

# **Understanding Constraints and preferences for green space recreation: A study of participation and utilization of green space parks in Putrajaya**

## **Abstract**

This study explored the constraints affecting recreation in Putrajaya's green spaces, focusing on personal, interpersonal and structural constraints. The study collected 345 valid questionnaires, and the results showed that most respondents were 19-39 years old, single and highly educated. The respondents' favorite activities in the parks were walking and photography, while ticket prices and weather conditions influenced participation. The research instrument showed high internal consistency and validity, indicating reliable findings. Significant positive correlations were found between the various constraints, highlighting the intertwined nature of personal and interpersonal factors in leisure activity participation. However, these constraints may not directly determine participation levels, suggesting that the influence of extrinsic factors (e.g., weather and pricing strategies) still impacts participation levels. In conclusion, this study provides valuable insights into the complexity of green space utilization and highlights the need to consider constraints and preferences in park planning and management. Future research should investigate these factors to improve the visitor experience and park utilization.

## **1. Introduction**

The Putrajaya government has prioritized the development of green parks for the past four decades as it recognizes the important contribution of green spaces to environmental protection and improving the quality of life and overall well-being of residents. These efforts are aimed at creating a more attractive open urban space that will ease urban congestion in neighboring cities such as Kuala Lumpur by attracting more people to live and work here.

Despite a clear direction in development, the allure of these green spaces in Putrajaya appears to have waned, as evidenced by a decline in visitation between 2014 and 2016, particularly at Putrajaya Wetland Park (Omar, 2018). This trend raises concerns about these spaces' effectiveness in improving residents' lifestyles and fostering a sense of belonging and attachment to the Putrajaya environment. Reluctance to utilize these spaces also reduces Putrajaya's attractiveness to potential new residents in the surrounding area.

Notably, the COVID-19 pandemic highlighted the value of green spaces (Ugolini et al., 2020), with government-imposed social segregation rules and the closure of some indoor recreational facilities prompting people to seek out green spaces for relaxation and recreation.

Nonetheless, factors such as the accessibility of green spaces to low-income groups via public transport (Munson, 1994) continue to limit people's use of green spaces, suggesting that distance itself is not a significant deterrent.

This study aims to provide insight into the distribution and accessibility of green spaces in the center of Putrajaya and investigate the underlying reasons for their underuse by local residents. The study will explore the main constraints—personal, interpersonal, and structural—that prevent people from using these spaces frequently. A comprehensive understanding of the spatial distribution of green parks in Putrajaya is fundamental to identifying and addressing these constraints.

Remarkably, this study pioneers in filling a significant research gap, as there has yet to be a detailed exploration of the factors deterring the use of green spaces in Putrajaya, Malaysia. By shedding light on these issues, the research seeks to contribute valuable insights into urban planning and the enhancement of green spaces, ultimately aiming to improve public engagement and well-being.

Despite recognizing the vital role of green parks in environmental protection and enhancing the quality of life for residents, the diminishing appeal of such spaces in Putrajaya remains undeniable. This situation raises concerns about the city's green park planning and management efficiency. The COVID-19 pandemic underscored the importance of green parks as essential recreational areas (Venter et al., 2020). However, significant obstacles to their use persist. The study aims to uncover the reasons that deter Putrajaya's residents from frequenting green spaces, identify the constraints, and suggest solutions.

Green spaces are recognized as serene havens that significantly reduce psychological stress and aid in patient recovery (Uwajeh et al., 2019), alongside offering physical health benefits such as reducing obesity among teenagers and extending the lifespan of the elderly. These areas are not only therapeutic for patients but also promote overall physical well-being. Building upon this, green spaces enhance community cohesion (Aziz, 2012) and foster harmonious relationships among residents. They serve as platforms for diverse groups to engage in recreational activities, which strengthens social bonds. Moreover, green spaces contribute to environmental sustainability by improving air quality, regulating urban climates, and supporting biodiversity (Goddard et al., 2010; Rudd et al., 2002; Fernández & Jokimäki, 2001), crucial for the ecological balance within urban ecosystems.

Furthermore, the economic advantages of green spaces are evident in their positive impact on property values (Nicholls & Crompton, 2005), highlighting an economic benefit that complements their environmental and health advantages. This multifaceted value underscores the importance of green spaces in urban development and planning.

Shifting focus to the planning and management of green spaces across various countries reveals a range of standards and policies. Each nation adopts its own strategies to ensure urban green spaces are accessible to all its residents. However, challenges persist, as illustrated by Malaysia's struggle to meet green space standards in urban areas (Maryanti et al., 2017). This situation points to the global diversity in green space planning efforts and the importance of developing strategies that cater to local needs and conditions.

The economic advantages of green spaces are also evident, positively impacting property values (Nicholls & Crompton, 2005). This economic benefit, alongside environmental and health benefits, underscores the importance of green spaces in urban development and planning. However, the planning and management of green spaces across different countries present a range of standards and policies, each designed to ensure these urban green spaces are accessible to all residents. Despite this, challenges such as those highlighted by Malaysia's struggle to meet green space standards in urban areas (Maryanti et al., 2017) persist, pointing to the diversity in green space planning efforts globally and the need for tailored strategies.

Innovative planning models have been introduced in response to these challenges, emphasizing the integration of green spaces into urban ecosystems and encouraging collaborative planning to tackle accessibility and environmental equity issues. These models ensure green spaces are seen as integral components of sustainable urban development, moving beyond their mere recreational function. This shift is crucial for enhancing urban life through a balanced consideration of health, social, environmental, and economic impacts, and underscores the need for innovative planning and management to maximize their benefits.

Within this context, the Leisure Constraint Model offers a theoretical framework for understanding the barriers to green space usage, categorizing them into intrapersonal, interpersonal, and structural constraints (Crawford & Godbey, 1991). This model serves as a foundation for analyzing the limitations faced by residents, such as those in Putrajaya, and forms a critical part of the discourse on green space planning and management. In Putrajaya, the legal framework for parks and the roles of government bodies in urban green space

management are pivotal. The city's development, with a focus on integrating green spaces to enhance accessibility and quality of life, illustrates a commitment to creating sustainable urban environments. This comprehensive approach to green space planning and management highlights the significant role these spaces play in urban development and the ongoing efforts to overcome challenges and realize their full potential.

This review underscores the crucial role of green spaces in enhancing urban living quality, biodiversity, and environmental sustainability, while also identifying a significant research gap in understanding the barriers to green space utilization in Putrajaya, Malaysia. The study aims to delve into the personal, interpersonal, and structural constraints that prevent residents from engaging with these areas, seeking to bridge a critical gap in the literature on Malaysia's urban development. Through this exploration, the study endeavors to provide valuable insights for the improvement of green space planning and management, aiming to boost public engagement and well-being within urban settings.

Building on these insights, the paper outlines several hypotheses. These hypotheses are crafted to methodically examine the reasons for the low usage rates of Putrajaya's green parks. By testing these hypotheses, the research seeks to uncover the intrapersonal, interpersonal, and structural barriers that prevent residents from fully benefiting from green spaces. Each hypothesis targets a specific set of potential barriers, creating a detailed framework for assessing and enhancing understanding of green park usage.

Hypothesis 1: Personal constraints (such as lack of interest, time, or perceived benefits) significantly reduce the frequency of green space recreation among Putrajaya residents, addressing what constraints prevent people from visiting green spaces for recreational activities.

Hypothesis 2: The absence of companionship or social support significantly deters Putrajaya residents from participating in green space recreation, indicating that interpersonal constraints significantly limit engagement with these spaces.

Hypothesis 3: Structural constraints (such as accessibility, availability of facilities, and safety concerns) significantly hinder the utilization of green spaces by Putrajaya residents, focusing on the physical and infrastructural barriers to green space access.

Hypothesis 4: There are significant differences in the purposes of using green spaces among Putrajaya residents, reflecting varied recreational needs and preferences. This

hypothesis aims to uncover the diversity in motivations for green space utilization, from leisure and exercise to socializing and relaxation.

In conclusion, this study investigates the under-utilization of green parks in Putrajaya, even though green parks benefit environmental protection and residents' quality of life. By formulating and testing several hypotheses, this study attempts to shed light on the personal, interpersonal and structural factors that limit residents' use of green spaces. By examining these barriers in detail, this study endeavors to provide insights that can guide improved planning and management of green spaces in parks. The ultimate goal is to improve the attractiveness and accessibility of these important green spaces, enriching the lives of Putrajaya residents and deepening their connection to the city.

## 2. Methods

### 2.1 Study Area

The study was conducted in Putrajaya, which is strategically positioned on the southwest coast of Peninsular Malaysia. It is strategically located on the south-west coast of Peninsular Malaysia and covers an area of 329,847 square kilometers, with latitudes of 2°53' to 2°58' north and longitudes of 101°44' to 101°10' east. Putrajaya is located 25 kilometers south of Kuala Lumpur, between Kuala Lumpur and Kuala Lumpur Airport, and is an important administrative and urban center. In terms of climate, Putrajaya is situated in a typical tropical jungle-hill country with annual rainfall of up to 2-3 meters and average daytime temperatures hovering around 30 degrees Celsius.

According to the census data released by the Government of Malaysia, Putrajaya has a population of about 110,000, of which about 54,000 are male and 56,000 are female. The population is predominantly Malay, accounting for 90 per cent of the total population, with Chinese, Indians and other ethnic groups making up the rest. There is also a tiny non-citizen population of about 3,000. Most of the population practices Islam, while a few residents practice Hinduism, Christianity, Buddhism and other religions. The composition of the urban population of Putrajaya is not only diverse but at the same time, the size of the population is changing, with the number of households increasing from 20,000 to 30,000 in the decade from 2010 to 2020, reflecting a change in the age structure of the population, as well as a significant increase in the density of the population from 1,395 to 2,215 inhabitants per square kilometer.

Although the percentage of Chinese in Putrajaya is low, including Chinese in the Putrajaya green space utilization study is still necessary for Malaysia, comprising 22.6 per cent of the Malaysian population of about 6.9 million people. Studying the constraints of the Chinese community in Putrajaya regarding green space utilization is crucial to increasing equitable participation in green spaces in Putrajaya, the Garden City. This study can help city planners understand the needs of different residents better to ensure that residents from different cultural backgrounds are treated relatively and that visitors to the city have equal access to and enjoyment of the city's green space resources regardless of their racial or cultural backgrounds, and that it is the basis for building an equitable society.

Moreover, many Chinese tourists visit Malaysia, including Putrajaya, due to the intensifying relationship between China and Malaysia. Focusing on the Chinese-speaking population allows the study to delve deeper into their preferences for tourist destinations, travel motivations, and experiential perceptions. This nuanced approach helps identify specific recreational constraints faced by Chinese visitors, which can be instrumental in refining the recreational offerings of Putrajaya to better cater to this demographic. Understanding these preferences enhances the ability to provide targeted recommendations to enrich Chinese tourists' experiences in the city's green spaces.

The survey sample for this study was local Chinese residents and long-term Chinese students living in Sri Kembangan, near Putrajaya. These populations provide valuable insights into the constraints faced by recreation in Putrajaya's green parks, including accessibility, cultural preferences, and infrastructure. By focusing on these specific populations, this study aims to gain insight into how these constraints affect the frequency of their participation in Putrajaya Green Park activities. This understanding is critical to developing more inclusive and accessible urban parks to ensure that they effectively meet the diverse needs of all community members.

## 2.2 Data Collection

The use of an online questionnaire to study the topic of recreational constraints in Putrajaya's green spaces has multiple benefits. Firstly, given the high familiarity with online platforms and tools, using an online questionnaire significantly increases the response rate, ensuring sufficient data is collected to support the study. A high response rate is essential to

ensure the study's results are representative and reliable, especially when a wide range of opinions are needed to analyze the diverse constraints encountered in green spaces.

Secondly, the online questionnaire system's automated data collection and collation functions greatly simplified the data handling process. These speed up data collection and improve accuracy by reducing human entry errors. The ability to process data quickly and accurately is essential when studying complex issues such as physical barriers to green space access, socio-economic factors, or cultural preferences, as it allows researchers to quickly analyze large amounts of data and provide reliable analysis results.

Finally, the advantages of online questionnaires in protecting the privacy and anonymity of participants are that they make them more able to express their genuine opinions and experiences when answering questions that may relate to their personal habits or sensitive issues. This anonymity is essential because it encourages participants to share without apprehension the problems they have encountered using green spaces. Such authentic feedback is crucial for identifying and understanding the natural barriers affecting the use of green spaces by specific communities, which helps design more inclusive and practical urban green space planning programs.

The data collection for the questionnaire was conducted from January 15 to March 15, 2024, a period chosen because of the high number of holidays and the increased availability of people for leisure activities. Each week, a link to the questionnaire was distributed to different online groups and incentives were provided to motivate participants to complete it. Completing the questionnaire required approximately 7 minutes, ensuring it was thorough and respectful of participants' time.

Many previous studies inspired the design of the questionnaire (Crawford et al., 1991; Hubbard & Mannell, 2001; Wilhelm Stanis et al., 2009) when examining recreational constraints to parks in Booth Green.

The first section aims to assess the dimension of individual constraints. The questionnaire covers a range of influencing factors that serve as primary constraints on individuals' engagement in activities within green spaces. These influencing factors encompass respondents' perceptions of personal discretionary time, physical health status, the intensity of daily work commitments, the level of engagement in household affairs, the state of emotional mood, proficiency in fitness skills, and the cognitive awareness of personal discretionary fitness

expenses. These factors are crucial for a comprehensive evaluation of various internal constraints faced by individuals when participating in activities within green spaces. For instance, situations where individuals have limited discretionary time may result in a reduced frequency of visits to green spaces or a decrease in the duration of their stay in such spaces.

Through a comprehensive assessment of these influencing factors, the impact level of the dimension of individual constraints among the three dimensions can be determined, revealing its relative influence on the degree of participation. In addition, for each individual influencing factor, multiple regression analysis will be conducted to obtain the coefficients of each factor. The magnitude and significance of these coefficients can be utilized to measure the impact of each factor on the degree of participation. Factors with larger absolute values and smaller p-values exhibit a more significant influence on the degree of involvement. Based on the magnitude and significance of these coefficients, each factor will be ranked in descending order of its impact, determining which factors within the dimension of individual constraints are the most crucial in influencing the degree of participation.

Identifying the most significant individual constraints is crucial for policymakers and interveners involved in formulating leisure services policies in Putrajaya. Such identification can help them tailor specific improvements in policies and interventions, thereby enhancing the frequency of people's engagement in green space activities, extending the duration of residents or visitors in green spaces, increasing the utilization of green spaces, and improving individual well-being. As a result, this may lead to more individuals being willing to explore or reside in Putrajaya. For example, the perception of environmental safety proves to be the most significant factor influencing individual constraints. In that case, relevant government departments may need to implement corresponding facilities or adopt protective measures to enhance overall safety in the Putrajaya area. Such actions can heighten individuals' perception of safety, subsequently boosting their participation frequency or prolonging their stay in green spaces.

The second section aims to analyze interpersonal constraints, as this dimension plays a crucial role in influencing people's participation in green space activities. When examining interpersonal constraints, a survey of the research subjects will be conducted through five influencing factors. The questions cover companions' preferences for types of green parks, the frequency of companions visiting green parks, the duration companions can stay in green parks, the frequency of companions participating in green parks, companions' invitations, companions'



attitudes toward engaging in leisure activities in green parks, and the transportation distance between companions and respondents. Multiple regression analysis will be employed in the analysis of this dimension to identify significant contributing factors and pinpoint those that play a key role across the entire dimension. Additionally, factor analysis will be utilized to uncover latent variables within interpersonal constraints. This method helps detect commonalities among these factors and whether they converge into a single factor.

Furthermore, path analysis will be applied to provide valuable insights by exploring causal relationships between these factors, revealing both direct and indirect impacts among them. For instance, it may be discovered that companions' invitations have a direct and significant impact on whether respondents are willing to visit green parks, while their influence on other factors may be indirect or nonexistent. Therefore, path analysis will yield coefficients indicating the impact levels of each factor on the degree of participation, aiding in identifying the most significant factors. This computational approach will also be applied to measure the other two dimensions.

Moreover, factor analysis and path analysis help to gain a deeper understanding of the latent structures and the extent of correlations among these factors. They also shed light on the direct and indirect impacts of these factors on the degree of participation. This comprehensive analysis will provide a more thorough and nuanced exploration of the constraints on leisure activities within Putrajaya's green spaces.

The third section aims to analyze structural constraints, measuring the following items: the convenience of transportation on the way to the park, weather conditions, park ticket prices, security within the park, crowd density in the park, availability of pavilions for shade and shelter, hygiene conditions in the park, convenience in obtaining recreational information about the park, availability of user-choice fitness equipment in the park, park size, presence of distinctive landscapes, and the existence of accessibility facilities within the park. In the analysis of this dimension, the same methods, including multiple regression analysis, factor analysis, and path analysis, will be applied. The goal is to identify the most significant factors within this dimension that impact the degree of participation and the factors that have the greatest overall impact on participation.

In the fourth section, the measurement of the degree of participation involves the following metrics: the frequency of respondents' engagement in green park activities in their daily lives,

the duration of their stays in the park, the preferred periods for frequenting the park, the types of activities they enjoy participating in the park, and their preferences for park types. These questions will be utilized to assess the degree of participation among the respondents.

The fifth section focuses on measuring sociodemographic characteristics because there are various connections between sociodemographic features and the level of participation in green spaces. For example, the influence of gender on the level of participation in green spaces has been highlighted in previous research, indicating that women often prioritize the safety of the green park environment. Suppose there is insufficient lighting or a lack of on-site security personnel in the green park. In that case, it may lead women to be more cautious about participating in activities in these areas or even choose not to visit these green spaces. Additionally, the level of participation in green spaces is also influenced by individual age and health status; for instance, healthy young individuals may be more inclined to engage in recreational activities in green spaces, resulting in higher participation frequency. Meanwhile, income and education levels also impact the level of participation in green spaces. Individuals with higher income and education levels may be more consciously utilizing green spaces, as this demographic is likely to recognize the benefits and have the economic resources to enjoy these areas.

### 2.3 Statistical Analysis

In this study, we have used various data analysis methods to gain insight into the relationship between leisure constraints and participation in Putrajaya Green Park. Firstly, correlation analysis helps to understand the extent to which intrapersonal constraints (e.g., personal free time, physical health, etc.), interpersonal constraints (e.g., peer preferences and behaviors, etc.), and structural constraints (e.g., accessibility, park ticket prices, etc.) are interrelated. This analysis method can reveal which variables are significantly associated with each other, providing a basis for further regression analyses.

Second, multiple regression analyses can quantify the specific effects of intrapersonal, interpersonal, and structural constraints on park activity participation. Such analyses allow not only the identification of the main constraints affecting participation but also the assessment of the importance of these factors relative to participation. For example, it is possible to assess which personal or structural factors are critical barriers to residents' frequent use of green spaces.

In addition, factor analysis is used to explore potential factors or dimensions within interpersonal constraints. This can help simplify the structure of the data and identify common factors that influence participation in leisure activities. For example, it can reveal how different interpersonal factors can centrally influence an individual's decision to participate in green space activities.

Finally, t-tests compare differences in green space use attitudes and behaviours across different groups (e.g. different genders, education levels, etc.). Such comparisons can reveal how specific socio-demographic characteristics affect green space use, thus helping urban planners to design more precise and effective interventions to increase green space use among all groups.

Overall, this study was able to assess and explain the various constraints encountered by Putrajaya citizens in their green space recreational activities more comprehensively, thus providing a scientific basis and strategic recommendations for the planning and improvement of urban green spaces. These analyses not only enhance the depth and breadth of the study but also ensure the practicality and relevance of the findings, which can provide critical support for improving the quality of life of urban residents.

### 3.Results

#### 3.1 Demographics

A total of 345 valid questionnaires were returned. Regarding gender distribution, women accounted for a more significant proportion, 61.4 per cent, while men accounted for 38.6 per cent. The age structure shows that the young group aged between 19 and 29 accounted for 44.1 per cent, making them the main target of the survey, followed closely by the young and middle-aged group aged between 30 and 39, accounting for 47.8 per cent. At the same time, there were relatively fewer respondents aged over 40. Regarding marital status, 60.9% of the respondents were single, while at the same time, a certain percentage, 38.6%, were married. In terms of educational background, respondents with postgraduate and doctoral degrees constituted the majority, accounting for 44.1% and 35.9%, respectively. At the income level, respondents with a monthly income between MYR1,000 and MYR6,000 constituted the majority at 52.2 per cent.

Regarding park visits, 145 people visited Anjung Floria, while locations such as Taman Saujana Hijau, Taman Wetland Putrajaya and Putrajaya Botanical Garden were popular. Regarding park features that attracted visitors, rivers and shaded lawns drew the most crowds,

with 237 and 251 people, respectively, citing these elements as attractions. The primary motivation for visiting a park was for relaxation, with 283 people doing so, followed by proximity to nature, with 236 people saying they visit parks for this purpose.

Ownership of transport was almost evenly split, with 49.9 per cent owning a vehicle and the other 50.1 per cent not. The group with no religious affiliation was in the majority, at 69 per cent, reflecting the diversity of respondents in terms of religious affiliation.

Based on the results of the data display in Figure 1, it can be seen that the most popular activity among visitors to the park is walking, with 308 individuals choosing this activity. This is followed by photography, which attracted 192 enthusiasts. Running and enjoying the scenery is also quite popular, with 122 and 87 participants. Other popular activities include picnicking with 86 participants, socializing with 66, and exercising with 62. Many visitors prefer reading in the park, with 50 individuals. Cycling, boating, and horse riding are the least favoured activities, with 37, 44, and 25 participants.

This analysis clearly shows the types of activities that people most and least prefer in parks.

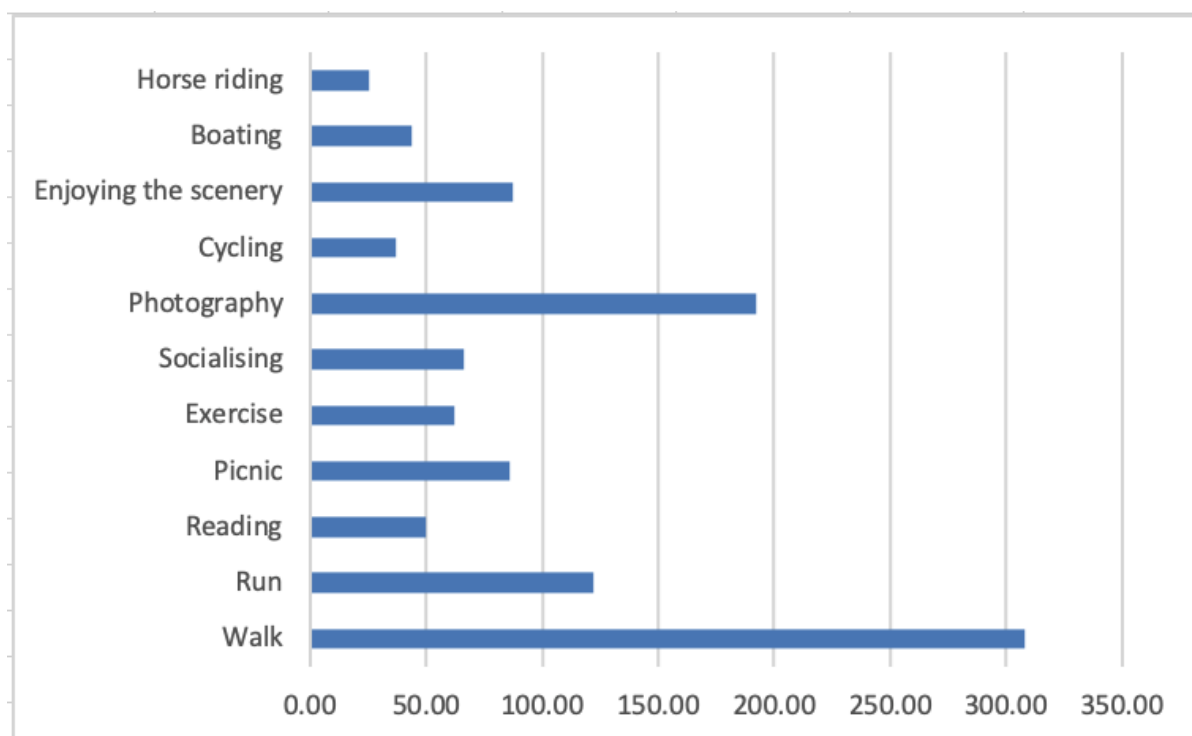


Figure 1. Types of Activities Preferred by People in Parks.

Walking and photography emerge as the top choices, indicating that visitors often seek relaxation, physical activity, and opportunities to capture memorable moments in natural settings. On the other hand, activities like cycling, boating, and horse riding are less popular,

suggesting that these may require more specialized equipment or be perceived as less accessible or appealing to the general park-going population.

### 3.2 Reliability and Validity Test Results

The reliability analysis of this study in assessing the recreational constraints showed in Table 1 that the overall dimension had a Cronbach's alpha value of 0.889, reflecting a high internal consistency of the questionnaire as a whole. This result indicates that the questionnaire items have a good synergy in measuring recreational constraints. Regarding sub-dimensions, Cronbach's alpha value for the interpersonal constraints dimension is 0.771, which shows good reliability, implying that the entries in this dimension effectively reflect the constraints in interpersonal relationships. The Cronbach's alpha value of 0.834 for the structural constraints dimension shows excellent internal consistency, highlighting the reliability of the dimension's items in measuring structural constraints.

Nonetheless, Cronbach's alpha value of 0.683 for the personal constraints dimension was slightly below the conventional acceptance criterion of 0.7, which, while still reflecting moderate reliability, implies that the dimension may require further testing.

Table 1  
Cronbach's Alpha Coefficients

Dim.	Var.	Cronbach's Alpha	
Recreation Constrains	Intrapersonal	0.683	0.889
	Interpersonal	0.771	
	Structural	0.834	

From the results of the validity analysis (Table 2), the KMO value is 0.738, which indicates that the sample suitability is moderate to good for conducting factor analysis, as the KMO value ranges from 0 to 1. 0.6 or more indicates that the data is suitable for factor analysis.

The Chi-Square Approximation (CSA) is 5964.550, Degrees of Freedom (df) is 300, and the p-value is almost 0, indicating that Bartlett's Test of Sphericity results are statistically significant.

Table 2  
Validity Test Results

KMO		0.738
Bartlett's Test of Sphericity	Chi-Square Approximation	5964.550
	Degrees of Freedom, df	300
	p-value	0

### 3.3 Correlation Analysis Results

Correlation analyses of recreational constraints in this study revealed that the correlation coefficient between intra-personal and interpersonal constraints was 0.628 shown in Table 3, indicating a significant positive correlation, suggesting that constraints at the individual level and the level of interpersonal interactions tend to work together to influence participation in leisure activities. Similarly, the correlation coefficient between intra-personal and structural constraints was 0.574, which also revealed a significant positive correlation between them, suggesting some degree of statistical association between individual perceptions and the external environment.

However, the correlation coefficients of -0.033 between internal personal constraints and participation and -0.015 between interpersonal constraints and participation are both close to zero and insignificant, suggesting that these internal and interpersonal factors do not statistically significantly influence the frequency of participation in leisure activities. In addition, the correlation between structural constraints and participation was -0.048, again showing a non-significant association, pointing to the limited influence of the structural environment on the level of participation in leisure activities.

These results emphasize the interconnectedness of individual and interpersonal level constraints in leisure activities and, on the other hand, suggest that these constraints may not directly determine the level of participation in leisure activities. Therefore, other possible influences and their underlying mechanisms need to be further investigated to improve the utilization and quality of participation in green parks.

Table 3  
Green Space Constraints Correlation Analysis

	Intrapersonal	Interpersonal	Structural	Participation
Intrapersonal	1			
Interpersonal	.628**	1		
Structural	.574**	.530**	1	
Participation	-0.033	-0.015	-0.048	1

The results of the Pearson correlation analysis between the weather conditions and the overall dimension of personal constraints among the structural constraints showed a correlation coefficient of 0.453\*\* with a significance (two-tailed) value of 0.000. This indicates a positive

correlation of moderate strength between the weather conditions and the overall dimension of personal constraints. For example, weather conditions, such as sunny, rainy, cloudy, etc., positively correlate with personal limiting factors related to leisure activity participation. This may mean that in better weather conditions, individuals are more likely to overcome other constraints (e.g., time, health, etc.) to participate in leisure activities in greenfield parks. In contrast, these constraints may be more pronounced in poor weather conditions, hindering an individual's willingness to participate in greenfield leisure activities.

Among the structural constraints, the results of the Pearson correlation analysis between the price of park tickets and the level of participation showed a correlation coefficient of 0.107\* with a significance (two-tailed) value of 0.000. The results indicated a slight positive correlation between the price of park tickets and the level of participation. The indicated correlation here is statistically significant. This means a positive correlation exists between the price of park entrance tickets and individuals' participation level in green space parks. However, the correlation coefficient 0.107 indicates that this relationship could be more robust. This could mean that ticket price increases may affect some individuals' willingness to participate, but this effect may not be significant. Therefore, although there is some relationship between ticket prices and participation levels, this relationship could be more robust, and ticket prices may be only one of many factors affecting participation levels.

#### 4. Conclusion and recommendations

The study offers valuable insights into the factors influencing green space recreation among Putrajaya residents. Most respondents are young adults with postgraduate and doctoral degrees, indicating potential time and financial constraints. Interestingly, these personal constraints do not significantly reduce participation in green space activities, suggesting that residents find ways to engage despite academic or professional demands.

Demographically, most respondents are single women, indicating a potential lack of companionship or social support. The significant positive correlation of 0.628 between interpersonal and personal constraints underscores this point, highlighting how interpersonal relationships and individual perceptions influence participation in leisure activities. This emphasizes the importance of social support in encouraging green space recreation.

Structural constraints, such as accessibility and facility availability, were identified as significant barriers to utilizing green spaces. Despite the popularity of parks like Anjung Floria

and attractions such as rivers and shaded lawns, the correlation coefficient of 0.574 between intra-personal and structural constraints suggests these barriers hinder utilization. This underscores the need to improve infrastructure and enhance accessibility to green spaces.

Visitor motivations and preferences were also examined, revealing diverse recreational needs. Activities like walking and photography were popular, indicating a preference for relaxation, physical activity, and a connection to nature. In contrast, less popular activities like cycling, boating, and horse riding suggest they might require specialized equipment or be perceived as less accessible. This diversity underscores the importance of catering to varied recreational needs to make green spaces more inclusive.

The research instrument's high internal consistency and upper-middle sample applicability reflect its reliability and validity. Significant positive correlations between different types of constraints suggest that personal and interpersonal factors influence participation in leisure activities. Additionally, ticket prices and weather conditions impacted participation levels, indicating that some constraints may be more directly related to personal preferences. In contrast, others may be extrinsic and changeable, such as pricing strategies.

In conclusion, this study emphasizes the interconnectedness of individual and interpersonal constraints in leisure activities. While these constraints may not directly determine participation levels, other external factors like weather and price should be considered in future park planning and management to enhance the visitor experience and utilization. Therefore, urban planners and policymakers should address these constraints and cater to diverse recreational needs to improve the quality and utilization of green spaces in Putrajaya.

Further research is needed to explore these factors in more depth and understand the mechanisms behind them. Understanding visitor demographics, motivations, and preferences is crucial for effective park planning and management. By addressing these factors and providing diverse recreational opportunities, park planners can enhance the visitor experience and promote the sustainable utilization of green spaces.



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