

## USE OF URBAN GREEN SPACES: A CASE STUDY IN TAMAN MERDEKA, JOHOR BAHRU

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### ABSTRACT

*This study attempts to identify the use patterns and factors influencing the use of urban green space in Taman Merdeka, Johor Bahru. The aim of this investigation is to provide more crucial information to the field of urban green space study, especially in Malaysia. For this purpose, a total of 356 questionnaires were distributed to park users of Taman Merdeka. The questionnaire consists of several multiple-choice questions, open-ended questions, and questions that respondents answered based on the Likert scale. Data collection was done through convenience sampling. Results showed that most users of the park are Malays, consisting of an even percentage of male (49.4%) and female (50.6%) users, and are largely young adults in the age range of 26-32 years. This study also revealed that those living within 2 km radius from the park visit this recreation area more frequently compared to those living more than 10 km away from the place. Most users agreed that they visit Taman Merdeka for restorative health purposes and escaping from the stressful activities of the busy city lifestyle. The findings of this study are useful for future planning and management of urban green space in Malaysian cities.*

**Keywords:** Factor influencing, Johor Bahru, socio-ecological model, use pattern, urban park

### 1. INTRODUCTION

An urban green space is defined as a publicly owned and publicly accessible open space that is covered with lush vegetation such as parks, urban forests, nature areas and other green spaces (Schipperijn et al., 2010) primarily because increased use is expected to improve the health and well-being of the urban population. Green space is contributing to restoring mental fatigue, serving as a resource for physical activity, reducing mortality and reducing the level of stress. However, knowledge and experience on how to implement this agenda are scarce. In this paper, we use a socio-ecological model as framework when studying influences on the use of respondents' nearest urban green space in the Danish city of Odense. Data were obtained from a survey sent to 2500 randomly selected adult residents within the central part of the city. We tested the relative importance of different factors on the frequency of use of the nearest urban green space by using a multivariate logistic regression model. The results show that almost half of the respondents did not use their nearest green space the most. Whether or not respondent used their nearest green space most depends primarily on area size, distance to the area and factors that are likely to express a reduced mobility; old age, young children and poor health. If the nearest urban green space also is the most used green

space, having a dog is the only factor that significantly increases the frequency of use. Further research is needed to determine what it is that makes people use an area more, if the basic conditions of a reasonable size (>5ha). The use of the urban green space is associated with many human health benefits such as mental and physical rejuvenation. In addition, urban green spaces also bring social, environmental and economic benefits to humankind. As defined by Schipperijn (2010), the use of the urban green space refers to any sort of visits to an urban green space, without considering the reason or purpose of visit, activity done while visiting, and duration of the visit.

As urban sprawl is a common phenomenon in developing countries, many health risks are on the rise such as obesity and hypertension. Ramachandran & Snehalatha (2010) stated that with the prevalence of obesity, risks of other diseases, such as cancer, diabetes and cardiovascular diseases, have increased many folds. Urban green spaces act as avenues for urbanites to be in contact with nature and become more physically active. According to Braubach et al. (2017), urban green spaces are regarded as important as they provide restorative environments to urbanites.

Studies on the use of urban green spaces are important to ensure that the needs of the public are met through green space planning and management. This is particularly crucial to the health of people in the rapidly urbanising countries of South-east Asia, where green spaces are usually sacrificed for commercial and infrastructural developments.

### Study aim

The aim of this paper is to contribute to the research knowledge on the use of green space in Malaysia by studying the recreational use of Taman Merdeka in Johor Bahru. This paper accentuates the factors influencing the use of an urban green space such as motivation, satisfaction of users and users' perception of the urban green spaces.

## 2. LITERATURE REVIEW

### 2.1 Socio-ecological model

The socio-ecological model is adapted from the ecological model as proposed by Bronfenbrenner (1979) with a broader social context to suit the purposes of the use of urban green spaces. The adapted socio-ecological model as seen in Figure 1, distinguishes between various levels of influence on an individuals' behaviour, which are divided into, individual factors and environmental factors.

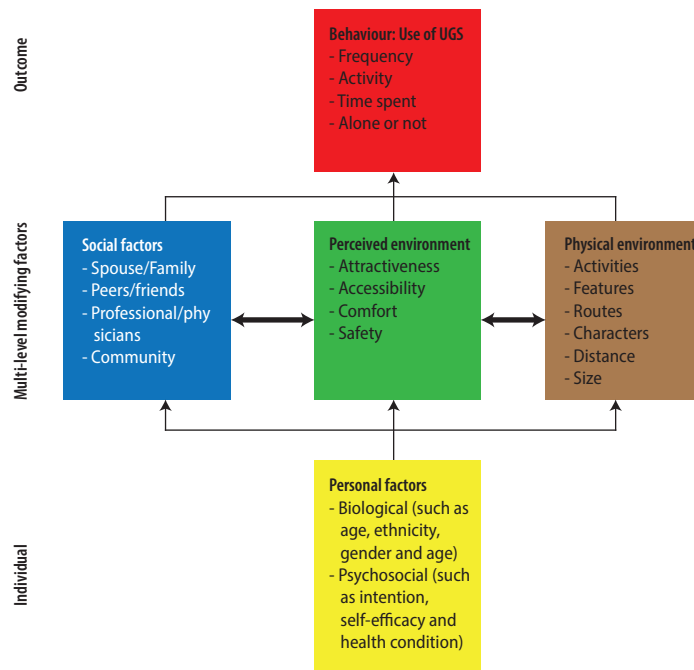


Figure 1: Socio-ecological model of the use of urban green space.

#### Personal factors

The personal factors according to Yi Pan et al. (2009), can be divided into biological and psycho-social factors. Examples for biological factors include age, gender, and health status. As for psychosocial factors, these include examples such as intention, self-efficacy, and health beliefs. These combined factors influence the behaviour of an individual when “using” urban green spaces.

#### Social factors

Social factors include social support and social network. Some examples are such as companionship, encouragement from friends or family members and even advice or information from professionals. These factors influence the use of urban green space and even participation in physical activity (Yi Pan et al., 2009). This is because people are more likely to be physically active when they have the support or encouragement from their own social environment (Sallis & Owen, 1999).

### *Physical environment factors*

It is postulated that the environment influences the use of green space (Humpel et al., 2002). These environmental factors are such as features provided, condition and distance. Several research in the past has shown that distance to green space is the main influencing factor towards usage in both children and adults (Giles-Corti et al., 2005; Akpınar, 2017). In addition, a study by Wang et al. (2019) conducted in China, pointed out that infrastructure, size of green space and facilities provided, greatly influence residents' activity.

### *Perceived environment factors*

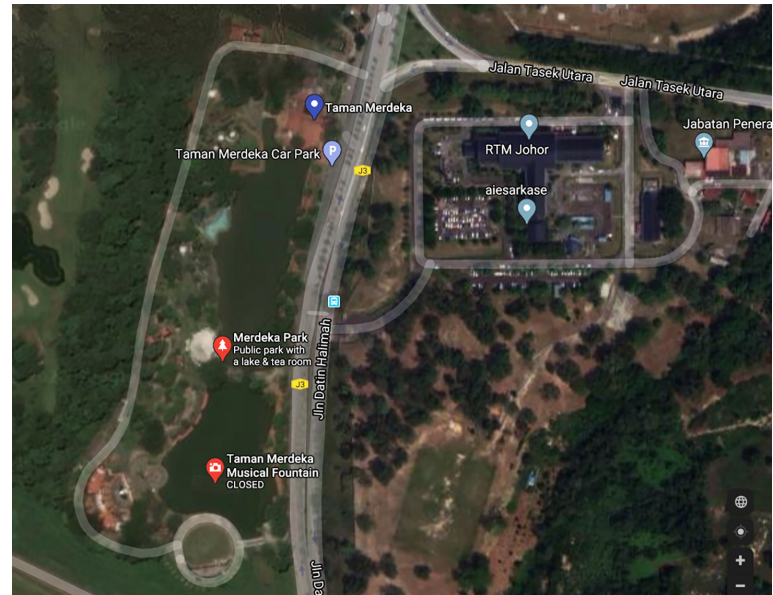
In the socio-ecological model, perceived environment relates to the perceived characteristics in the physical context in which people engage in recreation. Some of the factors include safety, traffic or crowding, attractiveness and accessibility. Moreover, perceived access to urban green space and perceived quality of urban green space are important factors that influence actual use (Sugiyama & Ward Thompson, 2008).

This study employed the socio-ecological model as the approach of investigation as it does not only involve human behaviours but also human interactions with the environment and the nature of the environment, which may also influence human participation in their uses of urban green spaces (Nor Akmar et al., 2018). This study also focuses on individual-related factors such as age, gender and education level, distance of the place of residence to the park in relation to the frequency of park usage, day of visit, and time spent in the parks.

## **3. METHODOLOGY**

### **3.1 Study area**

The study focuses on Johor Bahru, the capital of Johor, which is the most southerly state in Peninsular Malaysia. The city has a population of 497,067, which consists of Malays (48.35%), Chinese (34.73%) and Indians (13.7%), based on the 2010 census conducted by Malaysian Department of Statistics. The subject of this study is Taman Merdeka, which is situated approximately 3 km away from the city centre of Johor Bahru. It is a publicly accessible park, established to commemorate Malaysia's independence. The park has a land area of 12 hectares, and is managed by the city council (MBJB). The park was chosen as it is situated near the city centre and is most readily accessible by the residents living nearby. Figure 2 depicts a satellite image of Taman Merdeka Johor Bahru.



*Figure 2 : Satellite image of Taman Merdeka Johor Bahru.*

### **3.2 Data collection**

The survey was conducted using a questionnaire formulated by Nor Akmar (2012), who applied a socio-ecological approach in understanding the factors that influence urban green space visits in Kuala Lumpur and Kuching. The questionnaire, consisting of several sections, includes open-ended questions, multiple-choice questions and questions that can be answered using the Likert scale.

In November 2017, a total of 356 questionnaires were distributed to the current users of Taman Merdeka, Johor Bahru. The method used for data collection was convenience sampling. The convenience sampling method is a non-probability sampling method where the sample consists of a group of people who are easy to reach. It differs from a simple random sampling method as there are no other criteria to convenience sampling other than the respondent agreeing to participate. Considering how we have no control or volition on who enters the park during our survey, and whether everyone who visits the park would agree to participate, the convenience sampling method is the best method for us to utilize in this study. Due to time and budgetary constraints, the survey was done for the course of only 3 days. The questionnaires were written in Bahasa Malaysia, which is the national language of Malaysia.

### 3.3 Data analysis

A crosstab analysis was done to identify the interactions between “distance from the place residence to the park” and “frequency of visits”. Descriptive analysis was performed to ascertain the mean scores of the perception, satisfaction, and motivation of the park use for the respondents. Meanwhile, the Statistical Package for Social Science (SPSS) version 17 was used to perform the analyses.

## 4. RESULTS

### 4.1 Socio-demographic profile of the respondents

In total, 356 visitors were surveyed in this study. Based on Figure 3, the study sample consists of a somewhat even percentage of female (50.6%) and male (49.4%) respondents. The majority of the respondents are Malays (71.1%), followed by Chinese (14.9%) and Indians (14.0%). At the time of this study, about 44.9% of the respondents were in the age range of 26-32 years, and only 1.1% of them are in the age range of 41-50 years. As for the education level, majority of the respondents are university graduates (82.6%).

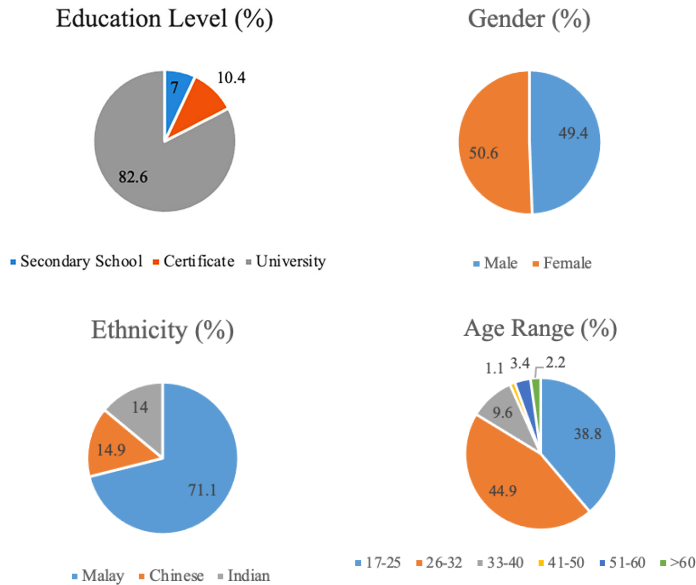


Figure 3 : Socio-demographics of the respondents

### 4.2 Park use patterns

Out of the 356 respondents surveyed, 49 of them were first time visitors to the park. Out of the 307 respondents, 66 of them had not visited Taman Merdeka in the past 3 months. Based on data presented in Figure 4, 70.5% of those residing more than 10 kilometres from the park did not visit the park in the past 3 months. Meanwhile, the respondents living within 0 – 300 m and 5.1 – 10 km from the park registered the highest percentage of 50%, with the frequency of visits ranging from 1 to 20 times. About 56.9% of the respondents living between 601-1 km from the park visited the place more than 20 times in the past 3 months. Out of the total 356 respondents surveyed, 37.1% visited more than 20 times, 32.3% of the respondents have not visited at all, and 30.6% visited between 1 – 20 times in the past 3 months.

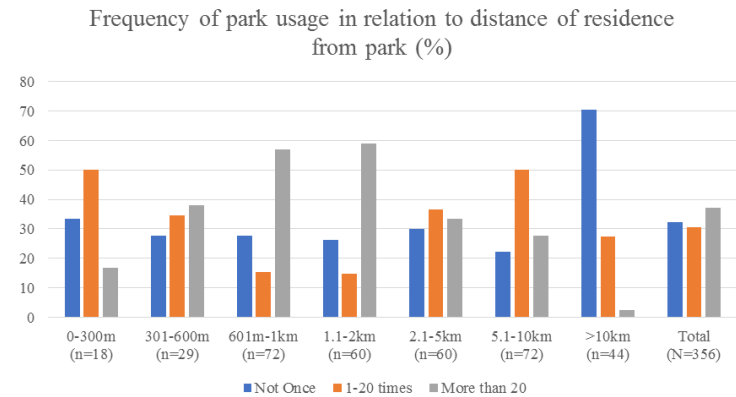


Figure 4 : Frequency of park usage (in %) within 3 months in relation to the distance of respondents' place of residence from the park

As for the access to the park, 64.9% of the respondents stated that they travelled by car, 19.4% by motorcycle and only 2% by bicycle. Meanwhile, 76.4% of the respondents visited the park on weekends, and 73.6% of the respondents spent about an hour or less in the park. As for the time of visit, majority of the respondents stated that they visited the park in the morning (56.5%). In addition, based on our observations during the survey, most of the park visitors were seen at or around the jogging area of the park. Heavy traffic of joggers was more prevalent than other type of visitors. This showed that most of the visitors were more inclined for physical activity, whether moderate or rigorous, other than sedentary activities.

### 4.3 Users' motivation to visit the park

The results pertaining to users' motivation to visit the park were based on the mean score of the Likert scale ranging from 1 to 4, with 1 corresponding to "Strongly disagree" and 4 to "Strongly agree". Based on data given in Table 1, three motivation statements share the highest mean score of 3.84. These statements are "To enjoy nature", "To get a better mood", and "To get fresh air". The second highest mean score ( $m = 3.76$ ) goes to the statement "To enjoy the calmness of the surroundings". This is followed by "To be away from everyday stress", with the mean score of 3.65. These figures suggest that most visitors seek to de-stress themselves when visiting the park. The statement "For staying physically fit" also shows a high mean score of 3.64. The three statements with the lowest mean scores are "To use the park as shortcut" ( $m = 2.20$ ), "To read or study" ( $m = 2.05$ ), and "To sleep" ( $m = 1.62$ ).

**Table 1 :** Users' motivation for visiting Taman Merdeka

	Minimum	Maximum	Mean	SD
For staying in shape	1	4	3.64	.602
To be away from everyday stress	2	4	3.65	.536
To enjoy the calmness of the surroundings	3	4	3.76	.426
To enjoy nature	3	4	3.84	.364
To get a better mood	3	4	3.84	.364
To get fresh air	2	4	3.84	.381
To reflect on myself	1	4	3.49	.633
To read or study	1	4	2.05	1.005
To sleep	1	4	1.62	.875
To see new things and activities	1	4	2.87	.865
To learn about trees and plants	1	4	2.74	.802
To spend time with friends or family	1	4	3.21	.742
To meet new people	1	4	2.72	.890
To observe people	1	4	2.66	.826
To be with friends of the same interest	1	4	2.90	.684
To be with my loved one	1	4	2.38	.872
To watch the children play	1	4	2.59	.785
To use the park as shortcut	1	4	2.20	.877

### 4.4 Users' perception of the park

Based on Table 2, most of the respondents agreed to the statements such as feeling safe, comfortable, proud, happy, and calm when they were visiting the park. The highest mean score was obtained for the statement "I feel safe when visiting this park" ( $m = 3.62$ ). The second highest mean score was obtained for the statement "I feel comfortable in this park" ( $m = 3.59$ ), followed by "I feel happy when I'm here" ( $m = 3.56$ ), "I feel calm in this park" ( $m = 3.55$ ) and lastly, "I feel proud of this park". In summary, most users strongly agree that they feel safe when visiting the park and agree that they are proud of Taman Merdeka.

**Table 2 :** Users' perception of Taman Merdeka

	Minimum	Maximum	Mean	SD
I feel safe when visiting this park	3	4	3.62	.487
I feel comfortable in this park	2	4	3.59	.524
I feel proud of this park	1	4	3.18	.735
I feel happy when I'm here	3	4	3.56	.498
I feel calm in this park	2	4	3.55	.594

### 4.5 Users' satisfaction with the park

Table 3 shows the results of users' dissatisfaction with the park. When they were asked to rate the statements that suggest dissatisfaction, users perceived that the roads leading to the park are safe, as the mean score for the statement "The routes to this park are dangerous" is the lowest ( $m = 1.50$ ). The highest mean ( $m = 2.42$ ) score was obtained for the statement "the park is not well maintained", suggesting that most users felt the park maintenance is somewhat of an average standard. In addition, an average mean score was obtained for the statement "This park has too many visitors", indicating that an average number of users at Taman Merdeka felt that the park is too crowded. On the whole, most of the respondents felt no strong dissatisfaction with the park as most of the mean scores obtained for the statements are below 3.



**Table 3 : Users' satisfaction with the park**

	Minimum	Maximum	Mean	SD
This park is too far away from home	1	4	1.63	.778
The main entrance to this park is terrible	1	4	1.53	.682
The routes to this park are dangerous	1	4	1.50	.664
This park doesn't satisfy me	1	4	1.95	.910
This park has too many litter around	1	4	1.91	.759
This park is not well maintained	1	4	2.42	.659
This park has too many visitors	1	4	2.41	.919
This park is full of shady individuals	1	4	1.62	.616
This park is too quiet	1	4	1.62	.628
This park has not enough benches	1	4	1.56	.680
This park is too dark	1	3	1.52	.562

#### 4.6 Users' opinions of urban green spaces

Table 4 shows the user's opinions of urban green spaces. The results were obtained based on a set of Likert-scale questions with scores ranging from 1 to 4; 1 corresponds to "Strongly disagree" and 4 to "Strongly agree". When they were asked what urban green spaces meant to them, most of the respondents agreed that urban green spaces are a place to rest and alleviate stress ( $m = 3.74$ ). The statement "A place to stay active" comes in second with a mean score of 3.70. The lowest mean score was obtained for the statement "Something needed when being alone" ( $m = 3.56$ ).

**Table 4 : Users' opinions of urban green spaces**

	Minimum	Maximum	Mean	SD
Part of my life	2	4	3.58	.522
Important for living quality	3	4	3.65	.478
Something needed when being alone	2	4	3.56	.585
A place to stay active	3	4	3.70	.460
A place to gain new experiences	2	4	3.57	.569
A place to rest and alleviate stress	3	4	3.74	.440
A place to be with friends and family	1	4	3.44	.776
A place where I don't feel safe when alone	1	4	1.97	1.119

## 5. DISCUSSION

Findings of this study prove that the distance from the place of residence to the green space is an important factor that influences the frequency of visits. From the results, a large percentage of those living within 2 kilometres visited the park more than 20 times. On the other hand, a significant percentage of those living more than 10 kilometres away did not visit the park at all. This shows that the further the distance between the place of residence to and park, the lower the frequency of visits.

Similarly, a significant percentage of the respondents travelled to the park by car. A previous study conducted in Kuala Lumpur and Kuching also revealed the same finding (Nor Akmar et al., 2018). This is in contrast to studies on urban green spaces usage in the European cities (e.g., Arnberger, 2006; Schipperijn et al., 2010). The most probable reason is the hot and humid tropical climate of Malaysia, as walking or cycling is unpleasant and inconvenient. This could also explain why most of the users would visit the park in the morning. These results are consistent with those of several studies conducted on the use of urban green spaces in cities with warmer climates (e.g., Jim & Chen, 2006; Laforteza et al., 2009; Nor Akmar et al., 2018).

In terms of motivation to visit the park, a large proportion of users agreed that they visited the park to get away from the stressful activities of everyday life, to breathe fresh air, and to enjoy the serenity or tranquillity of the environment. These findings indicate that most of the users sought restorative experiences that could alleviate stress from the busy lifestyle of the city. This phenomenon can be explained by the Attention Restoration Theory (ART) by Kaplan and Kaplan (1989). The theory suggests that a person-environment exchange becomes apparent, especially when a person is mentally fatigued by stressors of everyday life. In addition, based on the opinions of the users when they were asked what urban green spaces meant to them, a large proportion of them strongly agreed that it is a place to rest and alleviate stress. The users also strongly agreed that urban green spaces are a place to stay active and parks are needed for a better quality of living.

In terms of users' satisfaction with Taman Merdeka, the results showed that the users are quite contented with the park. From the results, the mean scores retrieved for the two statements indicated that users somewhat agreed that the park is overcrowded and that it is not well maintained. The overcrowding issue can be clearly seen particularly at the jogging trail and near the entrance. In terms of maintenance, based on our observations, several facilities such as they wall climbing area and swimming pool were poorly maintained to the point that it could not be used by the visitors. However, the low mean scores obtained for the other dissatisfaction statements indicated that the users are somewhat satisfied with Taman Merdeka.

## 6. CONCLUSION

This study provides invaluable insights into the use patterns and behaviours of people visiting Taman Merdeka, Johor Bahru. The results of this study could contribute to the knowledge on the use of urban green spaces, especially in the Malaysian context. By utilising the socio-ecological approach, both human and environmental factors are used to explain the differences in the park usage and preferences. It would be helpful and beneficial to both the public and the planning authority for future researchers to conduct more surveys in the urban parks of Johor Bahru such as Taman Hutan Bandar MBBB and Taman Mutiara Rini.

In particular, the findings of this study contribute to the foundational understanding of the urban green space usage among Malaysians. These findings could be utilized by park planners/managers to better facilitate the needs and preferences of visitors to ensure better spatial efficiency. These findings could also be useful to other key stakeholders in the field of urban green spaces.

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