blockchain infrastructure and advancing AI capabilities. This case demonstrates the potential of comprehensive transformation approaches and the benefits of integrated system design.
The selection of European cases enables comparison within similar institutional and regulatory environments while maintaining sufficient variation in scale, approach, and implementation context. Both cases represent successful implementations with sufficient documentation and data availability to support rigorous analysis.

Data Collection and Sources

Data collection employed multiple sources to enable triangulation and enhance validity. Sources included official government reports and publications, technical documentation from implementing organizations, and performance metrics from government databases. Secondary sources comprised citizen satisfaction surveys, academic research, independent evaluations, and media coverage of implementation initiatives.
The temporal scope covers the period from 2012, when Estonia began blockchain implementation, to 2024, representing the latest available performance data. This timeframe enables analysis of both initial implementation challenges and longer-term outcomes. Data collection also included limited stakeholder interviews conducted virtually due to access constraints, though these were supplementary to the primary documentary analysis.

Data Analysis Approach

Analysis followed Eisenhardt's approach to case study research, involving within-case analysis to understand each implementation comprehensively, cross-case comparison to identify patterns and differences, and iterative comparison with existing literature to develop theoretical insights.[20] Within-case analysis involved detailed examination of implementation processes, technical architectures, organizational changes, and measured outcomes.
Cross-case comparison focused on identifying similarities and differences in implementation approaches, success factors, challenges encountered, and outcomes achieved. This comparison enabled the identification of generalizable insights while recognizing context-specific factors that influence implementation success.

The analysis process was iterative, moving between data and theory to develop insights that are both empirically grounded and theoretically informed. Pattern matching techniques were used to compare empirical patterns with theoretical predictions, while explanation building helped develop causal explanations for observed outcomes.

CASE STUDY ANALYSIS

South Tyrol's Digital Transformation Initiative

Implementation Context and Approach

South Tyrol, an autonomous province in northern Italy with approximately 530,000 residents, initiated its digital transformation program in 2019 with a focus on addressing specific governance challenges unique to its multilingual context. The province's trilingual administrative requirements, involving Italian, German, and Ladin languages, created coordination complexities that traditional paper-based processes could not efficiently handle.

The initiative adopted a targeted approach, beginning with streamlining construction permit processes, particularly for telecommunications infrastructure. Traditional approval processes involved multiple departments, extensive paperwork, and coordination challenges across three language systems, often resulting in delays exceeding four months and significant administrative costs. The decision to focus initially on telecommunications permits reflected both the technical relevance of digital solutions and the economic importance of telecommunications infrastructure for regional development.

The implementation strategy emphasized incremental deployment with careful attention to stakeholder engagement and change management. Provincial leadership recognized that success would depend not only on technical implementation but also on organizational adaptation and citizen acceptance. This approach reflected lessons learned from other digital government initiatives that failed due to insufficient attention to non-technical factors.

Technical Architecture and Innovation

The technical implementation centered on blockchain-based smart contracts developed in partnership with SAP, chosen for their enterprise-grade capabilities and integration potential with existing provincial systems. The blockchain infrastructure was designed to handle the province's multilingual requirements while ensuring interoperability with Italian national systems and European Union regulatory frameworks.

Smart contracts were developed to automate application routing based on location and regulatory requirements, ensure consistent application of regulations across all three languages, provide immutable audit trails for all decisions, and enable real-time status tracking for applicants. The system architecture incorporated multiple security layers, including cryptographic protection of sensitive data and role-based access controls for different types of users.

Integration with existing databases required careful attention to data migration, system interoperability, and maintaining service continuity during the transition period. The technical team developed custom interfaces to ensure that multilingual content could be processed consistently and that automated translations maintained legal accuracy across all three official languages.

Measured Outcomes and Impact Assessment

Quantitative analysis of implementation outcomes demonstrates significant improvements across multiple dimensions. Processing times decreased from an average of 120 days to 45 days, representing a 62.5% improvement that exceeded initial project targets. Administrative costs decreased by 40% through reduced paperwork, fewer manual processes, and improved coordination between departments. Document errors, previously a significant source of delays and citizen

complaints, were reduced by 85% through automated validation and standardized processing procedures.

Citizen satisfaction metrics show substantial improvement, increasing from a baseline of 65% to 90% following full implementation. This improvement reflects not only faster processing times but also enhanced transparency, better communication throughout the approval process, and reduced uncertainty about application status. Citizens particularly valued the real-time tracking capabilities and multilingual support that made the system accessible to all community members.

Qualitative improvements include enhanced inter-departmental coordination through shared data access and standardized processes, improved regulatory compliance through automated checks and consistent rule application, increased process transparency that builds citizen trust and enables better oversight, and better overall citizen experience that reduces frustration and improves government-citizen relationships.

AI Integration and Future Development

Since 2022, South Tyrol has begun integrating AI capabilities to further enhance system performance and citizen services. Natural language processing systems now analyze multilingual documents automatically, reducing the manual effort required for translation and review processes. Predictive analytics capabilities help provincial planners anticipate infrastructure needs and optimize resource allocation based on historical patterns and projected development trends.

Automated compliance checking systems use AI to verify applications against building codes and regulatory requirements, reducing review time and improving consistency. Citizen service chatbots provide 24/7 support in all three provincial languages, handling routine inquiries and freeing human staff to focus on more complex cases requiring personal attention.

The AI integration strategy emphasizes gradual deployment with careful monitoring of system performance and citizen acceptance. Provincial leadership recognizes that AI systems require ongoing training and adjustment to maintain effectiveness and avoid algorithmic bias that could disadvantage certain community groups or language speakers.

Estonia's E-Governance Model

Historical Development and Comprehensive Approach

Estonia's digital transformation represents one of the world's most comprehensive national e-governance implementations, beginning with the post-independence "Tiger Leap" program in the 1990s. The nation's small size, with 1.3 million residents, and need for efficient governance in the context of limited resources drove early adoption of digital technologies as a strategic necessity rather than merely a modernization option.

The comprehensive e-governance system launched in 2002 with the X-Road platform, designed to enable secure data exchange between government databases while maintaining strict privacy protections. This foundational infrastructure created the technical basis for subsequent developments, including blockchain integration beginning in 2012 with the KSI (Keyless Signature Infrastructure) system and more recent AI implementations.

Estonia's approach differed fundamentally from incremental implementations by designing an integrated system from the outset. This comprehensive strategy required substantial initial investment and political commitment but enabled greater long-term efficiency gains and systemic benefits that would be difficult to achieve through piecemeal implementation.

Technical Infrastructure and System Integration

The X-Road platform serves as the backbone of Estonia's digital infrastructure, connecting 99% of public institutions and processing over 2 billion transactions annually. The platform ensures interoperability between more than 2,800 government services while maintaining security and privacy protections. The success of X-Road has led to its adoption by Finland, Iceland, and the Faroe Islands, demonstrating its scalability and replicability.

Blockchain implementation through the KSI system provides hash-tree based signatures for data integrity without requiring centralized authority control. This approach enables mathematical proof of data authenticity while providing comprehensive audit capabilities without compromising privacy. The KSI system protects critical databases including health records, legal documents, and government communications.

AI integration encompasses multiple applications including automated fraud detection in tax systems, predictive maintenance for public infrastructure, natural language processing for citizen inquiries, and machine learning algorithms for traffic optimization. The AI systems are designed to complement human decision-making rather than replace it, maintaining democratic accountability while enhancing efficiency.

Comprehensive Impact Analysis

Estonia's digital transformation has achieved remarkable efficiency metrics that demonstrate the potential of comprehensive implementation approaches. Ninety-nine percent of government services are available online 24 hours a day, seven days a week, providing citizens with unprecedented access to government services. The system saves approximately 2% of GDP annually, equivalent to about €500 million, through digital efficiency gains that free resources for other priorities.

Tax system digitization has achieved 98% online filing rates for companies, with an average business registration time of just 18 minutes. These efficiency gains reduce administrative burden on businesses while improving government revenue collection and reducing opportunities for tax evasion.

Democratic participation has been enhanced through digital voting systems, with 44% of votes cast online in the 2019 parliamentary elections. Despite initial concerns about security and integrity, the system has maintained zero confirmed cases of election fraud while increasing voter participation, particularly among younger citizens and Estonian residents living abroad.

The e-residency program has attracted over 100,000 digital residents from 174 countries, creating new opportunities for international business and demonstrating Estonia's digital leadership globally. System reliability maintains 99.8% uptime across all digital services, providing citizens with confidence in the system's availability and reliability.

Healthcare digitization exemplifies the comprehensive benefits of integrated implementation. Ninety-nine percent of health data is digitized, generating €70 million in annual administrative savings while reducing medical errors by 15% through comprehensive digital records. Patient-controlled access through blockchain-verified consent ensures privacy protection while enabling coordinated care across different providers.

Cross-Case Analysis and Comparison

Implementation Strategy Differences

The contrasting approaches of South Tyrol and Estonia provide insights into different viable pathways for digital transformation. South Tyrol adopted a targeted, problem-specific approach, focusing on particular administrative challenges before expanding to broader applications. This incremental

strategy reduced implementation risks, allowed for learning-by-doing, enabled stakeholder adaptation, and required lower initial investment.

Estonia pursued comprehensive transformation from the outset, building integrated systems that could scale across all government functions. This approach required substantial initial investment and sustained political commitment but yielded greater long-term efficiency gains, created systemic benefits that would be difficult to achieve incrementally, established competitive advantages for the nation, and demonstrated the potential of comprehensive digital government.

Both approaches have merit depending on local context, available resources, political support, and implementation capacity. The choice between incremental and comprehensive approaches should reflect careful assessment of organizational readiness, technical infrastructure, financial resources, and stakeholder support.

Critical Success Factors

Analysis of both cases reveals several critical success factors that appear necessary regardless of implementation approach. Strong political leadership provided sustained commitment from senior government officials, ensuring continuity through political changes and providing resources necessary for successful implementation. Citizen-centric design focused on improving user experience rather than internal processes, ensuring that digital transformation benefits citizens rather than merely automating existing inefficiencies.

Legal framework adaptation involved proactive updating of regulations to enable digital innovation while maintaining appropriate protections and oversight. Both cases required significant changes to legal and regulatory frameworks to accommodate digital processes, electronic signatures, and automated decision-making systems.

Cybersecurity investment provided robust security measures essential for building and maintaining public trust in digital systems. Both implementations invested heavily in security infrastructure, regular audits, and continuous monitoring to protect against cyber threats and maintain system integrity.

Stakeholder engagement involved extensive consultation with citizens, businesses, and civil society organizations throughout the implementation process. This engagement helped identify potential problems early, build support for changes, and ensure that systems met actual user needs rather than assumed requirements.

Implementation Challenges and Adaptive Responses

Both cases encountered similar implementation challenges despite their different approaches. Initial resistance from government employees required extensive change management, training programs, and clear communication about benefits and job security. Significant upfront infrastructure investments required careful financial planning and sustained budget commitment over multiple years.

The need for continuous system updates and maintenance emerged as an ongoing challenge requiring dedicated technical staff and budget allocations. Balancing transparency with privacy protection required careful system design and clear policies about data access and use.

Context-specific challenges reflected local conditions and requirements. South Tyrol faced multilingual complexity requiring specialized technical solutions and integration challenges with Italian national systems that added complexity and cost. Estonia's small population provided advantages in terms of system scale and change management that may not be easily replicable in larger jurisdictions with more complex governance structures.

DISCUSSION AND IMPLICATIONS

The comparative analysis reveals that successful AI-Blockchain integration in urban governance depends on careful attention to both technical and organizational factors. While the technologies offer significant potential for improving efficiency, transparency, and citizen engagement, realization of these benefits requires sustained political commitment, adequate resources, and careful implementation planning.

The evidence suggests that both incremental and comprehensive implementation approaches can succeed, but they require different strategies and resources. Incremental approaches may be more suitable for organizations with limited resources or complex stakeholder environments, while comprehensive approaches may yield greater long-term benefits for organizations with sufficient resources and political support.

The importance of citizen-centric design emerges as a critical factor in both cases. Technical sophistication alone is insufficient; systems must be designed to improve citizen experiences and meet actual user needs. This requires ongoing engagement with citizens throughout the implementation process and continuous adaptation based on user feedback.

CONCLUSION

This research provides empirical evidence that AI and Blockchain technologies can significantly improve urban governance when implemented thoughtfully and systematically. The cases of South Tyrol and Estonia demonstrate different viable approaches to digital transformation, each with distinct advantages and challenges.

Key findings include the critical importance of political leadership, citizen engagement, and careful attention to organizational change alongside technical implementation. Both cases achieved substantial improvements in efficiency, transparency, and citizen satisfaction, but through different pathways that reflect their unique contexts and resources.

For urban policymakers considering similar initiatives, the research suggests several important considerations. Implementation approach should align with organizational capacity and available resources. Stakeholder engagement must be sustained throughout the implementation process, not just during initial planning phases. Investment in cybersecurity and privacy protection is essential for building and maintaining public trust. Legal and regulatory frameworks require proactive adaptation to enable digital innovation while maintaining appropriate oversight.

Future research should examine implementations in diverse global contexts, particularly in developing countries where resource constraints and institutional contexts may differ significantly from the European cases examined here. Long-term sustainability of digital governance systems also requires further investigation, particularly regarding maintenance costs, technological obsolescence, and evolving citizen expectations.

The integration of AI and Blockchain in urban governance represents a significant opportunity for improving public administration, but success requires careful attention to both technical and human factors. Cities that approach digital transformation as a comprehensive organizational change process, rather than merely a technological upgrade, are more likely to achieve lasting benefits for both government efficiency and citizen welfare.

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IMPACT ANALYSIS OF GREEN SPACES ON VIOLENT AND PROPERTY CRIME RATES

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INTRODUCTION

Green spaces such as parks and gardens share similar features and are expected to have a positive impact on various urban issues; they serve not only as recreational areas but also as "green infrastructure" that preserves biodiversity and retains rainwater.[1] One effect that has attracted attention is their relationship with crime (Table 1). For example, Venter et al. and Saraiva et al. suggested that green spaces may increase vulnerability to crime by reducing visibility or providing concealment opportunities for criminal activities. From the perspective of the "broken windows theory," inadequately maintained green spaces may degrade public safety and encourage crime. However, Sukartini et al., Ogletree et al., and Wang et al. found that the abundance of green space or greenery is often correlated with lower rates of criminal activities.[2]

One reason for these differing conclusions is related to population density. Green spaces tend to have a negative correlation with population density. Some studies, such as Ogletree et al. and Wang et al., include population density as one of the explanatory variables in their analyses; however, as they did not consider the correlation and interaction with green spaces, it is not possible to discuss the mechanism by which green spaces affect crime rates.[3] For example, if high crime rates lead to population decline, which in turn results in an increase in green spaces, a positive correlation between crime rates and green spaces may emerge. Therefore, careful consideration is necessary when determining causal relationships, as the influence of other explanatory variables can make these causal relationships highly complex. In addition, many studies use cross-sectional data, and few studies have conducted panel data analysis.[4]

Thus, the present study aims to clarify the relationship between green spaces and violent and property crime rates using panel data. Using the Normalized Difference Vegetation Index (NDVI) as an indicator of green space, we apply a lagged two-dimensional spatial additive model that considers the correlation between NDVI and population density.

METHOD

We employed a lagged two-dimensional spatial additive model estimated using the Generalized Additive Model (GAM) framework implemented in the mgcv package in R.[5]

Authors (year)	Area	Definition of Green space	Crime	Method	Results
Sukartini et al.(2021)	1,086 wards, Jakarta, Medan and Surabaya, Indonesia	Presence of green space	Total crime rate	DID	↓
Ogletree et al. (2022)	301 cities (USA)	NDVI	Crime risk index	Multilevel model	↓
Venter et al. (2022)	1,152 police precincts, South africa	Total green space	Violent, property and sexual crimes	GAM	↓ (Violent, Property)
		Tree cover rate, proximity to park			↑ (Property)
Saraiva et al.(2023)	15,902 cells of 50×50m, Porto, Pourtugal	Distance from green space	Street crimes	Hot-spot analysis	↑
Bhatia and Jason (2023)	2,179 areas (Chicago, USA)	NDVI	Violent and non-violent crimes	SEM	↓ (Overall and Non-violent)
Wang et al.(2024)	890 areas (Northern Ireland)	Green coverage rate	Total crime rate	Spatially filterd unconditional quantile regression	↓
Liang et al. (2025)	128 areas (NSW, Australia)	Green coverage rate	Domestic and non-domestic assault rates	Generalized estimating equation	↓

Table 1. Previous studies regarding the impact analysis of greenery on crime after 2020

The dependent variable was the crime rate (number of crimes per district population), while the pre-term crime rate was included as a lagged term to account for the possibility that areas with higher pre-term crime rates tended to exhibit higher later crime rates. To address the spatial autocorrelation, a spatial term was incorporated into the model to adjust for the tendency of geographically adjacent areas to exhibit similar values. The central component of the model was the two-dimensional interaction term between the NDVI and population density. This specification allowed us to capture the nonlinear and complex relationships between these two variables and their combined effects on crime rates. Additionally, several control variables were included to account for sociodemographic factors that may influence crime rates.

To account for seasonal variations in NDVI, we prepare the summer mean NDVI (summer NDVI) and winter mean NDVI (winter NDVI). Furthermore, the sum of summer NDVI and winter NDVI was defined as the sum of NDVI, representing the total amount of green space throughout the year, whereas the difference was defined as the difference in NDVI, representing annual fluctuations in green space.

Among these four green space indicators prepared for this study, the one that minimized the Bayesian Information Criterion (BIC) is selected. Then we compare the BIC values between the models with and without NDVI to evaluate whether the inclusion of NDVI improved model performance. Finally, using the selected model, we examined the effects of the interaction term and other explanatory variables on crime rates.

Data

Crime data

The analysis in this study focused on 4,774 districts within Tokyo, for which common datasets were available for 2010, 2015, and 2020. Crime data at the district level were obtained from the “number of crimes reported by districts, crime type, and method statistics” published by the Tokyo Metropolitan Police Department.[6]

Based on the hypothesis that the effect of green spaces on crime differs by crime type, we classified crime into two broad categories. Specifically, the sum of violent offences and felonious offences was defined as violent crime, whereas the sum of burglary and non-burglary theft was defined as property crime. These two categories served as dependent variables in the analysis.

Figures 1 and 2 illustrate the spatial distributions of violent crime and property crime rates, respectively, from 2010 to 2020. The spatial pattern of violent crime rates exhibited little change over the decade and remained consistently higher in the eastern part of Tokyo, including the city center, and lower in the central to the western areas (Figure 1). In contrast, property crime rates showed a clear overall decline during the study period; however, their spatial distribution maintained the same

east–west gradient observed for violent crime, with higher rates in the east and lower rates in the west (Figure 2).

Green space data

In this study, the NDVI was calculated for each district and used as an indicator of green space. Landsat satellite imagery (30 m resolution) was obtained from Earth Explorer provided by the U.S. Geological Survey (USGS).[7] NDVI is an index derived from the spectral reflectance characteristics of vegetation and was calculated using Equation (2). Unlike metrics such as the green coverage ratio or green view index, NDVI can evaluate not only the proportion of green areas but also vegetation quantity, spatial distribution, and activity level.

$$NDVI = (NIR - RED) / (NIR + RED) \quad (2)$$

Here, *NIR* represents the reflectance in the near-infrared band, and *RED* represents the reflectance in the red band. NDVI values for each district were averaged using census boundary data. Figure 3 shows the spatial distribution of the sum and the difference of summer and winter NDVI in 2020.

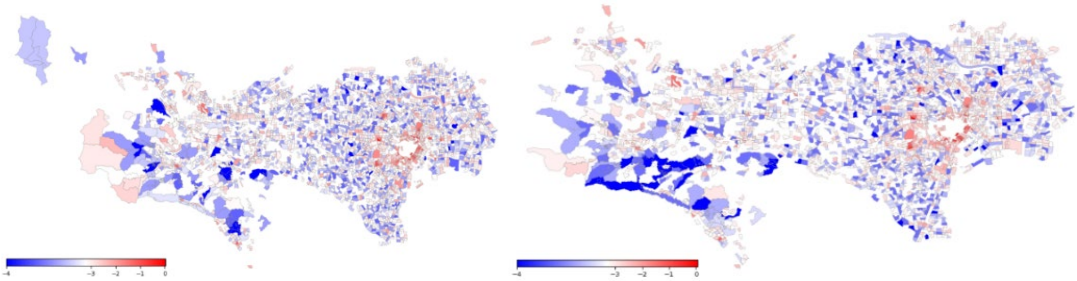

Figure 1. Distribution of violent crime rates (Left: 2010. Right: 2020)

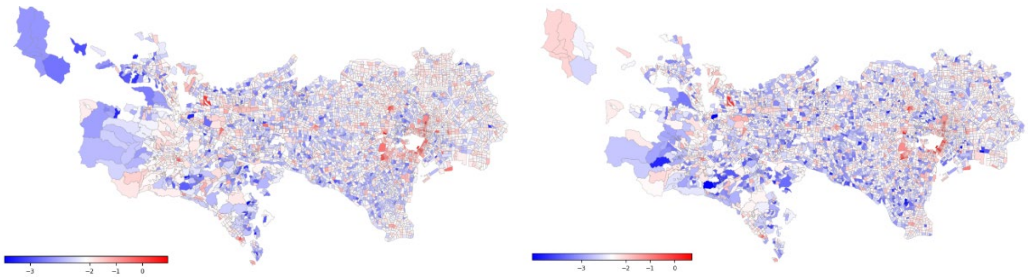

Figure 2. Distribution of property crime rates (Left: 2010. Right: 2020)

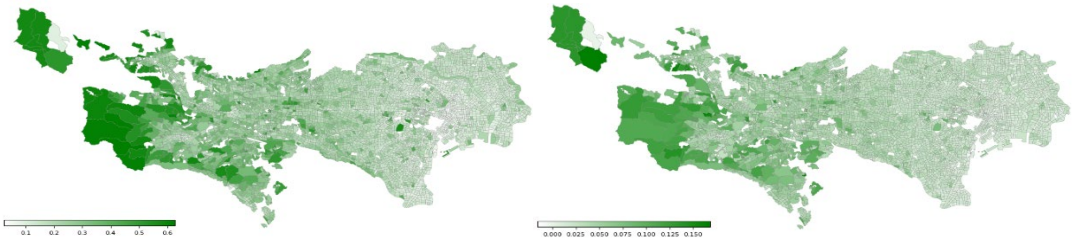

Figure 3. Spatial distribution of NDVI in 2020 (Left: sum of NDVI. Right: difference of NDVI between summer and winter)

Sociodemographic data

In addition to green space indicators, variables suggested by previous studies as influencing crime occurrence were obtained from the census. The variables listed in Table 2 were used as explanatory variables in this analysis.

This study analyses changes in crime rates and related variables over two five-year periods (2010–2015 and 2015–2020). Each dataset includes the crime rate (later crime rate) for a specific year (2015 or 2020) and various variables as well as the crime rate for the previous five years (2010 or 2015) as the pre-term crime rate.

	Min	Mean	Median	Max
Population density	16	14979	14062	72540
Day/night population rate	32.8	312.36	80.97	144097.22
Home owner-occupied rate	0	0.49	0.48	1.00
Non-workers rate	0	0.37	0.32	0.96
High-school graduate rate	0	0.66	0.67	1.00
Foreigners rate	0	0.03	0.02	0.55

Table 2. Descriptive statistics of sociodemographic variables

RESULTS

The model incorporating the sum of NDVI values yielded the lowest BIC for both crime types. Therefore, the results reported below are based on a model that uses the sum of NDVI. Table 3 shows the estimation results of property and violent crime with and without the NDVI variable. While the pre-term crime rate was statistically significant, the geolocation term was not.

	Property				Violent			
	NDVI×popden		Popden		NDVI×popden		Popden	
Linear term	estimate	t value	estimate	t value	estimate	t value	estimate	t value
Pre-term crime rate	0.66	204.28	0.67	213.11	0.89	212.72	0.90	214.93
Day/night population rate	0.003	2.90	0.007	8.94	0.0003	2.97	0.0004	3.53
Year dummy	-0.012	-3.67	-0.03	-8.09	-0.001	-2.60	-0.002	-3.00
Intercept	-0.004	-3.57	-0.004	-3.09	-0.0006	-3.08	-0.0006	-2.96
Nonlinear term	edf	f	edf	f	edf	f	edf	f
Sum of NDVI × popden(log)	10.98	56.12			8.91	23.37		
Popden(log)			9.62	38.17			7.78	29.29
The number of samples	9548							
Deviance explained	86.3		86.1		85.6		85.5	
BIC(0)	-8771				-44166			
BIC	-27643		-27441		-62535		-62536	
Coefficient of determination	0.86		0.86		0.86		0.86	

Table 3. Results of regression analysis

Property crime

As the model with NDVI provided a better fit, we confirmed that NDVI was an essential variable for the analysis. A positive association was observed between the lagged crime rate and the daytime–nighttime population ratio.

Figure 4 presents the regression coefficients for the interaction term between NDVI (y-axis) and population density (x-axis). While the coefficient of population density (x-axis) had a peak of approximately 150 (persons/km2), the larger NDVI value, the smaller the coefficient (y-axis). This means that the higher the NDVI, the lower the property crime rate.

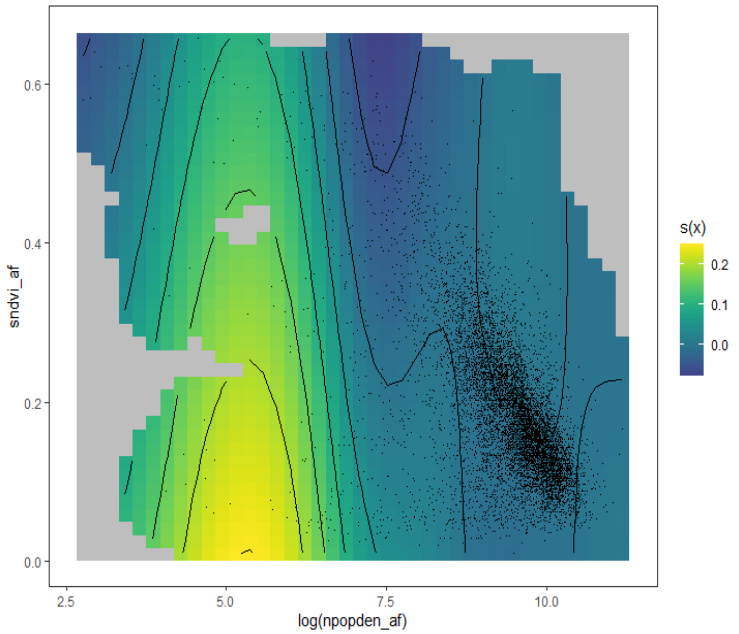

Figure 4. The interaction term in the property crime model.
X-axis represents population density (logarithm) and Y-axis represents NDVI and colors shows the coefficient for crime rates (Yellow is high and Blue is low). Figure 5 is the same.

Violent crime

In the model selection process for violent crime, the model excluding NDVI demonstrated a better fit, as indicated by a lower BIC value compared to the model that included it (Table 3). This result suggests that NDVI is not a statistically significant predictor for explaining the occurrence of violent crime in the context of this analysis.

To investigate this nonlinearity further, a stratified analysis based on population density was performed. Specifically, the data were divided into "low-medium density areas" (150 to < 3,000 persons/km²) and "high-density areas" (3,000 persons/km² or more), with the same regression model applied to each subset (Table 4).

The NDVI was statistically significant only in high-density areas. Figure 5 shows that the interaction term between green space and population density yielded a significant negative coefficient. This finding suggests that the presence of green spaces may mitigate crime rates associated with increasing population density, particularly in densely populated urban areas.

	150～3000		3000～	
Linear term	estimate	t value	estimate	t value
Pre-term crime rate	0.9	50.29	0.56	108.25
Day/night population rate	0.001	0.85	0.0003	5.48
Year dummy	-0.01	-2.84	-0.0002	-3.33
Intercept	-0.003	-0.32	-0.001	-4.12
Nonlinear term	edf	f	edf	f
Sum of NDVI × popden(log)	2.47	1.56	2.94	6.56
The number of samples	473		9036	
Deviance explained	87.2		61.7	
BIC(0)	-837		-74089	
BIC	-1778		-82711	
Coefficient of determination	0.87		0.62	

Table 4. Results of regression analysis for violent crime models split by population density

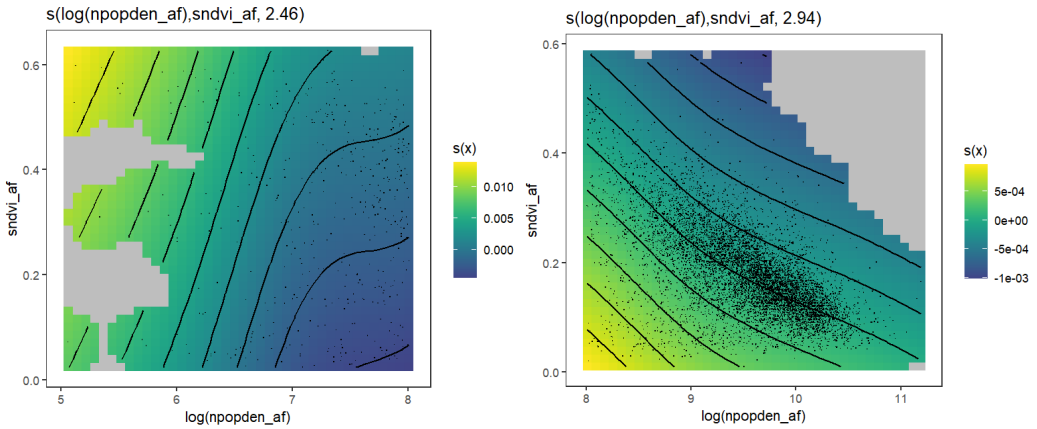

Figure 5. The interaction term (Left: 150 ~ 3000 persons/km². Right: 3000 persons/km² or more)

DISCUSSION

The results of this analysis indicate that while green space (NDVI) has a consistent negative association with property crime rates, its effect on violent crime rates is contingent on population density. This disparity can be attributed to the distinct characteristics of each crime type.

Property crime is characterized by its high dependency on environmental opportunities. Because these offenses often occur in locations with low public visibility, surveillance serves as a critical deterrent. The presence of green space encourages routine activities, such as walking and children's outdoor play, which in turn enhances natural surveillance by residents' "eyes on the street." This mechanism is interpreted as a reduction in opportunities for property crime, leading to the observed suppressive effect.

In contrast, violent crime frequently stems from impulsive factors such as interpersonal conflict and psychological stress, suggesting that its occurrence may be more strongly influenced by socioeconomic determinants than by the physical environment. Consequently, the crime-suppressive effect of the mere physical presence of green space is likely limited, which may explain the lack of consistent statistical significance in our analysis. On the other hand, Liang et al. found that higher

levels of green space total coverage as well as population-weighted green space exposure are consistently associated with lower assault rates in Australia.[8] Venter et al. showed that total green space was associated with less violent crime in South Africa.[9] Bhatia and Jason found the weak association observed between greenness and violent crime rate.[10] We need further discussion including the correlation between population density.

Furthermore, the effect of green spaces on population density can be explained by the ineffectiveness of natural surveillance in low-density Even with abundant green spaces, opportunities for resident interaction in such regions are inherently scarce, hindering natural surveillance. Moreover, green space itself may act as a physical barrier, further restricting social interaction, and thus nullifying its potential crime-suppressive benefits.

Based on these considerations, we posit that the suppressive effect of green spaces on violent crime is manifested only when a certain population density threshold is met, enabling natural surveillance to function effectively. This strongly suggests that the role of green space in crime prevention is realized not merely through its physical presence but also through its interaction with the residents' activities.

CONCLUSION

In this study, considering the correlation between population density and green space (NDVI), we showed that green space has a negative association with property crime rates. Regarding violent crime, a significant negative association was confined to areas with higher population density. Therefore, when planning urban development, it is necessary to consider green spaces as an intervention for crime reduction, but different types of vegetation, crime types, and crime rates across regions should be taken into consideration.

An examination of the spatial distribution of the model residuals revealed that, while no statistically significant spatial autocorrelation was detected, there was geographical clustering of extremely low residuals in the western part of the study area. This spatial pattern suggests the potential for an uncaptured bias in the model, indicating that certain region-specific variables may have been omitted. This implies that the model can be further refined.

The incorporation of green space functionality is a key direction for future research. The present study utilized only NDVI as an indicator of green space. However, as argued in the discussion, the interaction between residents and green spaces is crucial to the mechanism of crime suppression. Therefore, a more refined analysis would require operationalizing the functional aspects of public green spaces, such as the type and amenities of parks and plazas and patterns of actual use, to test the specific environmental conditions that foster natural surveillance empirically. We may also consider the presence of bars, and other social outlets which would increase the pool of potential victims.

In higher crime rate districts, population density tend to decrease. The higher population density, the lower NDVI. Therefore, crime rate, population density and green spaces would interact each other. Using more longer panel data, the structural Vector Autoregression (Structural VAR) or Vector Error correction (VEC) model would be useful for more detailed analysis.

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LIVABLE CITIES: ENVIRONMENTAL JUSTICE AND THE URBAN DILEMMA

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INTRODUCTION

The world's population continues to increase at an alarming rate, which necessitates solutions to the challenges of preserving natural resources, preventing environmental degradation and pollution, and securing habitable land. This is especially true for city centers that continue to attract people in the hopes of increased access to jobs, education, healthcare, and upward mobility. As people flock to cities, the impacts of increased urbanization may lead to a strain or breakdown of local ecosystems and infrastructure failure. The urgency of these challenges calls for collaborative solutions - especially since urbanization is inevitable. The question is not whether cities will grow, but *how* they will grow, *for whom* they will be designed, and *at what cost*—to the environment, to human dignity, to cultural memory, or to marginalized communities. Furthermore, sociological and theological questions abound: Who gets to cast a vision of the cities of the future? Whose voices are silenced? What are the environmental sacrifices? And how might faith communities function as moral architects and city planners in reshaping urban life toward justice and sustainability? While the role of architects, urban planners, and engineers have been heard in casting a vision of an urban future that centers on livability, widening the conversational field to include scholars in environmental justice and the sociology of religion provides a moral framework for the cities of the future. In this paper, I will explicate how applying a religious environmental justice framework informs community participation. When residents are empowered to make decisions concerning the communities they live in, they embody the right to the city concept. In this way, they are not passive residents upon whom the expanding city acts, but they are the "architects" of the urbanism they want. Livable cities are socially equitable places that balance society, environment, economy, and culture. They require justice, inclusion, and moral imagination that acknowledges the *imago dei* in all created order.

Researcher Positionality

This research grew from my prior professional career in architecture and urban planning, my twelve years work as a pastor and personal connection to environmental hazard. This combination amplifies my academic understanding of the sociology of religion, urbanization, ecology, and black church studies. My work as an architectural designer and assistant urban planner helped me to understand more clearly the relationship between the built and natural environment. I also began to see how certain communities bore a disproportionately greater share of environmental burden than others. As a pastor of historically black churches in urban contexts, I observed some of my congregants

compromised health due to jeopardized environmental quality. Acute and chronic health-related issues ranging from asthma, cancer, and hypertension were evident throughout the congregation and community. My academic interest in churches as environmental interventionists is directly informed by my professional experience and vocational call. I bring this first-hand experience in the worlds of community development and pastoral leadership in predominantly black churches to my exploration of what committed urban black churches can do to address anti-environmentalism. I nudge black churches to incorporate an urban environmental justice framework in their social activism, both for the sake of their congregations and for the sake of the larger world. Alongside religious programs and institutions that support community and economic development, I urge black Christian congregations to address structural apparatuses like racially motivated urban planning policies that support anti-black spatial segregation, environmental planning, and degraded air, water, and land. Simultaneously, I urge architects, planners, and epidemiologists to take seriously the role of faith and faith-based institutions in future city planning. Now, I turn to urbanization and the right to city.

URBANIZATION AND THE RIGHT TO THE CITY

The people who are most affected by increased urbanization and unequal environmental protection should have the freedom to exercise their environmental agency. The "right to the city" concept was introduced by Henri Lefebvre in *Le Droit à la Ville*, referring to the socially marginalized who were excluded from the social, economic, political, and production aspects of city life. He argued for citizens to shape and govern the urban spaces they inhabit.[1] Rather than being subjected to capitalistic and market forces, citizens have the right to co-produce the spaces they occupy. Geographer Eugene J. McCann expands on this idea as "the right not to be marginalized in decision-making, nor to be channeled into certain political discussions or decision-making processes and not into others on the basis of one's similarity to or difference from other individuals or groups."[2] The right to the city means citizen participatory governance is central to creating livable social spaces for all within the urban environment. In a sense, it is the right of urban citizens to claim their presence in the city and the right to human flourishing amid alienation from the means of production, power, and decision-making structures. The right to the city encompasses rights to housing, protection from police abuse, access to public space, and participation in urban development.[3] Peter Marcuse, professor of planning, and Ronald van Kempen, professor of urban geography, offer that the spatial ordering of cities is ever widening and results in increased social separation and residential clustering.[4] Thus for David Harvey, professor of anthropology and geography, space is relational. Relational space means "space is neither absolute, relative or relational *in itself*, but it can become one or all simultaneously depending on the circumstance" – social, economic, and political processes that shape it.[5] Cities are complex material, social, and economic places because of the many divisions that exist within them, and changing one component, may have consequences on others. Acknowledging social structures that undergird "urban ecological security" - or the maintenance of first-class environmental services and policies that support the health of whites while fracturing the environmental security of people of color is important.[6] Urban churches—functioning as mediating structures—help address such disparities. For the churches and church-affiliated organizations included here the right to the city approach has meant addressing immediate environmental harms inflicted on black and poor communities and actions to redress environmental injustice through alternative solutions, which include the creation of a nationwide black church food network, affordable and sustainable housing, tree planting, and land reclamation. For Marianne E. Krasny, professor of civic ecology, these examples of context-specific local-level environmental activism, alongside strides to address the social and material aspects of urban life, expand Lefebvre's right to the city concept to what she calls "civic ecology practices" that offer collective socio-environmental betterment.[7]

BLACK CHURCHES AS ENVIRONMENTAL ACTORS

Though often traced to the 1982 Warren County protests, Black church environmental advocacy predates this moment. Indeed, Warren County was a turning point, popularizing the term "environmental racism," but black religious environmental engagement may be rooted as far back as the Memphis Sanitation Workers Strike of 1968.[8] At the National Black Church Environmental and Economic Justice Summit held in Washington, D.C., in 1993, a contingent of mainline leaders from predominantly Black denominations endorsed an agenda linking environmental degradation, racism, civil rights, and economic justice. Out of this gathering came the "Black Church Declaration on Environmental and Economic Justice," in which participants proclaimed: "We, African-American Church leaders, historically committed to justice issues, affirm the unitary nature of life and commit ourselves to the ministry of converging justice and environmental issues that are critical matters of life and death for our Church and for our community". This declaration may challenge assumptions that Black Christian congregations are indifferent to environmental concerns, given the multitude of pressing social issues they face. The declaration continued: "As leaders in the Black Church, we view climate change as a moral issue and one of the greatest public health challenges of our time, particularly for Black and other marginalized communities. Breathing dirty, carbon-polluted air, that causes climate change contributes to thousands of asthma attacks, hospital visits, and premature deaths every year. Black and lower-income communities are often hit the hardest by climate change in the United States". My research reveals that, thirty years later, scholarship still falls short in adequately exploring the role of churches—particularly Black churches—in addressing urban environmental injustice. I weave together critical urban studies, Black church studies, and environmental justice to explore the ways churches are responding to environmental injustice in their urban contexts. The term "urban religious environmentalism" aims to center religious environmental actors within the particularities of expanding urbanization. Religion is not practiced in a vacuum; it is shaped in place—embedded in specific geographical, cultural, and social contexts. As the global population shifts toward city life, the urban backdrop is becoming the primary setting for religious expression. Churches rooted in urban spaces have something vital to say about livable cities and environmental equity.

Turning to concrete examples, I highlight three predominantly Black urban churches that are forging alternative pathways for survival and collective flourishing considering environmental injustice. Though geographically distinct, they share a commitment to resisting ecological degradation and promoting public health:

Trinity United Church of Christ, founded in 1961 on Chicago's South Side, is the largest congregation in the United Church of Christ, a historically white Protestant denomination. With more than 10,000 members and rooted in Black liberation theology, Trinity has gained national recognition under the leadership of Rev. Dr. Jeremiah A. Wright Jr. and current pastor Rev. Dr. Otis Moss III. In my interview with Rev. Dr. Moss, he named environmental dumping, food accessibility, and tree resilience as key concerns for the church. Through its community garden, tree planting campaign, and sustainable housing projects, Trinity frames environmental activism through an eco-theological lens, using scripture to call for just policy and ecological awareness.

Friendship-West Baptist Church, established in 1976 in Dallas, Texas, now counts over 13,000 members. Its pastor, Rev. Dr. Frederick Haynes III, is a prominent voice for prophetic social justice. At the 2018 Green Church Summit, he asked, "It's almost impossible to live healthy in a world that is sick. How do you expect to experience wholeness, when the climate is broken?" That same year, an illegal recycling operation created "Shingle Mountain" in a nearby Black and brown neighborhood. Toxic particulate matter led to respiratory health concerns. Friendship-West responded with direct action, coalition building, and advocacy against both the polluting company and city officials.

Pleasant Hope Baptist Church in Baltimore, Maryland, founded in 1933, is smaller than the aforementioned congregations, averaging about 120 people per Sunday. Its inclusion underscores that environmental activism is not limited to megachurches. Following the death of Freddie Gray and the curfews that ensued, the church's 1,500-square-foot garden—originally developed during an Earth Day celebration—became a vital food distribution hub. Rev. Dr. Heber Brown III recalled, "We transformed our multi-purpose room into a food distribution center, set up shop on street corners, and got food in the hands of people".[9] Like Moss, Brown III offers eco-spiritual readings of scripture to highlight the links between food insecurity and structural racism.

Through interviews with pastors across diverse urban regions, I found that Black churches are increasingly engaging environmental issues in partnership with church-affiliated organizations such as Green the Church and Faith in Place. These congregations address air, water, and soil contamination, food apartheid, garbage accumulation, and the need for affordable housing. Their theologies are often rooted in biblical mandates to care for creation and reclaim ancestral connections to land lost through slavery, sharecropping, and the Great Migration. These eco-theological commitments inform the sermons, programs, and public witness of churches that—whether through solar panels, urban gardens, or legislative advocacy—demonstrate that liberation theology remains fertile ground for environmental justice.

RELIGION AS MORAL INFRASTRUCTURE

My interviews with pastors across various U.S. regions addressing local environmental crises reveal how churches function as environmental interventionists and mediating structures. Lambert Zuidervaart, emeritus professor of philosophy, argues that religious communities "can help give birth to artistic, educational, and other organizations and movements that contribute to cultural, economic, and political change".[10] He continues with, religion allows people to "make meaning of their lives and the institutions, communities, cultures and societies they inhabit". Religion thus becomes a vehicle through which people critique societal macrostructures and articulate visions of the world as it ought to be. Kendra H. Barber, sociologist of religion, builds on this by suggesting that "mediating structures"—a term coined by Berger and Neuhaus—more appropriately describe faith-based organizations that bridge "large bureaucratic megastructures and individual citizens".[11] Black churches, as such structures, have historically catalyzed civil and social progress. As Mike Hulme argues, "climate change needs to be studied not just by meteorologists, ecologists and economists … but by sociologists, anthropologists, philosophers and, importantly, by theologians and religious scholars".[12] Religion and its institutions must be part of our environmental discourse. Indeed, religious voices have long been involved. In 1982, Black churchwomen in Warren County, North Carolina, catalyzed the environmental justice movement by resisting a toxic waste site in their community. In 1983, the World Council of Churches urged its members to incorporate environmental concerns as part of a broader commitment to justice, peace, and the integrity of creation. The Dalai Lama addressed climate change in 1990, and by 2002, the Oxford Declaration had garnered signatures from over 70 climate scientists, policymakers, and Christian leaders affirming that "the Christian community has a special obligation to provide moral leadership... to all God's creation".[13] As Grim and Tucker observe, religious traditions hold moral authority, institutional infrastructure, and political influence that can shape environmental action.

Gould and Kearns note that "religious environmentalist activism... extends the conceptual reach of [religious] reforms to include both the health of nature itself and... human well-being, often disproportionally along race, class, and gender lines".[14] Religious communities frame environmental issues in terms of moral responsibility and justice. Black churches, though understudied, have been

pivotal in eco-justice activism by offering "powerful moral pulpits and networking tools" helping to bridge the long-standing scholarly divide between Black religion and environmentalism.[15]

TOWARD TRULY LIVABLE CITIES

Livability within the future urban context must extend beyond aesthetics and efficiency. It must account for the whole person and the social and material conditions that support their health and well-being. Truly livable cities require the dismantling of entrenched social structures that lead to poor health outcomes for marginalized populations and reinforce disparities shaped by race, access to services, and planning decisions.[16] Across both the Global North and South, governments are failing to adequately respond to escalating health crises in urban settings. In the U.S. context, some Black churches are stepping into this void—creating alternative pathways for health access, such as Trinity United Church of Christ's urban garden and Pleasant Hope Baptist Church's food distribution network. Proponents of health equity define it as "efforts to address avoidable social inequalities by equalizing the conditions for health for all groups, especially for those who have experienced socioeconomic disadvantage or historical injustices".[17] These efforts demand multi-level solutions—individual, institutional, and societal—that are grounded in transparency, equitable political processes, and grassroots engagement. Disparities in health are not merely technical concerns; they are justice issues, reflecting systemic inequalities based on race, class, gender, and economics.

Faith-based congregations are uniquely positioned to offer culturally appropriate, context-specific interventions that address the health challenges plaguing poor and politically disempowered communities. As urbanization accelerates, and as public health disparities mount, these local institutions offer critical insight and responsive strategies. Centering marginalized voices in these conversations is not only a moral imperative but also a strategic necessity for cultivating an equitable, sustainable, and resilient urban future. Livability must include access to basic needs, opportunities for human flourishing, and the restoration of dignity. Since Black, Brown, low-income, immigrant, disabled, and LGBTQ+ communities have long been excluded from environmental decision-making processes, centering their experiences becomes an act of restorative justice—and a corrective to systemic environmental harm. Moreover, these communities often hold valuable, place-based knowledge essential to shaping needful and just solutions.

Theologically, through liberationist, Black liberation, and womanist lenses, prioritizing marginalized voices echoes the divine's preferential option for the poor and oppressed.[18] The challenges facing cities today—housing insecurity, failing public health, food deserts, and unequal access to green space—demand intersectional approaches. Yet religious voices are often absent from planning tables. They bring moral clarity, deep community trust, and physical assets—buildings, land, and networks—that can anchor transformative change. As Jane Jacobs once noted, "Cities are more like biological systems than anything else."[19] In this view, cities possess the capacity for self-repair—assuming, critically, that their residents are empowered to act.

CONCLUSION

Adopting language that bridges environmental justice and sustainability—such as "just sustainability"—equips community coalitions to confront how race and racism disproportionately shape public health and how present patterns of consumption compromise the future. Just sustainability offers "a more proactive, deliberative, sustainable-type visioning approach," one that reorients environmental discourse and reshapes planning and zoning through the lens of equity.[20] As Edward Soja asserts, justice has a "consequential geography, a spatial expression that is more than just a background reflection or set of physical attributes to be descriptively mapped."[21] Spatial justice links social processes with the lived geographies of marginalized communities. For urban

congregations engaged in transformation, this means adopting a framework that interrogates how urban space has been commodified, controlled, and racialized. Social structures—like race and class—organize access to space, but spatial arrangements themselves must be critically examined. Undoing urban inequity requires dismantling what Emilie Townes calls the "cultural productions of evil".[22] She reminds us that, "We are in a world that we have helped make." If our built environments reflect injustice, they can also be remade with equity at their core. Systems of white supremacy do not only oppress communities of color; they corrode the moral and human potential of those who uphold them. As urbanization accelerates, we must ask: What would our cities look like if we planned not only with efficiency and innovation, but with justice and joy?

NOTES

[1] Henri Lefebvre, Le Droit à la ville (Paris: Anthropos, 1968); English trans., The Right to the City (Oxford: Blackwell, 1996).
[2] Eugene J. McCann, “Space, Citizenship, and the Right to the City: A Brief Overview,” GeoJournal 58, no. 2/3 (2002): 77–79.
[3] Kafui A. Attoh, “What Kind of Right Is the Right to the City?” Progress in Human Geography 35, no. 5 (2011): 669–85. https://doi.org/10.1177/0309132510394706.
[4] Peter Marcuse and Ronald van Kempen, Globalizing Cities (Oxford: Blackwell Publishers, 2000).
[5] David Harvey, “Space as a Keyword,” in David Harvey: A Critical Reader, ed. Noel Castree and Derek Gregory (Cambridge, MA: MIT Press, 2006), 270–302.
[6] Mike Hodson and Simon Marvin, “‘Urban Ecological Security’: A New Urban Paradigm?” International Journal of Urban and Regional Research 33, no. 1 (2009): 193–215. https://doi.org/10.1111/j.1468-2427.2009.00832.x.
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[9] Amy L. Sherman, “How Churches Are Helping in Food Deserts,” Common Ground Magazine, 2020. https://www.madetoflourish.org/resources/beyond-charityhow-churches-are-helping-food-deserts.
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[11] Kendra H. Barber, “Whither Shall We Go? The Past and Present of Black Churches and the Public Sphere,” Religions 6, no. 1 (2015): 245–65. https://doi.org/10.3390/rel6010245.
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[13] Climate Forum, Faith Communities Together: Climate Forum 2002 (Washington, DC: National Council of Churches, 2002).
[14] Rebecca Gould and Laurel Kearns, “Ecology and Religious Environmentalism in the United States,” Oxford Encyclopedia of Religion and America (online publication, 2018), 2.
[15] Jennifer Toffolon-Weiss and J. Timmons Roberts, Chronicles from the Environmental Justice Frontline (New York: Cambridge University Press, 2005), 83.
[16] Malo André Hutson and Sacoby Wilson, “The Role of Community-Based Strategies in Addressing Metropolitan Segregation and Racial Health Disparities,” Community Development 42, no. 4 (October 2011): 476–93.
[17] Jason Corburn, “Urban Place and Health Equity: Critical Issues and Practices,” International Journal of Environmental Research and Public Health 14, no. 2 (January 26, 2017): 117. https://doi.org/10.3390/ijerph14020117.
[18] Gustavo Gutiérrez, A Theology of Liberation: History, Politics, and Salvation, trans. Sister Caridad Inda and John Eagleson (Maryknoll, NY: Orbis Books, 1973).
[19] Jane Jacobs, The Death and Life of Great American Cities (New York: Random House, 1961), 444.
[20] Julian Agyeman, Just Sustainabilities: Development in an Unequal World (Cambridge, MA: MIT Press, 2003); and Introducing Just Sustainabilities: Policy, Planning, and Practice (London: Zed Books, 2013).
[21] Edward W. Soja, Seeking Spatial Justice (Minneapolis: University of Minnesota Press, 2010), 19.
[22] Emilie M. Townes, Womanist Ethics and the Cultural Production of Evil (New York: Palgrave Macmillan, 2006).

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THE EXTENDED BODY: INVESTIGATING THE NEGOTIATIONS OF BODY AND SPACE THROUGH SCALES

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INTRODUCTION

As 'participant A' shut down the computer to end his day at work, he gazed outside the window while packing his belongings. The weather app had predicted rain, and rain it did, but the rain was not accompanied by the familiar petrichor he was used to. As he quickly walked to avoid the rain, he waved at the cashier who had stepped out of the store next to the station. The cashier responded by engaging in the most quintessentially British small talk about the weather, but in Hindi. '*Jor se barish hone waali hai* (is going to rain heavily)', to which he replied '*is mausam se chai ki talab aa gayi* (This weather has caused me to long for tea)'.

As soon as he reached home, he decided he would make *chai.* Pacing up and down the apartment while the spiced water boiled, he wondered, 'What does one do when they wait for the tea to boil?' When he lived in Lucknow, he never left home without his *maa ke haath ki chai (*tea made from mother's hands*).* It was an integral part of his morning routine, just like the *surya namaskars* (sun salutations). After office, he would frequently accompany his friends for *chai* (tea) and *sutta* (cigarette) at the roadside *tapri* (temporary stall). In both these scenarios, conversations filled the time while the chai boiled. Although devoid of conversations, the room was now filled with the familiar fragrance. He carefully strained the tea using *channi* (strainer*)* that he had got from Lucknow. He noted that, unlike earlier times, he had strained the tea perfectly without spilling a drop, a mastery just like his mother's hand. With that final accomplishment in his very scared ritual of making chai, he sipped in approval. He had finally made his '*Maa ke haath jaise chai (*tea just like that made by my mother's hands).'

In Participant A's case, the simple act of making chai is no longer only about brewing a drink. Instead, it becomes a network across places, an invisible thread that ties his body inhabiting an apartment in London to memories of Lucknow, to friends and family, as well as to a sense of belonging. Through this paper, I embark upon understanding this very network that the body creates by considering objects, rituals, and spatial arrangements as 'extensions' of it 'self', weaving them into what I call the '**Extended Body'**. Using the case study of the voluntarily displaced Hindu migrants, I examine how the body inhabits unfamiliar spaces by continually adding, discarding, and reconfiguring its extensions. I address a gap in architectural discourse, where the body as a qualitative measure of culturally situated, embodied experience remains under-theorised. I do so by proposing a framework of visual representation that traces how bodies, driven by culture and memory, inhabit through their extensions.

THE EXTENDED BODY

To understand the Extended body as a relationship between body, self and its extensions, I first attempt to define what qualifies as an 'extension'. To begin with, not every addition to the body is an extension. For example, not every piece of clothing that is worn is an extension. An addition becomes an extension only when the body considers it a projection of its 'self'. To elaborate further, one may think that obvious examples of extensions would be technological or physical tools used by the body. There is no denying that these tools extend the body and exert agency in modifying what the body can do and how it experiences the world.[1] However, I believe this is not enough to qualify them as extensions of the self. For example, a pair of spectacles may appear as a literal extension of the body of its user. But apart from improving the bodily function of seeing, it does not necessarily become an extension of the self. In another instance, I believe my computer is a very important addition to my body. In this fast-paced world, it does not sound like an exaggeration when one says one carries their world around with them in a laptop. Typing on the laptop is undoubtedly a very efficient way of writing. Especially if I compare it to a particular fountain pen that I keep in my study drawer. I stole this pen from my father's desk, knowing he wouldn't notice its absence. Whenever I write something special, I use this fountain pen. I invest time in cleaning it regularly and filling it with ink. As compared to the laptop, or any other ballpen, this particular fountain pen somehow holds a special status. It did not have any special status to the actual owner of the pen (my father), but it does to me, and thus it is a strong contender to be investigated as an extension. To decode the extended body and its extensions, I adopt a two-fold framework, which reviews the 'Extended Body as a process' and then the 'Extended Body as a network' (Figure 1).

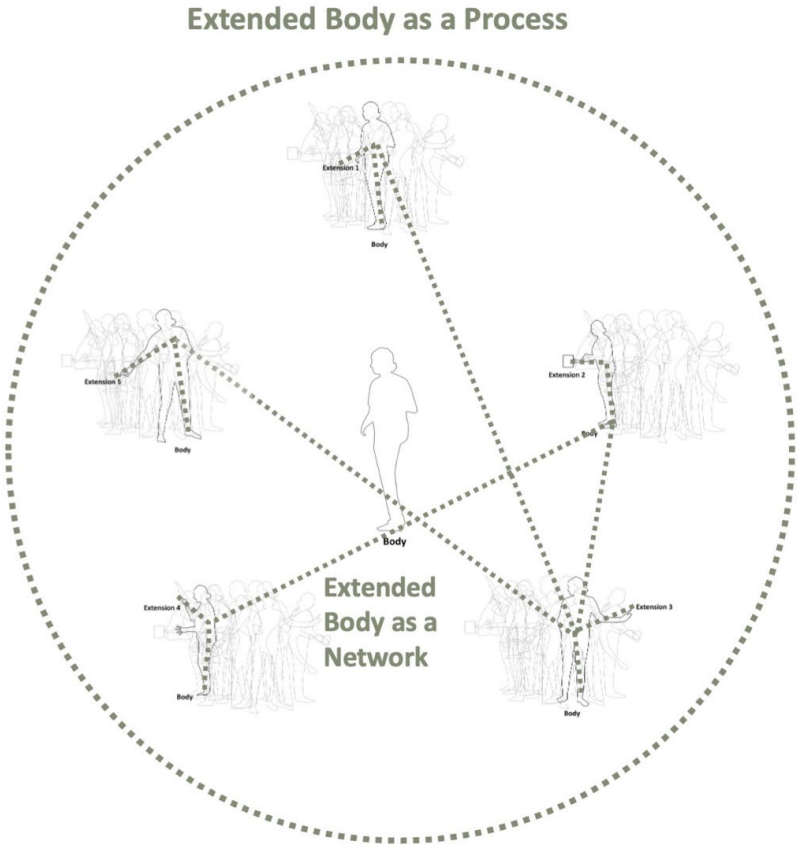

Figure 1. Extended Body as a Process and Extended Body as a Network

Extended Body as a Process

In the scenario of the displaced migrant body, I draw from the discourse around the changing definition of the body. It understands the body as a process that is always *becoming*[2] and *translating.*[3] To comprehend the body's response to inhabiting an unfamiliar space and drawing from *memory* and *culture*, I review the literature that understands the creation of *'embodied space'*[4] where 'human experience and consciousness takes on material and spatial form'.[5] In the context of the migrant body, the embodied space facilitates the constant translation of the body,[6] wherein the body is understood as a process of 'becoming' and how bodies make meaning of place.[7] This process is furthered by the gap between memory and place in dislocation.[8] In the context of this literature, I propose the concept of *'intermediate space'*. Defined as an embodied space with characteristics that evoke memory from the source culture, the *'intermediate_space'* enables the translation of the migrant body to inhabit the target culture. The formation of the Extended Body is triggered by the characteristics/qualities found in the intermediate space. The intermediate space offers some of the extensions to the body, facilitating the making of the Extended Body. In an unfamiliar culture, the body seeks out these intermediate spaces that allow its extendedness and the process of becoming.

Extended Body as a Network

While the body seeks extensions, it is not looking for specific elements as extensions, but for those with qualities that allow them to become extensions. To consider the agency of the extensions, I explore the Extended Body as a network of human and non-human actors by referring to Deleuze and Guattari's rhizomic thinking of assemblage. Deleuze and Guattari use the concept of the rhizome to describe a non-hierarchical, linear way of thinking and organising knowledge. 'Any point of a rhizome can be connected to anything other, and must be'.[9] The concept of the rhizomic thinking thus encourages viewing these connections with heterogeneity. As opposed to a tree, whose growth is linear and can be traced to the roots, the rhizome grows in all directions. It has several lines of flight or tendencies towards change, that enter and exit it, allowing for a horizontal network of connections.[10] Building on Deleuze and Guattari's rhizomic thinking, Braidotti suggests a 'figuration' or 'a live map to represent the transformative account of the self.[11] Thus, I believe that the representation of the Extended body as a rhizomic figuration would allow for the unfolding of a horizontal, shifting network of all the connections that constitute it.

RHIZOMATIC REPRESENTATION OF THE EXTENDED BODY

I now turn to addressing the challenge of developing a method of rhizomic representing the Extended Body both as a process and a network, without reducing its complexity. This attempt of representation is neither the act of drawing the architectural space nor the body. It is an exercise of producing a non-linear rhizomic drawing of the collective engagement of the body with objects, surfaces/textures and spatial arrangements.

During the fieldwork, participants describe how they engage with objects, spaces, and rituals that evoke memories of culture and familiarity. This engagement is diagrammed from two perspectives: one from the observer's (my) viewpoint, and the other from the participants' perspective as they perceive their bodies while engaging with the extensions. Both these versions overlap to produce a body that is engaging and a body that is seen as engaging. These observations are based on the participants' responses in the questionnaire and semi-structured interviews, wherein each stage 'unearths' more elements to be diagrammed. These elements, although all related to a single participant, may or may not be connected. Discovering one relevant piece of information after another is almost comparable to an archaeological dig wherein each discovered element is carefully excavated, documented and recorded, and this process involves digging and drawing. An

archaeological site is worked upon by several excavators, and an individual drawing, while it may seem complete, is just a fragment of a much larger collective drawing. I compare each step of the documentation to different excavations. Collectively, they help excavate the large site, ie the way in which the participant's body inhabits space.

To avoid the error of making premature assumptions or overlooking connections between the elements discovered in each step, I adopt the documentation process of an archaeological survey, as such recordings 'postpone judgement and bias'.[12] Archaeologists use the method of 'Stratigraphy', which means the drawing of layers (Latin 'stratum '(layer) and the Greek 'graphos '(the drawn).[13] 'The purest method for drawing stratigraphically is 'single context planning'; this drawing / digging system breaks up all the drawings, so that each shows a single context.[14] The method used in stratigraphy[15] allows each new element to be viewed in isolation, as well as a collective with other finds, yet it is not limited to just these two connections. The placement of the element in the schema is not fixed, allowing for a change as and when new elements are excavated. 'Drawing occurs before, during and after the digging of any single context.''[16]

The Harris matrix is a methodology for stratigraphic recording that 'deals primarily with the relative temporal sequencing of archaeological stratigraphy (i.e. which archaeological strata come before and after each other) but does not require absolute chronological dating of the archaeological stratigraphy itself according to any independent time framework.'[17] A spatial record in the form of plans or sections accompanies the matrix. A site excavation contains many shorter matrices combined to form a full matrix record after the excavation. 'The stratigraphic, sequencing and temporal information held in a matrix is fundamental in further studies of the site records and in working out how the site may relate to other excavated sites of similar or related dates and phases.'[18] Most importantly, it expresses 'the excavators' understanding of the 4D *spatio-temporal sequence* by which contexts were deposited, and most significantly, therefore the physical and temporal sequence in which they were excavated, based on the excavator's stratigraphic reasoning.'[19]

I adopt the essence of the Harris matrix methodology in stratigraphic recording to create diagrams and short matrices of the documentation, as it finds the concept of these emerging connections apt for a rhizomic representation.[20] Each short matrix comprised a list of objects, textures/surfaces, spatial arrangements and the involved body parts. All of these were noted in a sequence of their appearance in the relevant activity. When these short matrices are looked at collectively as one comprehensive matrix or as 'one archaeological site' (the participant) it provides an opportunity to see relations, associations and unexpected connections between the body and its extensions. This comprehensive matrix allows for all the layers in the individual matrices to be seen as links and connections with each other, allowing for new layers and offshoots to be brought into the picture, thus creating the beginnings of a non-linear rhizomic diagram. Feedback on this comprehensive matrix from the participant and revisiting the questionnaire to reflect on their other responses play an essential role in this final step.

RHIZOMIC DRAWING OF PARTICIPANT A

In this section, I attempt to illustrate one way of representing using the case of Participant A and deconstructing the network of the Extended Body described in the introduction of the paper into drawings and matrices. When asked to elaborate on objects, rituals and places that help bring a sense of belonging, Participant A mentioned three instances that were of different scales, ranging from a room to an urban street and the larger realm of the virtual world.

In instance A (Figure 2-5), when asked to elaborate about nostalgia related to making of *chai*, the participant claims *'jab chai ki talab aati hai, maa ke haath ki chai yaad aati hai'* (when I long for tea,

I remember the tea made by my mother's hands). While these are commonly used phrases in Hindi, in this case, I believe it is essential to highlight this specific choice of words that emphasise the emotion of longing, while connecting it to the participant's mother's hands. The participant considers the simple act of making tea almost sacred by stating '*Acchi chai fursat se banate nake peete hai'(If I want to make tea, one should take their own time in making it).* The participant's own kitchen is the intermediate space, and the associated extension is the *Channi* (strainer).

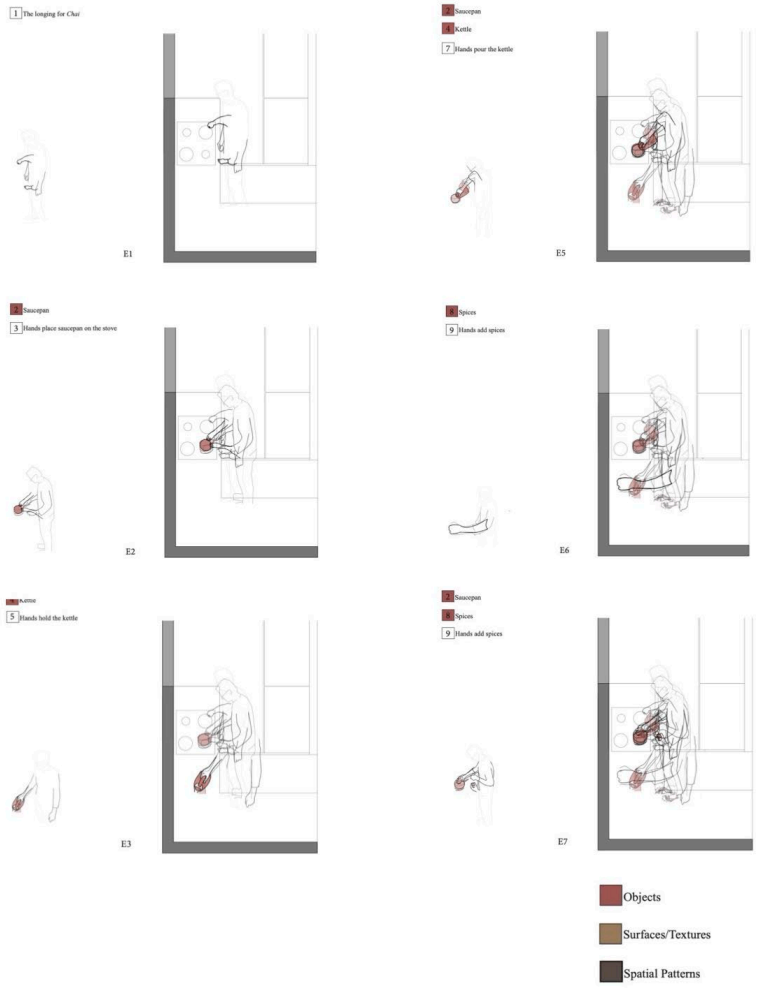

Figure 2. Diagramming 'Making chai' : E1-E7

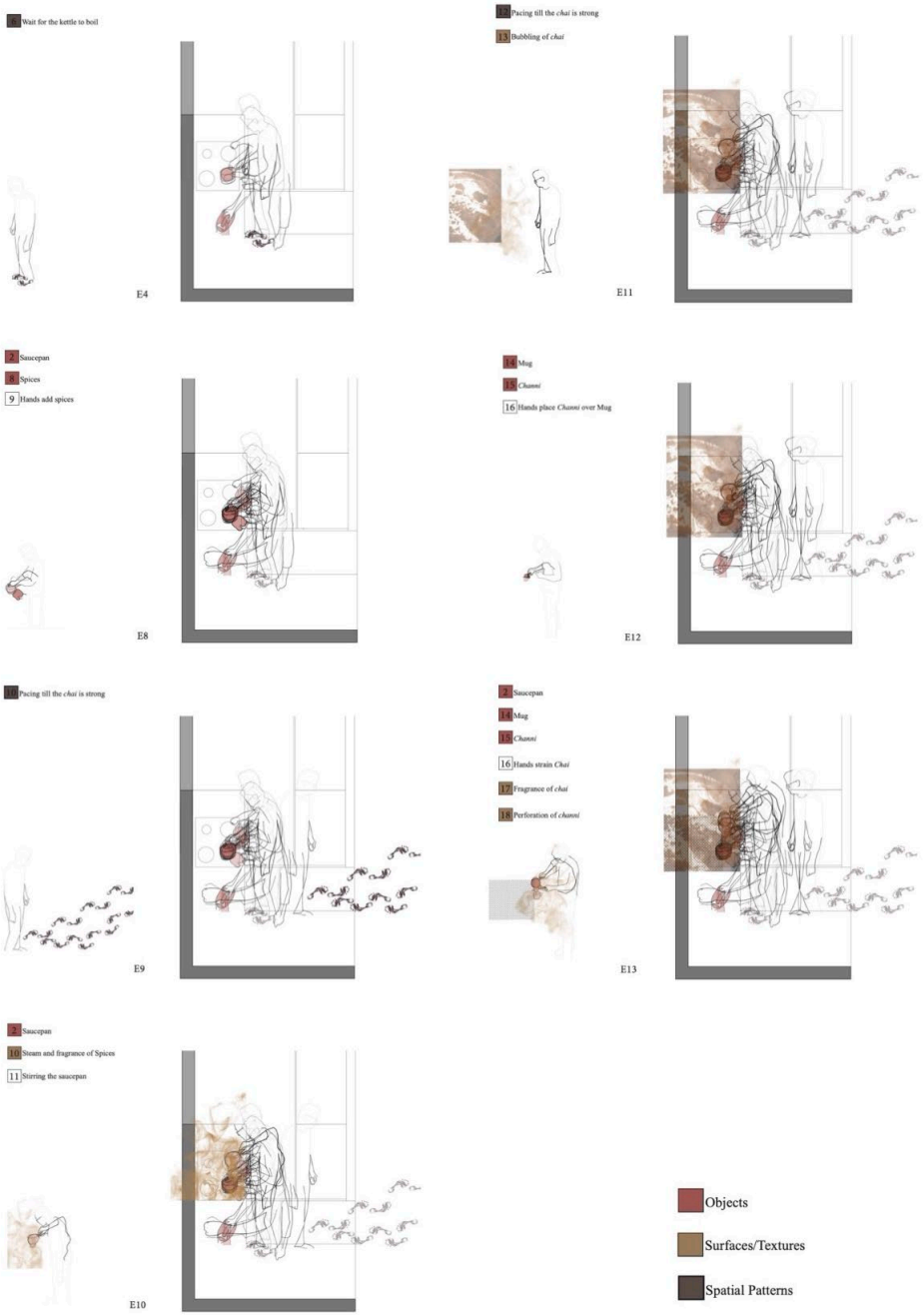

Figure 3. Diagramming 'Making chai' : E8-E13

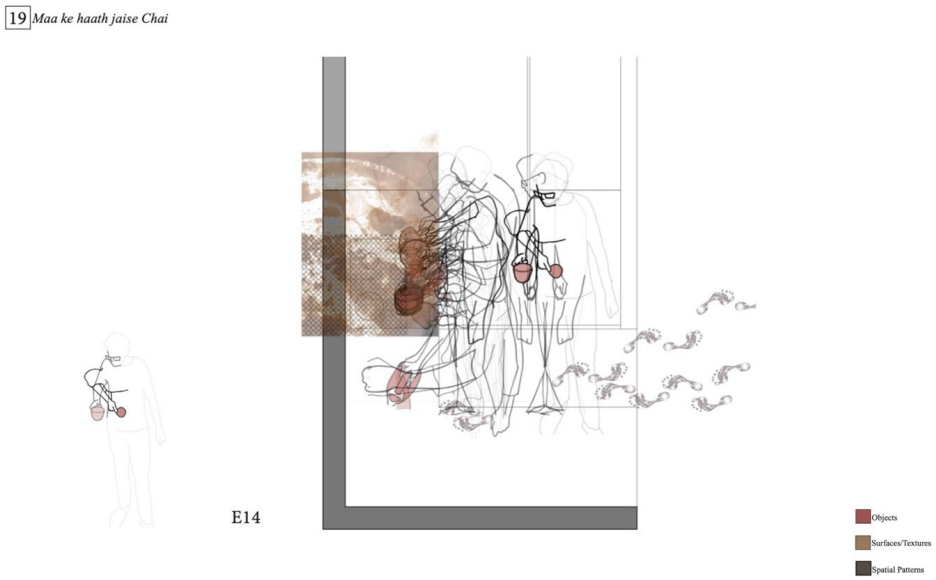

Figure 4. Diagramming 'Making chai' : E14

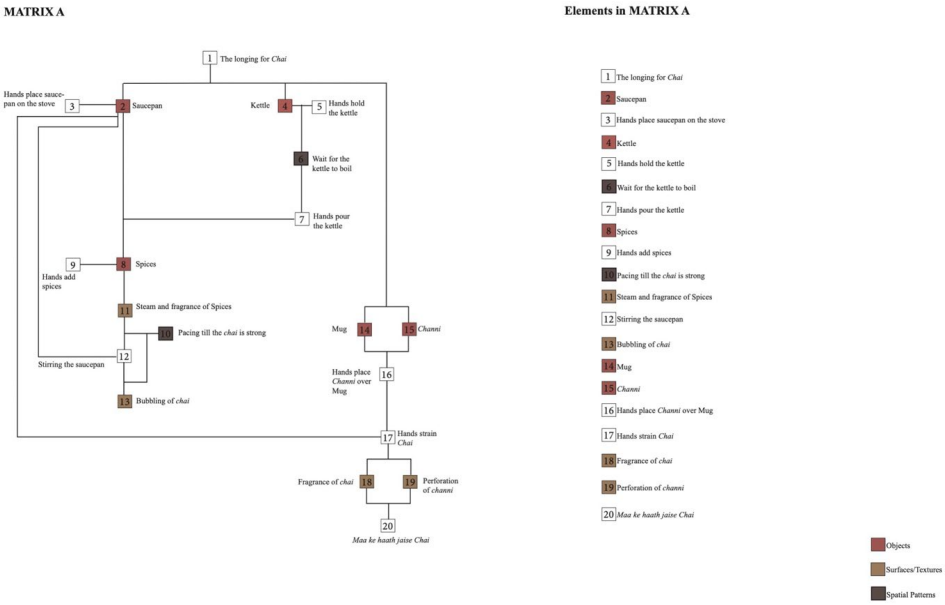

Figure 5. Matrix A 'Making chai'

Instance B (Figure 6-7) is Participant A's daily routine of performing variations of Surya Namaskar guided by an online video on his television. The layout of his apartment does not allow him to face East, which is a direction one ideally faces while performing a spiritual act like yoga. He improvises, and looks at the reflection of his television screen in the window while orienting himself toward the rising sun in the East. Here, the reflection of the TV screen on the glass is an intermediate space, and the associated extension is the East direction.

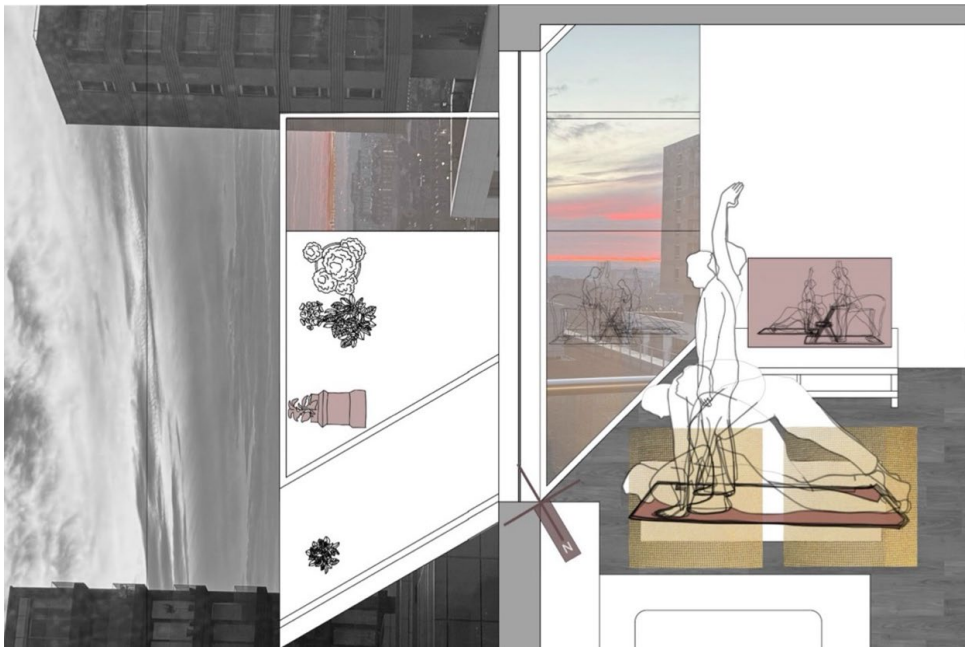

Figure 6. Diagramming 'Yoga''

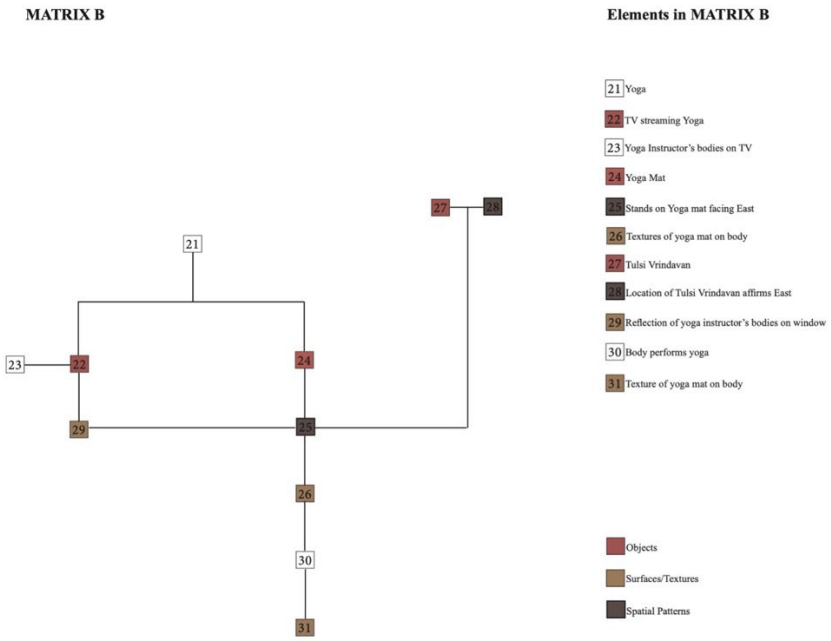

Figure 7. Matrix B 'Yoga''

Instance C (Figures 8-9) elaborates on Participant A's occasional office breaks, where he walks to an off-license store run by another Indian. He sometimes lingers to hear Bollywood songs playing in the background and notices a Hindu idol facing East. In this instance, the intermediate space is the ambiguous zone between the office and the off-license store, and the new extension is the walk from his office to the store with a lit cigarette. This latest extension aims to replace the old after-office ritual of interactions with friends over *chai* and *sutta.*

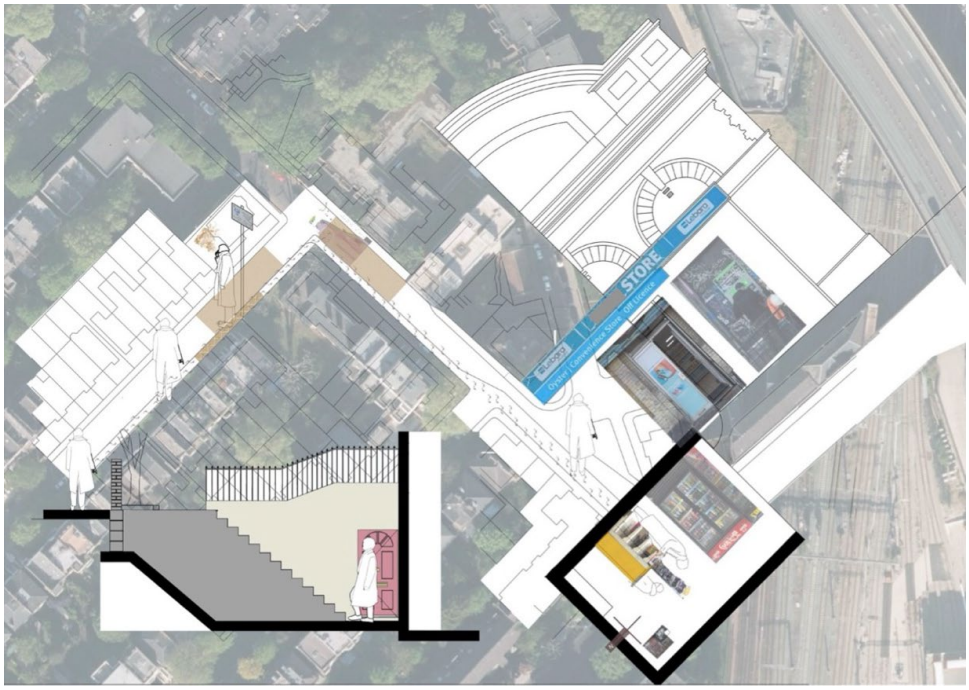

Figure 8. Diagramming 'Office Break'

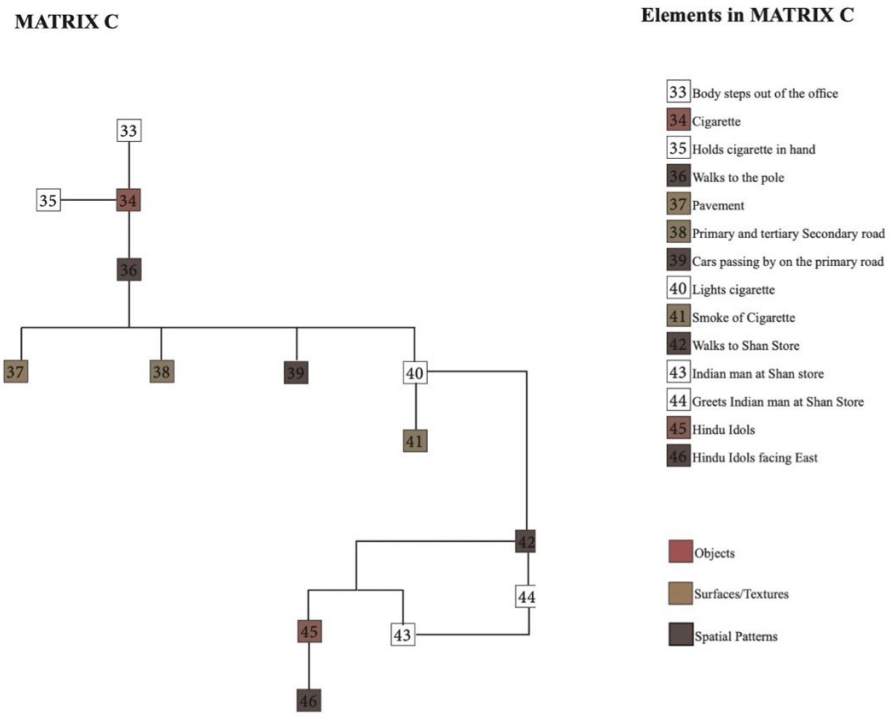

Figure 9. Matrix C 'Office Break'

Discussion

The intermediate spaces in all the instances of everyday acts allow the participant to find extensions that provide a sense of familiarity and create their own sense of belonging in their new habitat. However, when the short matrices are layered together to form a comprehensive matrix (Figure 10), it allows one to draw connections and unexpected links between what would otherwise seem as the

three separate instances. The participants' almost sacred process of making *chai* by emphasising the time and effort that he associates with it also highlights the lack of its social aspect, the fulfilment of which links it to the visit to the Indian store during his office break. The extension (East) in instance B appears as a passive element in the spatial setting of the office break (instance C). Over the course of the interviews with the participant, the comprehensive matrix has been rearranged several times. Returning to the definition of the rhizome, this diagram shows relations, associations that show no hierarchy. The comprehensive matrix can be viewed in any sequence, and yet all these associations highlight the extendedness of the body.

The rhizomic presentation allows one to view the Extended Body not as a set of stable extensions but instead as a shifting network in which old and new, personal and collective, material and remembered, continually intermingle. Furthermore, from the point of view of the drawing the body in the architectural space, the exercise of representing the body rhizomically allows us to imagine the body as located within a network of objects, spaces, rituals driven by memories and culture. It compels us to look at the body operating not as a fixed biological entity in the built environment but as a fluid, contingent, and ever-changing phenomenon moving through space at a variety of scales.

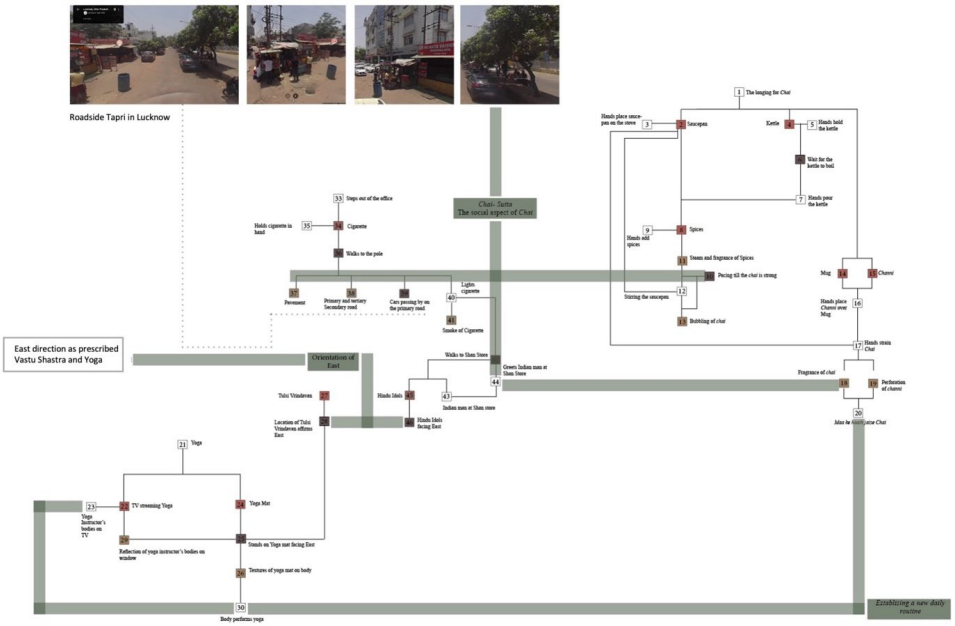

Figure 10. Comprehensive Matrix of Participant A

CONCLUSION

In this paper, I have attempted to introduce a broader concept of the 'body' in the built environment by recording the body as an extended phenomenon. I have argued that this Extended body should be viewed as a shifting network, the body attaching and discarding objects, textures, and spatial patterns as its extensions to help shape its identity and belonging. Through the case study of Participant A, I have showcased how quotidian acts like

making tea, practising yoga, and walking to a local shop can be seen as a complex scenario in which these extensions emerge.

By adapting the method of recording used in archaeology, I have demonstrated one way to represent these processes of the Extended Body without collapsing them into linear narratives. Just as the Harris matrix records stratigraphic layers in archaeology, the diagrams created in this paper allow for the

overlapping associations that make up the Extended Body. The contribution of the paper lies in creating a method of drawing that allows one to see how the body, its extension, spaces, and memories converge, diverge, and occasionally rupture, producing configurations of identity that are contingent, fluid, and multiple. Importantly, it also reveals the unexpected connections that appear when seemingly disconnected acts of inhabiting the built environment are layered together.

The representation technique also provides a critical lens through which the extended migrant body can both be observed and articulated to reveal how displaced individuals reassemble their identity through their bodies. By tracing how displaced individuals reconfigure their sense of self by selecting and using new extensions, the study aims to foreground the subtle, often overlooked strategies through which migrants cultivate belonging in unfamiliar environments. In doing so, it hopes to enrich ongoing conversations around what 'culture' means in multicultural societies such as the United Kingdom, particularly in how it is sensed, embodied, and redefined through everyday inhabitation.

NOTES

[1] Beatriz Colomina and Mark Wigley, *Are We Human, Notes on an Archaeology of Design.* (Zürich: Lars Müller, 2016.)
[2] Rosi Braidotti, *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory* (Columbia University Press, 1994).
[3]Karma R. Chávez, "Embodied Translation: Dominant Discourse and Communication with Migrant Bodies-as-Text." Howard Journal of Communications 20, no. 1 (2009): 18–36. doi:10.1080/10646170802664912.
[4] Maurice Merleau-Ponty, Landes Donald, Carman Taylor, and Lefort Claude. *Phenomenology of Perception* (Routledge, 2013); Thomas J. Csordas, editor, *Embodiment and Experience: The Existential Ground of Culture and Self* (Cambridge: Cambridge University Press, 1994), 1-21
[5]Setha M. Low, "Embodied Space(s): Anthropological Theories of Body, Space, and Culture." Space and Culture 6, no. 1 (2003): 9, https://doi.org/10.1177/1206331202238959 (Original work published 2003)
[6] Karma R. Chávez, "Embodied Translation: Dominant Discourse and Communication with Migrant Bodies-as-Text." Howard Journal of Communications 20, no. 1 (2009): 18–36. doi:10.1080/10646170802664912.
[7] Donna Haraway. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective 1." *In Women, Science, and Technology*, (Routledge, 2013). 455–472
[8] Sara Ahmed,. "Home and Away: Narratives of Migration and Estrangement." International Journal of Cultural Studies 2, no. 3 (1999): 329–347. https://doi.org/10.1177/136787799900200303
[9] Gilles Deleuze and Félix Guattari. *A Thousand Plateaus: Capitalism and Schizophrenia* (Bloomsbury publishing, 1988), 5.
[10]Gilles Deleuze and Félix Guattari. *A Thousand Plateaus: Capitalism and Schizophrenia* (Bloomsbury publishing, 1988); Brent Adkins. *Deleuze and Guattari's A Thousand Plateaus a Critical Introduction and Guide*. (Edinburgh: Edinburgh University Press, 2015)
[11] Rosi Braidotti, *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory* (Columbia University Press, 1994).
[12]Elizabeth B. Hatz,. " Building, Seeing, Delaying'' In *Drawing in Architecture Education and Research : Lucerne Talks*, ed by Heike Biechteler et al. (Zurich: Park Books, 2023), 52.
[13] Dr Helen Wickstead. "Drawing Archaelogy" in *Drawing: The Purpose*, ed by Leo Duff et al (Bristol, U.K: Intellect.Play Text, 2008).
[14] Dr Helen Wickstead. "Drawing Archaelogy" in *Drawing: The Purpose*, ed by Leo Duff et al (Bristol, U.K: Intellect.Play Text, 2008).13
[15] 'Drawings are made on semi-transparent drawing film (perma-trace) that allows drawings to be layered one on top of the next. Layering drawings allows us to see how what we dig right now relates to what we dug away a few days ago. Looking back through drawings and layering them in different ways can produce startling new discoveries' Wickstead. "Drawing Archaelogy".19.
[16] Wickstead. "Drawing Archaelogy", 19
[17] Keith May. "The Matrix: Connecting Time and Space in Archaeological Stratigraphic Records and Archives." Internet Archaeology no. 55 (2020): 3, doi:10.11141/ia.55.8
[18] May. The Matrix, 2
[19] May. The Matrix, 9
[20] It numerically labels each element discussed during the documentation and then divides them into four categories, namely: body (or body part), objects, surfaces and spatial arrangements. While some of the elements may not be strictly relevant to these categories, this serves as a starting point to analyse the data collected. The numerically labelled elements that are part of a similar context are clubbed together in short matrices. In this study, this context can be a personal memory, a cultural ritual, etc.

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Merleau-Ponty, Maurice, Donald Landes, Taylor Carman, and Claude Lefort. *Phenomenology of Perception* Routledge, 2013;

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REVIEWING POLICY DIMENSIONS OF SOCIO-ECONOMIC POLARISATION IN REFUGEE-HOSTING AMMAN

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INTRODUCTION

Amman's population has grown rapidly since the first refugee wave in 1948 and has more than doubled in the last 15 years.[1] The city has undergone rapid demographic and spatial transformation in response to successive refugee influxes, reshaping its urban fabric and amplifying existing socio-economic divides.[2] Socio-economic polarisation refers to the widening gap between social and economic groups within a city, whereby some areas receive concentrated investment and development while others face limited access to formal employment, social services, and cultural and recreational amenities. This is often described as access to 'soft infrastructure'.[3] Informally, residents refer to this divide as 'West' and 'East' Amman. 'West' denoting more affluent districts and 'East' denoting older areas with higher levels of informality. Some academic work has adopted this shorthand.[4] Against this backdrop, we ask how successive planning policies and institutions have shaped these uneven geographies of access.

This paper addresses under-examined policy gaps in accounts of socio-economic polarisation in refugee-hosting Amman. Existing studies tend to analyse plans and regulations within narrow time frames, offering limited synthesis of how successive frameworks collectively shape distributional priorities across the city's districts.[5] The study reviews literature and policy/planning records from 1907 to 2025, tracing their underlying assumptions and instruments and clarifying how these translate into priorities for service provision and urban investment. While other planning initiatives exist, they are not discussed here due to their limited citywide impact; the focus is on the policies and statutory plans most likely to have shaped urban typologies, the character of Amman's different expansion zones, and the concentration of services. In doing so, the study provides a theoretical framework to guide subsequent empirical assessment in forthcoming work.

THE FIRST MUNICIPAL COUNCIL IN AMMAN 1907 AND LAND PRIVATISATION

Kostof highlights in *The City Shaped* the significant role that pre-urban landownership patterns play in the development of cities.[6] Therefor to understand the relationship with current landownership pattern in Amman, there is a need to highlight the Circassian refugees arrival to Amman in the late 19th and early 20th C, as a result of the Russo-Ottoman war. As peripheral to the empire and largely administered from Damascus. Limited Ottoman control allowed southern Arabian tribes to migrate into the area, leading to raids on villages and the displacement of local populations to the West Bank,

leaving Amman and surrounding agricultural settlements largely abandoned until the late 19th century. Reallocating the Circassian refugees to Amman was means to convert the land into taxed land.[7]

The first municipal council in Amman 1907 was established during the Ottoman rule[8] (1909 in another reference [9]). The policy aimed to generate revenue from natural areas and lands claimed by the Bedouin communities that were not being taxed. While these lands had largely remained uncultivated, they were still considered part of the local community's traditional territory. By attempting to monetise these areas, the council sought to formalise land use and create new economic opportunities in the city. However, this approach led to significant conflicts. Tensions arose between the local community and Circassian refugees, both of whom laid claims to the same plots of land. Competition over ownership and use of these spaces created disputes that undermined social cohesion and complicated the implementation of the policy.[10]

Prince Abdullah I, appointed as the ruler of Trans-Jordan under the British mandate in 1921, needed to secure the backing of both local tribes and the Circassian community to consolidate the legitimacy of the crown. That meant that landownership was continued to be recognised as it was during the Ottoman rule. As a result of the first municipal council legislations, some researchers estimate that, in the 1920s, 95% of the current Amman downtown area was privately owned.[11]

This is significant because it created a property system in which almost all central land was held privately, sharply limiting municipal capacity to assemble land for public purposes-social housing, streets, and open space-without costly expropriation. It pushed planning toward negotiated outcomes with landowners, encouraged speculative subdivision, and channelled value uplift from public investment to private hands. This have largely constrained equitable redevelopment of the historic centre of Amman.

GENERAL PLANNING FRAMEWORKS (1918-1953)

Between 1918 and 1953, Amman experienced its first attempts at structured urban planning through the establishment of general planning frameworks. These frameworks were primarily designed to stimulate economic growth, targeting commerce, industrial development, and the expansion of agricultural activities.[12] Despite these ambitions, the approach remained largely economic in focus, with minimal attention to the social or environmental implications of rapid urbanisation. Moreover, there were virtually no formal regulations to manage urban growth, largely due to a lack of financial and institutional capacity.[13]

This regulatory and financial limitations had significant consequences for the city's spatial development. The post 1948 Palestinian refugees, were often left without formal housing, resulting in widespread informal settlement formation. This resulted in the urbanisation of agricultural land near the water resources of the town centre,[14] where the town started to transform from agricultural to commercial activity. Furthermore, the predominance of private land ownership compounded these challenges, as public authorities had limited ability to implement large-scale urban interventions or provide adequate public services.[15] The city's growth thus reflected a tension between economic imperatives, social needs, and environmental constraints, setting the stage for subsequent planning efforts that sought to balance these competing demands.

THE LAW OF MUNICIPALITIES

The 1925 Municipal Law replaced Ottoman rules with a national framework, giving municipalities control over core services (roads, water, taxation) and linking governance to basic infrastructure, which are foundations for uneven urban development within Amman, as well as between Amman surrounding municipalities.[16] Mid-century reforms expanded municipal powers into planning and land

use: by the 1950s, councils regulated buildings, land taxes, and urban services. These shifts strengthened local control over land and resources but also introduced distributional tensions, as land registration and taxation regimes affected social groups unevenly.[17] The over-concentration of investment in Amman town over the other major towns/cities in Jordan have started to attract internal migration to Amman, adding to the rapid population growth of the city.[18]

A significant turning point came with the designation of Greater Amman Municipality in 1963, which reflected the capital's rapid growth and gave it exceptional planning powers compared to other municipalities. Later restructurings in 1987 and 2011 further centralised control, with the cabinet maintaining authority over the appointment of Amman's mayor.[19] These shifts concentrated planning power in the capital, reinforcing disparities between Amman and smaller municipalities. Another critical reform came in 2001, when large-scale municipal mergers reduced the number of municipalities from 328 to 99.[20] This redrawing of boundaries not only reshaped local governance in Amman but also altered patterns of service provision, often leaving peripheral communities within the city with weaker representation and access to resources.

The trajectory of municipal law in Jordan illustrates a gradual reduction in the autonomy of local councils in favour of greater dependence on central government, reflecting a persistent top-down approach to urban governance. This centralisation has limited the ability of individual municipalities to address local needs effectively, particularly as financial constraints have restricted their capacity to implement regulated planning or provide adequate housing for refugees. In turn, the absence of responsive local governance and sufficient resources has contributed to the growth of informal settlements, which continue to expand under the pressures of successive refugee migrations.

1955 DEVELOPMENT PLAN

The 1955 Development Plan for Amman was prepared under the supervision of the United Nations Field Town Planner and later edited and approved by Max Lock, the UN's Town Planning Consultant. It was the first modern planning effort for Amman. The plan proposed a polycentric urban structure with neighbourhood units, formal zoning, a hierarchy of road networks, and protection of green spaces and public land. Institutionally, it created the first urban planning department within Amman Municipality and introduced building codes and planning controls.[21]

Its limits were evident. Rapid population growth, especially the influx of Palestinian refugees, quickly outpaced the plan's projections. Implementation was constrained by limited institutional and financial capacity and a weak regulatory framework for enforcement. The plan overlooked informal housing and refugee settlements, lacked a regional planning perspective, and remained largely top-down with limited community engagement.[22] It is included in this review as a representative example of several foreign-led or international proposals that sought to address Amman's challenges yet often did so with insufficient grounding in local context and bottom-up approaches.

TOWN AND COUNTRY PLANNING ACT 1966, AND 1968 MASTER PLAN

The Town and Country Planning Law No. 79 (1966) created a legal framework for growth management through zoning, land-use regulation, and development control. It also entrenched a highly centralised system. Planning committees were dominated by state representatives, with little local or regional participation. In practice, the regional level did not exist. No strategic plans went beyond the municipal scale. This lack of a regional vision concentrated investment in Amman further and accelerated internal migration from rural areas and secondary cities.[23]

The 1968 Master Plan by Doxiadis Associates proposed the "Dynapolis" model, which is a linear expansion along transport corridors, to manage rapid growth. It showed limited understanding of Amman's political, social, and spatial realities. It proposed unfeasible traffic solutions (e.g., bridge

highways) and drastic interventions in the historic centre, including demolitions, which met strong resistance. Implementation was minimal. A few cultural institutions were created, but most proposals were abandoned due to the plan's technocratic, impractical vision and the diversion of resources after the 1967 Arab–Israeli war.[24] Together, the law and plan reflected a top-down, externally driven model. They failed to address informal housing, refugee integration, and spatial equity, thereby reinforcing long-term socio-spatial polarisation.

DOWN-ZONING AND BUILDING REGULATION ORDINANCE (1970-1979)

In the early 1970s, Jordan adopted down-zoning to protect rural and agricultural land by requiring large minimum lot sizes, which was inspired by US planning practices. The intent was to make rural development less viable and limit sprawl on agricultural land. Outcomes were mixed. Urban land prices rose, but no small, serviced plots were provided for low-income and refugee households. Therefore, informal expansion persisted, and spatial inequalities widened.[25]

The Building Regulations Ordinance in 1979 introduced controls on occupancy ratios, plot coverage, heights, and ventilation to manage land use and improve building quality. While it helped regulate aspects of urbanisation, the ordinance lacked detailed guidance on urban design and construction materials. Tehrefore, buildings continued to be constructed without considerations for thermal performance or material efficiency, driving higher energy consumption.[26]

THE ESTABLISHMENT OF UDD AND HUDC 1980S- EARLY 2000S

The Urban Development Department (UDD) was created in the 1980s within GAM, with World Bank support, and pioneered upgrading of informal settlements in Amman. Drawing on incrementalist theory (notably Turner), it prioritised in-situ improvement, tenure security, and community participation over clearance and redevelopment. Through the Urban Development Project (UDP), the UDD targeted East Amman neighbourhoods (Wahdat, Nazzal, Jofeh, Hai al-Ameer Hassan). The East Wahdat Upgrading Programme—combining long-term lease-to-own arrangements with investments in roads, water, sanitation, and public facilities—won the Aga Khan Award in 1992. Institutionally, the UDD created Zone E, formally recognising low-income areas within the planning system.From the mid-1990s, UDD influence waned as policy moved back to top-down approaches. After the Oslo Accords (1993) and Wadi Araba Treaty (1994), donor programmes such as the Community Infrastructure Programme shifted from tenure and participation to service delivery, marking a retreat from the UDD's participatory ethos.[27]

In 1992, the Jordanian government established the Housing and Urban Development Corporation (HUDC) as a response to the continued expansion of informal settlements by low-income groups. It delivered over 42,000 units in 170 projects, benefiting nearly 400,000 people,[28] but did so mainly on peripheral sites. These locations were disconnected from employment hubs and public services, raising transport costs and lowering effective access for low-income and refugee households-especially since most low-income groups relied on informal employment, which is largely dependent on the urban densities provided in the city centre. Housing was treated as a technical delivery task rather than a socio-spatial challenge. Little attention was paid to tenure security or proximity to opportunity. The result was a landscape of isolated, under-served enclaves. This resulted in many low-income groups to return to informal settlements to be near their economic activities.[29]

This marks a clear break from the UDD's earlier in-situ upgrading model, which combined community engagement, tenure regularisation, and integration into the existing urban fabric. Where the UDD sought inclusion, HUDC prioritised output.

AMMAN 2025

Amman 2025 master plan was published in 2007. It was a set of plans to guide fast growth of Amman, especially after more than two million Iraqi refugees moving to the city.[30] Amman started to attract further globalisation efforts and gulf investments.[31] The new Amman 2025 constituted from five main strategies. *The Interim Growth Strategy* set clear rules for big projects, covering site size, spacing, building height and shape, street alignment, construction, and design quality after foreign investment surged from 2003. The *Corridor Intensification Strategy* tried to limit sprawl by building more inside the existing city (aiming to infill about 40% of Amman), with mixed densities, walkable streets, inclusive housing, and protection of rain-fed land to the north and west, as well as areas to the south. The Industrial Land Policy planned for the expansion of current industries and for matching industrial land supply with demand. The Outlying Settlements Policy and the Airport Corridor Plan aimed to steer new rural housing to planned sites, focusing mixed-use growth along the route between Queen Alia Airport and the city. The Metropolitan Growth Strategy said the public should have a bigger role in decisions.[32]

Now, as we approach the end of 2025, it is timely to reflect on the implications of the Amman 2025 plan. A review of the plan's recommendations indicates that Amman 2025 prioritised commercial corridors and new development areas, giving limited attention to existing neighbourhoods. Regulation was concentrated along the north-west corridors and the new industrial expansion in the south. Low-income districts, including many refugee-hosting areas, received little structured intervention. The period 2007–2025 has also witnessed the dominance of Gulf-financed mega-projects, raising questions about the extent of local participation.

CONCLUSIONS

Drawing on a critical review of policy documents and relevant literature, this paper has shown that institutional responses have reinforced Amman's socio-economic polarisation. We have argued that these divides in Amman are not solely the product of demographic change but are deeply entangled with the capacity, orientation, and limitations of policy frameworks. This supports a framework for understanding urban polarisation in refugee-hosting cities and sets up the next phase of empirical work using spatial analysis and GIS within our larger research project.

At the same time, it is important to recognise that planning efforts before and within the Amman 2025 horizon did achieve notable gains. Early strategies sought to manage rapid growth, clarify development controls, and channel investment, while initiatives by the Urban Development Department (UDD) piloted more integrated, neighbourhood-scale approaches. These steps improved regulatory coherence and helped structure expansion, even if outcomes were uneven across the city and particularly in districts hosting low-income and refugee communities.

However, there remains limited quantifiable analysis of the social and spatial implications of investment-driven planning -both under Amman 2025 and preceding frameworks. Most assessments to date are descriptive. Our upcoming study attempts to address this gap by conducting GIS analysis that examines the distribution of soft infrastructure (cultural, commercial, touristic activities, and business/administrative centres) across the city's different expansion zones. This will provide an evidence base to guide targeted, area-specific interventions.

Taken together, the policy review and the planned spatial analysis point to a constructive path forward: refine corridor and zoning tools with explicit distributional criteria; leverage value generated in growth areas to fund upgrades in underserved neighbourhoods; and build on UDD-style, neighbourhood-focused practices through more consistent, cross-departmental coordination. Framing future decisions around demonstrable accessibility and service-equity outcomes can align investment

with social cohesion. This would hopefully help Amman move from managing growth to advancing equitable urban governance in a refugee-hosting context.

NOTES

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THE HOME-SICKNESS OF THE DIGITAL ERA

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RESIDENTIAL GROUNDS: INTRODUCTION

In recent times we have experienced many changes regarding the concept of home, which gradually stopped representing a solid foundation and a stable point of reference, a stance from where to find one's place in the world. On one hand, ownership of a house has become less frequent in young generations in societies that are not specifically supporting young people to that end, and on the other hand, the contemporary way of life insists less on permanence and belonging and often opts for dispersed rather than deep-rooted existences.

Our world has become a liquid one, where impermanence prevails. Understanding the reasons for this change is important because it is partly imposed and therefore problematic, but also partly desired and therefore well received. The problem of housing shortage is generally understood as a problem of affordability and lack of building stock for the population explosion. Underlying are, of course, the policies, or better yet, the lack of policies in order to regulate a loose and debauched market, making it extremely difficult to acquire a house for middle- and low-class incomes. Still, contemporary life appears to be less revolved around the idea of home than it was in the past.

The paper is going to discuss why this is happening and how life without a home can come to be the new reality. It will focus on the reasons that appear to be a symptom of the choices and preferences of our contemporary life, which are all somehow associated with the liquidity of our current times, but this is a final argument to follow. Mainly, it will analyse the alteration of the idea of the home caused as a result of: the changes that occur regarding its inhabitants, the composition of the group; the activities that are hosted in the home and their expression in both space and time; and the decadence of its narrative and symbolic value from a point of reference and a stance for the subject to be in the world to a simple commodity. Expressions and symptoms of this condition will be presented in order to comprehend the ongoing transformations that affect everyday living, burden social cohesion, and also question the role of architecture and its ability to address the changing needs and adapt to this liquid world.

LIVING SPACE: THE RESIDENT, THE USER, THE CONSUMER

According to Bauman,[1] humanity's attitude toward the world evolves through three distinct roles: ranger, gardener and hunter. In the premodern era, humans are likened to forest rangers, tasked with maintaining divine order and the balance of nature by avoiding intervention. In modernity, this perspective shifts: humans become 'gardeners', imposing order through their own means. Balance is no longer considered divine but rather a human construct, necessary for ensuring security and societal

organization. Postmodernity introduces a new approach, with humans functioning as 'hunters'. In this phase, the focus shifts from maintaining order to exploration, exploitation, and experience. Space is no longer inhabited or cultivated but consumed. The home, once a symbol of stability and personal creation, becomes a commodity, as exemplified by practices such as those of digital nomads and platforms like Airbnb.

During premodernity, humans are 'inhabitants' who themselves construct and shape their environment within the natural limits set by the divine. In modernity, they become 'users', settled in ready-made structures built by others. In postmodernity, the concept of the home loses its exclusive significance, transforming into a consumable good, tailored to the needs and desires of its temporary users.

A corresponding distinction is made by McLuhan[2], who claims that the post-alphabetic and pre-alphabetic examples are more similar to each other than to the alphabetic one. He analyses the pre-alphabetic – alphabetic - post-alphabetic triptych, noting that many post-alphabetic electronic practices resemble pre-alphabetic handmade ones and both are in contrast to their alphabetic mechanical intermediate. Still, the post-alphabetic model is a hybrid, because it bears within it both the pre-alphabetic and the alphabetic one.

The pre-alphabetic dwelling is a complex and rather autonomous unit, where three or more different generations coexist, but even different classes can share a common space, as servants are part of the household and where functions are not separated in time or space, as people can sleep, eat, work in the same space. The pre-alphabetic era is not based upon control or rationalization; the world is not analysed and categorized and consequently neither the form of dwelling attempts such an approximation.

The alphabetic perception of the world, based upon vision and theoretical understandings, is particularly interested in organizing, categorizing everything in order to achieve a certain grade of control. Institutions are an alphabetic conception even if in certain cases they pre-exist. Institutions are the expression of the desire to separate and classify everything. In the alphabetic era people are not educated, nursed, entertained, punished or hosted at homes; and the tribe, clan or village cannot inflict its own rules upon individuals. Typologies and rules organize the urban life but at the same time they create a new setting at homes. The notion of the architectural program first appeared during the industrial revolution, and its main purpose was one: standardization.[3] Different spaces for different functions is a way of transferring the concept of the institution inside the home, segregating life in time zones and associating them to the private or intimate character of each function that they host.

In the post-alphabetic era, both pre- and alphabetic ways of dwelling are fused in a complex combination. Typologies become irrelevant and institutions struggle to reinvent themselves as education, work, caring, punishment and hosting can be integrated in the augmented, hybrid, post-alphabetic home. At the same time, detailed, specific services emerge, which are intended to liberate time previously devoted to taking care of the household. In the modern era, this was achieved by the inclusion of mechanical devices in the household, but nowadays several new services offer the possibility to exclude residents of a series of time consuming obligations, rendering impossible the autonomy of the dwelling unit. These services, which can include food, cleaning, storing, or maintenance, are often offered from outside the residence, which becomes penetrable to strangers. And furthermore, the proper residence as a service can be offered to strangers during the absence of its inhabitants or even while they are there.

Nowadays, once more, as in the distant past, we seem unable to stand at a distance as we did in the alphabetic modern era and organize our world in definitive concepts. Old categories and dichotomies are no more operational.

DOMESTIC ORIGIN: THE EXTENDED FAMILY, THE NUCLEAR FAMILY, THE LIQUID FAMILY

The notion of the family has undergone numerous transformations and transitions. According to the suggestion of sociologist E. W. Burgess,[4] the structure of the family changed after the industrial revolution. It evolved from the extended family, a type of family that involves three generations of relatives all living in the same household, to the nuclear family, a family model consisting of two parents and their children.

Pre-modern households were complicated and crowded units, where privacy as well as separation of functions were impossible to achieve but also irrelevant to the inhabitants. The concept of privacy as well as the concept of intimacy was greatly appreciated in the modern world; where not only the house is a private unit, but also in this private unit there are more private zones where intimate moments take place. Nowadays, physical, material borders are abolished and annulled by digital pervasive and ubiquitous media; privacy is abandoned and even the most intimate spaces and the most personal moments are colonised by the intrusion of distant audiovisual witnesses, who are not forcefully imposing but to whom participation is willingly offered. Different members of a family offer closeness to different distant witnesses and thus cohesion in the family residence regarding privacy and intimacy is questioned.

If we consider the family a principal social unit that inevitably shapes society, regardless of its type and structure, these radical shifts from one family model to another suggest radical changes in societal structure as well. The modern era signified a significant transformation that terminated the extended family's communal type of living and cohabitation. Nuclear, modern families are typical, canonical and predictable.

Stacey noted that the nuclear family type, namely the one that consists of a mother, a father and their children will disappear together with the modernist society: the family structure of the 21st century will be fluid and its values, desires and practices will be diverse.[5] Genres become irrelevant for creating families; family generations are atypical and difficult to define as ages vary a lot; owning a home often inflicts an unfeasible permanence in choices and finally communal structures of living reappear and offer a less strict way of organizing life.

Perhaps a person only has two permanent residences:[6] their childhood home and their grave. However, it seems that starting with Generation Z, the only true permanent residence may be our grave. Those born in the 21st century often spend their childhoods in multiple homes, as families increasingly relocate due to lack of ownership or due to choice, across the home town, the country or the globe, with similar ease.

We do not fully belong to a specific and singular group of people and consequently we are not deeply rooted to any of the places we inhabit, which no longer transcend our existence connecting us with those who came before and those who will come after; we are, in a sense, perpetually dispersed everywhere and nowhere adhered.

HOME-WORK

The way we live and work is strongly affected by technological advancements. Technology has revealed itself to be not just a tool for enhancing value or ability, but a catalyst for change – even if we do not often recognize it as such.

Thomas Edison's invention of the electric light has been considered a game-changer when it comes to designing, building and even perceiving workspaces.[7] The rapid shift in technology that electricity brought had created an entirely new world, in which working schedules and working spaces were

subject to irrevocable change and most importantly a new level of control was achieved in relation to physical conditions.

Nowadays, as digital technologies transform the way people receive information, rapid technological growth is expected, once again, to change the organization of labour, habitation and human activity. In the premodern world the home was not clearly separated from work and the same room could be used during the day in many different ways. The modern society organized and differentiated spaces according to each human activity – as Louis Sullivan[8] famously argued, 'form ever follows function [...] this is the law'. Spaces have clear distinctions and boundaries: there is a space for work, a space for sleep, a space for leisure. Furthermore, the 8 hour working day and the consequent three eights, separate time as well, time for work, time for sleep and time for leisure. In the digital era, due to the ever-increasing development of ICT technologies, all these clear taxonomies and unambiguous categories are gradually becoming obsolete as location becomes irrelevant and functions are redistributed and merged.

As technologies radically transform the world, we are shifting from the transparency of the window to the transparency of the screen.[9] The architectural element that used to be the primary mediator between the inside and the outside now gives way to its digital descendant. Screens are now among our most important mediators to the outside world - and that completely changes the way we perceive the notion of the habitat.[10]

All these transformations, transitions and revisions alter the way we perceive the organization of labour, habitation and human activity – and, at the same time, they bring revolutionary changes to architecture. The clear and distinct functions of space that modernists praised are now inevitably merged to the point of being inseparable and indistinguishable. The organization of homes reflect this change as they no longer respond to the modernist model of a private place for the nuclear family to rest and socially interact. Labour and free time become indistinguishable and their entanglement is reflected in space organizations as well.

The intrusion of many aspects of public life into the domestic space during the pandemic brought about a profound shift in how people perceive and experience their homes. The pandemic escalated the changes, which were previously occurring slowly and unacknowledged due to the proliferation of the digital media, converting the home into a multidimensional, multipurpose, hybrid space capable of meeting practically every demand of daily life.

Post-pandemic, the relationship between people and their homes has undergone significant changes. The home now simultaneously functions as a workplace, a space for rest, and a venue for entertainment, commerce, etc, undermining the clear distinction between these activities.

HOMEWARD: FROM THE SYMBOLIC VALUE TO THE COMMODIFICATION OF THE HOME

The unprecedented technological shift that digital technologies instigate, will inevitably redefine many aspects of the sedentary society. As the home can be the basis and the center of any aspect of everyday life, the world is at the same time converted into a diffused home, which generates homely experiences. The tourism sector undergoes significant transformations. Online services and web applications such as Airbnb and Couchsurfing already play a big role in this changing process, as they remove tourists from formal accommodation services and bring them back into the locals' own homes.

This novel version of tourism is much more than a current trend. The oikos, or household, has played an integral role in xenia (hospitality) since the Homeric times.[11] The Odyssey sets the example for honorable hospitality through the wandering hero's seemingly endless quest for xenia.[12] In addition, ancient Greek scholars such as Plato[13] and the lawgiver Solon[14] have praised the importance of

hospitality to the civilized society; hospitality that always takes place in the oikos: the home, the household. Likewise, Black[15] mentions that for 18th century travellers touring through Europe, "it was possible to lodge with private individuals".

On came modernity, and hospitality disassociated itself from the oikos. Once again, as Louis Sullivan[16] observed, the separation of functions was plain as day. Local residents had their own private space, their household, and tourists lodged in establishments such as hotels, inns and other types of resorts. In other words, xenia was no longer domestic; it was no longer considered a civil duty or a way to honour the gods and society. Hospitality became institutionalized and the boundaries between permanent residency and temporary accommodation were perfectly clear.

Nowadays, in the era of networked hospitality, xenia returns to the oikos. Whether we are talking about Airbnb's online peer-to-peer marketplace that turns the home into a commodity or about Couchsurfing's non-commercial hospitality network for the contemporary Odysseus, it is clear that the separation of functions is now vague and unclear. Through these widely accessible online communities, people can now feel "at home" anywhere in the world. Moreover, web applications such as Spotted by Locals further blur the boundaries between tourist and local resident.

These homely experiences not only affect the perception of the tourists but also of the locals, who are often rendered strangers in their own home. The home is increasingly transformed into a commodity, stripped of the symbolic and archetypal value it traditionally held. The housing paradigm, goes beyond its traditional role, by including the concept of hospitality and sociality, through collaborative use and the creation of a collective storytelling.[17]

HOMECOMING: THE ARCHETYPE OF ARCHITECTURE IS THE HOME

Discreetly but undoubtedly changes are occurring in the occidental way of dwelling. The mixed-uses of the past become even more mixed, even inside the home, as life is no longer organized in time zones; institutions destined to specific commissions succumb to digital fluidity and permanence.

Still, at the same time and because of the same reasons, the home as a universe becomes obsolete, as it is not cost or time worthy to maintain its fixedness, autonomy and independence. Allowing others not just to built it but also to clean, cook and take care of your home, or even to use it for a fee, is also about surrendering the intimacy of the close circle, the nucleus. And meanwhile, strangers, indistinctive from inhabitants, can enter this disintegrating universe and form part of it, creating history, relation and identity. Hospitality in the past was about receiving strangers but not about surrendering the intimate to them; Ulysses' thalamus is unreachable to the strangers that invade his house.

Populations such as digital nomads or seasonal workers exemplify a growing mobility that blurs the boundaries of traditional housing. Within this context, the home is evolving into a flexible and adaptive amalgamation of digital and physical elements, reflecting the volatile, 'liquid' nature of modern life.

Under these conditions, architecture is called upon to redefine its role and focus on more meaningful and experimental approaches. Architectural education, theory, and practice could be engaged in comprehending the contemporary condition of dwelling, embracing the different needs that include impermanence, variability, multifunctionality, in order to develop proposals with greater social depth and innovative character. These approaches should address the needs of contemporary lifestyles and explore how architecture can provide adaptive and flexible solutions for a new concept of home, which on one hand, responds to the shortage of housing and the elevated prices due to the unregulated market and on the other rethink domesticity in the liquid condition into which we are submerged.

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SPATIALIZING CARE: TOWARD DESIGNING INCLUSIVE PUBLIC SPACES FOR REFUGEES – A CASE FROM AMMAN - JORDAN

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INTRODUCTION

Host cities for refugees, such as Amman, Jordan, are often characterized by socio-cultural diversity and complex urban challenges.[1] Public outdoor spaces (POSs) within these cities can serve as vital resources for fostering integration, social cohesion, and well-being among refugees. However, the design and operation of these spaces frequently overlook the nuanced needs and experiences of refugee communities. By using the refugee's lenses, this research looks at the way they understand and experience caring landscapes, and the way they use and live the POSs, and by raising their voices, which in many cases is not counted, decision makers can integrate their voices and include them a co-produces of the spaces that they use.

The concept of "caring landscapes" in urban settings is explained in this paper, focusing on how POSs can be reimagined to address the relational and material dimensions of care. Jordan hosts one of the world's highest proportions of refugees—about 89 per 1,000 residents[2]—including Palestinians, Iraqis, Syrians, Yemenis, Sudanese, and Somalis. Each group has arrived in successive waves of conflict, subject to shifting legal categories, public narratives, and spatial arrangements.

Palestinians displaced in 1948 and 1967 were gradually incorporated into Jordanian society.[3] Iraqis arriving after 2003 were marked by class divisions and often treated as temporary guests.[4] Since 2011, the Syrian crisis has produced the largest influx, with Syrians now forming more than 15 percent of the population.[5] Yet, policies remain fragmented and inconsistent, reflecting geopolitical pressures, donor dependence, and domestic politics.[6] Refugee "deservingness" has thus been unevenly defined, shaping access to rights, services, and urban space. Today, most Syrians and Iraqis live outside camps, concentrated in Amman.[7]

Amman itself, often described as a city of immigrants,[8] conceals deep disparities in access to space. Public open spaces (POS) illustrate these inequalities: decades of neoliberal planning have produced privatized, under-maintained, and unevenly distributed amenities.[9] Access is restricted by regulatory control, safety concerns, and design priorities that ignore everyday use.[10] Following Tronto's (2019) critique, these "uncaring" spaces[11] marginalize refugees, women, the elderly, and people with disabilities. Understanding how care is claimed or withheld in such spaces highlights the contested politics of recognition and belonging in Amman's urban landscape.

The application of care in urban studies is conceptually and methodologically complex. While its relevance is increasingly acknowledged, theoretical and empirical explorations of care in cities are still limited.[12] Care is frequently framed as either an idealized moral imperative or a functional response,[13] often relegated to institutional, health-based, or domestic settings.[14] However, a growing body of scholarship on the materiality of care[15] and its specialization in urban life [16] insists on care as a relational, affective, and more-than-human practice embedded in everyday spatial experiences.

Nonetheless, spatializing care is not straightforward. Caring spaces are often mundane, informal, or difficult to name.[17] They may be implicit or silenced, and extend to non-human elements such as infrastructure or landscape.[18] a clear and universally accepted definition of care continues to be elusive.[19] Yet an emerging discourse, advanced by Davis,[20] Wiesel et al.,[21] and Orlek et al.,[22] interrogates the relational and spatial dimensions of care. Conradson[23] defines spaces of care as socio-spatial fields revealed through practice, while Milligan and Wiles[24] describe landscapes of care as spatial expressions of care across scales. Power and Williams[25] caution against reducing care to proximity or typology, instead calling for recognition of transient, contested, and affective public spaces as potential sites of care.

METHODOLOGY:

The research draws on feminist ethics of care and urban theory to conceptualize care as a relational and spatial phenomenon. It aligns with scholars who emphasize the role of urban landscapes in facilitating collective well-being and fostering connections among diverse populations. The methodological framework positions POSs as critical sites where care is enacted through material design, social practices, and operational strategies.

As emphasized in the preceding section, the meaning of care is deeply context-dependent, taking shape only when it responds to the lived realities and circumstances of those it seeks to serve.[26] Building on this understanding, the methodological framework was developed to engage with the concept of “caring landscapes” from the perspective of urban refugees in Amman. The focus was placed on how care emerges through adaptive strategies and purposeful spatial practices. This inquiry adopted a qualitative, socio-spatial approach, combining mobile ethnographic methods with participatory workshops in order to uncover nuanced insights into refugee experiences.

Fieldwork unfolded in two phases. First, ten “go-along” interviews were conducted in October 2022 with refugees of different genders, ages, nationalities, and abilities. Second, between October 2022 and May 2023, two participatory workshops[27] were organized to collectively expand the insights derived from these initial interviews. While the go-along interviews provided an intimate view of individual experiences, the workshops generated the most substantial and collaborative dataset, and thus became a cornerstone of the research design.

The go-along method, developed in ethnographic research,[28] was chosen because conventional interviews and observations often miss critical aspects of lived experience. By accompanying participants during their everyday outings in Amman’s Al Hashimi Al Shamali neighborhood, researchers could witness how individuals interacted with places while narrating their personal geographies. The approach blended interviewing with participant observation, allowing researchers to ask questions in situ, to listen attentively, and to notice the subtle ways in which meaning was attached to specific sites. The method also helped build rapport, easing participants into conversations that would later inform the design of workshops. Each go-along lasted between 45 and 120 minutes. These mobile encounters revealed how deeply personal histories intersect with urban landscapes, highlighting the affective and relational dimensions of place.

The second phase of fieldwork centered on two workshops facilitated through the networks of the Collateral Repair Project (CRP), a community-based NGO in Amman. Engagement with CRP began

through formal exchanges of research proposals and methodological outlines with officers, followed by in-person meetings to ensure clarity of purpose. CRP staff then acted as intermediaries, inviting potential participants who expressed interest in joining. While this gatekeeping process enabled access, it also reflected broader debates on power and representation in refugee research.
Both workshops were held at CRP's premises in Al Hashimi Al Shamali. Arabic was the primary language of communication, ensuring inclusivity for participants. Creative participatory tools were employed, including cognitive mapping, visual exercises, and brainstorming with sticky notes. These activities were designed not only to elicit knowledge but also to empower participants as co-producers of insights. Seating arrangements around round tables of four to six people promoted dialogue and collaborative reflection (Figure 1). Each workshop followed the same schedule: two sessions held on a single day, separated by a lunch break.

Figure 6. Workshop layout

The first session began with introductions to the research project and its aims. Participants were then invited to define the concept of "care" through a collective brainstorming exercise. Using colored sticky notes, they wrote down synonyms, related terms, or personal interpretations, which were later grouped on a wall (figure 2). This process made visible the multiplicity of meanings attached to care, while sparking conversations among participants and researchers. A second exercise asked them to reflect on "care places." Here again, sticky notes were used to capture and display their ideas, creating a visual collage of spaces where care was perceived, absent, or desired.

Figure 7. Sticky notes used in exercise one

The second session shifted towards spatializing these insights. Participants marked “care places” on large-scale maps with colored pins, while colored threads were used to connect these locations to different meanings of care generated in the first exercise. This participatory mapping revealed the layered geographies of care in Amman and the ways refugees collectively navigated and interpreted urban space (Figure 3).

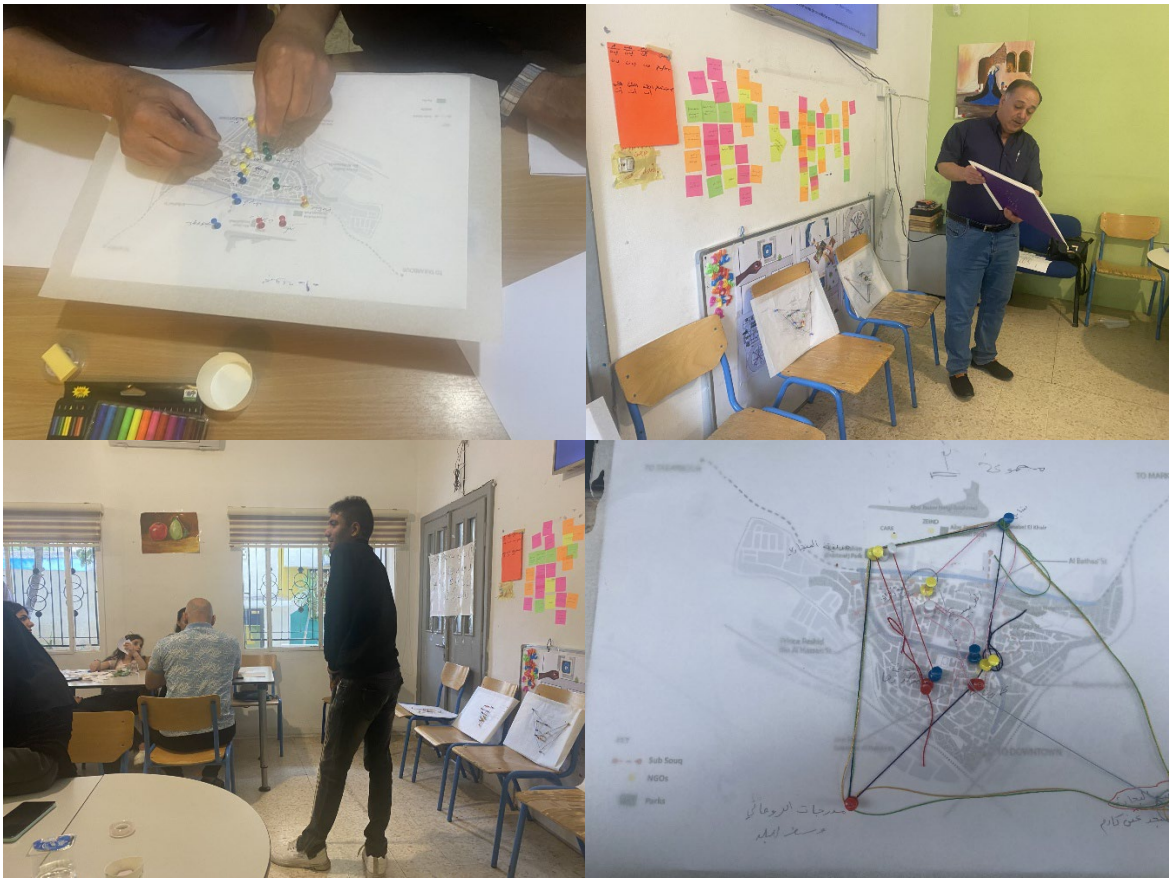

Figure 8. Workshop activity – Care Places

Ethical considerations were embedded at every stage. In line with Mackenzie, McDowell, and Pittaway,[29] consent was treated as a continuous and negotiated process. Recognizing participants' potential anxieties around formal bureaucratic procedures, the team adopted verbal consent protocols. To avoid alienation linked to literacy challenges, participants were given green and red cards to signal their willingness or refusal to participate. Consent regarding photography or the use of visual materials was reaffirmed throughout the workshops, especially when capturing images of participants' maps or other creative outputs.

Figure 9. Participants give consent to participate in the workshop

The workshops brought together groups of men and women from diverse backgrounds, including Syrians, Iraqis, and Jordanians, with each workshop featuring a different composition of participants. The structured yet flexible format created opportunities for participants not only to share their experiences but also to collectively reflect on care as both an idea and a spatial practice.

Finally, following both the go-along interviews and workshops, the research team held debriefing sessions to record observations, discuss emerging themes, and reflect on questions of power and positionality. These reflexive practices were integral to maintaining ethical integrity and acknowledging the asymmetries inherent in refugee research.

FINDINGS

Care in their eyes

When asked about the meaning of care, participants described it in profoundly personal terms. For Noor, a 19-year-old Syrian, care meant "peace of mind… knowing someone is looking out for you, that you belong." Hakeem, a 28-year-old Iraqi, emphasized resilience: "Even in difficult times, care is about staying hopeful, helping each other through." In line with Trogal's[30] observations, participants associated care with attentiveness, support, problem-solving, and sincerity—qualities resonating with Tronto and Fisher's[31] notion of caregiving as requiring competence.[32]

Yet, fewer spoke about receiving care. Some hesitated, as Azhar, a Syrian mother, admitted: "I don't think about it that way." Many felt overburdened as constant caregivers—towards family, community, and even host society—while rarely experiencing care themselves. This imbalance reflects the unequal dynamics of displacement, where refugees are positioned as recipients yet live primarily as providers.

Workshop discussions often revolved around familial responsibility, gradually extending to strangers and displaced communities abroad. "You care for the people around you first," explained Malek (Iraqi, 30). Rayan (Syrian, 40) highlighted transnational care chains:[33] "We help each other here, just like people in other countries helped us."

A central theme was shelter as care—not only physical protection but also dignity, belonging, and stability. For those uprooted, rebuilding a sense of home became central to imagining care within displacement.

Defining Caring POSs

To investigate how urban refugees, conceptualize caring public open spaces (POS), this research employed a participatory mapping exercise. The objective was not to establish a typology based on geographical categories but to interrogate how care becomes spatially articulated. While POS is defined here as free-to-access outdoor environments, participants identified an expansive spectrum of sites, including health and educational institutions, markets, streets, neighborhoods (al hara), and religious venues, alongside public green areas, heritage sites, and semi-private domestic extensions such as gardens, rooftops, and balconies. The heterogeneity of these places illustrates the multiscale and dispersed character of care in the urban fabric. Through color coded descriptors, participants elaborated on physical attributes, social relationships, affective experiences, and governance dynamics that collectively shaped the perceived "caring" qualities of these spaces.

Refugees described caring POSs as spaces that:

- Provide physical and emotional safety.
- Foster inclusivity by accommodating diverse demographics and abilities.
- Support social interactions and community building.
- Enhance accessibility through thoughtful design and management practices.

Participants consistently described caring places as responsive environments that addressed diverse needs while offering experiential and emotional benefits. Such places were seen as purposeful and future-oriented, supporting growth rather than mere survival. As Faris, an Iraqi teenager, explained: "A caring place should help you grow, not just survive." For younger participants, this often meant spaces fostering self-determination, such as parks with sports facilities or Wi-Fi zones enabling education and employment opportunities. Mohammad, a Syrian man with a disability, stressed: "Free internet in public spaces means I can apply for jobs. It's more than a luxury—it's a necessity."

Access emerged as a central theme, defined not only by entry but also affordability, comfort, and usability. Older participants emphasized familiarity and intuitive design: "If I don't know where it is or how to use it, then it's not for me," noted Abu Ahmad. Many valued cultural familiarity and continuity, such as Rayan's attachment to a small Amman park that reminded him of Al Fayhaa Park in Syria.

Preferences varied across groups: Syrians highlighted spaces for intra-community gatherings, while Iraqis, stressed the need for inclusive venues that reinforced cultural belonging. Christian participants pointed to church-adjacent spaces as central to communal care.

On a micro-scale, everyday practices such as water sabils, free bread shelves, and shared maintenance reflected reciprocal care. Yet participants also highlighted neglect and exclusion in existing POS.

While refugees rarely engaged in future-oriented environmental discourses, this silence reflected the urgency of daily survival.

Rethinking Care in Public Space

In exploring caring design practices for public outdoor spaces (POS), we sought imaginative perspectives from refugees, framed through utopian ideals for just cities.[34] Participants first described caring POS in material terms. Some – mostly mothers- envisioned open landscapes free of barriers, with water, flowers, light, and play areas to nurture children's growth: "A caring space is somewhere you can truly experience nature, not just concrete," explained Caroline. Teenagers emphasized spaciousness metaphorically, as Malek described an ideal place where he could be "like a bird" and breathe freely. Accessibility was also central, with Mohammad, a disabled Syrian refugee, noting, "A caring place is one where I can enter without struggle."

Social concerns were equally prominent. Gender shaped imaginaries, as Syrian girls sought safe environments for sports, breastfeeding zones, and freedom from harassment. Refugee teenager described caring POS as safe havens where they could belong without stigma: "It's a place where we can do what we love without being reminded that we're different," reflected Faris. Participants also rejected commodified, profit-driven models of POS, critiquing entry fees and restrictive policies, and instead imagined spaces rooted in solidarity and inclusivity. Majid, an Iraqi participant, likened them to a *jalsah ʿarabīyah*—traditional floor seating that embodies hospitality and equality.

Beyond these practical concerns, participants revealed more utopian framings. For some, caring POS represented peace and stability, while for others they symbolized renewal, mobility, or even unattainable distance: "A truly caring place? It's only reachable by plane," said Rayan. Such reflections underscore Tronto's[35] notion of "caring with"—spaces that repair relationships, foster belonging, and nurture both human and ecological ties.

Across the different discussions with the participants, key characteristics of Caring POSs were emerged as following:

1. Accessibility: Free entry, walkable pathways, and amenities such as clean restrooms and shaded seating areas.
2. Inclusivity: Design elements that cater to different age groups, genders, and abilities, including spaces for women, children, and individuals with disabilities.
3. Emotional Safety: Features that evoke a sense of belonging, familiarity, and tranquility, such as greenery, water features, and culturally resonant design.
4. Social Connectivity: Opportunities for interaction, such as communal seating and open spaces for events or activities.

CONCLUSION

This research has argued that care spaces, ethics, and imaginaries must be central to the conceptualisation of public open space (POS), underscoring the significance of care and repair in shaping just urban environments.[36] By approaching care through a situated feminist lens, it became evident that care is neither a singular concept nor an abstract moral ideal but a lived, affective practice embedded in material, social, and operational urban realities. Among urban refugees in Amman, care was articulated in diverse, context-specific ways—shaped by displacement, cultural traditions, gender, and generational experiences. Syrian participants drew on practices such as *siran* to sustain sociability, while Iraqi participants emphasised solidarity amid exclusion from formal labour. Mothers prioritised dignity, accessibility, and safety, teenagers imagined spaces of freedom and identity, and Christian participants located care in faith-based gathering. These layered accounts reveal care as both differentiated and intersectional, conditioned by structural inequities and everyday struggles.

The findings highlight three interdependent dimensions of caring POS: material configurations, relational and experiential dynamics, and governance and maintenance. Failures in upkeep or access were shown to undermine otherwise well-designed spaces, reinforcing feminist calls to integrate physical form with lived experience and to extend design concerns to justice, equity, and trust. Importantly, participants' imaginative reflections on ideal caring POS were not utopian abstractions but grounded critiques and hopeful visions for more inclusive, dignified spaces. While these imaginaries did not foreground environmental futures, this absence reflects the immediacy of survival rather than indifference, underscoring the urgency of rooting environmental agendas in the lived temporalities of marginalized groups.

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LIVABILITY AND LOVABILITY INDICES: A SPATIAL ANALYSIS AND DESIGN EXERCISE AT THE MABOPANE STATION PRECINCT IN TSHWANE, SOUTH AFRICA

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INTRODUCTION

We apply a critical lens to global livability and lovability indices and how relevant [or irrelevant] they are to contexts in the Global South. Cities of the Global North that often achieve high rankings on global indices are compared to cities of the Global South, which do not achieve high rankings but have demonstrated that they attract high levels of urbanisation due to the opportunities they offer. A set of criteria is developed on what constitutes desirable, beautiful, dignified, functional and efficient cities.

Concepts of livability and lovability are considered in terms of how they may be translated into form and space, as well as how measures of success need to include egalitarian and inclusive guidelines. These are then used to analyse a case study in the City of Tshwane, South Africa, at the Mabopane Station Precinct. While this is not intended as a comprehensive urban design exercise. The proposed interventions present an approach to achieve catalytic and acupunctural interventions that may transform the spatial and formal conditions of the area.

The background and current condition of South African urbanism

Many aspects of South African cities were meticulously conceptualised by built environment professionals who served under the apartheid political dispensation. The legacy of apartheid is still evident in the built environment and can only be "undone" through targeted spatial restructuring and complex, multi-disciplinary interventions. There is a need for conceptual and analytical research on spatial transformation, delving into what spatial transformation means for integrating planning and design of transport, infrastructure, property and land-use (the physical). Spatial transformation also implies deliberate investment in decision-making and the governance of urban areas (the political), as well as the aspirations, interactions, perceptions, behaviours, and inclusion of people (the socioeconomic).

The research methodology

A case study has been selected and analysed through applying the lens of global livability indices. This has also been expanded to consider lovability indices and the distinction between them is explained. The case study area is Mabopane Station in Tshwane, South Africa. The analysis of the precinct is conducted as a spatial design exercise that considers the nodes, edges and connections (routes) – and concludes with some proposals as to how this condition may be addressed. The project has similarities with other contexts in the country – and the proposed approach may be replicated elsewhere.

The methodology adopted is as follows:

1. A literature review was conducted positioning South African townships in the context of current urbanist thinking, as well as applying a critical lens to global liveability and lovability indices
2. Cities of the Global North that often achieve high rankings on global indices are compared to cities of the Global South.
3. An analysis of maps was coupled with a walking tour of the area and documentation of the case study area through images and text.
4. A set of criteria was developed on what constitutes desirable, beautiful, dignified, functional and efficient cities; and measures of success are presented.
5. Concepts of liveability and lovability were translated into form and space applicable to strategically selected nodes, edges and connections (routes) in the case study area

A CRITICAL LENS: GLOBAL LIVABILITY INDICES

There are attempts to unpack the qualities of cities that appeal to people and to replicate those qualities in other cities. These can have some benefits, but they also fall short in some ways. The term “livability” has been used to describe the desirable aspects of cities globally. It is a term that raises intellectual controversies.

An overview and definitions

Livability as concept involves addressing interlinked aspects of urban form, infrastructure, social equity or inclusion, environmental sustainability, economic prosperity and governance efficiency.[1] Livability studies often focus on subjective well-being surveys such as the Global Livability Index, conducted by the Economist Intelligence Unit (EIU) and Mercer’s Quality of Living Index.[2] These indices ignore informal systems and overlook the sociopolitical legacies embedded in postcolonial [urban] environments. Rapoport[3] and Robinson[4] argue that there is a Global North bias, thus making current indices insufficient for the conditions of many cities of the Global South. Only European, Australian, and Canadian cities achieve high rankings.[5] In contrast, livability studies in the Global South tend to use more objective, project-driven measurements such as national development strategies.[6]

The controversies

Urban livability is a fluid, context-dependent, and politically loaded concept[7]. There are several contradictions and paradoxes in understanding livability, such as standardisation versus local context, sustainability versus economic growth or consumption and growth versus equity, among others[8]. The push for global livability rankings implies comparability, yet cities differ vastly in culture, climate, governance, and economics[9]. The ranking of cities based on sets of criteria always seem to rate similar contexts highly.[10] Heathcote asks if these polls eschew diversity, arguing that it is the juxtaposition of wealth and poverty, the collision between the two worlds that makes cities work.[11] Many measures and polls exclude issues of the poor in cities. The developing world and emerging economies are thus

labelled as unfavourable. Is it possible that cities of the Global South are not desirable at all based on these global measures? What measures, tools and as well as innovative city management strategies have been put in place for these "other" contexts? Perhaps cities of the Global South could be labelled "lovable", as an aligned but alternative measure, seeing that they resonate with many people and offer opportunities for many?

Livability studies in the Global North and Global South emphasise basic urban services and quality of life, and shared concerns about environmental sustainability, social inclusion, and infrastructure.[12] The EIU survey shows that the majority bottom 10 least livable are found in the Global South.[13] In contrast, the top 10 most livable cities are all in the Global North.[14] Pantuliano et al. highlights the precarity of urban living conditions in the Global South.[15] Suri reported similar findings in India and argues that Global South cities require a shift from universal infrastructure creating relevant and context-specific solutions.[16]

African urbanism, the ethics of place, participatory knowledge production and the right to the city

Jürgens et al advocate for understanding South African townships through their dynamic transformations, rather than viewing them as static relics of apartheid. [17] Townships must not just be seen as failures of formal planning, but also as evidence of spatial agency and survival. How can localised cultural mapping reframe the value of everyday spaces to achieve a more balanced view of spaces that support people and their livelihoods across the economic divide? Although townships are peripheral, they are an important and lasting part of South African urban form and central to any honest conceptualisation of the future. Lawanson, Salau and Yadua argue for Afrocentric livability metrics grounded in access to livelihood, safety, and communal life.[18] Pieterse[19] and Simone[20] propose that African cities function as systems of improvisation and resilience. Their theories frame urban life not by absence but by adaptation.

Attempts are often made by designers and researchers to identify local philosophies, such as Ubuntu, for evaluating space through values of interdependence and dignity.[21] These perspectives suggest that livability must extend beyond physical infrastructure to include communal well-being and memory. Chambers offers participatory rural appraisal as a method to gather information on lived experience – perhaps a similar methodology may be applicable in contexts of the Global South? [22] The concept of spatial justice—particularly Lefebvre's "right to the city"—calls for urban spaces that empower residents to co-produce and shape their environments. [23]

The theoretical foundations of survivalist functionality emerge from critical Southern urban scholarship. AbdouMaliq Simone's concept of "People as Infrastructure" frames the collective improvisation of marginalized groups (traders, healers, and community patrols, etc.) in contexts like Mabopane, as the essential functional backbone that sustains cities where formal systems fail.[24] Complementing this perspective, Asef Bayat's "Quiet Encroachment" reveals how incremental, non-confrontational space-claiming such as the emergence of bush paths and tunnel stalls constitutes a tactical repertoire for survival and livelihood generation. [25]

Building on these grassroots dynamics, Ananya Roy's "Subaltern Urbanism" asserts that informality operates, not as an exception, but as a constitutive logic of Southern cities, where spaces like shrubby railway reserves become legitimate urban forms.[26] Edgar Pieterse further anchors this in African contexts through "Everyday Resilience", centering rogue improvisation as defiance against rigid planning orthodoxies.[27] Global livability indices, dominated by metrics privileging cities of the Global North, fail to capture the dynamic resilience of Southern urban contexts. These indices pathologise informality, overlooking how communities in cities like Mabopane, South Africa, sustain lifeworlds through adaptive spatial practices. To bridge this gap, we introduce the concept of survivalist

functionality: spatially embedded strategies through which marginalised communities maintain livelihoods, mobility, and safety amid formal infrastructural exclusion.

Lovability as an additional measure of successful urban space

The built environment needs to be conceptualised and designed with a view to being "lovable" and "open", with the latter implying that the environment is "adaptable" and "receptive." Lovable is a term used by some practitioners to describe an environment that has resonance with many users over time. These kinds of environments have also been described to have "accommodation capacity" and perceived as "precious" as an emotional value attributed to them. By adopting these principles and applying them at city level, cities are "livable" if they are equitable, beautiful, functional and resonate with many people, over many years and "lovable" when they may be defined as being sustainable through their potential to accommodate and embrace diversity, choice, change and by being embedded in their context. Lovability may be further explained as being egalitarian and inclusive, as allowing for participation, as a tool for inclusion, as a tool to reduce conflict, as a tool to involve everyone as a decision-maker in the design of the built environment and as a tool for effective management of the built environment. In contexts of the Global South, this means that lovable environments support:

1. Income diversity
2. Informal and formal development processes
3. Upgrading
4. Incremental development
5. Participation by everyday citizens and professionals alike

A PROPOSED LIVEABILITY/LOVABILITY GUIDELINE

The development of criteria for the measurement of livability indices relevant for a wider variety of contexts globally may be considered as follows:

Livable = equitable, beautiful, functional and resonating with many people, over many years.

Lovable = sustainable by accommodating and embracing diversity, choice, change and embedded in context. This is presented in this table:

	ROUTES	NODES AND PUBLIC SPACE	EDGES	BLOCKS
DESIGN	Pedestrian and vehicular circulation as separate as possible Legibility of pedestrian circulation **Defined routes and a hierarchy of spaces** Identify ownership through design Integrated housing developments Hierarchy of streets related to the hierarchy of spaces **Identity and character of streets and public space** Pedestrian scale	Progression from public, to semi-public, to semi-private and private spaces Gradual progression from private to public space for increased defensibility A balance between the individual and the collective space Buffer zones as thresholds into private domains **Legibility, safety, development community identity, and community sense of ownership** **Strategically placed nodes (visual or functional)** Semi-private and public spaces visible from interior spaces Access points to the site well located **Night lighting** Parking strategies Shade provision for temperature control – the micro-climate Overall design for a positive atmosphere (major elements are surface treatment and tree planting) Variety of public and semi-private spaces for different functions such as children's play areas, informal sports, seating areas The creation of urban forests: Using trees for shading and visual control such as blocking unwanted views Food production in every neighbourhood	**Medium to high density along the urban edges** Safety and security: activating the edges – eyes on the street Scale and space definition – a sense of enclosure for semi-urban/communal space A gradient from private - semiprivate/communal – semi-private – private Designing in section – articulating the interface, where different domains "meet" **Cultural variety, vibrancy and dignity**	Experiment in the design of housing rental stock. Provide choice and variety. Strategically placed nodes (visual or functional) Variety in housing options such as row housing, walk-up units, the enclosed block Circulation and servicing strategies Entrances as visible as possible; As many private entrances as possible (with possibility of personalization of a small entrance space) and avoiding many entrances on long corridors Ground floor units with a small private garden separated with a low wall from the semi-private areas Internal and external aesthetic and functional personalization and adaptability Accessibility for disabled Sustainability (energy and resource efficiency); Building efficiency Cooling and heating: Orientation, roof overhangs, insulation, ventilation Waste and water recycling strategies Of a character/image appropriate to the development's surroundings Variety in the façade and block designs for visual identity, richness and a lowering of the perceived density Level of uniformity to maintain a sense of community with distinct identity Technical innovation in the services of a vision (and not vice versa) Distributed Decision Making for Mass Customization and Self-Regulation Phased and Adaptable Developments
POLICY	Location within city, accessibility of public transport nodes, commercial, medical and service amenities Immediate surroundings and the planning and design response **Community consultation and participation** Personalisation and participation initially and throughout the life of the project	**The implementation of policy strategies to focus on open space** **A strategy to accept and support and integrate informal economic activity into every future vision** The development of policies and regulations putting in place clear guidelines for building placement on site to enhance the quality of the streets and the open space Revise Zoning to Encourage Desegregated Mixed Use Just Add Housing – to every urban development as a policy-led and enforceable condition	**Street Edge Activation as a Condition for Development Approvals** **Developing and enforcing strict guidelines on the site edges through a reward and penalty system** **Ensure Sustainable Densification Opportunities for XS,S,M,L and XL**	Separation between what is shared (the collective) and what may be independently determined as per occupancy (the individual) Disentanglement in design, technical systems, construction, procurement and funding Maximum capacity for adaptability Systems, processes taking precedent over product Separation in decision-making process to accommodate all (multiple agents in the built environment) Enforcing these principles by law
FINANCIAL	**Refocus Government Subsidies on 1 hr (+/- 3km) Wide Neighbourhoods** Financial aspects Funding Affordability Demand Market research **Sufficiently high-income thresholds to support small-scale economic activities**	Shared responsibility – individual and collective investment Public and private funds – incentives for the private sector to participate The creation of mixed teams and unique financial models	Taxable land that generates income for the government (private land) versus land that is cared for by the government and needs to be funded by the government (public land)	A strategy to address the financial implications of design decisions Long term viability of the building stock Design for affordability and optimisation: every cubic cm counts
PROCUREMENT	**Large construction companies for the complex parts of the projects** **Small scale construction industries**	The main funder is the government and procurement systems need to be developed to allow for that	Private and government funds may be used here – this is the most ideal place to use government housing subsidies	The main funder is the private sector – however, government needs to encourage interventions that align with the spatial vision intended
DELIVERY	Public, Private and Community Partnerships Led by Committed Project Teams	Collective action – the commons – innovating delivery systems in the public space where the energy of multiple agents may be harnessed	As the "edges" are the mediating element between public and private, the methods of delivery may be innovated with mix forms of delivery	Support level and Infill level differentiation may have different modes of delivery

Table 1. Livable and lovable set of criteria

THE MABOPANE STATION AS A PERIPHERAL SOCIO-SPATIAL CORE

This is a unique location with massive public investment having been made on the railway, bus and minibus taxi terminals just before COVID lockdowns. The precinct is now a juxtaposition of a decaying, abandoned conglomeration of urban ruins with an active and vibrant informal market that has attached itself to the unused infrastructure – a compelling demonstration of how the formal and the informal co-exist without sufficiently merging.

Figure 1. Mabopane Station precinct. DATA SOURCE: National Geo-spatial Information; map by Tlhologello Sesana

Architectural proposals for the station's upgrade aim to improve commuter safety, navigability, and integration across transport modes. While these designs offer a promising spatial vision, further empirical studies are required to assess how these proposals address the complex informal uses and social dynamics of the precinct. The Mabopane Station continues to be use even though there is a decrease in mobility to the core areas of the Gauteng city region (GCR) due to an increase in the rate of unemployment. Indeed in 1985 the North-West Star had a fleet of 650 buses, which has reduced to 255 buses in 2019, seemingly ceasing its operations thereafter.[28] Similarly, the Public Utility Transport Corporation bus service reduced its rail service schedules by 20% since 2004 – out of 427 trains per day that were running then, 334 were in service in 2012, and 79 trains in 2020 according to media reports.[29] That said, the City of Tshwane built the new ranks for the Public Utility Transport Corporation bus service as well as the Soshanguve and Mabopane taxis.[30] PRASA has upgraded the train station, which includes the platforms for the North-West Star buses. The revamped Station has a ground level area of 5 949.39m^2 (the mezzanine).[31] The Station precinct together with the nearby Mabopane Unit N industrial area boasts extensive informal economy and a range of formal commercial establishments that draw people from the wider subregion. People's agency to build their own streams of income, bringing opportunities to the community, accessible from their dwellings is prominent along intersections and nodes surrounding the station's infrastructure. This resourcefulness and the interventions made in the last decade call for a redefinition of livability; one that is relational, rooted, and informed by African urbanism and township life. Figure 2 below shows sites for possible intervention discussed below.

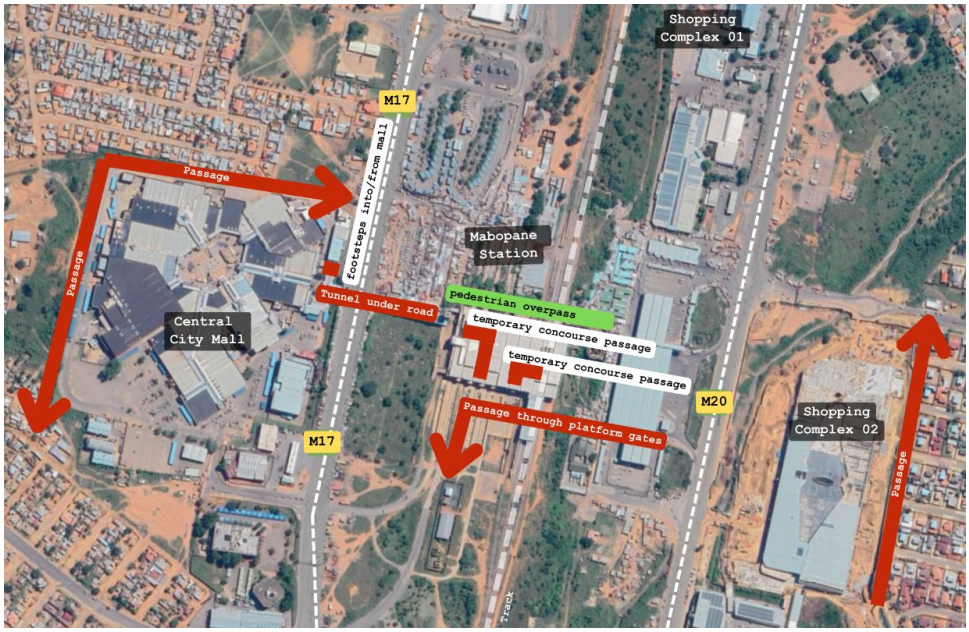


Figure 2. Unsafe public spaces and infrastructures: pedestrian passages and tunnels across the Mabopane Station precinct; map by Tlhologello Sesana

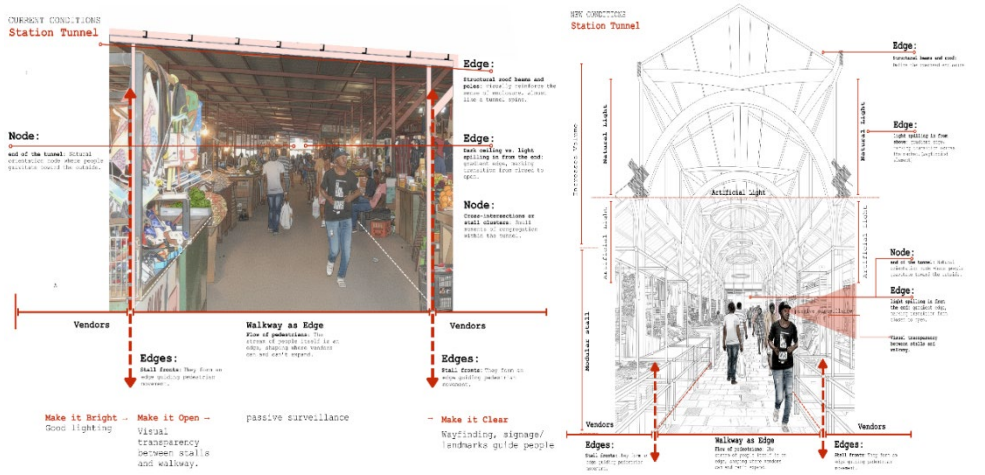
FROM INFRASTRUCTURE TO INTIMACY: NODES, EDGES AND ROUTES

Recognition must be given to the adaptive and resilient characteristics of many peripheral cities and townships of the Global South. The future development of the Mabopane Station precinct needs to recognise the temporal nature of the area and must consider the complex history of the GCR. While the precinct offers great opportunities for many, small businesses catering for the surrounding communities through diverse and small-scale economic activity, there are also sections that are a breeding ground for crime and abandoned spaces become havens for drug dealings. A reframing of current global indices directly informs our decolonial reconceptualisation of urban space. With an understanding of the complex realities of the context, and the assessment criteria we developed, we embarked on a spatial design exercise where we identified strategic nodes, edges and connections (routes). We present here a snapshot of a project in progress:

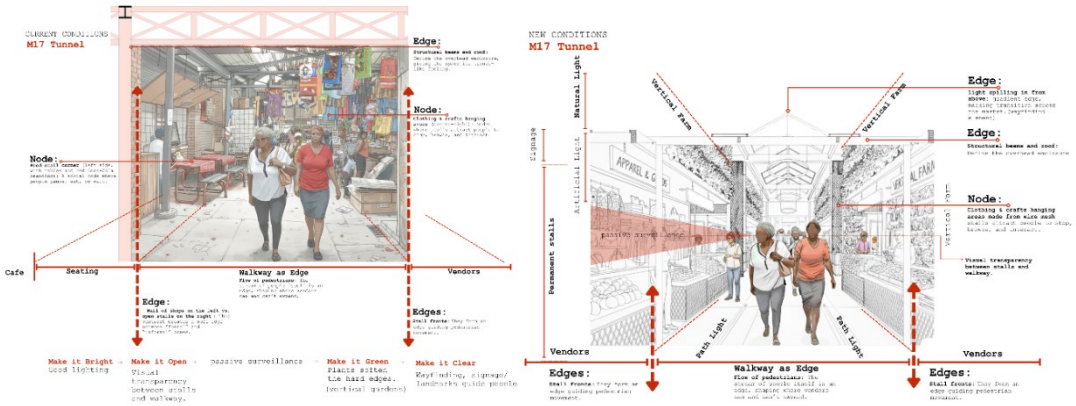
Figures 3 and 4. Open passage proposal between Mabopane Unit CV and Central City Mall Zone by Kutlwano Ramphele, existing and proposed condition

Figure 3 on the left shows an unsafe and neglected route with a fixed edge on one side and rather haphazard structures on the other; no windows or doors open onto this passage making pedestrians

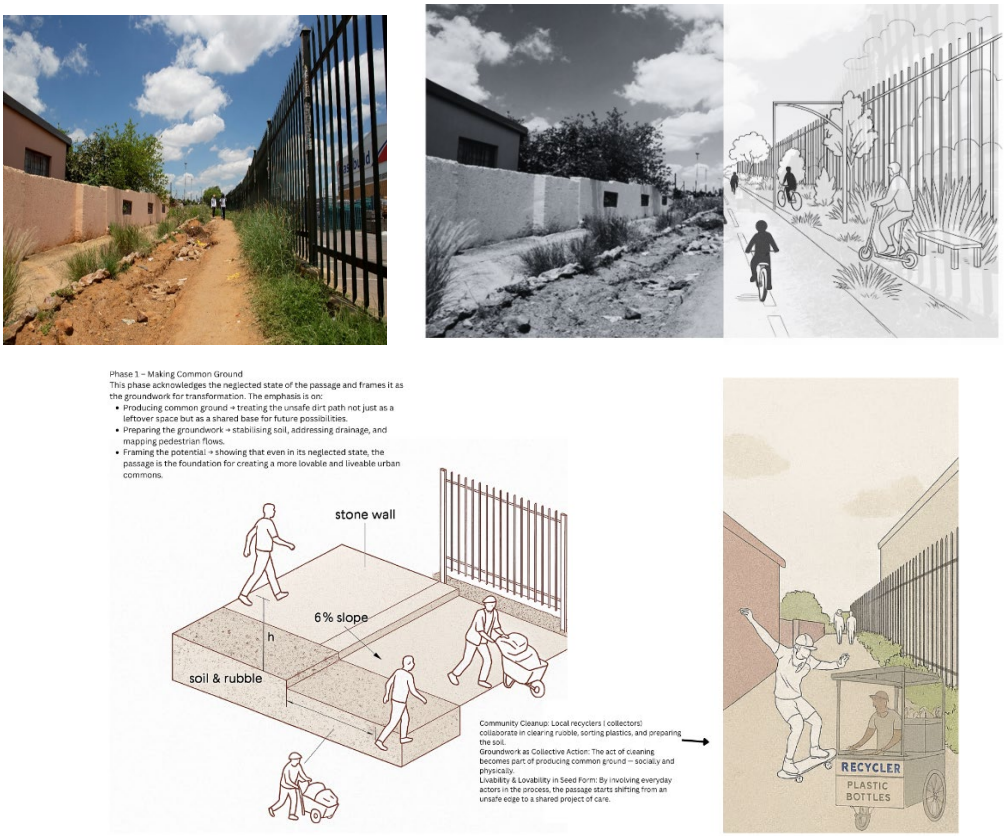
vulnerable to crime. Figure 4 on the right shows the proposed design with the fence screened and the edge recreated into a green space with outdoor furniture and lighting. The buildings are pushed back to create usable community space and children's play areas. Paving greenery completes this image. Figures 5 and 6 show sections of the Station Tunnel and Figures 7 and 8 show sections of the M17 Tunnel which reconceptualise both spaces by defining the edges, organising the space, clearly defining walking routes and trading space. Verticality in emphasised through design and functional elements. It is also achieved by creating a cathedral-like environment through increased height and the articulation of the ceiling space, puncturing and raising it in the one case. Artificial and natural light is harnessed to address the darkness of the tunnels. Many elements such as wayfinding and signage and vertical gardens are used to soften the harshness of space.



Figures 5 and 6. Station Tunnel by Tlhologello, existing and proposed condition



Figures 7 and 8. M17 Tunnel by Tlhologello Sesana, existing and proposed condition



Figures 7, 8, 9, 10. Passage between the Soshanguve Mall and Block AA by Simphiwe Mlambo, existing conditions and proposed new interventions.

Focusing on a phased and incremental process, Figures 7-10 show how an unsafe, fenced-in dirt path may be converted into a **shared civic corridor** that functions as a *buffered transition space*, encouraging movement, interaction, and safety. Passages become connective tissues, *urban commons*, that dissolve hard boundaries between residential, commercial, and institutional edges. Through a phased process, the neglected state of the passage is framed as a **groundwork for transformation**. The emphasis is on treating the unsafe dirt path not just as a leftover space but as a shared base for future possibilities by stabilising the soil, addressing drainage, and mapping pedestrian flows. Even in its neglected state, the passage has the potential to be re-created into a **more lovable and livable urban commons**. These spaces may be made more equitable and beautiful by offering permeability and visual continuity, embracing diversity by allowing people to flow through multiple points of access. The passage is broken into zones of movement and pause, fast lanes for cyclists, skateboards, micro-mobility as well as slow lane: walkers, children and elders. Pause nodes offer shaded benches, street art walls and small vendor kiosks.

Applying *colourful paving geometries*, encourages slower vehicular speeds at crossings making them safer for pedestrians. Instead of gated walls, **porous thresholds** are introduced creating shared courtyards between houses and permeable commercial edges where shops face directly onto the corridor. By so doing, we achieve more efficient and accessible connections between neighbours and encourage trust and co-presence by blurring "back" and "front" spaces. Finally, the interventions envision a **world without fences** where "dead" passages evolve into **urban commons**, where movement is democratic (multiple micro-transport forms coexist), safety comes not from barriers but from *continuous presence, pacing, and buffer layers* and the in-between space shifts from a *zone of abandonment* (crime, waste, fear) into a *zone of transition* (play, encounter, economic exchange).

CONCLUSION

We argue that global indices cannot meaningfully capture the vibrancy or hardship of places such as the Mabopane precinct. Instead, a contextually rooted framework centred on spatial justice, dignity, mobility, and economic participation must emerge. There is the need to redefine livability in a way that is relational, rooted, and informed by African urbanism and township life. Global indices cannot meaningfully capture the vibrancy or hardship of such places. Instead, a framework centred on spatial justice, dignity, mobility, and economic participation must emerge from within.

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EXPLORING BENGALI CULTURAL PRACTICE OF ĀDDĀ (INFORMAL SOCIAL HANGOUT) AS AN ENACTMENT OF THE "RIGHT TO THE CITY": A LITERATURE REVIEW

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INTRODUCTION

The urban experience, particularly in postcolonial contexts, is increasingly characterized by contestations over space, identity, and belonging. Against the backdrop of global urbanization, homogenization and urban restructuring guided by neo-liberal market ethos, Henri Lefebvre's seminal concept of the "Right to the city"[1] or RttC continues to offer a critical and yet open enough framework for understanding spatial justice and participatory urban life. In Lefebvre's imagination, this right is both a cry and demand. It is not limited to access, but deals with the right to inhibit, appropriate, and produce spaces that resist commodification driven by capitalist systems. It is a right of use value over exchange value.[2] It is a radical and flexible framework to explore urban spaces and citizenship.[3] At the same time, moves to codify and institutionalize RttC as a new human right, has not gone without criticism.[4]

In the South Asian context, across West Bengal (in present India) and Bangladesh, the Bengali cultural practice of āddā, which is understood as informal, convivial gatherings for intellectual and/or leisurely conversations that happen in spaces ranging from public spaces to tea-stall, college campuses, coffee shops[5] offers a compelling lens which enables us to reevaluate the everyday politics of urban space. Far from being trivial or leisurely in a reductive sense, āddā can serve as a vital spatial and cultural practice that animates public discourse and fosters community.

This literature review seeks to explore how āddā functions as a lived articulation of the right to the city, embedding urban citizenship in everyday improvisation. The review aims to bridge two seemingly disparate scholarly fields of urban theory and South Asian cultural studies, while also introducing a decolonial perspective on spatial practices and urban citizenship.

LITERATURE REVIEW

In the following sections a brief introduction to the Bengali practice of āddā and the Lefebvre's call to "Right to the City" will be introduced. Due to the scope of this review, only relevant parts of either concept will be presented.

Bengali āddā: Cultural practice and spatial politics

Scholarly work on āddā is very scarce. In contrast, numerous instances exist in literary discourses with personal meanings and significances attached to it. These accounts are sometimes overly romanticized and utopic.

From the scholarly articles reviewed, adda can be best summarized through the definition provided Ritam Dutta– "any friendly gathering of peers where enjoyable, purposeless, unrigorous social conversation of considerable duration (usually several hours, but not necessarily so) is the primary objective, could be designated as an āddā, whether or not it recurs, or is planned."[6] The most prominent feature of āddā is conversation being the main activity.[7] The nature of this conversation is convivial, free flowing and mostly aimless. In short, adda is when friends or peer groups get together informally for prolonged sessions of joyful conversation, sometimes over light snacks, tea or smoke. This can happen indoors, outdoors, in alleyways, on perches, in tea stalls, any place in general, as shown in Figure 1. It is a way of celebrating leisure outside the modern dichotomy of home and work.[8] Āddā is informal in nature.[9] Authors also reiterate the prolonged nature of these gatherings.[10] The practice is often without a telos,[11] or notions of productivity and purpose, thereby making it non-instrumental.[12] As such, they can be seen as a critique of more functional, and sanctioned forms of getting together.[13] This non-instrumental nature of the practice makes it worthwhile to study closely, as it is largely different from conventional modes of public gatherings or recreation.

Figure 1. Āddā at a roadside tea stall in Kolkata (source: https://robbar.in/daily-update/an-article-about-bengalis-adda-culture/)

Despite some debates surrounding the act of āddā, such as its gendered and classed nature, general consensus is that it 'played enough of a role in Bengali modernity for it to be tagged Bengali.'[14] Scholars have at the same time argued that the limitations were largely the reflections of the conditions of the society at the time, and not a fault of the practice itself. It is also generally agreed that after the nineteenth century the practice started to become more open to people of all backgrounds, and contemporary addas are more open, public, egalitarian and democratic in nature. Indeed, most authors now consider it to be a cultural heritage tied to the Bengali identity.[15]

These insights pave the way for interpreting āddā as a culturally embedded spatial practice that articulates rights to assembly, speech, and informal occupation of space. It asserts the city as a space of dialogue rather than control making it a vernacular manifestation of Lefebvre's right to the city.

The "Right to the City": Theoretical Foundations and Contemporary Reinterpretations

Henri Lefebvre's idea of the RttC remains quintessential to radical urban theory. Recent interest in the topic is underpinned by concerns in urban citizenship and crisis of public spaces.[16] Originally articulated in Le Droit à la Ville , which was translated into English in 1996, Lefebvre conceptualized the city not solely as a fixed territory, but as an 'oeuvre,' a collective project shaped by the lived experiences and spatial practices of its inhabitants.[17] RttC is presented as entailing both a right to participation in urban decision-making, thereby producing the urban space and a right to appropriation, that is, the right to inhabit, modify spaces.[18] It is a right that prioritizes the use value of spaces rather exchange value, thereby resisting commodification. This right must not be seen simply as a conventional right to already existing resources of the city, but rather as right to transform radically the processes that shape the city.[19] Moreover, this should be seen as collective rights, not individual rights.[20] Lefebvre intended the rights to be not associated with any kind of legal landownership but rather linked to rights to occupy and participate in urban spaces.[21] RttC is not an absolute remedy either, rather, it must be conceptualized as an opening to new forms of exploration of urban spaces, urban life, and urban politics.[22]

This idea has since been adapted by scholars to critique neoliberal urbanization, particularly in cities of the Global South where rapid economic restructuring has led to displacement, marginalization, and loss of public space.[23] However mainstream applications of the concept often overlook localized cultural practices and vernacular expressions of resistance. This calls for a contextualized understanding of RttC that considers the lived practices of marginalized and subaltern communities. In this review, the practice of āddā is proposed as such a practice that may not immediately register as political or activist but embodies spatial claims and participatory urban life in subtle, culturally specific ways.

METHODOLOGY

This literature review employs a qualitative content analysis methodology, situated within the interpretive tradition of urban cultural studies. The methodology is intentionally interdisciplinary and interpretive, favoring depth of analysis over breadth of coverage. Rather than producing original fieldwork data, the study relies on secondary sources to cross analyze and synthesize existing scholarly materials in domains of urban theory, cultural geography, South Asian studies, and Bengali social practices. Only scholarly published works that directly engage with the concepts of RttC, informal urbanism, cultural practices of urban life, and the Bengali tradition of āddā were chosen for this review.

While the lack of empirical fieldwork might limit generalizability, the purpose of this literature review is not to provide statistical representativeness but to construct a theoretical argument grounded in existing academic discourse. Furthermore, the review acknowledges its positionality within Anglophone academia and actively seeks to de-center Eurocentric narratives by elevating South Asian epistemologies and experiences.

DISCUSSIONS

How the practice of āddā embodies Lefebvre's RttC is discussed in the section below. For the purpose of clarity, the discussions will be made on three points, among which appropriation and participation are the main ones, as evident from Lefebvre's writings. This will be followed up with the notion of the city as collective work or oeuvre. It should be kept in mind that these aspects are not separate points, rather they are tied to each other in multiple ways.

Appropriation and spatial practices: Reclaiming the city from below through āddā

Core to Lefebvre's thinking is the distinction between pre-determined, instrumental use of spaces and the lived experience of citizens under capitalist rationality.[24] When use of space is defined by functionality, space becomes a commodity, to be bought for its 'exchange value.' In contrast, when people appropriate spaces for their daily use, it generates 'use value.' The practice of āddā embodies this exact appropriation. Recent literature in urban studies has emphasized the importance of informal and everyday practices in shaping the urban experience,[25] challenging the hegemonic (and western) top-down planning paradigms, focusing instead on how ordinary people continuously make and remake the city through improvisational tactics, embodied routines, and cultural performances.

One of the defining features of āddā is its informality and its refusal to adhere to structured, commodified, or institutionalized norms of urban interaction. Most existing literature on adda locates rowaks (front perches), tea stalls, book shops, bus stations, university campuses as popular sites of āddā. Take the example of the rowak, which has been associated with Bengali addas the most.[26] These were the elevated, elongated, perch like spaces built in front of homes in the colonial period. While the home is a private space, the rowaks in the neighborhood were used by people to congregate in adda. The humble tea stall, or 'chaa er dokan,' 'chaa er tong' found everywhere in the cities of Bangladesh and India are another popular spot for āddā. These shabby structures are often informal and technically illegal, meaning they exist on public spaces like sidewalks, parks, road-sides, university campuses, without any formal lease. Although they are illegal in the technical sense, they offer people accessible, affordable means of small social congregation, and for much of the populace, are the main spots of public socialization. They offer people means to linger or loiter in public, without having to spend much money.

Figure 2. Left image shows āddā on a rowak in South Kolkata, India (source: https://www.telegraphindia.com/my-kolkata/places/rowaks-of-south-kolkata-the-fading-seats-of-adda-photogallery/cid/2109371), middle and right images respectively show āddā on roadside and university campuses in Rajshahi, Bangladesh (source: author)

Whether practiced at a rowak, roadside tea stalls, college canteens, coffee shops or shaded corners of residential neighborhoods, as shown in Figure 2, āddā exemplifies Lefebvre's idea of the city as a space to be appropriated rather than passively consumed. By occupying such spaces without institutional sanction, āddā performs "spatial appropriation," wherein ordinary citizens assert a right to use and define urban space beyond the frameworks of capital and state planning, subverting the commodified logic of urban spaces and reclaiming them for non-instrumental, non-commercial purposes. Asef Bayat's concept of "quiet encroachment of the ordinary"[27] is particularly relevant here, explaining how seemingly mundane or non-political actions such as squatting, street vending, or informal gathering can be acts of spatial resistance. These are precisely the sites where urban social life is produced and reproduced on a daily basis.[28]

Moreover, the regular and informal nature of the practice aligns with RttC, which are achieved not through any legal institutionalizations, but rather through frequent processes of negotiations,[29] and through meaningful social interactions. The seemingly everywhere, unassuming nature of adda sites,

the prolonged nature of adda, cheap drinks, snacks that everyone can afford- enable people to occupy and loiter in urban spaces. Adda becomes an act of defying the commodified exchange value of capitalist urban spaces, an embodiment of use value.

Adda and Participation

Fundamental to Lefebvre's call for RttC is inhabitants' right to participation. The dominant understanding is that what Lefebvre meant by participation was the direct participation in the process of decision making, or, planning urban spaces.[30] Yet, this interpretation has been criticized for downplaying the radical nature of RttC, and presuming (or accepting) an already existing capitalist urban governance with rigid hierarchies.[31] Rather, participation should be seen as the agent that modifies the social processes itself that create capitalist urban spaces and the way they are governed.[32] The act of āddā can be seen as an extended version of this. Through āddā, people produce the new spaces, directly. Or to put it on other words, impose new meanings and usage to existing places, thereby producing what Lefebvre categorized as lived spaces, representing a person's real experience of space in day-to day life.[33] It creates a democratic arena in which diverse voices engage in dialogue, argument, and reflection. Production of such spaces is also a means to produce aspects of urban life.[34] This participation is not "reproductive" in nature, it does not reproduce existing capitalist notions of behaviors or decorum, rather it is "transformative." It produces new experience of cities. This important distinction offers the scope to view āddā as a space for this kind of participation. Unlike formal political institutions, or other types of congregation which can be class bound, contemporary āddās are open and inclusive, often associated with the participation of the marginalized.[35] Unlike state-sanctioned forms of political participation, āddā practices an everyday form of democracy rooted in informality and trust.

The participatory nature of āddā is especially visible in university campuses across West Bengal and Bangladesh, where students routinely gather in canteens, lawns, and roadside stalls. Here, āddā is not only leisure but also a space for organizing, planning protests, and reimagining social futures. Conversations (although not pre-determined) often touch on politics, culture, philosophy, cinema, cricket, or everyday concerns; topics that allow participants to collectively interpret their urban condition.[36] Such participation aligns with Lefebvre's insistence that the city must be an arena for continuous negotiation and co-creation, not merely a backdrop for capitalist accumulation.[37]

The city as a collective creative work through āddā

For Lefebvre, the city must be seen not as a product- a pre-fabricated, concrete object but as an "oeuvre," a living work shaped by the creative practices of its inhabitants.[38] Āddā embodies this idea by contributing to the city's intangible cultural fabric. Many addas used to be very intellectual in nature, prior to it becoming more egalitarian[39] and has been associated with the cultivation of artistic and literary tastes, and the production of Bengali intellectual community.[40] The narratives, jokes, arguments, and shared memories generated through āddā accumulate to form a collective urban memory and identity. It becomes a site of shared cultural production, and has taken its place in songs, movies and various writings in the Bengali language. Figure 3 shows just an example.

Figure 3. A still from "Adda: Calcutta, Kolkata" a documentary film on the addas of Kolkata from 2011, directed by Surjo Deb (source: Youtube)

Furthermore, the practice can be seen as a critique to overcome the monotony of everyday life.[41] The everyday creativity of āddā resonates with Lefebvre's call to reclaim the city as a lived, collectively produced oeuvre.[42]

In the words of one scholar, Bhaswati Bhattacharya- "For the connoisseurs, the practice of adda gives them the space to cherish the leisure time to its fullest, to extract the maximum pleasure out of it….. This is a site where practices of sociability, conversation and public orality, practices of the production and reproduction of culture may come together."[43]

In South Asia, this resonates strongly with scholarship on urban informality and cultural production. Social and cultural lives of South Asian cities are often shaped less by official urban planning than by everyday practices of negotiation and improvisation.[44] In this sense, āddā demonstrates how the "oeuvre" of the city is generated not by planners or elites, but by ordinary inhabitants who infuse space with meaning through conversation, sociability, creativity and memory.

LIMITATIONS

The biggest limitation of this review is the reliance on secondary literature, which limits the ability to capture broader experiential and emotional textures of āddā. Furthermore, scholarly works on āddā are sparse and fragmented, and a proper study of the spatiality of the practice is still lacking.

The analysis is heavily focused on the greater Bengal region, where āddā has its most iconic cultural associations. Similar practices from other South Asian cities, or even across the Indian sub-continent have not been considered in detail. Therefore, conclusions drawn here may not be generalizable to other urban contexts or even across all neighborhoods of the Bengal region itself.

All of the reviewed literature is in English and scholarly in nature. Vernacular articulations of āddā, or alternative media remain outside the scope of this review. Disadvantageous groups, namely females, queer, non-middle class, non-urbanite, or ethnic backgrounds, may remain underrepresented or filtered through academic mediation. This bias may skew the representations of the experiences of urbanity.

The integration of Lefebvrian urban theory with cultural practices like āddā involves a level of abstraction that may obscure practical political concerns. While this review interprets āddā as a form of spatial resistance, its actual political efficacy in affecting urban policy or planning outcomes remains unclear and requires further empirical investigation.

CONCLUSION

This review has argued that āddā, the Bengali practice of informal, pleasurable conversation, can be understood as a culturally embedded enactment of the right to the city. Across the Bengal region, such types of informal gatherings constitute what Ananya Roy describes as "unmapped territories"[45] of urban life, spaces that elude formal regulation yet are rich with social life and meaning. Urban informality, as the scholar argues, is not simply a lack of formality or structure but a different way of organizing urban life. The practice does not ask for permission; rather, it asserts presence. It takes place with participation, little to no economic exchange, thereby re-signifying urban space as a commons rather than a commodity.[46] Through spatial appropriation, participation in production of urban space from bottom-up method, āddā performs many of the functions that Lefebvre envisioned when he articulated the right to inhabit, participate in, and transform urban life. Āddā reaffirms that spatial rights are not abstract legal claims but are enacted through the daily act of gathering and conversing in spaces that are made meaningful through repetition and presence. Through adda, control of spaces is taken up by residents in varying ways, away from the capital and the state. Purcell argued that this is one of the core feature of the RttC.[47] It is also worth noting that both the practice of adda and RttC, complement each other as concept, acting as useful lenses to examine the other. The Right to the city only exists as long as people make efforts to create them through their political and social actions.[48] To truly honor the spirit of RttC urban scholarship must attend not only to policies and protests but also to poetics. It must listen to the daily lived experience of the citizens as much as to its master plans. In doing so, it can begin to recognize practices like āddā not as cultural curiosities, but as political acts of space-making, memory-keeping, and everyday world-building.

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THE ROLE OF URBAN PUBLIC SPACES IN FOSTERING SOCIAL COHESION IN CITIES

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INTRODUCTION

Urban public space is essential in shaping the social environment of the city. It provides opportunities for individuals to interact with each other and promote a sense of belonging. It has been argued that well-designed public spaces can contribute to a positive psychological impact where the individual can share a sense of identity and belonging.[1] The Sustainable Development Goals (SDGs, Target 11:7) 2030 acknowledge the role of the public space and encourage access to safe and accessible public spaces.[2] Along this line, the urban public spaces should be designed with an understanding of the diverse needs of society, and ensure that all individuals, including children, the elderly, and people living with disabilities, are safely accommodated.[3]

The use of urban spaces in South Africa is inflected by apartheid policies. For instance, the regime excluded the black majority from the planning processes of their living spaces and were often restricted to precarious squatters on the urban fringe – the so-called townships and locations.[4] The emerging post-apartheid context requires public spaces that are aligned with collective aspirations, recent developments, and offer redress for the historical discrimination inflicted on the black population. Given this, recourse was taken from European cities, where public space is historically related to its capacity to enable human activities.[5] Consequently, new public spaces that have the potential to attract group interaction and foster the integration agenda of post-apartheid regimes, including community interaction and engagement, have been proposed and executed. Even with this, a lingering gap remains in the literature on the extent to which the potential of public spaces in South Africa has been realised. Indeed, the significance of this study is highlighted against this backdrop. The very problematic nature of accessing the potential of public spaces has been highlighted to include the lack of accessibility, socio-economic disparities, and inadequate funding.[6] This study examines public spaces in the North, East, and Central parts of Pretoria, South Africa, to determine their potential and the extent to which this potential is realised in enhancing social cohesion.

THE CONCEPT OF URBAN PUBLIC SPACE

The public space is where people from different social groups meets, participate in communal life, share thoughts, information, and make collective decisions.[7] It consists of streets, pathways, squares, beaches, roundabouts, plazas, playgrounds, and city halls.[8]

Well-designed public spaces can boost the health condition of communities, as well as provide opportunities for recreation and educational experiences.[9] When strategically located, public spaces

can enhance urban regeneration and promote economic growth, establishing better residential environments for higher-income groups.[10] Public spaces can also promote interaction among various groups of individuals and an enriched sense of belonging and identity.[11] Against this backcloth, social interaction was seen as the most important aspect of public space[12] and can occur umpteen times in public spaces per day.

Features of public space

Urban public spaces and community engagement

Public space is important for community engagement. It contributes to the city's democratic rights and creates a platform for groups seeking a common cause.

Urban public spaces, inclusivity, and accessibility

Well-designed public spaces should provide comfort and visual attraction to social groups and visitors.[13] It should lead people to rest, walk, and experience the environmental pleasure.[14] To ensure that public spaces function effectively and meet people's aspirations, seven points ranging from mental to physiological comforts, aesthetics, relaxation, social desirability, security, and passive and active occupation were highlighted.[15] Accordingly, while mental and physical security are basic needs for social cohesion in public spaces, active and passive occupation involve the direct experience of the space, social activities, sightseeing, and entertainment. Moreover, aesthetic considerations have included visual beauty, harmony, order, and space recognition, providing visual attractions and desirability. A calm setting with privacy and natural components contributes to relaxation, whereas safety demands clear sightlines to enhance and reinforce the presence of individuals in public areas, establish open vistas, offer conspicuous signage, and remove unsecured locations.

The utility of urban public spaces

In contemporary societies, the physicality of spaces does not dictate social interactions and their overall utility; rather, other factors and socio-spatial nuances have to be considered.[16] To buttress this, the perspective of urban public space as a socio-spatial construct in the Right to the City was reinforced.[17] Consequently, in creating an effective public area to fulfill its role, the socio-spatial significance of the urban environment can be characterized by the following[18]

Social interaction

Comfort and attraction

Activity

Continuity and easy access (Figure 1).

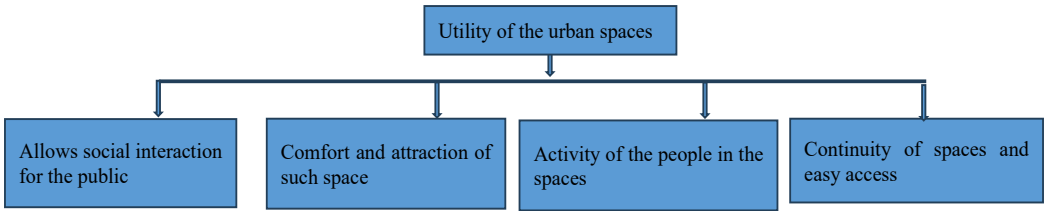

Figure 1. Four factors of effective utility of the urban spaces

RESEARCH METHODOLOGY

This study employs a quantitative research method to examine the role of urban public spaces in social cohesion in South Africa. The study area is the main regions of Pretoria, South Africa, which include the North, East and Central parts of the city. Pretoria was selected because it serves as the administrative capital of South Africa, and it offers a unique blend of historical, cultural and economic significance.

Each region of the study area was divided into groups made up of clusters of streets. The groups were determined by the voting districts and wards of Pretoria North, East and Central. In each group, the total number of public spaces was counted to constitute a population of 179 (52, 71, and 56 in Pretoria North, East and Central, respectively). A notional value of 10% of the population was selected as the sample (similar figures had been used in previous research[19]). In each group, streets were randomly selected and the total number of public spaces in the randomly selected streets constitutes the sample frame. Thereafter, the public spaces - sidewalks, plazas/squares, beaches, malls, and parks – were systematically selected until the sample size was realised. The sampling technique is therefore a mixed sampling as it is a combination of randomly selected streets (from the clusters) and systematic sampled public spaces from the population. The research instrument for data collection is the questionnaire. The questionnaire was designed with restricted responses and the Likert scale to elicit and quantitative data.

RESULTS

The results reveal that urban public spaces play a crucial role in encouraging social cohesion in cities. Figure 2 shows that open spaces foster economic development and a plausible positive relationship between economic development and social cohesion.

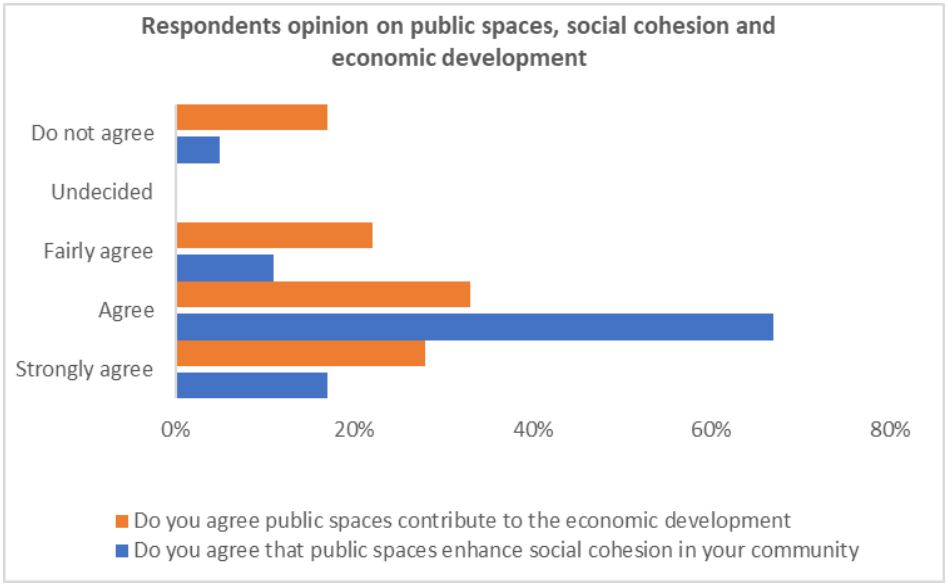

Figure 2. Respondents' opinions on public spaces, social cohesion, and economic development

The respondents further reported challenges related to safety, accessibility, and lighting. They opined that stronger accessibility to safe environments, social interaction, and reflections on their local cultural activities and history could enhance visits to public spaces (Figure 3). Correspondingly, Figure 3 affirms the use of public spaces for social and cultural inclusiveness. This is especially relevant in post-apartheid South Africa to address inherent spatial disaggregation.

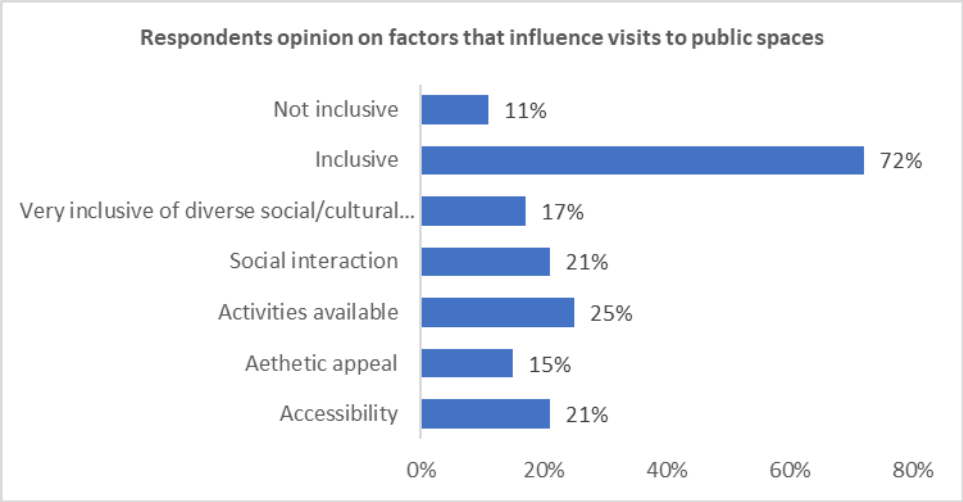

Figure 3. Respondents' opinions on factors that influence visits to public spaces

Aside from these, respondents observed that enhancing public spaces to foster cohesion will require the design of the spaces to include corridors with adequate width and corners for sit-outs, walking, observing the environment, and sightseeing (Figure 4). The study indicated stronger opinions for socialising, better lighting, and more seating areas as requirements for efficient public spaces.

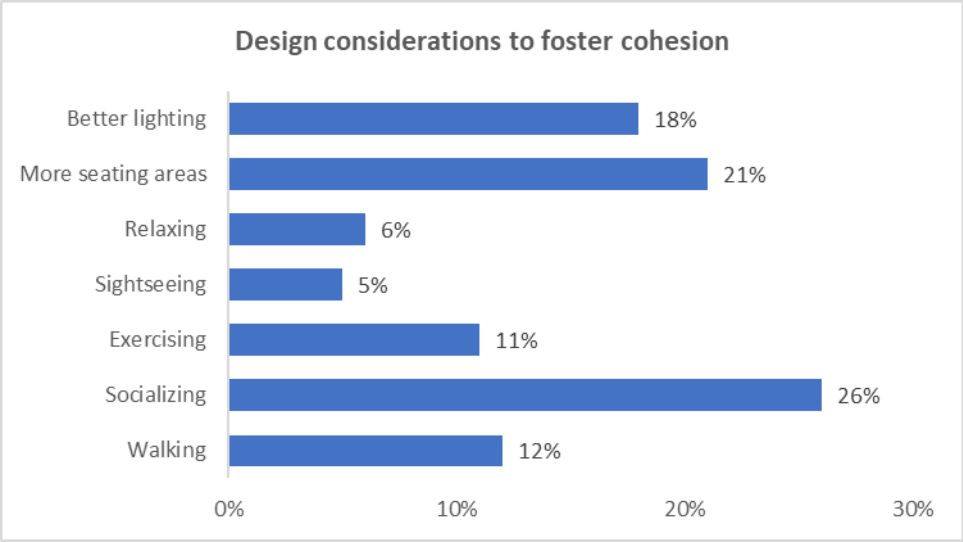

Figure 4. Design considerations to foster cohesion

These results are in tandem with previous studies that designers should control the use of public space to enhance security and sightseeing.

Inferences drawn from respondents' opinions on lighting in Figure 4 may further suggest users' preference for security and safety in public spaces. Hence, user engagement in the design of public spaces to understand users' their premiums and preferences can enhance the use of the spaces. Socialising in this context also reveals a desire for integration and cohesion. Building on this, Figure 5 shows respondents' opinions on integration through socialising with strangers in public spaces.

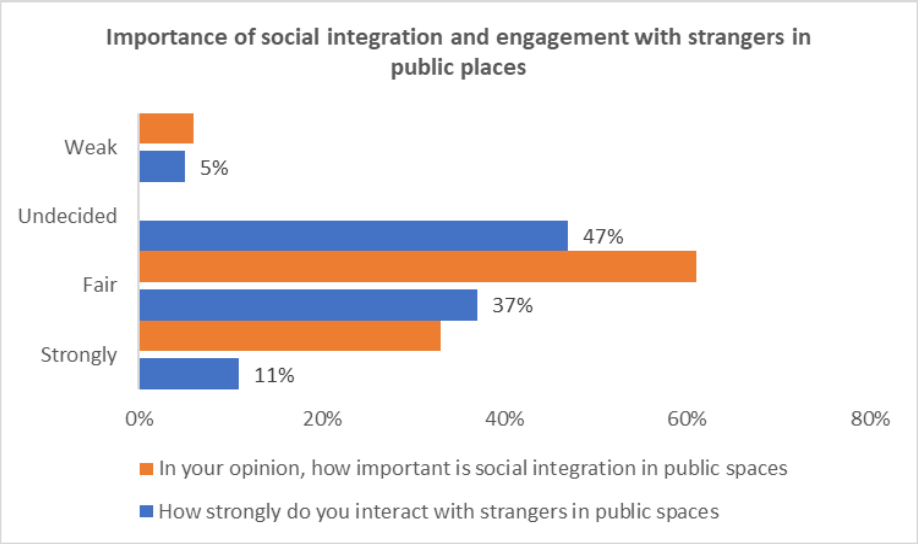

Figure 5. Importance of social integration and engagement with strangers in public places

From Figure 5, social integration is enhanced in public spaces through interactive sessions with strangers. This is particularly resourceful in the context of post-apartheid policies for social agglomeration and addressing existing spatial disintegration.

The study further examines users' accessibility to the case study areas. From Figure 6, respondents assert that the public spaces are accessible to children, the elderly and the disabled. This implies that the public spaces respond well to design considerations for this group.

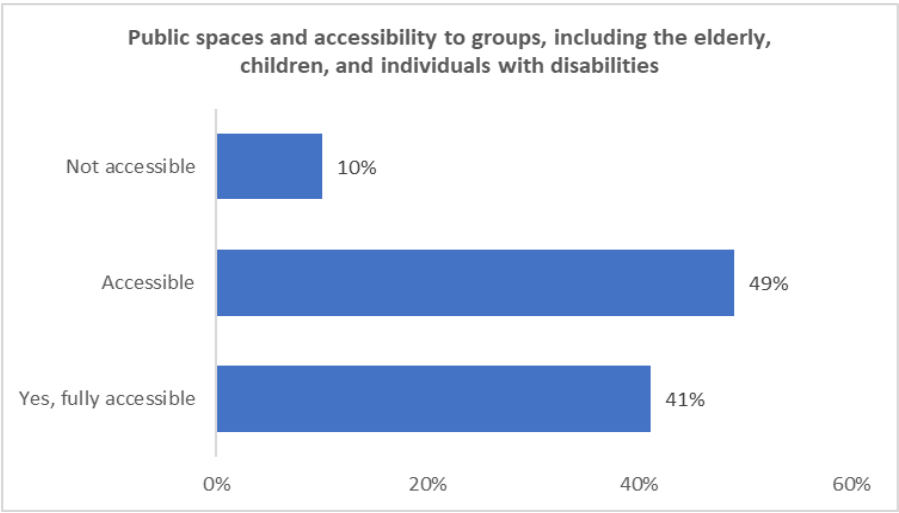

Figure 6. Public spaces and accessibility to groups, including the elderly, children, and individuals with disabilities

CONCLUSION

The study showed that engagement of the community in the design of their public spaces can enhance safety and overall users' experiences. The study highlighted that public spaces should be well-designed to the diverse needs of the individual, ensuring safety, security, accessibility, and reflecting the cultural and historical identity of local communities. The study concludes that well-designed public spaces can contribute to economic development. It advocates that designers should prioritise public space planning to ensure inclusion, accessibility for all, and to meet users' needs.

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FASHION AS A FUNDAMENTAL TOOL AND FACTOR OF CIVIC CULTURE IN MOBILITY AND PUBLIC TRANSPORTATION

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INTRODUCTION

The main objective of the present paper is analyzing the connection between fashion and urban mobility; although these concepts are not usually interlinked in academic researches, it intends to formulate how the concept fashion and its social appliance can affect transportation. Fashion should not be only seen as a personal experience linked with luxury, but as an item and action which impacts the way people are perceived and interacts. The analysis of this phenomenon in Colombia is marked by social structures and breaches, this paper prompts a change in the mindset to adopt fashion as a collective, and as a vital part of the civic culture, without leaving behind its nature as a way of personal expression and encouraging identity and aspirational. Additionally, the relationship between quality of life and urban transportation is addressed through fashion, contemplating security, comfortability and adaptability, not only through clothing but as how the design and appearance things and commodities in public transportation impacts how citizens behave. This investigation as an analogical work which examines how clothing can be influenced by society but also influence its behavior, it takes example from different cities where fashion is cultural, aiming to extrapolate successful models and methods and see their appliance in Bogotá, Colombia. Based on empirical sources and analogies, this writing seeks to expand the limited bibliography and research on the topic.

CONCEPTS AND UNDERSTANDING

Breaking down the concept “Fashion”

Fashion is usually associated with clothing, luxury, brands, high couture, and something accessible only for the high spheres of society. In recent years, fast fashion and the massification of the textile industry has managed to make fashion items more affordable. However, through social media and the constantly changing aesthetics and trends, the lifestyle that is being sold to society, promoted through overconsumption, the creation of aspirationals of having luxurious items and displaying them as proof of social status and well-being, has become hard to maintain, less affordable, less practical, less thoughful and less personal.

In this paper, the aim is to transform this concept of fashion and begin understanding it as something bigger, more complex, and applicable than couture, expanding through adaptability, livability and new perspectives of culture and design.

In *The Fashion Body* by Joanne Entwistle, she introduces fashion as a social practice, explaining it through the relationships between different bodies that interact and intertwine in the production, promotion, and consumption within fashion industry and system.[1] She cites Fine and Leopold, who in their studies describe fashion as a "dual concept" and a "cultural phenomenon". In this investigation, all these concepts are blended into the construction of fashion, beginning with a definition of the word as a form of expression, means of communication, a tool in the creation of identity, and a social practice.

Identity

To understand fashion better, there are two crucial concepts that always come into play: identity and aspirationals. One of the principal purposes of fashion is to give and express representation. Through designs, shapes, colors, and materials, the message of the item is transformed, are as its use and intention. When society and individuals define their preferences and likes in any aspect, they express them through their choices, and those choices ultimately represent the identity they are creating.

Identity can be either individual or collective. Individual identity is shaped by personal decision, influenced by familiar background, personality traits, personal beliefs, experiences. When seeking representation, it primarily satisfies individual interests. Nevertheless, a personal style is not shaped only by individual identity, but also by collective identity. This derives from a social consciousness that constantly grows as individuals interact and become part of society. Social identities are attributed in order to classify and distinguish but also to include. According to David Snow, the sense of a "we", brings together, encouraging and mobilizing in an emotional, cognitive, moral and social way. Thus collective identity embraces both personal and social identities, adopts their claims and orients them toward action and character.[2]

Fashion as a social practice

To continue constructing this new concept of fashion, it is vital to explain it as a social practice in order to understand its role in social and civic culture. When making choices, there are previous thoughts and questions involved to ensure they fit different needs and scenarios. For example when putting together an outfit, factors such as place, weather, activity, mood, or the search for comfort versus formal attire, all influence the choice. Samilarly, when creating a space, whether it will be used for leisure, work, young people or whether it should transmit calm, serenity, or stimulate activity, all these elements matter. Combined with adopting a brand identity that aswers "who are we" and "where are we from", these are all part of the social practice of fashion. Fashion does not exists only to satisfy personal needs; it is intended to couple with the environment and contribute to its construction and definition.

However, it is crucial to understand that being a social practice does not mean standardizing styles nor identities, a social practice is not punitive; its main idea is not to prohibit or force certain items, styles or designs, but rather to create patterns, spaces and methods that enable the representation of individuals and collectives too.

Fashion as a catalyzer of civic culture

Continuing with the interpretation of fashion as a decision and social practice, it can be easily associated with civic culture, understood as a part of the democratic activity and responsibility. According to Timal and Castillo in democracy the active citizenship has the responsibility of choosing in function of personal interests and for participation to be possible there must be a civic culture that communicates it.[3] In their investigation of civic culture is also mentioned anthropologist Rodolfo Stavenhagen, who analyzes culture, human rights, and cultural rights; postulating multiple

approaches, first culture as a material patrimony in which 'right to culture' is equally granted to everyone, second, culture as a creative process, and third, a more modern approach that defines culture as the sum of activities, material and spiritual products of a social group that distinguishes them from others.[4]

DESIGN, AN OPEN PANORAMA

Design can be classified into two categories, function-driven or emotion-driven, both can apply to any design process. Function-driven design is directly related to need, there is something that requires solving, and the solution is shaped in a practical way to sort it out. Humans are even function-driven beings, the abilities we develop are an answer to a necessity we suffer. In evolution, we prioritized functional organs and movements rather than appearance or beauty unlike other species. According to designer Jaroslaw Morawski, function-driven design responds to people's needs, is done to accomplish a goal, and depends on data.[5] However, this sort of design also seeks standardization and optimization, to make production easier, and to cheaper. It is meant to be accessible, which implies it being simple, neutral and replaceable. It is not intended to last forever but to be affordable, temporary and easy to reply.

On the other side, emotion-driven design is based on a completely different premise; while it is based in need, it goes further by trying to evoke feelings, create emotions and being pleasant to see and interact with. The Interaction Design Foundation states that through emotion-driven design, the goal is to reach the clients in three different cognitive levels, visceral, that is the first impression and feelings, behavioral, when the user introduces and uses it a solution or facilitator in their activities, and reflective, which is the opinion created after experience, and the worth attributed to it.[6] Under this conception, although need is the first motor of creation, three factors differentiate the product when selling: reliability, usability, and pleasure. While creating a product, practicality is essential but it is equally important to anticipate which possible user responses.

Clothing Design

When designing clothes, as many other products there are always items that need to be comprehended before starting its creative process and production. To summarize, the first is the target audience, who are you trying to reach? second, its purpose, third, the activity for which the garment is intended, what is it suitable for, reliable and resistant enough to support? Fourth, price, both production and commercialization costs are important not only when selling or buying but also when budgeting and producing. And fifth, external conditions, such as culture, religion, weather, and season, can help reach specific niches, forming a brand identity, and influence consumers decisions to choose one brand or design over another.

The common denominator among all these factors is identity, the search for a genuine representation, a connection between the individual and what they wear. This is why standardization should not be considered in a market so full of differences, variability, and needs, and above all aspirationals. Fashion is driven by aspirationals, the desire to own something particular, special even, creating items that people feel the want or need to have, because they represent and signify something.

'Fashion in transit'

Fashion and clothing should be adaptable to scenarios, people, and environments, and here is where an invisible relationship is created between fashion and mobility. When understood as both a social practice and a decision-making exercise, it become clearer how transportation can be one of these external conditions that influence choices. How people decide to dress is often related to the how they plan to travel, for reasons such as comfort, practicality, distances, and duration; the transport choice

can affect clothing decisions, but they should not restrain it because of insecurity, danger or intimidation, rather they should allow people to adapt and move freely.
Recently, a new concept has been used to express this relationship between fashion and mobility: *Fashion in transit*. This concept investigates how, historically fashion and dress have been adapted to human conditions, including movement and transportation. Cornell University, created an exhibition that showcasted how clothing has been designed to function in diverse situations, and how modes of transportation have influenced clothing trends and design. The invention of the car brought the dusters, airplanes inspired aviator sunglasses and jackets, and similar shifts have occurred throughout history, especially since industrialization.[7] The opening of markets, easier transportation across countries and continents, and the rise of mass production and fast fashion, clothing has become more accessible to everyone. Transport is one of the big responsibles in this process and in that sense has also had an impact on trends, styles and design.

URBAN MOBILITY

When referring to urban mobility, there is a simple division between private and public modes of transport, which in the broader sense, constitute mobility through cities. Private transport are primarily cars, motorbikes, bicycles, and recently scooters or other personal transportation options, and public transport includes a large list of types, such as subway, buses, trains, cableway, trolleybuses, among others, that can vary depending of the city or even country .A solid, useful, and friendly system of transportation is directly related to the habitability of a city, increasing quality of life, and creating an environment of development, growth, expansion, and urbanization.

Intermodal mobility

Intermodal mobility makes reference to infrastructural articulation among the different types of transportation, with the purpose of increasing security, practicality, convenience, comfort, and regulation. Texeira, Rocha and Couto, make an investigation on intermodal mobility and state is meant to create a user-oriented journey that satisfies a large range of mobility demands;[8] it is, in simple words the combination of two or more means of transportation during the same trip; planning in an intermodal system, ensures more routes, estimations in time of trip, distribution of the density of users and vehicles in certain zones and hours and more coverage through the city.

Design in Mobility

Urban mobility has four drivers if taking about a user-oriented system, which are comfort, coverage, security and adaptability; therefore, when designing a mobility plan, project, structure, or system, it is important that guided by these factors, the design ensures a friendly and pleasant user experience through the whole system, not only in terms of commodity, but also of feeling safe, not stressed and creation a connection with the system and city that is what as mention before, an emotion-driven design will help to elaborate.
Around the globe, there are multiple examples of design techniques applied to the infrastructure of transportation systems, stations and vehicles, both have different ways to attract and create this link with the users. For example, in cities as Moscow, Sweden, and Paris, art is a main part of the subway design, it is almost like a cultural attraction, creating exhibitions and museums that show the local culture; or the New York subway, which is a cultural gathering scenario, crossing the city and adopting the diversity of population, trends, styles and lifestyles; or Medellin in Colombia, which has as a whole “metro culture” created around neatness, respect and care to the subway, it enhances social urbanism. On the other hand, there are also design adaptations in the vehicles, such as Seoul’s subway heated seats for winter, Riyadh’s women-only metro cars, and Mexico City and Medellin women-only

wagons. Some vehicle design improvements can be related to ergonomic seating, disability-friendly design, intelligent regulation, low environmental impact, amongst others.

APPLIANCE IN BOGOTA, COLOMBIA

Bogotá's public transport system is manly constituted by Transmilenio, which are elevated buses of rapid transit which means they work in a particular lane and stations, and according to Transdev (the operator company of Transmilenio), it is a solution for 2,4 million passengers a day, covering the main roads and sectors of the city.[9] Transmilenio is part of SIPT, which is the Public integrated transport system (in Spanish, acronym for Sistema Integrado de Transporte Publico), including as well SIPT Urbano, that are essentially buses and TransMiCable, that are cable cars. According to the District Mobility Survey of 2023, around the thirty-five percent of the population uses public transport system,[10] being the principal mean of transportation in city. However, Bogota is also known for its cycle-routs system, the Bogota Metro Company estimated there are about six-hundred and thirty kilometers of cycle-routes in the city;[11] complemented by 'Ciclovia', every Sunday and holiday the city closes lanes and road adapting them for cycles, skates, walkers, among others for exercising, decreasing the traffic stress of the city and it is a model that has been replicated in other cities that has demonstrated a positive social impact.

As well, in Bogotá there is actually the on-going construction of a subway system, that has imposed a new paradigm and a new necessity of creating a whole new identity, a new representation, start investigating how the diversity will play a role in the maintenance and function of the system. And in all this process, fashion and design, could be a solution to these preoccupations, and needs of the city.

Objectives

The objectives of the appliance of fashion in mobility and transport go through all the concepts, purposes, and interpretations that were proposed earlier in this paper. For starters, it is just right to pretend it to foment the creation of individual and collective identity, as well as a collective culture, fashion, and conscience around mobility. When de-articulating the concept "fashion" and unlinking it from luxury, and introducing it as a social practice, a decision, then it is maybe possible to blur the socioeconomic differences, social classes and promote a collective belonging despite the zone, race, class; which can be directly related to the increase o civic culture, security and adaptability in mobility.

In order to meet with these objectives, creating a distinctive characteristic that generates a belonging feeling and connection with the people, accompanied by communications, publicity, campaigns, and replicating successful models will enhance the social practice a collective gathering. Additionally, sustainability and ecology are two of the most important aspects to always keep in mind, planning, intelligent and caring design, ensuring a friendly user experience, and a positive impact on the environment. As well as new technologies and artificial intelligence advances that should be included in the system planning, times and schedules, and design choices based on demographics, city mobility, and particularities.

Examples

Proposals as transforming buses, stations, and vehicles into a publicity space, for divulgation, exchange, and offer for national fashion brands, open commerce, stores, and businesses in the stations, increasing sustainability, flow of people, and attractiveness to locals and tourists, Also, receiving feedback from users in order to create a two-way path of communication, cultural and identity exchange, and maintaining aspirational and belonging. These three methodologies, manly through communication and publicity, enhance the creation of civic culture in the cities.

CONCLUSION

This paper has argued that fashion, often confined to the spheres of luxury and individual expression, must also be understood as a social practice with direct implications for civic culture and urban mobility. Fashion is as a form of constructing identity, adaptability, and collective belonging, and it shapes individuals and colletives' interaction with the infrastructures. The interrelation of fashion and mobility demonstrates how material choices, design processes, and aspirational values extend into the lived reality of transportation systems.

When examining Bogotá, the challenges of fragmented mobility, socioeconomic disparities, and rapid urban expansion reveal the urgency of developing new strategies that incorporate cultural and aesthetic dimensions into transportation design. Fashion in this sense is instrumental, it can generate recognition, inclusivity, and engagement in public spaces, thereby strengthening civic culture and fostering safer, more adaptable environments. Examples from global cities illustrate how design, fashion, and transport can converge to create systems that are not only functional but also emotionally resonant and culturally distinctive.

Ultimately, adopting fashion as a factor in mobility planning expands the conversation beyond infrastructure and efficiency, into the realms of identity, culture, and sustainability. For Bogotá, and for other cities facing similar challenges, this perspective opens pathways for reimagining transport systems that are equitable, aspirational, and deeply connected to collective urban life. Future research and practice should continue to explore how integrating fashion and mobility can promote inclusive development and contribute to the creation of cities that are both livable and culturally vibrant.

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FACTORS ENHANCING CIVIC WALKING POSITIVENESS OBSERVED IN THE USERS OF MUNICIPAL WALKING PROMOTION APP IN TOYAMA CITY

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INTRODUCTION

Emergence of walking apps

Liveable city policies often encourage active transportation to contribute to the public health of urban residents. In the digital society, municipalities can also utilise applications to support such policies for urban residents who own smartphones. A review of the 16 walking apps recommended by the Heart Research Institute[1] reveals at least five distinct types:; 1) step tracking apps that record and visualise individuals' walking and health situation; 2) challenge-based apps that encourage gradual increases in walking activity through design, enabling users to sustain exercise habits in an enjoyable manner; 3) reward-based apps that provide economic incentives, such as digital currencies; 4) social and community-based walking apps that integrate exercise records with social networks and friendly competition; and 5) recreational value apps that provide route information to support high-quality walking experiences.

Through this diversification, users can increasingly choose apps that align with their individual lifestyles and health goals. Well-designed walkable spaces are likely to stimulate further the adoption and effective use of walking apps in cities that actively promote walkability. However, the relationship between residents' living community and the prevalence and utilisation of health-promoting applications remains insufficiently understood. Clarifying this relationship is essential for examining the complementary interplay between urban design and digital health services.

Existing research

Since the early 2020s, research on mobile applications promoting physical activity has expanded considerably including systematic reviews[2] and empirical investigations of how each app functions to influence certain user behaviour.[3] Bisson et al.[4] tested the efficacy of a new app (StepMate!) among middle-aged, inactive adults. Their findings indicated that walking was positively associated with mood and vitality, particularly among women and older participants. Similarly, Abdullah et al.[5] explored the effectiveness of interventions in promoting walking among diverse demographic groups using difference-in-differences analysis. Young participants who received all types of intervention (monetary incentives, health data and visual feedback) demonstrated a significant increase in steps. In contrast, low-income participants experienced a 54 % reduction. These studies suggest both the potential and the limitations on equity of app-based interventions.

Reward-based interventions might be one solution; however, evidence remains mixed. Chang et al.[6] compared apps with and without financial incentives and found no differences in mental health outcomes, whereas Buisonjé et al.[7] demonstrated clinically relevant increases in step count through the gamified StepBet deposit contract. This divergence highlights the need for more nuanced evaluations of reward-based strategies.

Beyond individual-level interventions, municipalities have begun experimenting with app-based approaches. Thorsen et al.[8] integrated the InterWalk app into diabetes rehabilitation, reporting no significant improvements in objectively measured physical activity time, although apparent benefits were observed for self-rated health-related QoL. According to Seprhri et al.,[9] practised use under COVID-19 over 120 days resulted in nearly 55 more daily steps compared to new users. Maps highlighted walking hotspots in mixed-use neighbourhoods with amenities. While this suggests potential synergies between app route pattern and urban form, the relationship between environmental factors and sustained app use remains insufficiently understood.

Therefore, our research in connection with liveable city policies advances understanding of how municipal digital interventions can induce walking activities and clarifies the challenges of maintaining citizen engagement over time. Unlike most prior research, which relies on relatively short-term data, this research draws on step counts spanning four years.

TARGET

Toyama city, Japan

The target is Toyama City, a snowy prefectural capital with the fifth-lowest population density (325 people/km², approximately 400,000 population) among Japanese urban areas. The city is well known for its compact city policy under conditions of demographic decline (Fig. 1)[10] and has been highlighted internationally by organisations such as the OECD. A key concept is the Residence Encouragement Zone (REZ, red coloured), defined as areas within 500 metres of LRT corridors where the municipality promotes residential concentration. The policy aims to raise the share of residents living along these convenient corridors from roughly 30 % to 40 %. Since the introduction of the PORTRAM LRT system in the 2000s, urban mobility has improved significantly, linking the northern REZ with key urban functions. The subsequent extension of LRT to the south anchored the railway station and historic centre with the Grand Plaza, a public square that now hosts social activities and cultural events. The walkable city strategy, launched in 2019, required cross-departmental policies that encourage citizens to experience urban scenes on foot and to use public transport. Such integration of public spaces and transit access exemplifies the city's policy.

Tohokatsu application

As an aspect of the walkable city strategy, the city developed a reward-based mobile application called Tohokatsu ("active walking" in Japanese, Fig. 2).[11] Users can accrue points by walking, using public transport, and participating in events in the city centre, and exchange the points for special prizes. Each function can also be displayed as a daily chart, allowing users to track the cumulative status of their activities. The app was recognised for the Good Design Award in Japan, demonstrating implementation at the municipal level. According to the diffusion of innovation theory,[12] usage diffuses in mass after over 16 % of potential users have adopted it. In Toyama, approximately 5 % of citizens have registered with Tohokatsu over the past four years, representing innovators or early adopters of a walking-oriented lifestyle.

Figure 1. Residence Encouragement Zones in Toyama city

Figure 2. Tohokatsu app launched in 2019

OBJECTIVES

This research contributes new insights into the long-term effectiveness of reward-based walking apps in connection with liveable city policies.

The objectives of this research are:

1. To investigate the behavioural patterns of continuous Tohokatsu app early adopters; and
2. To examine the relationship of the community factors of users on sustained app use.

METHODS

Data

We utilised Tohokatsu data (November 2019–July 2024) from 4,805 anonymous users, who had been using the app since 2019, defined as early adopter users. We also analysed their questionnaire to the "FY2024 Transportation and Health Monitoring Survey in an Ageing Society".[13] The average duration for the 4,805 users was 3.6 years. We excluded inactive user data by checking the criterion that they had kept recording for less than four years. Data were provided as average daily steps in a month. That is, the total steps in a month, excluding days with zero steps, divided by the number of recorded days.

Structure of analysis

The analysis was structured around three main components:

1. Baseline assessment of average walking steps between app users and the general population.[14]
2. Classification of early adopters' walking styles by step data. Using k-means clustering and time-series analysis, we categorised users according to the stability and trajectory of their average daily steps.[15] This allowed us to detect behavioural heterogeneity within the early adopter group.
3. Exploration of internal and community factors[16] that may influence continued use.

To examine determinants of walking styles further, we utilised data from the FY2024 questionnaire mentioned above (n = 1,856). Among these respondents, a subset of 457 individuals could be matched with early adopter app user IDs, meeting the criteria for a 95% confidence level with a ±5% margin of error. Two types of analysis were performed: 1) chi-square tests were conducted to explore associations between categorical variables and walking styles; 2) Two classification models were created using a random forest, with the k-means cluster result as the objective variable.[17] The contribution analysis of the random forest was then used to determine which internal or community factor variables contribute to cluster separation. Rather than evaluating classification accuracy, we focused on explaining the structural characteristics of clusters.

RESULTS

Walking styles and trends

The target for the k-means clustering was N = 2,417 after screening out inactive users. The dataset spanned key periods, including the COVID-19 state of emergency declarations (T = 6–7, T = 15–23; T represents month unit, November 2019 being T=1), enabling examination of both long-term usage and responses to external disruptions.

A total of 18 clusters were identified (Table 1, A–R).[18] To evaluate the similarity of clusters, ANOVA was applied. Clusters marked * to ***** indicate there were specific periods with no significant differences were observed, suggesting similar not whole but during the periods. Moreover, the authors synthesised them into three overarching trends by graph shapes, represented in the table by colour groupings:

1. Increasing or high-level trend (pink 39.4%): clusters A, D, H, O, P and R.

Users either steadily increased their step counts or maintained consistently high levels (6,000–14,000 steps). This category may reflect successful engagement, often aligned with events, incentives or situational motivations.

2. Decreasing or fluctuating trend (grey 35.9%): clusters B, C, I, J, K and N.

Users displayed irregular or gradually decreasing usage without complete disengagement. This suggests situational or partial use of the app, potentially influenced by lifestyle changes, seasonal factors or limited resonance with incentives.

3. Obvious decline/lack of Adoption (black 24.3%): other clusters.

Users demonstrated a sharp decrease in activity or almost discontinued use. This trend highlights challenges in maintaining long-term engagement.

Table 1. A-R Clusters and three trends (coloured pink, grey and black)

Figure 3. All data visualisation of cluster A, H, N, P, R

Increasing or high-level trend users

Focusing on clusters with "increasing or high-level trends (IHT)" provides valuable insights into user groups that may be most responsive to future interventions by the app. To summarise the vast samples in each cluster (Fig. 3), we conducted a time series analysis by focusing on the median values of the target clusters. To confirm the stationarity of the time series data, we performed a Phillips-Perron unit root test. Based on the Dickey-Fuller statistic, an appropriate lag length, and the p-value, we verified the null hypothesis of the existence of a unit root (non-stationarity). For cases where the p-value was below the significance level and the data were deemed stationary, we applied an autoregressive model to account for the autocorrelation structure. We plotted the predicted values as dashed lines in the graph (Fig. 4). O and D, which have recently been on a decreasing shift, have been omitted from the visuallising.

Cluster A represents users who gradually increased their activity from a low baseline (2,000 to 6,000+ steps). The forecast shows a continued mild increase. Clusters H and R exhibited high fluctuations before stabilising, with bottom records during the COVID-19 emergency declaration period (T = 15–23, orange band). Cluster N comprised high-performers who intermittent recorded step counts peaking over 20,000. Cluster P demonstrated seasonal variations, declines coinciding with the winter-to-spring periods and possible links to a snowy climate. This pattern reinforces the role of environmental and temporal factors in shaping walking behaviour. As a side note, when we examined

available event participation data in October 2024, Cluster P was with a relatively high record of event participation (Fig. 5).[19] In addition to P, clusters with a larger volume of steps, such as R, show proactive event participation points. Cluster C in "decreasing or fluctuating trend", which is about the same level as P in this graph, might suggest the people who liked events but did not continue to use the app.

Effects of internal factors and community factors

Attributes of increasing or high-level trends (IHT)

There was not much difference in attributes between early adopters' ID and others (Table 2). Therefore, we were unable to define any specific attributes that make people more likely to become early adopters. As the next step, focusing on the early adopters' ID, chi-square tests were conducted to determine whether there were any significant differences concerning IHT (n=276) and the other two trends (n=181) based on the perspective of the previous research mentioned above—whether they were elderly (born before the 1950s), differences in gender, whether their household had a low income (2 million yen or less, the smallest value among the questions), and whether they lived in the city centre (city-centre postcode). The results showed significant differences for gender (Table 3; X^2 = 4.74, df = 1, p-value = 0.029). Regarding the place of residence, while city center residents account for only 5.3% of the total population (2001), their share of IHT users is relatively high at 20%. However, the ratio of IHT users the city center is similar to outer area. IHT users: Other two trends' users is approximately 6:4, . Despite intensive policy investment, it cannot be said with certainty that the city center is making a clear difference in adopting lifestyles that involve mastering apps and increasing step counts.

Figure 4. Median values time-series analysis of five clusters in increasing or high-level trend users

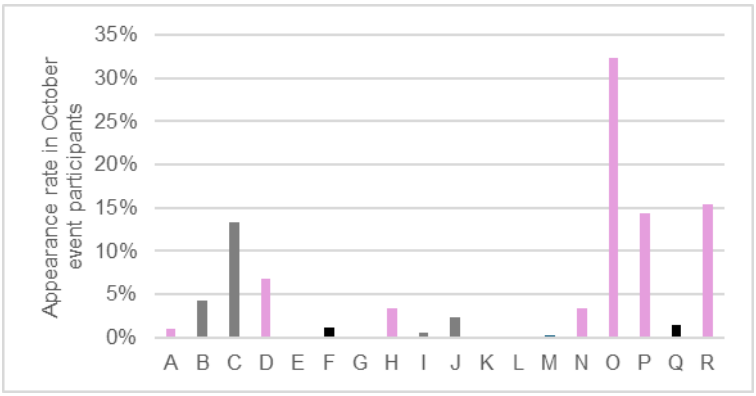

Figure 5. Events participation of each cluster (October 2024)

Table 2. Early adopters' and others' attributes from questionnaire

Table 3. Cross-tabulations showing significant differences

Random forest models

The first of the two random forest models was used to determine the contribution to three trends of the user's intrinsic psychological factors (Table 4). The larger the Gini value, the more substantial the variable's contribution to branching. The classification error was low only for the IHT group (Fig. 6 left). The table shows the contribution score for each category(Fig. 6 right). Rather than on an individual satisfaction basis, when with one in community area is on a medium to high level, people

are likely to be adept at using walking apps well. The second model focuses on the mobility environment.[20] In situations where it takes a long time to drive to major destinations, users do not seem to fit with IHT. Since the accuracy is relatively low for other categories of classification, we should examine other expression of questions in future survey to confirm whether users may be affected by train ride times and walking times.

Table 4. Available FY2014 questionnaire data

Figure 6. Random forest outputs

DISCUSSION

Regarding the first research objective, several key observations emerged. Approximately half of the early adopters did not sustain long-term use, indicating that initial enthusiasm was insufficient to sustain engagement over extended periods. Table 1's each peak value revealed that divergence in walking styles became apparent between 10 and 30 months after adoption, an important contrast with studies of shorter duration, many of which reported initial increases in activity.[21] Among continued users, only 40 % exhibited IHT in step counts. Furthermore, when compared with the prefectural level,[22] only 18 % of users exceeded baseline levels (in case of females, 6,074 in 2016). Nevertheless, it is noteworthy that 12 % of users (Cluster A, H) who began with relatively low step counts demonstrated gradual improvement, indicating that the municipal reward-based Tohokatsu app contributed to a positive change for a subset of participants. From the perspective of the second objective, the differentiated walk step patterns can inform more nuanced approaches to sustaining engagement. While certain groups (e.g. cluster A) may benefit from targeted motivational incentives to sustain gradual improvements, others (e.g. H and R) may require resilience-oriented strategies to mitigate external disruptions. Seasonal groups (P) highlight the importance of aligning with environmental and urban contexts such as citizen events.

In addition, random forest analysis indicated that individuals with shorter access times to major destinations by car and higher satisfaction with their community environment were more likely to maintain or improve their walking styles. At first glance, these results appear inconsistent with the compact city policy, which emphasises the concentration of population and services in the city centre. One possible explanation is that although Toyama's city centre offers high accessibility by public transport, this does not necessarily translate into more walking due to short commuting distances and reliance on sitting. The other less positive explanation is that, according to existing citizen reports, city centre residents are less satisfied with their daily walkable environment despite the overall improvement of urban spaces for lively activities and interaction being rated relatively higher,[23] because walk-inducing events are concentrated on weekends and not weekdays. Qiao and Yeh[24] indicate that "objective improvements will not necessarily promote walking if people's subjective perceptions do not match." While Toyama city centre has objectively improved its environment through the development of public transportation and plazas, it is possible that residents do not subjectively rate it as easy to walk. In contrast, Koszowski et al.[25] showed that significant differences between frequent and less frequent walkers were identified mainly for the delight variables. These encompass space availability and street furniture for leisurely walking. Toyama has been promoting a support system to create community places in suburban areas, which might contribute to the result. Bridging this gap between policy intentions and actual behavioural outcomes will be essential for future iterations of liveable city strategies.

CONCLUSION

In conclusion, almost 50 % of early adopters are considered active—that is, continuous—app users. The app successfully promoted gradual improvement for a subset of such users (notably 12 % who began with low step counts), while 40 % maintained an increasing or high-level trend. However, just 18 % exceeded the prefectural average. This underscores the limitation of financial reward as a stand-alone mechanism for long-term behavioural change. One of the key points of division might be during the 10 to 30 months following registration, suggesting that campaigns during this period are especially effective in motivating users. The cluster analysis highlights the need for tailored strategies even among increasing or high-level trend users.

Even though the app is reward-based, the influence of environmental factors is estimated. A synergistic effect is expected with the app when users are satisfied with community areas and spend less time driving to their destination in daily life. Tohokatsu demonstrates the potential of municipal apps to foster active living. Future research should investigate means to bridge the gap between physical design and lived experience, ensuring that urban interventions and digital tools jointly contribute to more liveable and health-promoting environments.

NOTES

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[15] People who regularly walk in a month and those who do not usually walk but walk a lot a few days a month (typically turn the app off and on during rewarding events) may be evaluated similarly in this dimension.
[16] A key limitation of the questionnaire dataset is that location information was available only in the form of postcodes. Since the geographic size of each postcode varies considerably, it was not possible to establish a precise correspondence between respondents' residences and REZs.
[17] There are studies that use random forests as the objective variable for clustering results, such as Timothy DeLise, "Data Segmentation via t-SNE, DBSCAN, and Random Forest," *arXiv preprint arXiv:2010.14304[cs.LG]* (2021), https://arxiv.org/abs/2010.14304
[18] The clustering was done so that the number of samples was less than 255 in each cluster, which Excel can process through graph drawing.
[19] Event participation is recorded by apps accessing the QR code on-site. Toyama City's weather in October is relatively mild with little rainfall and daytime temperatures in the 20s, making it ideal for walking. (Source: https://www.ncei.noaa.gov/ ,accessed September 1, 2025)
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QUANTIFYING "SOZORO-ARUKI" WALKABILITY IN JAPANESE HOT SPRING TOWNS USING LIDAR-BASED PEDESTRIAN DATA: A CASE STUDY OF KINOSAKI ONSEN

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INTRODUCTION

The term "Sozoro-Aruki" encompasses the emotional aspects of pedestrian

In many tourist destinations, walking is not simply a means of mobility but an integral part of the visitor experience. The Japanese term "sozoro-aruki(そぞろ歩き)" literally translates to "stroll"[1] or "ramble"[2] and refers to walking at a leisurely pace without a specific destination in mind[3](figure 1). This style of walking involves enjoying the townscape, interacting with shops, and immersing oneself in the atmosphere, and is particularly symbolic in hot spring resort towns such as Kinosaki Onsen. Here, guests wear traditional yukata robes and wooden geta sandals, carry towels, and do sozoro-aruki between public onsen bathhouses with friends and family.[4]

Such activities significantly influence regional identity, the local economy, and the subjective well-being of both tourists and local residents. By fostering spontaneous social interactions, encouraging visual exploration, and enhancing a sense of place attachment, these activities supported by sozoro-aruki serve as essential components of tourism planning, pedestrian environment design, and efforts to improve urban liveability.

Figure 1. "Sozoro-aruki" in Kinosaki Onsen, Japan[5]

Challenges in Realizing Sozoro-aruki

Despite its importance, sozoro-aruki faces two challenges to realizing and promoting in contemporary tourism areas.

The first is that leisurely walking is hindered by cars traveling on roads that are not separated from pedestrians. Hot spring towns such as Kinosaki Onsen and traditional tourist destinations often have narrow roads without physically separated sidewalks or pedestrian-only areas, resulting in a road environment shared by vehicles and pedestrians. When vehicles pass by, pedestrians often have no choice but to yield the road, disrupting the relaxed atmosphere of sozoro-aruki. Visitors who wish to enjoy a leisurely walking must constantly remain vigilant, frequently yielding the road to vehicles or temporarily stopping to avoid delivery operations, despite their desires. These interruptions transform what should be a relaxing walking experience in tourist destinations into a stressful and unenjoyable one.

The second issue is the difficulty of presenting objective and numerical evidence necessary for coordination among stakeholders when restricting vehicle access. Local governments, ryokan (Japanese inn) operators, shop owners, and residents are aware of the tension between vehicles and pedestrians, so proposals such as restricting vehicle access, introducing pedestrian-only hours, and redesigning road layouts are frequently raised in public discussions. However, without clear data and evidence, it is difficult to evaluate the cost-effectiveness of policy interventions, build consensus among stakeholders with conflicting views, and implement such changes.

Several methods or indicators[6] for measuring walkability have already been developed, but these methods tend to prioritize the evaluation of physical characteristics of roads (connectivity, accessibility, safety, etc.). Additionally, there have been attempts to consider pedestrians themselves, including their attributes and behaviors, for policy consideration and effect evaluation, but appropriate tools for evaluating the quality of pedestrians, in addition to simple counts of pedestrian numbers, have not yet been sufficiently developed.

Therefore, this study aims to provide quantitative indicators in the context of “sozoro-aruki” based on captured pedestrian behavior to address the above needs.

Research Questions

In order to fill the gap mentioned above, this study define “sozoro-aruki” behavior, propose measurable indicators, and verify their effectiveness through case studies in real field. The objective of this study is to provide urban planners, local governments, tourism and transportation planners, and regional development companies with an evidence-based framework for evaluating the impact of road design and traffic measures on the quality of walking in tourist areas that can be enjoyed on foot, such as hot spring resort areas. Essentially, this study will use objective sensor-based pedestrian movement data to develop a behavioral indicator called the “sozoro-aruki score” that captures the essence of leisurely walking.

Specifically, it is structured around the following three research questions.

1. How is sozoro-aruki defined, and how can it be expressed as a spatially and behaviorally measurable indicator? This question focuses on concretizing the culturally rooted concept of “sozoro-aruki” into a measurable phenomenon by verifying, and measuring elements that best represent its characteristics, such as walking speed, stopping behavior, and walking trajectories, in accordance with its definition.
2. How can specific locations such as Kinosaki Onsen be evaluated from the perspective of sozoro-aruki based on the proposed indicators?
3. How do environmental and temporal conditions influence the ability of pedestrians to do sozoro-aruki? By analyzing the correlation between factors such as day of the week/time of day, automobile

traffic volume, and crowd density—which are generally assumed to influence sozoro-aruki in tourist destinations—the aim is to identify conditions that promote or hinder desirable walking experiences. Through these efforts, we aim not only to propose the "sozoro-aruki score" as a reliable indicator, but also to enable broad discussions about urban spaces with diverse stakeholders taking into account cultural and social concepts. This approach is also applicable not only to tourist destinations in Japan but also to pedestrian-oriented urban spaces around the world.

CONCEPTUAL DEFINITION OF "SOZORO-ARUKI"

Dictionary Definition

According to Japanese dictionaries, "sozoro-aruki" is defined as "Aimlessly walking about as one feel, without any specific destination."[7] In English, terms like "stroll," which means "to walk somewhere in a slow, relaxed way," or "ramble," which means "to walk for pleasure, especially in the countryside," would be appropriate translations[8]. The French term 'flâneur' means "someone who walks around not doing anything in particular but watching people and society"[9] and is similar to the Japanese concept of "sozoro-aruki."

A common feature of these terms is that they emphasize a leisurely pace and a sense of enjoyment and relaxation, unlike functional or goal-oriented walking such as commuting or errands. They involve moving around and stopping along the way based on curiosity and a sense of freedom, without a clear destination, driven by intrinsic motivation.

This suggests that a unique analytical perspective that captures the characteristics of such movement is necessary to understand and analyze "sozoro-aruki."

Representation as an objective characteristic

Based on the dictionary definition mentioned above, the characteristics that represent "sozoro-aruki" were classified into the following two main areas (Figure 2).

Figure 2. Feature that constitute the concept of "sozoro-aruki"

The first is behavioral features, which consist of sub-features such as "walking speed" and "stopping behavior." With regard to walking speed, it can be said that the slower the average speed of a each pedestrian, the more leisurely their walk, and it is thought that a speed distribution that is not constant expresses a sense of aimlessness. Similarly, a high number of stops and long stop duration are likely to express an interest in that location.

The second is trajectory features, which consists of two sub-features: "straightness of trajectory" and "road crossing." In commuting or other purposeful walking, the trajectory is straight and highly linear toward the destination, while in aimless walking without a clear destination, the trajectory is not straight but meanders toward places of interest. Additionally, on streets lined with shops on both sides, the facades of shops on the opposite side of the road are more noticeable, and most people may

have experienced crossing the road to approach a shop that caught their attention. The presence or absence of road crossings is also added as an indicator to represent sozoro-aruki.
It should be noted that emotional elements such as “relaxation” and “casualness,” which are important aspects of sozor-aruki, are subjective and vary depending on the individual, culture, and context. While questionnaires and interviews can provide insights into the emotions of pedestrians, collecting sufficient samples is a time-consuming and labor-intensive process that is also susceptible to bias in the memories of respondents. Therefore, in order to enable scalable and reproducible analysis, this study focuses on observable walking patterns that indicate emotional states as proxy variables for behavior. While these six indicators mentioned above cannot capture the emotional dimension of sozoro-aruki on their own, the key point is that we try to approximate the quality of the walking experience by combining multiple characteristics.
Finally, this framework has a certain degree of versatility. While sozoro-aruki is rooted in a Japanese context, words that express the enjoyment of the walking experience itself exist in English and French, and its importance is not unique to Japan; similar behaviors are likely to be observed in other cultural settings. Therefore, this study's framework is expected to contribute to a broader field of walking possibility models that reflect cultural nuances.

METHODS

Analytical Steps

The study was conducted in the following steps. First, data on the movements of individual pedestrians was collected, and based on the acquired data, characteristic values for each pedestrian were calculated in accordance with the definition of “sozoro-aruki.” After normalizing the characteristic values, a single score called the “sozoro-aruki score” was calculated from multiple characteristic values using principal component analysis. This process made it possible to represent each observed pedestrian movements as a continuous score based on their behavioral characteristics. Finally, using regression analysis and Structural Equation Modeling with this score as the dependent variable, we analyzed the environmental and temporal conditions that contribute to a high sozoro-aruki score.

Methods of capturing pedestrian movement data

There are various methods for acquiring pedestrian data, including visual surveys, camera image analysis, and smartphone GPS data analysis, which can accommodate a wide range of scales. However, there are limited technologies capable of acquiring high-precision, high-frequency data for the “walking speed” and “walking trajectory” defined in this study. Therefore, this study selected a survey method using LiDAR(Light Detection and Ranging) sensors.
LiDAR is a remote sensing method that uses pulsed laser beams to measure distances and generate three-dimensional spatial data. It has been widely used in autonomous vehicles, terrain mapping, and crowd monitoring. Its advantages in the context of urban pedestrian analysis include high spatial accuracy (±30 cm), rapid sampling frequency (5–10 Hz), and—critically—non-visual data capture, which preserves individual privacy.

IMPLEMENTATION

LiDAR Sensing and Site Overview

In this case study, we chose Kinosaki Onsen, a famous hot spring town in Hyogo Prefecture, Japan, as a field survey site and collected pedestrian data by installing two LiDAR devices on Yunosato-dori, the main street of this area (Figures 3 and 4: Map of the study area and LiDAR installation locations and measurement ranges).

Figure 3. Location of the field survey site, Kinosaki Onsen

Figure 4. LiDAR installation locations

The survey was conducted over four consecutive days from Thursday, November 14, 2024, to Sunday, November 17, 2024, with each day's measurement lasting 12 hours from 10:00 AM to 10:00 PM. This time window was selected to capture multiple cycles of tourist flow across weekdays and weekends, including different environmental conditions.

Field Setup and Processing Flow

On-site setup involved mounting a Velodyne VLP-16 LiDAR onto a streetlight pole using clamps, with power supplied from a power source provided on the road(Figure 5). Data from the two sensors was synchronized using Panasonic's 60GHz wireless communication device ECDI. Pedestrians were extracted using LiDAR data processing software developed by Hitachi Information & Telecommunication Engineering, Ltd. and saved as CSV files.

The CSV file recorded information such as datetime, pedestrian ID, coordinates (x, y, z), and movement speed every 0.2 seconds. These data were visualized and analyzed using the geospatial

information system QGIS. Since objects such as vehicles, trees, and signs may be mistakenly detected as pedestrians, IDs not measured continuously for 10 seconds or more and IDs with an average speed exceeding 2.5 m/s were considered false detections. These were deleted during the screening stage before analysis.

Figure 5. The site where the LiDAR was installed

RESULTS

Pedestrian Summary Statistics

During the four-day LiDAR survey, a total of 21,270 pedestrian trajectories were recorded. Each trajectory represents an individual detector walking within the observation area defined by crossing a virtual baseline (A–A') across Yunosato Street(Figure 6). Hereafter, the number of these trajectories is treated as the pedestrian count. When examined by survey date and time period, as shown in Figure 7, the peak pedestrian count was observed on Saturday, November 16, with over 7,000 pedestrians recorded in a single day. The hourly trend showed a peak at 4:00 PM, followed by a sharp decline between 6:00 PM and 7:00 PM, with pedestrian numbers recovering again after 7:00 PM. This pattern aligns with dinner time at ryokan (6–7 PM) and evening bathing times (after 7 PM).

Figure 6. Virtual baseline (A-A') and an examples of pedestrian trajectories

Figure 7. Hourly Pedestrian Traffic (14th – 17th, November)

Feature Calculation

After preprocessing raw LiDAR data, six types of behavioral and trajectory characteristics were calculated for each pedestrian trajectory. The calculation procedure is as follows:

• Average walking speed was calculated by averaging the instantaneous speeds acquired every 0.2 seconds for each unique ID.

• Velocity variability was calculated using the standard deviation of instantaneous velocities computed at 0.2-second intervals. High variability indicates gait fluctuation.

• Number of stops was identified using a velocity threshold: periods where velocity fell below 0.2 m/s were counted as "stops".

• Average stop duration was calculated as the time the speed remained below 0.2 m/s continuously, indicating how long a pedestrian stayed at a specific location.

• Path straightness rate was calculated as straight-line distance / total path length. A value closer to 1 indicates a more linear path.

• Crossing behavior recorded whether a pedestrian crossed the road's centerline.

As shown in Table 1, basic descriptive statistics for each pedestrian revealed patterns consistent with predictions regarding walking behavior characteristics in leisure-oriented environments. The average walking speed was approximately 0.98 meters per second. This speed suggests many pedestrians walked without rushing.

Additionally, each pedestrian made an average of 1.1 stops within the detection area, with each stop lasting an average of 7.4 seconds. The average path straightness was 0.81, which can be interpreted as a slightly meandering result.

Features		Unit	Mean	SD	Median
-	Observation time	s	44.73	49.04	38
Behavioral Features	Mean walking speed(I)	m/s	0.982	0.371	0.939
	SD of walking speed(II)	m/s	0.310	0.308	0.219
	Number of stops(III)	times	1.078	3.074	0
	Mean stop duration(IV)	s	7.388	24.546	0
Route Features	Directness of Walking trajectory(V)	-	0.812	0.194	0.881
	Whether the center-line is crossed(VI)	T/F	-	-	-

Table 1. Basic result of Pedestrian features

Result of PCA and Sozoro-aruki Score

These feature values were compiled into a structured dataset, with each row representing a single pedestrian trajectory and each column corresponding to one of the six indicators. To integrate these features into a single composite indicator, principal component analysis (PCA) with varimax rotation was applied.

As shown in Table 2, PC1 had an eigenvalue exceeding 1 and explained 33% of the variance. The loadings indicated that lower speeds and higher stopping/curving tendencies loaded positively onto this component. Therefore, this component was interpreted as the "sozoro-aruki score."

Considering interpretability and to adjust the directionality of the score, the sign of PC1 was reversed. This ensured that higher values corresponded to more sozoro-aruki walking.

	Standard deviation	Proportion of Variance	Cumulative Proportion	(I)	(II)	(III)	(IV)	(V) [10]	(VI)
PC1	1.41	**0.331**	0.331	-0.48	0.06	0.53	0.45	0.51	0.13
PC2	1.22	0.247	0.577	-0.47	-0.70	-0.01	-0.34	-0.20	-0.49
PC3	0.92	0.141	0.718	0.21	0.41	0.07	0.42	0.12	-0.77
PC4	0.873	0.127	0.846	0.08	0.11	0.41	-0.74	0.38	-0.35
PC5	0.768	0.098	0.944	0.05	0.03	0.70	-0.04	-0.69	0.18
PC6	0.579	0.056	1.000	0.70	-0.57	0.24	0.26	0.25	0.01

Table 2. Result of Principal Component Analysis

EFFECTS OF TIME AND ENVIRONMENT

From here, we conducted a series of statistical analyses using inferential modeling, with the calculated sozoro-aruki score as the dependent variable, to gain a deeper understanding of the temporal and environmental determinants of that score.

This section focuses on the effects of time of day, day of the week, vehicle traffic volume, and pedestrian density on the sozoro-aruki score, presenting the results of these analyses.

Temporal Patterns and Relation to Vehicle Traffic

By examining the temporal trends of the Sozoro-aruki scores calculated for each pedestrian ID, a consistent temporal pattern emerged. The hourly time-series plot of average scores shows the hourly averages for both weekdays and holidays, illustrating the temporal changes in the Sozoro-aruki scores.(Figure 8)

Figure 8. Hourly Sozoro-aruki Score vs. Vehicle Count (15th-16th November)

Additionally, the graph plots hourly vehicle counts obtained from camera surveys conducted at the same location. Note that only data from November 15th and 16th, for which vehicle traffic data was available, is graphed here. Subsequent statistical analyses focus solely on these two days. The graph shows that scores peaked in the morning (11:00-12:00) and evening (around 20:00), dropped significantly around 15:00 (the typical inn check-in time), and this decline was inversely proportional to vehicle traffic volume.

Factors affecting Sozoro-aruki score

Based on the above results, statistical analysis using structural equation modeling (SEM) revealed the following key findings(Figure 9):

- Vehicle traffic volume had a significant negative effect on the score ($\beta = -1.241$, $p < .05$).
- The morning time period had a positive effect ($\beta = +0.996$, $p < .05$).
- Pedestrian density was not statistically significant, indicating that crowds do not inhibit sozoro-aruki.

Figure 9. Result of SEM

These findings clearly demonstrate that it is not pedestrian congestion but the presence of moving vehicles reduces sozoro-aruki. The morning period also emerged as an optimal opportunity for relaxed strolls. This time slot featured low vehicle traffic, creating conditions conducive to sozoro-aruki. However, regarding the third finding, higher pedestrian density may have hindered free walking, forcing slower speeds than desired and consequently inflating the sozoro-aruki score. Determining the upper limit of density comfortable for sozoro-aruki requires conclusions based on insights from congestion studies and related fields.

Taken together, these results confirm that time and traffic management, not just physical infrastructure, play a decisive role in enabling sozoro-aruki. This suggests that urban planners and tourism planners should consider implementing time-restricted pedestrian zones or partial road closures to protect and promote desirable walking experiences.

Methodological Implications

The findings of this study provide practical insights for tourism planning and urban design. For instance, leisurely strolls are promoted by quiet, relaxed street environments, and it is vehicles—not crowds—that primarily undermine this condition. Furthermore, the "sozoro-arukio score" demonstrated in this study functions not only as a diagnostic tool but also as a communication tool. Quantitative metrics help coordinate stakeholders with differing priorities, such as shop owners, logistics companies, tourists, and urban planners. They enable discussions grounded in empirical data rather than subjective claims about comfort.

However, this LiDAR-based approach also has several methodological limitations. First, behavioral inference is always a proxy metric—LiDAR captures movement, not motivation. A pedestrian stopping to tie their shoelaces and one pausing to admire the scenery may exhibit the same behavior. Similarly, a winding path might result from getting lost rather than leisurely exploration. While the six features used in this study were carefully selected to align with the definition of sozoro-aruki, their interpretation requires contextual understanding. Second, this study focused on the single urban environment of Kinosaki Onsen. This area possesses unique spatial, cultural, and demographic characteristics. While the methodology is transferable, the behavioral patterns observed here may differ in other districts which has other characteristics.

CONCUSION

This study developed and tested a novel framework for quantifying sozoro-aruki walkability using LiDAR-based pedestrian trajectory data in Kinosaki Onsen. By translating a culturally embedded concept into measurable behavioral and spatial indicators, we introduced the “sozoro-aruki score” as a composite metric that captures the essence of leisurely strolling. Empirical analysis revealed that vehicle traffic, rather than pedestrian density, significantly undermines the quality of strolling, while morning hours provide favourable conditions for relaxed walks. These findings highlight that temporal vehicle traffic management is as important as physical design in sustaining enjoyable pedestrian environments. Methodologically, the study demonstrates that high-frequency sensor data can be used not only for diagnostic purposes but also as a communication tool to align stakeholders in urban and tourism planning. The proposed framework offers transferable insights for promoting walkability and liveability in culturally diverse pedestrian-oriented areas worldwide.

NOTES

[1] Kenkyusha, *Kenkyusha's New English-Japanese Dictionary*, 5th ed. Tokyo: Kenkyusha, 2003.
[2] Kenkyusha, *Kenkyusha's New English-Japanese Dictionary*.
[3] Shogakukan, *Shogakukan Unabridged Dictionary of the Japanese Language*, 2nd ed. Tokyo: Shogakukan, 2007.
[4] Kinosaki Tourist Information Center, "Kinosaki Hotspring Official Site". accessed September 5, 2025. https://kinosaki-spa.gr.jp/.
[5] Photographed by the author
[6] See, for example: Robert Cervero and Kara Kockelman, "Travel Demand and the 3Ds: Density, Diversity, and Design," Transportation Research Part D: Transport and Environment 2, no. 3 (1997): 199–219; Bojing Liao et al., "Empirical Analysis of Walkability Using Data from the Netherlands," Transportation Research Part D: Transport and Environment 85 (2020): 102390; Ryo Tanimoto, Tomoya Hanibuchi, and Tomoki Nakaya, "Development of Japan Postcode-level Walkability Index and Examination of Its Usefulness," Quarterly Journal of Geography 75 (2023): 16–26; Redfin Corp., "Walk Score," accessed September 5, 2025, https://www.walkscore.com/; Lucy Saunders, "Healthy Streets," accessed September 5, 2025, https://www.healthystreets.com/.
[7] Shogakukan, *Shogakukan Unabridged Dictionary*.
[8] Oxford University Press, Oxford Learner's Dictionaries, 10th ed. United Kingdum: Oxford University Press, 2020.
[9] Cambridge University Press, "Cambridge Dictionary". accessed September 5, 2025.
https://dictionary.cambridge.org/dictionary/
[10] Here, we use the Curviness expressed as [1 - Directness] rather than the directness itself.

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FROM STRESS TO SOLUTIONS: INVESTIGATING THE PSYCHOLOGICAL IMPACTS OF AIRCRAFT NOISE AND URBAN DESIGN RESPONSES

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INTRODUCTION

Environmental noise has become a major public-health concern in cities worldwide, with aircraft noise singled out for its intensity, unpredictability, and broad health burden.[1] Chronic exposure is linked to annoyance, psychological stress, disturbed sleep, cognitive effects, and cardiometabolic risk, even below hearing-damage thresholds, via sustained physiological stress responses.[2] Sleep disruption is especially robust, with nocturnal events degrading continuity and recovery.[3] In Jeddah, rapid urban expansion has placed dense neighborhoods beneath KAIA's flight corridors without enforceable noise-zoning or acoustic-mitigation requirements, leaving many residents unknowingly in high-exposure zones. This study addresses the evidence gap by integrating a community survey (n = 57), GIS exposure mapping, and international best-practice benchmarking to quantify exposure, characterize psychological and sleep impacts, and develop a locally adaptable planning toolkit.

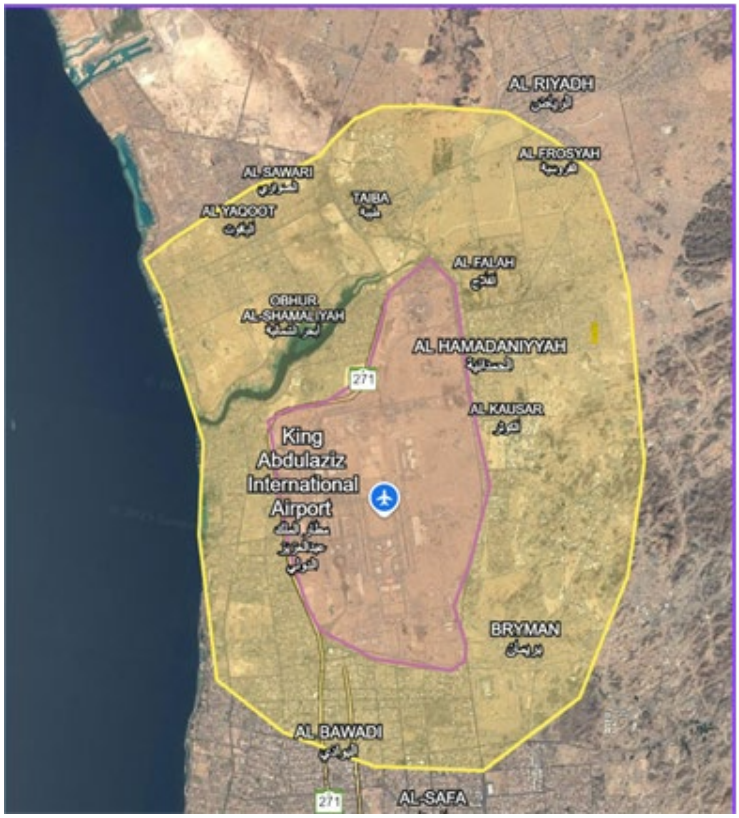

Figure 10. Study area around King Abdulaziz International Airport (KAIA), Jeddah—key districts within the broader airport vicinity (yellow outline, approx. 2–10 km buffer) and the airport perimeter (magenta outline).

RESEARCH OBJECTIVES QUESTIONS

Objectives

01. To assess the perceived levels of psychological stress and annoyance among residents exposed to aircraft noise.
02. To identify patterns of sleep disturbance and reduced sleep quality in relation to proximity to King Abdulaziz International Airport.
03. To analyze public awareness and preferences regarding urban planning interventions to mitigate aircraft noise impacts, including zoning, green buffers, and soundproofing strategies.

Research Questions

Q1. What is the perceived level of psychological stress and annoyance caused by aircraft noise among residents?
Q2. How does aircraft noise exposure affect sleep quality and disturbance patterns among residents?
Q3. What urban planning interventions are supported by the affected community, and what is the level of public awareness regarding aircraft noise regulations?

LITERATURE REVIEW – KEY THEMES

Noise, Stress, and Psychological Well-Being

Population-based and airport-adjacent studies consistently link aircraft noise with annoyance and psychological distress, with effects persisting after adjustment for sociodemographics.[4] Non-acoustic factors—noise sensitivity, perceived control, fairness, and attitudes to the source—mediate and often

amplify annoyance responses, helping explain heterogeneity at a given sound level.[5] Structural-equation and causal analyses indicate bidirectional links between psychological factors and annoyance, underscoring the need to address perceptions and agency alongside acoustics.[6] DEBATS findings further associate aircraft noise annoyance with psychological ill-health in community samples.[7]

Noise-Induced Sleep Disruption

Sleep is a robust pathway for noise impacts. Reviews and field studies show that nocturnal aircraft events fragment sleep architecture and reduce continuity even where average levels are moderate.[8] Recent large-scale evidence—from national pilots, cohort analyses, and actimetry—demonstrates altered sleep timing, shorter duration, and greater disturbance under aviation exposure.[9] Protocolized work aims to refine exposure–response functions for policy, reflecting the public-health importance of protecting sleep.[10]

Awareness & Planning Solutions Preferences

Beyond acoustics, governance and planning determine lived exposure. Transparent communication, participatory tools, and accessible information shape trust and acceptance.[11] Urban-design responses range from noise-based zoning and runway/route management to green buffers and home insulation; their selection depends on local morphology and operational constraints.[12] WHO guidance frames target levels and health rationale for such measures, while health-effects syntheses quantify the broader burden to support action.[13]

Evidence Gap and Literature-Derived Conceptual Framework

Few studies triangulate resident perceptions, GIS-based exposure, and planning preferences in fast-growing Middle-Eastern cities. This motivates our mixed-methods design and the conceptual framework that links perceptions, spatial exposure, and policy levers (Figure 2).

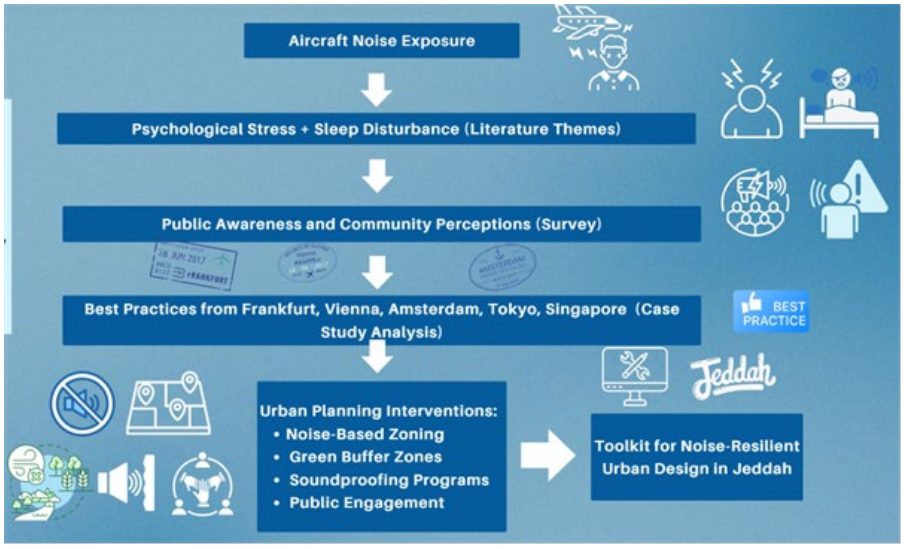

Figure 11. Literature-derived conceptual framework linking resident perceptions, GIS-based exposure, and planning/mitigation preferences.

Most international work models exposure–response in European or North-American settings, but few studies triangulate resident perceptions, GIS-based exposure and planning preferences in fast-growing Middle-Eastern cities. This gap motivates the present study's mixed-methods design and the

literature-derived framework that links perceptions, spatial exposure, and policy levers (see Figure 3, Triangulation).

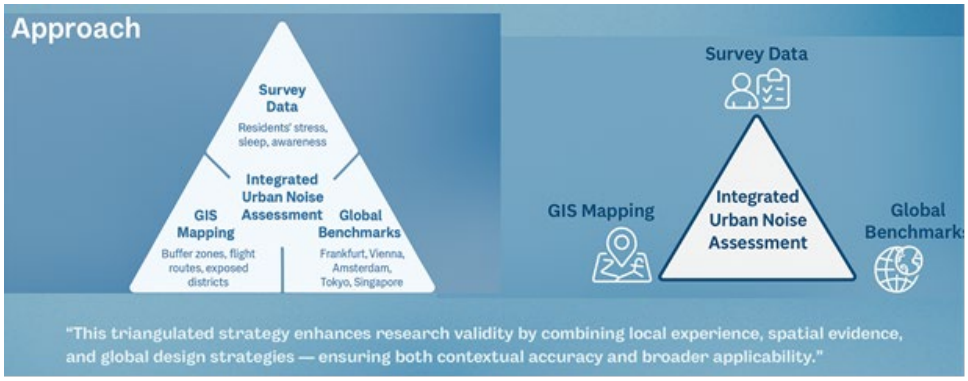

Figure 12. Literature-derived framework linking resident perceptions, GIS-based exposure, and planning/mitigation preferences.

METHODOLOGY

We operate the framework via three strands: (a) a community survey near KAIA; (b) GIS exposure mapping using flight-path overlays and 2/5/10-km buffers; and (c) best-practice benchmarking of airports with mature noise programs. Analyses were conducted in parallel and triangulated to align perceived impacts, spatial exposure, and feasible planning responses.

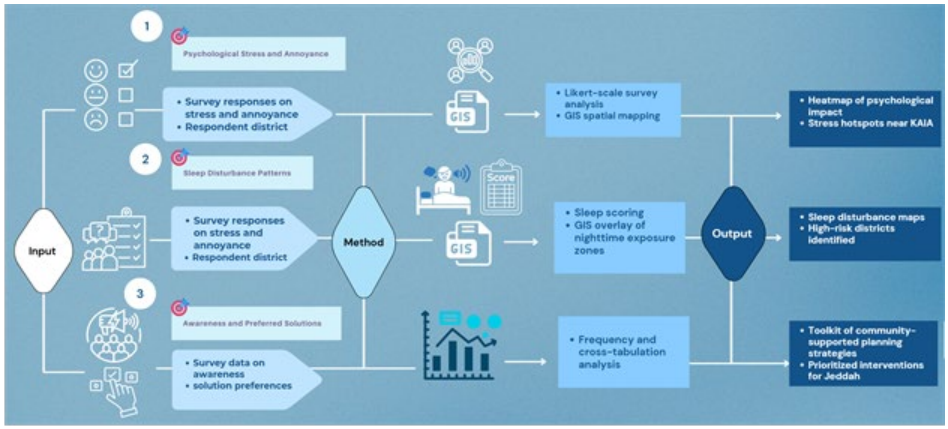

Figure 13. Research methodology flowchart showing inputs (survey and spatial data), parallel analyses (survey statistics, GIS exposure mapping, best-practice review), and triangulated outputs (hotspots and planning toolkit).

GIS Exposure Mapping Community survey

Residents within ~10 km of KAIA completed an Arabic/English questionnaire (Spring 2025). (n = 57) valid responses (pilot scale) were geo-tagged by district. Items measured: stress/annoyance due to aircraft noise; sleep disturbance/quality (e.g., difficulty falling asleep, night awakenings); awareness of rights/regulations; and preferred measures (curfew, insulation, zoning, buffers). Likert items supported descriptive statistics, open comments captured context.

Without official contour maps, we used proximity and flight-path density as practical exposure proxies. Dominant approach/departure corridors were digitized and overlaid on a city basemap (Figure 5).

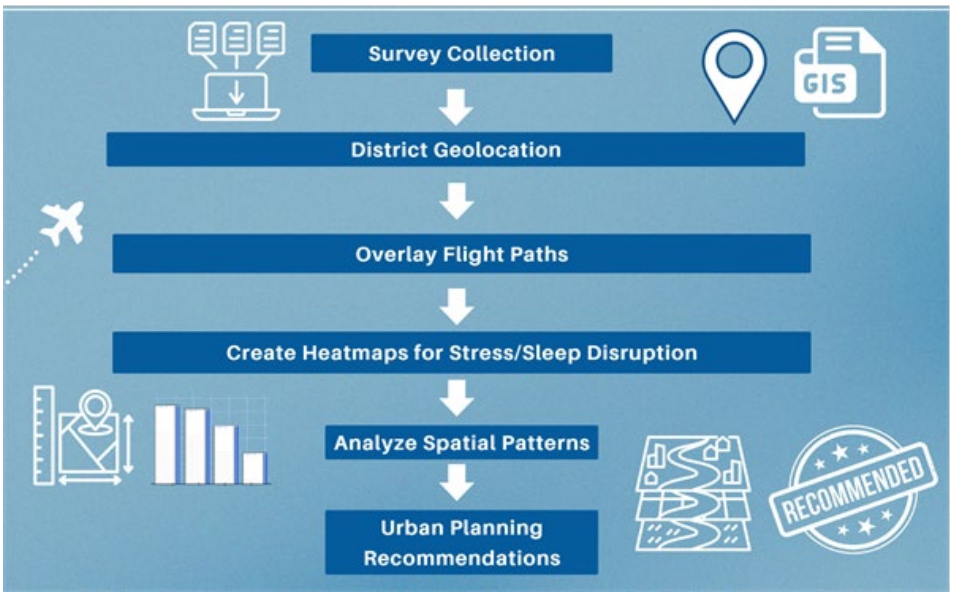

Figure 14. GIS workflow diagram: survey collection → district geolocation → overlay flight paths → create heatmaps for stress/sleep disruption → analyze spatial patterns → urban planning recommendations.

Concentric buffers at 2/5/10 km defined very-high, high, and moderate exposure bands. Survey districts were classified by band and by under-flight vs. off-corridor status; land-use layers flagged sensitive receptors within higher-exposure zones (Figure 6).

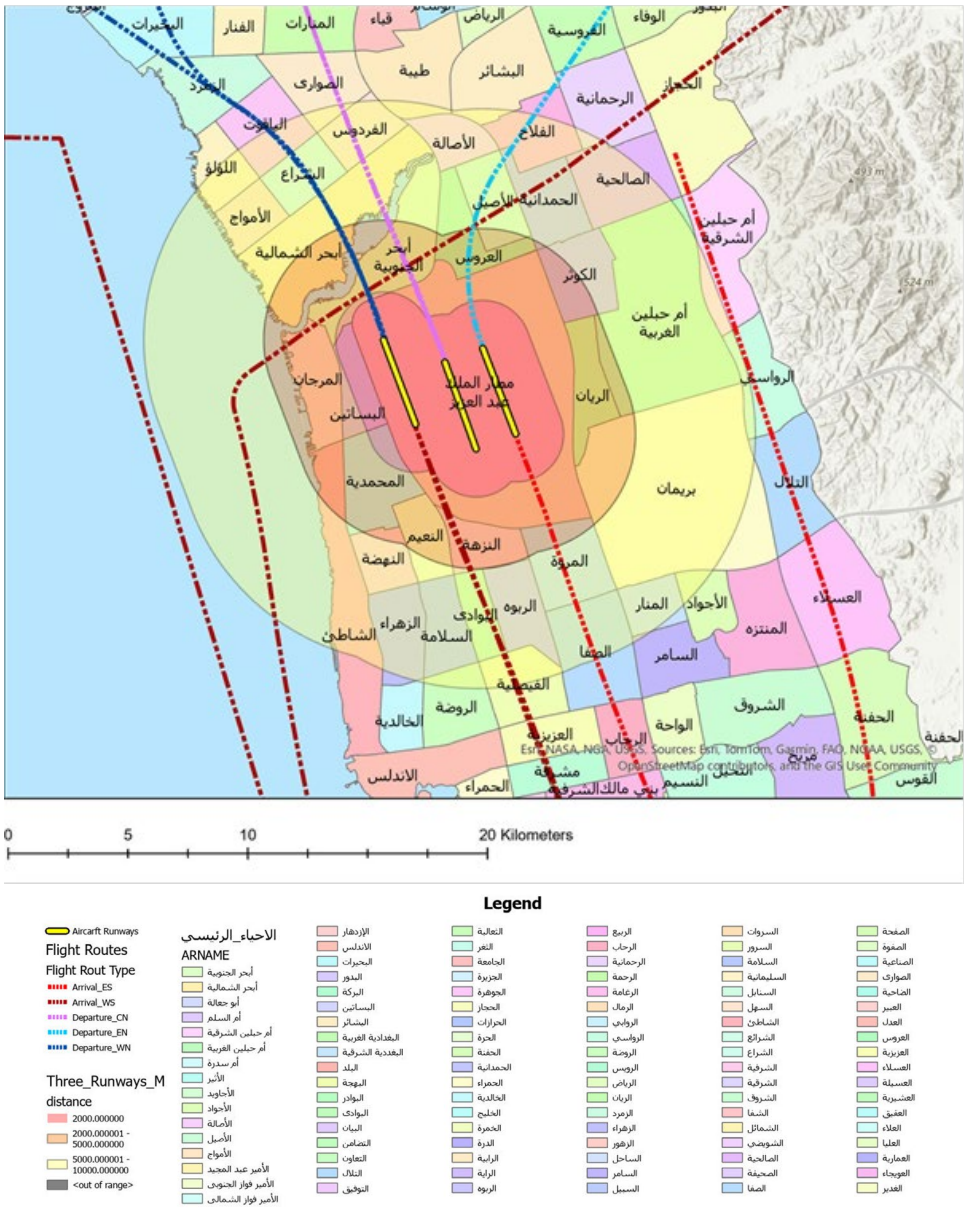

Figure 15. Exposure bands (2/5/10 km) from KAIA with flight corridors and district overlays; used for classification and hotspot detection.
Source: Aircraft Noise Impact Survey (n=57), 2025; map by author (ArcGIS Pro).

Best-practice case selection and benchmarking protocol

Cases: Frankfurt, Vienna, Amsterdam, Tokyo, Singapore. Inclusion criteria: dense urban adjacency, documented noise policies, transparent reporting. We compared land-use/zoning, night operations, operational procedures, buffers, insulation, and governance mechanisms.

Frankfurt (FRA). Europe's strict night-flight curfew (23:00–05:00) is combined with contour-based zoning and long-running insulation programs, transparent monitoring and complaint procedures support community acceptance. [14]

Vienna (VIE). The Dialogue Forum mediates between airport, municipalities, and residents; planning is guided by dB-zoned controls, and negotiated green belts/land mediation reduce exposure.[15]

Amsterdam (AMS). Schiphol applies runway rotation and noise-preferential routes, with strict contour-based dwelling caps and enforcement of limits. [16]

Tokyo (TOK). State-supported residential and school insulation programs and preferential routing mitigate impacts where dense housing pre-dates the airports; compensation/retrofits are tied to contour classes.[17]
Singapore (SIN). Noise contours are integrated into planning approvals; operations emphasize preferential runway use, with transparency and building-code provisions ensuring prevention. [18]
We screened Frankfurt, Vienna, Amsterdam, Tokyo, and Singapore based on: high-traffic airports in dense urban settings; documented noise policies; and transparent reporting. We compared: (i) land-use/noise zoning; (ii) night operations; (iii) operational measures; (iv) buffers/land strategy; (v) residential insulation; and (vi) governance/engagement. Patterns were summarized for transferability to Jeddah. The comparative matrix appears in Results (Table 1).

City	Noise Zoning	Night Curfew	Operational Measures (NPR/Rotation)	Green Buffers	Soundproofing	Community Engagement
(FRA)	Contour limits	Yes (23:00–05:00)	Optimized procedures	Limited	Yes (subsidies)	High
(VIE)	dB-based zones	Partial/limited	Route design	Green belt/land mediation	Yes (programs)	Dialogue Forum
(AMS)	Contour zoning	Limited	Runway rotation, NADP-2	Integrated	Yes	Medium
(TOK)	Zoning by dB	Narita 00:00–06:00	Preferential routing	Limited	Mandated (schools/residential)	Limited
(SIN)	NEF-guided	No (operational prefs.)	Preferential runway use	Green corridors	Support via codes	Public monitoring

Table 1. Comparative best-practice toolkit by city.

RESULTS

Survey findings — stress, sleep, awareness

A slight majority reported low daily impact: ~52% indicated no significant sleep disturbance; 58% reported no notable stress/annoyance. Nevertheless, 48% experienced some sleep disruption and ~42% reported stress/irritation attributable to aircraft noise; ~15% described severe impacts. Higher annoyance was noted among those at home most of the day and residents of older, poorly insulated dwellings. Awareness was low (~78% unaware of protections). Preferred measures were home insulation, night quiet-hours, and stricter noise-based zoning

Spatial patterns — citywide exposure and hotspots

Citywide overlays show corridors traversing multiple neighborhoods; the northern arc within ~2–10 km is most frequently overflown. Using 2/5/10-km buffers and path density as proxies, priority zones emerge for targeted retrofits and operations. Hotspots correspond with survey reports—Al-Salamah, Al-Faisaliyah, and Al-Naeem—supporting spatially targeted interventions.

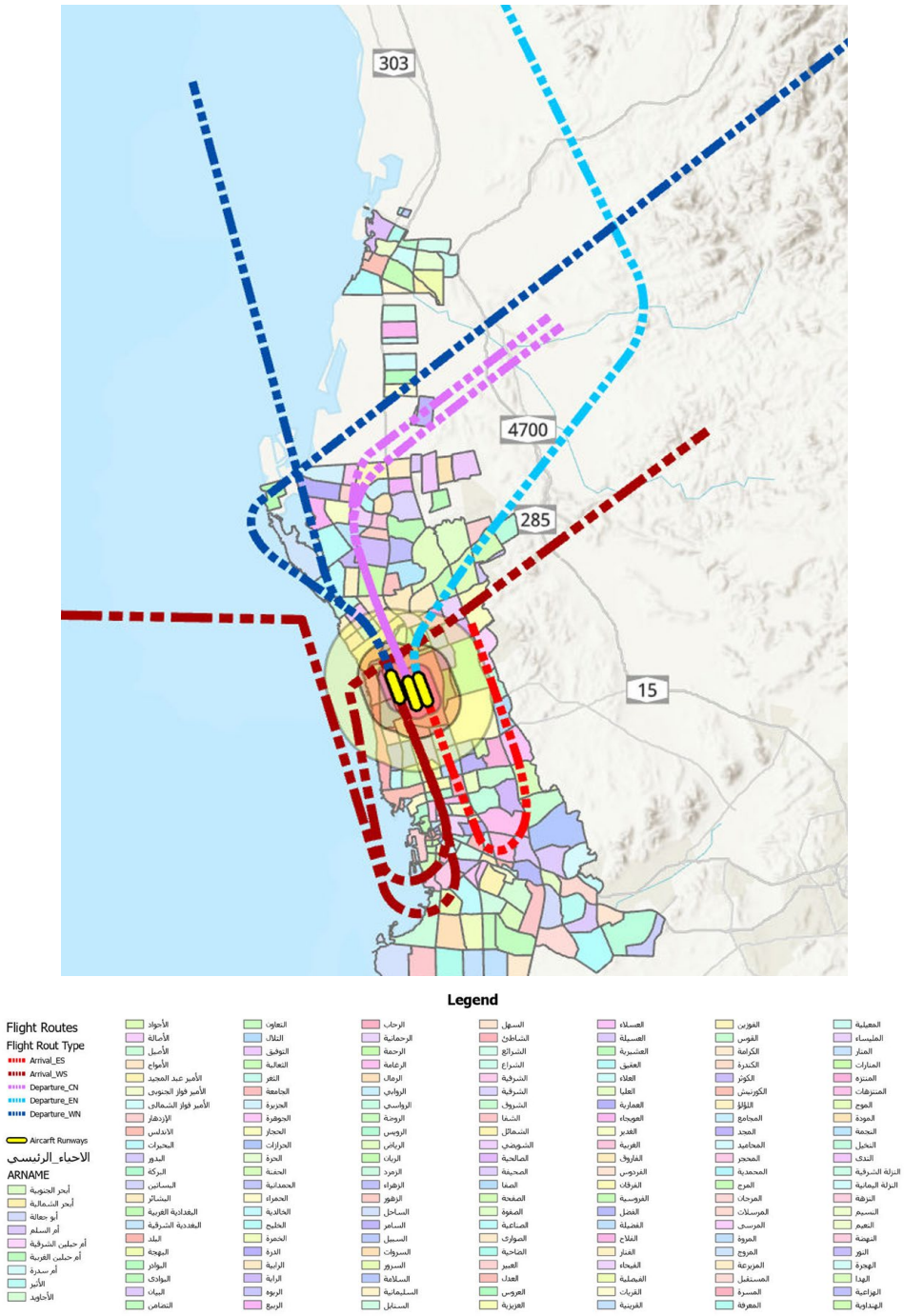

Figure 16. Full city coverage with exposure bands: aircraft approach/departure corridors over Jeddah and 2/5/10 km rings around KAIA; note corridor intersections with residential districts. Source: Aircraft Noise Impact Survey (n=57), 2025; map by author (ArcGIS Pro).

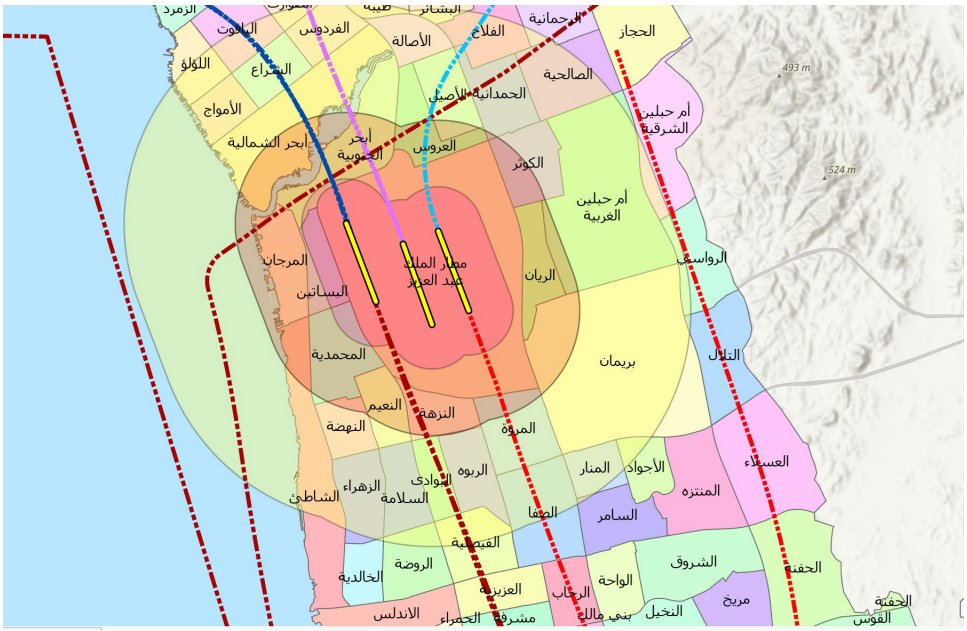

Figure 17. Zoomed exposure hotspot: flight-corridor overlap with densely populated districts
Source: Aircraft Noise Impact Survey (n=57), 2025; map by author (ArcGIS Pro).

District-level maps of perceived impacts (sleep & stress)

Instead of a single heat map, we present two district-level choropleths—(a) sleep disruption and (b) stress/annoyance—each classified into 0–10%, 10–25%, 25–40%, 40–60%, >60%. Flight corridors and 2/5/10-km buffers from KAIA are overlaid for exposure context, and districts with <2 responses are hatched to indicate low reliability. Using identical class breaks and color ramps enables direct comparison across the two maps (see Figure9: Sleep; Figure10: Stress).

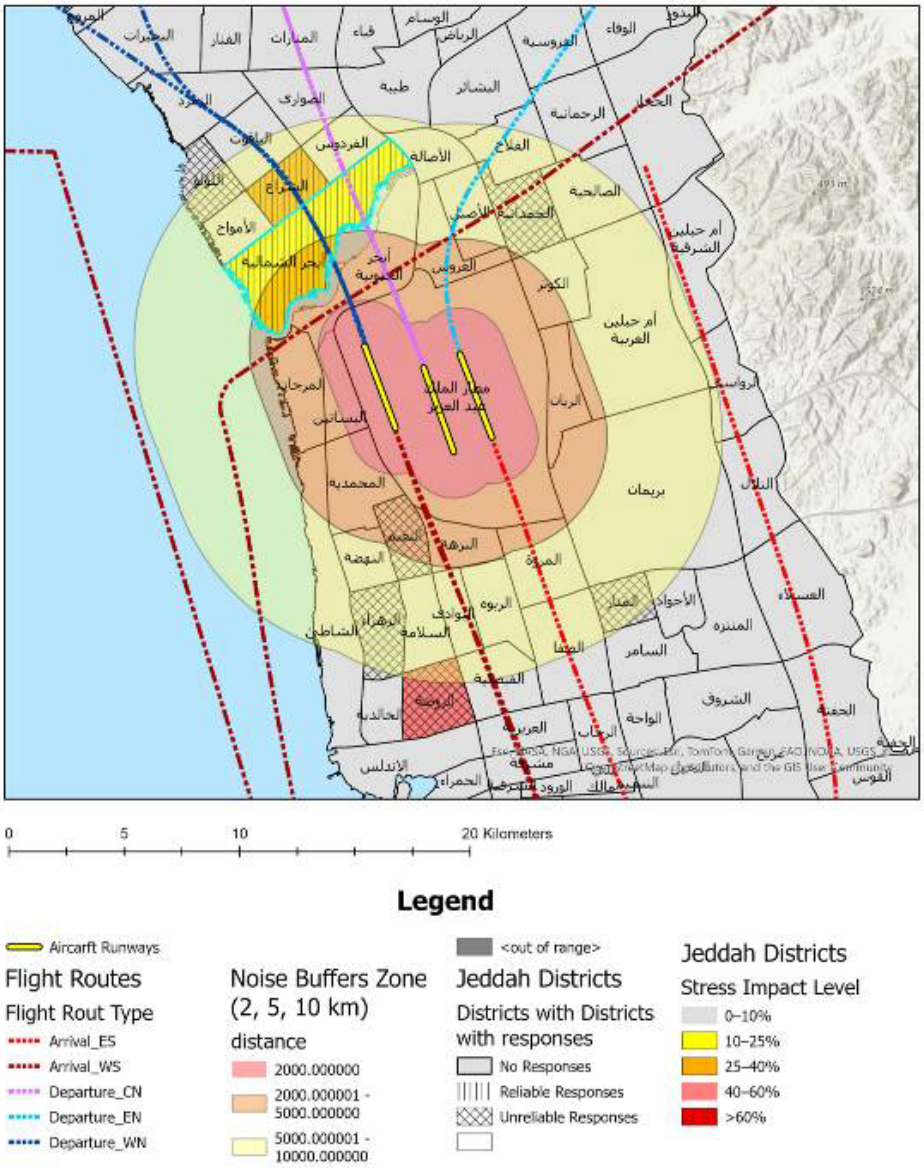

Figure 18. Sleep impacts from aircraft noise (district level).
Source: Aircraft Noise Impact Survey (n=57), 2025; map by author (ArcGIS Pro).

Choropleth of % respondents reporting high sleep disruption, classified 0–10%, 10–25%, 25–40%, 40–60%, >60%. Flight corridors and 2/5/10-km buffers are overlaid; hatched = districts with <2 responses. Hotspots cluster in the 2–7-km arc beneath dominant corridors.

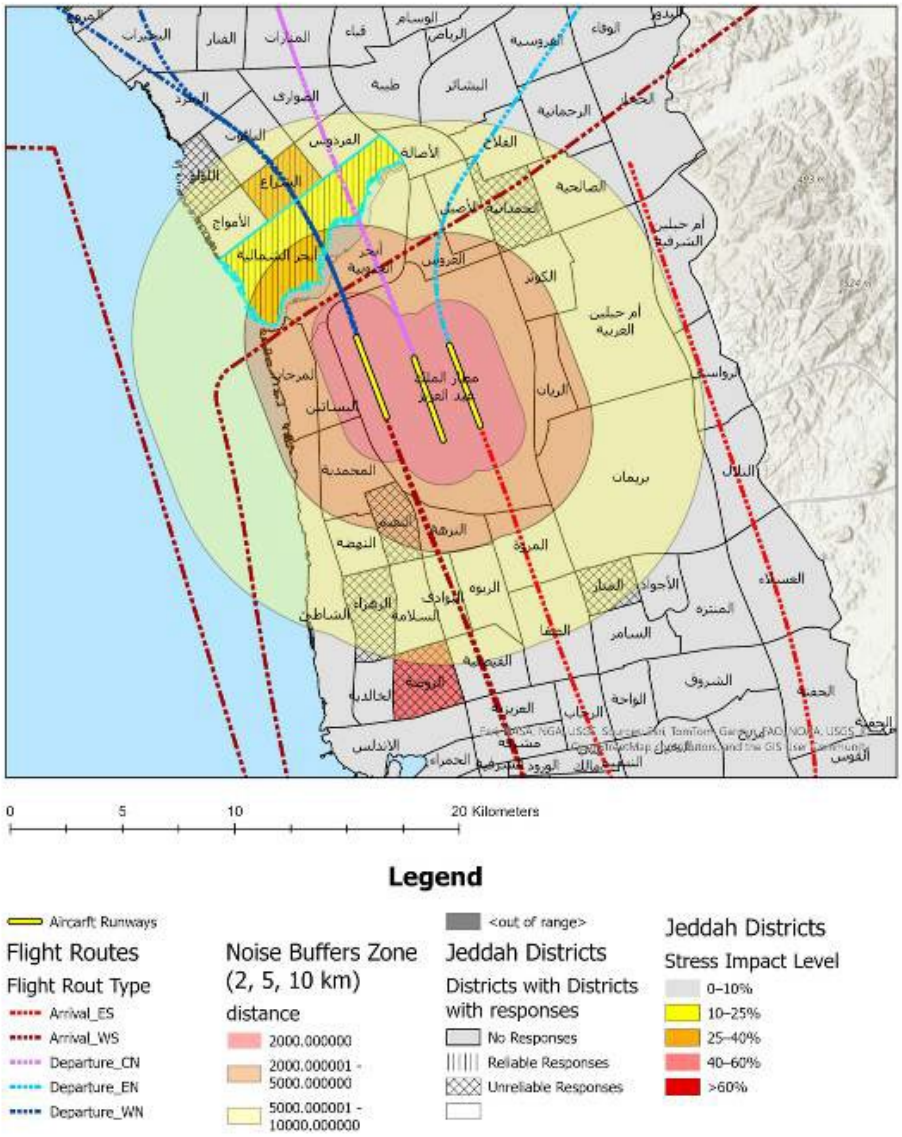

Figure 19. Stress/annoyance impacts from aircraft noise (district level).
Source: Aircraft Noise Impact Survey (n=57), 2025; map by author (ArcGIS Pro).

Choropleth of % respondents reporting high stress/annoyance, classified 0–10%, 10–25%, 25–40%, 40–60%, >60%. Flight corridors and 2/5/10-km buffers are overlaid; hatched = districts with <2 responses. Hotspots concentrate in the 2–7-km arc beneath dominant

DISCUSSION

The choropleths confirm a clear spatial gradient of perceived impact: districts within the 2–7 km arc north of KAIA, where multiple corridors overlap, report higher sleep disruption and stress, while a slim majority elsewhere appears habituated. Still, nearly half of respondents report some impact, ≈15% severe, and ~78% are unaware of protections—indicating material burdens even when complaints are muted. These patterns align exposure with perceived effects and justify targeted interventions in hotspot districts. Both maps use identical class breaks and show hotspots concentrated in the 2–7 km arc beneath overlapping corridors; **hatched = n<2** is interpreted cautiously.

A mismatch between exposure and response also appears—some highly exposed areas report low impact and vice-versa—consistent with non-acoustic mediators (sensitivity, control/fairness, housing).

Therefore decibel reduction is necessary but insufficient. Policy should pair physical measures with governance: a four-pillar package of (i) noise-based zoning/buffers, (ii) night quiet-hours and preferential routing, (iii) subsidized insulation for homes/schools, and (iv) transparent engagement/monitoring (Noise Forum + dashboard). A time-phased rollout (pilot in the 2–7 km arc → scale-up → embed) provides quick wins while building evidence and acceptance.

RECOMMENDATIONS — Noise-resilient toolkit and schedule

Prioritize the 2–7 km hotspot arc north of KAIA, then scale city-wide. The toolkit spans four pillars: (i) land-use controls (noise zoning + buffers), (ii) operations (phased night quiet-hours, preferential routing, NADP-2), (iii) buildings (subsidized insulation for homes/schools), and (iv) governance (Noise Forum, monitoring dashboard, awareness/assistance pathways). Implement through a time-phased rollout—pilot → scale-up → embed—as detailed in Table 2.

Phase	Timeframe	Target (from maps)	Priority Actions	Expected Outcomes
Pilot	0–6 months	2–7 km arc under overlapping corridors; any district with ImpactLevel ≥ 25–40%; exclude n<2 (monitor only)	Night quiet window 01:00–04:00; insulate ~200 homes + 2 schools; portable noise loggers; launch Noise Forum + public dashboard	Quick wins; local feasibility evidence; trust building
Scale-up	6–18 months	Extend to 2–10 km and all ≥ 25–40% classes	Extend quiet hours toward 23:00–05:00; expand insulation by ring (2–5→5–10 km) and class; formalize noise zoning + buffers in permitting; broaden fixed/portable monitoring; publish modelled contours	Wider coverage; approvals reflect noise criteria; larger reach
Embed	>18 months	City-wide per contours & performance	Code acoustic requirements; annual noise & health reporting; enforce preferential routing/curfew; institutionalize Forum + quarterly dashboards with KPIs	Sustained, auditable management across aviation/urban/health

Table 2. Time-phased rollout for the noise-resilient toolkit

LIMITATIONS

District maps are choropleths at administrative scale; intra-district variation may be masked. Several districts had low or zero responses (hatched or omitted), limiting generalization. Exposure was proxied via 2/5/10-km rings + flight-path density rather than modelled contours; outcomes are self-

reported and single-season. Maps are district-level choropleths; several districts had **n<2** (hatched) or **no responses** (gray), limiting small-area inference. Objective dB and clinical metrics were not collected. These constraints temper causal inference even though patterns align with the literature and the hotspot arc identified near KAIA.

FURTHER WORK

1) Fill hatched gaps: increase responses in n<2 districts; stratify by ring (≤2, 2–5, 5–10 km) and under-flight vs off-corridor. 2) Measure dose: deploy monitors (e.g., L_night, event maxima) with indoor/outdoor attenuation logs; move from buffers to contour-based mapping. 3) Health linkage: pair with actigraphy/PSQI and BP/HRV panels to derive dose–response. 4) Point-level mapping: geocode respondents (or district centroids) to enable KDE/IDW overlays. 5) Evaluate pilots: pre–post / DiD for quiet-hours and insulation grants; KPIs include night-wakings, indoor LAeq, complaint-resolution time, dashboard uptime, retrofit uptake.

CONCLUSION

A narrow majority near KAIA reports low day-to-day impact, yet a substantial minority experiences sleep disruption (~48%) and stress/annoyance (~42%), with ~15% severe and ~78% unaware of protections. The stress and sleep maps localize higher perceived burdens in the 2–7 km arc under dominant flight corridors, justifying targeted action. We recommend a four-pillar package—(i) noise-based zoning/buffers, (ii) night quiet-hours with preferential routing, (iii) subsidized insulation for homes/schools, and (iv) transparent governance (Noise Forum + public dashboard)—implemented via a pilot → scale-up → embed rollout. This approach delivers quick wins, builds local evidence and acceptance, and aligns with Vision 2030, showing how a busy airport can coexist with calmer, healthier neighborhoods.

NOTES

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BERLINIGHTS: GENDER, VISIBILITY AND COLLECTIVE MAPPING IN THE NOCTURNAL CITY

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INTRODUCTION

Night is not only a temporal dimension but also a spatial one: it reshapes urban territories, rhythms and uses. The 24-hour city has shifted from being framed as a problem to being acknowledged as a space of opportunity. In recent years, several cities have incorporated nighttime governance structures,[1] and transnational networks[2] have consolidated the night as a political and economic space.[3] Within this transformation, Urban Lighting Infrastructure (ULI) has become critical for nighttime accessibility, shaping visibility and influencing safety perceptions in public space. Despite growing research on lighting and perceived safety, there remains a methodological gap in spatialising in-situ perceptions and enabling their collective interpretation. This study addresses this gap by combining nocturnal walks, lighting measurements, and collective mapping to discuss gendered safety after dark.

Gender: Safety perception and risk

Over the past two decades, news and public debate have increasingly portrayed the urban night as hostile for women. Surveys have shown that over one third feel unsafe walking alone after dark, with a persistent 10–15 percentage point gender gap.[4] Research on lighting confirms that women report higher fear levels than men, especially after dark, although this evidence base remains limited and requires careful interpretation.[5] Yet victimization data reveal a mismatch, with men more often of lethal and physical violence in public spaces, while women are disproportionately affected by sexual violence,[6] pointing to the role of social and environmental factors beyond objective risk. While recent studies have linked lighting and safety,[7] further research is needed to address these gendered discrepancies.

Visibility: Lighting for Safety

Street lighting shapes visibility, recognition, and the reading of spatial cues, making it a key urban infrastructure for safety after dark.[8] Historically, the “more light equals more safety” assumption has often driven over-illumination, with costs for 'health,[9] biodiversity,[10] and energy use.[11] Research shows that lighting effects are not linear:[12] it can reduce some offences and enhance surveillance,[13] but may also displace crime or increase victimization.[14] Moreover, safety is not only determined by

illuminance; uniformity, spectrum, and glare control matter, as spaces can remain unsafe when facial recognition or spatial legibility is compromised.[15] This highlights the need for research that considers lighting in interaction with urban morphology and social activity.

Collective Mapping: Method of Perception

Participatory approaches have increased in recent years, often through walks or guided explorations that capture situated experiences of safety and care.[16] While subjective data are mostly gathered via questionnaires, interviews, or biometric sensors,[17] these formats rarely capture the spatial perceptions or enable collective discussion. In gender studies, this gap has been partly addressed through cartographic methods—such as collective mapping—that visualize experiences in a shared spatial system.[18] Despite their potential to reveal how physical context shapes safety perception, such methods remain rare in lighting research, which has often relied on laboratory experiments, perceptual studies, or psychophysical approaches.[19] Even when mapping is used, results rely on authors' translations into formal maps—risking reinterpretation—, with few exceptions such as the fem*MAP Berlin project.[20]

This paper presents the findings of a field campaign project selected and conducted during the Forecast Festival 2025[21] in Berlin, where nine women (aged 20–69), recruited through an open call, completed a nighttime walk across six urban typologies. The methodology combined on-site lighting measurements with collective mapping—map cards, a shortened NEWS survey,[22] and open-ended questionnaires—to capture objective lighting conditions and subjective perceptions of lighting and safety. The study addresses a methodological gap by spatialising women's perception safety evaluations —lighting, environmental and social conditions and distinguishing personal and traffic safety—for collective discussion and linking them to distinct safety dimensions in their environmental and social context.

METHODOLOGY

Research framework

Building on the methodological framework introduced earlier, this study approaches nighttime safety perception the outcome of interactions between lighting, environmental and social conditions (Figure 1). Street lighting provides visibility through its parameters —intensity, spectrum, and distribution—, but its effects are mediated by environmental features such as open or enclosed spatial configurations,[23] and by social aspects including activity (lonely or lively), mobility type (pedestrian, cyclist, or vehicular), perceived gender composition (women, men, or neutral), and suspicious behavior or presence perceived as sign of threat or danger.[24]

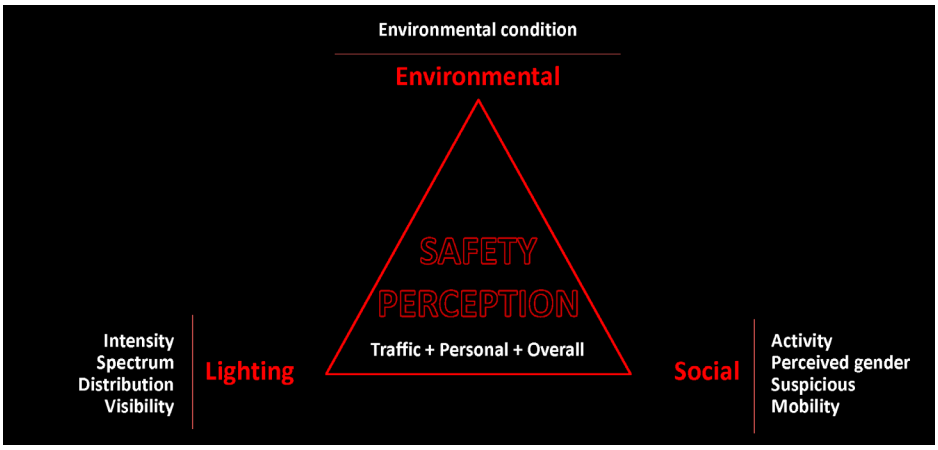

Figure 1. Lighting, environment and social impact on safety perception.

In this framework, visibility is defined not only as brightness but also as the ability to recognize people, spatial layout, and potential risks that enable pedestrian mobility. [25] Research indicates that uniformity (Uo) or correlated colour temperature (CCT) can influence perception as much as horizontal illuminance (Eh).[26] In this study, these insights were operationalized by combining objective measurements (Eh, Uo, CCT) with subjective evaluations (lighting, environmental conditions, and social presence) on map cards.

Case study

Berlin was selected as a pilot to test the methodological framework. Germany provides a useful reference, with perceived safety close to the European average,[27] while Berlin exhibits higher levels of subjective insecurity[28], making it especially relevant for this study. The walk was conducted in Karl-Marx-Allee Süd, one of the city's highest-crime areas,[29] offering an appropriate context to investigate the interplay between lighting, urban form, and perceived safety.

Methods and Data collection

This study adopted a mixed-method design combining on-site lighting measurements, nighttime walk, and collective mapping to capture subjective dimensions of six urban typologies commonly associated with insecurity after dark—public building, tunnel, bus stop, parking lot, park, and bar— (Figure 2).

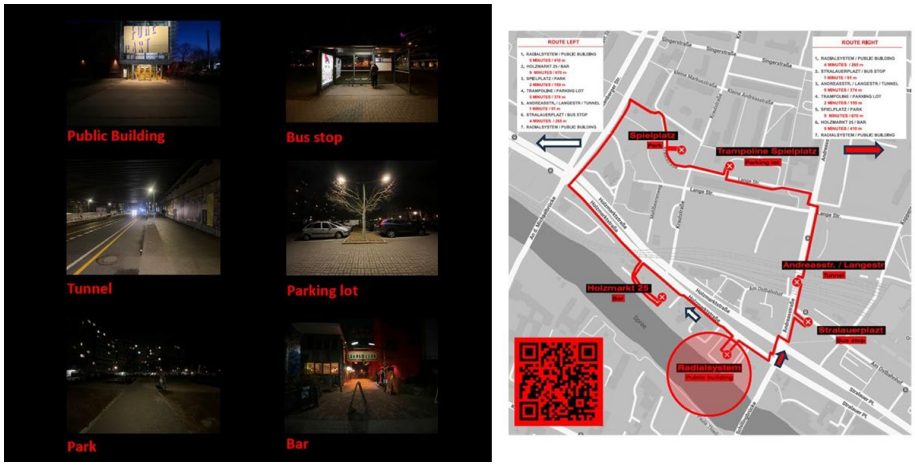

Figure 2. Nighttime walk route and urban typologies.

Fieldwork was conducted over three days: i) preparatory session to establish baseline conditions and verify safety; ii) main campaign in which eleven participants completed the walk individually to avoid group bias, followed by a collective mapping and discussion session; and iii) systematic lighting measurements to collect the technical dataset. To ensure a stable and comparable lighting dataset, the field campaign followed a consistent field protocol, including comparable nighttime conditions (~99% lunar illumination and cloud cover), fixed measurement hours (20:00–00:00) to avoid twilight interference, and site-specific sampling grids scaled to surface size. The study involved eleven participants (9 women and 2 men), but this paper presents only the results for women. The protocol is gender-sensitive by focusing the analysis women's evaluations and by recording situational social cues (perceived gender composition, loneliness, suspicious presence) commonly discussed in women's nighttime reassurance, while remaining relevant to safety perceptions more broadly.

Subjective data methods

Safety perceptions were captured during the walk and synthesised afterward through three instruments:

- Card Map: Adapted from the fem*MAP Berlin project,[30] the tool was redesigned to focus on lighting. The adapted version included three domains—lighting (intensity, colour, uniformity, visibility), social conditions (activity, appearance, gender, mobility), and physical environment (open-enclosed)—and a fourth block addressing safety distinguishing traffic from personal safety, complemented by an overall evaluation. Participants assessed each domain by drawing predefined icons on the card, while overall safety was encoded through a central color code (red for unsafe or black for safe). One card map was completed for each site, serving as a structured instrument to guide observations of lighting infrastructure—and potentially other urban features such as green or water—and to enable subsequent synthesis (Figure 3).
- NEWS survey: A shortened and adapted version was administered after the walk, focusing on sections G (traffic safety) and H (crime safety).[31] This complemented the card method evaluating the entire route, while reducing survey fatigue, and all items were adapted to nighttime conditions.
- Open-ended questionnaire: Participants identified individually the safest and least safe site among the six and provide free comments on the cues shaping their sense of safety. This method helps capture aspects not addressed by fixed scales. [32]

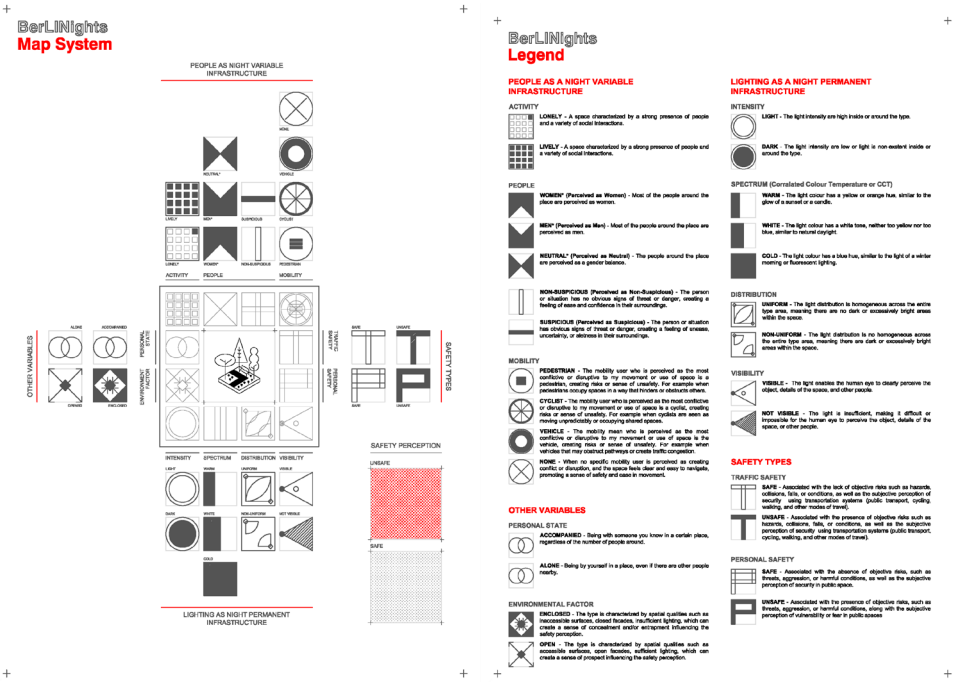

Figure 3. Card map system and legend.

Objective data method:

Horizontal illuminance (Eh), correlated color temperature (CCT), and chromatic deviation (Auv, also Duv in CIE standards) were recorded at each grid point using a Konica Minolta C-70F spectrometer (accuracy ±5% for illuminance and ±0.003 for chromaticity at 800 lx). Measurements were conducted on orthogonal grids scaled to surface size (<1000 m2 = 5x5 m, 1000-4999 m2 = 10x10 m, 5000-9999 m2 = 15x15 m, 10000-49000 m2 = 20x20 m, >50000 m2 = 25x25 m). Georeferenced coordinates were captured using the Mergin Maps mobile application (accuracy ±2 m).

RESULTS

Subjective data: lighting, social, physical environment, safety.

Card Map:

The 54 individual cards revealed strong contrasts in perceptions across typologies (Figure 4). Participants' evaluations are encoded through a central color code (overall safety) and the activation of perimeter icons, with repeated selections indicating criteria identified by multiple participants. The collective map highlighted recurrent patterns: predominantly unsafe assessments (marked in red) in the bus stop, park, and parking lot, and predominantly safe judgments (marked in black) in the bar–restaurant, public building, and tunnel.

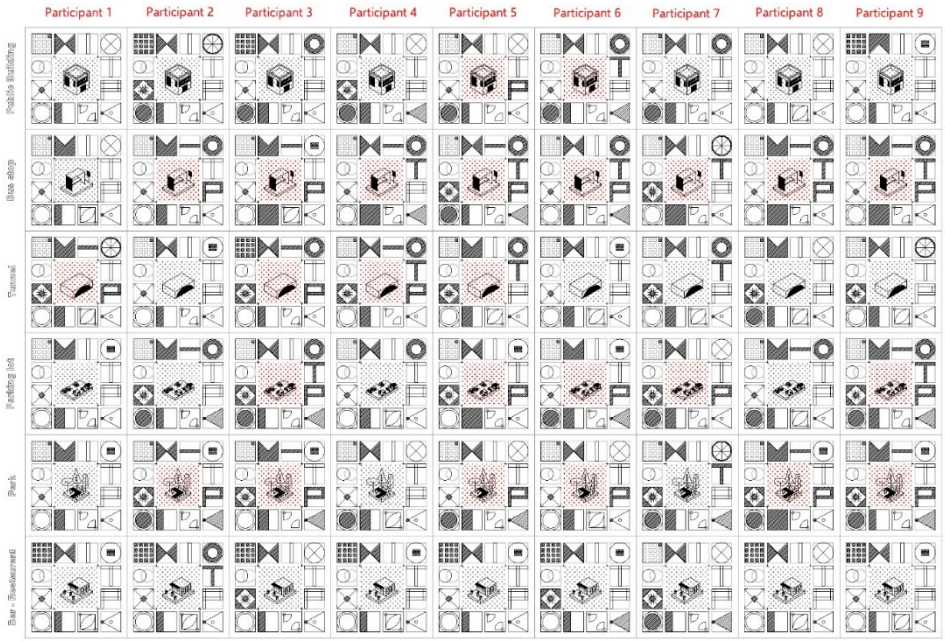

Figure 4. Collective mapping results by site-urban typology (rows) and participants (columns).

For each urban typology, summary cards were produced to aggregate individual evaluations visually and numerically (Figure 5). The central color code (red/black) indicates overall safety assessment, while red numerical values show how many participants (out of nine) selected each criterion. Across typologies, lower perceived safety was associated with dark or non-uniform lighting, spatial enclosure, and suspicious groups, whereas brighter and more uniform lighting, lively activity, and open spatial configurations supported reassurance.

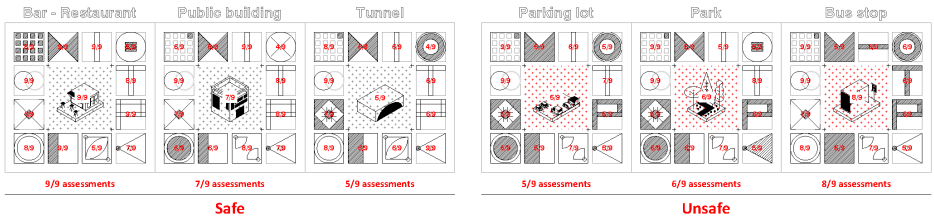

Figure 5. Summary cards synthesize collective safety perceptions by site-urban typology.

Figure 6 correlates individual parameters and safety assessments across the dataset of 54 evaluations. Given the reduced sample and the low statistical power, the matrix is included as an analytical scaffold to synthesise cross-variable patterns in this pilot dataset and support interpretation.

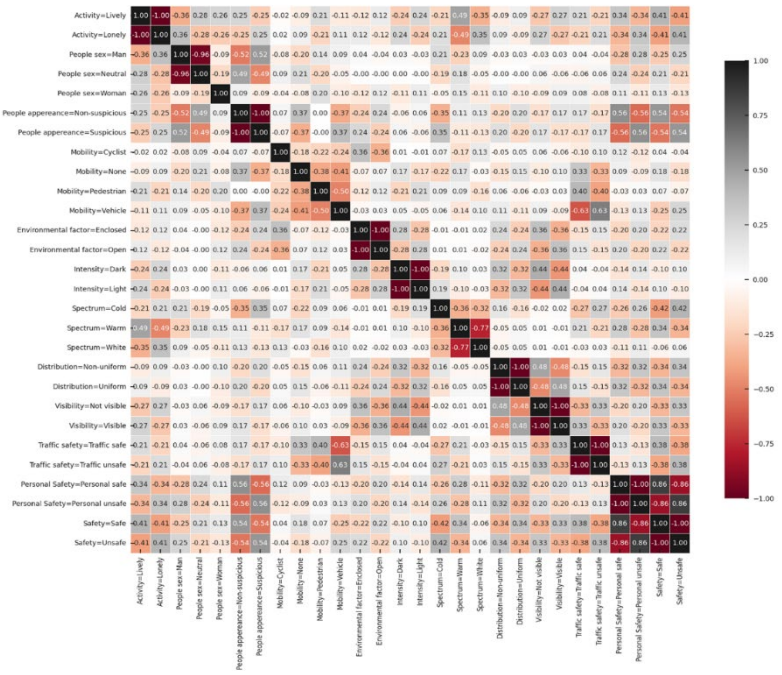

Figure 6. Pearson correlation matrix of lighting, social, environmental variables and safety perception.

Safety dimensions showed uneven co-variation: overall safety correlated with personal safety (0.86) and with traffic safety (0.38), while personal and traffic safety correlated (0.13); traffic safety was often rated as "safe" even when overall safety was rated as "unsafe". Lighting uniformity (0.34 overall; 0.32 personal) and visibility (0.33 overall; 0.33 traffic) correlated positively, while non-uniform (-0.34 overall; -0.32 personal) or not visible conditions (-0.33 overall; -0.33 traffic) correlated negatively. Warm spectrum values showed positive associations (0.34 overall), whereas cold correlated negatively (-0.42 overall). Lively activity (0.41 overall; 0.34 personal) and non-suspicious people (0.54) reinforced overall safety; while loneliness (-0.41), suspicious groups (-0.54), and male presence (-0.25) were negatively associated. Mobility patterns showed positive links between pedestrian activity and traffic safety (0.40), while vehicle correlated negatively (-0.63). Environmental cues followed a similar trend, with openness linked positively (0.22) and enclosure negatively (-0.22) with overall safety.

NEWS Survey:

For traffic safety (Table 1a), responses were dispersed: items ranged from M = 2.11 (SD = 1.17) for "traffic speed on nearby streets" to M = 3.00 (SD = 1.00) for "drivers exceeding speed limits", reflecting divided opinions. Crime safety items (Table 1b) showed clearer consensus: "streets are well lit" scored highest (M = 3.22, SD = 0.67), while "crime makes it unsafe to go on walks" scored lowest (M = 1.33, SD = 0.50), with participants strongly rejecting the idea that crime deterred walking.

1a.	**TS_1**	**TS_2**	**TS_3**	**TS_4**	**TS_5**	**TS_6**	**TS_7**	**TS_8**	***TS_9**
Mean	2.44	2.78	2.44	2.11	3.00	3.22	2.78	2.67	2.89
StdDev	0.88	1.20	0.88	1.17	1.00	0.83	0.83	1.12	0.93
TS_9: Do you think that the lighting of this street could have an influence on potential accidents (traffic, pedestrian falls...)?									
1b.	**PS_1**	**PS_2**	**PS_3**	**PS_4**	**PS_5**	**PS_6**	***PS_7**	***GS_1**	***GS_2**	***GS_3**
Mean	3.22	2.56	2.22	2.00	1.33	2.00	2.89	2.56	2.33	2.56
StdDev	0.67	0.53	0.97	1.00	0.50	0.87	0.33	0.88	1.12	1.01
PS_7: Do you think that the lighting of this street could influence on potential incidents (crime, robbery, harassment)? GS_1: In general, I feel safe (related to traffic) at nighttime. / GS_2: In general, I feel safe (related to personal) at nighttime. / GS_3: In general, I feel safe at nighttime.										

Table 1. Responses to the shortened/adapted NEWS (Sections G: Traffic safety; H: Crime safety). Items were minimally reworded for the nighttime walk/route; study-specific additions are marked (*) and reported below (TS_9, PS_7, GS_1, GS_2, GS_3) each subtable: 1a) Traffic safety questions (TS), 1b) Personal (PS) and general safety questions (GS).

Two added self-developed items (TS_9, PS_7) captured the perceived role of lighting in safety, with participants generally agreeing that lighting influences accident risk (TS_9: M = 2.89, SD = 0.93) and the likelihood of incidents such as robbery or harassment (PS_7: M = 2.89, SD = 0.33). Regarding to general safety were similar across dimensions, with slightly lower perceived safety for traffic (GS_2: M = 2.33, SD = 0.88) than for personal (GS_3: M = 2.56, SD = 1.01).

Open-ended questionnaire:

In the open-ended questionnaire, participants identified the bar–restaurant as the safest place (8/9) and the bus stop and park (3/9) as most unsafe. Qualitative comments were consistent with the patterns observed in the card map: lighting was reassuring when described as bright and well distributed, and negative when dark or uneven; lively, non-suspicious social contexts were reassuring, whereas loneliness or suspicious groups were associated with insecurity; and openness was valued, while enclosure and vegetation obstructing sightlines were frequently cited as unsafe. Additional themes also emerged, including sound (silence as unsettling, activity as reassuring), construction sites (negative), and spatial configuration or movement shaping reassurance.

Objective data results: lighting.

Lighting conditions were measured on-site across six urban typologies recording three key parameters: Eh, CCT, and Auv. From these, additional lighting quality metrics were computed: overall uniformity (Uo = Eh_min / Eh_avg), and longitudinal uniformity (Ul = Eh_min / Eh_max).

Typology	**Eh avg**	**Eh min**	**Eh max**	**Uo**	**Ul**	**CCT avg**	**CCT min**	**CCT max**	**Auv avg**
Bar-Restaurant	16.38	3.30	94.70	0.20	0.03	2506.54	1585.00	2875.00	-0.0018
Bus stop	9.21	1.90	38.50	0.21	0.05	2252.25	1855.00	3713.00	0.0021
Tunnel	12.56	0.00	39.10	0.00	0.00	2706.43	2649.00	2806.00	0.0040
Park	1.25	0.00	14.20	0.00	0.00	3030.00	3030.00	3030.00	0.0026
Parking lot	3.64	0.00	55.90	0.00	0.00	3434.60	2687.00	4703.00	0.0018
Public building	9.08	0.00	81.00	0.00	0.00	2523.00	2493.00	2553.00	0.0017

Table 2. Lighting metrics by typology.

Average horizontal illuminance ranged from 1.25 lx in the park to 16.38 lx in the bar–restaurant. Based on EN 13201-2,[33] only the bar exceeded the maximum P-class threshold (2-15 lx), while the park and parking lot fell below the minimum. Uniformity values dropped to zero in four typologies due to 0-lx points: limited in the tunnel (two readings, broken luminaire) but widespread in the park, parking lot, and public building, indicating inadequate coverage. Where measurable, Uo values at the bus stop and bar–restaurant remained below the 0.4 minimum requirement. Spectral quality showed average CCT values between 2252 K and 3434 K, placing all sites in the warm to neutral-white spectrum. Auv values were low across all sites (–0.0018 to 0.0040), indicating minimal chromatic deviation from the Planckian locus. The parking lot displayed the widest CCT variation, consistent with heterogeneous lighting technologies.

Integration of findings

Alignment or contrast was evaluated by comparing the majority subjective category with objective classifications (EN 13201-2 for Eh_avg and Uo; CIE 115 for CCT), using "partial" for borderline or 0-lx-driven cases. The comparison between subjective perceptions and objective metrics revealed high alignment in illuminance: typologies judged as light or dark generally corresponded to measured Eh_avg values, with the public building as an exception, perceived as dark despite an average of 9.08 lx. In terms of color, alignment appeared in the public building, parking lot, and bar–restaurant, whereas contrasts emerged at the bus stop and tunnel, where lighting was perceived as cold or white although CCT values were warm. The park presented low contrast, with participants perceiving the lighting as white though its CCT (3030 K) was close to the warm threshold. Distribution showed more discrepancies: the bus stop indicated partial alignment, with participants perceiving non-uniformity that matched low but non-zero uniformity; the tunnel suggested partial contrast, with uniformity perceived despite two 0-lx readings; and the bar–restaurant showed partial contrast, as uniformity was perceived but metrics remained below EN standards.

Typology	Light–dark (subjective vs. objective)	Colour (subjective vs. objective)	Distribution (subjective vs. objective)
Public building	6/9 dark vs. Eh_avg = 9.08 lx → Contrast	6/9 warm vs. 2523 K → Alignment	8/9 non-uniform vs. Uo = 0.00 → Alignment
Bus stop	8/9 light vs. Eh_avg = 9.21 lx → Alignment	5/9 cold vs. 2252 K → Contrast	7/9 non-uniform vs. Uo = 0.21 → Partial alignement
Tunnel	8/9 light vs. Eh_avg = 12.5 lx → Alignment	6/9 white vs. 2706 K → Contrast	6/9 uniform vs. Uo = 0.00 → Partial contrast
Park	6/9 dark vs. Eh_avg = 1.25 lx → Alignment	6/9 white vs. 3030 K → Low Contrast	7/9 non-uniform vs. Uo = 0.00 → Alignment
Parking lot	6/9 dark vs. Eh_avg = 3.64 lx → Alignment	5/9 white vs. 3435 K → Alignment	7/9 non-uniform vs. Uo = 0.00 → Alignment
Bar	8/9 light vs. Eh_avg = 16.4 lx → Alignment	9/9 warm vs. 2507 K → Alignment	5/9 uniform vs. Uo = 0.20 → Partial contrast
EN 13201-2: Eh_avg 2–15 lx (classes P1–P6); Uo ≥ 0.40 (minimum spatial uniformity). *CIE 115:2010*: CCT categories: Warm < 3300 K; White 3300–5300 K; Cold > 5300 K.			

Table 3. Lighting subjective perceptions vs. lighting metrics by typology.

CONCLUSION

This paper has presented a replicable mixed-method framework combining in-situ photometric measurements with collective mapping to spatialize and compare safety-related perceptions across typologies commonly associated with insecurity after dark.. The approach integrates visual, spatial, and narrative data of lighting, environment, and social context to support collective interpretation, while objective lighting metrics contextualize perceptions and show how technical indices can be misread when detached from lived experience. A gender-sensitive lens is retained by reporting women's evaluations and recording perceived gender composition, loneliness, and suspicious presence.

Results indicated that safety was shaped by the interaction of lighting, social, and environmental cues. Uniformity, visibility, and warm spectrum were consistently associated with reassurance, while dark, non-uniform, or cold lighting coincided with insecurity. Social presence proved decisive: lively activity and non-suspicious people supported safety, whereas loneliness, suspicious groups, and male presence undermined it. Open spaces reinforced reassurance, while enclosure diminished it.

Limitations include the small, non-random sample and the reporting of women's evaluations only (despite a mixed-gender walk), which prevents assessing gender differences. The study also rely on single lighting conditions per site and one night observation, restricting generalization and temporal variability, while isolated 0-lx readings distorted uniformity metrics. Future work should recruit larger mixed-gender samples, test multiple lighting configurations in comparable locations, and explore integration with VR or mobility tracking.

To our knowledge, this is the first study to combine nocturnal walks, collective mapping, and lighting measurements to analyze street lighting and safety perceptions. Beyond its empirical findings, the approach offers a transferable framework to examine how infrastructures shape embodied safety perceptions, adaptable to domains such as noise, air quality, or thermal comfort.

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THE FUTURE OF DWELLING: ADDRESSING FOOD SECURITY IN THE UAE

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INTRODUCTION

According to the United Nations, there are 828 million undernourished people worldwide. Food security remains a major concern for many countries because they either cannot produce enough food for their populations or face economic, political, or environmental crises that could disrupt their distribution channels and food supplies. The coronavirus pandemic exposed vulnerabilities in the UAE's food security by disrupting global supply chains, creating challenges in maintaining steady food imports. Although the United Arab Emirates (UAE) is considered food secure mainly due to its economic and political stability, it still faces issues caused by water shortages, climate change, high temperatures, and a growing population expected to reach 10 million by 2026. Currently, the UAE imports between 80-90% of its food, and despite not experiencing food insecurity thanks to its ability to purchase food on the global market—even at higher costs—the country's heavy reliance on petroleum for economic income means it primarily funds its food imports through fossil fuel revenues. This dependence makes the country vulnerable to fluctuations in trade involving food and other commodities like oil. To tackle these challenges, the Extreme Environment Studio focused this semester (Fall 2024) on research into urban food production within the Emirate of Sharjah. The project explores proposals for sustainable adaptability and systemic interdependence, aiming to foster a discussion about food security in extreme environments. This article will summarize our work.

WHAT IS THE EXTREME ENVIRONMENT STUDIO?

The Extreme Environment Studio serves as a thematic methodology applied to a fourth- or fifth-year Architecture and/or Interior Architecture studio, developing programs aimed at mitigating the impacts of climate change in local communities. The studio integrates the interconnectedness of social and environmental sustainability to provide learners with an understanding of a design process that reduces environmental impact and promotes social and economic well-being, while fostering a sense of agency. The studio focuses on social design and urban acupuncture techniques designed to solve urban problems by proposing imaginative and innovative ideas to everyday situations. Throughout the semester, the learner will conduct and implement research to develop self-sufficient design proposals that harness, produce, and reuse water, generate and store energy from renewable sources, and grow food. The work presented in this article was created at the Extreme Environment Studio, which in Fall 2024 consisted of a vertical studio with ARC401 and ARC501 architecture students.

PROGRAM: THE FOOD HUB AND THE 20-MINUTE NEIGHBORHOOD

The concept of the 20-minute city is challenging to achieve in cities experiencing rapid urban growth and widespread urban sprawl, a situation prevalent in the United Arab Emirates. However, this does not mean that a 20-minute neighborhood isn't possible. In this studio, we explored the potential of transforming a typical neighborhood in the Emirate of Sharjah by utilizing urban acupuncture as a catalyst for change. The project involved developing a Food Hub in the neighborhood's center, which in Sharjah is usually occupied by a park. The Food Hub was meant to house a food production facility focusing on hydroponic vertical farming, mushroom farming, and micro-livestock (insect farming). Its role was to produce enough basic food products to feed the neighborhood at a location easily accessible to incentivize pedestrian traffic. The program included producing water for the facility with atmospheric water generators to ensure self-sufficiency. And to propose an alternative energy solution to do the same in terms of power production. In addition to the macro programs, learners were encouraged to develop micro-programs, such as community kitchens, a cooking school, a market, aquaponics, restaurants, and other initiatives they deemed necessary to socially activate the hub and give back to the community, marking the center of a 20-minute neighborhood. The goal of the semester was to develop solutions for the food security issue by dividing food production into a network of centers, one in each neighborhood, designed to supply each community independently, thus creating partly self-sufficient food hubs.

A QUICK OVERVIEW OF FOOD PRODUCTION IN THE UAE

The Food and Agriculture Organization of the United Nations (FAO) defines food security as the condition in which every person has reliable physical and economic access to enough, safe, and nutritious food to meet their dietary needs and food preferences for maintaining an active and healthy life.[1] The importance of food security makes it a central aspect of the United Nations Sustainable Development Goal (SDGs), where it manifests as an aspect of SDG-2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture),[2] and the basis for the Zero Hunger goal. In a land with an arid climate marked by high temperatures, low rainfall, a lack of natural waterways, and poor soil, food security becomes crucial to support a population that has grown from 1.5 million in the 1970s to 11,345,795 in 2025. And to achieve this, the government has focused on three strategies: The first is importing food from international markets. Followed by actively pursuing food security through investment in agricultural projects and land abroad, such as in Sudan, Kenya, Morocco, Egypt, Ethiopia, Pakistan, Tanzania, the Philippines, Vietnam, and other countries, where food is grown and then imported to the UAE.[3] And the third is focused on growing food domestically. This last strategy needs to be expanded to enable the country to become food self-sufficient, because the other two, while functional, are unsustainable.

Agriculture and hydroponics

Thanks to government incentives and subsidies, the UAE currently has around 30,000 farms, up from 4000 in the 1970s. The limited availability of water resources, harsh environmental conditions, and soil salinity have created specific zones within the country that are suitable for agriculture. Typically connected to underground aquifers and mountain water sources, the country's farmland is mainly located in Diqdaqah in Ras Al Khaimah, Falaj al Mualla in Umm al Quwain, the coastal region of Fujairah, Wadi Adh Dhayd in Sharjah, Al Awir in Dubai, and Al Ain and Liwa Oasis in Abu Dhabi. It covers about 160,000 hectares, mainly used for planting date palms (Phoenix dactylifera), with smaller production of tomatoes, cabbage, eggplant, cauliflower, squash, citrus fruits, and mangoes. Less than 20% of the fruits and vegetables consumed in the UAE are grown locally. Although significant efforts were made to expand the cultivable land, it led to the depletion of underground

aquifers, drops in water tables, and increased soil and water salinity. To achieve self-sufficiency, food production requires a layered approach that relies on systemic interdependence. Hydroponic vertical farming in the UAE offers a sustainable approach to enhancing food security in a region with limited water resources. This soilless farming approach enables efficient water utilization and improves crop production, making it well-suited for the UAE's climate and growing population. This sector currently produces approximately 20% of the produce consumed in the UAE and is expanding rapidly. In a region where about 80% of water is used for agriculture, hydroponics, which uses 90% less water than traditional farming, becomes the right solution.[4]

Seafood, fisheries, and aquaculture

While the United Arab Emirates has a 1318 km coastline, the Persian Gulf side is characterized by warm saline water that is relatively poor in fish resources. Nevertheless, although the fisheries are artisanal and small in scale, they produce an average of 70,000 tons of seafood per year.[5] In 2025, this number is supplemented by 4600 tons of fish from aquaculture farms. Aquaculture in the UAE is a growing sector, thanks to a population that consumes around 220,000 tons of seafood annually.[6] There are presently 17 aquaculture farms in the UAE.

Chicken, beef, camel, sheep, and goat meat

Supported by government subsidies and new technologies, local chicken meat production is expected to reach approximately 70,000 tons per year, accounting for only 15 percent of total chicken meat consumption. This makes the local market depend on international imports, mainly Brazil, to supply the remaining 85 percent.[7]

Cattle farming in the UAE has faced challenges in expanding over the years, primarily due to limited water resources, scarce arable land, and high production costs. Although beef is not commonly consumed in local cooking due to its high price, the UAE's tourism and hospitality industry is a major driver of demand. Local beef producers are increasingly struggling to compete with imported premium beef varieties from Australia, Brazil, Argentina, Japan, and the USA, which are priced 150% to 180% higher than the standard local quality.[8] Production of beef in the UAE is projected to reach 21,090 tons (15%) by 2026, for a country that is expected to consume 134,700 metric tons.

Just like with beef, the UAE's self-sufficiency in red meat, particularly lamb, is very low, with less than 2% of domestic needs being met by local production. The UAE sheep meat market relies heavily on imports, with more than 37,868 tons (58%) of total demand in 2020 satisfied through imports. The UAE primarily imports sheep meat from countries such as Australia, India, Ethiopia, and Kenya.[9]

With a population of 593,294 camels, the UAE produced approximately 38,100 tons of camel meat in 2023, utilizing all of its production. Abu Dhabi holds the majority of the UAE's camels, accounting for 89.7% of the total population.[10]

The sheep and goat herds in the UAE have an estimated population of approximately 5 million. These meats, such as camel meat, are an integral part of traditional Emirati cuisine and are widely consumed throughout the country.

Dairy farming

Dubai's rapidly growing population, particularly its large number of expats who consume more dairy than the local population, is driving an increased demand for fresh milk, cheese, and yogurt. Farms use corral coolers that spray a cool mist on the cows, effectively reducing heat stress for the 75,000 dairy cattle living in the UAE. Forages like alfalfa and oat hay are imported from regions as far away as Australia and the Americas, supplemented by cereals and grains such as corn, wheat, soybeans, and

beet pulp.[11] The result is a production of around 283,000 liters of milk a year, requiring 17,000 tons of whole fresh milk imported in 2024.
Commercial camel milk production started in the UAE in 2001. Today, 4,500 tons of camel milk and related products are produced annually. Camel's milk flavor differs depending on the pasture or feed and is typically saltier and more acidic to the taste than milk from other ruminants. It has been part of the Bedouin diet for generations, making it a vital supplement to local dairy production. Along with dates, camel milk has become one of the UAE's main food exports.[12]

STUDIO APPROACH

The semester started with the planting of mangroves to offset the carbon footprint of the studio. This type of physical activity gets the learner's hands dirty and provides a sense of accomplishment, helping to start building a sense of agency. This is followed by an initial assignment where the student must propose a case study to research that they believe would enhance the development of the studio's main project. Once this phase is finished, the project boards are pinned up in the studio to serve as catalysts for the development of their ideas. The case studies become a database for any team (students work in teams of two) to access. During the term, we visited hydroponic farms and attended lectures by biologists, hydroponic engineers, community representatives, and food nutritionists who helped the learners deepen their understanding of the systemic interdependence of our three main themes: energy, water, and food. The studio had four reviews, with the third being an online gallery review where each team met individually with three international reviewers (one at a time) to present their project. Each of these reviews was conducted in succession, forcing the team to present three times and adjust their presentation accordingly to match the direction of the discussion with each of the reviewers. The final review was conducted in the presence of government officials and developers, sparking a discussion on regional food security. The research that came out of this course's work was the basis for an interview in Fast Company Middle East entitled "This is how architects are designing for water scarcity in the Middle East".[13] Followed by an invitation to participate in "Edible Urban Futures" by Melbourne School of Design, where the discussion on food scarcity continued and an exhibition of work related to the subject took place from March 7th to April 11th, 2025, at the Design Gallery in Victoria, Australia. And finally, an invitation to participate in "The World Future Energy Summit" held in Abu Dhabi, UAE, on a panel about self-sufficient, sustainable cities.[14]

PEDAGOGIC CONCEPTS THAT MANIFEST IN THE WORK

The learners were exposed to a conceptual pedagogy that manifests in their work at different levels.

Social design

Social design is the application of design methods to address complex human issues, with social issues held as the top priority. A process based on participation and co-creation that fosters belief in human agency and enhances communities' capacity to reimagine new stories and realities for themselves. In the learners' work, this idea emerged as moments that promoted community engagement, micro programs benefiting the community, and services such as educational tours, classes, and prepared food delivery to the elderly, all designed to present the Food Hub as a social hub for the neighborhood.

Urban acupuncture

Urban acupuncture is a design strategy that promotes local urban regeneration by using targeted interventions to revitalize city areas and serve as a catalyst for creating a ripple effect of transformative impact throughout a community. Using the metaphor of traditional Chinese medicine, urban acupuncture is a design approach that creates targeted interventions to revitalize specific urban issues, address social and urban challenges, and enhance urban planning strategies. The learners realized that their project was to act as a form of urban acupuncture, enabling them to ideate how it could function as a catalyst for change within the community and, by doing so, anticipate future transformations related to their intervention.

Deconstructivism

Deconstructivism is a theoretical term that appeared in art, architecture, and philosophical writings during the late 1980s and early 1990s. It primarily describes an architectural style characterized by displaced, distorted, and angular forms often arranged in conflicting geometries. Originating from the ideas of French philosopher Jacques Derrida (1930-2004), deconstructivism fostered an iconoclastic, avant-garde style.[15] Large projects can be overwhelming for undergraduate learners, so deconstructivism is used (by some in a literal way) to break a whole into multiple smaller parts, making them more manageable. A large project then becomes a series of smaller ones that are linked together, allowing for a hybrid to be created where the two programs meet. Often, these points of contact become nodes of social interaction and activity.

Systemic Interdependence

The increasing complexity of our society is creating and/or tightening interdependencies among all its component systems. Systemic interdependence refers to the interconnectedness and mutual reliance between different systems, where changes in one system can have a significant impact on others. On this project, this manifests through the relation between the three main themes (energy, water, and food) that are the basis for the *Extreme Environment Studio*. The learner's design process creates a ripple effect on other elements once an element is redesigned, leading to ongoing evolution with each change. This results in a design process where the project is reevaluated each time a significant decision is made, using deconstructivist techniques to connect different programs, foster social interaction, and meet functional needs.

WALK THROUGH

Essentially, all the projects that came out of the studio operate in the same manner, featuring a public ground floor and two additional levels where private food production takes place. The project is one level higher than the average residential height of the neighborhood, making it visible from a distance. The ground floor is designed to host functions that attract people to spend time at this hub. This aims to foster social sustainability and a sense of community within the neighborhood by providing restaurants, markets, and other food-related retail options close to the farthest residence in the area. The project acts as a catalyst to encourage walking and helps establish the foundation for a 15-minute neighborhood. Other functions such as a cooking school, community kitchens available for intrapreneurial neighbors, a recipe library, and multipurpose spaces that can be reserved by the community would draw the public for reasons beyond just leisure.

Figure 1. Exterior image of Food Hub by Joan D Silva and Dina Abu Alfailat.

Figure 2. Interior image of Food Hub by Joan D Silva and Dina Abu Alfailat.

Figure 3. Bird's eye view of Food Hub by Joan D Silva and Dina Abu Alfailat.

Figure 4. Bird's eye view of Food Hub by Menatallah Abdulrhman & Yiwen Cheng.

Figure 5. Bird's eye view of Food Hub by Menatallah Abdulrhman & Yiwen Cheng.

Figure 6. Bird's eye view of Food Hub by Menatallah Abdulrhman & Yiwen Cheng.

Another source of traffic could relate to educational tours created to showcase the farms. Programs tailored to the community's needs would help create a multilayered system of public participation. The seasonal garden could also be linked to the schools in the area, providing on-site classes, and/or the hub could have workshops and programs for the elderly. In this way, while the projects address environmental sustainability through the course's central themes of energy, water, and food production, they also promote community development, social sustainability, and increased agency for the populations they serve.

FINAL THOUGHTS

In the dry climate of the UAE, food security is vital for the country's stability and growth. The current situation, where 85% of food is imported, is unsustainable and presents an opportunity to develop innovative systems. If these systems incorporate elements of environmental and social sustainability, they can address multiple issues by integrating private and public functions to meet the needs of neighborhoods and the city as a whole. A network of such projects working together could help the UAE reduce its food reliance.

NOTES

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[3] Unifrutti Group, *2022 Sustainability Report-Harvesting value for a better world* (Unifrutti Group, 2022).
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[12] Emma Pearson, *Meat your next natural superfood: Camel milk* (Livehealthy, August 21st, 2024).
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[14] World Future Energy Summit, *Self-sufficient Cities: Unachievable Dream or Future of Interdependent Communities* (World Future Energy Summit, 2025).
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IMPACT ANALYSIS OF NURSING CARE ON HOUSEHOLD TRANSPORTATION EXPENSES

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INTRODUCTION

Mobility constraints have been demonstrated to be associated with diminished well-being, constrained access to medical services, and the deprivation of employment and educational opportunities. For instance, Clery et al.[1] found that individuals with disabilities encounter two to three times more difficulties in traveling than those without disabilities. Similarly, Smith and Symonds[2] reported that 30% of people with disabilities experience reduced independence owing to challenges in using public transportation. This underscores the critical importance of equity in transportation policy, leading to a concerted effort to create spaces and supply systems that allow people with disabilities and those requiring nursing care to enjoy the same mobility services as people without disabilities. Have mobility disparities been eliminated? This inquiry forms the basis of the present study.

Venkataram et al.[3] analyzed the impact of geographic factors and policy issues on the mobility of people with disabilities. Their findings indicated that the lack of access to healthcare by people with disabilities in the U.S. results in approximately 11.2 million lost medical visits per year. Rubensson[4] demonstrated that enhancing transportation infrastructure for individuals with disabilities could augment their travel distance by more than 20%. Additionally, an estimate suggests that transport operators are losing £42 million per month by disregarding the needs of people with disabilities. Park et al.[5] conducted a comprehensive review of these and other previous studies examining the mobility patterns and transportation availability experienced by individuals with disabilities daily. The findings indicated that individuals with disabilities engaged in 10–30% fewer trips than those without disabilities, particularly non-work-related trips. The study also observed changes in travel mode choice, with increased reliance on public transit, taxi services, and rideshare options and a decrease in walking and driving among individuals with disabilities. This suggests a tendency among individuals with disabilities to prioritize safety and convenience, opting for slower and more reliable modes of transportation, particularly for shorter distances.

As noted by Shen et al.,[6] who conducted a similar review, there is a paucity of studies discussing mobility constraints in terms of time and cost. Kevins et al.[7] conducted a statistical analysis of time use by persons with disabilities in Canada and found that persons with disabilities spent an average of 1.5 hours per day or more additional time traveling compared to individuals without disabilities. They found that persons with disabilities spend an additional 1.5 hours or more per day on average for transportation compared to healthy persons. While not exclusively focusing on transportation, a quantitative analysis of the additional expenses incurred by households with members with disabilities

was also conducted. Schuelke et al.[8] found that the additional weekly expenses of households with persons with disabilities in the UK increased from approximately 293 to 326 pounds between 2013 and 2016. Alonso-Epelde et al.[9] demonstrated that households with members with disabilities exhibited an average requirement of 52–59% additional disposable income to attain a comparable standard of living to that of a similar household devoid of members without disabilities. For households with severe limitations, the cost of disability can reach 93% of disposable income. Doorley et al.[10] estimated that the cost of disability is 52–59% of the disposable income of households with members with disabilities and that this cost varies with the severity of disability. Deriving a disability-adjusted equivalence scale, they estimated that the weight of an additional adult with a disability should be 9% higher than that of an additional adult without a disability.

However, these studies do not address additional transportation-related expenses. Households with persons with disabilities or persons requiring nursing care are likely to spend more on medical care and less on other expenses.[11] These households are also considered to have relatively low incomes, and lower incomes may result in lower expenses. Furthermore, in developed countries, car ownership exerts a substantial influence on transportation costs. While there have been studies that consider the spatial perspective of urban and rural areas, taking into account the presence or absence of car ownership, to the best of the author's knowledge, there have been no studies analyzing the attributes of people with disabilities or those who require nursing care. In Japan, the target of this study, Akiyama et al.,[12] Mimura et al.,[13] and Toyota Urban Transportation Research Institute[14] have investigated the transportation behavior characteristics and mobility issues of people with intellectual disabilities, mental disabilities, and physical disabilities. However, the survey was geographically constrained, excluding data on income, and the discussion remained qualitative.

This study uses individual household data from the 2019 National Household Income and Expenditure Survey to analyze the impact of care needs on transportation expenses. Households are classified into three categories contingent on the presence of individuals with care needs and utilization of day care or other facilities (hereafter, household nursing care type). Initially, we assess whether household income and car ownership vary by household nursing care type, considering the attributes of the household and head of the household (Level 0). Subsequently, we construct an equation relating transportation-related expenses, including these variables, to train, bus, taxi, and gasoline expenses and analyze whether the household type dummy is estimated as a statistically significant variable (Levels 1–3). Furthermore, we integrate Levels 0, 1, and 2 to examine whether households with a person requiring nursing care differ in their transportation-related expenses (see Figure 1).

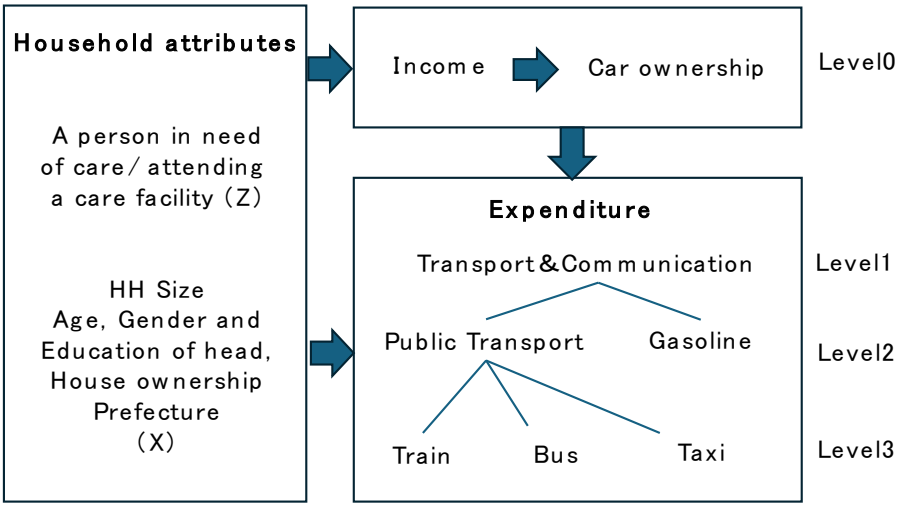

Figure 1. Analytical Framework.of This Study

METHODOLOGY

A multiple regression analysis was conducted using Level 0 annual income as the explained variable and household attributes, including household nursing care type, as the explanatory variables. For each consumption expense in Levels 1–3, household income, car ownership dummies in Level 0, and the type of home ownership were included as explanatory variables.[15] Households with gasoline expenses were considered to have cars, whereas those without gasoline expenses were considered to have no cars.

Given the presence of households with zero expenses, the Tobit and sample selection models were applied.[16] The Tobit model is expressed by (1a) and (1b).

$$y^* = \beta_0 + \sum_{i=1}^{p} \beta_i x_{ip} + \epsilon, \qquad \epsilon \sim N(0, \sigma^2) \qquad \text{(1a)}$$

$$y = \begin{cases} y^* & y^* > 0 \\ 0 & y^* \leqq 0 \end{cases} \quad \text{(1b)}$$

The sample selection model was first proposed by Heckman (1979)[17] as an extension of the Tobit model. The sample selection models are based on two latent variables: Y_1^* and Y_2^*. The first latent variable Y_1^* is assumed to be of the form $Y_1^* = X_1\beta_1 + \varepsilon_1$ with X_1 being a row vector of explanatory variables and β_1 being the corresponding vector of coefficients describing the linear dependency of Y_1^* on X_1. Similarly, the second latent variable Y_2^* is assumed to be of the form $Y_2^* = X_2\beta_2 + \varepsilon_2$, again with X_2 being a row vector of explanatory variables and β_2 being the corresponding vector of coefficients. The error terms (ε_1, ε_2) are assumed to be independently and identically distributed according to a bivariate normal distribution. Therefore, they may be correlated with each other. The observed variable is defined as follows:

$$Y = \begin{cases} Y_2^* & , Y_1^* > 0 \\ 0 & , Y_1^* \leq 0 \end{cases} \qquad (2)$$

The sample selection model coincides with the Tobit model if $X_1 = X_2$ and $\beta_1 = \beta_2$ (i.e. $Y_1 = Y_2$).

We used the AER[18] and heckmanGE[19] packages in R software for parameter estimation. Aakake Information Criterion (AIC) was used for model selection. The heckmanGE() function fits a generalization of the Heckman sample selection model, allowing sample selection bias and dispersion parameters to depend on the covariates.

If households requiring nursing care exhibited substantial disparities in both household income and car ownership, this effect was also expected to influence Level 1–3.

This study utilized the estimated equations to examine the above disparity by setting household income to a specific value and considering the effects of income and car ownership.

Data

Based on the Statistics Act, these statistics have been independently compiled and processed using anonymous data provided by the National Statistics Center regarding the Household Income and Expenditure Survey for the fiscal year 2019. The survey is conducted once every five years by the Statistics Bureau of the Ministry of Internal Affairs and Communications. It provides information on average household expenses and income for the two months of October and November. Tables 1 and 2 present the descriptive statistics for the variables used in this study. As anticipated, a considerable disparity in the age of the household head was evident. Figure 2 presents a box-and-whisker plot of the annual income categorized into three distinct household types. It is evident from the figure that households with members requiring nursing care tend to have a lower income. The car ownership rate was approximately 13% lower for households with a person requiring nursing care and approximately 8% lower for households where the person requiring nursing care uses an institution (Figure 3). However, these observations are merely simple correlations and should be interpreted considering

confounding variables. These confounders include the age and gender of the household head, the number of individuals in the household, the context of car ownership, and income.
A significant proportion of households exhibited a lack of public transportation expenses, with over half of all households demonstrating zero expense on train, bus, and cab fares. A more detailed breakdown revealed that 71%, 86%, and 88% of households with a car had no expenses, whereas the corresponding figures for households without a car were 71%, 82%, and 82%, respectively.

Variable		Household nursing care type	Number of samples	Min.	Median	Mean	Max.	SD
Household	Size (persons)	None	28,512	1	2	3	12	1.22
		Yes w/o NF use	642	1	2	3	8	1.17
		Yes w NF use	1,845	1	3	3	10	1.29
	Income (Yen per year)	None	28,512	2	495	584	6,833	407.61
		Yes w/o NF use	642	48	373	495	4,102	421.07
		Yes w NF use	1,845	28	436	546	2,671	385.03
Household head	Age	None	28,512	18	62	60	101	15.24
		Yes w/o NF use	642	33	76	73	98	12.63
		Yes w NF use	1,845	31	71	72	103	12.13
Transporation expense (Yen per month)	Transportation & communication	None	28,512	0	26,603	39,032	6,565,260	84,232
		Yes w/o NF use	642	0	17,923	28,693	1,107,811	50,544
		Yes w NF use	1,845	0	21,191	35,529	1,305,434	68,339
	Public transoi\port	None	28,512	0	0	4,306	345,759	11,737
		Yes w/o NF use	642	0	0	2,956	70,665	6,977
		Yes w NF use	1,845	0	0	3,453	144,973	8,939
	Gasoline	None	28,512	0	4,006	6,160	106,225	7,457
		Yes w/o NF use	642	0	2,006	4,407	40,234	6,342
		Yes w NF use	1,845	0	2,651	5,310	61,805	7,424
	Train	None	28,512	0	0	1,695	174,200	5,929
		Yes w/o NF use	642	0	0	1,053	56,283	4,182
		Yes w NF use	1,845	0	0	1,128	59,000	4,305
	Bus	None	28,512	0	0	270	54,186	1,263
		Yes w/o NF use	642	0	0	233	13,815	1,102
		Yes w NF use	1,845	0	0	218	17,741	1,048
	Taxi	None	28,512	0	0	273	63,685	1,375
		Yes w/o NF use	642	0	0	876	46,899	3,319
		Yes w NF use	1,845	0	0	1,000	83,895	4,172

Table 1. Descriptive Statistics (continuous variables), NF: nursing facility

Variable		Household nursing care type	0: None	1: Yes	Percentage
Household	Under 18	None	20,384	8,128	28.5
		Yes w/o NF use	598	44	6.9
		Yes w NF use	1,722	123	6.7
	Over 65	None	15,743	15,599	49.8
		Yes w/o NF use	41	601	93.6
		Yes w NF use	66	1,799	96.5
	Car ownership	None	9,032	22,270	71.1
		Yes w/o NF use	270	372	57.9
		Yes w NF use	680	1,165	63.1
Household head	Female	None	25,356	5,946	19.0
		Yes w/o NF use	495	147	22.9
		Yes w NF use	1,462	383	20.8
	Higher education	None	22,271	9,013	28.8
		Yes w/o NF use	526	116	18.1
		Yes w NF use	1,472	373	20.2

Table 2. Descriptive Statistics (categorical variables).

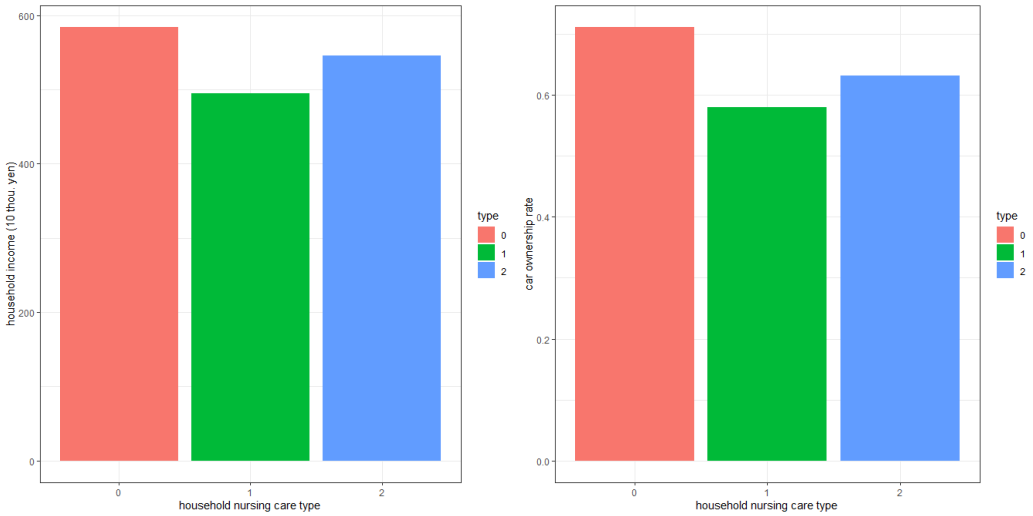

Figure 2. Average Income and car ownership rate by household nursing care type.
Note: 0: None, 1: A person without nursing facility use, 2: A person with a nursing facility use.

RESULTS

Level 0: Income and car ownership

Table 3 presents the estimation results. The dummies for households requiring nursing care are negatively significant when annual income and car ownership were the explained variables. Households with caregivers requiring nursing care exhibited a 10% reduction in annual income, whereas those with caregivers utilizing a facility demonstrated a 5% decrease in annual income. In addition, the car ownership rate was statistically significantly lower among households with a

caregiver requiring nursing care and those with a caregiver utilizing a facility. These findings imply that these factors may contribute to mobility constraints.

Level 1: Transportation and communication

The estimation results are presented in Table 4. In the "transportation and communication" category, which encompasses all transportation-related expenses, there was no statistically significant difference among household nursing care types, after adjusting for income and car ownership.

Level 2: Public transport and gasoline

As with the “transportation and communication" category, there was no statistically significant difference in public transport expenses among household nursing care types, after adjusting for income and car ownership (see Table 4). The coefficient of the car ownership dummy was negative and substantial, indicating that households with cars tend not to use public transportation.

This study revealed no statistically significant disparities among households with individuals requiring nursing care who did not use care facilities. Conversely, households with individuals requiring nursing care and those utilizing care facilities exhibited a decrease of 7%. This variation could be attributed to either an increase in expenses for facility use or a decrease in the utilization of cars owing to facility access.

Level 3: Train, bus, and taxi

The analysis revealed that expenses related to train and bus services were notably detrimental to households with individuals requiring nursing care. Conversely, the results for taxi services were positive and significant (Table 5). This finding suggests that households with a person requiring nursing care are less inclined to use traintrains and buses and are more inclined to use taxis. The coefficient of car ownership is insignificant, suggesting that households with cars do not affect these modes of transportation.

Level 0			**Income (log-linear)**		**Car ownership (binomial)**	
Variables			coef.	t-value	coef.	t-value
Household	**Care**	**w/o NF use dummy**	**-0.10**	**-4.67**	**-0.35**	**-3.94**
		w NF use dummy	**-0.05**	**-4.12**	**-0.30**	**-5.44**
	Size(sqrt)		0.94	86.14	0.34	6.04
	Under 18 dummy		*-0.38*	*-39.12*	-0.41	-8.54
	Upper 65 dummy		-0.21	-23.96	*0.00*	0.06
	Income (log)				**0.29**	**11.67**
Household head	Male dummy		0.27	34.31	0.45	13.01
	Age		-0.01	-17.76	-0.02	-13.96
	Higher education dummy		0.23	35.56	*0.01*	0.33
Intercept			4.73	179.31	-0.65	-3.83
Pref. dummy			yes		yes	
BIC(0)			69,259		41,026	
BIC			50,249		38,099	
(quasi) Coef. of determination			0.44		0.09	
Number of samples			33,789			

Table 3. Estimating Results for Level 0.

			Level 1		Level 2			
			Transportation and communication (Tobit)		**Public transport (Sample selection)**		**Gasoline (log-linear)**	
Variables			coef.	t-value	coef.	t-value	coef.	t-value
Household	**Care**	**w/o NF use dummy**	***-0.07***	***-1.69***	***-0.05***	**-0.63**	**-0.05**	**-1.09**
		w NF use dummy	***-0.05***	***-1.76***	***-0.02***	**-0.40**	**-0.07**	**-2.71**
	Size (sqrt)		0.29	11.40	-0.25	-4.14	0.24	9.90
	Under 18 dummy		-0.14	-6.48	-0.16	-3.79	-0.05	-2.68
	Over 65 dummy		-0.10	-5.50	*0.00*	-0.07	*-0.02*	-1.21
	Income (log)		**0.47**	**29.00**	**0.57**	**11.68**	**0.24**	**21.73**
	Car ownersip dummy		**1.68**	**15.12**	***-0.51***	**-1.88**		
	Income: car ownership dummy		**-0.12**	**-6.47**	**-0.25**	**-2.00**		
Household head	Male dummy		0.04	2.35	*0.00*	-0.43	0.21	12.40
	Age		0.00	-4.60	0.28	7.29	-0.01	-10.27
	Higher educaton dummy		0.06	4.30	*0.09*	1.90	-0.03	-2.73
Intercept			6.26	60.10	4.72	12.94	7.14	94.12
Pref. dummy			yes		yes		yes	
House type dummy			yes		yes		yes	
BIC(0)			110,922		106,656		62,397	
BIC			101,334		104,135		59,602	
(quasi) Coef. of determination			0.09		0.02		0.13	
Number of samples			33,789				23,807	

Table 4. Estimating Results for Level 1 and 2.

Level 3 (Sample selection)			**Train**		**Bus**		**Taxi**	
Variables			coef.	t-value	coef.	t-value	coef.	t-value
Household	**Care**	**w/o NF use dummy**	**-0.83**	**-1.96**	***-0.08***	**-0.60**	**0.41**	**4.07**
		w NF use dummy	**-1.40**	**-5.60**	***-0.16***	**-1.64**	**0.48**	**7.82**
	Size (sqrt)		-0.42	-5.62	*0.05*	0.45	-0.33	-3.43
	Under 18 dummy		-0.26	-4.81	-0.33	-3.92	0.12	1.97
	Over 65 dummy		0.17	3.46	0.18	2.40	*0.03*	0.52
	Income (log)		**0.70**	**12.89**	**0.22**	**2.42**	**0.21**	**2.63**
	Car ownersip dummy		*-0.01*	*-0.21*	*-0.83*	-1.65	*-0.70*	-1.91
Household head	Male dummy		*0.03*	*0.59*	*0.08*	1.22	-0.19	-4.31
	Age		*0.00*	*-1.29*	*0.00*	-1.07	*0.00*	1.34
	Higher educaton dummy		0.36	8.16	0.19	2.38	*-0.02*	-0.37
Intercept			3.11	7.73	4.72	8.95	6.50	10.87
Pref. dummy			yes		yes		yes	
House type dummy			yes		yes		yes	
BIC(0)			75,471		46,551		40,542	
BIC			72,536		46,121		39,515	
(quasi) Coef. of determination			0.04		0.01		0.03	
Number of samples			33,789					

Table 5. Estimating Results for Level 3.

Other variables

Income elasticity

The income elasticity of total transportation expenses was estimated to be 0.47 for households that owned a car and 0.35 for those that did not. The income elasticity of gasoline expenses was 0.24. The income elasticity of public transportation and train expense was 0.57 for households without cars, indicating greater elasticity than that of gasoline expenses. In contrast, the income elasticities of bus and taxi expenses were 0.22 and 0.21, respectively.

Gender of household head

Female-headed households tended to have lower incomes and car ownership than those headed by males, and they also showed lower transportation expenses. Even among those who owned a car, their gasoline expenses were found to be lower than those of men, and their travel distances were shorter.

TOTAL EFFECTS

After controlling for household attributes, households with members requiring care exhibited lower incomes and car ownership rates (Level 0). Additionally, there was no significant difference in public transport expenses, whereas gasoline expenses were lower (Levels 1 and 2). The latter was obtained when income and car ownership remained constant. Therefore, the impact of having a member requiring care must consider the differences observed at Level 0. Here, we compare transportation-related expenditures for a married couple living in Tokyo to those of the head of a household aged 65 years.

The results are shown in Figure 3. In terms of gasoline, we observed 7–8% gap compared to households without the need for nursing care. Households did not pay for train but paid more than 50% for taxi services. Therefore, there was a small difference in public transport expenses (3–8%).

Figure 3. Total Effects of Nursing Care on Transportation Expenses
Note: 1: Household without nursing facility use,
2: Household with nursing facility use.

DISCUSSION

In this study, after controlling for the age of the household head and other household attributes, it was clarified that households with a person in need of care:

- (Level 0) have an approximately 7% lower income and a lower probability of owning a car.
- (Levels 1 and 2) show no significant differences in transportation and public transport expenses when income and car ownership status are the same, although gasoline expenses are lower.
- (Level 3) have a higher proportion of zero trainway and bus fares; however, taxi expenses are more likely to be incurred.

Level 0 was found to be smaller than the income disparity for people with disabilities. There are several possible explanations for these results. First, this study distinguished between whether there was a person in need of care in the household, while the definition of extra costs differs; the target

was people with disabilities or the disabled themselves. The difference in the writing results is due to differences in social security systems between countries. Government pensions and subsidies are also included in income; therefore, it is possible that the income disparity in Japan is smaller. The validity of these results should be investigated further in future studies.

The fact that households with care recipients who use facilities spend less on gasoline may suggest that their range of movement is limited due to time constraints imposed by the need to use the facilities.[20] Park et al.[21] also showed that people with disabilities were prone to travelling shorter distances.

Uddin et al.[22] revealed that low-income people with disabilities were more likely to rely on public transport or walking, and Park et al.[23] showed an increased use of public transit and taxis. However, our results showed a decreased use of train and an increased use of taxis. Bezyak et al.[24] showed that the majority of respondents experienced difficulties in accessing public transportation, and community activities that did not occur on a regular schedule were more affected by problems with public transportation. With regard to train and bus use, we must understand the barriers to access and egress. In Japan, barriers to access and egress may be higher. In contrast, taxis are relatively expensive, but they supply door-to-door services.

CONCLUSION

Households with members requiring care typically have low annual incomes and a lower likelihood of car ownership. When controlling for household and household head attributes, such as household income and car ownership, there is no significant difference in transportation expenses among households with members requiring care. Furthermore, households that own cars tend to spend significantly less on gasoline, and travel shorter distances.

Our findings also indicate that, while expenses on public transport, such as trains and buses, are relatively low, spending on taxis remains comparatively high. This observation suggests substantial demand for door-to-door services.

Numerous challenges must be addressed in this study. The coefficient of determination for the estimated model is relatively low, indicating potential limitations in its explanatory power. There is a possibility of omitted variable bias, particularly concerning factors such as the level of public transport service in the vicinity of the home, road density, and other transportation infrastructures. Additionally, the assumption that income elasticity remains constant irrespective of the presence of a person in need of care or the attributes of other households or household heads warrants further examination to validate its accuracy. Furthermore, this analysis assumes that household attributes influence income, and that both household attributes and income determine car ownership. However, it is plausible that car ownership may influence income or that income and household size may interact simultaneously. Moreover, this study did not analyze individuals with disabilities who experience mobility difficulties beyond those requiring care. Additionally, the focus was solely on whether facilities were utilized without considering the varying levels of care required. We contend that it is crucial to understand the extent of mobility constraints not only in financial terms but also in terms of time.

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THE LINK BETWEEN NEIGHBOURHOOD CHARACTERISTICS AND SOCIAL SUPPORT: A PATHWAY TO ADOLESCENT WELLBEING

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INTRODUCTION

Given the growing urbanization of the world, the recent *Lancet Commission on Adolescent Health and Wellbeing*[1] called for a greater emphasis to be placed on the built environment as a social determinant of adolescent health. This call aligns with what we know from developmental neuroscience: adolescence is a period of life when the onset of puberty, social and cognitive development and changes in peer relations all affect how adolescents perceive and interact with their environment.[2] Building on this call, scholars have proposed that improving adolescent wellbeing research requires focusing on the social and emotional opportunities that urban spaces can offer for socializing with friends and peer groups, for exploring local and wider environments and for emotion regulation. In line with this, neighbourhood characteristics, such as population density and compactness, deprivation and greenness, have all been proposed to play a distinct role in adolescent wellbeing.[3] Given that social relationships and community belonging are central to adolescent self-development and mental health,[4] this paper reviews how these neighbourhood characteristics influence opportunities for social support and connectedness, and, in turn, can serve as a pathway for adolescent wellbeing.

COMPACTNESS AND POPULATION DENSITY

Compact urban forms have been linked to both positive and negative physical and mental health outcomes.[5] Urban compactness refers to the concentration of residential, commercial, and recreational spaces, promoting accessibility and proximity. Population density is one element of compactness, defined as how many people occupy a given area.[6] The relationships between compactness, population density and wellbeing are complex: while compact urban forms may enhance urban sustainability and social capital, which are both important aspects of wellbeing, population density shows more complex associations.[7] In fact, population density has been linked to symptoms of anxiety, psychosis and lower life satisfaction across the lifetime.[8] Given the mixed evidence, this section reviews how density relates to social connectedness, particularly in adolescence.

Opportunities for social interaction

Several researchers have proposed that city living enhances the opportunity to meet people and build a sense of community. In line with this, research using census data from adults living in Norwegian cities showed that residents of higher population density areas reported more opportunities for meeting new people and to participate in social activities than residents of less dense areas.[9] These studies also suggested that urban compactness was tied to greater frequency of meeting close friends, satisfaction with relationships and a sense of support. However, these relationships were relatively weak and disappeared when isolating population density from other features of compactness,[10] suggesting that population density might be beneficial only alongside other elements of compact urban forms such as accessible public spaces and facilities.[11] Evidence from adolescents remains limited but points to similar patterns. A study using data from over thirty-six thousand adolescents in Greater Manchester, UK, found that higher density was associated with lower loneliness.[12] These effects disappeared once factors like gender, ethnicity and minority status were considered. In contrast, a study of Italian adolescents (eleven to fifteen years old) found no increase in number of friends among those living in dense areas, and instead found lower quality of personal relationships (accounting for gender and socioeconomic status but not for ethnicity or minority status).[13] Taken together, these results suggest that demographic characteristics of young people (e.g. gender and minority identities) could affect the overall experiences of social life in densely populated environments.

Social cohesion and perceived neighbourhood quality

In contrast, other studies have shown associations between urban density and weaker social cohesion and lower sense of community in adolescents and adults.[14] Two explanations have been proposed to explain this tension. First, there may be a trade-off between the number and strength of ties: dense areas might enable a larger number of weaker ties, while less dense areas could offer fewer but stronger connections.[15] Second, some authors have proposed a difference between spatial density and social (perceived) density, whereby the latter is created by the perceptions and estimates of the number of people in a given area, the space available and the organisation of the space.[16] As such, high spatial density might induce negative perceptions of neighbourhood quality (social density). In line with this, residents of higher density areas more often described their neighbourhoods as noisier and less clean compared to residents from less dense areas,[17] and also reported lower happiness and satisfaction with their neighbourhoods.[18] In addition, feelings of neighbourhood overcrowding predicted lower sense of community over and above objective measures of population density.[19] These findings were mirrored in studies using census data from UK residents sixteen years and older: adjusting for other neighbourhood factors, respondents in higher density neighbourhoods reported lower feelings of pride and belonging to their neighbourhoods, feeling more concerned with safety and reported more instances of negative or unfriendly social interactions.[20] This last finding is particularly important in the context of adolescence, as negative peer influences have a role in the development of mental health difficulties.[21] Taken together, as quality of relationships is a stronger predictor of wellbeing than the number of social contacts,[22] and can alleviate detrimental effects of negative social experiences,[23] it is important to understand how spatial and social density differently affect adolescent subjective experiences of their social world.

NEIGHBOURHOOD DEPRIVATION

Urban deprivation has been consistently linked to poorer adolescent mental health, with evidence suggesting a cumulative effect of growing up in deprivation on health and emotional difficulties over time.[24] Deprived urban neighbourhoods often combine concentrated poverty, lack of recreational

facilities, housing instability and greater exposure to violence, antisocial behaviour and crime. In turn, these indicators are related to negative perceptions of the neighbourhood, lower feelings of safety and reduced use of public spaces, as well as negatively impact social relationships and increase feelings of isolation.[25] This section reviews how different aspects of cumulative deprivation in urban neighbourhoods can affect social cohesion and exploration, particularly during adolescence.

Safety and negative social interactions

Perceptions of safety are a key determinant of neighbourhood cohesion. In deprived neighbourhoods, issues such as crime, noise and disorder are better predictors of negative neighbourhood perceptions (e.g., worse neighbourhood quality, reputation, attachment and satisfaction), than structural features of the neighbourhood, such as availability of greenspace, access to public transport and local amenities.[26] In line with this, adolescents who reported higher perceived social and physical disorder in their neighbourhoods also reported lower trust and reciprocity with their neighbours.[27] In addition, adolescents who experienced issues with safety, trust and support from their neighbours reported feeling lonelier than those who perceived their neighbourhoods as safer.[28] Higher crime rates in deprived neighbourhoods are also related to greater adolescent conduct and peer problems.[29] One study using data from adolescents aged sixteen to seventeen years in England showed that community disadvantage was not only related to less frequent positive social ties and trust in neighbours, but also with more frequent negative social ties, and the detrimental effect of negative interactions on emotional wellbeing was twice the beneficial effect of positive interactions.[30] Neighbourhood deprivation, safety issues and worse adolescent social and psychological outcomes could therefore be related to an increased exposure to negative social interactions.

Access to third places for community building

Third places are accessible spaces outside of home and work (e.g. parks, cafés, libraries, and community centres) that foster connection, belonging and wellbeing, and are important spaces for socialisation and community building.[31] While deprived neighbourhoods often have limited access to third places, and these are often not well-maintained,[32] accessibility to third places is a key characteristic to urban health. One study using data from adolescents aged thirteen to eighteen years living in a deprived neighbourhood in Rotterdam, the Netherlands, showed that, while concerns with safety affected the use of public spaces, adolescents still identified several areas within the neighbourhood that served as sources of support, including youth centres, sports clubs and places of worship.[33] The authors suggested that these places provide opportunities for instrumental or affective meaning making, such that third places and the interactions residents experience in them have socioemotional value. In line with this, another study found that perceiving that the neighbourhood had more meeting places and opportunities to engage in activities was related to having more friends and better general personal relationships.[34] In addition, some third places were described as social hubs (e.g. places with facilities that cater to youths), and these were associated with an increase in adolescent movement and exploration within and beyond the neighbourhood.[35] Some policy initiatives have increased the access to third places in deprived neighbourhoods as a way of improving health-related outcomes in infants and their parents, for example the Best Start for Life programme in England.[36] Recognising the psychosocial benefits of social connection and exploration during adolescence, targeted policy initiatives that improve accessibility and quality of third places in deprived neighbourhoods could create vital social hubs that contribute to adolescent social support and sense of community.

NEIGHBOURHOOD GREENNESS

Evidence suggests that natural environments such as green areas (e.g. parks and tree cover) and blue spaces (e.g. lakes) show health-related benefits, particularly on physical activity, cognitive restoration and stress reduction.[37] As such, the World Health Organisation recommends having a large green space within three hundred meters of the residence,[38] and other guidelines recommend having at least three well-established trees in view from the home, school and place of work, and no less than a thirty percent tree canopy in the neighbourhood.[39] Availability of well-maintained green spaces and greener urban designs have been proposed to play an important role in providing spaces for social interaction, enabling social cohesion and sense of community,[40] and for improving perceptions of safety, neighbourhood pleasantness and satisfaction.[41] The following section reviews how neighbourhood greenness is related to social activities and interactions and positive neighbourhood perceptions.

Spaces for social activities

Closely related to third places, neighbourhoods with large green spaces have been proposed to be important places for social activity and connection to take place.[42] Features such as sports facilities, shaded or sheltered seating areas, barbecue and picnic areas and organised events have been identified as key characteristics incentivising adolescents to use parks as places of social gathering.[43] One study using data from adolescents aged ten to eighteen years in Iran showed that more frequent use of neighbourhood green spaces was related to having more friends and spending more time with them.[44] This study additionally found that the relationship between use of green spaces and social connectedness was particularly strong for adolescents older than fourteen years. These findings are mirrored in a study looking at mental health and wellbeing using data from adolescents aged ten to fifteen years in London, UK, and the authors suggested that the age-related benefits of green spaces could be due to increased independent mobility and exploration in older adolescents.[45] Importantly, however, several authors have proposed that opportunities for social interaction that green recreational spaces offer might not always translate to increasing quality of social interactions, particularly beyond personal relationships and into a wider range of actors, such as peers and neighbours. In line with this, one study using data from adolescents aged twelve to eighteen years in Australia found no differences in social connectedness related to frequency of use of outdoor recreation spaces such as parks and lakes. The authors suggested that adolescents might not interact with other people who are not in their group of friends and might also start to spend more time exploring recreational spaces beyond their neighbourhoods.[46]

Residential green design and pleasantness

In addition to availability of green spaces that enable socialisation, research has also shown that greener neighbourhoods, including residential areas with greater tree cover, are related to social and psychological wellbeing. One study using data from Spanish adolescents (nine to seventeen years) showed that higher residential greenness was related to increased perceived social support and feelings of autonomy in older adolescents (fifteen years and older), and this was related to overall psychological wellbeing.[47] In addition, a series of studies using data from Canadian adolescents (nine to seventeen years) consistently found that urban environments that have embedded natural features offered the greatest benefits to emotion regulation (e.g. calmness and anxiousness) and positive mood compared to other urban forms.[48] These studies also showed that adolescents prefer to explore natural environments characterized by imageability and complexity (e.g. more colours and landscapes with more features), as well as natural enclosures or openings (e.g., tall trees and fences with ivy). Taken together, these studies suggest that neighbourhood green design, aesthetics and pleasantness might also contribute to wellbeing during adolescence.

CONTEXTUAL CHALLENGES

Interconnected exposures

One key challenge in this area of research is that urban exposures are often interconnected, and it is challenging to isolate their effects on wellbeing. It is therefore important to understand how density, deprivation and greenspace can interact to create different realties for city dwellers. For example, economic and social imbalances can bias deprivation indices in high density areas (e.g. UK Index of Multiple Deprivation), where affluent individuals have access to premium housing accommodation, but poorer residents live in concentrated subsidized social housing.[49] Nonetheless, integrating elements of urban compactness (e.g. well-connected streets for pedestrians and access to public facilities) could be particularly beneficial for adolescents living in deprived neighbourhoods, as these can increase social interactions and emotional wellbeing in high density areas.[50] Another example is the complex relationship between greenspace availability and neighbourhood deprivation. Firstly, deprived neighbourhoods often have reduced access to greenspace and lower residential green cover.[51] Second, where green spaces are available, these spaces are often less well-maintained, which is an important barrier of use and is related to perceptions of disorder and unsafety.[52] Nonetheless, several studies have shown that the salutary effects of access to green areas are greater for low-income individuals than for affluent individuals, highlighting neighbourhood greenness as a potential resource for health equity.[53] Given the importance of greenness, safety and access to third places for adolescent social and psychological wellbeing, robust causal inference methodologies might be a useful tool to understand how different urban exposures contribute in interconnected pathways to healthy and socially active uses of public space during adolescence, as shown in Figure 1.

Individual differences

Another challenge is the impact that contextual and sociocultural factors have on urbanization, resulting in individual differences in wellbeing. For example, the positive association between high population density and greater number of social contacts has been mostly reported in Western samples,[54] but findings are more mixed or even negative in migrant or ethnic minorities[55] and in other global samples (e.g. China).[56] In addition, social marginalization can mean that some young people (e.g. girls, younger adolescents, LGBTQ+ youth, young people of colour and young people experiencing homelessness) are disproportionally affected by barriers to participate from their neighbourhood environments in ways that are beneficial for their wellbeing. For example, girls often face greater obstacles to access (alone) and to navigate public third places (e.g., due to safety concerns), and this can limit their involvement in certain social and physical activities. Relatedly, girls and adolescents from ethnic and sexual or gender minorities also report heightened difficulties with loneliness related to safety and trust in urban environments.[57] Younger adolescents might also be particularly susceptible to the negative effects of urban stressors (e.g. overcrowding and negative social interactions), given the continued development of social stress processing and emotion regulation during adolescence. Yet, research on how urban spaces support adolescent wellbeing remains limited for younger adolescents (ten to fourteen years) and particularly for adolescents who are most at risk (e.g. not in schools). Therefore, it might be important for urban health research to integrate how the heterogeneity of individual experiences might alter the relationship between urban form and adolescent social and emotional wellbeing, as shown in Figure 1.

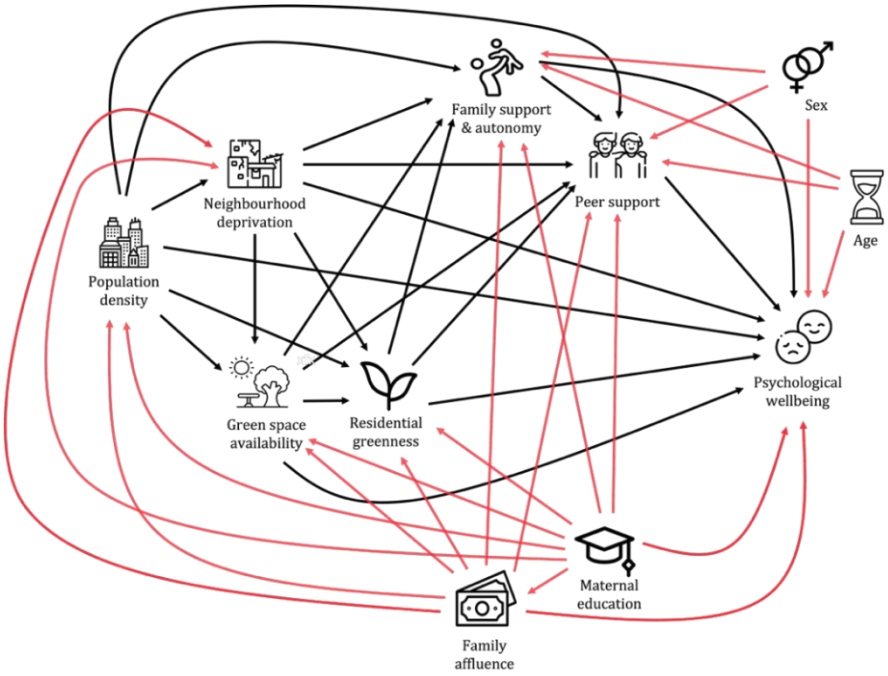

Figure 1. Linking neighbourhood exposures, adolescent social support and psychological wellbeing.[58]

CONCLUSION

Urban neighbourhood factors like compactness and population density, neighbourhood deprivation and neighbourhood greenness may foster opportunities for connection for young people. In addition, features related to these factors, such as perceptions of the neighbourhood, perception of safety and access to third places, could support or hinder social interactions. The literature reveals that the relationship between urban form and adolescent wellbeing is neither straightforward nor universal, but rather, is affected by social processes that create opportunities and barriers for social connection. We further suggest that neighbourhood factors can interact with each other in shaping wellbeing: benefits of population density may be amplified when paired with accessible and safe third places, while the negative effects of deprivation may be buffered by supportive green and social infrastructure. In addition, we expose that the experiences of girls, younger adolescents, and young people from ethnic, sexual or gender minorities living in urban environments demonstrate that neighbourhood characteristics do not affect all adolescents equally, and research specifically examining these differential impacts remains limited.

Moving forward, several key priorities emerge for both research and practice. First, longitudinal studies employing novel methodologies are needed to explore the entangled effects of density, deprivation, and greenspace on adolescent social and emotional development. Second, research must better incorporate the voices and experiences of younger adolescents and those most at risk, including minoritised adolescents and adolescents not in school. Third, policy initiatives should prioritise the development and maintenance of third places as social hubs, particularly in deprived neighbourhoods where their absence most affects young people's opportunities for connection and exploration. Integrating quantitative methodologies with participatory, co-design approaches will be crucial for advancing our understanding of how built environments and their social and emotional opportunities can nurture adolescent wellbeing. Only through such comprehensive approaches can we develop urban policies and interventions that truly support the diverse needs of all young people as they navigate the critical developmental period of adolescence.

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FROM MEDICAL CARE TO COMMUNITY WELLBEING. BUILDING A CONCEPTUAL FRAMEWORK FOR HOSPITAL OUTDOOR SPACES

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INTRODUCTION

The relationship between public health and urban planning is crucial for promoting healthy lifestyles and environments. Urban environments should be designed to promote inclusion, social engagement, and environmental sustainability, to reduce health inequalities and improve the quality of life. Cities such as Barcelona exemplify this duality: they offer a high standard of living, but also face challenges such as pollution, urban density, and high living costs[1]. Bologna shares similar characteristics, making both cities relevant for studying urban health dynamics.[2]

Within this context, hospitals – places of care by definition – play a crucial role. Their outdoor spaces should be reimagined not only as functional spaces for treatment, but as integral parts of the urban fabric with broader public health implications.

This paper explores the topic of urban health and how it can be identified by ten key components, translated into two different dimensions: hospital and urban. Moreover, the case study of the regeneration of the Sant'Orsola Polyclinic outdoor spaces – one of Bologna's main hospitals – offered the opportunity to extend the analysis to the main hospitals of the city of Barcelona, due to their comparable features.

Such analysis reveals which components have been addressed the most by hospital institutions so far. This helps to identify strengths and gaps and provides a conceptual framework that can guide the definition of urban renewal strategies for hospital open spaces.

URBAN HEALTH

In 1950, 30% of the world population lived in urban areas, later increased to 49% by 2000, and stood at 55% in 2018.[3] Over the coming decades, these urbanization trends are expected to continue, with 66% of the world population expected to be urban by 2050.[4] On the one hand, urbanization has improved population health thanks to better job and education opportunities and greater access to essential health services.[5] However, fast-growing cities also pose new threats to public health, including increased social inequalities[6] and lifestyle-related risk factors.[7] In 1948, the World Health Organization (WHO) defined health as «a state of complete physical, mental and social well-being and not simply the absence of diseases and infirmities».[8] In 1986, the Ottawa Charter defined the concept of health promotion (later recalled in the Shanghai Declaration[9]) as «the process of enabling people to increase control over, and to improve, their health».[10] Therefore, it overcomes the

responsibility of the health sector, extending beyond healthy lifestyles to well-being. Other related concepts were introduced in the following years: Healthy Cities (promoted in the Beyond Health Care conference, Toronto, 1984), i.e., urban contexts that continually create and improve their physical and social environments and expand the community resources that enable people to mutually support each other in performing life functions and in developing to their maximum potential;[11] Health in All Policies (promoted by the WHO in 2006) i.e., an approach to public policies across sectors that systematically considers health systems implications of decisions, seeks synergies and avoids harmful health impacts, in order to improve population health and health equity.[12] Moreover, the concept of Urban Health was first defined in the Urban Health Rome Declaration of the G7 Health 2017, representing a strategy that integrates health promotion actions into spatial and urban planning and defines services that positively impact population health.[13]

Therefore, considering hospitals emerges as a priority in this context. It is essential to apply the concept of urban health to hospital outdoor spaces viewing them not only as places of medical care, but also as integral parts of the urban fabric, influencing the health of the wider community. They embody a connection between hospital interior and the urban public space of the city, thus serving the patient as a transition between the internal care and the city environment. In addition, they represent a temporary (or daily) living and working place for patients, medical and technical staff. This process of "de-medicalization" starts with places of care and transform urban spaces and planning public health. Urban health can shift the focus from a human-based medical model to a social model, which considers health resulting from socio-economic, cultural, and environmental factors.[14]

For this reason, following a literature review on urban health, ten main components were first identified – as illustrated in Figure 1. Secondly, two main dimensions were differentiated: the first concerns the health lived within the hospital spaces by patients and hospital staff (the hospital dimension); the second that experienced outside the hospital walls by patients' relatives, professors, and students (the urban dimension).

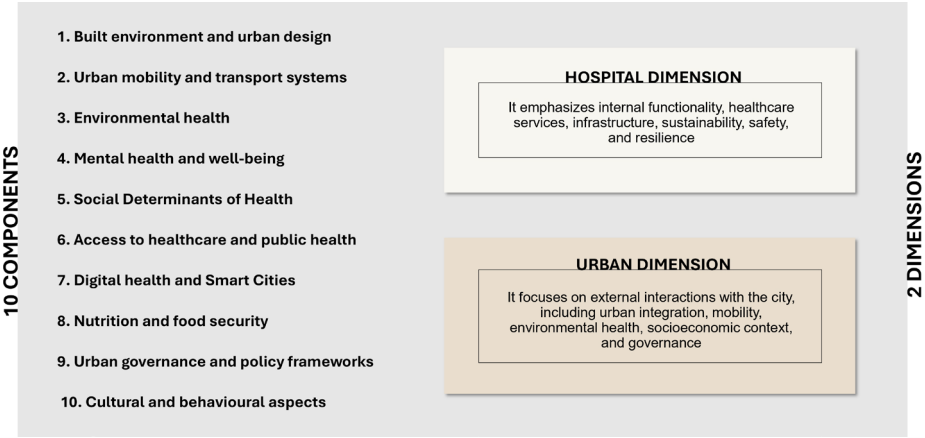

Figure 1. Ten components and 2 dimensions to describe urban health.

The third step was to translate the ten components into the two dimensions – as illustrated in Figure 2:

1. Firstly, the internal organization must ensure efficiency, ease of navigation, and proper separation of functional areas. However, the geographical location of health facilities within a city influences aspects such as accessibility, connectivity and integration with the surrounding environment.

2. On the one hand, a clear wayfinding system and architectural design, reducing stress for patients and visitors while improving staff efficiency. On the other hand, the possibility to move safely and comfortably through the outdoor spaces of the hospital.

3. Access to clean drinking water, adequate sanitation, and waste management systems are crucial to prevent the spread of diseases within healthcare facilities. On top of that, it is essential to ensure continuous monitoring of air quality and pollution.
4. Healing environments in hospitals are designed to support patient recovery, enhancing overall well-being but also public recreational spaces encourage social interaction benefiting all users.
5. From the first perspective, hospitals should provide resources for disease prevention and efficient health care. Whereas socio-economic conditions and the promotion of health literacy for informed health behavior and preventive care directly influence health outcomes.
6. Hospitals must ensure patients a timely, high-quality care in appropriately equipped medical facilities. More broadly, this means a well-developed health infrastructure to ensure continuous and efficient access to medical care, especially in crisis situations.
7. The former relates to the potential for improved efficiency and patient care through the adoption of digital tools and technologies. The latter involves smart technologies and real-time health data monitoring, to support public health interventions.
8. Inside hospitals, patients need nutritious, safe and customized meals to support their recovery, while outside, visitors as well as medical and technical staff also need access to balanced food options.
9. The first relates to the need to prioritize the patient ensuring personalized, respectful and holistic care. The second regards the approach to urban policy that integrates health considerations across all sectors to create healthier living environments.
10. On the one hand, promoting positive health behaviors among citizens and in hospitals (e.g., preventive care, public health campaigns, etc.), supports individual and collective well-being. On the other hand, social cohesion, strong community networks, and public engagement in health initiatives contribute to healthier lifestyles for citizens.

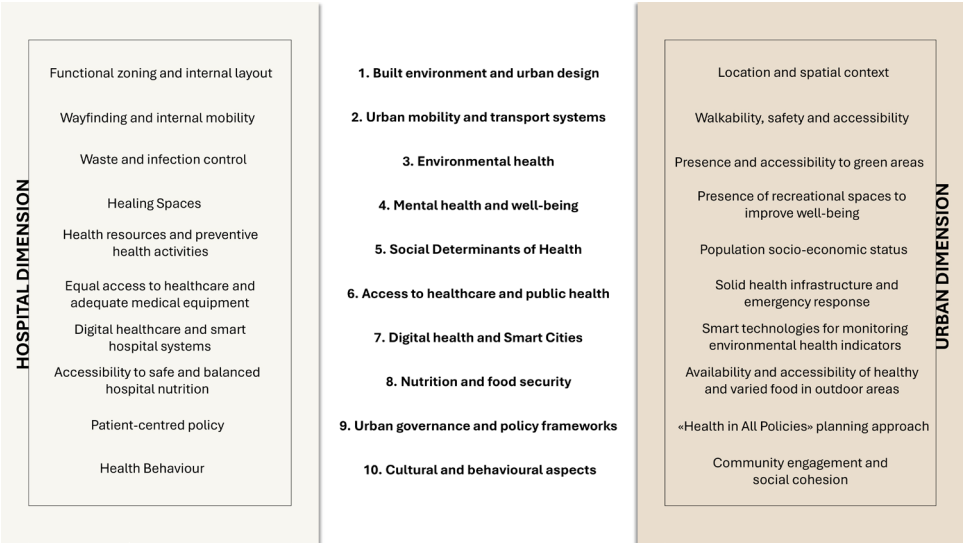

Figure 2. Application of urban health to hospital contexts.

CASE STUDIES

Sant'Orsola Hospital

This research case study focuses on the urban regeneration project for the outdoor spaces of the Sant'Orsola Polyclinic, one of the main hospitals of the city of Bologna – as illustrated in Figure 3. The aim of the project is to transform the polyclinic area into an integrated urban space and enjoyed

by all the citizens as a place of daily life, not only for clinical reasons. The Sant'Orsola Hospital, with its strategic location just outside the city's historic walls, is spread over an area of more than 7 hectares and consists of 32 pavilions that cover the main functions of assistance, teaching, training and research.[15] One of its main characteristics is that it can be considered a small 'city within a city', complete with its own internal mobility system, green spaces and services. The second main characteristic is the variety of users who live in these spaces every day. In fact, up to 20,000 people (including patients, visitors, staff and students) pass through the area daily, giving the hospital an urban significance that far exceeds its healthcare function.[16] While the health aspect of the hospital environment in the traditional sense of care is a priority, the thousands of people who also experience the outdoor spaces of this small healthcare district cannot be ignored.

Figure 3. Location and context of the Sant'Orsola Hospital.

A focus on Barcelona

The cities of Bologna and Barcelona can embody a sort of duality: a deep tension between their potential and challenges. Although on a different urban scale, they both offer a high quality of life, celebrated through cultural vitality, economic attractiveness and an important historical heritage.[17] However, they also face numerous critical daily issues, including pollution, unaffordable housing, and overtourism.[18] In order to overcome these daily challenges, they have been collaborating on numerous joint projects since the 1990s (e.g., EUROCITIES network,[19] Sharing Cities Declaration,[20] Cooperation Agreement,[21] collaborative data governance model,[22] Urban Digital Twins,[23] A-PLACE[24]).

Moreover, Barcelona offered the opportunity to study three hospitals that are very different from each other in terms of size and context – as illustrated in Figure 4. The first is the Hospital del Mar, which is located on the city coast. As part of the MAR Health Park, it combines healthcare with scientific and university research functions. It is currently undergoing a renovation process to improve the experience of both users and professionals.[25] The second example is the Vall d'Hebron Hospital Campus, the largest hospital complex in Catalonia, which combines many research centers and functions. Its elevated and decentralized location in the north of Barcelona has favored its continuous expansion over the years.[26] A redevelopment project has recently been launched for the entire area. The aim is to build a large park connected to the surrounding neighborhoods and the city, thereby improving the site's accessibility and permeability.[27] The last case study is the Hospital de la Santa Creu I Sant Pau. Part of the dense urban fabric of the city center, the site combines two elements: the historic modernism pavilion campus (today a UNESCO heritage site),[28] and the new hospital, a

modern and compact building situated at the northern end of the site. The innovative aspect of this regeneration process is the symbiotic relationship between the new hub built for current clinical needs and the historic campus, transformed into a cultural center.[29]

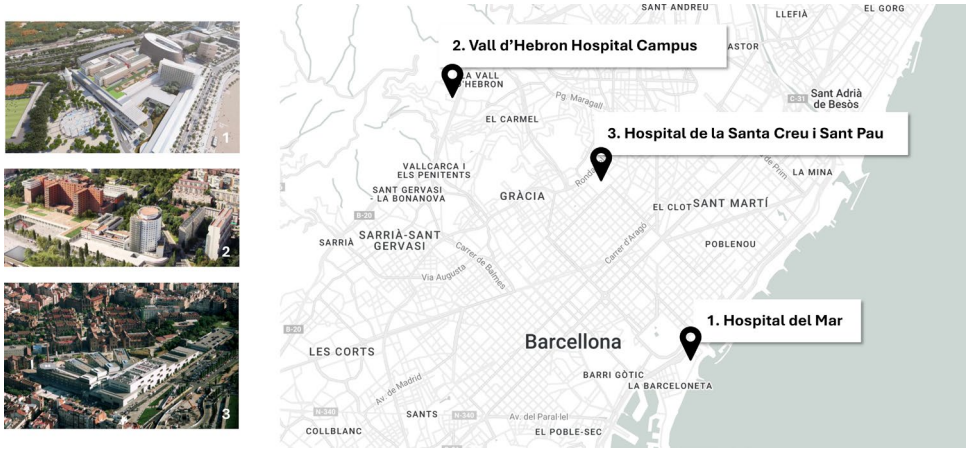

Figure 4. The 3 hospital case studies of Barcelona.

RESULTS

Urban health matrices

To evaluate to what extent and how urban health has been addressed in these hospital contexts, special matrices (i.e. urban health matrices) were created – as illustrated in Figure 5. They consist of two typologies, (one for the hospital and one for the urban dimension) with the ten components translated into their respective dimensions. The study conducted allowed to investigate the presence of each urban health component in the different case studies. Using the heat map approach, each box was colored according to the degree of presence (i.e., present, partial or poor).

The matrix analysis shows an overall high care to urban health issues. As regards the hospital dimension, an excellent condition is found in the three Spanish case studies, where almost all the components are present. These lasts are found at a lower level in terms of *wayfinding and internal mobility*, *accessibility to safe and balanced hospital nutrition* and *health behavior*. However, they still present a partial grade. The first component is understandable, especially when considering such vast structures that have grown over time. In these cases, users are very likely to encounter problems with orientation and inner navigation. The limits of the second component concern the difficulty of finding information rather than a lack of interest from the hospitals in the topic. Since they are recognized centers of excellence, particular attention must be paid to the administration of safe and balanced food. Lastly, health behavior is a relatively recent aspect that is increasingly being considered and integrated into the broader topic of health. Therefore, as with the other components, the information is likely to be incomplete and not exhaustive. The Sant'Orsola hospital faces a similar situation, but with more critical issues related to the following: *wayfinding and internal mobility*, *healing spaces*, and *digital healthcare and smart hospital systems* are currently some of the most widely discussed topics in the hospital context.

On the other hand, considering the urban dimension, the matrix presents more variability. The most frequently encountered components are *location and spatial context*, s*olid health infrastructure and emergency response* and *community engagement and social cohesion*, addressed mostly by all four case studies. As previously stated, the location and relationship with the surrounding context are key and characterizing elements of the hospital itself, alongside the prime aspects of solid healthcare

infrastructure. Conversely, the focus is on involving the population and creating a solid community to promote greater awareness, mutual support and improvements in public health.
Finally, the least found components for this dimension are *presence of recreational spaces to improve well-being* and *availability and accessibility of healthy and varied food in outdoor areas*. As for the previous dimension, these aspects have only recently been given attention, broadening the concept of health to include external spaces and seeking to enhance people's well-being through activities and services (not only patients, but also family members, technical and medical staff, and students).

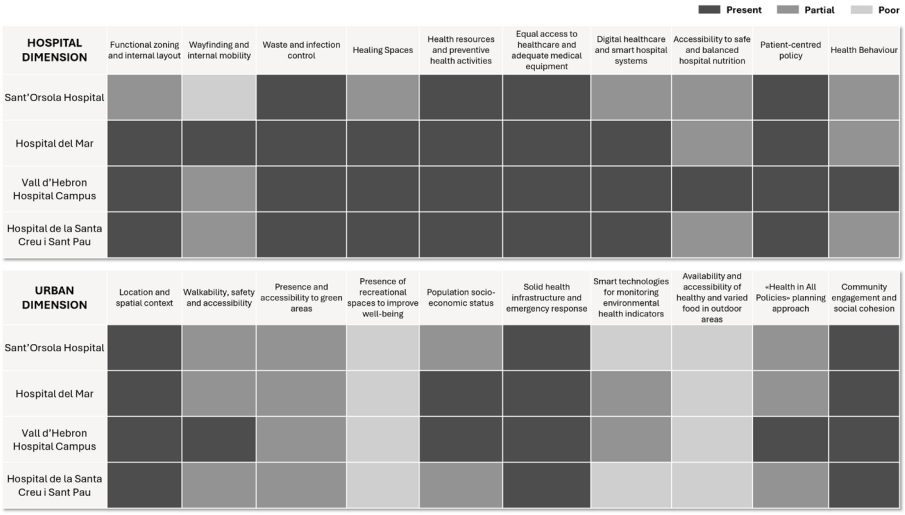

Figure 5. Analysis of the case studies through the urban health matrices.

DISCUSSION

From the outset of this research and the matrices analysis some evidence emerged. They have been translated into urban regeneration strategies implemented by the analyzed case studies. These strategies can be considered good practice for hospitals undergoing urban regeneration, such as Sant'Orsola in Bologna.
Regarding the hospital dimension, the following strategies should be considered:

- Clear and functional interior layout. An optimized space design to ensure the smooth running of hospital functions and the comfort of healthcare and technical staff, as well as patients;
- Wayfinding. A clear and intuitive signage system (both physical and digital) to reduce the stress and anxiety experienced by patients and visitors when moving around the facilities;
- Healing Spaces. Designing spaces that are specifically intended to promote patients' psychophysical well-being;
- Health resources and prevention activities. Collaborating with research facilities enables the creation of an innovative ecosystem that translates research into advanced clinical practices and prevention programs;
- Smart hospitals. Regenerating hospitals' technological infrastructure to make them 'smart', with the aim of improving the provision of healthcare and the wellbeing of patients, visitors and healthcare staff by harnessing technology;
- Involved and cohesive community. Using hospital spaces and resources to host events and awareness-raising campaigns open to citizens, strengthening the link with the local area and promoting social cohesion.

The urban dimension, instead, includes:

- City-Within-City hospital. Overcoming the concept of hospitals as isolated entities by transforming them into real urban districts, fully integrated into the city fabric and promoting wellbeing both within and outside their boundaries;
- Accessibility. Improving access to the hospital via public transport and soft mobility options to reduce dependence on private cars and integrate the hospital into the urban transport network;
- Walkability. Designing outdoor spaces that are safe, accessible, and pleasant to walk in;
- Healing Gardens. Designing outdoor spaces that systematically integrate urban green systems that can be used not only by patients and staff, but by the entire community;
- Recreational spaces. Creating or redeveloping outdoor spaces as places of socialization and recreation for patients, visitors, hospital staff, and citizens;
- Health in All Policies. Actively involving hospitals as municipal partners in urban planning and promoting policies that consider health in all aspects of citizens' lives.

CONCLUSIONS

This paper investigates the topic of urban health applied to hospital contexts with the aim of finding some urban regeneration strategies to be applied to the project of this research case study, the Sant'Orsola Hospital in the city of Bologna. After a literature review, ten main components were identified, describing how this topic involves all aspects of a person's life. Subsequently, they were translated into two different dimensions, (hospital and urban). The first concerns the consideration of urban health experienced within hospital walls, in particular by patients. The second, instead, extends the concept and considers the external areas of hospital environments, representing a health experienced by technical and healthcare staff, as well as patients' families and students.

To investigate the topic of urban health applied to hospital contexts, three case studies of hospitals in Barcelona with characteristics similar to those of Sant'Orsola were examined. Urban health assessment matrices were constructed to identify how each component was addressed in the different case studies.

Firstly, the analysis showed the importance of considering both dimensions. Separating them would mean ignoring health as a systemic phenomenon, in which hospitals and cities must work together to promote people's well-being. Secondly, this evidence can inform urban redevelopment strategies to be applied to the research case study. Indeed, this can pave the way for future developments linked to the analysis of the other Italian and International case studies identified in the literature review, with the aim of determining the most appropriate set of urban strategies for the urban regeneration project of the outdoor spaces of the Sant'Orsola hospital.

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METHODS OF ANALYSIS OF WOMEN'S PERCEPTIONS IN RESIDENTIAL OPEN SPACES INTEGRATING BIOMETRIC DATA AND WALKING INTERVIEWS AND THEIR RELATIONSHIP WITH SPATIAL AND MORPHOLOGICAL CHARACTERISTICS OF OPEN SPACES.

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INTRODUCTION

Despite efforts toward inclusive urban development, public spaces in residential settings often remain places of fear and vulnerability for women - experiences frequently overlooked in design discourse. This study explores how women's perceptions are shaped by the morphology of the built environment. Drawing on feminist geography, urban morphology, and spatial analysis, we adopt a gendered lens integrating qualitactedtive data with physiological responses and morphological analysis to offer a rich understanding of how spatial form influences emotional experience.

Historically, public spaces have been constructed as male-dominated arenas - sites of political, economic, and social engagement - while women were relegated to the domestic sphere.[1] Although urban design discourse has become more inclusive over time, contemporary urban environments remain largely shaped by male-centric perspectives. They often fail to accommodate the needs of women and other marginalised groups, including children, the elderly, disabled individuals, or migrants. These populations frequently encounter physical, social, or psychological barriers that limit their full participation in urban life.

This study identifies spatial strategies to address gender equity and inclusivity in residential open spaces, ultimately informing urban design practices that enhance safety, accessibility, and emotional well-being for all.

In addition to spatial exclusion, women worldwide face persistent threats of urban violence. A recent UN Women UK survey[2] revealed that over 80% of young women in the UK have experienced sexual harassment. This statistic underscores the urgency of addressing women's safety in urban planning and policy - a topic that has gained global attention.[3] Scholars in gender studies and feminist geography have developed theoretical frameworks to understand and address the roots of this problem.[4] While social transformation is often slow, urban interventions can be implemented more rapidly. Identifying the spatial features that influence women's sense of safety is therefore essential. Such interventions can significantly enhance women's presence and empowerment in urban life.

In this paper we present an integrated methodology and data collection strategies for evaluating open spaces in terms of gendered perceptions and sense of safety. We conclude with recommendations for this field of research and contributions made by the study.

The research targets a specific demographic — women aged 18–35—and a specific typology of space: pedestrianised residential open spaces in suburban London that function as through-routes. Three areas were selected to reflect a range of urban forms and development histories: Roman Road (Area 1), Mile End South (Area 2), and Stratford East Village (Area 3). Each area includes three open spaces, offering variations in layout, typology, and network integration (see figures 1-4).

Figure 1. Aerial views of the three case study areas, each comprising of three residential open spaces

Area 1 - Roman Road			
	PB1A	**PB1B**	**PB1C**
Name development & Postcode	E3 5NL - Daling Way	E3 5LF - Ranwell East Estate / McKenna Green	E3 5HA - Roman Road Housing Area, St Stephens Estate
Borough and Ward **LSOA**	Tower Hamlets Bow West TH 003D	Tower Hamlets Bow East TH 001A	Tower Hamlets Bow East TH 001D
Blocks names	Sandall House, Butley Court, Dalton House, Josseline Court, Brine House, Hitchin Square (Daling Way Poplar)	McBride House, McKenna House, McAusland House, McEwen House, (Centurion Lane/Libra Mansions)	Brodick House, Lancelot House, Tristram House, Cruden House, Lunan House (Saxon Road/Sutherland Road)
Type of Development	Council Estate	Council Estate	Council Estate
Height range (development)	3.50 to 60 m	2 - 13 m	2 - 60 m
Typology (development)	Tower block, perimeter block with deck access	Linear blocks around green space with deck access	Tower blocks, linear blocks
Distance from Transport Hub	19 min walk (1.5km) / Bus stop within 100m	17 min walk (1.3km) / Bus stop within 100m	12 min walk (1km) / Bus stop within 100m
Network location (type of roads adjacent to	B-Road / Local Roads /Local Access Road (restricted)	Restricted local access roads	Local Roads
Number of units	635	56	707
Area (acres)	13.422	1.274	12.8
Type of public space	Fenced green spaces and footpaths	Fenced green spaces and footpaths with level changes	Fenced green spaces and footpaths
Owner/management	Clarion Housing Association	Clarion Housing Association	Tower Hamlets Council
Socio-Economic Context			
Ethnicity (LSOA)	48% white - 51% BAME	54% white - 45% BAME	51% white - 49% BAME
Religion (LSOA)	35% Muslim - 29 % Christian	25% Muslim - 39 % Christian	31% Muslim - 33 % Christian
Deprivation Index	3rd most deprived decile	2nd most deprived decile	3rd most deprived decile
Median Household Income (LSOA)	£28,343	£26,686	£28,343
Crime rate (per 1000 pp)	98.5	98.9	98.9
Sexual offences 2019-21 (Ward)	69	86	86
Predominant Land Use Area	Residential	Residential	Residential
Density Area (500m)	63 units/Ha	71.5 units/Ha	71.5 units/Ha
Predominant building type	441 Self-contained flats (incl. maisonnette/apartment) 187 dwellings 5 semi-detached 1 terraced, 1 detached 2 public facility/community centre	56 Self-contained flats (incl. maisonnette/apartment) 3 shops/showrooms 2 storage land	707 Self-contained flats (incl. maisonnette/apartment) 74 allocated parking 31 car parking

Public Space 1A

Public Space 1B

Public Space 1C

Figure 2. Summary table Area 1

Area 2 - Mile End South			
	PB2A	**PB2B**	**PB2C**
Name development & Postcode	E3 4FX - Ennerdale Gardens / Rushton Walk	E3 4TE - Treby Street	E3 4RD - Pickard Gardens
Borough and Ward **LSOA**	Tower Hamlets Mile End TH 014A	Tower Hamlets Mile End TH 014B	Tower Hamlets Mile End TH 014C
Blocks names	Ennerdale House, Derwent House, Yatton House, Blackett Appartments (Hamlets Way / Southern Grove)	Beckley House, Fielder & Clarke Appartments, Eric St, Treby St , English St and Claversham House (Hamlets Way/Treby Street/English Street)	Steadman House, Walvisch House, Beaton House, Sherard Appartments, Bolan Appartments, Cowlen House, Bunwell House, Lewey House, Oxford House, Zeital House, Brandwood House, Valvisch House, Broadhurst House (William Whiffin Square/Bow Common Lane/Pickard Gardens)
Type of Development	Council Estate with new infill residential block	Council Estate with new infill residential block	Council Estate with new infill residential block plus private homes
Height range (development)	3.60 to 50.7 m	2.7 - 30 m	7.7 - 77 m
Typology (development)	Tower block, perimeter block (medium and high rise)	Tower block, perimeter block (medium and low rise)	Tower Block, Linear blocks (low, medium and high rise)
Distance from Transport Hub	4min walk (350m) to Mile End Station / 200m to bus stop	5 min walk (400m) to Mile End Station / 150m to bus stop	9 min walk (800m) to Mile End Station / 400m to bus stop
Network location	Local Roads	Local Roads	Local Roads / Minor Road / Restricted Local Access
Number of units	218	105	223
Area (acres)	2.5	2.5	3.18
Type of public space	Green spaces and footpaths	Green spaces and footpaths	Green spaces and footpaths
Owner/management	East End Homes Limited	East End Homes Limited	East End Homes Limited / Places for People Homes Limited / Private owners
Socio-Economic Context			
Ethnicity (LSOA)	60% BAME - 39% white	54% white - 46% BAME	73% BAME - 26% white
Religion (LSOA)	38% Muslim - 25 % Christian	27% Muslim - 26 % Christian	51% Muslim - 23% Christian
Deprivation Index	3rd most deprived decile	3rd most deprived decile	3rd most deprived decile
Median Household Income (LSOA)	£28,075	£35,252	£27,941
Crime rate (per 1000 pp)	87.3	85.5	88.2
Sexual offences 2019-21 (Ward)	101	101	101
Predominant Land Use Area	Residential	Residential	Residential
Density Area (500m)	35 units/Ha	39 units/Ha	43 units/Ha
Predominant building type	216 Self-contained flats (incl. maisonnette/apartment) 2 public facility/community centre	105 Self-contained flats (incl. maisonnette/apartment)	223 Self-contained flats (incl. maisonnette/apartment)

Public Space 2A Public Space 2B Public Space 2C

Figure 3. Summary table Area 2

Area 3 - East Village	PB3A	PB3B	PB3C
Name development & Postcode	E15 1GB - Chobham Farm Zone 1 (Prospect Row)	E15 1FX - Prospect Row	E15 1GN - New Garden Quarter
Borough and Ward	Newham Stratford and New Town	Newham Stratford and New Town	Newham Stratford and New Town
LSOA	NH 013G	NH 013G	NH 013G
Blocks names	Mogul Building, Sentinel Building, Prairie, Atlantic, Pacific (Liberty Bridge Road / Leyton Road, Decapod Street)	New Stratford Works, Hudson Building, Dawson Building, Wenborn Building on Penny Brookes St) + Prospect Row	Avenir House, Waterman House, Merchants House, Matlock House, Odessey House, Sinclair Jouse, Locksley House, Foundry House, Carriage House, Templar House, Ravensbourne House, Braithwaite House, Langham House, Hawthorn House, Giles House (Penny Brookes St / Leyton Road)
Type of Development	New London Building stock (mixed tenure) - Construction 2008 - 2017	New London Building stock (mixed tenure) - Construction 2017 - 2021	New London Building stock (mixed tenure) - Construction 2017 - 2021
Height range (development)	9.6 - 32 m	13 - 26 m	20 - 28 m
Typology (development)	Tower block, duplex maisonnettes, perimeter block (low, medium and high rise)	Duplex maisonnettes (linear block), perimeter block (low and medium rise)	Perimeter blocks with rooftop duplex maisonnettes (medium rise)
Distance from Transport Hub	8 min walk (700 m) to station / Bus stop within 100m	7 min walk (600m) / Bus stop within 100m	7 min walk (600m) / Bus stop within 100m
Network location (type of roads adjacent to	A-Road / Local Roads	Minor Roads / A-Road / Local Roads	A-Road / Minor Road / Restricted Local Access
Number of units	173	153*	471
Area (acres)	2.115	2.867	5.346
Type of public space	Fenced play area, raised green space and footpaths	Green space with play area, sport equipment and footpaths with ramps	Green space with water feature, play area and footpaths
Owner/management	London & Quadrant Housing Trust	Higgins Homes Limited (Chobham Farm)	Chobham Farm North LLP
Socio-Economic Context			
Ethnicity (LSOA)	40% white - 30% Asian/Asian British - 21 % Black / African / Caribbean / Black British	40% white - 30% Asian/Asian British - 21 % Black / African / Caribbean / Black British	40% white - 30% Asian/Asian British - 21 % Black / African / Caribbean / Black British
Religion (LSOA)	45 % Christian - 22% Muslim	45 % Christian - 22% Muslim	45 % Christian - 22% Muslim
Deprivation Index	3rd most deprived decile	3rd most deprived decile	3rd most deprived decile
Median Household Income (LSOA)	£31,969	£31,969	£31,969
Crime rate (per 1000 pp)	240.9	240.9	240.9
Sexual offences 2019-21 (Ward)	231	231	231
Predominant Land Use Area	Residential	Residential	Residential
Density Area (500m)	95 units/Ha	95 units/Ha	95 units/Ha
Predominant building type	165 Self-contained flats (incl. maisonnette/apartment) 7 terraced 5 Shops/Showrooms 1 Indoor leisure/sport centre 1 children nursery	153 Self-contained flats (incl. maisonnette/apartment) 2 Development Site 1 shop/showroom 1 Office/Work Studio	438 Self-contained flats (incl. maisonnette/apartment) 33 HMO Not Further Devided 4 Office/Work Studio 3 Shop/Showroom 1 Nursery

Figure 4. Summary table Area 3

FROM THEORETICAL TO METHODOLOGICAL FRAMEWORK

The literature review draws on interdisciplinary research concerning women's experiences in urban environments and establishes the theoretical and methodological framework underpinning the study.

The first thematic area concerns the perception of fear and safety in public spaces and spans psychology, environmental geography, urban design, and planning. Foundational contributions by Jane Jacobs, Jay Appleton, and Oscar Newman laid the groundwork for understanding how urban form influences safety. They argued that safety stems from vibrant, socially active environments that encourage mutual watchfulness;[5] a balance of visibility (prospect) and security (refuge);[6] and environments fostering territoriality and collective responsibility through clear spatial boundaries.[7] Their insights inspired research into the relationship between spatial design and human behaviour. For instance, Margarita Greene and Juan de Dios Ortúzar expanded on natural surveillance and visual control, identifying spatial variables that shape feelings of security,[8] such as high visibility and connectivity.

Matthew Carmona[9] and Jan Gehl[10] examined public spaces from historical and design perspectives, noting that suburban residential areas often lack the vibrancy and features that promote safety. These underutilised spaces can heighten perceptions of insecurity. Similarly, Christian Dymén and Vania Ceccato[11] highlighted the disconnect between actual crime rates and perceived unsafety, particularly in suburban contexts. Even in low-crime areas, perceptions of danger persist, underscoring the need to examine how spatial and perceptual factors interact.

Gendered differences in safety perception are central to this research. Studies consistently show that women, especially those aged 18–35, report higher levels of fear, largely due to the threat of sexual violence.[12] Carina Listerborn[13] and Gill Valentine[14] found that perceptions of safety improve when women feel surrounded by buildings and people. Certain spatial configurations enhance co-presence and informal social control, which are critical to women's sense of security.

These insights form the theoretical foundation of the study outlining key spatial and social conditions influencing women's perceptions of safety, summarised in Table 1.

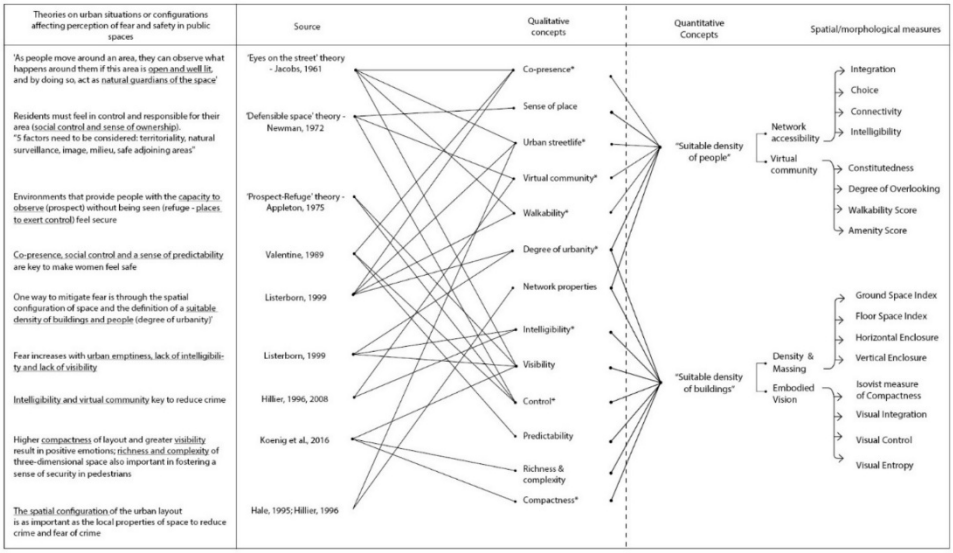

Table 1. Theoretical framework – urban situations associated with fear or safety translated into morphological characteristics

In parallel, various approaches offer analytical tools to assess urban layouts across the four headings listed in the table: network accessibility, virtual community, density and embodied vision. Space syntax relates spatial measures to empirical data of human activity to understand how urban layouts support co-presence and influence perceptions of safety. Hillier and Hanson's *The Social Logic of Space* (1984) introduced axial maps showing how visibility and connectivity shape movement and activity. Segment maps later refined this by measuring segment integration, demonstrating that highly integrated areas attract movement and co-presence.[15]

Urban morphology also provides tools to measure spatial characteristics affecting safety. Scholars expanded the concept of density beyond simple measures with Pont and Haupt proposing a matrix of interrelated variables (urban footprint, network density)[16] and Dovey and Pafka[17] introducing ideas like *streetlife density* and a *density assemblage* to capture the social–spatial dynamics of urban form.

Spatial metrics from both fields can be used to measure the qualitative characteristics of urban layouts affecting safety.

To complement the study, we considered work on perceptual experiences and how these can be captured to develop an empirical validation study after the initial prediction phase. In the 1960s,

pioneers like Donald Appleyard, Kevin Lynch, and John R. Myer explored visual perception through simulation techniques such as linear or sequential observations.[18] They laid the groundwork for later research linking objective visual stimuli to emotional or behavioural responses.[19] Urban experiences are captured through methods combining perception, participation, and movement. Interviews reveal residents' views on safety, accessibility, and social interaction,[20] while participatory mapping documents local knowledge and patterns of use.[21] Experiential walks highlight sensory and social dimensions of streetscapes,[22] and wearable sensors link bodily responses to spatial configurations, tracking movement, gaze, and physiological reactions.[23]

Recent studies show that multimodal sensors can capture stress on different timescales: EDA[24] detects short spikes (acute incidents), HR/HRV[25] indicates longer stress trends while eye-tracking/EEG[26] add cognitive and contextual data.[27] Combining physiological data with walking interviews or post-walk ratings is essential to determine valence and contextualise findings.[28] However, the use of multimodal sensors in outdoor safety studies remains limited due to technological challenges such as complex data cleaning, baseline differences, sensor noise and motion artefacts. These approaches reveal how urban spaces are lived and perceived and were carefully assessed before being incorporated into the study's methodology.

Together, these theoretical and methodological perspectives support the study's central hypothesis: that urban layouts fostering density and co-presence enhance women's perception of safety and that both quantitative and qualitative methods can help analyse urban layouts and understand how open spaces are perceived from a safety perspective. Our study translates spatial conditions into micro-variables, grouped into four categories. The case studies are evaluated using these metrics and validated through participant feedback using both quantitative and qualitative data collection methods to compare predicted and actual perceptions.

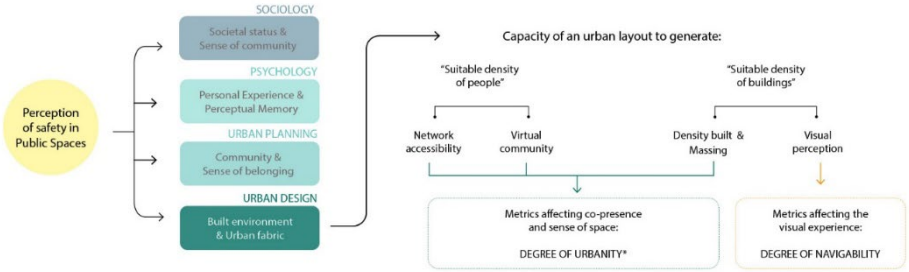

Figure 5. Summary of the urban characteristics that affect women's perception of safety

METHODOLOGICAL PARAMETERS

Building on the theoretical framework, this study identifies a set of spatial and configurational parameters that influence women's perception of safety in open spaces. These parameters are transformed into measurable metrics, either adapted from established spatial and morphological methodologies or developed specifically for this research. By calculating these metrics for each site, the study aims to predict how safe a space may be perceived.

The metrics operate across different spatial scales. Some describe the entire open space of a residential development, while others vary according to a pedestrian's location within the space. To capture this variation, the open spaces are subdivided using three approaches: axial,[29] convex[30] and grid cells. This study adopts convex space division to break down the open spaces into subspaces, then segments following the most prominent path across each convex space - typically the most direct route linking entry and exit points. Given the irregular shapes of residential open spaces, convex

subdivision allows for more precise measurement of spatial characteristics. The spaces are also divided into 3m x 3m grid cells to support metrics that vary across space (e.g., visibility). This granularity is essential for understanding how spatial design influences women's perception of safety during everyday navigation.

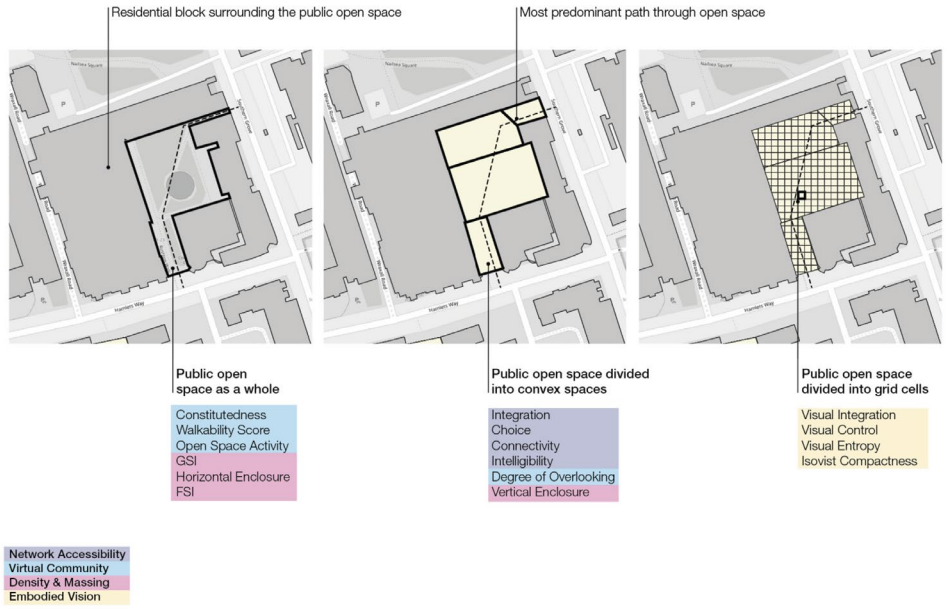

Figure 6. Three spatial units used to analyse open spaces, from the whole space to convex spaces to individual grid cells, with metrics assigned to each unit

Network Accessibility

The first category of metrics assesses how accessible and navigable a space is. Drawing from space syntax theory, four key indicators are used: *integration,*[31] *choice,*[32] *connectivity,*[33] and *intelligibility.*[34] These evaluate how well a space is connected to its surroundings both locally and globally, its potential to attract pedestrian movement, and how easily it can be navigated. Together, they provide insight into the spatial logic and movement potential of each site.

Virtual Community

The second category focuses on the presence of people – critical factors in fostering perceived safety. Four metrics are employed:

- Constitutedness:[35] Based on Julienne Hanson's work, this measures the number of doors or entrances connected to a space indicating the likelihood of residents encountering neighbours in the open space.
- Degree of Overlooking: Informed by Jane Jacobs' "Eyes on the Street" (1961), this quantifies how much a space is visually monitored by surrounding facades, based on the proportion of glazed surface overlooking the space.
- Walkability Score: Defined as the product of walking distances to the nearest local centre and transport hub, this estimates the likelihood of pedestrian activity.
- Amenity Score: Evaluates the presence of features that encourage dwell time - benches, greenery, playgrounds - as well as barriers like fences that may deter use.

Density

The third category addresses spatial density and the sense of enclosure provided by surrounding buildings. Four metrics are used:

• Ground Space Index (GSI)[36] and Floor Space Index (FSI).[37] Standard urban morphology measures of building density.

• Vertical Enclosure: The ratio of building height (H on figure 7) to space width (W), where a value near 1 suggests balanced enclosure (square).

• Horizontal Enclosure: The ratio of connected street widths (X on figure 7) to the perimeter of the space (L), indicating horizontal containment.

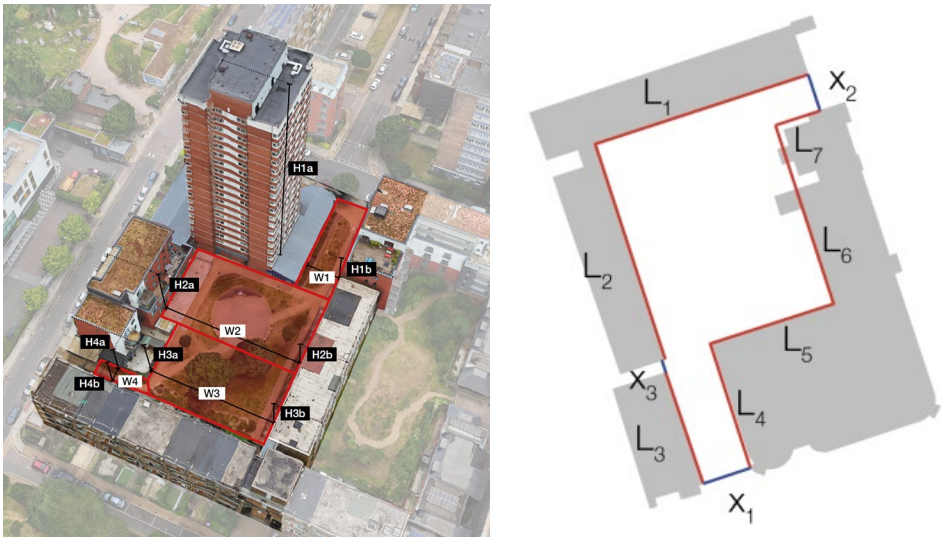

Figure 7. Diagrams showing how vertical (left) and horizontal enclosure (right) are calculated

Embodied Vision

The final category examines how pedestrians visually experience a space while moving through it. Drawing from Michael Benedikt's isovist tool and Visibility Graph Analysis (VGA), four visual metrics are applied: *Isovist Compactness,*[38] *Visual Integration,*[39] *Visual Control,*[40] and *Visual Entropy.*[41] These assess how predictable, complex, connected, controllable, and visually coherent a space appears—factors closely linked to perceived safety.

FIELDWORK AND DATA COLLECTION

The second phase of the study involves fieldwork and case study analysis to validate theoretical predictions through empirical data. Employing multiple case studies enables a context-rich, comparative exploration of how spatial configurations influence women's perceptions in public open spaces.

While spatial characteristics can be measured using spatial analysis tools, the experience of space is inherently subjective. To address this, the study adopts a mixed-methods approach, combining physiological data with insights from interviews and questionnaires. This allows for a nuanced understanding of how women perceive and respond to urban environments in real time.

After assessing baseline usage patterns and spatial dynamics, participants were recruited to undertake a structured 45–60 minute assessment. This involved walking a mapped route through three open spaces while wearing a Garmin smartwatch which recorded geolocation and heart rate data, to identify physiological responses linked to specific spatial features. Participants walked independently, without

interaction with the researcher, to preserve the authenticity of their experience. Simultaneously, the researcher observed external events (e.g., loud noises, sudden encounters), noting time and location to correlate with physiological responses.

In the second part of the assessment, participants engaged in walking interviews and completed questionnaires to reflect on their experiences. These methods provided rich, in-situ insights into perceptions of safety, comfort, and spatial awareness. Participants rated each space on a 0–5 scale and annotated maps to indicate areas perceived as safe or unsafe, helping to identify spatial triggers of fear or reassurance.

To ensure objectivity and minimise bias, participants were assigned to unfamiliar areas, and local residents were excluded. All fieldwork was conducted during weekday lunchtimes to maintain consistent activity levels and ensure participant safety. A total of 45 women participated in the study, divided into three independent groups corresponding to the three case study areas. This design allows for the analysis of both spatial and demographic variables and their interactions.

DATA OVERVIEW AND ANALYTICAL FRAMEWORK

The data collected during the fieldwork phase comprises both qualitative and quantitative components, enabling a comprehensive analysis of how spatial design influences women's perceptions of safety in public spaces.

The qualitative dataset includes 45 transcribed interviews (walking interviews and questionnaires). These were coded thematically using NVivo and imported into QGIS for geolocation processing using timestamps. The coding process began deductively, followed by an inductive phase, allowing new patterns to emerge. Key themes were visualised through thematic heatmaps, illustrating how perceptions varied across the three case study areas.

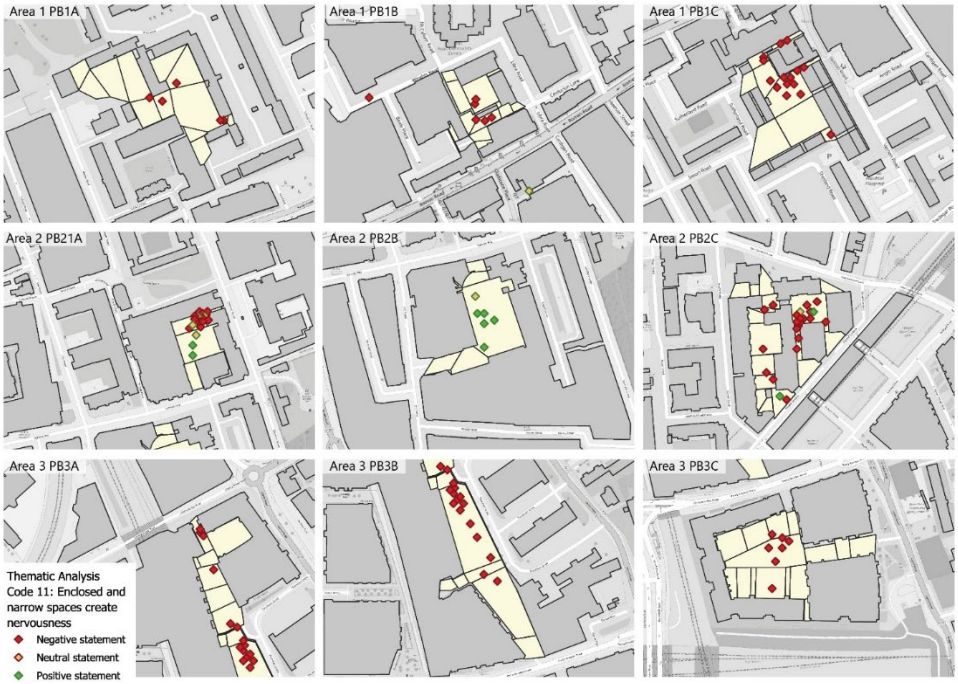

Figure 8. Thematic analysis visualised spatially with positive and negative statements associated with code 11 (enclosed and narrow spaces create nervousness)

The quantitative dataset includes several components:

- Physiological data: Heart rate readings recorded every second during the walk.

- Spatial-temporal data: GPS traces with timestamps from both the walk and interview.
- Perception mapping: Annotated maps indicating safe/unsafe hotspots aggregated in QGIS.
- Demographic data: Participant's profile from questionnaires.
- Experiential ratings: Participant scores (0–5) for atmosphere, safety, comfort, control, and navigability.

Together, these datasets form a rich, spatially grounded foundation for analysing how women perceive different urban environments.

The data was processed in QGIS and Excel, before being statistically analysed. Heart rate readings were mapped along walking routes, with sampling points every 5 metres. Each point was assigned a value based on the average heart rate of all the participants in that area to identify stress responses to specific urban settings.

Figure 9. Heart rate data points processed in QGIS joined with sampling points (every 5m)

Safe and unsafe hotspots marked by participants, were manually digitised in QGIS, colour-coded, and assigned values (+1 for safe, -1 for unsafe). These were spatially joined with grid cells to visually quantify perceived safety across each space.

Figure 10. Safe and unsafe hotspots traced in QGIS and spatially joined with grid cells

Three analytical datasets were created at different spatial scales:

1. Entire Open Space Level: For each of the nine open spaces, spatial metrics related to this scale (Constitutedness, Walkability, etc) were paired with perception ratings from questionnaires enabling comparison between predicted and actual outcomes.
2. Convex Space Level: Metrics related to this spatial unit (Integration, Choice, Connectivity, etc) were combined with the fieldwork results (aggregated safety scores and heart rate data), producing three sub-datasets of approximately 30 values each.
3. Grid Cell Level: Metrics related to this scale (Isovist Compactness, Visual Control, etc) were combined with participant data for each grid cell, yielding datasets of 130–170 values per area for fine-grained spatial analysis.

Statistical correlations and multivariate regression analyses were conducted across all spatial scales to test the relationship between morphological characteristics and fieldwork results.

This analytical framework enables a robust, multi-scalar investigation of how spatial design influences feelings of fear and safety, integrating physiological data, spatial metrics, and subjective perception.

DISCUSSION AND CONCLUSION

This study employs a mixed-methods approach, combining predictive spatial analysis with empirical validation through fieldwork. While detailed results are presented in a separate publication, this paper outlines the methodological framework and its application across three case study areas. It complements existing work on perceived safety and contributes methodologically by developing an interdisciplinary framework that combines multiscalar spatial analysis, walking interviews, questionnaires, and physiological measurements. In doing so, the study uncovers latent emotional responses to urban environments and enables a multi-layered understanding of how women perceive safety, revealing discrepancies between subjective narratives and involuntary stress indicators.

A key feature of the methodology lies in the spatial integration of data using QGIS. Thematic coding of interview transcripts was mapped onto the urban morphology, localising frequently mentioned perceptions. This spatial granularity highlighted how morphological features were interpreted differently across study areas. Additionally, qualitative safety ratings and physiological data were digitised, aggregated, and overlayed using a grid-cell framework, enabling statistical testing against visibility parameters.

The findings demonstrate that perceived safety is not solely determined by crime or surveillance, but is deeply influenced by spatial legibility, social presence, and environmental design. Parameters such as constitutedness, visual control, and walkability emerged as reliable predictors of perceived safety. These insights have practical implications for urban design, particularly in planning inclusive, gender-sensitive public spaces.

Beyond its empirical contributions, the study's methodological framework stands as a replicable model for future research into spatial perception. It offers a tool for exploring how urban form intersects with emotional and sensory experience—not only for women but for other marginalised groups whose access to public space may be constrained.

In conclusion, this research advances the discourse on urban inclusivity by demonstrating how spatial configurations shape lived experience. As cities evolve, methodologies that integrate spatial metrics, physiological data, and subjective feedback will be essential for designing environments that are not only functional but also emotionally responsive.

NOTES

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[30] A convex map consists in breaking the environment into discrete spaces where each space is the fattest possible space in which no line drawn between two points within it passes outside its boundary. Hillier & Hanson, *The Social Logic of Space*, 91.

[31] Space Syntax developed a number of measures based on certain representational tools. One of these tools is the ‘axial map’, as defined by Hillier and Hanson in *The Social Logic of Space* in 1984. The authors defined the measure of integration (closeness centrality in graph theory terms), as the fewer intervening lines which need to be passed through to go from a line to every other line in the system. It represents the potential of a space or street segment to be a destination and to be central in the way that it is quickly/directly accessible from anywhere in the system. High values of integration usually characterise streets that are associated with commercial activity, while low values ones indicate residential streets and alleys. Hillier & Hanson, *The Social Logic of Space*, 91.

[32] The measure of choice (betweenness centrality in graph theory terms) represents the likelihood of a street segment to act as a route within the network and how often an axial line lies on the shortest topological paths - based on turns - between any pair of axial lines. It can also be defined as the potential to be on the way of journeys of the different street segment constituting a network. Hillier & Hanson, *The Social Logic of Space*, 91; Hillier, Bill, Richard Burdett, John Peponis, and Alan Penn. “Creating Life: Or, Does Architecture Determine Anything?” Architecture and Behaviour 3, no. 3 (1987): 233–250.

[33] While integration and choice are global measures, connectivity is a local one accounting for the number of immediate neighbouring spaces or street segments to which a space is directly connected. Hillier & Hanson, *The Social Logic of Space*, 91.

[34] Intelligibility is a property described by Hillier as the relationship between local and global properties of a spatial system. It indicates the ability of a given space to inform a pedestrian about the global network from local observations and to help them navigate the system to which the space is connected. Hillier & Hanson, *The Social Logic of Space*, 91; Hillier, Burdett, Peponis, and Penn, “Creating Life: Or, Does Architecture Determine Anything?”, 233–250; Bill Hillier, *Space Is the Machine: A Configurational Theory of Architecture* (Cambridge: Cambridge University Press, 1996), 112–114. https://doi.org/10.1017/CBO9780511597237[1]

[35] Constitutedness refers to the degree of adjacency and permeability from buildings to the public space. Hillier & Hanson, *The Social Logic of Space*, 92.

[36] GSI focuses on the horizontal footprint or proportion of the plot area that is physically covered by buildings. This is one of the three metrics used by Berghauser-Pont and Haupt in their multi-metric density framework (Floor-Space Index; Ground-Space Index and Open-Space Ratio) to assign a spatial fingerprint to urban areas. Meta Berghauser Pont and Per Haupt, *Spacematrix: Space, Density and Urban Form* (Rotterdam: NAi Publishers, 2010).

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[40] Visual Control is a measure of how much choice a location offers for seeing and being seen, relative to its directly visible neighbours. It describes how much a viewpoint (a node in the graph) controls the visibility of its immediate surroundings. Alasdair Turner, Alan Penn, and Bill Hillier, "Space Syntax: A Methodology for the Investigation of Spatial Configurations," Environment and Planning B: Planning and Design 28, no. 1 (2001): 103–121. https://doi.org/10.1068/b2684.

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PUBLIC OPEN SPACE AS A DRIVER FOR WELLBEING AND URBAN QUALITY OF LIFE

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INTRODUCTION

As urban populations continue to grow, public open spaces (POS) have become critical urban infrastructure, serving not only recreational and ecological functions, but also supporting wellbeing and enhancing quality of life. Current POS planning in Saudi Arabia often prioritizes physical quantitative provision over qualitative experience leading to challenges such as thermal discomfort, low usage, and exclusion of certain groups.[1] Thus, Saudi's Vision 2030 sets a strategical goal to position Saudi cities among the world's top 100 most livable cities with a key focus on increasing POS provision per capita to improve quality of life and wellbeing.

This study examines the relationship between POS and urban wellbeing in Jeddah, one of Saudi Arabia's largest cities, focusing on how spatial planning and design influence urban wellbeing. By identifying key spatial and experiential indicators, the research aims to develop a context-sensitive conceptual framework for Jeddah city to guide local policymakers, urban planners, and designers in creating POS that meet international standards while are responsive to local social practices, cultural identities, and emotional connections to place. Thus, the objectives of this study are:

1 Identify the relationship between public open spaces and urban wellbeing.

2 Identify assessment tools that influence urban wellbeing and enhance quality of life.

3 Evaluate how the spatial and experiential qualities of selected public open spaces in Jeddah shape residents' perceptions and experiences.

4 Develop a context-sensitive framework to guide local policymakers, urban planners, and designers in creating POS in Jeddah city.

Literature Review

The literature review demonstrated key aspects underpinning the conceptual framework of the research, and is divided into two main areas: the first explaining the relationship between urban wellbeing and POS, while the second explaining the indicators and frameworks for assessing urban wellbeing.

Urban Wellbeing and POS

Urban wellbeing is increasingly recognized as a multidimensional concept shaped not only by material and infrastructural conditions, but also by the psychological and experiential factors of urban life.[2] With the growing urbanization, fostering urban wellbeing has become central within the broader sustainability and public health goals.[3]

Recent studies emphasize that POS significantly influences urban wellbeing through a mix of subjective and objective factors across interconnected dimensions.[4]

Individuals wellbeing is affected by the physical and spatial surroundings.[5] This includes accessibility and mobility by creating walkable, attractive, and well-connected environments, along with pathways, crossings, and surrounding streets.

Additionally, prioritizing the design quality as street-level features including lighting and safety increases physical activity and reduces urban stressors to ensure an inviting, inclusive, and accessible experience for all.[6]

Socially, there is a wide agreement that POS promote community cohesion, interaction, and inclusion.[7] As it influences how communities engage and builds a sense of belonging with spaces that support regular and repeated interactions which foster stronger emotional bonds with place and people.[8] Additionally, designing POS should reflect local identity and traditions to appreciate cultural values and everyday habits.[9]

Environmentally, POS offer essential ecosystem benefits that support both ecological and human health. In the context of urban growth and climate change, well-designed POS contribute to air purification, noise and heat reduction, and biodiversity conservation.[10] Exposure to nature and biodiversity also positively influences psychological outcomes, reduces stress, enhances community engagement, and improves overall quality of life.[11] Also, it promotes public health by reducing risks of chronic conditions as cardiovascular disease, encouraging active lifestyles, and fostering happiness.[12]

Psychological wellbeing has become a central concern in recent POS studies, particularly post-COVID-19, with strong associations to emotional regulation, anxiety and depression reduction, and life satisfaction.[13] Studies recommended that POS foster place attachment and a sense of belonging encouraging regular visits.[14] Wellbeing and daily routine of the community is shaped by the spatial accessibility and safety.[15]

Based on the previous section, the following conceptual framework (Figure 1) was developed to illustrate the relationship between urban wellbeing and POS which affect users' satisfaction and overall quality of life (QOL) in urban settings.

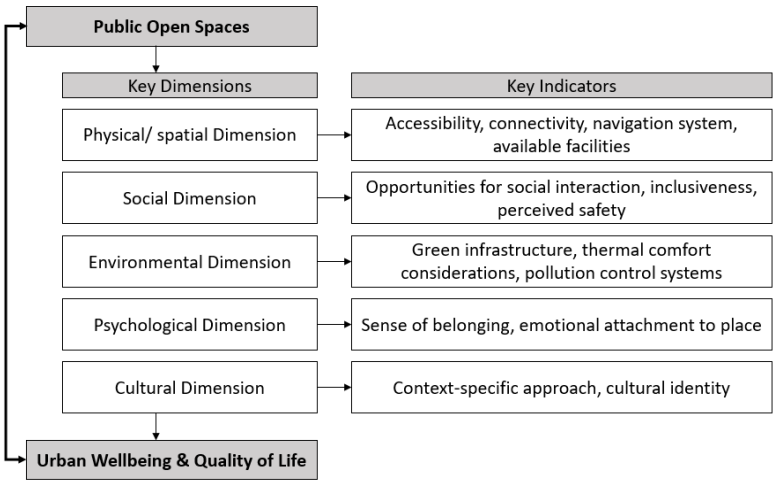

Figure 20. Research Conceptual Framework

Indicators and Frameworks for Assessing Urban Wellbeing

Several widely recognized frameworks have been developed to assess urban wellbeing in relation to POS, combining quantitative indicators of spatial experiences and perceived wellbeing,[16] while qualitative components capture insights on use and emotional attachment.[17]

At the global level, the Sustainable Development Goals (SDGs) provide 17 goals that shape foundational policy benchmarks. This includes Goal 11 which emphasizes inclusive, safe, resilient, and sustainable cities, and Goal 3 focuses on health and wellbeing through built environments.[18] These goals position POS as essential urban infrastructure for livability, equity, and overall wellbeing. Urban HEART further offers a comprehensive framework for evaluating equity in access to POS and related health outcomes. It offers indicators across physical environment, health status, infrastructure, and social inclusion.[19]

Public Space Index (PSI) complements this by providing measurable indicators for accessibility, safety, inclusivity, and usability, serving as a benchmark for urban design quality.[20] Further, Jan Gehl's Theory of Public Life emphasizes human-scale design, social activities, and spatial affordances, offering a behavioral and experiential perspective to foster interaction, comfort, and engagement in POS.[21]

At the regional level, the Arab Strategy for Housing and Sustainable Urban Development, supported by UN-Habitat, highlights culturally responsive and sustainable POS is part of broader urban development strategies, emphasizing the integration of local identity, social inclusion, and community wellbeing.[22]

These frameworks offer a multi-dimensional basis for assessing urban wellbeing, making them valuable for evaluating the spatial, social, environmental, and emotional functions of POS and their adaptation to Jeddah's specific context. Table 1 summarizes these frameworks.

Ref.	Frameworks	Focus	Wellbeing Dimensions Covered	Relevance to Jeddah	Strengths	Limitations
UN DESA, 2024	Sustainable Development Goals (SDGs)	Inclusive, safe, resilient, and sustainable cities	Spatial, environmental, social, cultural	Provides global benchmark for equitable, accessible, and safe urban spaces	Widely recognized and holistic	Broad and general, Not site-specific
WHO, 2019 Collins et al., 2024	Urban HEART	Physical environment, health outcomes, infrastructure, and social inclusion	Spatial, environmental, social, psychological	Guides analysis of infrastructure, connectivity, and equitable access to pos; informs health and wellbeing outcomes	Emphasizes equity and health	Less focus on cultural or experiential dimensions
Russo, 2024	Public Space Index (PSI)	Accessibility, safety, inclusivity, and usability/ comfort	Spatial, environmental, social, psychological	Offers measurable indicators to assess pos performance, user satisfaction, and functional usability	Measurable and comparable	Limited cultural context
Gong et al., 2024 Rugel et al., 2019	Theory of Public Life	How human-scale design, social activities, and spatial affordances promote interaction, comfort, and engagement Physical, functional, and experiential dimensions.	Spatial, social, psychological, cultural	Provides design principles to enhance social interaction, engagement, and experiential quality in pos	Emphasizes human experience and social interaction	Qualitative focus, Less standardized metrics

Table 1. key frameworks, focus, wellbeing dimensions addressed, scale, strengths, and limitations

RESEARCH METHODS

This section presents the methodology employed to examine urban wellbeing in Jeddah's POS through a mixed-method approach supported by a case study strategy to ensure the validity and reliability of the findings. As illustrated in Figure 2, the methodological framework guided data collection and analysis to develop a context-sensitive framework for improving urban wellbeing in Jeddah's POS.

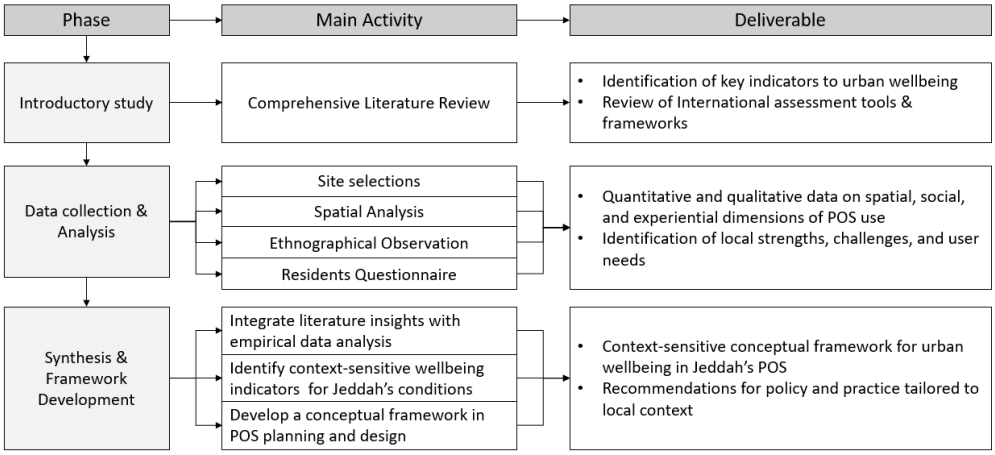

Figure 21. Research's Methodological Framework

Data Collection

Data were collected using multiple methods including spatial analysis, ethnographic observation, and a structured questionnaire. This multi-method approach facilitates triangulation to increase validity and reliability of the findings.

Site Selection

Sites selected for this study are Meral Garden, Springs Park, and Rawdah Garden, based on their geographic distribution across different residential districts of Jeddah (Figure 3) and their variation in scales and functions.

Figure 22. Jeddah Map Showing Sites Location

This selection allows for a comparative analysis of how spatial features and local context influence user experiences, patterns of use, and perceptions of wellbeing. An overview of the selected sites is presented in Table 2.

	Location	Scale & Function	Total Area	Accessibility
Meral Garden	Basateen	Neighborhood park; small–medium scale	16,245 sqm	Open 24/7, free entry, access vehicle & pedestrian
Springs Park	Alsafa	Community park; medium scale	24,600 sqm	Open 24/7, free entry, access vehicle & pedestrian
Rawdah Garden	Ar Rawdah	Neighborhood park; medium scale	17,762 sqm	Open 24/7, free entry, access vehicle oriented

Table 2. Comparison of Sites Selected

Spatial Analysis

GIS-based spatial analysis was used to evaluate accessibility, connectivity, and service coverage. Using satellite imagery, the analysis identified walkability areas coverage, transportation proximity, and physical barriers. Field observation further assessed physical components such as entrances, pathways, green coverage, and available amenities (Table 3). This approach was guided by Urban HEART framework to assess spatial quality and infrastructure and PSI to evaluate accessibility and usability.

	Meral Garden	Springs Park	Rawdah Garden
Accessibility & Connectivity	Within 400–800 m of residences; Poor pedestrian infrastructure with safety concerns; Strong road access but noise/air pollution risk	Strong pedestrian and vehicular access; >200 parking spaces; Adjacent to school increases activity	Strong walkability and connectivity; Parking limited but integrated with surrounding streets; Limited pedestrian infrastructure
Physical Access & Wayfinding	No designated clear entrances; Poor layout planning; lacks signage; low spatial clarity	Defined pathways and park map, clear directional signage, good visibility,	Effective signage, art features enhance clarity supports identifiable landmarks
Safety	Limited lighting coverage, safety concerns during evening; Absence of surveillance/ CCTV	Good distribution of lighting supporting safety; Presence of surveillance (guards/CCTV)	Moderate safety, but visible surveillance; Limited lighting;
Amenities & Infrastructure	Poorly maintained play area, fenced football court; lacks restrooms, trash bins, shaded zones	Shaded playgrounds, shaded benches; family seating zones & clusters; open lawns, Public WC; waste bins; Food trucks – kiosk; Bikes rental area	Seating zones, basketball court (fees), art and sculpture installations; Graffiti artwork; not shaded playground; Shaded pathways; Food trucks – kiosk Bike lane – scooter rental
Greenery & Environmental Comfort	Limited greenery, sparse tree cover, high sun exposure, minimal shade	Rich vegetation, automated irrigation, shaded areas, diverse plant cover improving comfort	Diverse planting, natural shading, improved microclimate but fewer built shade structures
User Demographics	Low density; mostly adult males; few families or women present	High density, diverse users; families, children, youth, elderly; strong female and child presence	Moderate density; adults and families; balanced gender mix
Cultural Features	Lacks cultural design or identity elements	Limited cultural cues	Public art, landscaping, and design enhance visual appeal and community attachment

Table 3. Field Observation Insights

Ethnographic Observation

Ethnographic observation was conducted to capture patterns of use, behavior, and engagement within the selected sites, providing contextual insights into how spatial design, amenities, and environmental conditions influence human behavior and wellbeing.[23]

Each observation session was 90 minutes long between 4:00 PM and 9:00 PM to reflect variations across peak hours. Data were collected using structured checklists and photographs while ensuring ethical considerations. The checklist was developed based on Gehl's Public Life tools focusing on human-scale design and social interaction to record activity types, user demographics, and stay-time duration.

Structured Questionnaire

A structured online questionnaire was developed and distributed via Google Forms to Jeddah residents to assess perceived wellbeing outcomes related to POS. The survey measured residents' satisfaction across five core wellbeing dimensions: physical/spatial, social, environmental, psychosocial, and cultural, using a 5-point Likert scale to capture nuanced perception of quality and emotional engagement. Its design incorporated key elements from the UN-Habitat Global Public Space Toolkit to evaluate safety, inclusivity, and satisfaction, while Urban HEART framework addresses social inclusion and health outcomes.

Data Analysis

The data were cleaned, prepared, and systematically categorized to ensure triangulation and validity. GIS datasets were analyzed to map and measure accessibility, connectivity, and service coverage enabling the visualization of spatial patterns and identification of disparities. Ethnographic observations were coded thematically based on activity type, user demographics, and duration of stay to identify recurrent behavioral patterns. Questionnaire responses were analyzed in Excel to calculate descriptive statistics and identify trends in satisfaction across the five wellbeing dimensions and to capture contextual perceptions and user priorities.

Findings were then triangulated within an integrated framework covering the five thematic dimensions. This triangulation allowed cross-validation of results, identification of recurring patterns, and extraction of context-specific insights for a comprehensive understanding of how spatial, environmental, and social characteristics of POS influence user experiences and perceived wellbeing in Jeddah.

Using simple random sampling, a total of 116 responses were collected offering valuable insights into resident perceptions supporting exploratory and qualitative analysis of the relationship between wellbeing and POS in the local context.

RESULTS AND DISCUSSION

This section presents the findings from processed data that were triangulated to identify patterns, correlations, and context-specific insights, connecting international standards with local needs. The results highlight how design, amenities, environmental conditions, and cultural context collectively influence user behavior, satisfaction, and engagement, providing a comprehensive understanding of POS contributions to urban wellbeing and informing a context-sensitive framework.

Spatial Dimension

GIS analysis revealed that Springs Park had the highest accessibility, supported by well-distributed parking (over 200 spaces), strong pedestrian connectivity, and integration with surrounding land uses. Questionnaire results confirmed parking as a key determinant, as most visitors preferred to arrive by

car. Ethnographic observations recorded steady vehicle turnover and high pedestrian flows, particularly during weekends.

In contrast, Rawdah Garden had limited parking capacity and weak pedestrian infrastructure. Although accessible on foot from adjacent neighborhoods, questionnaire feedback indicated that limited parking reduced its appeal beyond the immediate area. Meral Garden offered walkable access for nearby residents but weak wider connectivity and limited parking resulting in lower visitor turnover.

Wayfinding was strongest in Springs Park and Rawdah Garden where both offer defined paths, clear spatial layout, and landmarks, which supported safe and confident movement. Over 60% of respondents valued these features linking them to comfort and repeat visits. Meral Garden lacked wayfinding elements as confirmed by field observation.

Facility distribution varied, in which Springs Park had the widest range as shaded seating, play areas, and lawns supporting diverse use and highest satisfaction. Rawdah Garden offered basketball courts, sculptures, and shaded paths with strong demand for active play. Meral Garden was underutilized due to minimal shade, seating, and greenery, leading to shorter stays.

Environmental Dimension

Environmental quality was assessed through vegetation, thermal comfort, and pollution buggering. GIS and field assessments showed that Springs Park had the richest vegetation and automated irrigation which create a comfortable microclimate that encouraged long stays (30–90 minutes). Survey data showed 44% strongly agreed greenery improved their mood, while 62% linked parks to healthy living and mental refreshment.

Rawdah Garden offered moderate comfort with shaded paths, but lacked shade structures which reduced usability during peak sun hours. Finally, Meral Garden had sparse tree cover and limited landscaping, leading to thermal discomfort, shorter stays, and reduced family use.

Although no formal pollution systems were observed, vegetation in Springs and Rawdah buffered heat and noise, unlike Meral Garden's limited greenery. Findings confirm that green cover and thermal comfort strongly influence inclusivity, stay duration, and wellbeing in Jeddah's hot climate.

Social and Cultural Dimensions

Ethnographic observations showed that Springs Park achieved the highest levels of social inclusivity, attracting balanced gender representation, diverse age groups, and consistently high crowd density. Its size, layout, and varied facilities as playgrounds, shaded seating, and open lawns supported group activities and long stays. Questionnaire results aligned, with 79.7% of respondents strongly agreeing that visually attractive, well-designed parks improve mood and mental refreshment.

Rawdah Garden demonstrated moderate diversity and regular family use, with the basketball court and green pathways actively used. Meral Garden, despite its central location, was underutilized, attracting mainly solo adults for short visits due to limited shade, poor greenery, and lack of amenities.

Perceptions of safety varied across sites. Springs Park's activity and visibility promoted comfort, while Rawdah Garden and Meral Garden had limited evening use. Overall, only 27% of survey respondents felt safe both day and night, and 22% strongly disagreed. This indicates that design alone may not be sufficient to address safety concerns without complementary management measures as lighting and security presence.

Cultural integration was generally weak. Rawdah Garden's public art and native plantings enriched visual character and emotional connection, whereas Springs and Meral lacked distinct cultural cues. Survey data showed 55% wanted more Islamic patterns and Hijazi features, while only 33.9% felt

cultural needs were currently addressed. This supports the role of culturally reflective design in enhancing place attachment and community connection.

Psychological Dimension

Observations and survey confirmed that POS support emotional wellbeing, mental restoration, and satisfaction. In Springs Park, diverse activities as relaxation, socializing, and play contributed to prolonged visits and positive mood, with 62% strongly agreeing that POS refresh and relax them.

Satisfaction was highest in Springs Park due to comfort, cleanliness, and amenities. In contrast, Meral Garden's poor shading and maintenance led to lower satisfaction and shorter stays, underlining the importance of design quality and upkeep for psychological comfort and repeat visits.

Behavioral patterns and spatial features also showed that place attachment is strengthened by cultural symbolism, aesthetic appeal, and social interaction. Rawdah's art and native plants encouraged emotional engagement, while Meral Garden's lack of cultural cues weakened attachment. Surveys reflected this: respondents moderately agreed that POS contribute to community connection and cultural relevance, indicating that psychological wellbeing improves when spaces resonate personally and culturally.

FRAMEWORK DEVELOPMENT

Drawing on spatial analysis, field observations, and resident questionnaire, this research develops a context-sensitive conceptual framework for the planning and design of POS in Jeddah. The framework addresses the study's central aim to integrating evidence-based spatial indicators to enhance urban wellbeing.

Grounded in international benchmarks such as the SDGs and Urban HEART, the framework is tailored to Jeddah's socio-spatial conditions. This approach bridges global principles with local contexts, making it both theoretically transferable and practically adaptable.

The findings highlighted five core dimensions. Spatial accessibility and connectivity emerged as a critical factor, where sufficient parking provision, barrier-free pedestrian access, and stronger integration with surrounding land uses shaped equitable use and user satisfaction. Environmental comfort and climate resilience were also critical, as weather strongly determined when and how residents visited POS. With most use concentrated around sunset and evening hours, thermal comfort and shading strategies are essential. Continuous shaded walkways, dense native planting, and light-reflective surfaces are needed to extend usability during the day and sustain comfort in Jeddah's hot climate.

Cultural and social resonance represents another vital dimension. The limited presence of Hijazi design features, public art, and culturally meaningful spaces weakened place attachment, underscoring the importance of embedding local arts or culturally responsive programming such as seasonal local markets.

Functional diversity was shown to influence both inclusivity and length of stay, with facilities supporting youth activities, family use, and quiet rest areas encouraging wider participation. Finally, safety, legibility, and wayfinding were identified as essential to evening use. Since Jeddah residents prefer to visit POS around sunset, well-lit paths, clear sightlines, and visible signage are critical to enhancing perceived and actual safety.

CONCLUSION

This study examined the relationship between public open spaces (POS) and urban wellbeing in Jeddah by integrating spatial, environmental, psychological, social, and cultural dimensions within a mixed-method case study approach. The findings demonstrate that accessibility, design quality, greenery, safety, and cultural identity are critical determinants of user satisfaction and perceived wellbeing. Spatial analysis revealed marked disparities across the three selected parks in terms of pedestrian connectivity, parking provision, and multifunctional amenities, while ethnographic observations and resident questionnaire emphasized the significance of inclusivity, thermal comfort, and emotional attachment to place.

Through the triangulation of quantitative and qualitative evidences, this research developed a context-sensitive conceptual framework that reconciles international benchmarks with the specific cultural, climatic, and social realities of Jeddah. The framework highlights practical priorities for urban planning including the provision of shaded pedestrian pathways, culturally resonant design features, safety-enhancing measures for evening use, and diverse facilities that accommodate both active and passive recreation. By aligning global standards with local practices, the framework provides operational guidance for policymakers, planners, and designers seeking to improve the inclusivity, usability, and wellbeing outcomes of POS in Jeddah.

Demonstrating the value of integrating spatial planning principles with socio-cultural insights, this research contributes to the growing discourse on urban wellbeing in rapidly developing cities. Future studies may extend this research by exploring how climatic variations influence POS use and wellbeing outcomes in Jeddah and similar contexts.

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AN OUTSIDER'S PERSPECTIVE ON THE PSYCHIATRIC HOSPITAL OF SHKODRA: PERCEPTION OF NEARBY RESIDENTS

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INTRODUCTION

Mental health care in Albania has undergone significant transformations since the early 20th century, beginning with the establishment of the first psychiatric facilities within the hospitals.

Design of these buildings were developed under the Soviet-inspired *shemanko* model—a state-funded, centrally planned system that prioritized acute medical care and inpatient treatment.[1] Among the earliest psychiatric units in Albania were those in Vlora (established in 1920), Shkodra, Tirana, and Elbasan cities. These kinds of institutions are always associated with stigma and rejection. There is a notable gap in the literature concerning the intersection of mental health stigma and the design of psychiatric facilities—particularly how the physical environment influences public perception and social inclusion.

This study focuses on the Psychiatric Hospital of Shkodra (city in the Northen Albania), aiming to explore neighborhood residents' perceptions of both people with mental health and the hospital building location itself. Grounded in the principles of environmental psychology, the research emphasizes the role of the built environment in shaping attitudes and fostering community integration. By analyzing community attitudes, this study seeks to inform future planning and design practices that promote inclusivity, reduce stigma, and support the integration of psychiatric facilities into their urban and social contexts.

Environmental Perception of Mental Health Facilities

Environmental psychologists stress the importance of understanding the way people react to daily circumstances and sceneries. Gifford et al.[2] acknowledge that the level of awareness, adaptability, and necessary selectiveness in tending to environmental stimuli in complex sceneries are overpowering at times, and consequently make people filter out crucial elements, severely affecting health and safety. Culture plays an important role in environmental the perception of the environment and informs a person's perception behaviour. Goffman's[3] concept of the "Total Institution" provides the framework for understanding how asylum architecture, built to separate and control, manufactures a "spoiled identity" and profound stigma for its residents. Expanding this view, Link and Phelan's[4] concept of structural stigma frames the built environment as a key societal structure where stigma is enacted. Consequently, the peripheral location, imposing design, and isolation of psychiatric hospitals are active mechanisms that produce spatial stigma.

The study of perception behaviour is crucial to this study, regarding the image of the mental health facility on an individual as well as a community level. Gifford et al.[5] identify "the degree of noxiousness" as a measure of the community's perception. The degree of noxiousness allows individuals and the community to understand the effect of the facility on property values, environment enhancement, community benefits, and neighbourhood dynamics (perceived at risk for fear of what individual the mental health facility attracts). Understanding the impact that the psychiatric building exerts over the neighbourhood is an important contribution to the public participation field, specifically with regards to NIMBY — Not In My Backyard — discourse in urban planning. Cowan[6] investigates the attitudes of the public towards the relocation of a mental health facility in their neighbourhood. Her findings highlight that the existing public consultation guidelines fail to account the concerns and issues raised by the local people, and the study proposes a transparent public consultation and engagement process that involves the residents from the early stages. Similarly, Warner[7] notes that the neighbourhood community can deny the placement of a mental health facility in the neighbourhood, when faced with opposition, or can further intensify the opposition if a mental health facility is already established.

Effects of Attitudes, Perceptions and Behaviours towards Mental Health Facilities

There are many factors that affect the progress of the treatment of mental health patients. Repper and Brooker[8] define the following key conditions for progress: ample support and care offered by health staff and providers, community acceptance and integration in the neighbourhood's social constructs, and the patient users of the psychiatric hospital share similar rights with other residents.

Consequently, patients that do not have the acceptance of the community have a poor life quality. Other researchers[9] go so far as to suggest that the continuous lack of acceptance makes patients more likely to relapse, a chain of reaction with leads to re-hospitalization, and decreases the chances of a full recovery.

Although there is a recent spike in public (neighbourhood and community alike) acceptance towards health facilities, life in the neighbourhood of the facility is now more belligerent and indignant — sometime, these stances go as far as to foster opposition towards new facility projects.

Mental illness stigma is defined as a set of negative attitudes and beliefs that make an individual fear, reject, avoid, and even discriminate against people with mental illnesses. Therefore, patients of the mental health facilities face institutional and public stigma as well, which limits their independence and autonomy. More extreme negative behaviours rooted in mental illness stigma are discrimination, prejudice and resorting to harmful, reductive stereotypes. Most literature points to the main focus of stigma are the lack of knowledge of mental health issues.

Attitudes can range from negativity, which stems from fear to open-mindedness and growth. The consequences of these attitudes can result in either acceptance, which can benefit individuals with mental health disorders by increasing their chances of being employed after treatment, or conversely, lead to social exclusion. Several studies have indicated that knowledge generally promotes acceptance, but there are also findings suggesting that knowledge about mental health patients and facilities can actually contribute to a negative attitude. A global study concluded that developed countries exhibit less stigma towards mental health patients and facilities compared to developing nations. The research demonstrated that developing countries tend to hold the belief that mental health patients are prone to violence.[10]

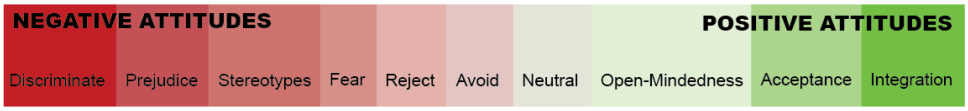

Figure 1. Range of attitudes described by Abi Doumit et al.[11] as. adapted by the authors.

In deciding the recommended approach to community engagement, a study has suggested that planners and designers must opt for a high-profile collaborative approach, encouraging communication and cooperation between host community and project planners), and a low profile (acting independently of the host community).[12] Planners and designers should take into account local guidance, regulations, and legal requirements (fire, parking, land use typology), because if local residents opposing the project uncover a breach in regulations, this will be grounds for expression of concern regarding facility safety and operator reliability.

A high-profile approach consists of various means to raise the public's awareness of the planned project and its clients (consisting of educational leaflets, advertisements, and radio programs).

Community Attitudes towards Mental Illness

There exists a framework named "Community Attitudes towards Mental Illness:[13] (CAMI) to anticipate the attitude of the community and the general public to mental illness. Results from CAMI are organized in four subscales, or categories:

1. Authoritarianism: the view that individuals with mental health issues are inferior and require supervision and coercion.
2. Benevolence: a humanistic and sympathetic view of individuals with mental health issues
3. Social restrictiveness: the view that individuals pose a threat to society and should be avoided.
4. Community mental health ideology (CMHI): the acceptance of services related to mental health and the integration of patients.

These are listed in 40 questions (or items) reported on a 5-point Likert scale which ranges from "strongly agree" to "strongly disagree". For example, scores higher in authoritarianism and lower in benevolence and social restrictiveness lead toward higher stigma. The CAMI is to this day the measure to determine stigma towards mental health patients

METHODOLOGY

Setting: Psychiatric Hospital of Shkodra

The psychiatric hospital was designed in 2009 and implemented in 2010 – 2011 by Atelier 4, by commission of the Municipality of Shkodra. The hospital was designed on vacant land, next to the previous psychiatric hospital, which was designed in 1979. The psychiatric hospital is part of the Regional Hospital complex, to the North-East of the city. It is a 16-minute walk from the city center, or a 7-minute car drive.

The neighbourhood is largely zoned for mixed-use urban development. The area consisting of the hospital complex is zoned for urban development. The first category of development is health, making up 28% of the land use area. This category is followed by residential, which makes up 10% of the area. The maximum height of development allowed is 7 storeys, and 23.6 m. Prohibited uses are industrial land uses and economy.[14]

The area is bordered on the South by the stadium "Reshit Rusi". The latter is zoned for social and recreational activities (40%), housing (16%), and services (5%). The industrial area begins slightly further up north, and the surrounding neighbourhoods consist primarily of housing and mixed-use development.

The design consists of two-storey volumes, abiding by the requirement of the Municipality that aimed to ensure ease of access for patients and high security and surveillance. The architectural shape responds to the former psychiatric hospital building, and ensures easy access to pedestrians and cars alike, while prioritizing a human-scale, restorative design.

Survey Design

The surveys were conducted on site, with printed surveys. The author conducted a door-to-door survey in the neighbourhood of the hospital (as defined in *Figure 2*) for a week, March 6 – 12 (March 6 - 9 from 8 AM to 1 PM, whereas from March 10 – 12 from 2 – 7 PM) interviewing people about their perception of the hospital.

The authors conducted a door-to-door survey in the neighbourhood of the hospital for a week, March 6 – 12, 2023 interviewing people about their perception of the hospital. The people were asked questions about their gender, age, familiarity with the neighbourhood, housing ownership/tenure, familiarity with the mental health care system, perception of the mental health hospital, real estate appreciation/depreciation due to the presence of the hospital, and the desire to live next to a psychiatric hospital. The survey closed with a cognitive mapping exercise, where the surveyed were invited to describe the road from the house to the psychiatric hospital.

The following questions are focused on attitudes related to mental health, and they include familiarity with mental health, where the resident would treat a family member with health issues (home or hospital), where they would want the hospital to be (in or out of the city), and transparency towards neighbours and relatives over treatment.

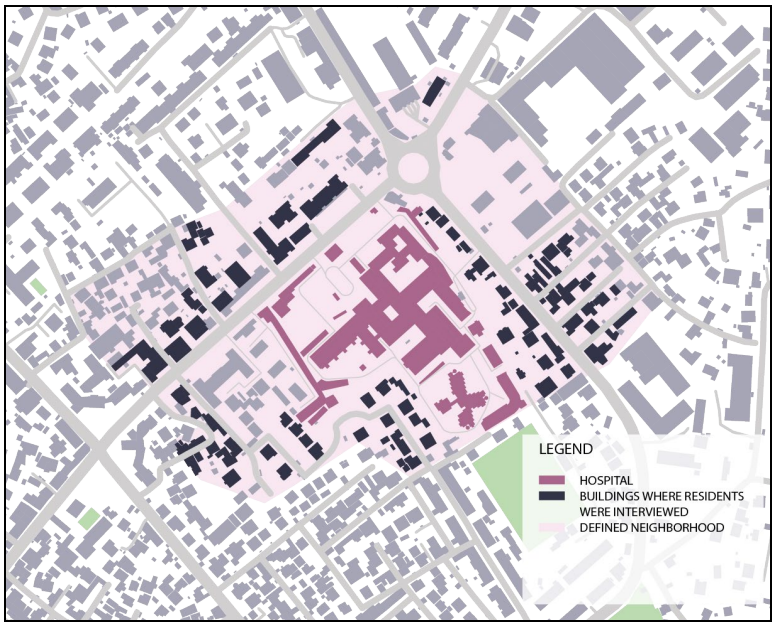

Figure 2. Map of the neighbourhood, highlighting the defined area of study.

The next category concern attitudes on the hospital, inspired by the CAMI framework and rated on a Likert scale from 1 to 5: situation on the psychiatric hospital, impression created by the presence of the facility, perception of mental health and facilities, impact of the facility on the traffic, noise and parking, fear, encounter with patients, and whether the facility affects real estate values.

REVEALING THE RESULTS

For the purposes of this study, 100 participants were interviewed. Out of 100 interviewed participants, 51% of them were male, and 49% were female. Most of the interviewed participants belonged to the 40 – 64 age group (41%), whereas 32% of the participants belonged to the 18 – 39 age group, and 27% of the respondents were over 65 years old. When asked about how long they lived in the neighborhood, 61% of the respondents replied that they had lived there over 10 years, 31% of them had lived there 5 – 10 years, and 8% had lived in the neighborhood for less than 5 years. Most of the respondents are homeowners (78%) as opposed to renters. 65% of the participants lived with children in their households, as opposed to 35% of them that had no children in their households.

When asked about familiarity with the mental health system, 60% of the respondents replied that they were familiar with the mental health system. 63% of the respondents attested that they would want their family member or acquaintance to be treated in a mental health facility, whereas 37% of the respondents replied that they prefer attending to them at home. The respondents were split, when asked if they would want the hospital to be inside the city (49%), or outside (51%).

Regarding stigma surrounding mental health, when asked if they would share hospitalization information with their relatives or neighbours, only 38% of them replied that they would let their relatives and neighbours know. The overwhelming majority, 62% of the respondents, would either not share this information (33%) or they were not sure (29%).

Community Attitudes towards the Facility

Respondents were invited to rate the current situation of the facility on a Likert scale, as it pertaints to the following aspects: distinct, accessible, gloomy, transparent, introverted, ordinary, wide/prominent, small, well-maintained, comfortable, and quiet. The aspect that was rated the most positive was ordinariness, followed by accessibility. On the contrary, the aspects that were rated negatively were the facility's transparency and maintenance.

Respondents were asked to report the feelings that the facility evoked. Almost half the respondents (47%) stated that the facility evoked no feelings, and 38% of the respondents noted that the facility made them feel bothered or annoyed.

Respondents were invited to respond on their opinion about some statements related the psychiatric hospital.

The statement which the respondents agreed the most with was "There should be guards at the facility", followed by "The facility should be surrounded by high walls". The only statement the respondents disagreed with was "Psychiatric hospitals should be like prisons".

Finally, the respondents were invited to report whether they felt afraid because of the presence of the facility in the neighborhood, and if so, why they felt afraid. The majority of the respondents (66%) did not feel afraid in the neighborhood due to the presence of the facility. The 34% of the respondents who felt afraid, mostly cited concerns about the kids (15%).

The following table discusses the results in term of the literature.

	Definition of Perceptions and Behaviors	Psychiatric Hospital of Shkodra
Pro-environment	Individual behavior that undermines the negative impact of someone's actions towards the environment.[15]	Most respondents believed that the facility does not affect traffic and noise pollution, and they were likely to perceive the accessibility of the facility as very positive. Similarly, it was likely for respondents to state that they felt slightly negative to neutral about the quietness and the state of maintenance of the facility. Most homeowners were more likely to state that the facility affected noise pollution.
Degree of noxiousness	A way for individuals and the community to understand the effect of the facility on property values, enhancement, community benefits and dynamics. [16]	Residents who felt slightly negative about the accessibility of the facility felt that the presence of the facility decreased property values. Homeowners were more likely to think that the presence of the facility decreases the value of the property, more so compared to renters. Residents of more than 10 years were more inclined to think that the facility decreased the value of their property than residents who had lived for less than 10 years in the neighborhood. Respondents that had children at home fully agreed to the statement "There should be guards at the facility".
The image of the environment	The image of the environment relies on group characteristics (gender, age, status). [17]	Most respondents that were 40 – 64 years old felt the facility was relatively small, whereas respondents over 65 years old felt the facility was slightly bigger. Men were more likely to respond that the presence of the hospital made them feel neutral/ evoked no sentiment, whereas women were more likely to answer that the presence of the hospital made them feel afraid and annoyed (bothered).
NIMBY	The term "NIMBY-ism" to describe the largely opposing behavior of residents. [18]	There was a statistical significance between respondents that preferred the facility to be in the city, and the perception of the ordinariness of the facility as neutral — whereas respondents that preferred the facility out of the city found the ordinary aspect of the facility to be slightly positive. Further study should be conducted, employing qualitative methods, as the residents might feel pressured to say "the right thing" when it's quantitative, categorical questions.
Image of the facility — dormant	The environment enables a person to act, therefore attributing a user's behavior to themselves, and perceiving the facility as a dormant agent.[19]	Facility perceived as prominent, coded as neutral alongside slightly disagreeing with "Most hospitalized patients are not dangerous", neutral agreement to "The facility being in a residential neighborhood makes them feel at home" and slightly agreeing to "Mental facilities should be surrounded by high walls".

		Facility perceived as well-maintained, coded as neutral alongside slightly agreeing to "Mental illnesses are the same as other illnesses". Most respondents believed that the facility does not affect traffic and noise pollution, and they were likely to perceive the accessibility of the facility as very positive. Similarly, it was likely for respondents to state that they felt slightly negative to neutral about the quietness and the state of maintenance of the facility. Most homeowners were more likely to state that the facility affected noise pollution.
Image of the facility — outsider and insider	A differentiation between outsider and insider perceptions, where the outsider is less likely to perceive the positive aspects of the mental health facility. [20]	There is a very negative association to the facility as transparent, and complete agreement to the statement "Mental facilities should be surrounded by high walls". Further studies and research should take into account insider perception, using the methodology and literature review of this thesis as a foundation to guide future research further.

Table 4. Perceptions and behaviours for the Psychiatric Hospital of Shkodra

After conducting various chi-square tests, the combinations of attitudes towards mental health and facility aspects were mapped in *Figure 3,* to understand the combinations better.

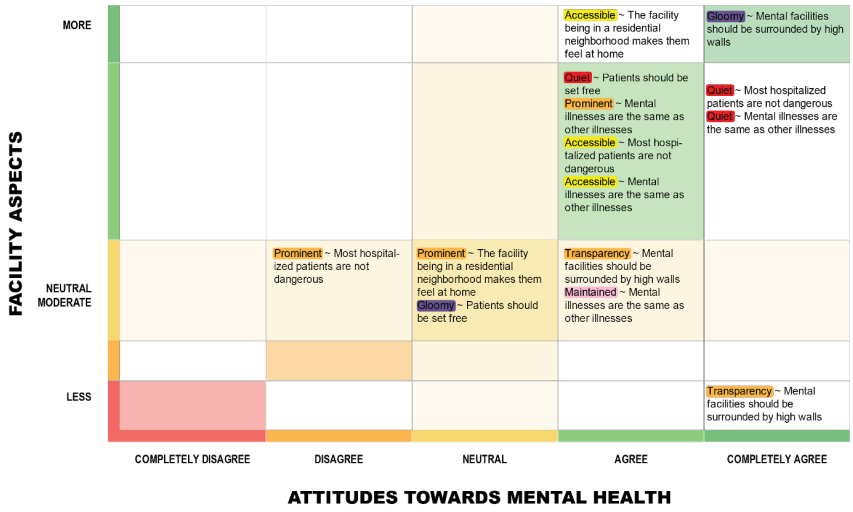

Figure 3. Combinations of attitudes towards mental health and facility aspects

Generally, facility aspects and community attitudes that were both coded positively were:
-Facility perceived as accessible was coded positively alongside agreeing to the statements "The facility being in a residential neighborhood makes them feel at home", "Most hospitalized patients are not dangerous", and "Mental illnesses are the same as other illnesses".
-Facility perceived as quiet was coded positively alongside agreeing to the statements "Patients should be set free", "Most hospitalized patients are not dangerous", and "Mental illnesses are the same as other illnesses".
-Facility perceived as gloomy was coded alongside strongly agreeing to the statements "Mental facilities should be surrounded by high walls".

-Facility perceived as prominent was coded alongside agreeing with the statement “Mental illnesses are the same as other illnesses”.
Generally, facility aspects and attitudes towards mental health that were both coded as neutral were:
-Facility perceived as prominent, coded as neutral alongside slightly disagreeing with “Most hospitalized patients are not dangerous”, neutral agreement to “The facility being in a residential neighborhood makes them feel at home” and slightly agreeing to “Mental facilities should be surrounded by high walls”.
-Facility perceived as well-maintained, coded as neutral alongside slightly agreeing to “Mental illnesses are the same as other illnesses”.
-Facility perceived as gloomy coded neutral alongside the neutral agreement to “Patients should be set free”.
Finally, there was an outlier/contrasting statistically significant relationship, where there is a very negative association to the facility as transparent, and complete agreement to the statement “Mental facilities should be surrounded by high walls”.

CONCLUSION

The study aims to comprehend and quantify community attitudes towards mental health and mental health facility (quiet, ordinary, transparent), and to provide suggestions for planning and design practices.

The facility is ordinary and evokes no feelings

Most respondents were more likely to report that the facility evoked no feelings (especially men), or that it was very ordinary. This aspect of ordinariness was mentioned frequently, in a positive note. Recommendations for further research would include focus groups with insiders (users of the facility), and qualitative analyses, to understand opportunities for integration.

The facility depreciates real estate

Residents who found the facility slightly less accessible felt that the presence of the facility decreased the property values. Homeowners tended to perceive the presence of the facility as a factor that decreased the value of the property, more so compared to renters. Residents who had lived there longer (more than 10 years) were more likely to think that the facility decreased the value of their property.

The facility should be maintained

It was likely for respondents to state that they found the facility not that quiet, and not that well-maintained. Most homeowners tended to perceive the facility as responsible for traffic and noise pollution. The facility should plan more frequent maintenance, and a greening buffer bordering the facility.

The facility should be surrounded by a buffer

All respondents tended to agree that there should be guards — especially residents with children in their households. Most respondents that perceived the facility as very ordinary tended to prefer that the facility be placed inside the city. This is an opportunity to implement a green buffer around the facility, to provide privacy for insiders and the outsiders, and maintain the perception of ordinariness.

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ARCHITECTURE AND IDENTITY: CANCER CARE CENTERS IN THE MIDDLE EAST AS CONTEXTUAL STUDIO PEDAGOGY

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INTRODUCTION

In architectural education, studio-based learning plays a vital role in equipping students to confront real-world design challenges. This paper examines a fourth-year capstone studio in which students, working in pairs, designed a Maggie's Center for Cancer Care tailored to the Middle Eastern context. Traditionally situated in Western settings, Maggie's Centers are known for their supportive environments, offering spaces for healing, reflection, and community for cancer patients and their families. Originally conceived by architectural theorist Charles Jencks and his wife Maggie Keswick Jencks, the centers reflect a belief in architecture's power to uplift and provide dignity through design. The absence of a Maggie's Center in the Middle East presents a distinctive opportunity to explore cultural, architectural, and spiritual considerations specific to the region.

Focusing on student projects, the paper highlights how cultural specificity informs architectural expression through attention to privacy, materiality, and form. Drawing inspiration from Islamic architectural traditions, the students embedded culturally resonant and spiritually meaningful elements into their designs. While Maggie's Centers globally tend to reflect Western interpretations of wellness and spirituality, these projects respond directly to Middle Eastern values—emphasizing spatial transitions for privacy, the use of local materials, and the creation of emotionally and spiritually grounded environments.

The studio prompted students to navigate the intersection of building technology, cultural context, and user-centered design. Their process included site analysis, programmatic development, and client/user needs assessment. By engaging deeply with regional traditions and sensitivities, students developed design solutions that demonstrate how healthcare architecture can meaningfully respond to the lived experiences of Middle Eastern communities. This paper proposes new models for culturally responsive healthcare design through the lens of architectural education.

Background

"Architecture, at its best, gives us hope. It can uplift the spirit, provide comfort, and create an environment where people feel cared for and valued."[1]

Maggie's Centers for Cancer Care are renowned architectural spaces designed to support individuals diagnosed with cancer, offering more than just medical treatment facilities. Founded in the UK by Maggie Keswick Jencks, herself a cancer patient, the centers aim to provide holistic care that nurtures

the emotional and psychological needs of cancer patients and their families. These centers are built on the belief that architecture and design can play a profound role in healing, offering safe, uplifting environments where individuals can find solace, hope, and community during some of the most challenging times in their lives.

Maggie Keswick Jencks, along with her husband, renowned architect Charles Jencks, envisioned these centers as places where patients could access practical information, psychological support, and group therapy in an environment vastly different from the sterile, impersonal settings often associated with hospitals. The first Maggie's Center opened in Edinburgh in 1996, designed by architect Richard Murphy.[2] Since then, numerous centers have been built across the UK and beyond, designed by internationally acclaimed architects, such as Frank Gehry, Zaha Hadid, and Norman Foster. Each Maggie's Center is unique, yet they all share a common architectural ethos of openness, warmth, and a deep connection to nature. The core idea of Maggie's Centers is that design is not just about functionality but about creating a healing and supportive environment that uplifts the emotional and psychological well-being of patients. Jencks' vision aligns with how Maggie's Centers are designed to support cancer patients holistically, blending architecture with care and compassion.

Architecturally, Maggie's Centers embody key principles aimed at fostering healing. A primary goal of each design is to create a welcoming, non-institutional environment where cancer patients and their families feel empowered and comfortable, such as the Maggie's Centre in Leeds, UK by Vincent & Brown (Figure 1). The centers are designed to feel more like a home than a hospital, with communal kitchens, open lounges, and inviting outdoor spaces that encourage relaxation and interaction. The emphasis on natural light, organic forms, and the integration of gardens or outdoor spaces is central to creating a calming atmosphere, connecting users with nature—a concept rooted in Maggie Keswick Jencks' belief in the restorative power of nature. By surrounding patients with beauty and comfort, Maggie's Centers help reduce stress and anxiety often associated with illness and medical treatment.[3]

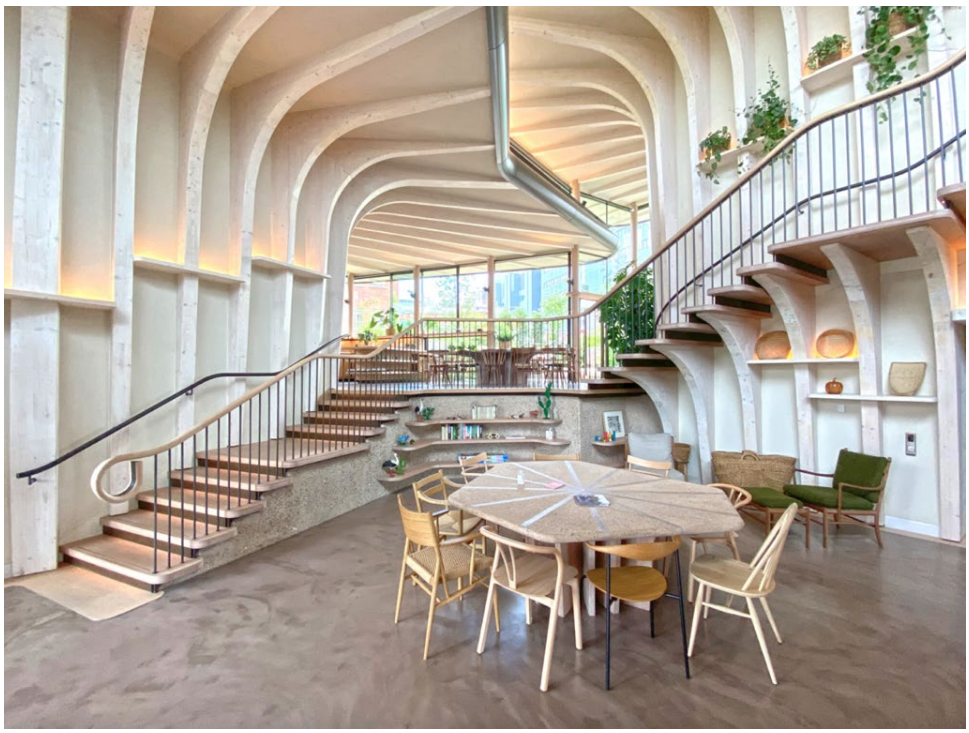

Figure 23. Heatherwick Studio. Maggie's Centre, Yorkshire, UK, 2020 (Retrieved from https://www.maggies.org/)

Furthermore, Maggie's Centers promote the idea of architectural therapy, where the physical environment itself becomes a supportive element in the healing process. The layout of each center is typically open and fluid, encouraging movement and interaction while also providing private spaces for reflection. The use of natural materials, soft lighting, and calming colors is carefully considered in each design, contributing to the overall sense of peace and serenity.[4] The design philosophy behind Maggie's Centers aligns with the concept of biophilia, the idea that humans have an innate connection to the natural world, and that being in nature or environments that evoke nature can have positive effects on mental and emotional health.

Designing a Maggie Center outside the Western Context

However, the Maggie's Centers established worldwide are largely rooted in Western ideals of spiritualism and healing, reflecting the cultural and societal values of the regions they serve. While the architectural design of each center is unique, the underlying values emphasize individualism, personal reflection, and a Western understanding of wellness, which is often centered on the self. These values are reflected in the design of spaces that encourage solitude and personal introspection, such as quiet rooms for meditation or individual therapy sessions.

The projects discussed in this paper present a significant departure from this Western-centric model, as they involve the design of a Maggie's Center for Cancer Care specifically tailored for a Middle Eastern context (Figure 2). This presents unique challenges and opportunities, as the cultural and spiritual values of Middle Eastern societies differ significantly from those of the West. In Middle Eastern cultures, wellness and healing are often seen as collective experiences, with a strong emphasis on family, community, and spiritual connection.[5] Privacy, particularly for women, is a deeply embedded value, and the notion of personal space is understood differently than in Western contexts.

In this context, the architectural design of a Maggie's Center must reflect these values, creating spaces that are sensitive to cultural norms and spiritual practices. For example, the concept of privacy is crucial in Middle Eastern architecture, particularly in spaces where individuals and families seek comfort and healing. The architectural design must therefore include spaces that allow for private reflection and prayer, while also accommodating the collective experience of healing through community and family support. The traditional Islamic courtyard, for instance, offers a model for creating private, enclosed spaces that are open to the sky, allowing for a sense of connection to nature while maintaining privacy.[6]

Figure 24. Students' Designs for Maggie's Centre in the Middle East. Left: Proposal by Rouqaya Al Mufti – Hala Al Khrishi. Right: Proposal by Heidy Tareq – Joel Azar

Materiality and form are also essential considerations in designing a Maggie's Center for the Middle East. The use of locally sourced materials, such as stone, clay, and wood, can help ground the design in its cultural and environmental context, creating a sense of place and authenticity. These materials not only respond to the local climate but also reflect the tactile and spiritual qualities that are central

to Islamic and Arab architectural traditions. In terms of form, the incorporation of geometric patterns and organic shapes that are characteristic of Islamic architecture can help create a spiritual resonance, offering spaces that evoke calm and reflection.

Overall, the design of a Maggie's Center in the Middle East offers an opportunity to reinterpret the core values of Maggie's within a new cultural context, providing spaces that resonate deeply with the spiritual and emotional needs of Middle Eastern cancer patients and their families. By addressing the specific architectural, cultural, and spiritual requirements of the region, this project represents a groundbreaking shift in the design of healthcare environments, offering a new paradigm for how architecture can support healing across different cultural contexts.

LITERATURE REVIEW

The integration of culturally sensitive architecture into healthcare environments has been widely studied, particularly in relation to how spatial design influences healing and well-being. Maggie's Centers have pioneered a holistic approach to cancer care by utilizing architecture to create uplifting, therapeutic spaces.[7] These centers emphasize natural light, organic forms, and a connection to nature, aligning with Western concepts of wellness and psychological healing through environmental design. However, these design principles, while effective in Western contexts, do not necessarily address the specific cultural and spiritual needs of Middle Eastern populations.

Maggie's Centers and Healing Architecture

Maggie's Centers are based on the philosophy that architecture itself can contribute to the healing process by reducing stress and anxiety associated with illness. Research on healing environments has demonstrated that exposure to nature, natural light, and non-institutional design elements can positively impact patient recovery and mental well-being.[8] The Maggie's model reflects these findings, as seen in various centers designed by architects such as Frank Gehry, Zaha Hadid, and Norman Foster, all of whom have emphasized biophilic design, spatial fluidity, and human-centered architecture.[9] However, existing centers primarily serve Western patients, and their spatial configurations reflect Western notions of comfort, privacy, and healing.

Cultural Considerations in Healing Spaces

In contrast, Middle Eastern healing traditions emphasize collective wellness, spirituality, and family support, differing significantly from the individualized therapeutic model found in Western cancer care facilities.[10] In Islamic and Arab cultures, healing is often intertwined with religious and communal practices, where prayer, hospitality, and shared experiences play vital roles.[11] Privacy is also a fundamental consideration, particularly for women, and influences spatial organization within healthcare environments.[12] Traditional Islamic architectural elements, such as courtyards, controlled access to private spaces, and the strategic use of light and materials, have long been incorporated into homes, mosques, and public spaces to support mental and spiritual well-being.[13]

Privacy, Materiality, and Form in Middle Eastern Architecture

Research has shown that privacy and spatial hierarchy are integral to Middle Eastern architectural design, shaping the organization of both residential and public spaces.[14] The concept of controlled visibility, where individuals can choose their level of exposure to communal or private areas, is essential in designing social spaces that respect cultural norms.[15] Additionally, the use of natural materials such as stone, clay, earth and wood has symbolic and functional importance, creating a sense of warmth and authenticity while responding to climatic conditions. Islamic geometric patterns,

arches, and organic forms serve both aesthetic and symbolic purposes, fostering a spiritual connection between users and their environment.[16]

Towards a Middle Eastern Maggie's Center

Given these cultural and architectural considerations, the adaptation of Maggie's Centers for a Middle Eastern context necessitates a departure from Western design precedents. This study builds upon previous research in healing architecture, spatial privacy, and cultural place-making to explore how the Maggie's ethos can be reinterpreted for Middle Eastern patients. By integrating Islamic architectural principles and acknowledging the region's cultural values surrounding healing, the design of these centers can create a more inclusive and responsive healthcare environment. This literature review establishes a foundation for exploring how architecture can bridge cultural and medical needs, creating spaces that support both the physical and emotional well-being of cancer patients in the Middle East.

RESEARCH QUESTION(S) AND OBJECTIVES

This study seeks to investigate how the design of Maggie's Centers can be adapted to reflect the cultural, spiritual, and societal values of Middle Eastern communities while maintaining the core principles of healing architecture. A key focus is understanding the role of privacy, materiality, and spatial organization in shaping cancer care environments that align with Middle Eastern traditions and Islamic architectural principles. Additionally, the study examines how student-led design explorations in an academic architectural studio contribute to the reimagining of healthcare spaces within non-Western cultural contexts. By exploring design strategies that integrate modern medical needs with traditional Middle Eastern spatial practices, this research aims to identify methods for creating spaces that foster healing, reflection, and wellness. Finally, the study evaluates the architectural responses in these student projects in comparison to existing Maggie's Centers in Western contexts, analyzing differences in spatial organization, user experience, and cultural appropriateness. Through these inquiries, the research aims to bridge the gap between global healthcare design and culturally responsive architectural practices.

DESIGN STUDIO METHODOLOGY

The comprehensive design studio is a required component in the Bachelor of Architecture Program at the American University of Sharjah. As a semester project, the students were tasked with the design of a Maggie's Center in a site located next to the Cancer Care Center at the Cleveland Clinic in the city of Abu Dhabi, UAE. The Studio followed the standard process of architectural design development from Schematic Design (SD) to Design Development (DD). allowing students to explore conceptual ideas before refining them into more detailed and technically resolved solutions. This process is fundamental in teaching students how to approach real-world architectural projects with both creative theory and design precision.

Schematic Design

The Schematic Design (SD) phase is the initial stage of the architectural design process, where students focus on developing broad design concepts and spatial strategies. In this phase, students engage in extensive research, analyzing site conditions, user needs, programmatic requirements, and cultural or contextual influences. For projects such as a Maggie's Center in the Middle East, this included studies on healing architecture, privacy, and spiritual spaces relevant to the local culture.

During the SD phase, students generate conceptual diagrams, massing studies, and preliminary spatial layouts to explore different design possibilities. Key activities start with Site Analysis to

understanding environmental, climatic, and urban factors that inform building placement and orientation. Secondly, Program Development which defines space requirements and their relationships based on user needs. Thirdly, Conceptual Design which focuses on Developing architectural themes and spatial narratives that drive the design. This period is followed by digital modeling studies to visualize ideas before the Preliminary Material and Structural Considerations take shape which begin to identify potential materials and structural systems that align with the project's goals. The goal of SD is to establish a strong conceptual foundation for the project, ensuring that initial ideas are well thought out before moving into more detailed phases. Students present their schematic proposals through pin-ups and critiques, receiving feedback from professors and peers to refine their designs.

Specific questions asked to students during the design process:

1.How can the design of Maggie's Centers be adapted to reflect the cultural, spiritual, and societal values of Middle Eastern communities while maintaining the core principles of healing architecture?

2.What role do privacy, materiality, and spatial organization play in shaping cancer care environments that align with Middle Eastern traditions and Islamic architectural principles?

3.What design strategies can be implemented to create spaces for healing, reflection, and wellness that integrate both modern medical needs and traditional Middle Eastern spatial practices?

Transition to Design Development

Once the schematic concept is reached, the project advances into the Design Development (DD) phase, where the focus shifts from broad design ideas to detailed architectural resolution. This stage involves refining spatial layouts, formal relationships, material selections, and structural systems to create a comprehensive and buildable design proposal. During the Design Development phase, students begin making critical decisions that will shape the final architectural form. The work in DD is more precise and involves in-depth technical exploration. Key activities include:

•Refinement of Floor Plans, Sections, and Elevations: Establishing clear spatial relationships, circulation paths, and design intentions at a more precise scale.

•Material Selection and Detailing: Identifying and specifying materials, considering their performance, cultural significance, and environmental impact.

•Structural and Environmental Systems Integration: Incorporating structural logic, HVAC systems, daylighting strategies, and sustainable design principles.

•Façade Development: Exploring envelope design, shading devices, and openings to optimize comfort and energy efficiency.

•Interior Spatial Resolution: Defining interior experiences, including furniture layouts, lighting conditions, and acoustics.

•Technical Drawings: Transitioning from conceptual sketches to more refined CAD drawings, BIM models, and detailed renderings.

Throughout both stages, students receive focused feedback through frequent formal reviews and desk critiques, helping them refine their designs based on human experience and contextual appropriateness. In an academic studio, the SD and DD phases are essential in bridging conceptual thinking with practical architectural resolution. The transition from SD to DD mirrors real-world practice, teaching students to balance creativity with technical constraints. By the end of DD, students produce comprehensive design presentations, including drawings, models, renderings, and narratives, demonstrating how their projects respond to programmatic, structural, material, and environmental considerations. For the Maggie's Center in the Middle East, this iterative process ensures that the final designs not only embrace cultural sensitivity and healing environments but also integrate functional, technical, and spatial resolutions necessary for a meaningful architectural intervention.

After design Development, the following two questions were asked: How does the architectural response in these student projects compare to existing Maggie's Centers designed in Western contexts in terms of spatial organization, user experience, and cultural appropriateness? How do student-led design explorations in an academic architectural studio contribute to the reimagining of healthcare spaces for non-Western cultural contexts?

STUDENT OUTCOMES AND DIVERGENCES FROM WESTERN PRECEDENTS

The architectural response in Middle Eastern student projects designing Maggie's Centers differs significantly from existing Western-designed Maggie's Centers in terms of size, spatial organization, materiality, user experience, and cultural appropriateness. These differences stem from the unique societal values, traditions, and healing practices embedded within Middle Eastern culture, necessitating a departure from the Western-centric models of healing environments

Spatial Organization

In terms of Spatial Organization, Western Maggie's Centers emphasize open-plan layouts, fluid circulation, and communal gathering spaces, reflecting an individualized and informal approach to healing. (Figure 3) The spatial configuration often prioritizes transparency and visual connections between spaces, reinforcing the concept of openness and accessibility. The focus is on personal choice and flexibility, allowing patients to navigate the space freely, engage in group interactions, or retreat into quieter zones. While these design choices are appropriate for healthcare spaces, there were contrasts for the Middle Eastern counterparts.

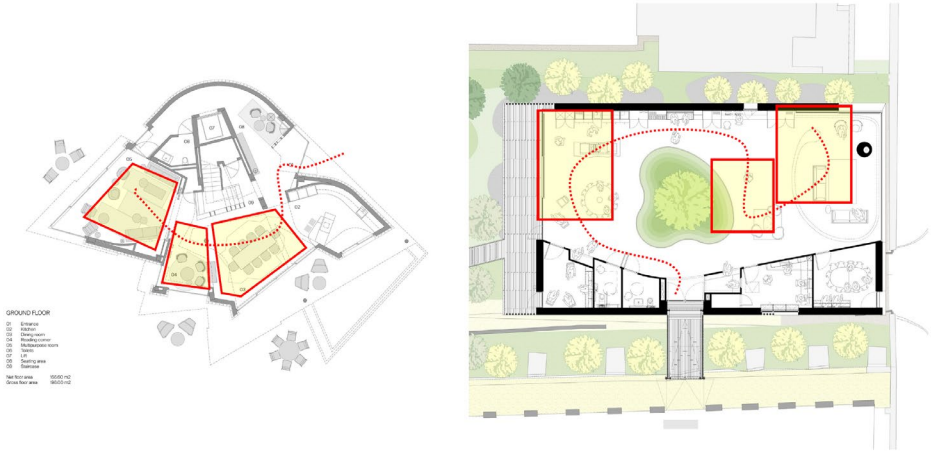

Figure 25. Maggie Centres designed by EMBT in Barcelona, Spain (left) and DRMM in Oldham, UK. In both examples, circulation and programmatic areas overlap, emphasizing and open and informal environment.

In contrast, the Middle Eastern student projects adapt spatial organization to align with local cultural expectations (Figure 4). They were also designed to be larger; this was due to the role of the family and the size of the family, which can be quite large in these contexts. Privacy, a core value in Islamic and Arab societies, plays a significant role in shaping space, leading to a more layered and hierarchical organization of interior and exterior spaces. These projects often integrate courtyards, semi-private zones, and gender-sensitive areas, ensuring that users can experience healing in a culturally comfortable setting. Transitional spaces, such as covered walkways, shaded outdoor areas,

and controlled entry sequences, are also prominent in Middle Eastern designs, offering a sense of gradual immersion into a healing environment rather than an immediate shift from external to internal space.

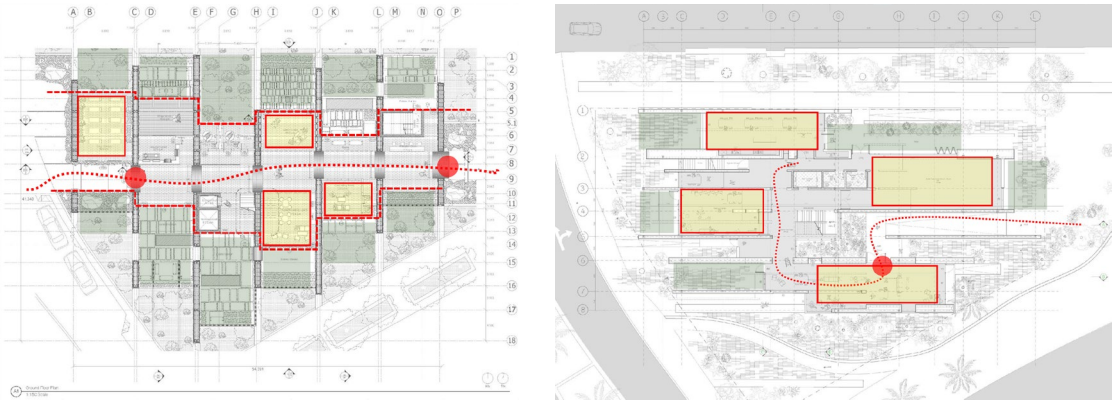

Figure 26. Student projects emphasized a distinction between circulation and programmatic spaces, emphasizing the need of privacy.

Additionally, communal healing spaces are emphasized in Middle Eastern designs, reflecting the collective nature of wellness in the region. Spaces designed for family support, group prayer, and social interaction are integrated alongside private retreat areas, balancing individual and collective healing needs. This differs from Western centers, where healing is often seen as a personal and introspective journey rather than a communal experience.

Materiality

Material selection in Western Maggie's Centers often reflects minimalist, contemporary aesthetics with an emphasis on glass and connection to landscape, along with steel or timber, creating a sense of transparency and lightness. While natural materials are used to create warmth, they are typically applied in a way that aligns with modern Western architectural styles and construction techniques.

Middle Eastern student projects take a different approach, grounding their material choices in regional building traditions, environmental considerations and those that can be found in local mosques. Locally sourced materials such as stone, clay, adobe, and natural wood are emphasized, along with the use of screening and layering with *mashrabiyas* ensuring both cultural relevance, privacy and climate responsiveness. These materials provide thermal comfort, durability, and a tactile connection to the local landscape, reinforcing a sense of place. The projects also heavily *mashrabiya* screens, water elements, and prioritize shading devices, —traditional components of Middle Eastern architecture that not only respond to desert climate conditions but also enhance the spiritual and sensory experience of the space. These elements filter light, regulate airflow, and create a calming interior, diverging from the more transparent and open Western Maggie's Centers.

Figure 27. Interior render showing the approach to materiality and daylight control. Proposal by Rouqaya Al Mufti and Hala Al Khrishi.

User Experience

User experience in Western Maggie's Centers is designed to encourage autonomy and free movement, where individuals can choose how they engage with the space. The design often fosters casual social interactions through open kitchens, communal dining areas, and shared lounges, reinforcing a domestic and informal atmosphere. The experience is largely self-directed, allowing users to engage with the space according to their personal needs.

In Middle Eastern student projects, the user experience is structured to align with cultural norms, emphasizing comfort, guided movement associated with larger families, and spiritual reflection. Privacy-sensitive pathways, gender-sensitive spaces, and separate gathering areas for men and women may be introduced where culturally appropriate. Additionally, prayer rooms, ablution spaces, and contemplative courtyards are incorporated, recognizing the spiritual dimension of healing that is deeply embedded in Islamic culture.

These projects also emphasize multi-generational engagement, ensuring that spaces accommodate not only patients but also their extended families, caregivers, and religious or community leaders, who often play an active role in emotional and spiritual support. This contrasts with Western Maggie's Centers, where larger focus can be placed on the individual patient experience.

Figure 28. Interior courtyard as a focal point. Proposal by Heidy Tareq and Joel Azar

Cultural Appropriateness

Western-designed Maggie's Centers follow universal design principles that prioritize openness, informality, and flexibility, reflecting Western values of choice, personal autonomy, informality, and secular healing environments. While these spaces are welcoming and inclusive, they are not inherently designed to accommodate the rituals, customs, and expectations of Middle Eastern users.

Middle Eastern student projects introduce design methodologies that are deeply rooted in local cultural and spiritual traditions. This includes:

•Designing with Islamic architectural principles, such as symmetry, repetition, and geometry, to create spaces that feel familiar and spiritually aligned.

•Incorporating water features, gardens, and shaded retreats, inspired by traditional Islamic healing spaces that emphasize tranquility and sensory engagement.

•Recognizing religious practices by providing prayer areas, gender-appropriate spaces, and culturally sensitive waiting and gathering zones.

Rather than imposing a Western model of healing, these projects reimagine Maggie's Centers as culturally adaptive healthcare spaces that align with Middle Eastern values of communal healing, spiritual connection, and privacy-conscious design.

FINAL CONCLUSION

The key differences between Middle Eastern student projects and Western-designed Maggie's Centers lie in their spatial organization, materiality, user experience, and cultural responsiveness. While Western Maggie's Centers prioritize openness, transparency, and self-directed healing, Middle Eastern student projects emphasize privacy, structured spatial flow, culturally relevant materials, and a balance between individual and collective healing experiences. By integrating Islamic architectural traditions, local building techniques, and cultural healing practices, these student projects present a new paradigm for designing cancer care centers in non-Western contexts, ensuring that architecture remains a meaningful and responsive component of the healing process.

OBJECTIVES OF THE STUDY

This study aims to explore culturally responsive architectural approaches for designing Maggie's Centers that reflect Middle Eastern values, emphasizing family-centered healing, privacy considerations, and spiritual spaces. By examining the influence of Islamic and Arab architectural traditions—such as courtyards, controlled visibility, and the use of light and materiality—the research seeks to understand how these elements can shape cancer care environments that are more attuned to regional cultural expectations. The study documents and analyzes three student projects developed within an academic architecture studio, each proposing alternative design methodologies for Maggie's Centers in a Middle Eastern setting. These projects highlight key spatial, structural, and material differences when compared to their Western counterparts. Additionally, this research contributes to the broader discourse on healthcare architecture by demonstrating how localized design strategies can influence patient well-being and emotional support in non-Western contexts. Furthermore, the study evaluates the effectiveness of an academic studio model in addressing real-world architectural challenges, particularly in adapting global healthcare typologies to local cultural and environmental conditions.

LIMITATIONS

The study is inherently limited by the scope of student output within a structured 14-week undergraduate academic timeframe. While the projects were designed comprehensively, they were not realized as built structures. The work was reviewed through an academic lens by a panel of architects and architecture professors, with students presenting their projects orally. Feedback on the study's objectives was provided through verbal critiques, following the standard discourse in architectural studio environments. These constraints shape the study's findings, focusing on conceptual design exploration rather than real-world implementation.

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