

Research Article

Reviving Traditional Streets through Urban Acupuncture: A Comparative Study of El-Nabi Daniel Street in Alexandria, Egypt, and Rainbow Street in Amman, Jordan

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Article Info	Abstract
Article History	Urban Acupuncture is an emerging urban strategy that employs small, targeted interventions to improve urban life. This paper examines two case studies: El-Nabi Daniel Street in Alexandria, Egypt, and Rainbow Street in Amman, Jordan. Both sites are culturally rich but economically challenged and have experienced improved spatial quality and community engagement through focused interventions. The main evaluation indicators include spatial, socio-economic, and governance aspects. The implemented actions involved redesigning pavements, installing street furniture, renovating façades, reducing traffic speed, and activating public spaces. The results indicate significant improvements in livability, social interaction, and environmental performance, despite minimal physical change. The approach has proven to be flexible and adaptable to specific urban contexts. Urban Acupuncture is therefore considered an economically affordable and environmentally friendly method for revitalising historical areas with limited financial support.
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1. Introduction

Urban Acupuncture (UA) is inspired by traditional Chinese medicine. It views the city as a living body that can be improved through small, focused actions. UA originated with Solà-Morales' work (a Spanish architect and urbanist who developed the concept of urban acupuncture, 1939-2012) and was later developed by Lerner (a Brazilian architect and former mayor of Curitiba who popularised the approach, 1937-2021). It responds to the limits of large-scale planning, which often disrupts social ties and traditional fabric [1]. Unlike modernisation driven by demolition, UA promotes timely, low-cost, and context-sensitive actions that start positive change [2]. Its use in South America, Southern Europe, and parts of Asia shows its flexibility, community-oriented nature, and experimental adaptability. Casagrande believes cities operate through layers of energy. With careful actions, urban areas can be revitalised, creating positive effects in both space and community [3].

Despite their global importance, traditional Arab streets remain understudied, especially regarding

cultural heritage loss, economic issues, and complex social conditions. No framework links performance indicators, such as walkability and identity retention, to the outcomes of micro-interventions across contexts. Also, little is known about why UA works differently in diverse Arab settings. This study examines how and why small-scale interventions lead to different improvements in traditional streets. It explores how UA can boost livability, restore continuity, and strengthen cultural identity in these areas. The research suggests that micro, context-sensitive interventions can enhance livability and revive historic streets in the Arab world. It focuses on a comparative study of Rainbow Street in Amman and El-Nabi Daniel Street in Alexandria, both facing socio-spatial decline and cultural shifts. The study will assess UA's effectiveness, identify common and unique context variables, and create a framework to analyse the impact of small-scale urban actions on traditional Arab streets. How do UA interventions influence walkability, spatial coherence, public space activation, and identity preservation in the two streets? Why do some interventions work in one place but not in another? What lessons can be learned, and what factors are specific to each context?

2. Literature Review

Urban acupuncture is a strategic tool that uses small, focused actions. Manuel de Solà-Morales and Jaime Lerner developed this idea. It provides a quick, flexible way to solve urban issues and serves as an alternative to large, top-down city planning. For example, Lerner's work in Curitiba proved that small, affordable changes can rapidly improve public life [4]. In the Arab context, Al-Hinkawi and Al-Saadi studied urban acupuncture in Baghdad's old neighbourhood, Al-Rusafa. This area was one of the city's first neighbourhoods. The research indicated that small, targeted measures could improve social, economic, and environmental conditions without incurring significant financial costs. Their hands-on approach combined urban analysis with stakeholder participation. This highlighted how targeted interventions could increase access, mobility, urban amenities, and public engagement while respecting the cultural values of traditional areas [1].

Recent research on the COVID-19 pandemic highlighted how urban acupuncture can adapt to unique urban challenges. Elshinawy and Afifi showed that inexpensive public interventions in New Cairo brought previously unused spaces to life. These measures improved safe mobility and encouraged healthy social interaction during quarantine. Such measures demonstrate that urban acupuncture is a quick and versatile approach to addressing complex urban problems [5]. Salman and Hussein recommend urban acupuncture

as a technique for city renewal. The method is specifically focused on certain points in the city. This approach focuses on specific points in the city. They believe small-scale interventions can lead to significant changes. These efforts should be part of a community-based planning process [6].

Hoogduyn's comparative study of case studies, along with the synthesis of Solà-Morales, Lerner, and Casagrande, found shared principles. These include the importance of speed of intervention and placemaking. Despite their focus on different aspects, such as mobility sustainability or urban form, these concepts remain very much alive. Besides, his inquiry underscored minor interventions as a common ground in both upper- and lower-level government strategies [7]. These studies show that urban acupuncture is effective, low-cost, and adaptable. However, they point out the absence of comparative analyses that take into account the social, spatial, economic, and governance features of traditional Arab alleys. This research aims to bridge that gap.

Table 1. Definitions of urban acupuncture principles [9]

No	Principles	Definition
1	Define Sick Point	Identifying sensitive urban areas where intervention is needed, like acupuncture's approach to energy blockages
2	Screen Play/Scenario	Creating an alluring story to captivate the community and the authorities, thus guaranteeing their engagement and participation
3	Immediate Action	Carrying out quick and easy actions to stimulate change, evading long-term traditional planning
4	Citizen Involvement	Allowing the citizens to take an active role in the planning process, thus creating a variety of answers and community ownership
5	Educating Citizens	Making the public conscious of the interventions' environmental and social benefits to increase their effectiveness
6	Holistic Approach	The integration of economic, environmental, and social aspects into interventions necessitates cooperation among various disciplines.
7	Small-Scale Intervention	Focusing on small, localised actions with wide-reaching impact, Lerner viewed urban acupuncture as a swift, resource-efficient alternative to slow, complex planning processes.
8	Create Sense of Place	Transforming areas by the incorporation of local knowledge and the promotion of community identity

2.1. Urban Acupuncture Principles

Urban acupuncture, as a practice, helps locate and mark areas that need revitalisation, better access, and improve the quality of urban life [8]. Based on these core principles, urban acupuncture was divided into several interconnected principles, each applied in successive phases. The first step involves determining the flow of the built environment (see Figure 1), followed by identifying areas with energy leakage or blockage. The last part is to design a specific scenario for each point that has been affected. The

simplicity of the intervention being kept ensures its effectiveness and quick results. This method, like an acupuncture needle, attracts the community's involvement [8].

2.2. Urban Acupuncture Strategies

Urban acupuncture implementation methodology is divided into three subsequent stages: inquiry, observation, and planning for action (see Table 2).

Table 2. Definitions of urban acupuncture strategies [10]

No	Strategies	Definition
1	Use Existing Resources	Utilising local resources through community engagement to rejuvenate urban spaces with minimal investment, emphasising urban vibrancy, social bonds, and cultural identity.
2	Redefining Aesthetic Elements	Public space aesthetics will be maintained in accordance with the individuality of each neighbourhood, community tastes, and the city's overall character.
3	Promote Inclusivity and Diversity	Promoting diversity and strengthening community integration to make the city more vibrant and unified.
4	Redefining Open Space	Redesigning spaces to prioritise pedestrians and cyclists, enriching everyday experiences.
5	Value Green Spaces	Enhancing the connection between people and nature by encouraging the use of native vegetation.
6	Design Connectivity	Interventions should link open spaces and gradually expand from focal points.
7	Flexible & Open Design	Evolving designs over time in response to community engagement and shifting needs.
8	Shared Administration & Accountability	Enabling locals to oversee public spaces and ensure lasting sustainability.

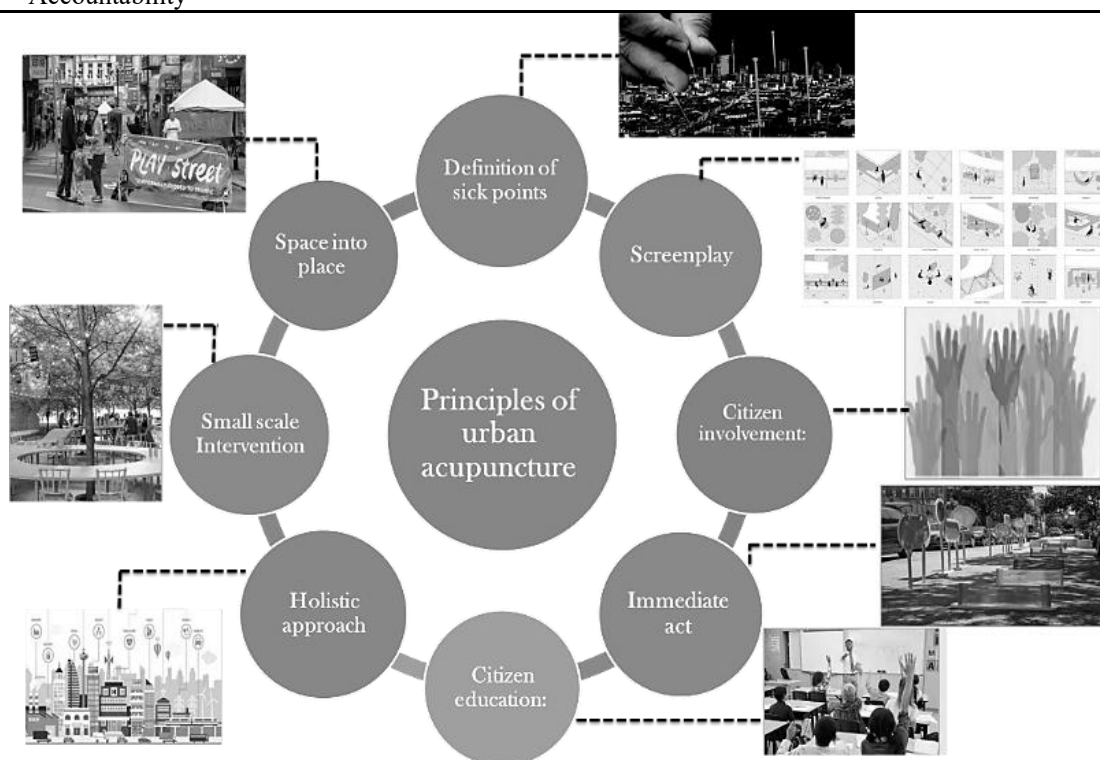


Figure 1. Principles of Urban Acupuncture, adapted from Nassar [8] by the researcher

2.3. Levels of Urban Acupuncture in the City

The city is more than just a collection of buildings; it is a space for social coexistence where daily life and services overlap. Yet, this density can be a double-edged sword, frequently leading to urban pressures such as strained infrastructure, traffic safety concerns, and systemic gridlock. These problems necessitate specific urban interventions. Previous studies and experts identify four principal elements in the urban core: transport, basic services, low-income housing, and civic green space. Urban Acupuncture is designed around these four elements, viewing them as high-priority zones for urban rejuvenation. This study will concentrate on three levels: transportation, infrastructure, and urban parks (see Figure 2).



Figure 2. The Cheongyecheon River in Seoul before and after intervention [11]

3. Methodology

The assessment in this study uses a qualitative and interpretive research design. This approach is suitable for exploring spatial performance, experiences, and context in historic urban streets. To ground this theoretical framework in reality, we conducted field visits to Nabi Daniel Street in Alexandria (November 2024) and Rainbow Street in Amman (September 2025). Our primary objective was to observe urban acupuncture interventions in situ and to evaluate their direct spatial and social impacts.

To ensure a comprehensive and systematic analysis, we assessed these interventions through three core indicators: Spatial and Physical, Socio-Economic, and Governance and Institutional. We documented the physical conditions and pedestrian dynamics through a series of original photographs, which served as the primary visual evidence for our evaluation. These observations were then translated into a structured format using a qualitative scoring system ranging from 1 to 5 (Table 3). To maintain objectivity and eliminate individual bias, both authors independently evaluated the sites against the three indicators. We then cross-referenced our findings and reached a consensus on the final scores, which were further verified against official archival records to ensure the reliability and consistency of the research data.

Table 3. Qualitative Scoring Rubric for Urban Acupuncture Interventions

Score	Level	Description / Criteria
5	Excellent	Full integration, high pedestrian flow, sustainable economic activity, and strong institutional support.
4	Good	Visible improvement with minor gaps in maintenance or social integration.
3	Moderate	Partial success; the intervention is functional but lacks consistency or long-term sustainability.
2	Fair	Minimal impact: the intervention exists but fails to attract users or significantly improve the urban fabric.
1	Poor	No noticeable improvement; physical decline or failure of the intervention to meet its objectives.

The indicators of "improvement" and "decline" in the evaluation tables are based on systematic qualitative judgments from repeated on-site observations, not on numerical data. Improvement was noted through better walkability, enhanced continuity of public spaces, increased diversity and duration of use, upgraded façades, higher perceived safety, and sustained urban vitality. In contrast, decline was linked to ongoing congestion, physical decay, poor maintenance, dominance of informal activities, and reduced spatial clarity.

Regarding methodology, the two streets were selected as case studies primarily for their profound cultural and historical significance. They provided a unique opportunity to examine documented micro-scale interventions and their impact on low-cost urban revitalisation within diverse socio-economic and governance frameworks. Other sites were ultimately excluded from the study, mainly because of insufficient documentation or unreliable spatial data that would have compromised the depth of the analysis.

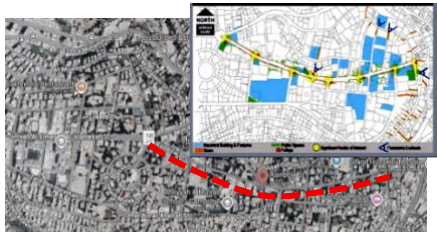
Ethical integrity was a priority throughout this research. Since the study relied on a combination of systematic field observations and authorised archives/publicly accessible data, it did not involve human participants or the collection of sensitive personal information. The analytical approach centred on a thematic content analysis of municipal reports, policy documents, and archival records. By employing this method, it was possible to pinpoint recurring patterns regarding urban performance and community sentiment, while also evaluating the practical challenges and successes of past interventions.

3.1. Case-selection criteria

Specific criteria guided the selection of case studies. First, both streets are historic urban centres with high cultural and social value. Second, extensive documentation is available, including planning reports

and field observations. Third, the two cases offer a diverse socio-economic and spatial context. Finally, they provide comparable examples for evaluating urban acupuncture strategies under different local conditions.

Table 4. Description of the selected study cases

Sample Code	Case Information		
	Project Name	Location	
A	Project Name	El-Nabi Daniel	 Map of the study area and its surrounding. Source: Google maps adapted by the authors
	Location	Alexandria, Egypt	
	Project Scale	Street and public space (buildings, cultural activities)	
	Year	2024	
	Implementing Authority	Alexandria Governorate, in coordination with the local community and the Chamber of Commerce (with limited and inconsistent implementation).	
	Project Description		As Egypt's second-largest Mediterranean city, Alexandria is home to El-Nabi Daniel Street. This historic street, once called "Books' Street," links Misr Station to the sea [12]. Despite its cultural and commercial importance, the street struggles with congestion, poor infrastructure, and unregulated activities. To address these issues, the National Organisation for Urban Harmony started a heritage-led revitalisation. They used targeted urban acupuncture methods. These include reorganising traffic to improve walkability and adding smart lighting for safety. This approach balances conservation with modern urban needs [13].
	Quiddity of Intervention	Addressing "sick points" caused by urban and commercial deterioration, improving visual quality, and facilitating movement in a congested traditional street.	
	Reason for Selection	Represents a deteriorated, overcrowded traditional street, an ideal context to test the capacity of small-scale interventions under complex urban conditions.	
	Type of Intervention	Sectoral, Temporary/Permanent Intervention	
	Urban Acupuncture Points	- Façade repainting - Opening congested paths - Vendor reorganisation - Improving shop signage - Removing clutter - Public-space cleaning	
			Before  After  Small-deteriorated urban points that became targets for (AU) interventions, Source: Photographed by the authors.
B	Project Name	Rainbow	 Map of Rainbow Street, source: Google
	Location	Amman, Jordan	
	Project Scale	Street and public space (buildings, open spaces, cultural activities)	
	Year	2007	
	Implementing Authority	Greater Amman Municipality, in collaboration with residents, business owners, local cultural initiatives and TURATH.	
	Project Description		One of Amman's oldest roads, located in Jabal Amman near the First Circle, historically served as a major commercial axis dating back to the Roman and Greek periods [14]. The project upgraded eight urban nodes with tailored micro-interventions, enhancing views, public spaces, and cultural activity along the 1.5 km promenade. These improvements revitalised the street, attracted businesses, and repositioned it as a vibrant cultural and commercial hub [15]. Although full pedestrianisation was debated, cobblestone paving was introduced to slow traffic and improve walkability, consistent with a light-touch intervention strategy.

Quiddity of Intervention	Creating a pedestrian-friendly environment and enhancing cultural and touristic identity through flexible, low-cost, small-scale interventions.	
Reason for Selection	A successful and well-documented Arab model of urban acupuncture that shows how minor interventions can generate significant social and touristic impact.	
Type of Intervention	Comprehensive – Permanent Intervention	
Urban Acupuncture Points	- Sidewalk and pedestrian-path enhancement	
	- Traffic calming	
	- Façade and visual improvements	
	- Public art installation	
	- Activation of cafés and public spaces	Adding Green node on Sarveese Garden

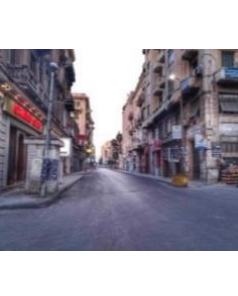
Source: Authors' elaboration.

Table 5. Improvement and decline indicators based on the theoretical foundations of urban acupuncture

Main Ind.*	Description	Sub. Indicator	Improvement Values	Decline Values
Spatial and Physical Indicator	Assesses how small-scale urban acupuncture interventions influence the physical structure and spatial experience of traditional streets, with a focus on pedestrian movement, spatial order, environmental quality, and the activation of street-based public space.	Walkability & Pedestrian Comfort	Increased pedestrian flow resulting from continuous sidewalks; reduced vehicle–pedestrian conflict through spatial reconfiguration	Congestion, fragmented pathways; sidewalk encroachment affecting pedestrian movement
		Spatial Coherence & Urban Order	Improved façade alignment; reduced visual clutter; clearer movement patterns and legibility of space	Increased disorder; weak spatial organisation; loss of visual and functional coherence
		Public Space Activation	Greener streetscape; improved cleanliness; reduced noise and visual pollution as a result of physical interventions	Waste accumulation, lack of greenery, and visual and environmental degradation
		Environmental Quality	Increased place-based commercial activity linked to improved public space quality; activation of ground-floor uses and street-oriented businesses	Reduced activity of street-facing uses; shop closures; dominance of informal or incompatible uses negatively affecting spatial quality
Socio-Economic Indicator	Examines how physical and spatial interventions within traditional streets influence social interaction, cultural continuity, and local economic activity as spatially observable outcomes of urban design improvements.	Economic Vitality	Increased place-based commercial activity is directly related to improved public space quality and activation of ground-floor uses	Reduced activity of street-oriented uses; vacancy of ground-floor units; dominance of informal or incompatible uses affecting spatial quality
		Cultural & Heritage Identity	Reinforced heritage expression through façade treatment, material consistency, and preservation of historic urban character	Visual degradation of heritage elements; inappropriate alterations; weakening of historic spatial identity
		Social Interaction & Safety	Increased presence of users in public space resulting from improved visibility, lighting, and spatial configuration; enhanced natural surveillance	Limited use of public space due to poor lighting, visibility, or spatial enclosure; reduced natural surveillance
Governance and Institutional Indicator	Evaluates the role of municipal coordination, regulatory frameworks, and community involvement in sustaining, managing, and maintaining physical urban acupuncture interventions within traditional streets.	Regulation & Maintenance	Effective regulation and routine maintenance of public space elements, ensuring continuity of physical improvements	Weak regulation; return of informal vendors; deterioration of spatial interventions
		Community–Government Collaboration	Community involvement in the design, use, and stewardship of public spaces	Resistance, weak communication, stakeholder conflict, and loss of trust are affecting spatial outcomes
		Implementation Consistency	Consistent execution and monitoring of spatial interventions, ensuring long-term physical impact	Interrupted implementation; conflicting authorities; lack of follow-up leading to post-project spatial decline

*Note: Ind. refers to Indicator

Table 6. Types of urban acupuncture interventions observed before and after redevelopment in Rainbow Street and El-Nabi Daniel Street

Type of intervention	The Rainbow Street		El-Nabi Daniel Street	
	Before	After	Before	After
Add seats				
Painting the façades				
Adding sales kiosks				
Unification of advertising banners and Lighting systems				
Floor finishes				
Signboards				

Source: Adapted by the authors from [10].

Table 7. Comparison of El-Nabi Daniel Street and Rainbow Street according to the urban acupuncture principle

Urban Acupuncture		Sample (A)		Sample (B)	
Principle	Strategy (S.)	Principle	S.	Principle	S.
Definition of sick points	Use Existing Resources	Weak energy flow due to the conflict between vehicle and pedestrian traffic	✓	A distinctive urban hub in an ideal location for commerce and cultural arts suffers from neglect and underutilisation.	✓
Screenplay	Redefining Aesthetic Elements	Transforming an old street into a prominent cultural and traditional centre	✓	Creating a balance between preserving heritage identity and the functional renewal of the street	✓
Immediate Action	Promote Inclusivity and Diversity	The implementation has taken several months and is ongoing.	✓	The project was implemented over eight months in three phases.	✓
Citizen participation	Redefining Open Space	Separate working groups consisting of citizens and experts identified the critical points.	△	Participatory design to enhance existing dynamics.	✓
Educating Citizens	Value Green Spaces	Educational programs on spatial organisation to revive cultural character	✗	A design competition was held to select ideas for the alley redesign.	✓
Holistic Approach	Design Connectivity	Utilisation of recycled materials and expert consultation to ensure sustainability.	△	Organising workshops and competitions to encourage citizens to share their ideas.	✓
Small-Scale Intervention	Flexible & Open Design	A minor intervention with a limited budget.	△	Preserving diversity and enhancing a sense of place with minimal intervention.	✓
Create Sense of Place	Shared Administration & Accountability	Originally a neglected area, it transformed into a public space through citizen participation.	△	Increasing the use of culture and art	△

Note: ✓ = Clearly implemented, △ = Partially or limited implementation, ✗ = Not implemented

Source: Authors' elaboration.

Table 8. Urban Acupuncture Applications: Comparative Overview of Sample (A) and Sample (B) based on key implementation dimensions

Dimension	Sample (A)	Sample (B)
Aim of Development	Focuses on the restoration of traditional identity and on enhancing the public realm.	Prioritises urban tourism and social interaction.
Responsibility	Led by Alexandria Governorate and heritage agencies, with minimal community input.	Managed by Greater Amman Municipality with active civil society engagement.
Target	Reinforce commercial-cultural vitality and urban continuity	Strengthen the local economy and encourage community engagement
Strategy	Small-scale interventions (pavement upgrade, façade restoration, lighting)	Integrated redesign including public art, traffic calming, and cultural events
Cost	Relatively low; constrained by public funding	Moderate to high; supported by multi-source funding
Funding	Partial public funding and symbolic local contributions	Public-private partnership and institutional support
Application Flexibility	Limited due to bureaucratic and infrastructural constraints	High flexibility supported by institutional frameworks and public support
Level of Improvement	Moderate; enhanced aesthetics with limited socio-economic impact	High; notable gains in economic activity, walkability, and place identity
Benefits	Partial heritage restoration, improved walkability, and minor commercial reactivation	Cultural vibrancy, increased tourism, and enhanced street life
Duration	Phased and fragmented (2018–2022)	Systematic and sustained (initiated in 2008 and ongoing)

Source: Authors' elaboration.

Table 9. The key concepts, visions, and indicators related to urban acupuncture

Sample Code	Concepts and Visions	Urban Acupuncture Indicators
A	Revitalising and renewing traditional and cultural areas.	Breathing new life into neglected areas, revitalising them, and integrating them into daily life.
	Enhancing the role of cultural institutions in driving local economic growth	The Role of Cultural Institutions and Events in Achieving Sustainable Development
	Coordinating with relevant entities to provide a unique cultural experience.	Enhancing economic sustainability by providing job opportunities for individuals
	Reducing uncontrolled urban expansion.	Development at the level of educational, social, and urban aspects.
	Diversification of business activities and an increase in tourism	Attracting new investments to the region
B	Utilising simple interventions to enhance the environment and community.	Leveraging simple and targeted interventions at specific points for immediate improvement
	Improving the urban environment to support walking and sustainable transportation	Increasing the use of culture and art

Source: Authors' elaboration.

4. Results and Discussion

The qualitative evaluation presented in this study is based on a structured scoring rubric developed by the authors to assess the impact of urban acupuncture interventions. Following our field visits and photographic documentation, we evaluated each site against three primary indicators using a scale of 1 to 5 (1 = poor performance, 5 = excellence). To ensure the reliability of these results, both authors independently assigned scores, which were then reconciled through a consensus process to reach the final values.

Our analysis shows clear differences between El-Nabi Daniel Street and Rainbow Street in spatial, socio-economic, and governance aspects. Rainbow Street consistently scores higher across these indicators, especially in walkability, public space use, economic activity, and governance. In contrast, El-Nabi Daniel Street demonstrates only partial improvements, with several indicators showing decline or limited sustainability over time.

The analysis of El-Nabi Daniel Street (Sample A) and Rainbow Street (Sample B) reveals that urban acupuncture's success depends on how well its core principles fit the local context. As summarised in Table 10, the assessment highlights clear differences in the scoring of the two streets across all dimensions, as defined by the qualitative rubric in the methodology.

Sample B shows better alignment with walkability and pedestrian comfort. In Amman, the interventions in 'sick points' like underused stairways were rated as 'Excellent' (5), as they effectively activated seating areas and enhanced flow. In contrast, Sample A followed a more scattered approach; while

some visual issues were addressed, the overall spatial impact remained 'Moderate' (3) due to persistent sidewalk encroachments and congestion that hindered movement.

Regarding environmental and visual quality, Sample B's traffic calming and pavement upgrades had positive spillover effects, resulting in high scores for streetscape cleanliness. In Sample A, while façade treatments improved visuals, these efforts remained isolated. Due to the high commercial density and irregular layout, the environmental gains were limited to 'Partial success' (3).

From a socio-economic perspective, Sample B achieved superior scores (4-5) in local economic vitality and perceived safety, creating a welcoming environment that encouraged longer visits. In contrast, Sample A showed only 'Fair' to 'Moderate' (2-3) levels of socio-economic improvement. Although beautification enhanced street appeal, informal vending and economic instability hindered sustained activation, resulting in lower social interaction scores.

The most pronounced differences appear in governance. Sample B excelled (5) in regulation, maintenance, and community-municipality collaboration. Coordinated efforts ensured ongoing monitoring and longevity. On the other hand, Sample A struggled (score 2) with fragmented responsibilities and limited community involvement, resulting in a noticeable decline after interventions and lower governance scores.

Table 10. Results summary table

Indicator	Key Indicator	Sample (A)	Sample (B)
Spatial Indicator	Walkability & Pedestrian Comfort	Limited improvement due to congestion, sidewalk encroachments, and irregular street width	Clear improvement through traffic calming, continuous sidewalks, and enhanced pedestrian priority
	Public Space Activation	Localised activation with weak continuity along the street	Active nodes, seating areas, and sustained social use
	Spatial Coherence & Urban Order	Fragmented spatial order and persistent visual clutter	Improved visual continuity and organised street character
Socio-Economic Indicator	Economic Vitality	Short-term commercial activity with limited long-term stability	Increased visitor numbers and stable local businesses
	Cultural & Heritage Identity	Heritage presence remains but lacks consistent activation	Reinforced identity as a leisure and cultural street
	Social Interaction & Safety	Weaker social interaction and fluctuating sense of safety	High levels of social presence and perceived safety
Governance & Institutional Indicator	Regulation & Maintenance	Weak enforcement and a gradual decline in improvements	Strong municipal coordination and continuous maintenance
	Community–Government Collaboration	Limited community involvement and fragmented institutional roles	Active stakeholder participation and shared responsibility
	Implementation Consistency	Discontinuous implementation and short-lived outcomes	Sustained interventions with long-term impact

Source: Authors' elaboration

The findings confirm that urban acupuncture relies on the combined strength of spatial, socio-economic, and governance indicators. In Sample B, where these elements worked together, the project achieved lasting 'Excellent' spatial coherence. In Sample A, where these elements were only partly present, improvements remained mostly visual and temporary, reflecting 'Moderate' to 'Poor' long-term sustainability. This emphasises that urban acupuncture is context-dependent and highlights the need for strong governance and a well-structured street layout to turn micro-interventions into meaningful urban change. Table 10. summarises the qualitative results of the comparative analysis, illustrating the differentiated impacts of urban acupuncture interventions across the two case studies.

5. Conclusion and Recommendations

This study shows that urban acupuncture is a strong choice for renewing traditional areas with limited funds. The findings highlight that small, focused changes can greatly improve walkability, pedestrian comfort, and public space use. This is especially true when changes are well-planned and supported by local institutions, as seen on Rainbow Street.

The analysis demonstrates a strong link between localised urban actions and improved livability. On Rainbow Street, clear intervention points and active community engagement improved pedestrian flow. These efforts, supported by effective municipal coordination, also boosted public use and economic vitality. In contrast, while El-Nabi Daniel Street showed visible environmental upgrades, its long-term impact was lower. Spatial congestion and fragmented governance hindered the realisation of full socio-economic benefits. The results emphasise the need for local authorities and communities to collaborate. This teamwork helps sustain urban acupuncture's positive effects. Key actions included redefining open spaces, promoting active mobility, and encouraging community engagement. These efforts strengthened urban identity and revitalised underused spaces in the more successful case.

Accordingly, this study recommends using urban acupuncture as a tool in traditional city planning. This is especially useful in historic areas where large projects are often impractical. Planning agencies should adopt phased strategies to ensure long-term sustainability. Furthermore, future research should refine this framework by combining qualitative and quantitative measures. Such efforts will help create resilient and sustainable urban environments.

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