

RECREATIONAL USE OF URBAN GREEN SPACE IN MALAYSIAN CITIES

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ABSTRACT

To support green space provision and management, it is important to obtain accurate information about the recreational use of green space, regarding use frequency and types of use, visiting time and duration of visits, but also on how the characteristics of different users influence these. Although these studies have become more common in developed countries, developing countries are lagging behind. In Malaysia, major cities such as Kuala Lumpur (Peninsular Malaysia) and Kuching (Sarawak) have experienced growth and policy makers recognise the importance of their green spaces, but lack comprehensive user studies. This paper presents the results from a comparative study on the use of green spaces and visitor preferences for five selected parks in Kuala Lumpur and Kuching. The study comprised, among others, a survey among residents living within a two kilometre radius of the park boundaries. A total of 1,692 respondents answered the questionnaire. Results show that close to 9 out of 10 people living within a 2 km radius of the studied parks use them for recreational purposes. Most of the respondents visit the parks during weekends and typically travel by car, in spite of the short distance to the park. The study also identified differences in green space usage patterns according to different socio-demographic and economic factors, including ethnicity. Malaysians of Chinese descent, for example, have a greater preference for using parks during the morning compared to Malaysians of Malay and Indian descent. Differences were also found regarding motivations for using the parks. However, various similarities can also be noted, e.g. regarding length of use visiting together with family members. It is important for park management to recognise park use patterns and preferences, in particular also where different groups are concerned.

Keywords: Cultural Diversity; Green Infrastructure; Public Users; Recreation; Urban Parks

1. INTRODUCTION

A large number of studies, especially in Western countries, have looked at how green spaces are used for recreational purposes (e.g. Chiesura, 2004; Sanesi and Chiarello, 2006; Arnberger, 2006; Neuvonen et al., 2007; Schipperijn et al., 2010a). ‘Green space use’ refers to recreational use. Here we follow the definition of Schipperijn (2010) who states that use of green space can be defined broadly as any sort of visit to an urban green space, without considering the duration of stay, the

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reason for visiting or the activity performed while visiting; for example passing through on the way to a destination.

As recreation typically comprises the most important use of urban green spaces, this type of information on recreational use helps urban green space planners and managers to meet public demands and preferences. Recreation activities can be defined as active participation occurs at the source of supply, which is the site, although elements of the experience in particularly anticipation and reflection, occur back home (Mohamad Afandi, Shuib, Ramachandran & Yacob, 2013). Typically, studies have looked at types, intensity and frequency of use amongst different groups of people, as well as at topics such as period and time of use, duration of stay, and issues of transportation and accessibility (Schipperijn et al., 2010a; Schipperijn et al., 2010b). A recreational activity could be those that are passive and contemplative or active and adventure based (Mohamad Afandi, Shuib, Ramachandran, Yacob & Richards, 2012)

2. LITERATURE REVIEW

2.1. Studies on recreational use of green space

Various studies have found that urban dwellers prefer to visit nearby green spaces and the frequency of use declines with the distance from the residence (see for example, Grahn and Stigsdotter, 2003; Nielsen and Hansen, 2007; Neuvonen et al., 2007), with 300 m (about a 5 minutes' walk) often being mentioned as the 'threshold' (e.g. Natural England, 2011). According to research in China, people prefer green spaces that are within walking distance (i.e. within 1.5 km) or which are accessible by public transportation (Jim and Chen, 2006). Research has identified the importance of being able to get to green spaces on foot, by bicycle or by public transportation. The preference to walk to nearby parks was confirmed by studies in Bari, Italy (Sanesi and Chiarello, 2006) and Hong Kong (Wong, 2009). However, not all studies have confirmed the importance of a limited distance to the green space. A study conducted by Schipperijn et al. (2010a) in Denmark did not identify distance as being a limiting factor for most people to visit a park. Schipperijn et al. (ibid.) also noted a lack of studies which specifically look at the actual distance to green areas, and that most research, e.g. looks at perceived distance or makes more overall statements.

It is important to conduct research on the use of green space to ensure that the needs of the public are met by green space planning and management (Nor Akmar, Konijnendijk, Sreetheran & Nilsson, 2011). Since many green space are public goods, the non-market economic value of green spaces are generally lacking in decision making process (Mohamad Afandi, Samdin & Shuib, 2013). According to Thompson (2011), improving access to green space can attract more users, enhance a wide range of recreational uses and users, and thus benefit the wellbeing of urban dwellers, as studies have identified the links between green space use, health and wellbeing (also Grahn and Stigsdotter, 2003). In this context, it is important to note that recreational use of green space varies with people's different socio-economic and cultural background, something should be kept in mind by those providing, designing and managing public services (CABE Space, 2010).

In rapid industrialised and urbanised countries of (South-east) Asia, there is a growing need to look at recreational use of urban green space, as well as to undertake studies that draw up a more nuanced picture of green space use. Distinguishing between users with differing socio-economic and cultural backgrounds is increasingly being studied in Asian cities (see Wong and Domroes, 2004; Jim and

Chen, 2006; Chen et al., 2009; Saniya and Faria, 2009; Wong, 2009; Lo and Jim, 2010 for recent examples). Yet, in countries like Malaysia, as in many other industrialised countries, information about green space use is still lacking, although some studies have been carried out at the local level (Mansor and Said, 2007; Baharuddin, 2009).

2.2. *The socio-ecological model*

The present work was inspired by studies on physical activity by Sallis et al. (2006) who applied the so-called ecological model in a study of active living, involving multiple levels of influence on individual behaviour, namely: intrapersonal (cognition/emotion); interpersonal friends/family/organization); community (neighbourhood design); and societal or cultural (social norms). The socio-ecological approach combines these issues with a wider social context, as well as the impact of people's environment. Thus it distinguishes between various levels of influence on a person's behaviour which can be divided into 1) individual factors such as age and education, as well more social aspects such as links to family and friends, and 2) environmental factors such as the physical and cultural environment (also Giles-Corti et al., 2005). As explained by Schipperijn (2010), who applied the socio-ecological approach in his doctoral study of green space use in Denmark, the behaviour 'use of green space' can be seen as the result of individual factors, the perceived environment, the physical environment (i.e. the characteristics of the green space itself) and various interactions. Thus it is very important to distinguish, for example, between differences according to individual and social factors of green space users, as these will have an important impact on actual green space use and preferences.

In this study, we have focused on individual factors, including age, gender and education, which impact behaviour in terms of how people use green space (e.g. time spent in the green space, frequency of use, using the space alone or not, time of visit).

2.3. *Focus on people's ethnic background*

Differences in green space use by people from different cultural backgrounds has become a topic of research, for example due to the growth of immigrant populations in Western countries (Fraser and Kenney, 2000; Gobster, 2002; Johnston and Shimada, 2004; Jay and Schraml, 2009; Peters et al., 2010; Gentin, 2011). Cultural differences also affect peoples' perceptions of nature and trees. A study in Toronto, Canada, looked at what type of tree people preferred to be planted in front of their residence. In contrast to residents of British, Italian, and Portuguese descent, almost 50% of the Chinese respondents opted for no trees at all, possibly because of feng shui considerations that prohibit the planting of trees in 'wrong' locations (Fraser and Kenney, 2000). In spite of findings like these, there is still a lack of studies on green space and nature use amongst different ethnic groups or migrants, thus limiting the possibility for discussion and comparisons (Jay and Schraml, 2009), while some studies use unclear methods to distinguish the participant's ethnic background (as noted by Gentin, 2011).

The present study was carried out in the multicultural society of Malaysia and focuses among other on ethnicity as an explanatory variable for variation in green space use. Ethnicity, as studied in this paper, refers to identity with or membership of a particular racial, national, or cultural group and observance of that group's customs, beliefs, and language (Chandra, 2006). Malaysia is physically divided into the western and eastern parts by the South China Sea. Western Malaysia is on the southern part of the Malay Peninsula, and stretches from the Thai border to the island of Singapore.

Eastern Malaysia includes the territories of Sabah and Sarawak on the northern part of the island of Borneo, separated by the country of Brunei. As a nation, Malaysia has always had a multi-ethnic population, with inhabitants comprising 53.3% Malays, 26.0%, Chinese, 7.7% Indians, and 11.8% from different indigenous groups (Dept. of Statistics Malaysia, 2010). All of these groups have their own specific culture, language and religion (Jamil, 2002).

The Malaysian peninsular primarily hosts the three first groups; Malay, Chinese, and Indian, while various ethnic groups make up a larger share of the population in Sabah and Sarawak. The term ‘Malay’ refers to a person who practices Islamic and Malay traditions, speaks the Malay language and whose ancestors are Malays. The second largest ethnic group, the Malaysian Chinese, are mostly descendants of Chinese immigrants who came to the area during the 19th century. The Malaysian Indians are largely descended from southern India. They were brought to Malaysia by the British as labourers and primarily worked on the country’s many plantations during the colonial era. The largest indigenous ethnic groups of Sabah’s population are the Kadazan Dusun, the Bajau and the Murut, while in Sarawak, the main ethnic groups are the Iban, Bidayuh, Melanau, and the Kayan (Hazri, 2010; Ismail et al., 2009).

The different ethnic groups hold different perceptions and beliefs. For example, it is a taboo among Malays to leave the house during dusk as they believe that it is the time when the evil spirits are about. Moreover, dusk is the time of prayer for the dominantly Muslim Malay (Abdul Aziz, 1984). Traditionally, Chinese tend to believe that the earlier they start the day, the more prosperous their lives will be. Hence, most of them prefer to go to the park early in the morning. Although many of these traditional beliefs have become watered down in today’s modern, global society, they can still play a role in explaining differences in green space use.

2.4. Study aim

The aim of this paper is to contribute to research on the topic of green space use in Southeast Asia and Malaysia in particular, by studying the recreational use of selected parks in large Malaysian cities. Different socio-economic and cultural characteristics of park users and their influence on park use and preferences are in focus. The paper deals with the question how environmental factors such as distance and socio-demographic factors such as ethnicity influence the use of urban green spaces in major Malaysian cities.

Figure 1: Map of Malaysia, with the cities of Kuala Lumpur and Kuching indicated.



3. DATA AND METHODOLOGY

3.1. Study area

The study focused on two of Malaysia's major cities: capital Kuala Lumpur on the Malaysian peninsular, and Kuching on Sarawak (Fig. 1). Kuala Lumpur is the largest city in Malaysia with a population of 1.8 million comprising 43% Chinese, 38% Malay, and 10% Indians. Kuching, Sarawak is situated on the island of Borneo which is separated from the Malaysian peninsular by the South China Sea. Kuching is the capital of the state of Sarawak and thus functions as a regional centre. The population in 2003 was 623,660 consisting of Chinese (38%), Malay (36%), Indian (5%) and a large share of people from indigenous ethnic groups (21%) (Department of Statistics Malaysia, 2010).

The study looked at municipally owned, publicly accessible city parks as important elements of cities' green space resource. In Kuala Lumpur, three parks were selected, namely Titiwangsa Lake Park (TLP), Permaisuri Lake Park (PLP) and Kepong Metropolitan Park (KMP), whereas in Kuching, Kuching Park (KP) and Friendship Park (FP) were chosen. The parks were chosen after discussions with green space managers at Kuala Lumpur City Hall and South Kuching City Hall (Table 1).

Table 1: Characteristics of the selected city parks in Kuala Lumpur and Kuching.

	TLP	PLP	KMP	KP	FP
Established (year)	1981	1984	2001	1995	2006
Size (ha)	46.1	49.4	95.0	64.0	2.4
Theme	Outdoor recreational park	Forest park	Semi-forest park	Small-scale recreational park	Historical park
Type (location)	City park (2.7 km from Kuala Lumpur City Centre)	City park (6.5 km from Kuala Lumpur City Centre)	City park (11.1 km from Kuala Lumpur City Centre)	City park (2.3 km from Kuching City Centre)	City park (5.4 km from Kuching City Centre)
Housing density within 2km from the park (houses)	480	13 800	6 500	625	3 800

Note: TLP: Titiwangsa Lake Park; PLP: Permaisuri Lake Park; KMP: Kepong Metropolitan Park, KP: Kuching Park; FP: Friendship Park.

3.2. Data collection

A survey was conducted using a questionnaire inspired by a recent study on use of green spaces in Denmark (Schipperijn et al., 2010a; Schipperijn et al., 2010b). The work of Schipperijn et al. (2010a) in particular looked at the social and physical factors that influence residents' decision to visit green spaces and applied a socio-ecological approach.

In September 2009, a total of 16,205 eight-page postal questionnaires were posted to the respective residential areas in the two cities, placed within a 2 km radius of the respective park. For this paper, questions related to the use of urban green space were included with questions which collected socio-demographic information about the respondents. The questionnaires were distributed by mail through Pos Malaysian Berhad, the Malaysian national post agency. Due to time and budgetary constraints, it was decided not to include all addresses near PLP (6,300 instead of 13,800) and KMP (5,000 instead of 6,500). The number of addresses was reduced using random selection. For other areas, the following number of questionnaires was delivered (covering all addresses within the 2 km perimeter): TLP, 480 questionnaires; FP, 3,800 questionnaires; and KP, 625 questionnaires. The difference in the number of questionnaires delivered illustrates how the housing density around the parks differs considerably.

The questionnaires were written in two languages, namely English (international language and widely spoken in Malaysia) and Bahasa Malaysia (local language), to cater for the variety of races in Malaysia. The respondents were asked to answer the questionnaires within three weeks of receiving it. Budgetary restrictions meant that no follow-up reminder could be undertaken. In all, only 1,692 (10.44%) respondents returned the questionnaires. The low response rate is in line with previous experiences in Malaysia. According to PriceWaterHouseCoopers (2002), responses to postal surveys in Malaysia are typically between 10 and 16%. A study on people's walking behaviour resulted in a somewhat higher response rate of 22.2% (Wan Rabiah et al., 2011). The low response rate in this study should be seen in the light of the large sample population, which included the large majority of the addressed within 2 km from the selected parks, as well as the absence of follow up due to financial constraints. Dillman (1991) has discussed the fact that mail surveys often hold an element of bias due to high-levels of non-response. However, as it is unlikely that the over 10% that responded also represents the 90% of non-respondents, study findings will be biased.

Following the socio-ecological model, the questionnaire addressed the demographic, socio-economic and cultural background of the respondents, and asked about gender, marital status, ethnicity, age, educational level, and income level. In terms of respondents' green space use behaviour, questions were asked on the frequency of use of the nearby park, typical times of the week and day to visit, time spent in the park, and whether people were typically visiting alone or with others. The local residents were also asked about self-reported distance from their homes to the specific park (ranging from <100 m, to 1.1-2 km) and about their mode of transportation to the park.

4. RESULTS AND DISCUSSION

A Chi-square (χ^2) tests were carried out to compare the variables by using cross tables. Next, logistic regressions were carried out used to analyse the probabilities of the influence of different socio-cultural and socio-demographic factors predictive value for recreational park use, as well as the impact of the city in which people lived. The results are presented as odds ratios (OR) with 95% confidence intervals (CI). Goodness-of-fit of the models was assessed by the Hosmer–Lemeshow test (Hosmer and Lemeshow, 2000). A principal component analysis was performed to look into reasons for people visiting the park for each ethnic group. The Statistical Package for Social Sciences (SPSS V.17) was used to analyse the collected data.

4.1. Socio-demographic profile of the respondents

The study involved quite an even number of men (49.9%) and women (50.1%) (see Appendix 1). In line with the population composition of the cities, Chinese represented the majority of respondents (45.2%), followed by Malays (38.5%). Meanwhile, as may be expected, the share of indigenous respondents was high in the case of the two parks in Kuching, namely FP (38.7%) and KP (42.8%). Respondents aged between 41-50 years comprised the largest age class (23.5%). In addition, more than half of the total respondents had a university degree (54.6%), except for the respondents who live near KMP. However, local differences can be noted. Appendix 1 indicates that respondents who live near TLP and PLP stated higher education levels. This can be explained by the location of the parks which are near the city centre area with businesses and educational institutes.

4.2. Recreational use of the parks

When combining the findings for all parks, the largest share of the respondents (65.0%) lived within 1 km of the park (see Appendix 2). Appendix 2 also shows that 88.5% of the respondents stated that they had visited the park near their residence, while 72.1% of all respondents had visited the nearby park during the past three months. Smaller differences were noted between the different parks with PLP in Kuala Lumpur having the highest score (91.6% of nearby residents having visited the park).

Table 2 shows the frequency of park use for different categories of distance from the residence to the park, as an average of all parks. The results show that the share of people who visited the park more than 20 times during the past three months increases as the distance to the park from the residence decreases. Moreover, the findings show that the group of ‘non users’ increases as the distance to the park increases. Furthermore, the category of 1-20 visits during the past three months is the largest (55.8%) and does not show large variety across the different distance categories. The results for this cross-sectional analysis were significant ($p=0.00$).

Table 2: Frequency (in %) of park use within 3 months related to residence distance from the park.

	0-300m (n=500)	301-600m (n=256)	601-1km (n=334)	1.1-2km (n=581)	Total (N=1671)	p-value
Not once	19.4	25.8	27.5	36.5	2.9	0.00
1-20	55.8	53.1	59.0	57.1	56.5	
More than 20	24.8	21.1	13.5	6.4	15.6	

The majority of respondents stated that they visit the nearby park during the weekends, although the results for the five different parks varied. Close to 40% of the residents who live around TLP in Kuala Lumpur visited the park in the morning. Meanwhile, a large group of respondents who live close to FP in Kuching stated that they visit the park during the evening (25.3%). Still, residents preferred to go to their nearby park in the afternoon up until the early evening (between 13.00 and 20.00 hrs).

When looking at how people get to the parks, most respondents stated that they travel by car (61.2%), with only 26.6% walking to the park. About 80% of all respondents spent an hour or less in the park. The majority of respondents visited the park with the family (54.0%); not many of the respondents used the nearby park alone (9.7%).

4.3. Impact of socio-demographic factors on park use

4.3.1. Park use, ethnicity and age

Table 3 shows results from multiple logistic regression analysis demonstrating the association between ethnicity and age, and park use. Adjusted for age, the odds of using the nearby park were significantly lower for Malay (OR: 0.62, 95% CI: 0.40-0.96) compared to Chinese. Also Indians and other ethnic groups appear to have lower odds for visiting a park than the Chinese. However, these results were not significant and there was considerable variation within these two groups. Looking at the association between age and using parks, adjusted for ethnicity, it becomes clear that respondents over 60 years of age have almost three times higher odds (OR: 2.94, 95% CI: 1.46-5.92) of using parks compared to 41-50 year olds.

Table 3: Results from multiple logistic regression analysis showing the association between ethnicity and age, and use of parks.

	Crude%	Sig.	OR	95% CI	N
<i>Ethnicity*</i>					
Malay*	92.3	0.03	0.62	0.40-0.96	601
Chinese	84.7		1		647
Indian	88.0	0.31	0.41	0.07-2.29	44
Others	90.3	0.80	0.93	0.53-1.64	205
<i>Age*</i>					
17-25	84.7	0.14	1.44	0.89-2.32	222
26-32	93.8	0.60	1.13	0.72-1.76	300
33-40	89.4	0.22	0.78	0.51-1.17	346
41-50	88.7		1		353
51-60	87.8	0.51	1.18	0.72-1.93	201
>60*	78.1	0.00	2.94	1.46-5.92	75

Notes: * p <0.05; OR: Odds ratio, 95% CI: 95% Confidence Interval.

4.3.2. Differences in day and time of visit

The logistic regression models predict that the probabilities of using parks are spread out according to seven individual models in terms of day and time of visit (Tables 4 and 5).

Table 4: Logistic regression model predicting the probability of park use in terms of day of visit.

	Day of visits							
	Weekday				Weekend			
	Crude%	OR	95% CI	N	Crude%	OR	95% CI	N
<i>Ethnicity**</i>								
Malay	14.8	0.89	0.59-1.33	644	76.6	1.38	0.98-1.93	644
Chinese	20.8	1		753	65.6	1		753
Indian	14.6	0.59	0.17-2.06	48	62.5	0.61	0.27-1.41	48
Others	30.1	2.80	1.76-4.46	226	65.0	0.55	0.35-0.85	226
<i>Age (in years)**</i>								
17-25	15.2	0.57	0.378-0.87	257	70.4	1.15	0.81-1.63	257
26-32	13.5	0.53	0.35-0.80	318	71.1	1.03	0.74-1.44	318
33-40	12.8	0.46	0.31-0.68	382	77.7	1.66	1.20-2.31	382
41-50	25.2	1		393	67.2	1		393
51-60	27.2	1.14	0.78-1.66	228	67.1	0.98	0.69-1.40	228
>60	37.6	1.74	1.06-2.86	93	46.2	0.43	0.27-0.70	93
<i>Gender</i>								
Men	18.2	1.10	0.76-1.58	834	70.6	0.82	0.60-1.12	834
Women	20.9	1		837	68.7	1		837
<i>Education level*</i>								
Primary	23.4	1.25	0.61-2.57	47	74.5	1.13	0.56-2.26	47
Secondary	20.8	1.27	0.95-1.70	515	65.6	0.69	0.54-0.89	515
Certificate	28.1	1.42	0.97-2.08	196	64.8	0.86	0.60-1.21	196
University degree	16.9	1		913	72.7	1		913
<i>City</i>								
Kuala Lumpur	17.1	1		1119	71.7	1		1119
Kuching	24.6	1.07	0.77-1.48	552	66.7	0.99	0.76-1.34	552

Notes: * p <0.05 (Weekend); ** p <0.05 (Weekday and weekend); OR: Odds ratio, 95%, CI: 95% Confidence Interval

Table 5: Logistic regression model predicting the probability of park use by time of day.

	Time of visits											
	Morning				Afternoon				Late afternoon and evening			
	Crude %	OR	95% CI	N	Crude %	OR	95% CI	N	Crude %	OR	95% CI	N
<i>Ethnicity**</i>												
Malay	35.2	1.02	0.81-1.30	644	52.2	3.28	2.58-4.10	644	12.3	0.21	0.16-0.28	644
Chinese	32.1	1		753	24.4	1		753	43.0	1		753
Indian	20.8	0.42	0.20-0.87	48	56.3	3.88	2.10-7.17	48	20.8	0.47	0.23-0.98	48
Others	20.4	0.89	0.58-1.37	226	28.8	1.39	0.94-2.04	226	50.9	0.79	0.55-1.12	226
<i>Age (in years)***</i>												
17-25	24.5	0.68	0.47-0.97	257	42.4	1.23	0.87-1.72	257	33.1	1.20	0.84-1.74	257
26-32	31.8	0.89	0.64-1.24	318	39.9	1.12	0.80-1.51	318	27.7	0.98	0.69-1.40	318
33-40	24.1	0.67	0.48-0.93	382	39.5	1.17	0.86-1.59	382	35.6	1.21	0.87-1.67	382
41-50	32.3	1		393	34.4	1		393	33.1	1		393
51-60	45.2	2.18	1.53-3.11	228	24.1	0.56	0.38-0.83	228	30.7	0.75	0.51-1.10	228
>60	41.9	1.62	0.99-2.62	93	37.6	1.22	0.74-1.99	93	20.4	0.45	0.25-0.80	93
<i>Gender</i>												
Men	28.7	0.69	0.52-0.86	834	38.7	1.24	1.01-1.54	834	32.2	1.17	0.93-1.47	834
Women	34.2	1		837	34.5	1		837	30.9	1		837
<i>Education level</i>												
Primary	51.1	1.85	0.98-3.47	47	29.8	0.77	0.39-1.52	47	19.1	0.58	0.26-1.28	47
Secondary	30.5	0.98	0.76-1.26	515	40.0	1.14	0.90-1.45	515	29.3	0.89	0.69-1.16	515
Certificate	35.7	1.27	0.90-1.79	196	32.1	0.96	0.67-1.36	196	31.6	0.83	0.58-1.20	196
University degree	30.0	1		913	36.0	1		913	33.5	1		913
<i>City (Kuala Lumpur)*</i>												
Kuala Lumpur	36.7	1		1119	40.5	1		1119	22.3	1		1119
Kuching	20.7	0.40	0.29-0.55	552	28.8	0.94	0.70-1.25	552	50.5	2.49	1.88-3.29	552

Notes: * $p < 0.05$ (Morning and late afternoon and evening); ** $p < 0.05$ (Afternoon and late afternoon and evening); *** $p < 0.05$ (Morning, afternoon and late afternoon and evening); OR: Odds ratio, 95% CI: 95% Confidence Interval.

When looking at probabilities for day of visit, differences in findings were found to be significant on both weekdays and weekends for ethnicity and age ($p > 0.05$), while differences for education levels were only significant for weekends ($p > 0.05$). Gender and city did not lead to significant differences. In terms of ethnicity, the other groups had the highest odds for visiting during the weekend (OR: 2.78; 95% CI: 1.76-4.46), while Malay were the group with the highest odds for weekday visits (OR: 1.38; 95% CI: 0.98-1.93). The 60+ age group had the highest odds for park visits during weekdays (OR: 1.74; 95% CI: 1.06-2.86), while the 33-40 year age group's odds were highest for weekend visits (OR: 1.66; 95% CI: 1.20-2.31).

Findings on different odds for time of visit during the day were found to be significant for age (all times of day, $p > 0.05$) and ethnicity (morning, late afternoon and evening only, $p > 0.05$), while gender, age and educational level were not found to have a significant effect. The 51-60 year group had the highest odds for visiting during the morning (OR: 2.18; 95% CI: 1.53-3.11) but the lowest probability for park use during the afternoon (OR: 0.56; 95% CI: 0.38-0.83). The youngest age groups had the highest odds for late afternoon and evening visits. Regarding ethnicity, Indians showed the lowest odds for morning visits (OR: 0.42; 95% CI: 0.20-0.87) and Malay for late afternoon and evening visits (OR: 0.21; 95% CI: 0.16-0.28). On the other hand, Chinese had the highest probability for park use during the late afternoon and evening. Comparison between the two cities demonstrated lower odds for morning use in Kuching (OR: 0.40; 95% CI: 0.29-0.55), while the odds for late afternoon and evening visits were higher (OR: 2.49; 95% CI: 1.88-3.29).

4.3.3. Reasons for visiting the park

Principal Component Analysis of 20 reasons or purposes for going to the park was performed (see Appendix 3). Out of the 20 reasons, 4 dimensions were identified: 1) restorative (30.7%), 2) social (13.6%), 3) education (7.4%), and 4) fitness (6.1%), with the percentage showing total variance explained by that dimension. As shown in Table 6, the main reasons for Malays to visit the park are restorative, educational and to a limited extent for fitness. Meanwhile, Chinese people visit the park for broader reasons; they score almost equally on the 4 dimensions. Indians score high on the restorative dimension, just like the Malays, but they score lowest in fitness. Other ethnic groups score highest in social for visiting the park, but score lowest in the restorative component.

Table 6: The ethnic groups' score on four dimensions concerning reasons for going to the park

Ethnicity		Factor restoration	Factor social	Factor education	Factor fitness
Malay	Mean	.11	.00	.10	.08
	N	644	644	644	644
	Std. Deviation	1.05	1.06	1.02	1.01
Chinese	Mean	-.03	-.02	-.05	-.03
	N	752	752	752	752
	Std. Deviation	.91	.95	.98	.10
Indian	Mean	.36	-.06	.10	-.32
	N	48	48	48	48
	Std. Deviation	.932	.88	.88	1.00
Others	Mean	-.27	.08	-.13	-.06
	N	226	226	226	226
	Std. Deviation	1.11	1.02	1.01	0.95

4.4. Discussion

4.4.1. Use of green space in Malaysian parks in an international perspective

This study confirms many findings from studies on urban park use across the world. The study confirms, for example, that the distance from the residence to the green space is an important factor in explaining the frequency of green space use, and the large majority of the people who live within a 2 km radius of a park also visit it. However, no comparison was made with people who live more than 2 km from the park boundaries. In this paper, distance was predicted by the respondent. According to Scott et al. (2007), self-estimated distance is a better predictor for the frequency of urban green space use than the objectively measured distance. Meanwhile, Lackey and Kacyznski (2009) showed that the correlation between the objective and self-estimated distance to the nearest park is rather poor, especially for people who do not use that park regularly.

A greater proportion of park users in Kuala Lumpur and Kuching travel to the parks by car compared to residents of European (e.g. Arnberger, 2006; Schipperijn et al., 2010a) and even other Asian cities (Jim and Chen, 2003). This can be partly explained by the hot and humid climate in Malaysian cities, which makes walking and bicycling less pleasant than in cooler climates. Moreover, a lack of sufficient public transportation could be a reason why people travel by car. Most Malaysian cities still lack a well-functioning public transport system. Inhabitants in Kuching, for example, have to rely on bus services and taxis. The Klang Valley, in which Kuala Lumpur is situated, is somewhat

better off due to the ongoing development of a more integrated public transportation system incorporating Light Rail Transit (LRT), monorail, railway and bus services.

The climate also explains why the parks in Kuala Lumpur and Kuching are hardly used during midday. Early mornings and late afternoons / early evenings are the most common times for using the parks; findings which are similar for other cities in warm climates (e.g. Jim and Chen, 2006; Sanesi and Chiarello, 2006; Laforteza et al., 2009). The study does confirm that the weekend is the most popular time for visiting green spaces in Malaysia. Cultural factors were also found to influence time of park use with, e.g. the Malays showing low use patterns during the late afternoon and evenings. When comparing the findings of the two cities, significant differences are apparent, e.g. based on the differences in cultural/ethnic composition of the population.

This study also demonstrated that differences in recreational use and motivations for using the parks can be explained by socio-demographic and economic factors, individually or in combination. The use of parks in Malaysia generally shows that the parks are equally used by two gender groups; male users were most dominant in three parks compared to women users in the other two parks. According to a study in the UK, women tend to use green spaces less than men and are less likely to use them for exercise, particularly if the green space 'doesn't feel safe' (Mitchell and Popham, 2007). When looking at age, the age group between 26-32 has the highest probability to use the park for recreational purposes, while the 33-40 years group had the lowest probability. According to Sallis et al. (2000), young people tend to spend more time outdoors if there are facilities in the parks. Most young people aged 26-32 preferred to bring friends to the park, while people over the age of 41 prefer to bring families. A study in England found that most people aged 30 to 39 years old reported that they usually visit the parks with their children or family members (Green Link, 2010).

Education level can also have an impact on park use, with for example higher educated respondents preferring visits during the late afternoon. Here it has to be said that Titiwangsa Lake Park and Permaisuri Lake Park in Kuala Lumpur, as well as Friendship Park in Kuching, are located close to the institutes of higher learning and the commercial areas, thus resulting in higher-than-average education levels among respondents.

Among the ethnic groups, differences between the ethnic groups included, among other, Chinese having a different preference for bringing family and friends to the park. The Chinese have very similar scores on the four motivation components, e.g. implying that individual visits for restorative and educational purposes are very common, where the visits of other groups have a stronger social component.

4.4.2. Difference across ethnics groups in an international perspective

Although the study found many similarities in park use patterns, some notable differences were also found, for example, regarding preferred time of use. Malays, for example, generally avoid using parks in the late afternoon and evening, while Malay and Chinese have a clear preference for the early morning. As previously mentioned, these differences are related to preferred activities, but also probably to cultural differences. The early-morning use of parks for, e.g. exercise and tai-chi, also emerges as a major activity from studies in Chinese cities (e.g. Jim and Chen, 2006; Wong, 2009). Also, traditionally Malay and Chinese tend to believe that the earlier they start the day, the more prosperous their lives are (ibid).

Using parks with family and friends was found to be popular among all ethnic groups, although once again there are some differences, with especially the Chinese preferring more individual park use. This is also confirmed by studies of different ethnic groups elsewhere (e.g. Fraser and Kenney, 2000; Peters et al., 2010).

The noted differences in park use patterns and preferences between the different ethnic groups in Malaysia are also interesting from an international perspective. Many Western countries, for example, have experienced an influx of migrants from other parts of the world. For the case of the Netherlands, for example, Buijs et al. (2009) describes dissimilar views of nature between immigrants and native Dutch based on, for example, Islamic and Christian backgrounds respectively. In Malaysia, Malay culture and behaviour is based on Islam and traditional values (*adat*) (Mat Saat, 1993), while traditional Chinese cultural values generally follow Confucianism (Jia, 1997).

Peters et al. (2010) argued that parks provide important settings where different social (and ethnic) groups can meet each other, thus stimulating social cohesion in increasingly multi-ethnic urban societies. The work of Peters et al. (2010) in the Netherlands also showed, however, that interactions between different groups are infrequent. This particular study did not ask respondents about their interactions with other park users, so no conclusions can be drawn regarding this aspect.

When looking at the main reasons for visiting parks, each ethnic group has its own purposes or reasons. A study done in the US on the motives behind using parks among ethnic minority groups showed that Hispanics and African Americans go to the park for social activities, while Caucasians visit the green space to appreciate nature (Gobster, 2002). Meanwhile, Tinsley et al. (2002) found that Hispanics and Asians are likely to go to the park for social engagement.

4.4.3. Discussion of methodology

Although the number of respondents was close to 1700, the study probably holds considerable bias due to the low response rate, even though this should be seen in the light of the large sample population (which included most of the people in the target area). Therefore findings need to be interpreted cautiously. However, it is probably not realistic to expect response rates as high as in Western countries. Moreover, resources for the study did not allow for a proper follow-up, something which could have enhanced the response rate.

It also has to be noted, however, that the 2 km radius is rather arbitrary. Some of the parks had very few residences within the first kilometre. Here a wider perimeter should perhaps have been adopted. Moreover, the lack of a follow up to the initial questionnaire, due to limited resources, has of course affected the response rate in a negative way.

4.4.4. Future research

This study provides a useful and still rare insight into the use of public parks and users' preferences in Malaysia, and in an industrialising country context. In rapidly industrializing countries such as Malaysia, urban green spaces face the dilemma of, on the one hand, becoming more and more important, while on the other hand, facing increasing pressure as a result of urbanization. Therefore, it is important to identify how citizens and users appreciate and use urban green spaces. A socio-ecological approach can help to address both individual and environmental factors to explain differences in use and preferences.

Differences in usage patterns among different ethnic groups should be a particular focus for future research, as it is an important aspect of modern green space planning and management where, e.g. migration and multi-ethnicity are increasingly common phenomena in countries such as Malaysia.

5. CONCLUSIONS

This study confirms the results from earlier studies, both in the Western world and in tropical countries, about the visiting habits of respondents who live close to parks. The study shows that the frequency of visits declines as the distance from the residence to the park increases, although this study only examined respondents who live within 2 km of the park. In tropical countries like Malaysia, distance may be even more important, as the hot and humid climate makes walking or cycling to the park less pleasant, while there could also be issues regarding easy access. Transportation by car is, therefore, much more common than in most Western countries. From a cultural perspective, visiting the park with family or friends is more common than in many Western countries.

The research also stresses the need to look at the socio-demographic characteristics of urban dwellers, as they have important effects on park use. For the case of multi-ethnic Malaysia, for example, clear differences can be noted in park use patterns between different ethnic groups. The uneven distribution of different ethnic groups in the two study areas hinders the analysis regarding the similarities and differences among them in terms of detailed usage patterns of the parks.

However, the findings of this study provide a good basis for understanding the use of green spaces among Malaysians according to socio-demographic factors. It is important that the park management or authorities are more sensitive and aware of these issues in order to attract more users (e.g. enhance accessibility, optimum usage) and to offer various experiences for the different user groups.

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REFERENCES

- Abdul Aziz, A. K. (1984). *Amalan dalam upacara kelahiran, perkahwinan dan kematian dalam masyarakat jawa ditinjau dari kacamata Islam tumpuan khusus di Daerah Klang* (Practices in the rites of birth, marriage and death in a Javan community through Islamic perspectives in the district of Klang) (Unpublished thesis, final year project 1983/1984). Jabatan Pengajian Dakwah dan Kepimpinan, Fakulti Pengajian Islam, Universiti Kebangsaan Malaysia, Bangi, Selangor (in Bahasa Malaysia).
- Arnberger, A. (2006). Recreation use of urban forests: An inter-area comparison. *Urban Forestry & Urban Greening*, 4(3-4), 135-144.

- Baharuddin, Z. M. (2009). *Role and perception on urban green space in Kuala Lumpur and Adelaide*. Poster presented at the Postgraduate Poster Presentation, School of Natural and Built Environment, University of South Australia, Mawson, April, 9, 2009.
- Buijs, A. E., Elands, B. H. M., & Langers, F. (2009). No Wilderness for Immigrants: Cultural Differences in Images of Nature and Landscape Preferences. *Landscape and Urban Planning*, 91(3), 113-123.
- CABE Space. (2010). *Research summary. Urban Green Nation: Building the evidence base*. London: Commission for Architecture and the Built Environment.
- Chandra, K. (2006). What is ethnicity identity and does it matter? *Annual Review of Political Science*, 9, 397-424.
- Chen, B., Adimo, O. C., & Bao, Z. (2009). Assessment of aesthetic quality and multiple functions of urban green space from the users' perspective: The case of Hangzhou Flower Garden, China. *Journal of Landscape and Urban Planning*, 93(1), 76-82.
- Chiesura, A. (2004). The role of urban parks for the sustainable city. *Landscape and Urban Planning*, 68, 129-138.
- Department of Statistics Malaysia. (2010). *The Official Website. The Source of Malaysia's Official Statistics*. Retrieved January 6, 2011, from http://www.statistics.gov.my/portal/index.php?option=com_content&view=frontpage&Itemid=1&lang=en
- Dillman, D. A. (1991). The design and administration of mail surveys. *Annual Review of Sociology*, 17, 225-249.
- Fraser, E. D. G., & Kenney, A. W. (2000). Cultural background and landscape history as factors affecting perceptions of the urban forestry. *Journal of Arboriculture*, 26(2), 106-113.
- Gentin, S. (2011). Outdoor recreation and ethnicity in Europe—A review. *Journal of Urban Forestry & Urban Greening*, 10(3), 153-161.
- Giles-Corti, B., Timperio, A., Bull, F., & Pikora, T. (2005). Understanding Physical Activity Environmental Correlates: Increased Specificity for Ecological Models. *Exercise and Sport Sciences Reviews*, 33(4), 175-181.
- Gobster, P. (2002). Managing urban parks for a racially and ethnically diverse clientele. *Leisure Science*, 24, 143-159.
- Grahn, P., & Stigsdotter, U. K. (2003). Landscape planning and stress. *Urban Forest & Urban Greening*, 2, 1-18.
- Green Link. (2010). *Understanding the contribution parks and green spaces can make to improving people's lives*. Retrieved June 16, 2011, from <http://www.green-space.org.uk/downloads/GreenLINK/Blue%20Sky%20Green%20Space%20Full%20Report.pdf>
- Hazri, J. (2010). Historical Overview of Malaysia's Experience in Enhancing Equity and Quality of Education: Focusing on Management and Mediation of Multiethnic Issues. In *Africa-Asia University Dialogue for Educational Development Report of the International Experience Sharing Seminar (1): Efforts towards Improving the Quality of Education* (pp. 63-70). Hiroshima: Center for the Study of International Cooperation in Education Hiroshima University (CICE).
- Hosmer Jr., D. W., & Lemeshow, S. (2000). *Applied Logistic Regression* (2nd edition). , New York: Wiley.
- Ismail, S. R., Abdullah, H., & Ahmad, Z. (2009). Socio-psychological dimension of ethnic relations in Malaysia. *European Journal of Social Sciences*, 12(1), 76-82.
- Jamil, A. B. (2002). *A Design Guide of Public Parks in Malaysia*. Skudai, Johor: Universiti Teknologi Malaysia Press.

- Jay, M., & Schraml, U. (2009). Understanding the role of urban forests for migrants – uses. Perception and integrative potential. *Urban Forestry & Urban Greening*, 8, 283-294.
- Jia, W. (1997). Facework as a Chinese conflict-preventive mechanism: A cultural/discourse analysis. *Intercultural Communication Studies*, 7, 43-61.
- Jim, C. Y., & Chen, W. Y. (2003). Comprehensive green space planning based on landscape ecology principles in compact Nanjing city China. *Landscape Urban Planning*, 65, 5–116.
- Jim, C. Y., & Chen, W. Y. (2006). Recreation-amenity use and contingent valuation of urban green spaces in Guangzhou, China. *Landscape and Urban Planning*, 75, 81-96.
- Johnston, M., & Shimada L. D. (2004). Urban forestry in multicultural society. *Journal of Arboriculture*, 30(3), 185-192.
- Lackey, K. J., & Kaczynski, A. T. (2009). Correspondence of perceived vs. objective proximity to parks and their relationship to park-based physical activity. *International Journal of Behavioral Nutrition and Physical Activity*, 6, 53.
- Lafortezza, R., Carrus, G., Sanesi, G., & Davies, C. (2009). Benefits and well-being perceived by people visiting green spaces in periods of heat stress. *Urban Forestry & Urban Greening*, 8(2), 97-108.
- Lo, A.Y., & Jim, C. Y. (2010). Differential community effects on perception and use of greenspaces. *Journal Cities*, 27, 430-442.
- Mansor, M., & Said, I. (2007). Green Infrastructure as Network of Social Spaces for Well-being of Urban Residents: A Review. *Proceeding of the International Conference on Built Environment in Developing Countries*. Malaysia: Universiti Sains Malaysia.
- Mat Saat, B. (1993). Tingkahlaku tak normal. In Abdul Halim (Eds.), *Psikologi Melayu* (pp. 344-385). Kuala Lumpur: Dewan Bahasa dan Pustaka. (in Bahasa Malaysia).
- Mitchell, R., & Popham, F. (2007). Greenspace, urbanity and health: relationships in England. *Journal of Epidemiology and Community Health*, 61, 681-683.
- Mohamad Afandi, S. H. B., Samdin, Z., & Shuib, A. B. (2013). Review of valuation from a non-market perspective: Travel cost method for rural tourism. *Worldwide Hospitality and Tourism Themes*, 5(4), 329-341.
- Mohamad Afandi, S. H., Shuib, A., Ramachandran, S., & Yacob, M. R. (2013). Length of stay of discrete outdoor recreation experiences of Perlis State Park. *Malaysian Forester*, 76(2), 133-140.
- Mohamad Afandi, S. H., Shuib, A., Ramachandran, S., Yacob, M. R., & Richards, A. (2012). The need for recreational economic valuation at Perlis State Park. *Malaysian Forester*, 75(1), 73-80.
- Natural England. (2011). *Standard for accessible natural greenspace*. Retrieved October 4, 2011 from <http://www.naturalengland.org.uk/ourwork/enjoying/places/greenspace/greenspacestandards.aspx>
- Neuvonen, M., Sievänen, T., Tönnies, S., & Koskela, T. (2007). Access to green areas and the frequency of visits – A case study in Helsinki. *Urban Forestry & Urban Greening* 6, 235-247.
- Nielsen, T. B., & Hansen K. B. (2007). Do green areas affect health? Results from a Danish survey on the use of green areas and health indicators. *Health and Place*, 13, 839-850.
- Nor Akmar, A. A., Konijnendijk, C. C., Sreetheran, M., & Nilsson, K. (2011). Greenspace planning and management in Klang Valley, Peninsular Malaysia. *Arboriculture and Urban Forestry*, 37(3), 176-183.
- Peters, K., Elands, B., & Buijs, A. (2010). Social interactions in urban parks: Stimulating social cohesion? *Urban Forestry & Urban Greening*, 9, 93-100.
- PricewaterhouseCoopers. (2002). Market Readiness for Disclosure-Based Regulation, Highlights from the survey on the readiness of the Malaysian Capital Market participants for DBR. Securities Commission, Kuala Lumpur.

- Sallis, J. F., Prochaska, J., & Taylor, W. (2000). A review of correlates of physical activity of children and adolescents. *Medicine and Science in Sports and Exercise*, 32, 963-975.
- Sallis, J. F., Cervero, R. B., Ascher, W., Henderson, K. A., Kraft, M. K., & Kerr, J. (2006). An ecological approach to creating active living communities. *Annual Review of Public Health*, 27, 297-322.
- Sanesi, G., & Chiarello, F. (2006). Residents and urban green spaces: The case of Bari. *Urban Forestry & Urban Greening*, 4, 125-134.
- Saniya, T., & Faria, S. (2009). Comparative analysis of responsive parks at urban neighbourhood in terms of accessibility: the case of Dhaka. In, M. Sreetheran, Y. Noor Azlin, M. N. Ahmad Azaruddin (Eds.), *Lessons for Sustainable Development* (pp. 60-68). Kepong: FRIM.
- Schipperijn, J. J. (2010). *Use of urban green space*. Forest & Landscape Research 45/2010.
- Schipperijn, J., Ekholm, O., Stigsdotter, U., Toftager, M., Bentsen, O., Kamper-Jørgensen, F., & Randrup, T. B. (2010a). Factors influencing the use of urban green space: Results from a Danish national representative survey. *Landscape and Urban Planning*, 95, 130-137.
- Schipperijn, J., Stigsdotter, U., Randrup, T.B., Troelsen, J. (2010b). Influences on the use of urban green space – A case study in Odense, Denmark. *Urban Forestry & Urban Greening*, 9, 25-32.
- Scott, M. M., Evenson, K. R., Cohen, D. A., & Cox, C. E. (2007). Comparing Perceived and Objectively Measured Access to Recreational Facilities as Predictors of Physical Activity in Adolescent Girls. *Journal of Urban Health*, 84, 346-359.
- Thompson, C. W. (2011). Linking landscape and health: the recurring theme. *Landscape and Urban Planning*, 99(3-4), 187-195.
- Tinsley, H., Tinsley, D., & Croskeys, C. (2002). Park Usage, Social Milieu and Psychosocial Benefits of Park Use Reported by Older Urban Park Users from four Ethnic Groups. *Leisure Sciences*, 24(2), 199–218.
- Wan Rabiah, W. O., Patterson, I., & Pegg, S. (2011). Health lifestyle: promoting walking behaviour in Kuala Lumpur, Malaysia. *World Journal of Management*, 3(1), 109-123.
- Wong, K. K. (2009). Urban park visiting habits and leisure activities of residents in Hong Kong, China. *Managing Leisure*, 14, 125-140.
- Wong, K. K., & Domroes, M. (2004). Users' perception of Kowloon Park, Hong Kong: visiting pattern and scenic beauty. *Chinese Geographical Science*, 14(3), 269-275.