



Jurnal Arsitektur Zonasi

Journal homepage:

<https://ejournal.upi.edu/index.php/jaz>



Identifying Spatial Inequity in Public Space Utilization Through a Multisensory Approach: A Case Study of Bandung City Hall Park

Cheryl Putri^{1*}, Dhini Dewiyanti²

^{1,2}Program Studi Arsitektur, Fakultas Teknik dan Ilmu Komputer, Universitas Komputer Indonesia, Bandung, Indonesia

*Correspondence: Email: cherylputripermana@gmail.com

ABSTRACT

Bandung City Hall Park is a public open space that serves as a venue for recreation and social interaction for urban communities. Although it provides relatively equal physical facilities and accessibility, space utilization in the field still shows significant spatial disparities. This condition is characterized by a high concentration of activities in certain parts of the mass composition and low utilization in other zones, which indicates a failure in fulfilling environmental stimuli. This study aims to identify these spatial disparities in space utilization through a multisensory approach by analyzing the relationship between sensory spatial configuration quality and visitor behavior patterns. The research method applies a descriptive qualitative approach through field observations, behavior mapping, documentation, and spatial analysis of architectural elements that trigger visual, thermal, auditory, and olfactory stimuli across four empirical observation zones (Zones A, B, C, and D). The results indicate that areas with better sensory environmental quality, characterized by dense shade-providing vegetation, optimal microclimate thermal comfort, adequate seating facilities, and comfortable auditory noise control, exhibit much higher levels of visitor activity and social interaction. Conversely, zones with lower sensory quality and minimal shading elements tend to be underutilized by the public. These scientific findings prove that the quality of the architectural multisensory environment directly influences the spatial distribution of user activities within the urban park. In conclusion, a

ARTICLE INFO

Article History:

Submitted/Received 1 July 2026

First Revised 5 August 2026

Accepted 27 September 2026

First Available online 1 Oct 2026

Publication Date 1 October 2026

Keywords:

multisensory;
public space;
urban park;
visitor activities.

multisensory approach can be applied as an evaluation instrument and design parameter for adaptive public open spaces to promote a more balanced and inclusive utilization of urban spaces.

Copyright © 2026 Universitas Pendidikan Indonesia

1. INTRODUCTION

Public open spaces are an important element of the urban fabric, serving as venues for recreation, social interaction, community activities, and the improvement of the quality of life for urban residents. The quality of a public space is determined not only by the completeness of its physical facilities but also by its ability to create comfortable and meaningful experiences for its users. From the perspective of the built environment, these experiences are shaped through the interaction of various sensory stimuli simultaneously perceived by users, including visual, auditory, thermal, tactile, and olfactory aspects (Spence, 2020). Therefore, understanding the quality of multisensory experiences is crucial in efforts to evaluate and improve the quality of public spaces.

City parks, as a form of public open space, play a strategic role in providing spaces for recreation, social interaction, and public engagement with the urban natural environment. In the city of Bandung, the development of green open spaces is a vital component in creating a livable and inclusive urban environment for diverse community groups (Putriana & Fatahillah, 2025). One such public space serving these functions is Bandung City Hall Park. As a city park located at the center of government and urban activities, this park experiences high visitor traffic and a diverse range of user activities. However, based on initial observations, the utilization of space within the park is not evenly distributed. Visitor activities tend to be concentrated in specific areas, while other zones exhibit relatively low usage rates. This phenomenon indicates differences in environmental quality that influence users' preferences and behaviors in utilizing the space.

Previous research has shown that environmental characteristics are closely related to the formation of users' experiences and behaviors in public spaces. Bachtiar & Kusuma (2019) demonstrated that spatial quality influences the formation of a sense of place in urban parks. These findings are supported by the study by Dwi et al. (2025), which showed that patterns of park user behavior are influenced by environmental conditions and available facilities. In the context of urban public spaces, Safira & Hartanti (2026) found that the activities and character of a space can shape users' perceptions of and attachment to a place. These research findings indicate that the quality of a space is determined not only by physical aspects but also by the experiences users perceive when interacting with the environment.

In recent years, multisensory approaches have been increasingly used to understand the relationship between environmental quality and user experience. Spence (2020) explains that the experience of space is the result of the integration of various sensory stimuli that are processed simultaneously by humans. Research by Septianto et al. (2023) shows that multisensory experiences play a role in shaping spatial perception and a sense of place in urban environments. Ba et al. (2023) found that the combination of sound and scent quality influences users' comfort levels in public open spaces, while Shahhoseini et al. (2023) demonstrated that the integration of sensory stimuli is related to users' preferences for urban green spaces. Research by Han et al. (2025) and Jin et al. (2024) further indicates that the quality of the multisensory environment influences activity, emotional responses, and the intensity of public space use. These findings are reinforced by Tabassum (2025) and Zheng et al. (2024), who emphasize that multisensory experiences are a crucial aspect in understanding the quality of urban green spaces and user behavior.

Although research on multisensory experiences in public spaces is growing rapidly, most studies still focus on user experiences, environmental preferences, the formation of a sense of place, or emotional responses to space (Jin et al., 2024; Septianto et al., 2023; Shahhoseini et al., 2023; Tabassum, 2025). Research utilizing a multisensory approach as a tool to identify disparities in public space usage remains relatively limited, particularly in the context of urban

parks in Indonesia. Yet, differences in sensory environmental quality have the potential to be one of the factors influencing the distribution of activities and levels of space usage in urban parks. Thus, there remains a research gap regarding how a multisensory approach can be used to explain the phenomenon of disparities in public space utilization.

Given these circumstances, this study aims to identify disparities in public space utilization through a multisensory approach by analyzing the relationship between sensory environmental quality and visitor activity patterns at Bandung City Hall Park. The novelty of this study lies in the use of a multisensory approach as an evaluation tool to identify areas with different environmental qualities and their relationship to the distribution of user activities. The results of this study are expected to contribute to the development of more comprehensive public space evaluation methods and serve as a foundation for improving environmental quality and promoting equitable space utilization in city parks.

2. RESEARCH METHODOLOGY

This study employs a qualitative method with a descriptive nature and a case study approach. The qualitative method was chosen because the study aims to understand the relationship between the quality of the multisensory environment and users' activity patterns in public spaces based on existing conditions in the field. The case study approach was applied because the study focused on a single research subject, Bandung City Hall Park, allowing for a more in-depth observation of the space's characteristics and user behavior (Bachtiar & Kusuma, 2019). The multisensory approach was used as an analytical framework to evaluate environmental quality based on users' sensory experiences. According to Spence (2020), the perception of space is formed through the integration of various sensory stimuli received simultaneously. In this study, the multisensory aspects analyzed include visual, auditory, thermal, and olfactory elements, as these are the most dominant sensory elements influencing user experience in public open spaces (Ba et al., 2023; Bachtiar & Kusuma, 2019; Jin et al., 2024)

The study was conducted at Bandung City Hall Park, located on Wastukencana Street, Bandung City, West Java. This site was selected because it is one of the city's parks with high activity levels and features a diversity of spatial characteristics and user activities. To provide spatial context for the study, a location map is presented in Figure 1, along with the division of observation zones within the park area. In Figure 2, the observation area is divided into four zones based on spatial characteristics and dominant activity functions. Zone A consists of the fountain area and paved surfaces under shady trees; Zone B includes the flower garden, gazebo, and monument area; Zone C encompasses the playground; and Zone D comprises the mini zoo area. This zoning was implemented to facilitate the identification of relationships between multisensory quality and user activity patterns within each zone.



Figure 1. Location of Bandung City Hall Park
(Source: Personal Data Analysis, 2026)

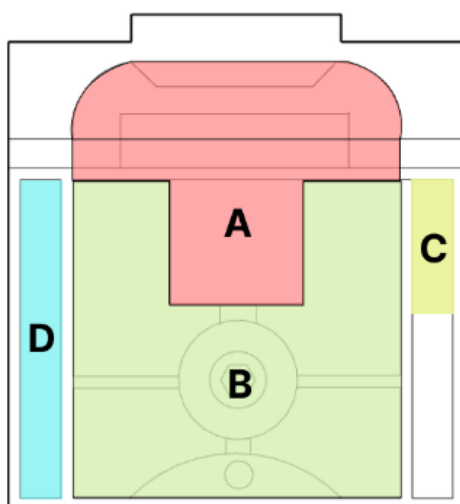


Figure 2. Park Observation Zone Division
(Source: Personal Data Analysis, 2026)

2.1 Data Collection Methods

Data collection was conducted through field observations, behavior mapping, documentation, and a literature review. Observations were used to identify the physical characteristics of the space, multisensory environmental elements, and user activity patterns in each zone of the park. Observations were conducted during both busy and quiet periods to capture variations in how the space was used. A total of four observation sessions were conducted, representing both weekday and weekend conditions. The observation schedule and observation intervals are presented in Table 1. The timing of the observations was chosen to capture variations in user activities during weekdays and weekends, as well as during the daytime and afternoon.

Table 1. Observation Schedule and Sampling Intervals

No	Date	Day	Observation Time	Interval
1	25 June 2026	Thursday	10.00 a.m – 12.00 p.m WIB	30 Minute
2	26 June 2026	Friday	5.00 p.m – 7.00 p.m WIB	30 Minute
3	27 June 2026	Saturday	4.00 p.m – 6.00 p.m WIB	30 Minute
4	28 June 2026	Sunday	11.00 a.m – 1.00 p.m WIB	30 Minute

Source: Personal Data Analysis, 2026

Static mapping with time sampling was used to map the distribution of user activity based on location, type of activity, and intensity of space use. Observations were conducted every 30 minutes across all zones, recording the number of visitors and dominant activities to identify patterns of space use on weekdays and weekends. Documentation was carried out through photographs of existing conditions, recording of spatial characteristics, and collection of spatial data, while a literature review was used to strengthen the theoretical foundation regarding public space, multisensory experiences, sense of place, and user behavior. The units of analysis included the zones within Bandung City Hall Park, multisensory environmental elements (visual, auditory, thermal, and olfactory), as well as the activities and distribution of public space users.

2.2 Data Analysis Methods

Data analysis was conducted using a descriptive-qualitative approach through the stages of data reduction, classification of field findings, spatial analysis, and interpretation of the relationship between multisensory environmental quality and user activity patterns. Data from observations and behavior mapping were compared to identify areas with high or low activity intensity, as well as the environmental factors influencing them.

Research variables were organized based on a multisensory approach encompassing visual, auditory, thermal, olfactory, and spatial support facilities. Visual aspects were analyzed based on vegetation quality, visual openness, and landscape elements (Shahhoseini et al., 2023). Auditory aspects were analyzed based on environmental sound quality and noise levels (Ba et al., 2023; Jin et al., 2024). Thermal aspects are analyzed based on the presence of shade-providing vegetation and thermal comfort (Jin et al., 2024; Putu et al., n.d.) Olfactory aspects are analyzed based on the quality of environmental scents that influence the user experience (Tabassum, 2025; Zheng et al., 2024). Meanwhile, supporting facilities were analyzed based on the availability of elements that support the social activities of park users (Safira & Hartanti, 2026)

The results of the analysis were then synthesized to identify the relationship between multisensory environmental quality and disparities in the use of public spaces. The research stages are presented in a research flowchart that illustrates the process from data collection and analysis to drawing conclusions.

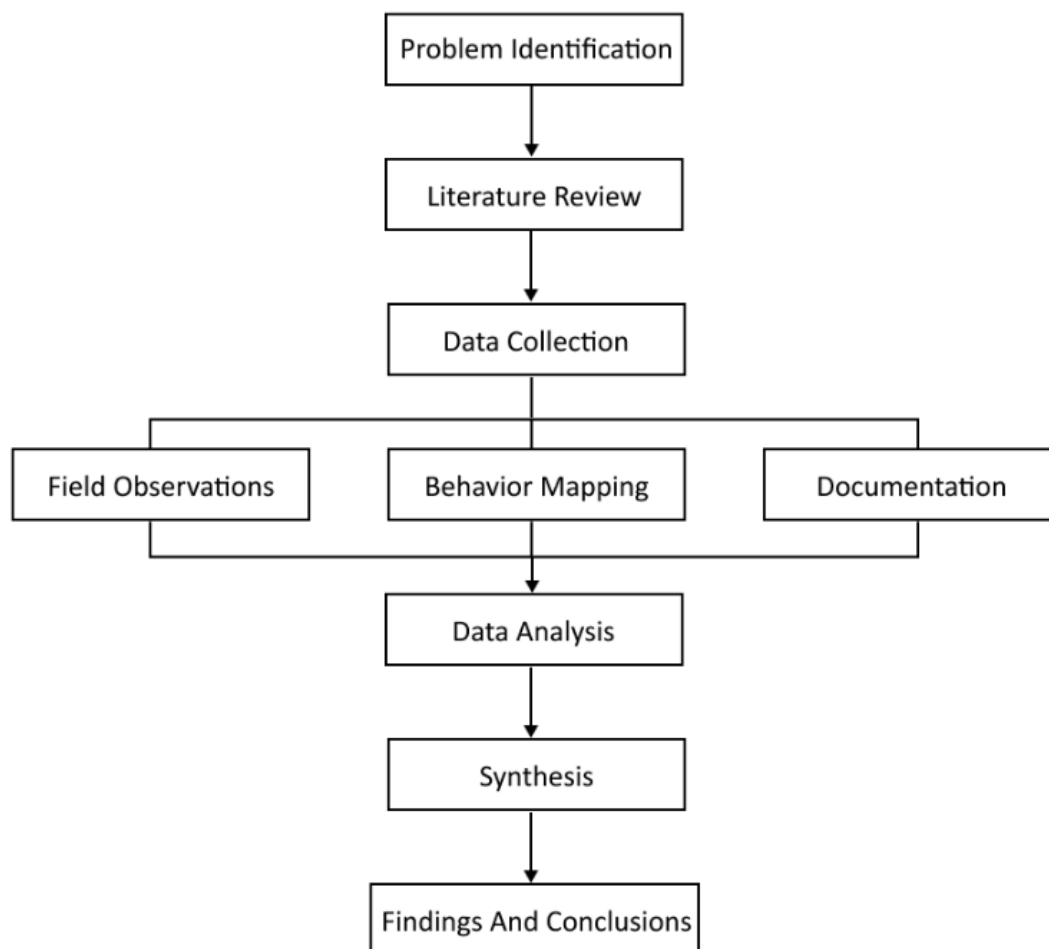


Figure 3. Research Flowchart
(Source: Personal Data Analysis, 2026)

3. RESULT AND DISCUSSION

3.1 Spatial Utilization Patterns Based on Behavior Mapping

Observations on the first day revealed activity patterns as shown in Figure 4 and Table 2.

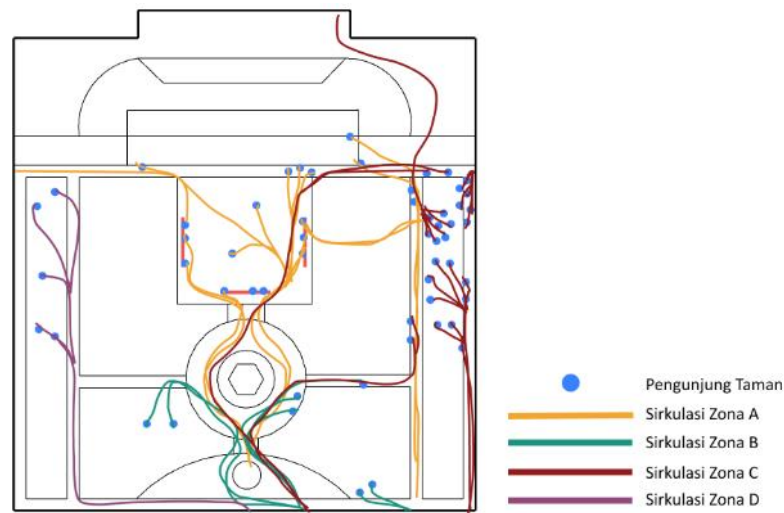


Figure 4. Behavior Mapping: Day One

(Source: Personal Data Analysis, 2026)

Table 2. Summary of the First Day's Observations

Zone	Number of Visitors (Range)	Dominant Activity
A	9 - 17 People	Sitting and chatting
B	3 - 7 People	Enjoying the flower garden
C	5 - 36 People	Playing games
D	2 - 7 People	Viewing animals

Source: Personal Data Analysis, 2026

Based on Figure 4, the results of the behavior mapping on the first day show that Bandung City Hall Park was relatively crowded on a weekday in the morning through early afternoon. Visitors were predominantly groups of kindergarteners and families bringing their children for recreation. The behavior mapping results showed that visitor activities were not yet evenly distributed across all zones. Zone C was the area with the highest activity intensity, dominated by play on the slides and seesaws, accompanied by shared meals and supervision of children by teachers or parents. Zone A also showed fairly high activity levels, with the main activities consisting of relaxing, chatting, and running. Meanwhile, Zone B was mostly used for enjoying the flower garden, sitting, and taking photos, while Zone D had the fewest visitors, with activities dominated by observing animals and taking photos (Table 2).

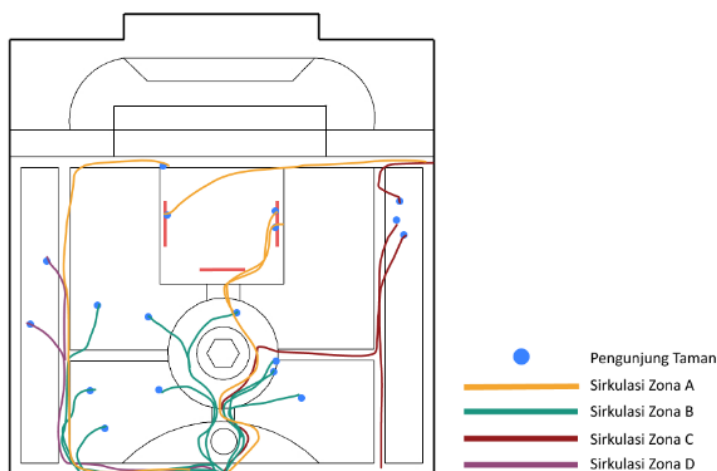


Figure 5. *Behavior Mapping: Day Two*
(Source: Personal Data Analysis, 2026)

Table 3. Summary of Observation Results for the Second Day

Zone	Number of Visitors (Range)	Dominant Activity
A	2 - 4 People	Sitting and chatting
B	2 - 9 People	Enjoying the flower garden, biking, and jogging
C	1 - 3 People	Playing
D	1 - 2 People	Viewing animals, taking photos with animals

Source: Personal Data Analysis, 2026

Based on Figure 5 and Table 3, the results of the behavior mapping on the second day show that the atmosphere at Bandung City Hall Park on a weekday in the late afternoon tends to be relatively quiet. Visitors are predominantly teenagers and children. The number of visitors has decreased significantly compared to the first day, and many people use the park as a place to relax after their daily activities. Visitor activity remained concentrated in Zone B, where people enjoyed the beauty of the flower garden, rode bicycles, and went for runs, while Zone A was used for relaxing and chatting. Zone C was used for play by a small number of visitors, while Zone D remained an area with low activity levels, dominated by observing animals and taking photos with them. Observations on the second day showed that visitor activity tended to be lower compared to the morning observations, so the use of space in each zone appeared more limited.

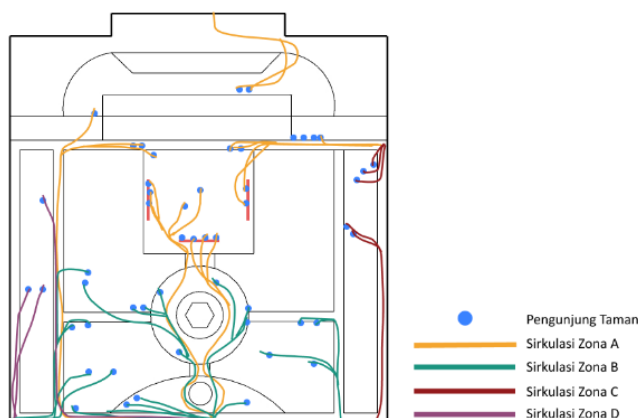


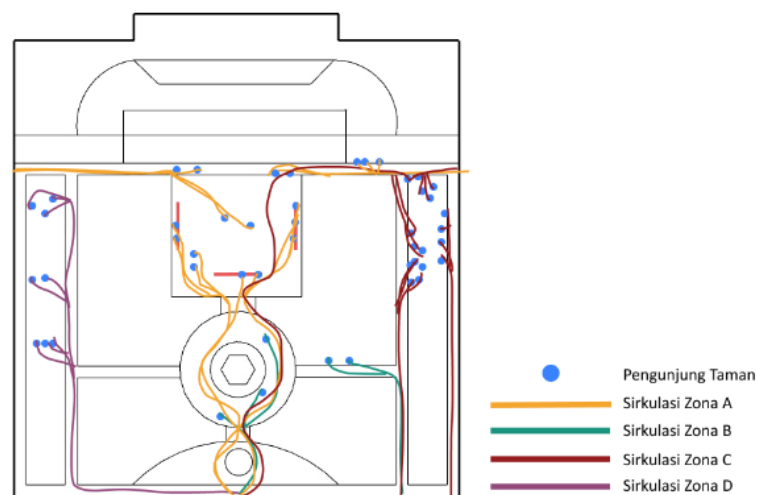
Figure 6. *Behavior mapping: Day Three*
(Source: Personal Data Analysis, 2026)

Table 4. Summary of Observation Results for the Third Day

Zone	Number of Visitors (Range)	Dominant Activity
A	12 - 21 People	Sitting and chatting
B	4 - 15 People	Enjoying the flower garden and taking photos
C	1 – 5 People	Playing
D	1 - 3 People	Viewing animals, taking photos with animals

Source: Personal Data Analysis, 2026

Based on Figure 6 and Table 4, the observations on the third day showed that Bandung City Hall Park was busier on the weekend than on the second day, which was a weekday. The number of visitors increased in almost all observation zones, especially in the afternoon when people used the park as a place for recreation and to gather with their families. Visitors were predominantly families bringing their children to play, groups of teenagers, and people using the open space to relax and enjoy the park's atmosphere. This increase on the third day indicates that park activity intensified as the afternoon progressed through the end of the observation period. Visitor activity remained concentrated in Zone C, the area with the highest activity intensity, which was dominated by children's play. Zone A was also frequently used for sitting, chatting, and resting. On the other hand, Zone B was more often used for enjoying the flower garden and taking photos, while Zone D remained the area with the lowest visitor traffic, dominated by wildlife viewing and photography.

Figure 7. Behavior Mapping: Day Four
(Source: Personal Data Analysis, 2026)**Table 5. Summary of Observation Results for Day Four**

Zone	Number of Visitors (Range)	Dominant Activity
A	12 - 18 People	Sitting, taking photos, and chatting
B	3 - 5 People	Enjoying the flower garden and taking photos
C	6 - 18 People	Playing
D	1 - 8 People	Viewing animals, taking photos with animals

Source: Personal Data Analysis, 2026

Based on Figure 6 and Table 6, the observations on the fourth day showed that Bandung City Hall Park was still quite crowded on the weekend. Visitors were predominantly families

bringing their children for recreation, teenagers, and people using the park to relax. Visitor activities remained concentrated in Zone A and Zone C. Zone A was dominated by activities such as sitting and relaxing, chatting, and taking photos, while Zone C was dominated by children's play and group meals. Meanwhile, Zone B was used for enjoying the flower garden and taking photos, while Zone D remained the area with the lowest visitor traffic, dominated by activities such as observing wildlife and taking photos. In general, the patterns of space utilization on the fourth day showed the same trend as in previous observations, namely that visitor activities were more concentrated in gathering areas and play areas.

Table 6. Summary of Observation Results Over Four Days

Zone	Weekday	Weekend	Dominant Activity	Intensity
A	Busy	Busy	Relaxing, taking photos, and chatting	High
B	Moderate	Moderate	Enjoying the flower garden and taking photos	Moderate
C	Busy	Very busy	Playing, eating, and watching the kids	Very High
D	Quiet	Quiet	Watching animals and taking photos with them	Low

Source: Personal Data Analysis, 2026

Based on the results of four observation sessions using 30-minute time sampling, it was found that the patterns of space utilization at Bandung City Hall Park showed a relatively consistent trend. On weekdays, visitor numbers tend to be lower, particularly during the afternoon and early evening, whereas on weekends, there is an increase in visitor numbers across nearly all zones. The most common activities include relaxing, chatting, playing, taking photos, enjoying the park, and observing wildlife.

Overall, Zone A and Zone C were the areas with the highest activity levels during each observation session. In contrast, Zone D consistently had the lowest level of use, while Zone B showed moderate activity levels, dominated by visitors enjoying the flower garden and taking photos. This pattern of activity distribution indicates that the use of space is not yet evenly distributed across all zones of the park. These observation results suggest that visitor activities tend to be concentrated in zones that offer a higher level of comfort and more supportive facilities. These findings are also supported by Dwi et al. (2025), who explain that spatial characteristics and facilities influence the behavioral patterns of urban park users. These findings align with research showing that spatial characteristics and zoning influence activity patterns and space utilization by users (Desain Dan Arsitektur et al., 2024a; Dewiyanti et al., 2022)

3.2 Multisensory Environmental Quality Analysis

A multisensory environmental quality analysis was conducted to identify the environmental factors influencing patterns of space utilization in each zone of Bandung City Hall Park. The analysis was based on visual, auditory, thermal, and olfactory aspects, as well as supporting facilities, which were observed directly in the field. According to Spence (2020), users' experiences of a space are shaped by the integration of various sensory stimuli received simultaneously. The multisensory approach not only influences perceptions of spatial quality but also determines the level of comfort, preferences, and intensity of users' activities when utilizing public spaces (Ayu Nabila & Tiara Maharani, n.d.; Nisa et al., 2025)



Figure 8. Conditions in Zone A
(Source: Personal Data Analysis, 2026)



Figure 9. Conditions in Zone A
(Source: Personal Data Analysis, 2026)

A. Zone A

Zone A has the best environmental quality compared to the other zones. This area is dominated by lush vegetation, fountain ponds, and benches scattered throughout, creating a comfortable atmosphere for sitting and resting. The sound of the fountains helps create a calmer environment, while the shade from the trees makes the area feel cooler. This combination makes Zone A a popular spot for various groups of visitors to gather, chat, and relax.



Figure 10. Conditions in Zone B
(Source: Personal Data Analysis, 2026)



Figure 11. Conditions in Zone B
(Source: Personal Data Analysis, 2026)

B. Zone B

Zone B's visual character is dominated by flower gardens with a variety of colors, making it an attraction for visitors. The atmosphere in this area is relatively calm, with fairly comfortable thermal conditions due to the presence of shade-providing vegetation. Visitors' activities are generally brief, such as enjoying the gardens, taking photos, and occasionally sitting down. The intensity of use is not as high as in Zone A or Zone C because facilities for gathering are still limited.



Figure 12. Conditions in Zone C
(Source: Personal Data Analysis, 2026)

C. Zone C

Zone C is the area with the highest level of activity due to the presence of a children's playground. The playground ensures this area is always bustling with children and families. The atmosphere tends to be more lively due to play activities, while thermal conditions remain quite comfortable as part of the area is shaded by vegetation. Although some playground equipment is beginning to show signs of wear and tear, this area remains a top destination for visitors, indicating that the function of the space is more influential than the physical condition of the facilities.



Figure 13. Conditions in Zone D
(Source: Personal Data Analysis, 2026)

D. Zone D

Zone D had the lowest utilization rate during the observation period. This area is dominated by animal enclosures, which are visually less appealing than those in other zones. The scent from the animal area was quite noticeable at several points, while visitor amenities remained limited. Most visitors only stopped briefly to view the animals or take photos before moving on to other zones. These conditions resulted in a relatively shorter duration of activity in Zone D compared to the other zones.

Based on the analysis results, the multisensory environmental quality in each zone exhibits distinct characteristics, thereby influencing the intensity of space utilization by

visitors. These differences in environmental quality are reflected in variations in the visual, auditory, thermal, and olfactory conditions and supporting facilities available in each zone, resulting in varying levels of space utilization. These findings align with the research by Nisa et al. (2025), which states that multisensory environmental quality influences the user experience of public spaces, as well as with that of Arif Budiman et al. (2022), which explains that facility conditions and spatial quality are important factors in supporting activities in urban open spaces.

3.3 The Relationship Between Multisensory Environmental Quality and Spatial Inequality

The research findings indicate that multisensory environmental quality is correlated with the level of space utilization in each zone of Bandung City Hall Park. Zones A and C are the most frequently used areas because they offer an environmental quality that better supports visitor activities compared to the other zones. In contrast, Zone D exhibits the lowest level of use despite its potential as an educational area due to the presence of a mini zoo. These findings suggest that activity intensity is influenced not only by the presence of facilities but also by the quality of the spatial experience perceived by visitors through various sensory stimuli (Nisa et al., 2025; Spence, 2020)

The presence of lush vegetation, thermal comfort, visual quality, and seating facilities in Zone A creates a comfortable space for social activities such as sitting, chatting, and resting. Meanwhile, Zone C remains the area with the highest activity intensity due to the presence of play facilities, which are the main attraction for families with children. These findings align with the research by Nurazizah et al. (2022), which explains that the characteristics of a play area influence children's choice of activity locations. These results are also supported by Dewiyanti et al. (2022), who state that users tend to choose spaces that provide a sense of safety and comfort and are capable of supporting social and recreational activities. This trend indicates that the quality of a space influences visitors' preferences when choosing where to engage in activities. This finding aligns with the work of Safira & Hartanti (2026), who explain that the character of a space plays a role in shaping a "sense of place," thereby influencing visitors' experiences and tendencies regarding the use of public spaces.

Conversely, the low activity intensity in Zone D indicates that the presence of spatial functions alone is insufficient to attract visitors if not supported by an adequate environmental quality. Unattractive visual conditions, limited supporting facilities, and a less comfortable environment cause most visitors to stop only briefly to view the animals before moving on to another zone. These results are consistent with the study by Arif Budiman et al. (2022), which states that the quality of facilities and the physical environment are important factors in increasing the intensity of public open space use.

Differences in space utilization rates across zones also indicate that zoning influences the distribution of visitor activities. Zones with clear functions, easy access, and adequate facilities tend to become hubs of activity compared to areas with less defined functions. This finding aligns with research by Desain Dan Arsitektur et al. (2024b), which explains that zoning arrangements influence circulation patterns and space utilization by users. Furthermore, the concept of placemaking emphasizes that the quality of a space is determined not only by its physical elements but also by its ability to create meaningful experiences and social interactions for visitors (Desain Dan Arsitektur et al., n.d.)

Overall, this study shows that spatial disparity in Bandung City Hall Park is causally related to differences in multisensory environmental quality across each zone. Zones with a better combination of visual, auditory, thermal, and olfactory qualities, as well as better facilities, tend to have higher activity levels. These findings reinforce the conceptualization that the sensory quality of the built environment influences human spatial behavior, where a

multisensory approach can be used as a method to identify disparities in the use of public spaces and serve as a basis for post-occupancy evaluations and the design of urban parks that are more equitable and responsive to user needs (Ayu Nabila & Tiara Maharani, n.d.)

4. CONCLUSION

This study successfully identified disparities in space utilization at Bandung City Hall Park through a multisensory approach by analyzing visitor activity patterns using behavior mapping and assessing the environmental quality in each zone. The results show that space utilization is not yet evenly distributed. Zone A (the fountain area and paved area under shady trees) and Zone C (the playground) have the highest activity levels because they are supported by better multisensory environmental quality, including visual comfort (unobstructed views without massive barriers), thermal comfort (shade from vegetation), auditory and tactile comfort, as well as the availability of seating (street furniture) that supports social and recreational activities. In contrast, Zone D (the mini zoo) showed the lowest level of utilization due to suboptimal environmental quality, such as a lack of supporting facilities, an isolated visual setting, and lower microclimatic comfort resulting from heat radiation exposure on the paved floor.

Research findings indicate that the quality of the multisensory environment has a direct impact on the intensity of public space use. The better the multisensory quality of a zone, the higher the tendency for visitors to use that space for stationary activities over extended periods. Conversely, zones with poorer multisensory quality tend to be merely passed through or have lower activity levels, leading to spatial disparities in usage between zones.

The results of this study demonstrate that a multisensory approach can be used as a method to identify disparities in the use of public spaces, while also serving as a foundation for post-occupancy evaluations and the design of open spaces that are more equitable, comfortable, and responsive to human sensory needs. It is hoped that this approach will be taken into consideration in the management of urban parks so that each zone has an environmental quality capable of supporting visitor activities in a more balanced manner.

This study is still limited to a single case study location with a relatively short observation period; therefore, the results obtained cannot yet illustrate variations in space utilization under seasonal conditions or over longer time periods. Consequently, future research is recommended to conduct observations in several public spaces with more varied observation durations, using quantitative sensory measurement tools (such as sound-level meters for noise levels and thermohygrometers for microclimate parameters), and to combine this multisensory approach with user perceptions gathered through questionnaires or interviews to gain a more comprehensive understanding of the factors influencing disparities in the use of urban spaces.

REFERENCES

- Arif Budiman, M., Dewiyanti, D., Widiyanti Natalia, T., Chandra Aditya, N., Kunci, K., & Saparua Bandung, T. (2022). ANALISIS KELAYAKAN FASILITAS RUANG TERBUKA KOTA DI TAMAN SAPARUA BANDUNG Corresponding Author. DESA Jurnal Desain Dan Arsitektur, 3(1), 6. <https://ojs.unikom.ac.id/index.php/desa/index>
- Ayu Nabila, F., & Tiara Maharani, R. (n.d.). JAUR (Journal of Architecture and Urbanism Research) Penerapan Arsitektur Multisensori sebagai Stimulus Multiple Intelligence Anak pada Taman Prestasi Surabaya Application Of Multisensory Architecture As A Stimulus For Children's Multiple Intelligence At Taman Prestasi Surabaya. <https://doi.org/10.31289/jaur.v9i1.14459>

- Ba, M., Li, Z., & Kang, J. (2023). The multisensory environmental evaluations of sound and odour in urban public open spaces. *Environment and Planning B: Urban Analytics and City Science*, 50(7), 1759–1774. <https://doi.org/10.1177/23998083221141438>
- Bachtiar, J. C. U., & Kusuma, H. E. (2019). Tipologi Taman-Taman Kota berdasarkan Sense of Place Pengunjung. 17(2).
- Desain Dan Arsitektur, J., Abdul Wahid, I., Dewiyanti Tantarto, D., Widiyanti Natalia, T., & Chandra Aditya, N. (2024a). PENGARUH ZONING RUANG TERHADAP SIRKULASI DI SOSI FITNESS CENTERBANDUNG. *DESA Jurnal Desain Dan Arsitektur*, 5(2). <https://ojs.unikom.ac.id/index.php/desa/index>
- Desain Dan Arsitektur, J., Bimantoro, D., Dewiyanti, D., Chandra Aditya, N., & Widiyanti Natalia, T. (n.d.). under a Creative Commons Attribution-NonCommercial 4.0 International License STUDI KONSEP PENDEKATAN PLACEMAKING PADA PERANCANGAN RUANG PUBLIK M BLOC SPACE, JAKARTA SELATAN. *DESA Jurnal Desain Dan Arsitektur*, 3(1), 22. Retrieved <https://ojs.unikom.ac.id/index.php/desa/index>
- Dewiyanti, D., Natalia, T. W., & Hertoety, D. (2022). Identifikasi Pilihan Tempat Bermain Anak pada Lingkungan Permukiman Terencana dan Tidak Terencana. *Jurnal Lingkungan Binaan Indonesia*, 11(4), 198–207. <https://doi.org/10.32315/jlbi.v11i4.61>
- Dwi, E., Astuti¹, K., Winarsih², E., & Budiyanto³, H. (2025). Kajian Perilaku Pengguna Taman Kota di Kabupaten Blitar. *VISA: Journal of Visions and Ideas*, 5(1), 463.
- Han, T., Tang, L., Liu, J., Jiang, S., & Yan, J. (2025). The Influence of Multi-Sensory Perception on Public Activity in Urban Street Spaces: An Empirical Study Grounded in Landsenses Ecology. *Land*, 14(1). <https://doi.org/10.3390/land14010050>
- Jin, T., Lu, J., & Shao, Y. (2024). Exploring the Impact of Visual and Aural Elements in Urban Parks on Human Behavior and Emotional Responses. *Land*, 13(9). <https://doi.org/10.3390/land13091468>
- Nisa, A. K., D Nurgandarum, & D Rosnarti. (2025). Multisensory Approach in Commercial Public Space Design in East Java, Indonesia. *International Journal of Architecture and Urbanism*, 9(3), 495–509. <https://doi.org/10.32734/ijau.v9i3.23589>
- Nurazizah, L. T., Dewiyanti, D., Natalia, T. W., & Aditya, N. C. (2022). TERITORI RUANG BERMAIN ANAK PADA FASILITAS PRASEKOLAH DI KOTA BANDUNG. *Vitruvian : Jurnal Arsitektur, Bangunan Dan Lingkungan*, 12(1), 1. <https://doi.org/10.22441/vitruvian.2022.v12i1.001>
- Putriana, A., & Fatahillah, I. A. (2025). Urgensi Pengembangan Ruang Terbuka Hijau di Kota Bandung dalam Upaya Mewujudkan Kota Layak Anak. *Dialogia Iuridica*, 17(1), 022–040. <https://doi.org/10.28932/di.v17i1.10241>
- Putu, N., Nitidara, A., Sarwono, J., & Suprijanto, S. (n.d.). Exploring cross-modal perception: audio, visual, and thermal responses to changes in audio-visual stimuli within virtual urban parks.
- Safira, C. P., & Hartanti, N. B. (2026). Peran Kegiatan Komersial dalam membentuk Sense of Place di Ruang Publik berdasarkan Persepsi Pengunjung (Studi Kasus: Taman Literasi, Blok M). *SENTRI: Jurnal Riset Ilmiah*, 5(2), 1685–1698. <https://doi.org/10.55681/sentri.v5i2.5709>
- Septianto, E., Djimantoro, M. I., Noviandri, P. P., Firmansyah, Poerbo, H. W., & Martokusumo, W. (2023). Multi-sensory in the conception of place in an urban cultural heritage environment. *ARTEKS : Jurnal Teknik Arsitektur*, 8(2), 271–282. <https://doi.org/10.30822/arteks.v8i2.2147>
- Shahhoseini, H., Kamal, M., Maulan, S., & Samimi, P. M. (2023). The Relationship between Sensory Stimuli Integration and Visual Preferences in Small Urban Parks. *International*

Journal of Architectural Engineering & Urban Planning, 33(1), 2023.
<https://doi.org/10.22068/ijaup.722>

Spence, C. (2020). Senses of place: architectural design for the multisensory mind. In *Cognitive Research: Principles and Implications* (Vol. 5, Number 1). Springer Science and Business Media Deutschland GmbH. <https://doi.org/10.1186/s41235-020-00243-4>

Tabassum, M. (2025). Understanding urban green spaces through lenses of sensory experience: a case study of neighborhood parks in Dhaka city. *Senses and Society*, 20(1), 62–94. <https://doi.org/10.1080/17458927.2024.2392960>

Zheng, H., Luo, M., Wang, Y., & Wei, Y. (2024). Multi-Sensory Interaction and Spatial Perception in Urban Microgreen Spaces: A Focus on Vision, Auditory, and Olfaction. *Sustainability (Switzerland)*, 16(20). <https://doi.org/10.3390/su16208809>