Macrothink Institute™

Environmental Management and Sustainable Development
ISSN 2164-7682
2026, Vol. 15, No. 1

The Relationship between Urban Design and Social Behavior in Egypt: A Comparative Study of Rural and Urban Environments

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Received: December 25, 2025 Accepted: February 15, 2026 Published: March 3, 2026

doi:10.5296/emsd.v15i1.23606 URL: https://doi.org/10.5296/emsd.v15i1.23606

Abstract

This study aims to examine the relationship between urban design and patterns of social behavior in rural and urban communities, with a focus on how built environments influence social interaction and the sense of community belonging. The study employs a comparative approach that combines a theoretical analysis of urban and behavioral concepts with a field study involving data collection from population samples in an urban area and a rural village. The study highlights the differences between the two environments regarding the impact of urban design on social behavior. In urban settings, urban design appears to enhance interaction in public spaces such as parks, squares, and pathways, whereas in rural settings, cultural and local social factors are closely linked to the importance of traditional shared spaces in strengthening social ties. The research also emphasizes the role of urban design in shaping daily behaviors and social interactions and provides recommendations to promote integration between urban design and social needs in both environments. This study contributes to understanding how urban design can be guided to enhance social cohesion while considering the differences between rural and urban contexts, and it opens avenues for future research on the relationship between the built environment and social behavior in diverse settings

Keywords: Urban design, Social behavior, Community, Rural-urban comparison, Public spaces, Social cohesion

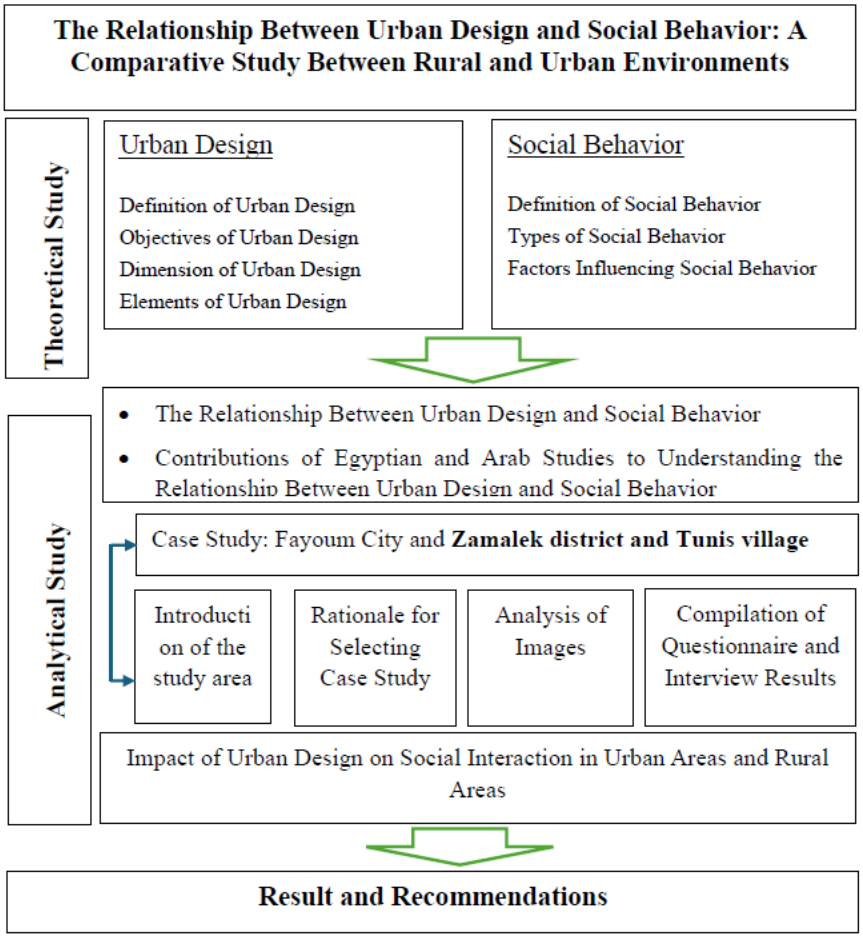
1. Research Problem

The research problem lies in the inadequate employment of urban design elements within

environments in a way that effectively enhances social behavior, along with the failure to link urban design dimensions to patterns of community behavior. This shortcoming results in decreased levels of social participation and a decline in the social quality of life. Therefore, there is a need for an analytical study to understand how urban design characteristics in both rural and urban contexts influence social behavior.

2. Research Methodology

This study employs a combined theoretical and analytical comparative approach. The theoretical method establishes key concepts—such as urban design and social behavior—through literature review. The analytical comparative method examines two distinct contexts, **Zamalek district and Tunis village**, using field observations, aerial image analysis, and questionnaires. This dual approach enables a contextual comparison of how urban design elements influence social interaction in urban versus rural environments.



Research Methodology (Author)

3. Urban Design

Urban design is a multidisciplinary field concerned with the planning, shaping, and management of the built environment. It plays a vital role in organizing the spatial

relationships between buildings, streets, public spaces, and landscapes to create functional, aesthetically pleasing, and socially responsive urban settings. As cities face rapid transformations due to environmental, economic, and social pressures, urban design emerges as a strategic tool to enhance quality of life, reinforce cultural identity, and promote sustainable development. By integrating human needs, environmental context, and cultural values, urban design contributes to the creation of inclusive, resilient, and meaningful places that foster interaction, well-being, and a sense of belonging.

3.1 Urban Design Definition

Urban design is a broad field within the sciences of urbanism concerned with shaping and managing the built environment. It emphasizes the connection between the urban design process and its product with society, its tangible and intangible characteristics, and its cultural and civilizational heritage. Human traits and environmental features are key factors in the distinctiveness of built outcomes. Urban design reflects the sense of place identity through the process of "place-making," which is its core purpose. It aims to achieve three main goals: Suitability, Firmness, and Beauty, at the right time and cost. These functions are linked to human nature, activities, experiences, and environmental perception, especially regarding suitability and beauty. Design creates spaces for human activities that support and express values and beliefs (Sobhy, Kamar, & Noor, 2022).

3.2 Urban Design Dimensions

Urban design dimensions are classified into six categories (Carmona et al., 2003):

3.2.1 Formal Dimension

Studies the shape and formation of human settlements, helping designers understand local development patterns and change processes. It includes movement networks, block development, building massing, and the relationship between built forms and surrounding spaces — referred to as the urban fabric.

3.2.2 Functional Dimension

Focuses on creating quality and successful places that support intended activities. It requires understanding how places work and how people use them socially, based on real-life spatial experiences.

3.2.3 Sensory Dimension

Involves perceiving physical phenomena through human senses. Since the 1960s, environmental perception research has explored how people experience urban environments through symbolism, meaning, and the sense of place.

3.2.4 Social Dimension

Emphasizes the importance of social content in urban design. Designers influence and shape human activities and social life through the built environment. It's difficult to imagine space without social meaning or society without spatial context.

3.2.5 Visual Dimension

According to Cullen, the visual treatment of city elements aims to evoke emotional responses. Human minds react to contrast and diversity, making cities come alive through "the drama of juxtaposition" and the art of assembling and integrating environmental elements.

3.2.6 Temporal Dimension

Inspired by Einstein's theory of relativity, which introduced the concept of space-time. Every entity has length, width, height, and duration. The universe comprises four dimensions — space and time — encompassing events, objects, changes, and movements.

3.3 Urban Design Objectives

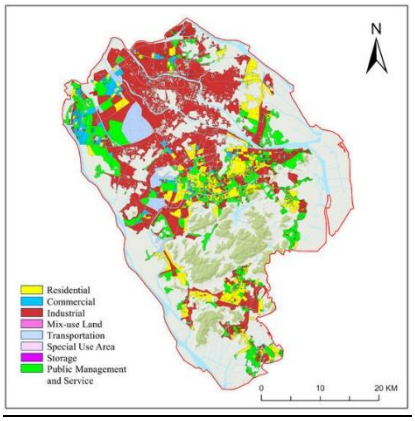
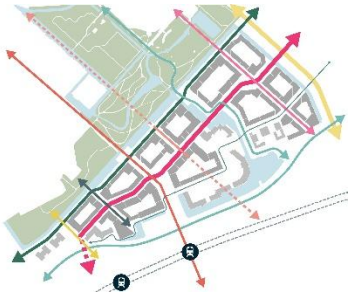
The main objectives of urban design in this study focus on improving the quality and functionality of public spaces. These objectives include analyzing how individuals' behaviors and activities change within these spaces over time, which helps in understanding user needs. In addition, the study explores how public spaces are formed, taking into account historical and cultural influences. Together, these objectives support the creation of inclusive, dynamic, and sustainable urban environments. The main objectives of urban design in this study include:

- Studying changes in individual behaviors and activities within public spaces
- Assessing the impact of urban design elements on behavioral patterns
- Linking urban design dimensions and their corresponding design elements to behavioral
- Reflecting behavioral patterns on spatial configurations in both urban and rural contexts Patterns.

3.4 Elements of Urban Design

Urban design elements form the foundation of a high-quality urban environment. They serve as tools that connect people to places by organizing spaces, guiding movement, and enhancing both visual and social identity. These elements include a set of interrelated components such as public spaces, circulation patterns, human scale, and architectural façades. Each plays a vital role in creating a balanced environment that supports social interaction, fosters a sense of belonging, and meets the daily needs of users. Understanding and analyzing these elements is a key step toward achieving sustainable and human-centered urban design (Jacobs, 1961).

Table 1. Urban Design Elements (adapted by the Author)

Elements of Urban Design	Description
Land Use  Figure 1. Illustrative Image of Land Use	• Distribution of activities (residential, commercial, service, industrial). • Usage densities and open spaces. • Relationship between activities and their impact on behavior and function.
Mobility & Circulation  Figure 2. Illustrative Image of Mobility& Circulation	• Roads and street classifications. • Pedestrian and bicycle pathways. • Public transportation and stop stations. • Ease of movement and accessibility.
Public Spaces  Figure 3. Illustrative Image of Public Spaces	• Squares, parks, and green areas. • Gathering spaces and voids between buildings. • Design quality, comfort, and safety factors.
Urban Fabric	• Building distribution, heights, and density. • Grid or organic planning patterns. • Visual relationships between different elements

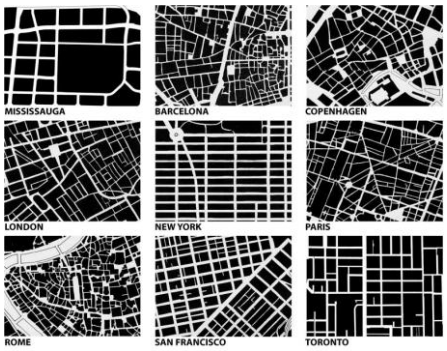


Figure 4. Illustrative Image of Urban Fabric

Building Form & Street Interface

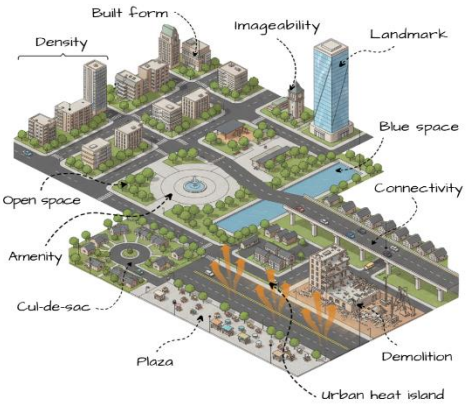


Figure 5. Illustrative Image of Building Form & Street Interface

- Building facades and construction materials.
- Setbacks and spacing between structures.
- Place character and urban identity.

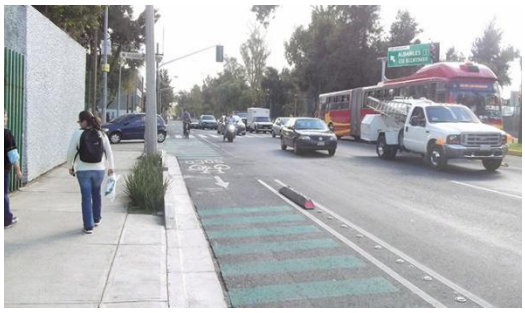
Landscape Architecture

Figure 6. Illustrative Image of Landscape Architecture

- Vegetation and trees.
- Sidewalk and pathway design.
- Seating areas and aesthetic elements.

Urban Infrastructure

- Water and sewage networks.
- Electricity and lighting.
- Communication networks.
- Waste management.

Environmental & Climatic Design  Figure7: Illustrative Image of Environmental & Climatic Design	• Climate-responsive design. • Natural ventilation and shading. • Control of heat and noise.
Safety & Security  Figure 8: Illustrative Image of Safety & Security	• Appropriate lighting. • Clear visibility with no dark spots. • Design that deters negative behaviors and enhances natural surveillance (CPTED).
Cultural & Visual Identity  Figure 9: Illustrative Image of Cultural & Visual Identity	• Heritage preservation. • Integration of local character in design. • Strengthening sense of place and belonging.
Sustainability	• Use of environmentally friendly materials. • Renewable energy. • Water management. • Promotion of sustainable transportation.

4. Social Behavior

4.1 Social Behavior

Social behavior refers to the set of actions and interactions that occur between individuals within a society, shaped by cultural norms, values, and social expectations. It includes behaviors such as cooperation, communication, competition, and helping others (Myers & Twenge, 2019)

4.2 Types of Social Behavior

1. Cooperative Behavior: Involves individuals working together to achieve a shared goal, such as volunteering or participating in community projects.

2. Competitive Behavior: Occurs when individuals strive to achieve their own goals, often in opposition to others, like competing in school or the workplace.

3. Helping Behavior: Refers to offering assistance or support to others without expecting anything in return, such as donating or helping during emergencies.

4. Aggressive Behavior: Includes actions intended to harm others physically or emotionally, often driven by anger or frustration.

5. Prosocial Behavior: Encompasses positive social actions that promote harmony, such as showing empathy, respect, and kindness.

6. Withdrawn Behavior: Characterized by avoiding social interaction, which may stem from shyness, anxiety, or a desire for solitude.

4.3 Factors Influencing Social

- Cultural Factors: These include the values, customs, and traditions that an individual is raised with in their society, which directly influence their behavior and interactions with others.

- Social Factors: Such as family, friends, school, and media, which play a key role in shaping social attitudes and behaviors.

- Economic Factors: Economic conditions like income, standard of living, and employment affect how individuals behave and interact within society.

- Psychological Factors: These include personality, motivations, attitudes, and past experiences, which determine how a person responds to social situations.

- Environmental Factors: The physical environment, such as housing, neighborhood, and available services, influences quality of life and general behavior.

- Educational Factors: The level of education and the quality of acquired knowledge impact an individual's awareness and behavior toward societal issues.

5. The Relationship between Urban Design Dimension and Social Behavior

Social behavior—as previously defined—is shaped by a range of factors including cultural,

social, economic, psychological, environmental, and educational influences. These factors intersect directly with the outcomes of urban design. For example, environmental factors such as access to green spaces and quality infrastructure promote cooperative and prosocial behaviors by encouraging social interaction in public areas. Similarly, cultural and social factors are reflected in neighborhood design that aligns with community values, reinforcing positive behavior and a sense of belonging.

On the other hand, urban design can be a tool to address negative behaviors such as isolation or aggression by creating safe environments, interactive spaces, and layouts that foster community surveillance and inclusion. Therefore, understanding the types of social behavior and the factors that influence them is essential for developing sustainable urban design that enhances quality of life and strengthens social.

Table 2. The Relationship Between Urban Design Dimensions and Social Behavior (Adapted by the Author)

Social behavior / Urban Design Dimensions		Cooperative Behavior	Prosocial Behavior	Aggressive Behavior	Helping Behavior	Competitive Behavior	Withdrawn Behavior
Functional	Ease of access	Designing multi-purpose spaces (such as community gardens or open courtyards) encourages teamwork and participation in volunteer activities.	Comfortable seating areas, pedestrian paths, and recreational zones enhance positive interaction and communication among residents.	Lack of functional organization or overcrowding may lead to tension and conflict, while well-structured spaces reduce opportunities for negative interactions.	Providing clear community service points (e.g., relief centers or donation areas) facilitates assistance and encourages individual initiatives.	Allocating spaces for sports or educational activities promotes positive competition within safe and organized environments.	Designing flexible environments that offer privacy and calm (e.g., quiet corners or secluded paths) supports gradual social engagement for introverted individuals.
	Variety of uses	Creates daily opportunities for interaction by integrating residential, work, and service functions, fostering collaboration and community initiatives.	Generates vibrant environments that encourage positive interaction, such as cafés, parks, and cultural centers.	Reduces stress caused by long commutes or service shortages, thereby limiting frustration-driven aggressive behaviors.	Proximity to social and health services facilitates assistance and strengthens a culture of mutual support.	The presence of educational, sports, and commercial facilities within the same urban area promotes positive and structured competition.	Offers diverse options for gradual social integration through quiet spaces within a multifunctional setting.
	Clarity and organization	Clear signage and organized spaces help identify shared activity zones, encouraging collaboration and community participation.	Clear pathways and well-distributed seating areas promote positive interaction and social engagement.	Good spatial organization reduces random friction and misunderstandings, limiting aggressive tendencies.	Clear wayfinding and organized access points make it easier for individuals to offer or seek help.	Well-structured facilities (e.g., sports fields or halls) ensure fair use and reduce conflict	Thoughtful layout provides alternative routes and quiet zones, allowing introverted individuals to navigate without social pressure.
Sensory		Warm colors, natural lighting, and calm sounds enhance comfort and openness, encouraging interaction and collaboration.	Balanced sensory environments (e.g., soft colors, natural sounds, pleasant aromas) foster calmness, empathy, and positive social interaction.	Harsh lighting, loud noise, or visual clutter may trigger stress and discomfort, increasing the likelihood of aggression.	Familiar scents, soothing lighting, and natural materials evoke feelings of safety and belonging, promoting helpfulness.	Visually stimulating environments (e.g., vibrant colors and high contrast) can boost focus and competitive drive.	Overstimulation may lead introverted individuals to withdraw, while low-stimulation environments offer safe zones for gradual engagement.
Social	Belonging and	A strong sense of belonging fosters collective	Collective identity promotes values of	Lack of belonging or shared identity can lead to marginalization	Belonging strengthens empathy and social bonds,	Shared identity creates a positive	Absence of identity or belonging may cause

		responsibility and encourages participation in community activities and teamwork.	respect and solidarity, supporting positive behaviors like kindness and tolerance.	and alienation, increasing the likelihood of aggressive behavior.	motivating individuals to help others without expecting anything in return.	competitive environment based on mutual respect and community pride.	individuals to withdraw and avoid social interaction.
	Spatial Justice	Fair distribution of resources and services fosters a sense of equality and belonging, encouraging cooperation and community participation.	Justice promotes mutual trust and respect, encouraging positive behaviors such as tolerance and kindness.	Lack of spatial justice leads to exclusion and marginalization, which can generate feelings of injustice and trigger aggressive behavior.	When individuals feel that everyone receives their rights, the willingness to support and help others increases.	Equal access to opportunities (e.g., education, activities) creates a healthy competitive environment based on fairness.	Unequal distribution of services may cause individuals to feel disconnected and withdraw from social life.
	Social Interaction	Frequent interaction in public spaces builds trust and understanding, encouraging collaboration and group initiatives.	Positive interaction fosters a sense of belonging and empathy, reinforcing behaviors like respect and participation.	Lack of interaction or social exclusion can lead to frustration and isolation, raising the risk of aggressive behavior.	Strong social ties formed through daily interaction increase the likelihood of mutual support and assistance.	Social interaction creates a dynamic environment that motivates individuals to excel within healthy competitive frameworks.	Absence of interaction opportunities or unwelcoming environments may cause individuals to withdraw from social life.
Visual		Visually appealing scenes and harmonious design enhance psychological comfort and openness, encouraging interaction and collaboration.	Balanced visual aesthetics (e.g., soothing colors, natural views, cultural symbols) promote calmness, belonging, and positive interaction.	Visual clutter, pollution, or poor organization may cause stress and discomfort, increasing the likelihood of aggressive behavior.	Visual clarity and easy recognition of places foster a sense of safety and belonging, encouraging helpful behavior.	Stimulating visual design (e.g., bold colors, clear symbols) can trigger self-motivation and a desire to excel in competitive settings.	Overwhelming or chaotic visual environments may lead to withdrawal, while calm visual settings support gradual social engagement.
Temporal		Varied activity times and overlapping schedules among different groups enhance opportunities for community collaboration.	A balanced rhythm between work, leisure, and rest improves quality of life and encourages positive interaction.	Time pressure caused by overcrowded spaces or limited service hours may lead to stress and aggressive behavior.	Extended service hours (e.g., clinics or community centers) increase opportunities for offering and receiving help	Flexible scheduling for educational and sports activities fosters fair and accessible competitive environments.	Lack of temporal flexibility or misalignment between activity schedules and individual lifestyles may lead to social withdrawal.

6. Contributions of Egyptian and Arab Studies to Understanding the Relationship Between Urban Design and Social Behavior

Regional studies conducted in Egypt and the broader Arab region have shown that urban design plays a pivotal role in shaping patterns of social behavior. Several Egyptian studies have examined the relationship between public spaces and social interaction in major cities such as Cairo (Elsheshtawy, 2015; Abdelmonem, 2016), while other research has focused on the influence of walkability and the quality of the urban environment on social life in urban neighborhoods (Ibrahim, Younes, & Abdel-Razek, 2024). In rural contexts, studies such as Abdel Rahman (2025) have demonstrated that Egyptian villages possess distinctive social patterns that are directly linked to the configuration of open spaces and movement networks.

Furthermore, studies from North Africa support these findings, with research from Tunisia, Algeria, and Morocco indicating that urban form has a direct impact on social interaction and community cohesion (Belakehal, 2016).

Despite these contributions, comparative studies that examine both urban and rural environments within the Egyptian context remain limited, highlighting the research gap that the present study seeks to address.

The previous study can be applied to **Zamalek district in Cairo** and **Tunis village in Fayoum** as two representative models that illustrate the contrast in urban design between city and rural settings. This application allows for an analysis of how urban form influences community behavior in each context, highlighting the reciprocal relationship between the built environment and social patterns.

7. Zamalek District in Cairo City

7.1 Introduction to Zamalek District

Zamalek is one of the most prestigious and beautiful districts in Egypt's capital, Cairo. Situated on an island in the Nile River, it enjoys a unique and distinguished location. The neighborhood is known for its tranquil atmosphere, wide tree-lined streets, elegant classical architecture, and the presence of numerous embassies and cultural institutions, all of which contribute to its refined urban character (Memphis Tours, n.d.).

7.2 Rationale for Selecting Zamalek as a Case Study

The selection of Zamalek as the applied context for this study is grounded in both scientific and field-based considerations. The district offers a rich urban fabric that enables a nuanced analysis of the relationship between urban design dimensions and community behavior. The key reasons for its selection include:

1. **Functional Diversity**: Zamalek integrates residential, cultural, diplomatic, commercial, and recreational uses within walkable proximity, making it ideal for examining functional design and its behavioral implications.
2. **Architectural Identity**: The district is characterized by classical architecture and visual coherence, providing a suitable context to explore how urban aesthetics influence place

attachment and preservation behaviors.

3. **Cultural and Social Vitality**: With its concentration of cultural institutions, cafés, clubs, and public venues, Zamalek supports the study of social interaction and cultural participation in urban settings.
4. **Fieldwork Accessibility**: The district's compact size and clear boundaries facilitate direct observation, interviews, and survey distribution, enhancing the reliability of empirical data.
5. **Socio-Demographic Diversity**: Zamalek hosts a mix of permanent residents, visitors, and institutional employees, offering a varied sample for analyzing behavioral patterns across user groups.
6. **Security and Urban Order**: The presence of embassies and formal institutions contributes to a heightened sense of safety, enabling the study of how perceived security shapes public space usage.

7.3 Urban Design element in Zamalek District

Figure 10. Building Character The architectural character of Zamalek is distinguished by its diversity between classical and modern styles

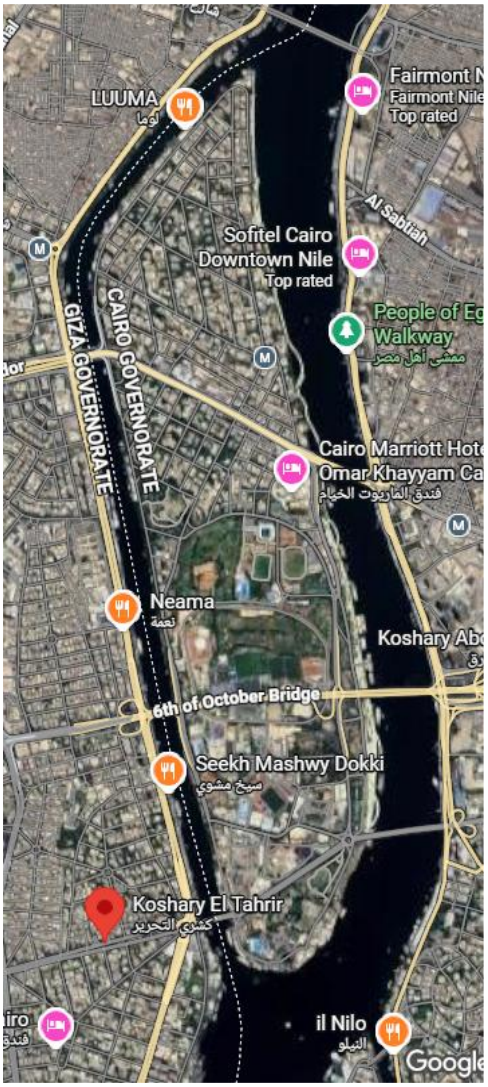


Figure 15. Zamalek plan

Figure 11. land mark (Cairo Tower)

Figure 12. Public Garden

Figure 13. Main Roads

Figure 14. Secondary Roads

Figure 16. Safety (sidewalk)

Figure 17. Safety (sidewalk)

With reference to the previous images, Zamalek district is characterized by a calm and well-organized road network, developed pedestrian pathways, and prominent cultural and historical landmarks that define its upscale identity. However, the district also contains relatively narrow streets, in addition to refined architectural landmarks and a well-planned urban design structure.

7.4 Urban Design Dimensions, Their Application in Zamalek, and Their Impact on Community Behavior

After presenting the urban design elements of the Zamalek district—including the physical and organizational components that shape the urban environment—it becomes essential to apply the various dimensions of this design as previously outlined in the study. These dimensions collectively contribute to forming the overall framework within which individuals interact in urban spaces, directly influencing patterns of community behavior. Each

dimension leaves a tangible impact on how individuals use and perceive space. Accordingly, analyzing the relationship between urban design dimensions and human behavior represents a pivotal step toward understanding the dynamics of urban life. This analysis was further supported by the outcomes of the field survey, which helped document and interpret community behavior patterns associated with each design dimension in an empirical and evidence-based manner.

Table 3. Urban Design Dimensions, Their Application in Zamalek, and Their Impact on Community Behavior

Urban Design Dimension	Design Elements Supporting the Dimension	Application in Zamalek	Impact on Community Behavior
Functional	Mixed land use, service distribution, spatial proximity of activities	Residential, cultural, diplomatic, recreational, and service functions within walkable range	Flexibility in daily movement, reduced car dependency, diverse social interaction
Visual	Architectural style, façade coordination, greenery, lighting, built proportions	Classical buildings, harmonious façades, tree-lined streets, good lighting	Sense of belonging, aesthetic appreciation, behavior that preserves visual identity
Environmental	Green spaces, natural ventilation, shading, proximity to water	Natural tree canopies, good airflow, proximity to the Nile, public gardens	Environmental awareness, sustainable use of resources, health-conscious behavior
Social	Public spaces, gathering areas, cultural activities, community facilities	Clubs, cafés, plazas, cultural institutions, artistic events	Strengthened social ties, civic participation, support for cultural identity
Mobility	Road network, sidewalks, pedestrian paths, transport access, organized crossings	Wide streets, structured sidewalks, moderate traffic, easy access	Ease of movement, encouragement of walking, reduced stress, orderly urban behavior
Security	Lighting, visual clarity, activity distribution, official institutions, signage	Adequate lighting, clear spatial organization, presence of embassies and formal institutions	Sense of safety, secure use of public spaces, disciplined civic behavior

7.5 Reflections of Urban Challenges on Community Behavior in Zamalek District

The following table reflects a set of urban challenges currently facing the Zamalek district, resulting from rapid transformations in land use patterns and urban expansion. These challenges directly contribute to shaping community behavior within the neighborhood. The shift in functional use has led to a decline in the residential character in favor of commercial activities, altering the daily use of public spaces and reducing opportunities for calm social interaction among residents. Traffic congestion and the shortage of parking spaces have impacted mobility behaviors, increasing reliance on private vehicles and diminishing the comfort and feasibility of walking or utilizing public spaces. Additionally, the pressure on infrastructure has affected how individuals interact with essential services, leading to a decline in overall quality of life. Meanwhile, real estate transformations have altered the social composition of the area, reducing diversity and gradually transforming the district into an exclusive enclave—an evolution that influences patterns of social interaction and sense of belonging. Lastly, visual privacy has been compromised by unregulated façade modifications and signage, affecting residents' perception of the district's identity and potentially weakening their emotional attachment to place. Thus, understanding these challenges is incomplete without analyzing their impact on human behavior, which constitutes a fundamental axis in evaluating the quality and social effectiveness of urban design**.**

Table 4. Reflections of Urban Challenges on Community Behavior in Zamalek District:

Aspect	Observation / Challenge
Functional Transformation  Figure 18. Illustrative Image of Functional Transformation	Increasing commercial and service activities at the expense of residential use, affecting the district's calm character
Traffic Congestion  Figure 19. Illustrative Image of Traffic Congestion	Narrow side streets and high vehicle density during peak hours cause traffic bottlenecks
Parking Shortage	Limited parking spaces, especially near cultural institutions and embassies

 Figure 20. Illustrative Image of Parking Shortage	
Infrastructure Pressure	High functional density may strain water, sewage, and electricity networks
Real Estate Shifts	Rising property prices may reduce social diversity and turn the area into an exclusive enclave
Visual Privacy  Figure 21. Illustrative Image of Visual Privacy	Unregulated façade modifications and signage may disrupt the district's visual identity

8. Tunis VILLAGE

8.1 Introduction to Tunis Village

Tunis village is one of the villages of Youssef El-Seddiq district in Fayoum Governorate, located on the northern shore of Lake Qarun. Despite its touristic fame, the other side of the village reflects a simple rural reality, where local residents rely primarily on agriculture, livestock, and handicrafts as main sources of income. Most inhabitants live in modest rural homes, and the village maintains a cohesive social fabric and deeply rooted local traditions that reflect the cultural identity of Fayoum's people. However, the benefits of tourism for the original residents remain limited, as investments are largely concentrated in the hands of external parties (Explore Fayoum, n.d.).

8.2 Rationale for Selecting Tunis village as a Case Study

Tunis village in Fayoum Governorate was selected for this study due to its distinctive spatial, cultural, and social characteristics, which make it a unique model for analyzing transformations in the Egyptian rural environment. The village blends traditional rural character with contemporary tourism and cultural activities, allowing for an exploration of the interaction between local identity and development demands. Its renowned handicraft tradition—particularly pottery—demonstrates the capacity of rural communities to harness cultural resources in support of the local economy. The village's location overlooking Lake

Qarun adds environmental significance that influences patterns of land use and community behavior. Additionally, the presence of artistic and touristic investments within the village offers an opportunity to examine the impact of tourism on social fabric and local economic dynamics, as well as the extent to which original residents benefit from such activity

8.3 Urban Design Element in Tunis Village

Building Character: Low-rise buildings made of local materials (mudbrick, limestone); whitewashed facades, wooden shutters, and handcrafted details.

Figure 22. Building Character

Figure 23. Artisan & Cultural Nodes**:** Pottery workshops, art schools, and galleries embedded in the village fabric Public Spaces & Gardens: Small-scale, informal gathering areas at intersections or between homes and some garden for public use

Figure 24. Public Spaces & Gardens

Figure 25. Street Network & Connectivity: Organic, narrow pedestrian paths that follow natural topography and land divisions

8.4 Urban Design Dimensions, Their Application in Tunis village, and Their Impact on Community Behavior

After presenting the urban design elements of Tunis Village, it becomes essential to link these dimensions to patterns of community behavior. Narrow pedestrian paths, shared open spaces, and vernacular architectural features all contribute to shaping daily interactions, reinforcing a sense of belonging, and promoting environmental awareness. Field observations helped document this relationship, highlighting how spatial design tangibly influences rural life

Table 5. Urban Design Dimensions, Their Application in Tunis village, and Their Impact on Community Behavior (Author)

Urban Design Dimension	Design Elements Supporting the Dimension	Application in Tunis Village	Impact on Community Behavior
Functional	Mixed land use, proximity of artisan, residential, and agricultural functions	Integration of pottery workshops, homes, and farmlands within walkable distances	Encourages multifunctional daily routines, supports local economy, fosters intergenerational skills transfer
Visual	Vernacular architecture, earthy materials, artistic façades, human-scale proportions	Whitewashed walls, wooden shutters, hand-painted murals, low-rise buildings	Enhances place attachment, promotes visual identity, encourages preservation of local aesthetics
Environmental	Natural ventilation, shading, proximity to Lake Qarun, use of local materials	Thick walls, shaded courtyards, tree-lined paths, lake views	Promotes thermal comfort, environmental awareness, and sustainable building practices
Social	Informal gathering spaces, artisan hubs, cultural events	Pottery schools, shared courtyards, seasonal festivals and workshops	Strengthens social cohesion, supports cultural continuity, encourages community participation
Mobility	Narrow pedestrian paths, organic street layout, walkability	Meandering alleys, compact layout, minimal vehicular intrusion	Facilitates social interaction, promotes walking, reduces reliance on cars
Security	Community surveillance, active frontages, clear sightlines	Homes open to alleys, active artisan spaces, low boundary walls	Enhances perceived safety, fosters trust, encourages use of public space

8.5 Reflections of Urban Challenges on Community Behavior in Tunis Village

Tunis Village faces several urban challenges that directly affect community behavior. Functional shifts have reduced traditional agricultural and residential uses, altering daily routines and weakening communal ties. Narrow alleys and limited parking create congestion and random use of public spaces, impacting mobility and social comfort. Infrastructure strain has led to individual coping behaviors and declining trust in services. Rising property values have displaced some residents, changing the village's social fabric. Meanwhile, unregulated façade changes have disrupted the visual identity, reducing residents' sense of belonging. These challenges highlight the need for balanced planning that preserves local character while addressing emerging pressures.

Table 6. Reflections of Urban Challenges on Community Behavior in Tunis Village (Author):

Type of Challenge	Description	Behavioral Impact
Functional Transformation   Figure 26. Illustrative Images of Functional Transformation	Increase in non-agricultural activities at the expense of traditional residential and agricultural uses	Changes in daily work patterns; reduced interaction among residents in shared agricultural spaces
Congestion in Pathways  Figure 27. Illustrative Image of Congestion in Pathways	Narrow alleys and increased movement within the compact urban fabric	Reduced comfort during mobility; random use of streets and open spaces
Infrastructure Pressure	Rising water and electricity consumption exceeding system	Individual coping behaviors (e.g., unregulated waste disposal); declining trust in

	capacity	public services; growing sense of neglect and marginalization
Real Estate Shifts	Rising land and property prices due to external demand	Displacement of original residents; changes in social relations and sense of place

9. Urban Design in Rural Areas versus Cities

After examining Zamalek district and Tunis village in Egypt, it becomes clear that urban design in cities differs significantly from that in rural areas, and this in turn influences patterns of social behavior. Rural urban design is characterized by low population density, a simple built fabric, and strong integration with the natural environment, where open spaces and informal public areas play a central role in fostering social interaction and reinforcing community spirit. In contrast, urban design in cities is marked by high density, mixed land uses, and complex circulation networks, with greater emphasis on infrastructure, functional efficiency, and safety measures. These differences shape social behavior: urban environments tend to encourage more anonymous and indirect interactions, while rural settings support stronger social ties and community cohesion. This highlights the critical role of urban design in shaping social life across both rural and urban contexts (Jacobs, 1961). The comparison between urban design in rural and urban areas highlights fundamental differences in density, functions, and identity, which calls for tailored design strategies for each context (ArchUp, n.d.) The table highlights the fundamental differences between urban design in cities and that in rural areas (Khabazi, 2025, adapted by the researcher).

The following table presents a concise summary of the study's findings, illustrating the patterns of community behavior in both urban and rural contexts, in relation to the urban design elements that contribute to achieving the various dimensions of urban design.

Table 7. Urban Design in Rural Areas versus Cities (Author)

Dimension	**Urban Design (City)**	**Behavioral Pattern in the City**	**Rural Design (Countryside)**	**Behavioral Pattern in the Countryside**
Population Density	High density; intensive land use	Limited interaction, superficial relationships, tendency toward privacy	Low density; dispersed buildings with open spaces	Direct interaction, strong relationships, personal familiarity among residents
Land Use	Mixed-use (residential, commercial, services,	Diverse functional interaction, individualistic	Primarily agricultural and residential with clear separation	Professional and agricultural cooperation, exchange of

	industrial)	behaviors		services
Infrastructure	Advanced and complex	Reliance on services, organized behaviors	Simpler and sometimes incomplete	Self-reliance, individual solutions, local cooperation
Public Spaces	Large plazas, urban parks, high-use recreational areas	Formal or limited interaction	Natural open spaces and village squares	Spontaneous gatherings, strong social communication
Visual Identity	Diverse and modern	Varied behaviors in maintaining visual appearance	Homogeneous, reflecting heritage	Strong place attachment, preservation of local identity
Mobility & Circulation	Public transport, walking, cycling, wide roads	Fast movement, traffic stress	Private vehicles, narrow roads	Calm movement, interaction during mobility
Environmental Approach	Challenges of pollution and noise	Defensive behaviors (avoiding noise)	Naturally integrated with the environment	Innate environmental awareness, sustainable resource use
Urban Challenges	Congestion, pollution, noise	Psychological stress, individualistic behaviors	Limited services, migration, preserving rural character	Community cooperation, mutual dependence

10. Results

The findings of the study indicate that urban design is a strategic, multidimensional tool that shapes the built environment in ways that respond to human needs and the cultural and environmental context. Integrating the formal, functional, sensory, social, visual, and temporal dimensions contributes to creating human-centered urban spaces that enhance social interaction, strengthen identity, and improve quality of life.

The results also show that urban design elements—such as spatial organization, movement guidance, and the reinforcement of visual and social identity—form a fundamental basis for producing high-quality environments. Understanding these elements is a key step toward achieving sustainable and context-sensitive urban design.

The study demonstrates that social behavior is influenced by a complex interplay of cultural, social, economic, psychological, and environmental factors, and that the urban environment

plays a direct role in shaping behavioral patterns, whether positive (e.g., belonging and cooperation) or negative (e.g., isolation and aggression).

The results reveal a complementary relationship between urban design dimensions and social behavior patterns. Thoughtful planning can promote positive behaviors and reduce negative ones by creating stimulating and balanced environments.

In Zamalek, the integration of urban design dimensions contributes to enhancing belonging, participation, and identity preservation, despite the urban challenges that affect quality of life. In contrast, Tunis Village presents a rural model that blends cultural identity with sustainability, fostering social interaction and place attachment. However, urban pressures and rising land values threaten this balance.

The comparison between the urban and rural contexts shows clear differences in population density, land-use patterns, infrastructure, visual identity, mobility, and environmental integration, highlighting the importance of context-sensitive planning in enhancing quality of life and preserving identity.

11. Discussion

The findings confirm that urban design is not merely a physical arrangement of space but a strategic, multidimensional framework capable of shaping the built environment in ways that align with human needs and cultural and environmental conditions. These results are consistent with literature from the Middle East and North Africa, which emphasizes the role of urban design in reinforcing identity and social interaction (Elsheshtawy, 2011; Salama, 2015).

The study also shows that understanding urban design elements—such as spatial organization, movement guidance, and identity reinforcement—is essential for achieving sustainable, human-centered design, aligning with findings from similar studies in developing Arab cities.

Furthermore, the study demonstrates that social behavior is shaped by multiple interacting factors and that the urban environment plays a significant role in influencing these patterns. This aligns with research linking the quality of public spaces to levels of social interaction.

Applying this framework to the two case studies reveals that the integration of urban design dimensions in Zamalek enhances belonging and participation despite existing urban challenges. Meanwhile, Tunis Village presents a balanced rural model that combines identity and sustainability, although it is increasingly threatened by functional shifts and urban pressures.

The comparison between the two contexts highlights fundamental differences in density, infrastructure, visual identity, mobility, and environmental integration, underscoring the need for context-sensitive planning that enhances quality of life while preserving cultural and social identity.

Moreover, the interpretation of the findings should be considered in light of several limitations. First, the study is limited to two case studies—Zamalek and Tunis—which

restricts the generalizability of the results to other Egyptian urban and rural contexts. Second, the research relies primarily on qualitative analysis, indicating the need for future studies to incorporate quantitative methods to validate and expand upon the findings. Third, the results may be influenced by the rapid social and economic transformations occurring in both contexts, which could affect behavioral patterns and spatial dynamics over time.

Building on the findings and limitations of this study, several future research directions are recommended. First, expanding the comparative framework to include additional urban and rural contexts across Egypt would provide a broader understanding of how different spatial, cultural, and socio-economic conditions influence the relationship between urban design and social behavior. Second, conducting longitudinal studies would help capture how ongoing urban transformations and socio-economic changes shape behavioral patterns and spatial dynamics over time. Third, integrating quantitative analytical tools such as spatial metrics, behavioral mapping, and statistical modeling would strengthen the empirical validity of the findings and allow for more precise measurement of the impact of urban design on social behavior. Finally, further research is needed to examine how economic development, tourism, and real estate pressures affect local identity and community cohesion, particularly in culturally significant rural settlements such as Tunis Village.

12. Conclusion

This study confirms the existence of a complementary relationship between urban design and social behavior in both urban and rural contexts in Egypt. The findings show that integrating the formal, functional, sensory, social, visual, and temporal dimensions into the design process contributes to enhancing social interaction, belonging, and quality of life. The comparison between Zamalek and Tunis Village further demonstrates that each context possesses unique urban, cultural, and social characteristics that directly influence patterns of social behavior, highlighting the importance of context-sensitive planning in both settings.

The theoretical significance of the study lies in expanding the understanding of the relationship between the built environment and social behavior in Arab contexts, and in emphasizing the role of urban design as an influential tool in shaping social relations and reinforcing identity. Practically, the findings underscore the need to adopt design strategies that respect the cultural and social specificities of each community, support community participation, and balance function, identity, and sustainability.

The study recommends developing clear planning policies for Egyptian cities aimed at improving the quality of public spaces, enhancing visual identity, and organizing movement in ways that support social interaction. It also calls for protecting the local character of heritage villages such as Tunis Village by managing urban and economic transformations and promoting sustainable design practices that preserve heritage and support community continuity.

Overall, the study affirms that conscious urban design can create more balanced and human-centered environments, and that improving quality of life in both urban and rural contexts requires a deep understanding of the reciprocal relationship between people and

place, and planning that is grounded in identity, context, and social needs.

Authors contributions

The study was conducted solely by the author, Rehab AbdAllah Abd El Zaher, who designed the research, collected and analyzed the data, drafted the manuscript, and revised it.

Funding

Not applicable.

Competing interests

The author declares that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Macrothink Institute.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

References

Abdelmonem, M. G. (2016). The modern ordinary: Changing culture of urban living in Egypt's traditional quarters at the turn of the twentieth century. *Middle Eastern Studies, 52*(5),

825-844. https://doi.org/10.1080/00263206.2016.1176918

Abdel Rahman, R. B. S. (2025). Advancing sustainable rural-urban development in Egypt: Case study of urban spaces in the village of Saryaqos. *Journal of Al-Azhar University Engineering Sector.*

Askarizad, R., Lamíquiz-Daudén, P. J., Dastoum, M., et al. (2025). A cross-cultural study to identify social behaviours of pedestrians in urban public spaces: Evidence from Iran, Spain, Italy, and Australia. *Scientific Reports.* https://doi.org/10.1038/s41598-025-16421-7

Belakehal, A. (2016). Public space and social interaction in Algerian cities. *Frontiers of Architectural Research, 5*(2), 210-218.

Carmona, M., Heath, T., Oc, T., & Tiesdell, S. (2003). *Public places, urban spaces: The dimensions of urban design.* Architectural Press.

Cullen, G. (1961). *Townscape.* The Architectural Press.

Explore Fayoum. (n.d.). Tunis Village. [Online] Available: https://fayoumegypt.com/tunis-village/

Ibrahim, S., Younes, A., & Abdel-Razek, S. A. (2024). Impact of neighborhood urban morphologies on walkability using spatial multi-criteria analysis. *Urban Science, 8*(2), 70. https://doi.org/10.3390/urbansci8020070

Jacobs, J. (1961). *The death and life of great American cities.* Random House.

Maliki, H. T., & Mawlan, K. A. (2025). Spatiality of outdoor social activities in neighborhood urban spaces: An empirical investigation. *Buildings, 15*(6), 867. https://doi.org/10.3390/buildings15060867

Memphis Tours. (n.d.). Zamalek Cairo: Elegant island district & Gezira guide. [Online] Available: https://www.memphistours.com/Egypt/Egypt-Wikis/Cairo-Attractions/wiki/Zamalek-Gezira

Sobhy, T. M., Kamar, M., & Noor, W. (2022). The relationship between urban design and the social sustainability of public urban spaces: Case study (gardens). *Journal of Engineering Research, 6*(Special Issue 4), Article 22. (Special issue from the Visions for Future Cities: Innovations & Environmental Technologies Conference (VFC2022), Cairo, Egypt, 24-25 September 2022). https://doi.org/10.21608/erjeng.2022.265899

Understanding the relationship between urban public space and social cohesion: A systematic review. (2024). *International Journal of Community Well-Being.* https://doi.org/10.1007/s42413-024-00204-5

Whyte, W. H. (2015). Observing the public realm: William Whyte's *The social life of small urban spaces. Built Environment, 41*(3), 399-411. https://doi.org/10.2148/benv.41.3.399

Myers, D. G., & Twenge, J. M. (2019). *Social psychology* (13th ed.). McGraw-Hill Education.