The Role of Public Waterfront Open Space Attributes on Social Interaction in Colombo's Urban and Suburban Areas

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Abstract

Public open spaces are integral to fostering social interactions within communities. This study investigates the impact of attributes associated with waterfront public open spaces on social interactions in both urban and suburban contexts, specifically examining Beira Lake and Boralesgamuwa Lake. The research aims to elucidate how key attributes—including uses and activities, access and linkages, comfort and image, and sociability—affect community engagement in these spaces and promote social interactions.

The study employs a mixed-methods approach, integrating quantitative survey data with qualitative photographic analysis to assess selected attributes across both locations. Findings indicate that Boralesgamuwa Lake, characterized by its natural environment and tranquil suburban setting, facilitates greater social engagement and a broader spectrum of social interactions compared to Beira Lake, which caters primarily to a more specialized urban demographic. Additionally, the research highlights that accessibility, comfort, and spatial design significantly influence both the frequency and quality of social interactions in these waterfront spaces.

The results offer valuable insights for urban planners and policymakers aiming to enhance the social functionality of Colombo's waterfront areas. This study emphasizes the critical role of intentional design in creating inclusive and accessible public spaces that promote social interactions and foster community engagement in rapidly evolving urban and suburban environments.

Keywords: Waterfronts, Social Interactions, Open Space Attributes, Public Space, Colombo.

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Introduction

In the twenty-first century, water-related open spaces are increasingly recognized for their dual role as symbolic and spatial elements within urban environments. Waterfront areas serve as crucial venues for outdoor activities, leisure, and social interaction, particularly for the densely concentrated populations in urban settings. These spaces play a significant role in urban development, fostering flexibility in land use without rigid demarcations. As waterfront developments enhance urban value, they also contribute to the formation of diverse mental images associated with these spaces.

The development of open spaces facilitates the harmonious integration of human activities and provides a response to the challenges posed by fragile and deteriorating environments. As Yuen (1996) notes, "A public space becomes truly valuable only if it can facilitate opportunities for social interaction and shared cultural values and meanings." Numerous studies substantiate the assertion that well-designed public spaces not only enhance the physical environment of cities but also improve the quality of life for urban residents (Compton, 1993; Lloyd & Auld, 2003; Logan & Molotch, 1987; Madanipour, 2003). Historical evidence in Sri Lanka indicates that meeting places with strong environmental ties have always existed. However, rapid population growth and urbanization have intensified the demand for urban public spaces, highlighting the need for thoughtful design in response to increasingly complex lifestyles.

In cities like Colombo, waterfront landscapes are emerging as vital urban public areas that provide opportunities for recreation, relaxation, and socialization. Nonetheless, not all waterfront spaces attract equal levels of public engagement; certain areas are frequented by large numbers of visitors, while others, even nearby, remain relatively underused. This disparity suggests that specific attributes render certain waterfront locations more appealing than others. Understanding the factors that influence this variation is essential for enhancing the accessibility and enjoyment of these spaces.

Research Problem

In the Colombo District, several public waterfront landscapes were developed as part of government initiatives following the civil war, with the intention of strengthening social interactions among urban groups. These waterfront landscapes are positioned as essential sites for recreation, leisure, and social engagement. Despite their potential, not all waterfront areas garner the same level of public interest. Some spaces attract regular use, while others experience limited social interaction, even within the same vicinity. This uneven distribution raises critical questions regarding the factors that drive engagement with certain waterfront spaces.

While Colombo's waterfronts have undergone significant revitalization, a gap persists in research regarding which attributes of waterfront landscapes encourage or inhibit social interaction among diverse demographic groups. This lack of clarity hampers the potential for informed urban design that maximizes the social benefits of these areas. The objective of this research is to address this gap, informing future urban waterfront design and planning efforts. It is imperative to consider both the physical and psychological interpretations individuals have of these spaces in relation to their surrounding environments. Given the diverse ethnic and cultural composition of Colombo's urban population, ensuring that waterfront landscapes facilitate interactions among various groups is crucial for promoting interethnic harmony. As Lloyd and Auld (2003) assert, "An

increased focus on the social outcomes of leisure spaces is needed if quality of life is to be improved for residents."

In recent years, Colombo has seen an increase in recreational waterfront development projects. To ensure that these projects effectively attract and engage the community, it is essential to assess public perceptions and valuations of these spaces. This research aims to evaluate how the attributes of public waterfront open spaces influence social interactions in both urban and suburban contexts.

Research Question

How do the place making attributes of waterfront open spaces foster social interactions in urban and suburban communities?

Public Waterfront Open Spaces

The waterfront landscape is characterized as a multifaceted urban area that acts as a critical interface between human activities and natural processes. It encompasses various functions, including ecological conservation, recreational spaces, and urban aesthetics, collectively enhancing both quality of life and urban image (Wang et al., 2024). Specifically, waterfronts refer to areas where land and water meet, encompassing the water's edge and adjacent land, which are typically sites of intense human activity and diverse ecological elements.

These waterfront areas are often organized along coastlines, presenting planners with challenges related to accessibility, multifunctionality, and integration with urban infrastructure (Üzümcüoğlu & Polay, 2022). Breen and Rigby (1994) describe an urban waterfront as the edge of any water body—whether a river, lake, ocean, bay, creek, or canal—within a city, serving a wide array of purposes from natural habitats to industrial ports. They emphasize that many waterfront areas are the product of numerous contributors and stakeholders, reflecting developments that have evolved over time and often include structures with historical ties to the water, even if not directly adjacent.

As Zhang (2018) notes, urban waterfronts have historically been of high value due to their geographical advantages, and many significant waterfronts worldwide are situated next to natural water bodies. In the context of urban planning and landscape architecture, substantial emphasis is placed on the development and beautification of waterfronts. The urban waterfront is an essential component of a city's public open space and serves as a prominent showcase of the urban landscape (Zhou & Shi, 2018).

1.1. Waterfront Open Spaces in Colombo

Waterfront open spaces hold significant value for urban populations, particularly in densely populated cities like Colombo, where available spaces for social engagement are limited. The fast-paced lifestyles of residents often leave little time for social interactions, which can lead to feelings of isolation and increased stress. In Colombo, where many people live in close proximity, these issues are particularly pronounced. However, the city is endowed with numerous water resources, including rivers and lakes, which present opportunities to enhance social interactions. Water-related parks and landscapes can serve as venues for community engagement, offering calming environments that facilitate social connections. Various attributes can enhance the

functionality of these waterfront areas, making them more attractive and conducive to social engagement (Sammakieh & Mohammed, 2021).

1.2. Significance of Urban Waterfront Open Spaces

According to Zhao et al. (2019), the landscape formed by the intersection of land and water serves as a transitional interface between waterfronts and urban areas, functioning as a primary space for leisure and recreation. The water landscape is characterized by its high malleability, creating unique environments conducive to various water activities. Zhao further emphasizes that the barge landscape is a critical ecological boundary in waterfront areas, particularly important for flood control across the entire catchment.

2. Waterfront Open Space Attributes

Koci (2005) posits that water serves as an active element capable of shaping urban morphology, while the physical and social characteristics of cities simultaneously influence water. This dynamic interaction contributes to the creation of waterfronts, which are characterized as areas of continuous transformation driven by social, economic, political, and urban growth processes. Additionally, waterfronts provide essential resources for sustaining human life (Kruse, 2006).

Koci (2005) further asserts that waterfront areas play a pivotal role in urban contexts, shaping city forms and enhancing the social, physical, psychological, and emotional well-being of the populace. Livni (2018) notes that expansive open water spaces uniquely foster socialization, promoting feelings of affiliation and openness that are often absent in other natural environments. Livni argues that spatial design influences social interactions by addressing individuals' needs and desires, with the presence of water inducing relaxation and a meditative state that enhances feelings of tranquility and awe.

This study focuses on the attributes that draw people to various waterfronts and their effects on social functions within urban waterfront landscapes. It examines how these attributes vary across different urban contexts and how they influence community engagement. Sammakieh and Mohammed (2021) indicate that factors influencing social interaction, combined with a user-centered design approach, can significantly enhance the effectiveness of waterfront open spaces, ultimately fostering a stronger sense of community and social interaction. Numerous scholars have explored attributes related to placemaking theory, demonstrating their significance in the context of public open spaces.

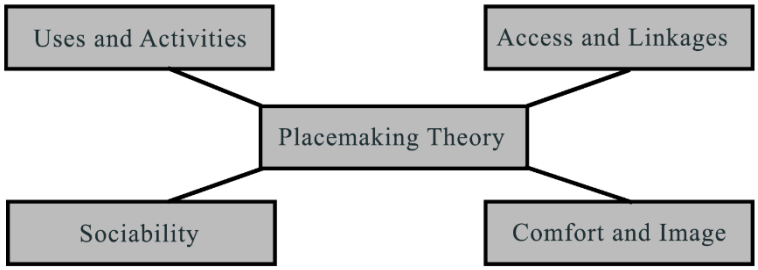
3. Placemaking Theory

Placemaking encompasses various disciplines, geographies, ideologies, and historical contexts, rendering it a complex and often ambiguous concept (Keidar et al., 2023). Relph (2016) describes placemaking as a critical methodology and planning tool for transforming public spaces, emphasizing its value to urban planners. Markusen and Gadwa (2010) argue that the meaning and significance of placemaking are context-dependent. Montgomery notes that the concept has been embraced by a diverse array of stakeholders, including grassroots residents, community organizations, civic agencies, artists, market-driven developers, and local governments, each with distinct objectives.

While placemaking is typically framed as an engagement and collaboration process, this is not universally the case. It often involves partnerships among public, civic, and private sectors aimed at serving the public good. Central to effective placemaking is community-based participation, which leverages local assets, inspiration, and potential to create high-quality public spaces that promote health, happiness, and well-being.

As a fundamental concept in urban planning, placemaking emphasizes the creation of public spaces that foster social connections and enhance community identity. It advocates for the design of spaces that are not only functional but also encourage social interaction and cultural exchange. Placemaking is adaptable to various contexts and priorities, relying heavily on community involvement to harness local creativity and strengths in shaping environments that enhance overall well-being.

Figure 1:
Placemaking attributes



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4. Social Interaction

Schilbach (2016) posits that the essence of human existence lies in the quality of social interactions, which range from the interactions between a child and parent to those among heads of state on the international stage. This study finds that the quality and character of social interactions are intrinsically linked to mental and social well-being. Social interactions are generally defined as the interpersonal relationships individuals maintain. Key components of these interactions include the number of social connections, the frequency of encounters, the diversity of relationships, and the reciprocity inherent in these connections. Social interaction can occur through face-to-face meetings, as well as via voice calls, video calls, and other technology-mediated communication platforms.

5. Research Approach

This research employs a mixed-methods approach to examine the impact of waterfront landscape attributes on social interactions at Colombo's waterfronts, specifically focusing on Beira Lake and Boralesgamuwa Lake. By integrating both qualitative and quantitative methods, the study aims to explore how various physical and social attributes influence social engagement within these spaces.

The quantitative component involves structured surveys designed to collect measurable data regarding participants' perceptions of key attributes. Respondents will rate these attributes using a Likert scale, facilitating a clear understanding of how each attribute is perceived and enabling the identification of patterns and differences between the two sites.

The qualitative component will provide a deeper exploration of these perceptions through photographic analysis, capturing the visual and contextual dimensions of waterfront space utilization and experiences. By systematically analyzing photographs taken under various conditions, visual content analysis will be employed to identify patterns, behaviors, and attributes that may not be evident from the quantitative data alone. Images will be categorized based on themes such as social interaction, safety perceptions, and aesthetic appeal.

By combining these methodologies, the research approach not only quantifies the relative importance of various landscape attributes but also offers a rich, nuanced understanding of how these spaces foster or hinder social interactions. This comprehensive approach ensures that the findings are robust across both analytical methods.

6.1. Theoretical framework

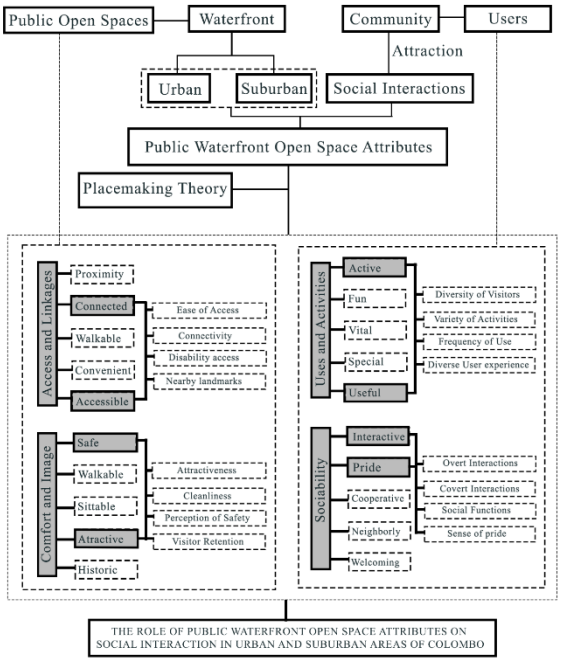


Figure 2: *Theoretical framework:* Compiled by author

6.2 Research methodology

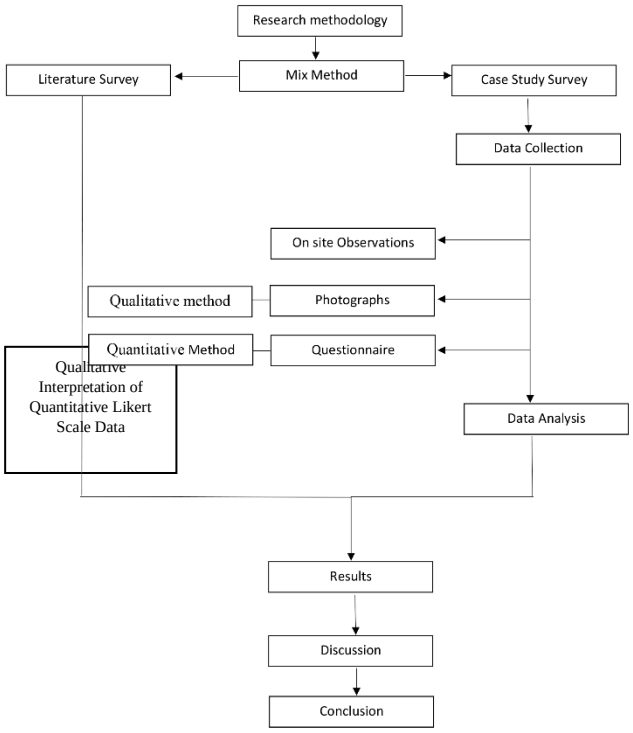


Figure 3. Research methodology *:* Compiled by author

7. Case Study Selection Criteria

7.1. Case Study Selection

Colombo, as the largest urban conglomeration in Sri Lanka, serves as the central economic and socio-cultural hub of the country, accommodating a significant population. The city is characterized by rich biodiversity, supported by surrounding parks and ecologically significant areas, and acts as an essential biodiversity corridor linking various green spaces and water bodies within and around its borders. Located in the wet zone of Sri Lanka, Colombo houses a diverse range of flora and fauna. Historically, the lakes and canals in the city have functioned not only as storage tanks but also as recreational areas, featuring both natural and man-made designs. Their cultural and historical significance is underscored by the presence of historic temples along their banks. These water bodies are situated in diverse locations, some in suburban areas and others along the scenic Indian Ocean coast. The city's climate, characterized by hot summers and moderate rainfall, further enhances the importance of these lakes in regulating local temperatures. As such, waterfronts have traditionally held a vital position within the urban fabric, closely associated with the lives and settlements of the people. However, technological advancements and changing lifestyles have altered the approach to these water bodies, with many individuals seeking alternative recreational options.

Fuxin (2023) defines the waterfront landscape as a multifaceted urban area serving as a critical interface between human activities and natural processes. This landscape encompasses various functions, including ecological conservation, recreational spaces, and urban aesthetics, collectively enhancing the quality of life and the urban environment. Based on this understanding,

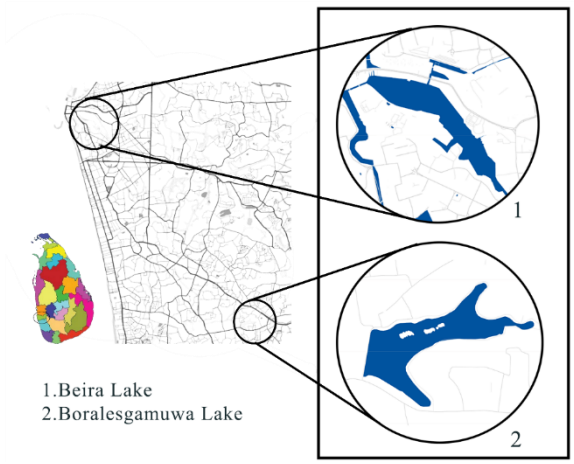
the selected case studies for this research are Beira Lake and Boralesgamuwa Lake, two primary waterfront landscapes in Colombo, each differing in location and development characteristics.

7.1.2. Beira Lake

Beira Lake is centrally located in Colombo, situated along one of the city's major thoroughfares, which provides easy access for both pedestrians and vehicles. Its prime location attracts a diverse array of users, from tourists to local residents. The urban setting of Beira Lake facilitates a wide range of public activities, including leisure walks and organized events, making it an ideal site for analyzing how accessibility, connectivity, and usage shape social interactions.

7.1.3. Boralesgamuwa Lake

In contrast, Boralesgamuwa Lake is situated in a suburban area of Colombo, characterized by less urban development and a more tranquil atmosphere. While it remains accessible via nearby roads, the environment is marked by its natural serenity, offering a quieter recreational space. Boralesgamuwa Lake is a favored location for local activities such as jogging and relaxation, providing a valuable context for studying how attributes like imageability, comfort, and maintenance influence social engagement in a suburban setting.



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8. Data Analysis

Figure 3

Analysis about the 'Uses and Activities'

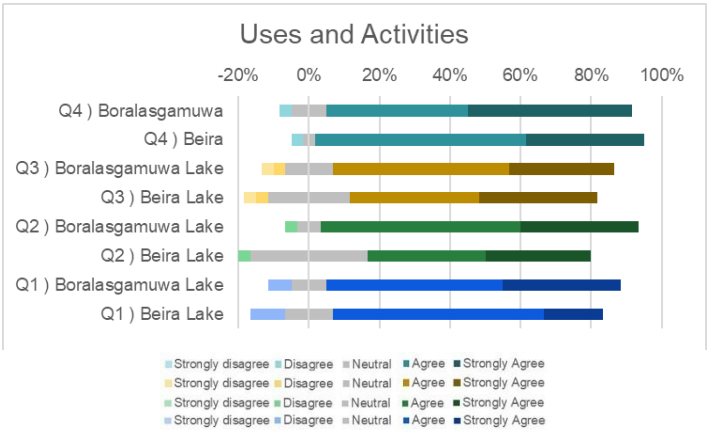

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Figure 4

Analysis about the 'Access and Linkages'

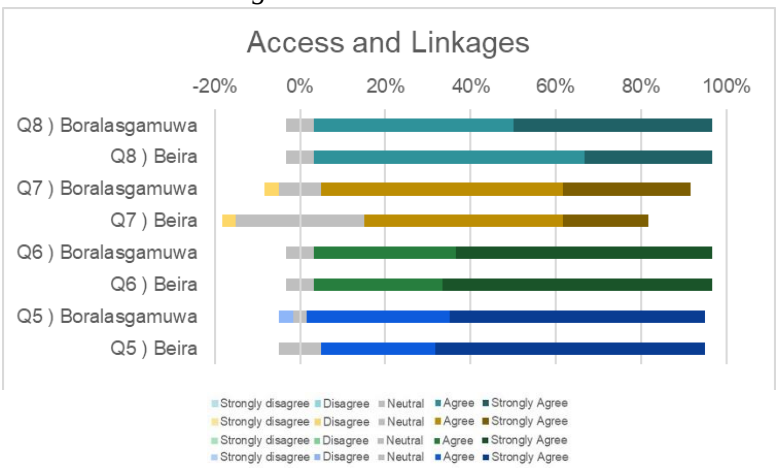

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Figure 5

Analysis about the 'Comfort and Image'

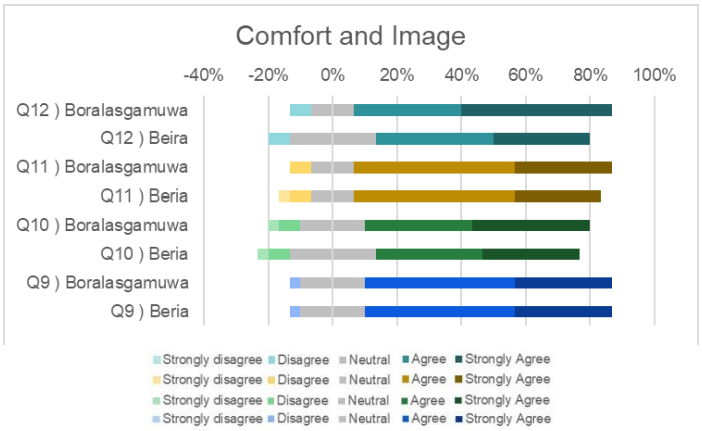

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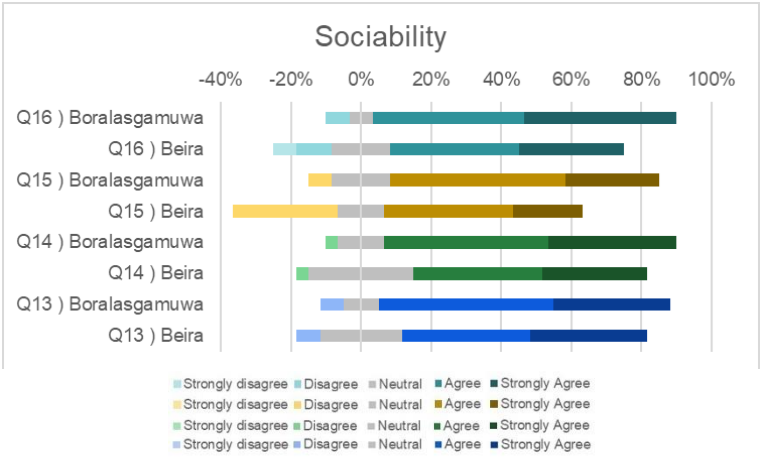
Figure 6:

Analysis about the 'Sociability'



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9. Discussion

The findings from this research underscore the critical role that various attributes of waterfront public open spaces play in shaping social interactions among communities in Colombo. Key factors influencing resident interaction at Beira Lake and Boralesgamuwa Lake include uses and activities, access and linkages, comfort and image, and sociability. A significant percentage of respondents emphasized the importance of these spaces for social, recreational, and community activities. Characteristics such as diversity of users, accessibility, cleanliness, and safety enhance the attractiveness and usability of these public spaces.

The findings regarding uses and activities reveal a wide range of engagements at Boralesgamuwa Lake, attracting a diverse visitor demographic. This supports the hypothesis that multifunctional public spaces can cater to varied users, irrespective of age or background. The theory of

placemaking emphasizes the importance of inclusivity and multifunctionality, suggesting that Boralesgamuwa's ability to meet diverse user needs contributes to its increased visitation rates.

Both lakes received high ratings for accessibility; however, Boralesgamuwa Lake was notably more connected to the local community. Its suburban location likely serves as a hub for social activities, while Beira Lake, located in a busier urban context, may face competition from other recreational spaces, resulting in lower connectivity ratings. Respondents indicated that cleanliness and aesthetic appeal were vital for both locations. Natural surroundings and landscapes were particularly praised at Boralesgamuwa Lake, encouraging longer visits. In contrast, Beira Lake's urban environment received slightly lower ratings for safety and cleanliness, potentially due to its proximity to a busy cityscape.

In terms of sociability, Boralesgamuwa Lake distinctly facilitates both overt group interactions and more subdued social exchanges. Its design, featuring shaded areas and open spaces rich in biodiversity, supports both extensive social contact and private moments. Conversely, Beira Lake appears to cater primarily to transient visitors, such as tourists and office workers, thereby lacking the quieter, more intimate spaces found at Boralesgamuwa.

The implications of these findings for urban planners and landscape architects are significant. The results suggest that the development of public spaces should prioritize multifunctionality, accessibility, and aesthetic appeal to enhance community social interactions. The success of Boralesgamuwa Lake, attributed to its inclusive design, highlights the challenges of balancing urban development with the preservation of inviting public spaces. This study aligns with existing literature that illustrates how open spaces foster social cohesion and contribute to residents' well-being.

While the findings offer valuable insights, several limitations should be acknowledged. The small sample size restricts the generalizability of results to the broader population of Colombo. Additionally, focusing on only two types of waterfronts may not represent the full spectrum of public spaces in the city. There is also the potential for bias in self-reported data, as respondents may provide socially desirable answers rather than truthful accounts of their experiences. The photographic analysis primarily captured physical features, lacking depth in understanding temporal variations in usage patterns.

Future research should expand on these limitations by utilizing larger, more diverse samples and exploring additional types of waterfronts. Longitudinal studies examining changing social interactions over time could yield deeper insights. Design elements such as lighting and seating should also be investigated for their role in facilitating social interactions. Moreover, research could consider how temporal factors, such as time of day or seasonal changes, affect waterfront usage patterns.

This study illustrates that well-designed public waterfront areas are vital for enhancing social interaction and community engagement. The findings provide valuable lessons for urban planners and policymakers aiming to create more inclusive, functional, and aesthetically pleasing public spaces in urban environments.

Conclusion

This research explores the contributions of various attributes of public waterfront open spaces in shaping social interactions within communities in Colombo, specifically focusing on Beira Lake and Boralesgamuwa Lake. The study aims to understand how landscape attributes—accessibility, variety of activities, comfort and image, and sociability—facilitate social interactions in urban and suburban settings.

The findings reveal that both water bodies significantly contribute to social interaction, albeit for different reasons. Boralesgamuwa Lake, with its accessibility, diverse activities, and appealing design, exemplifies how suburban areas can foster social engagement and attract a wide range of users. Conversely, Beira Lake's central urban location draws a varied audience, though its uses are more tailored to office workers, tourists, and pedestrians. This contrast highlights the importance of contextual landscape design in addressing diverse social needs and preferences.

Amenities and comfort also play crucial roles in influencing the duration of visitors' stays. The nature-based design and thoughtful planning of Boralesgamuwa make it an attractive destination, while Beira Lake, affected by urban noise and pressures, compromises aesthetic quality and prolonged social engagement.

Despite both lakes facilitating social interactions, their differing conditions provide insights for urban planners and landscape architects. Limitations of this study include the sample size, which affects generalizability, and the focus on visitor experiences rather than a broader analysis of environmental sustainability. Future research should explore the relationship between waterfront attributes and environmental factors, as well as the influence of seasonal changes on public interactions.

Ultimately, this study underscores how specific landscape attributes in the design of waterfront public spaces can enhance or hinder social interaction. The findings from Beira and Boralesgamuwa Lakes offer valuable guidance for creating more inclusive and socially vibrant public spaces that cater to the diverse needs of urban and suburban communities. By enhancing these attributes, urban planners and designers can foster improved social interactions and community development.

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