Factors influencing the public park use in Kuala Lumpur, Malaysia

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Abstract. Urban public parks provide a recreational space for urban residents. However, some peoples claimed that Malaysia has yet to reach a satisfactory degree of urban public parks design and development to facilitate residents with a healthy environment. Therefore, there is an essential need to identify a public park's characteristics that can satisfy and fulfill urban residents' needs for a healthy and high quality environment. This study aimed to examine the influencing factors of urban public park usage in Kuala Lumpur. A questionnaire is designed based on the socio-ecological model and previous empirical findings was distributed to 400 respondents at 12 public parks in Kuala Lumpur through a purposive sampling method. Multiple linear regression was used to analyze the data. The results found that the physical environment was the strongest factor influencing the use of public parks in Kuala Lumpur. Social and individual factors followed this. The results found extensive input and contributed to new literature related to the use of urban public parks. This study recommends several policies to be considered, particularly on urban landscape management. The local authorities should play an important role in protecting the existing public park's physical environment to achieve the best quality continuously.

1. Introduction
As stated in [1], a public park is defined as an open space to the public which was managed by federal, state, municipal governments, and private organizations. Parks offer important place for enjoyment of nature and scenery, sports, cultural events, and for education and research. Parks evolve about the prevailing understanding of the role of nature in human experience. The design and management of parks are informed by current urban planning practices, design attitudes, modes of recreation, philosophies of landscape preservation, and beneficial social interaction.

Urban public parks provide a recreational environment for residents. Hence more citizens would spend time in parks, especially the elderly and kids [2]. In Kuala Lumpur (KL), a public park plays a major role in enlightening the urban quality of life. It may provide urban residents with an active
environment, calm space surrounding and facilities through leisure and recreational activities in a hectic urban setting. Unfortunately, almost 50% of the public park’s amenities in KL were misplaced because of the continuous development made from concrete, cement, and iron glass [3, 4]. The lack of environmental awareness had made things worse in recent years. As a result, societies have a limited amount of space for recreational and physical activities.

[5] confirmed that the most of Asian cities, including Malaysia are facing underutilized public parks. [6] believed that design issues could be one of the main factors influencing the public park usage and claimed that Malaysia has yet to reach a satisfactory degree of green space design and development to help residents with a healthy environment. Therefore, there is an essential need to identify the characteristics of the public park to satisfy and fulfill urban residents’ needs for a healthy and high quality environment [6]. These characteristics could be important in the preparation of management policies to promote sustainable management [7].

A theoretical framework is vital for the entire study. It is, perhaps, easier to understand the nature of the research investigation. The application of the socio-ecological model in understanding the use of public parks is rapidly developing. In the context of humans and the environment, the socio-ecological model recognizes that it takes a mixture of individual and environmental elements to achieve substantial change in individuals’ behaviour towards any health behaviour including physical activity behaviour [8] in public parks.

Based on the socio-ecological model, public parks usage was directly influenced by individual, social, and physical environmental factors [9, 8]. [8] argued that individual factors including motor and sport-specific skills, abilities, age, gender, ethnicity, education level, income level, self-efficacy, childhood experience, and health condition influence physical activity participation. [10] found contradict finding. [10] stated that there was no significant relationship between individual factor and the use of outdoor and natural environment especially in the subject of ethnicity. Based on [10], this happens in North America and Britain because the minority group fears racial attacks and bullying. [11] confirmed that age, gender, socio-economic status, and education level were the consistent determinant of physical activity behaviour. Among these factors, gender and age were the most consistent determinants.

Other than that, [12] revealed a strong association between an individual's childhood experience and the frequency of adults' visits to the park. Children may lose their bond with nature during adulthood if they miss out on their interaction with nature during their childhood. However, [11] stated that there was little evidence proving the relationship between childhood experience and adult's physical activity. Hence, they believed that it was an inconsistent finding. It can be a positive significant relationship if they have experienced enjoyable scenery. Otherwise, childhood experience will lead to a weaker association with the use of parks and the engagement with life's experience associated with park usage. Hence, the first hypothesis was proposed:

Hypothesis 1: The individual factor significantly influences the use of the public park

Social attributes comprise of the relationships, the societies and the culture which the individual interacts. [12] found that the percentage of women visiting a recreational park was lower than men due to the crime factor, especially concerning enclosed woodlands. The women's group will go to the park with the trusted persons [13]. [14] found that the physical activity positively influenced by the social attributes consisted of the family members, friends, and peers. Recently, [15] found that a person or community with anti-social behaviour leads to low park usage levels. Accordingly, the second subsequent hypothesis was posited:

Hypothesis 2: The social factor significantly influences the use of the public park.

Physical environment attributes strongly influence park usage [16, 17, 18]. [19] defined the physical environment as the real space that can be described objectively, including natural factors, availability of facilities, activities provided, distance, and size. Distance and travel time were
frequently reported as the main physical environment factor influencing the use of parks [20, 16]. [15] noticed that the factors concerning the parks' quality, namely facilities, natural view, service maintenance, and other special attractions, contributed to the high level of using parks. However, some parks with good facilities face a low level of use because of poor maintenance and low accessibility. Consequently, the third suggested hypothesis was formulated:

Hypothesis 3: A physical factor significantly influences the use of the park

Above all, the most significant factors from prior studies were inconsistent and varied from one country to another. [16] proved that proximity and accessibility mostly influence the use of the park in China and Australia. [21] highlighted that the influencing factors of park usage in a certain country cannot be assumed to be the same as in another country due to the different in park characteristics, city structure and neighbourhood inhabitants. Therefore, by adopting the socio-ecological model from [19, 22], this study examined the factors influencing the use of urban public parks in KL. The individual, social and physical environment were used as the measurement for influential factors whereas the frequency of urban park utilisation was used to measure park usage.

2. Methodology
2.1 Data Collection and Data Sampling
This study involved a quantitative approach. The primary data and information about the factors influencing public parks' use were collected using a purposive sampling technique. 400 questionnaires were equally distributed in the early morning and evening through a face to face interview. It consisted of 12 public parks which were recognized by City Hall Kuala Lumpur. Out of 400 completed questionnaires, 14 were rejected, resulting in a balance of 386 usable questionnaires for data analysis.

2.2 Questionnaire Development and Instrument
The questionnaire was developed based on the empirical literature and socio-ecological theoretical framework. It consists of five sections. The first section records the demographic profile of each respondent. The individual and social information highlighted in the second and third section respectively. The fourth section contains questions on the physical environment. Lastly, the fifth section collected the data on the frequency of public park usage. The range was from “once a year” to “daily use”. This study used a five-point likert scale to measure each item for each section except the first section. It was ranging from ‘strongly disagree’ to ‘strongly agree’.

2.3 Statistical Technique
The reliability test and multiple linear regression aided by SPSS version 26.0 were applied to measure internal consistency and identify the factors influencing the public park usage in KL city respectively. The use of public parks was measured based on the frequency of public park usage. The independent variables consist of the individual, social and physical attributes.

3. Results and Discussions
3.1 Profile of Respondents
Based on the Table 1, the majority were males (74%), from which 72% of the participants were aged between 22 and 50 years, with 60% of them were married. The samples were dominated by the Malay ethnic group representing 82%. Furthermore, 40% of the respondents notably have a degree certificate. Based on the three groups of occupation categories listed, 74% of respondents were employed. Nearly half of them (45%) have an income range of RM3, 001 to RM7, 000. The majority of the respondents have experience visiting public parks during their childhood with 79%. 

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### Table 1. Demographic Profile of Respondents.

| Demographic Profile | Group | Frequency (N) | Percentage (%) |
|---------------------|-------|---------------|----------------|
| **Age**             | <22   | 61            | 16             |
|                     | 22-35 | 218           | 56             |
|                     | 36-50 | 61            | 16             |
|                     | 51-65 | 34            | 9              |
|                     | >65   | 11            | 3              |
| **Gender**          | Male  | 284           | 74             |
|                     | Female| 102           | 26             |
| **Marital Status**  | Married| 231          | 60             |
|                     | Not married | 152       | 39             |
|                     | Others | 3            | 1              |
| **Race**            | Malay | 318           | 82             |
|                     | Chinese | 44         | 11             |
|                     | Indian | 21          | 6              |
|                     | Others | 3            | 1              |
| **Education Level** | SPM/O-Level/STPM/A-Level | 37      | 9.6            |
|                     | Diploma | 85        | 22             |
|                     | Professional Certificate | 19    | 4.9            |
|                     | Degree | 154          | 39.9           |
|                     | Master Degree | 79      | 20.5           |
|                     | PhD | 12            | 3.1            |
| **Occupational Status** | Employed | 287      | 74             |
|                     | Non-employed/Housewife | 62    | 16             |
| **Household Income** | ≤RM1,500 | 39      | 10             |
|                     | RM1,501 – RM3,000 | 50    | 13             |
|                     | RM3,001 – RM5,000 | 77    | 20             |
|                     | RM5,001 – RM7,000 | 95    | 25             |
|                     | RM7,001 – RM9,000 | 73    | 19             |
|                     | >RM9,000 | 52     | 13             |
| **Childhood Experience** | Yes | 305      | 79             |
|                     | No | 81            | 21             |

#### 3.2 Descriptive Statistics of Variables

This section focuses on how the respondents answered the survey questions related to the research framework variables (individual, social, physical environment, and the use of public parks). Table 2 shows the descriptive statistic, including mean and standard deviation of four main variables. The analysis reported that the individual has the highest mean value (4.399) while the lowest mean value among all variables was the use of public parks (4.004). This table also shows the mean for social and the physical environment were 4.394 and 4.266, respectively.
Table 2. Descriptive Statistics on Variables (N=386).

| Variables                | N  | Min | Max | Mean  | Std. Dev. |
|--------------------------|----|-----|-----|-------|-----------|
| Individual               | 386| 1   | 5   | 4.399 | 0.601     |
| Social                   | 386| 1   | 5   | 4.394 | 0.599     |
| Physical Environment     | 386| 1   | 5   | 4.266 | 0.578     |
| Use of Public Parks      | 386| 1   | 5   | 4.004 | 0.573     |

3.3 Reliability Test
Based on Table 3, the Cronbach's alpha value for all the variables tested was between 0.7 and 0.9 suggested good internal consistency. These values represented that the measurement for individual, social, physical environment and the use of public parks were reliable.

Table 3. Cronbach Alpha Reliability Test.

| Variables                  | Number of Items | Cronbach Alpha Value |
|----------------------------|-----------------|----------------------|
| Individual                 | 6               | 0.828                |
| Social                     | 5               | 0.781                |
| Physical Environment       | 6               | 0.764                |
| Use of public parks        | 2               | 0.712                |

3.4 Multiple Linear Regression
Based on the multiple linear regression analysis, Table 4 illustrated that all of the three factors significantly influenced the use of public parks. Specifically, the attributes of individual ($\beta = 0.173$, $p < 0.01$), social ($\beta = 0.328$, $p < 0.05$), and physical environment ($\beta = 0.655$, $p < 0.01$), were positively influenced the use of public parks, which explains 62% of variances in the use of public parks. The physical environment factors offered the strongest determinant. Table 4 also demonstrated that all the hypothesis tested were statistically supported.

Empirical results revealed that the use of public parks was influenced by a mixture of individual and environmental factors. The regression analysis were consistent with the socio-ecological theory as developed by [9]. It also corroborates those obtained in the foregoing [19, 16, 18, 15]. Among the three variables tested, the most influential predictor variable was the physical environment factor. However, this was unlike any prior studies [23, 17]. This study proves that the strongest predictor factors may differ depending on the residents' behaviour patterns, socio-cultural context, and urban structure. This was agreed by [21]. The outcome demonstrated that public parks' physical appearance in KL was the most attractive for urban residents than other factors.

Table 4. Hypothesis Testing.

| Public Park Hypothesis | Std. Beta | Std. Error | t-value | Decision |
|------------------------|-----------|------------|---------|----------|
| Individual             | 0.173     | 0.059      | 2.929***| Supported|
| Social                 | 0.328     | 0.157      | 2.094** | Supported|
| Physical Environment   | 0.655     | 0.063      | 10.425***| Supported|

Note: ***p<0.01, **p<0.05, ***p<0.10

The result also implies that the individual factor and social surroundings influenced the public parks' tendency to visit. In terms of individual factors, age, income, education level, gender, race, and health status were likely influenced the public park usage. From this analysis, the age group below 36 years old has the highest percentage (72%) to use public parks for recreational purposes than others.
over 36. [8, 24] agreed that a young urban resident's tendency to visit the recreational place depends on the facilities condition. The good facilities will attract them to visit it. It is in line with the finding that the public park in KL has a good physical appearance, including its facilities.

4. Conclusion and Policy Implication
This study concluded that the individual, social, and physical environment significantly influenced the use of public parks in KL. It highlighted that the use of public parks was influenced by two important elements: the individual and physical environment appearance. The individual awareness to have good health quality supported with public parks' good physical attributes were attract the urban residents to enjoy the amenities of public parks in KL. The result serves new and extensive knowledge whilst also expanding the existing literature associated with the public park use factor. In term of policy implication, the finding offers important information for policy makers, designers, local authorities and urban planners to utilise, manage and enhance scarce land resources more effectively.

5. Limitations and Recommendations
The current study does not include the relevant knowledge as the factor in influencing the use of public parks. It relies on the main model of socio-ecological. [16] highlighted that knowledge also is an important element in examining individual behaviour. Simultaneously, the previous scholar opined that physical attributes in the socio-ecological model could be divided into two views: physical environment attributes and perceived environment attributes. It is expected that the study will be better if the future study applying some modification of the socio-ecological model. Hence, future studies may consider investigating the role of knowledge and perceived environment attributes as an extension for the socio-ecological model on examining the use of public parks.

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References
[1] The Cultural Landscape Foundation (2020). Retrieved from https://tclf.org/category/designed-landscape-types/public-park
[2] Wang L, Chang J, Zheng X, Liu J, Yu M, Liu L, ... and Zhang H 2018 Survey of ecological environmental conditions and influential factors for public parks in Shanghai Chemosphere. 190 9-16
[3] Nur Syafiqah A S, Abdul-Rahim A S, Mohd Johari M Y and Tanaka K 2018 An economic valuation of urban green spaces in Kuala Lumpur City Pertanika J. Soc. Sci. Hum. 26 (1) 469-490
[4] Samad N S A, Abdul-Rahim A S, Yusof M J M and Tanaka K 2020 Assessing the economic value of urban green spaces in Kuala Lumpur Environ Sci Pollut Res. 27 10367–10390
[5] Malek N A and Nashar A 2018 Measuring successfulness of Malaysian green open spaces: An assessment tool TERUM. 13 (2) 21-37
[6] Mansor M and Harun N Z 2014 Health issues and awareness, and the significant of green space for health promotion in Malaysia Procedia Soc Behav Sci. 153 209-220
[7] Francis F J, Hassan A, Mohd Afandi S H and Radam A 2019 Incorporating visitors’ preferences into the policy framework of a Rainforest Discovery Centre Tourism Review. 75 779-790
[8] Sallis J F, Owen N and Fisher E 2015 Ecological models of health behavior Health behavior: Theory, research, and practice. 5 43-64
[9] Bronfenbrenner U 1979 The Ecology of Human Development. Cambridge, Mass: Harvard
[10] Rishbeth C 2001 Ethnic minority groups and the design of public open space: an inclusive landscape? *Landsc Res.* **26** 351-366

[11] Trost S G, Owen N, Bauman A E, Sallis J F and Brown W 2002 Correlates of adults' participation in physical activity: review and update *Med Sci Sports Exerc.* **34** 1996-2001

[12] Thompson C W and Aspinall P and Montarzino A 2008 The childhood factor: Adult visits to green places and the significance of childhood experience *Environ Behav.* **40** 111-143

[13] Burgess J 1998 But is it worth taking the risk? How women negotiate access to urban woodland: A case study. In R. Ainley (Ed.), New frontiers of space, bodies and gender London: Routledge, 115-128

[14] Neuvonen M, Sievanen T, Tonnes S and Koskela T 2007 Access to green areas and the frequency of visits–A case study in Helsinki *Urban Forestry & Urban Greening.* **6** 235-247

[15] Bahriny F and Bell S 2020 Patterns of urban park use and their relationship to factors of quality: a case study of Tehran, Iran *Sustainability.* **12** 1560

[16] Wang D, Brown G, Zhong G, Liu Y and Mateo-Babiano I 2015 Factors influencing perceived access to urban parks: A comparative study of Brisbane (Australia) and Zhongshan (China) *Habitat Int.* **50** 335-346

[17] Zhang H, Chen B, Sun Z and Bao Z 2013 Landscape perception and recreation needs in urban green space in Fuyang, Hangzhou, China *Urban Forestry & Urban Greening.* **12** 44-52

[18] Wan C and Shen GQ 2015 Encouraging the use of urban green space: The mediating role of attitude, perceived usefulness and perceived behavioural control *Habitat Int.* **50** 130-139

[19] Schipperijn J, Stigsdotter U K, Randrup T B and Troelsen J 2010 Influences on the use of urban green space: A case study in Odense, Denmark *Urban Forestry & Urban Greening.* **9** 25-32

[20] Wolch J, Jerrett M, Reynolds K, McConnell R, Chang R, Dahmann N and Berhane K 2011 Childhood obesity and proximity to urban parks and recreational resources: A longitudinal cohort study *Health Place.* **17** 207-214

[21] Guo S, Yang G, Pei T, Ma T, Song C, Shu H, ... and Zhou C 2019 Analysis of factors affecting urban park service area in Beijing: Perspectives from multi-source geographic data *Landscape Urban Plan.* **181** 103-117

[22] Aziz N A A 2012 Green space Use and Management in Malaysia. Forest & Landscape.

[23] Lo A Y and Jim C Y 2012 Citizen attitude and expectation towards green space provision in compact urban milieu *Land Use Policy.* **29** 577-586

[24] Aziz N A A, Van den Bosch K and Nilsson K 2018 Recreational use of urban green space in Malaysian cities *Int. J. Bus. Soc.* **19** 1-16