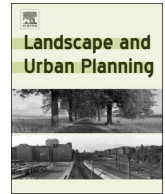




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Research Paper

Perception of park access and park use amongst youth in Hanoi: How cultural and local context matters

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A B S T R A C T

Urban parks offer many benefits for youth, including providing a place to express and build their social identity. Yet we know very little about how this group accesses and uses parks in Vietnam, and in non-western urban contexts in general. This paper begins to fill this gap by using the case of Hanoi where youth (18–24 years old) make up almost 20% of the population and their socio-cultural characteristics are changing rapidly. An intercept survey, using convenience sampling with quotas, was deployed in four parks in dense central areas and newer suburban zones (n = 382). Heat, crowded sidewalks, street crossings and traffic near parks are the most problematic obstacles to park access. Security was mentioned as an obstacle, with no significant difference between men and women. Participants reported on average 6.6 visits over two weeks and 77.5 min per visit. Perceived obstacles to access, duration of stay and frequency of visits were then fitted in a series of models against gender, timing of visits, travel modes, previous location, travel time, and performed activities (only in the last two models). Travel modes proved the most important features explaining obstacles to access. Practicing sports and exercises were predominant in explaining higher frequency and duration of visits. Gender differences were significant after controlling for other variables: women go to the park less frequently and stay for shorter periods than men. Our findings suggest avenues for park design and planning, such as providing equipment to support physical activities and addressing travelling obstacles near parks.

1. Introduction and research questions

The ability to use urban green spaces, such as public city parks, has the potential to bring significant benefits to urban youth. Many of these benefits, associated with the low access cost of parks and the social interaction opportunities they offer, accrue to all age groups. This is the case, for example, with access to recreational spaces sheltered from the dangers of street traffic, opportunities to interact with nature, and the social inclusiveness and community participation made possible by city parks (e.g. Chiesura, 2004; Orum & Neal, 2010). In addition, parks foster the adoption by urban residents of a healthy lifestyle, including the regular practice of physical activities. Parks, however, have more specific roles in urban youth development, notably by enabling the expression and construction of youth's social identity, because they allow sustained interactions with peers and other social groups (Baran et al., 2013; Chawla, 2002; Horschelman & Blerk, 2011; Malone, 2002).

Because of these specific roles, understanding the determinants of young people's use of parks is important. Such knowledge can improve the planning and design of urban public open spaces that are both appropriate for and attractive to youth. Existing studies have identified a number of factors that influence park use by urban populations. These

include users' socio-demographics and socio-economic status, park design and quality, as well as characteristics of the neighbourhood where they are located (Bedimo-Rung, Mowen, & Cohen, 2005; Byrne & Wolch, 2009). However, few studies have focused specifically on youth behaviour in accessing and using parks. These studies (see for example Baran et al., 2013; Moore et al., 2017) suggest that the determinants of park use vary significantly by age and by gender, and call for more targeted research on specific age groups, park locations and context.

This paper responds to this call by investigating the determinants of park uses among young people in Hanoi, Vietnam's capital city. By focusing on this rapidly growing Global South city, this paper also begins to fill a second important gap. To this day, the scholarship on public space access and use remains very much centered on Western and industrialized cities. Yet, the few studies of park use and access in non-Western cities highlight two reasons why context matters in the study of park access and usage (see reviews in Özgüner, 2011; Sreetheran, 2017).

First, national and regional cultural specificities influence park usage. Gender, to give a single example, is a well-established socio-demographic determinant of park use and access, which reflects socio-cultural norms. Depending on context, women (of all ages) have

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Received 28 February 2019; Received in revised form 22 April 2019; Accepted 22 April 2019

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been shown to be more or less present in parks due to a mix of local factors that includes their degree of mobility, social responsibilities, available time, and social norms regarding their presence in these public spaces (Lee & Kim, 2015; Özgüner, 2011; Wright Wendel, Zarger, & Mihelcic, 2012). Other elements of the local context must also be taken into account. In Vietnam's urban centers, socioeconomic reforms adopted since 1986 (known as *Đổi mới*) have spurred new consumption patterns, along with important lifestyle and cultural life transformations. This is especially salient among young urban dwellers and young women in particular (Hansen, Nielsen, & Wilhite, 2016; Thuan & Thomas, 2004). Yet we know little about other culturally-influenced constraints on youth's spatial behaviour in urban Vietnam, including those determining their access to public spaces such as parks, and the ways in which they use these spaces in their daily life.

Second, notable differences in local demography, population densities, and built forms distinguish cities of the Global South from their northern counterparts (and from each other). In Hanoi, reflecting the situation in much of the Global South, the speed of the city's population growth, and of its younger segments in particular, pose an enormous challenge for planning authorities who are struggling to meet new demands for urban infrastructure, services, and environmental controls (Gubry, 2010). These include demands by young people for more and better quality open green spaces (Geertman, Labbé, Boudreau, & Jacques, 2016), expressed in a context of limited accessibility to these spaces, of their uneven spatial distribution, and of encroachment over these spaces (Pham & Labbé, 2017). For two decades, Hanoi's urban population has increased by about 3.5% per year (World Bank, 2011). Young people contribute significantly to this rapid growth, notably through rural to urban migration. Consequently, this case study of Hanoi provides insight into park usage and its obstacles in a non-Western context.

Existing conceptualizations of park use determinants almost all stem from North American, European, and Australian contexts (see Özgüner, 2011; Sreetheran, 2017). These models need to be tested and adjusted to ensure that they capture important local characteristics of non-Western cities and populations. In Hanoi, for instance, this means taking into consideration a tropical climate, extremely high population densities, heavy traffic, and the overwhelming modal share of motorbikes, as well as gendered and cultural attitudes toward public space usage.

In what follows, we propose a locally-adapted conceptual framework, and test it by examining park access and use amongst Hanoi youth aged 18–24 through a survey. The analysis is guided by two main questions: i) what are the relationships between perceived obstacles to park access and user characteristics; and ii) What are the relationships between park use (duration and frequency of visits) and user characteristics as well as their activities? For both of these questions, we place a particular focus on gender differences. We also centered the analysis on physical obstacles because, based on our observations in the city, weather, road traffic and human density are important barriers to people's mobility in general and to park access in particular.

The remainder of this paper is organized as follows. Section 2 characterizes the context of park provisioning, as well as changes in youth population in Hanoi. Section 3 presents the conceptual framework used in this study. Section 4 describes our intercept survey data collection and analytical approach. Section 5 presents statistical analyses of perceived obstacles on the way to parks, and of duration and frequency of visits. Finally, in Sections 6 and 7, we discuss our results in relation to the literature on park use and park design.

2. Portrait of park provision and sociocultural changes affecting youth in Hanoi

2.1. Evolution of park provision

The urban morphogenesis of Hanoi, like that of most East Asian

cities, has bequeathed the Vietnamese capital city few open public spaces. The precolonial city had no Western-style public spaces (e.g. plazas, squares, gardens, or parks) and the few open spaces occasionally used for community activities (e.g. front yards of ritual buildings) tended to serve sacrality and officialdom, rather than participatory or inclusive social exchanges. This began to change during the colonial era (1884–1954), as the French colonial administration created a small number of Western-style public spaces around the precolonial city (Drummond, 2006; Kurfürst, 2011). The same approach was taken by postcolonial authorities after Vietnam's independence (1945). However, wartime (1945–1975), economic hardship (1975–1985), and intensive urbanization unleashed by socioeconomic reforms (starting in 1986) greatly limited the creation of new public spaces during the second half of the 20th century.

Significant efforts have been deployed since the beginning of the 2000s to increase the provision of open public spaces in the Vietnamese capital city. Illustrating this, Pham and Labbé (2017) report a twofold increase in the number of parks in Hanoi between 2000 and 2010. During that decade, 21 new parks were created, raising the city's total park area to 374.11 ha in 2010, compared to 236.51 ha in 2000.

Despite these recent efforts, public parks in Hanoi still represent less than 1.6 m² per capita. With only 6.5 m² of green space per capita (including lake areas and public parks), Hanoi is far behind other cities in the region, such as Kuala Lumpur (12.9 m² per capita) or Singapore (20 m² per capita) (Pham & Labbé, 2017; Said & Mansor, 2011). Furthermore, studies report significant shrinkages and deterioration of the limited green and open spaces in the city. Green space areas (including the street tree canopy) in Hanoi's urban districts decreased by about 3% per year between 1996 and 2003 (Duan & Shibayama, 2009; Uy & Nakagoshi, 2007) as they are being encroached upon by various development projects, illegal construction, and commercial activities (Anh, 2012). The scarcity of open public spaces translates into limited accessibility for residents. In 2010, only 15% of Hanoi's residential blocks had access to a park or a public garden within 500 m (Pham & Labbé, 2017).

2.2. City's youth population

Recent years have seen growing interest and demands on the part of Hanoians for more and better equipped parks and green spaces. In 2009, the former city (before the merger with the province of Hà Tây) was home to nearly 650,000 people aged 18–24, a group that represented 18% of the city's total population of 3.6 million (GSO, 2010). In the wake of the socioeconomic reforms launched in 1986, this age group experienced important sociocultural changes, for example, a stronger orientation toward consumption as a means to articulate sociability and express status (King, Nguyen, & Nguyen, 2008; Thuan & Thomas, 2004), more liberal views on sexuality (Charton & Boudreau, 2017), and a broader exposure to and selective adoption of Western ideas and practices. These include the adoption of skateboarding and parkour in public spaces (Geertman et al., 2016).

These changes, however, do not amount to a sharp break with the past. Instead, research suggests that tradition still has a significant impact upon attitudes and behaviours of young Vietnamese (King et al., 2008). Women, for instance, continue to be bound by patriarchal cultural and social norms; and paid work, domestic chores and schooling make them less prone than young men to engage in social activities (Drummond, 2006). Reflecting a gap in the scholarship on non-Western public spaces discussed in the introduction, the difference in park access and use between young men and women in urban Vietnam is still ill-documented. Understanding how parks are used by young Hanoians is particularly timely in this context as it can demonstrate the value of existing parks to the city government and generate evidence-based guidelines to support future decision-making on the provisioning of parks.

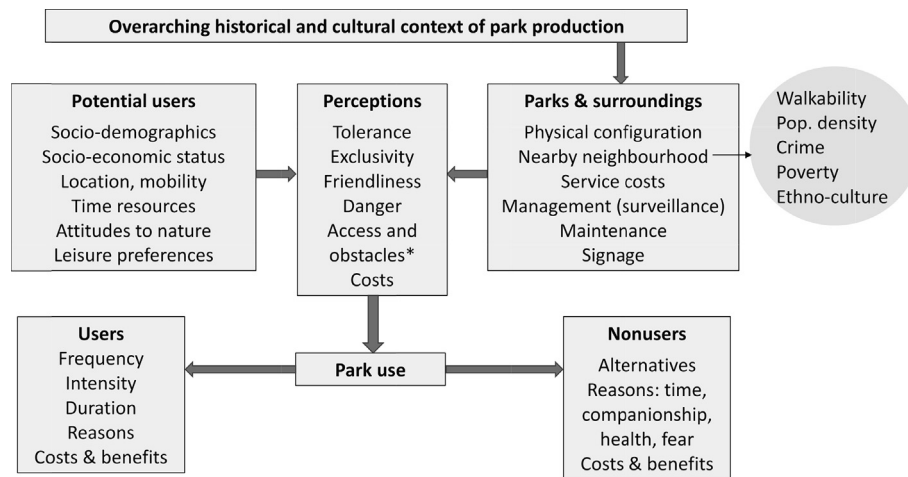


Fig. 1. Conceptual framework of park use (synthesis of literature). *Obstacles: we added this aspect, given the specific context of our study area.

3. Conceptual framework

The conceptual framework used in this study draws on existing models conceptualizing the determinants of park use (Bedimo-Rung et al., 2005; Byrne & Wolch, 2009). We also build on public health research on physical activity, on leisure studies and on the geographical literature (e.g. Baran et al., 2013; Wang, Brown, & Liu, 2015; Wright Wendel et al., 2012).

Fig. 1 schematizes our conceptual model. At the most general level, the conceptual model posits that the overarching historical and cultural context of park provision shapes how parks have been planned, located, and designed in a given city. In the case of Hanoi, as explained in the previous section, precolonial history and the Soviet-influenced planning approach shaped park space production, bequeathing the city a limited number of open public spaces.

Park use is measured in different ways: number of users (Baran et al., 2013), frequency of use, duration of stay, etc. (Byrne & Wolch, 2009). In addition, constraints on park use can be used to understand park use, for example by examining why people (including nonusers or infrequent users) do not make greater use of public parks and recreational amenities (Scott & Munson, 1994).

The model recognizes that park use decisions and choices between parks are affected by people's perception of parks (whether these spaces are seen as welcoming, friendly, fostering social interaction, etc.), of their ease of access, and of their usage costs (Byrne & Wolch, 2009). This perceived access may actually vary from one person to the next, according to two groups of factors: i) the potential user's characteristics and ii) characteristics of the park space and surrounding neighbourhoods. First, user characteristics include age, gender, ethnocultural group, socioeconomic status, and residential location. For example, in a study on park use among children, teenagers and adults in Durham (North Carolina), Baran et al. (2013) find that teenage boys, men, and children (6–12 years old) are more present in the observed parks. Scott and Munson (1994) in Cleveland found that females, older people, African-Americans, and individuals with lower education and/or income had lower park visitation rates. Second, characteristics of park space, proximity and accessibility to parks, and facilities in parks prove to be important (Wang et al., 2015). Surrounding neighborhoods may either ease or hinder access to parks, depending on their socio-economic attributes (poverty and crime level) and urban form (namely street connectivity, pedestrian amenities, and traffic in general) (Baran et al., 2013).

Drawing on this conceptual model, our research examines youth behaviour in using parks and the barriers to access them. We sought to adapt this to local geographical conditions of Hanoi, as will be detailed in the next section.

4. Data collection and analytical approach

4.1. The four studied parks

An intercept survey was conducted in four parks: Indira Gandhi, Nghĩa Đô, Linh Đàm, and Ngọc Lâm. Three criteria determined site selection. First, since our survey focused on examining park access, we sought parks situated near predominantly residential neighbourhoods, significant employment hubs, and schools or cultural centres. All of these increased the likelihood of young people's presence in the studied parks. Second, we selected medium-sized parks, primarily designed for use by local residents. As such, none of our study sites is a regionally or culturally important park or has a special vocation likely to attract users beyond the neighbourhood. Finally, in an attempt to explore different urban contexts, we selected parks located in areas of the city that became urbanized at different points in time.

More specifically, Indira Gandhi Park (10 ha) is located in an area urbanized over 50 years ago. Being in an older part of the city, this area had a high density of over 35,000 inhabitants/km² in 2009 (GSO, 2010). It also includes seven major employment hubs and universities. Nghĩa Đô Park (4.2 ha) is located in a more recently developed part of the city that began to urbanize in the 1990s. The surrounding area was already reaching high densities, varying from 16,000 to over 37,000 inhabitants/km² (GSO, 2010). Five important institutes and universities are found around this park. Linh Đàm Park (5 ha) and Ngọc Lâm Park (2.5 ha) are both located further from the inner-city in two areas that urbanized after 2000. Population densities tend to be lower in these zones, with over 9,000 persons/km² for Linh Đàm and slightly over 26,000 persons/km² around Ngọc Lâm Park (GSO, 2010). There are fewer significant residential zones, employment zones, educational institutions and entertainment centres near these two parks.

Aerial photos depicting the physical setting of these four parks can be found in Fig. 2. All the parks contain or are adjacent to a body of water, a typical feature in the city's parks. The locations of the four parks are shown in Fig. 3a. Hanoi's estimated service areas of parks and demographic characteristics are provided in Fig. 3b and c.

4.2. Survey design, administration and questionnaire

The survey was administered by intercepting youth randomly at the entrance of the parks. This method is common in park studies focusing on users (Lee & Kim, 2015; Özgüner, 2011). We used a non-probabilistic quota and convenience sampling method. Set numbers of respondents were predetermined to make sure that the experience of youth using parks was adequately represented while also capturing gendered and temporal variations in park attendance.

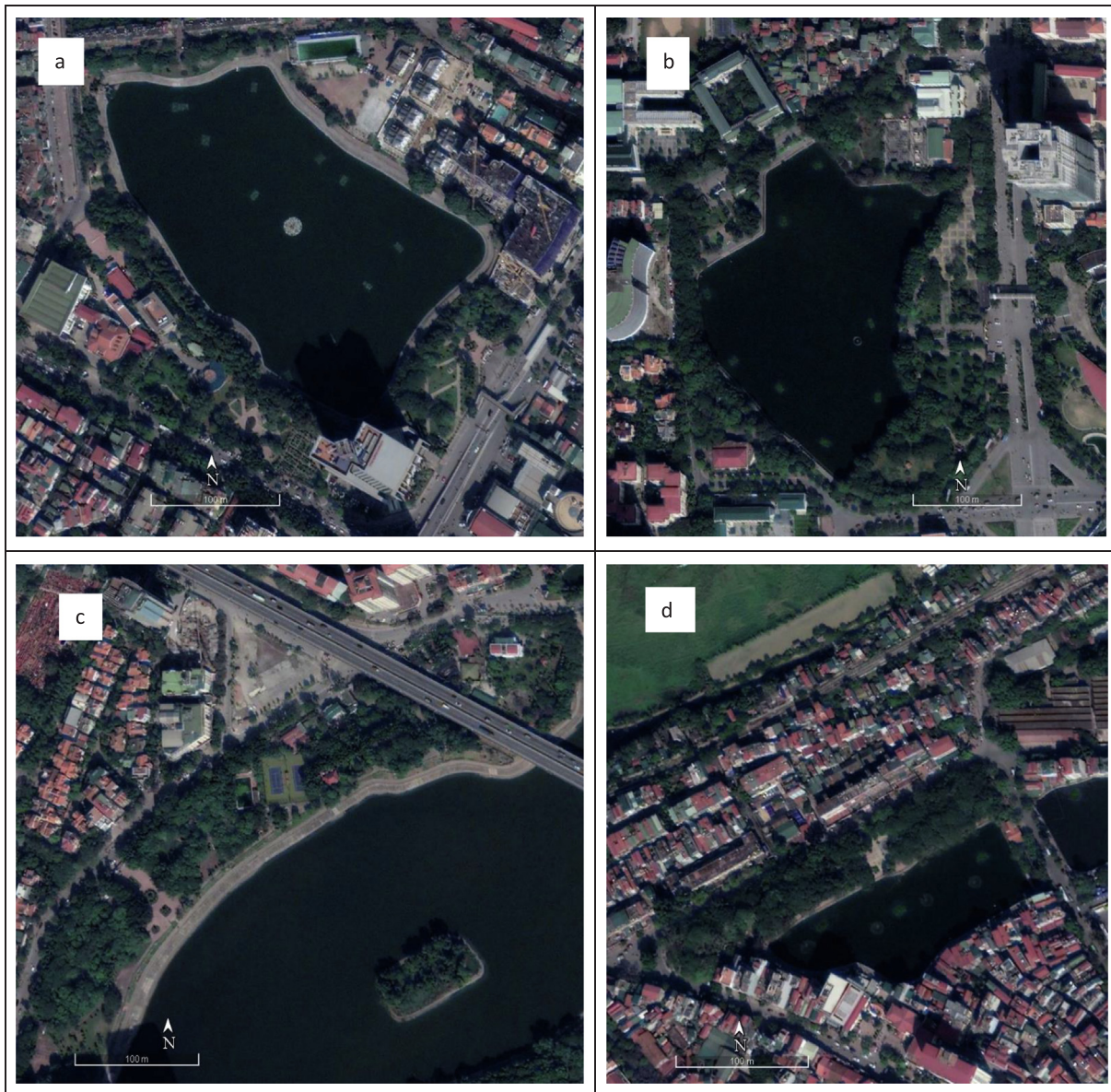


Fig. 2. Physical setting in and around the four parks: a) Indra Gandhi, b) Nghĩa Đô, c) Linh Đàm and d) Ngọc Lâm. Source: Google Earth 2018 (visualized at the same scale).

Quota sampling followed three rules. First, we aimed to administer 100 questionnaires to youths (which visually fit our target age group) in each of the four selected parks. Second, at each research site, we sought an equal number of male and female respondents (i.e., 50 of each per site). Third, we administered the questionnaires during the three busiest periods of park usage in Hanoi (referred to as ‘timing of visits’ thereafter): weekday morning (5:30–8:30 AM), weekday afternoon (5:30–8:30 PM) and weekend afternoon (4–7 PM). All questionnaires were self-administered on paper with the support of three trained research assistants during multiple site visits between May and August 2014. The refusal rate was quasi-null.

The questionnaires administered to young users documented: i) user characteristics (including their gender, the transportation mode used and travel time to access the park, and where they were before coming to the park – a characteristic referred to as ‘previous location’ thereafter); ii) activities practiced in the parks; iii) obstacles encountered on the way to the park through the question ‘What kind of obstacles do you usually face on your way to the park?’ (respondents were asked to select all obstacles that applied), and iv) two measures of park use (*Frequency*

through the question ‘Approximately, in the last two weeks, how many times have you visited this park?’), and *Duration* through the question ‘How much time do you spend at this park during a typical visit?’).

We encountered difficulties in attaining our target for young females in all four parks. This explains the slight underrepresentation of female respondents in the sample (47.1%, versus 52.9% young males). Variations in the administration of questionnaires at different times of the day and week were negligible, except for Linh Đàm Park, where we only administered twelve questionnaires during the morning period due to the limited presence of youth at that time of the day.

4.3. Statistical modeling

For all modeling procedures, we used mixed effects models in which the intercepts are set to randomly vary across the four parks. This allows us to capture statistical effects of the parks themselves (for example, design, or management) and of surrounding neighbourhood characteristics (density of population, tree canopy, traffic, etc.). In the regressions, we use *female* as the reference for the *gender* variable,

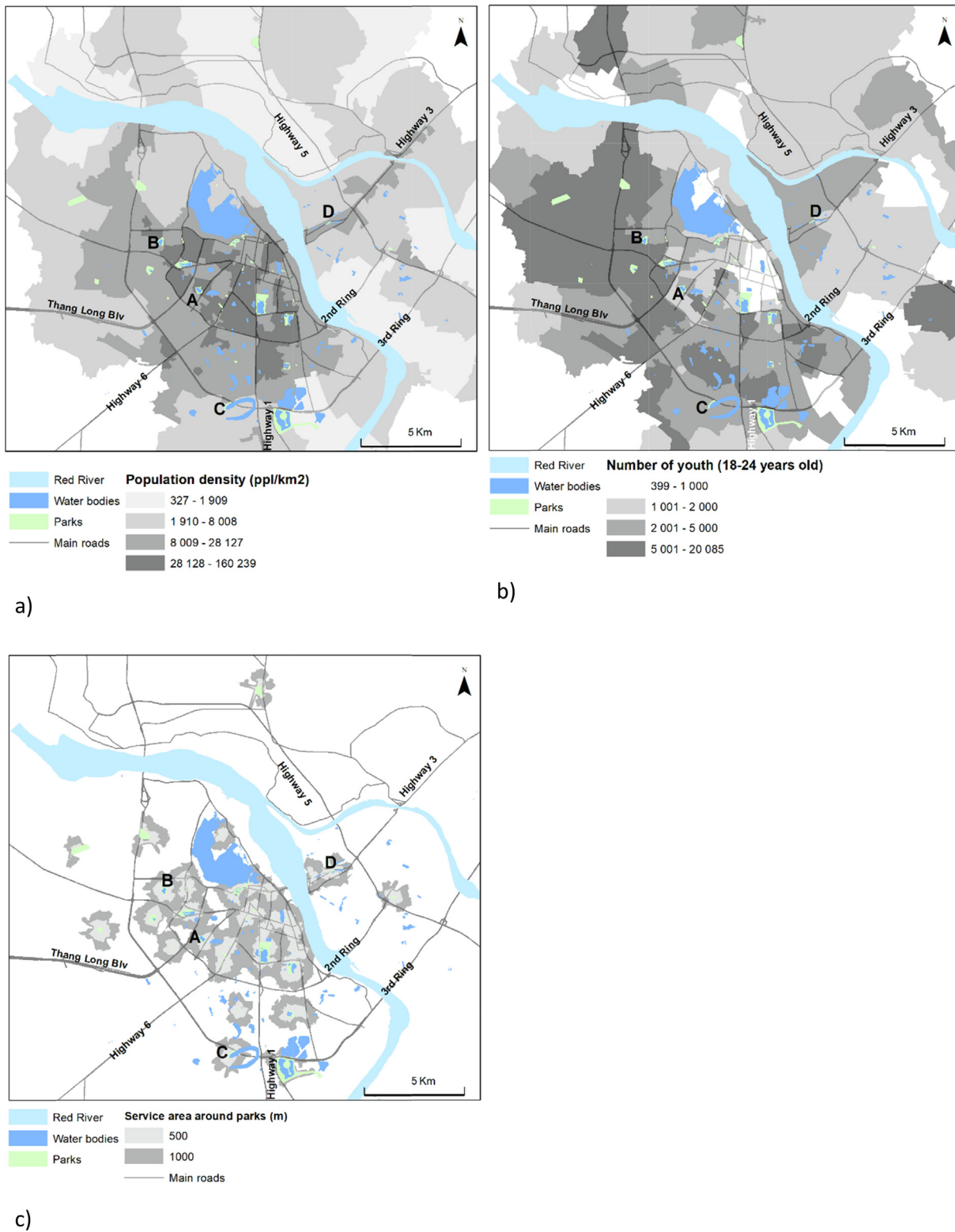


Fig. 3. Population density, number of youths and 500 m and 1000 m service areas around parks in Hanoi (location of the four parks: A – Indira Gandhi, B – Nghĩa Đô, C – Linh Đàm and D – Ngọc Lâm). Source: Authors.

weekday afternoon for the timing of visits, walking for the transportation modes and home for the previous location before going to the park. The last three response categories had the highest frequency in the survey (Table 1).

In the first set of models, the four most frequently reported obstacles (mentioned by over 10% of respondents) are fitted against the following

independent variables: the survey design variables (timing of visit) and user characteristics (gender, travel time to get to the park, travel modes to access the park, and the location which the person left to go to the park). Since travel time was not normally distributed, we transformed it by using its square root. Because the variables representing the perceived obstacles are binary, we use generalized linear mixed effect

Table 1
Frequency of surveyed time, day, previous location and travel modes by gender and their Chi-squared tests.

	All respondents (%) (n = 382)	Female (%) (n = 180)	Male (%) (n = 202)	Chi-squared	p-value
<i>Time/Day</i>					
Weekday	42.1	37.2	46.5	<u>6.039</u>	<u>0.049</u>
Afternoon					
Weekday	33.7	33.3	34.2		
Morning					
Weekend	24.1	29.4	19.3		
Afternoon					
Total (%)	100	100	100		
<i>Travel mode^a</i>					
Bike	13.1	14.4	11.9	<u>8.865</u>	<u>0.031</u>
Bus	6.5	6.7	6.4		
Motorbike	27.6	33.9	22.3		
Walking	52.6	45.0	59.4		
Total (%)	100	100	100		
<i>Previous location^b</i>					
Home	81.9	81.1	82.7	1.125	0.771
Other places	5.0	6.1	4.0		
School	8.1	8.3	7.9		
Work	5.0	4.4	5.5		
Total (%)	100	100	100		

Underlined and italic values: significant Chi-squared tests.

^a : How did you travel to this park today?

^b : Where were you before coming to this park today?

models (*glmer* function in R3.4.4) and specify their distribution as “binomial” (Bates et al., 2018).

In the second set of models, the two measures of park use (frequency and duration of visits) are fitted against the timing of visits, the same user characteristics as above, and the main activities practiced in the parks (sport, socialization, exercise, relaxation, or other activities). Because our survey respondents’ self-reported duration and frequency of visits used round numbers, each of these two variables have 18 reported values, which can be interpreted as “count” variables with a Poisson-like distribution. However, as both *frequency* and *duration* variables suffered from over-dispersion, we used negative binomial models, and *glmer* function in R3.4.4 (Bates et al., 2018).

5. Results

5.1. Description of independent variables

For the 382 respondents, weekday afternoons were the period when they came the most, followed by weekday mornings and weekend afternoons (Table 1). Breaking these down by gender revealed significant differences: young males in our sample came more often on weekday afternoons and much less on weekday mornings.

In terms of travel modes, almost 53% came by foot. Motorbike was the second most common mode, followed by bicycle and bus. There is a significant gender difference in our sample: males tend to walk more, and females tend to use the motorbike more (and the bicycle, to a lesser degree). The vast majority of respondents went to the park from their home (81.9%); the rest came from school and from their workplace and other locations. Median travel time (in response to the question ‘What was your travel time in minutes to the park today?’) was 10 min, while its mean value is 14.2 min, denoting a right-skewed distribution. Mean travel time of female respondents was 14.5 min, slightly higher than that of male respondents (13.8 min).

With respect to activities our respondents practiced in the surveyed parks (in response to the question ‘What do you typically do at this park?’), *exercise* was the most important, chosen by 36.2% of the

respondents. Over a fifth of respondents went to the parks to practice *sports*, followed by *relaxation* (17.8%) and *socialization* (14.2%). Finally, 12.5% of respondents chose *other activities*.

5.2. Relationships between perceived obstacles and user characteristics

Respondents in our survey reported encountering only a few types of obstacles on their way to the park. Six of the ten obstacle options listed in our questionnaire were mentioned by less than 10% of the respondents (i.e. risk of accidents, poor lighting, personal security, poor transit access, no guarded parking and impacts of entry fees). The obstacle most frequently mentioned, *heat*, was identified by 35.3% of respondents, followed by *traffic* (20.0%), *difficult road crossing* (15.0%) and *crowded sidewalk* (11.1%).

The first set of statistical models deals with the variables associated with these four most frequently reported obstacles. The statistics of fit (Table 2) show that the most robust model is *crowded sidewalk*, having the lowest Akaike information criterion (AIC) of the full model, and highest Pseudo R² values.

In the first model where *heat* is the dependent variable, values of the intercept indicate that, on average, the reference categories (weekday afternoons, being female, having walked to the park, and coming from home) perceived *heat* to be an obstacle, with an odds ratio (OR) of 0.40. Compared to those who walked, respondents who biked to the parks are significantly more likely to mention *heat* as an access obstacle (OR = 2.04), while those who took the bus are significantly less likely to mention it (OR = 0.24).

Regarding *crowded sidewalk*, the intercept and two variables are significant. Respondents who came on a weekday morning are more likely to mention it as an obstacle (OR = 2.95). Those who came to the park from their workplace were also much more likely to refer to this obstacle, albeit to a higher degree (OR = 5.52).

In the *traffic* model, the intercept and one variable are significant. Male respondents are more likely to perceive this obstacle than females (OR = 1.68). Finally, in the *street crossing* model, respondents accessing parks on buses and motorbikes are significantly less likely to consider this an obstacle (OR = 0.11 and 0.29, respectively).

Intraclass correlation coefficients (ICC) suggest that, among the obstacles faced on the way to the park, *traffic* varies the least among the four parks (only 4% of the variance of this obstacle can be explained by characteristics of the parks and of the surrounding environment). *Crowded sidewalk* varies the most among the parks. The intercepts estimated for each obstacle vary across the parks, clearly showing that the obstacles are more likely to be mentioned in the two large parks located in denser and more urbanized areas: the intercept of the *heat* model has the highest coefficient in Nghĩa Đô while the intercepts of the three other obstacles have the highest coefficients in Indira Gandhi.

5.3. Relationships between park usage and users’ characteristics and the activities they practice

In terms of frequency of visits, on average our respondents visited the parks 6.6 times within the two weeks preceding the survey. On average, young people in our sample stay in parks 77.5 min. Frequency of visits and Duration have standard deviations of 4.9 visits and 43.1 visits, respectively.

Table 3 shows results of the two models of park use. Both models generally have a low fit (low Pseudo R² values) and while many independent variables are significantly associated with the dependent variables, they only modestly contribute to explaining the outcomes.

In the *frequency* model, three variables have positive significant relationships with frequency of visits. Male respondents are associated with greater frequency of visits to parks than female ones, even after controlling for the other variables. Respondents practicing *sport* and *exercise* visited the parks more frequently. The rest of the variables have significant negative relationships with the frequency of visits. Those

Table 2
Generalized linear mixed logistic models of four obstacles to park access ($n_{\text{respondant}} = 382$, $n_{\text{park}} = 4$).

	Heat				Crowded sidewalk				Traffic				Street Crossing			
	Coef.	OR ^a	OR (95% CI ^b)		Coef.	OR	OR (95% CI)		Coef.	OR	OR (95% CI)		Coef.	OR	OR (95% CI)	
Fixed effects (Intercept)	-0.93	0.40	0.14	1.15	-3.58***	0.03	0.00	0.17	-1.67***	0.19	0.07	0.53	-1.28	0.28	0.07	1.07
<i>Time/Day</i>																
Weekday Afternoon	Ref.															
Weekday Morning	0.39	1.48	0.79	2.79	1.08*	2.95	1.14	7.67	-0.42	0.66	0.32	1.34	-0.63	0.53	0.22	1.26
Weekend Afternoon	0.25	1.29	0.75	2.22	0.51	1.66	0.67	4.08	-0.20	0.82	0.47	1.45	0.19	1.21	0.63	2.32
Travel time (square root)	0.02	1.02	0.83	1.26	0.22	1.25	0.90	1.73	0.08	1.08	0.87	1.35	-0.02	0.98	0.75	1.30
<i>Gender</i>																
Female	Ref.															
Male	0.00	1.00	0.63	1.59	0.17	1.19	0.59	2.39	0.52*	1.68	1.01	2.79	0.09	1.10	0.61	1.98
<i>Travel Mode</i>																
Walking	Ref.															
Bicycle	0.71*	2.04	1.02	4.08	-0.87	0.42	0.14	1.28	-0.50	0.61	0.25	1.45	-0.60	0.55	0.22	1.35
Bus	-1.43*	0.24	0.06	0.91	-15.94	0.00	0.00	Inf	-0.26	0.77	0.24	2.45	-2.23*	0.11	0.01	0.89
Motorbike	-0.25	0.78	0.44	1.36	-0.85	0.43	0.17	1.07	0.54	1.72	0.97	3.05	-1.24***	0.29	0.13	0.64
<i>Previous location</i>																
Home	Ref.															
Other places	-0.35	0.71	0.23	2.20	1.40	4.04	0.89	18.34	-0.51	0.60	0.16	2.23	-1.00	0.37	0.05	2.99
School	0.35	1.43	0.59	3.43	-0.36	0.70	0.14	3.49	-0.09	0.91	0.37	2.28	0.76	2.13	0.79	5.72
Work	0.38	1.47	0.50	4.32	1.71*	5.52	1.38	22.13	0.03	1.03	0.35	3.01	0.31	1.37	0.36	5.27
<i>Random effects (Intercept)</i>																
			Coef.	OR			Coef.	OR			Coef.	OR			Coef.	OR
Indira Gandhi			-0.86	0.42			-2.52	0.08			-1.31	0.27			-0.71	0.49
Linh Đàm			-0.81	0.44			-4.97	0.01			-1.59	0.20			-1.11	0.33
Nghĩa Đô			-0.21	0.81			-2.75	0.06			-1.49	0.23			-0.84	0.43
Ngọc Lâm			-1.80	0.16			-3.89	0.02			-2.26	0.10			-2.37	0.09
Intraclass correlation coefficient (ICC)			0.10				0.27				0.04				0.10	
<i>Fit statistics</i>																
AIC (null model)			476.0				255.1				422.4				342.0	
AIC (full model)			478.8				250.5				428.7				338.8	
Marginal R ²			0.06				0.76				0.06				0.15	
Conditional R ²			0.16				0.83				0.11				0.26	
McFadden R ²			0.04				0.10				0.04				0.07	

*, ** and ***: significant at < 0.05, < 0.01 and < 0.001.

^a: Odds ratio

^b: Lower and upper confidence intervals. Coef.: Coefficient, Ref.: Reference category. AIC: Akaike information criterion

who frequented the parks the least are those who came on weekend afternoons, traveled longer to access the park, accessed it by motorbike (compared to those who walked), and came from school or from places other than their home.

In the *duration* model, surprisingly, travel time is not significantly associated with duration of stay. Again, male respondents tend to stay longer than female ones, even after controlling for the other variables. Other variables that have significantly positive associations with the duration of stay are: accessing the park by bicycle (compared to walking) and practicing *sport* and *socialization* in the park. Respondents who stayed for a shorter time (negative and significant relationships) were those who came on a weekday morning.

ICC values show that only 2% of the frequency of visits can be attributed to the park and its surrounding environment, while 5% of the duration of stay can be attributed to these characteristics. In the *frequency* model, although Linh Đàm park seems to attract more visits and Indira Gandhi the least, the two other estimated intercepts are quite similar. The estimated intercepts in the *duration* model vary slightly more: Indira Gandhi's young users stayed for the longest period while in Ngọc Lâm, the smallest park, young users stayed for the shortest period.

6. Discussions

Some gender differences are worth noting in our sample. Young

females were more numerous on weekday afternoons than on the other two time slots. This may be because they came from “another place” at the end of their day, reflecting women’s tendency to combine different tasks on their trip (Burgess, 2008). Although the most common traveling mode was walking, female respondents tended to come by bike and motorbike more than males. Female respondents chose the *other activities* category more often while males reported *sport* more frequently. To our surprise, *socialization* (which tends to be considered a female activity in Wright Wendel et al. (2012) study in Bolivia), *relaxation* and *exercise*¹ were not gendered in our sample.

As discussed in the previous section, our respondents rarely encountered obstacles on the way to parks. This is understandable because our respondents were actual park users, suggesting obstacles did not hinder them. The importance of obstacles might have been higher if we had surveyed non-users. Furthermore, our respondents must have some strategies to reduce or cope with such obstacles. For example, to avoid heat, they might go to parks early in the morning or later on in the afternoon and evening. *Personal safety* and *poor lighting* were

¹ Sport (*chơi thể thao*, in vietnamese, used in our questionnaire) refer to group/team organized sports (such as soccer, badminton, tennis etc) while exercise (*tập thể dục*) refers to more individual training activities (such as running, walking, etc).

Table 3
 Negative binomial generalized linear mixed models of frequency and duration of visits in parks ($n_{\text{respondant}} = 382$, $n_{\text{park}} = 4$).

	Frequency				Duration			
	Coef.	IRR ^a	IRR (95% CI ^b)		Coef.	IRR	IRR (95% CI)	
Fixed effects (Intercept)	2.16***	8.71	6.37	11.93	4.15***	63.15	48.73	81.84
<i>Time/Day</i>								
Weekday Afternoon	Ref.							
Weekday Morning	-0.10	0.90	0.74	1.09	-0.22**	0.80	0.69	0.93
Weekend Afternoon	-0.27***	0.76	0.65	0.89	-0.11	0.89	0.79	1.01
Travel time (square root)	-0.11***	0.90	0.84	0.96	0.01	1.01	0.96	1.06
<i>Gender</i>								
Female	Ref.							
Male	0.24***	1.27	1.10	1.47	0.12*	1.13	1.01	1.26
<i>Travel Mode</i>								
Walking	Ref.							
Bicycle	-0.11	0.90	0.72	1.11	0.20*	1.22	1.03	1.44
Bus	0.11	1.12	0.80	1.56	0.08	1.08	0.86	1.37
Motorbike	-0.43***	0.65	0.55	0.77	0.03	1.04	0.91	1.18
<i>Previous location</i>								
Home	Ref.							
Other places	-0.54**	0.58	0.41	0.83	0.16	1.18	0.92	1.50
School	-0.48**	0.62	0.46	0.84	-0.08	0.92	0.75	1.13
Work	-0.13	0.88	0.63	1.23	-0.07	0.93	0.73	1.19
<i>Activities</i>								
Sport	0.23**	1.26	1.06	1.50	0.27***	1.31	1.14	1.50
Social	-0.06	0.95	0.80	1.12	0.17*	1.18	1.04	1.35
Exercise	0.32***	1.38	1.18	1.62	0.10	1.10	0.98	1.24
Relax	-0.04	0.96	0.81	1.15	-0.13	0.88	0.77	1.00
Other	-0.14	0.87	0.70	1.09	0.11	1.12	0.95	1.31
<i>Random effects (Intercept)</i>								
		Coef.		IRR		Coef.		IRR
Indira Gandhi		2.10		8.18		4.24		69.55
Linh Đàm		2.27		9.71		4.13		62.30
Nghĩa Đô		2.15		8.55		4.21		67.56
Ngọc Lâm		2.14		8.50		4.00		54.38
Intraclass correlation coefficient (ICC)		0.02				0.05		
<i>Fit statistics</i>								
AIC (null model)		2 191				3 868		
AIC (full model)		2 080				3 846		
Marginal R ²		0.35				0.14		
Conditional R ²		0.37				0.18		
McFadden R ²		0.07				0.04		

*, ** and ***: significant at < 0.05, < 0.01 and < 0.001.

^a : Incidence Rate Ratio

^b : Lower and upper confidence intervals. Coef.: Coefficient, Ref.: Reference category. AIC: Akaike information criterion.

mentioned but they were not key obstacles for surveyed youth in general, nor for young women in particular. This is similar to what was documented in Isparta (Turkey) (Özgüner, 2011) and Kuala Lumpur (Malaysia) (Sreetheran, 2017), while in the Bolivian city of Santa Cruz, safety proves to be important, especially for women (Wright Wendel et al., 2012). One possible explanation is that female youth in Hanoi tend to come in groups (as do park users in Isparta and Kuala Lumpur), which makes them feel safer.

What is surprising is the array of “other obstacles” mentioned by young females, such as the presence of vendors, dogs and insects, dirt, weather (rain), not enough people, pollution and the possibility of getting lost. We also asked users what they disliked about the park where the questionnaire was administered to them, and looking at young females’ dislikes, numerous other types of barriers were mentioned, although they may not be seen as obstacles to accessing the parks. For example, they referred to overcrowding. While this might seem to contradict mentions of ‘not enough people’ as being an

obstacle, it might in fact suggest that youth prefer a balanced density of users to either empty or overcrowded parks. Other mentions include: too many elderly people, the fishy smell of lakes, the poor quality or lack of equipment and of pathways in the park (for walking), the small size of the park, the park staff’s unfriendly attitude and the presence of “bad guys.” In sum, the diversity of these obstacles shows the environment and park quality seem to predominate in influencing their perception, but the sociocultural context plays a role as well, especially when considering the presence of other groups or danger.

Our statistical models on the relationships between perceived obstacles and user characteristics show notable associations between parks and their surrounding neighbourhoods and obstacles to access. Such obstacles are more severe in the two parks located in denser neighbourhoods (Indira Gandhi and Nghĩa Đô). Regarding gender, male is only significant in the traffic model. In the heat and street crossing models, travel modes proved the most important in explaining obstacles. This is understandable, given the density of vehicles and people

circulating in Hanoi.

Youth's frequency of visits and duration of stay in Hanoi are high compared to other groups in other cities. For example, in Kuala Lumpur, users reported staying up to 2 h in parks but visited them much less frequently (1–2 times per week). Three explanations for the high use of parks among youth in our survey are possible. First, these respondents are generally younger than groups in other studies; hence, they have fewer responsibilities and more free time to spend in parks. Second, as reported by [Charton and Boudreau \(2017\)](#), in Hanoi, young migrants (who form a large proportion of the youth population) tend to live in small rental rooms, shared with other youth, that can become uncomfortably crowded and hot (especially in the summer). In these circumstances, parks are ideal places for them to spend time, to socialize and even to have intimacy, hence to gain more individual autonomy (*ibid.*). Third, the diversity of activities practiced by youth in parks explains why they come often and stay for extended periods of time. Looking only at what they mentioned as “other activities,” we noted walking, walking one's dog, meditating, studying, filming a movie, playing music or singing, attending a club meeting, volunteering, taking pictures, watching other people's activities, taking some air and waiting for friends (using parks as meeting points).

Our models show the parks themselves are not associated with frequency and duration of visits as much as they are associated with the obstacles encountered. *Weekend afternoons* were the period when our respondents came less often (compared to weekday afternoons), maybe because they have other social activities during the weekend. Proximity to parks (measured by travel time) is important in explaining the frequency of visits but not the duration in parks in our sample, suggesting that the closer they are to a park, the more frequently they visit it.

Regarding genders, *male* is significantly positive in the *duration* and *frequency* models, even after controlling for the other variables. This is similar to what has been documented by studies conducted in both Western and non-Western cities ([Baran et al., 2013](#); [Özgüner, 2011](#); [Sreetheran, 2017](#); [Wang et al., 2015](#); [Wright Wendel et al., 2012](#)). In Hanoi, distinct reasons can explain this. Social norms and the division of labour, whereby young women have more domestic chores, may still play a role ([Charton & Boudreau, 2017](#)). Yet they may have other spaces to socialize and may spend more of their free time in cafés, on sidewalks, and at street food stalls ([Drummond, 2006](#); [Thuan & Thomas, 2004](#)) than in parks.

With respect to mobility, travel modes have significant associations with the two measures of park use. For example, park users traveling by motorbike have a negative association with the frequency of visits, compared to those who walked. A possible explanation is that motorbike users have to pay parking fees in or around the park, so they come less often. Those who cycled to the parks tend to stay longer (compared to those who walked). One of the possible explanations is that users make the physical effort required by cycling worthwhile by staying a significantly longer period in the park. Patterns of travel modes to get to parks in Hanoi are similar to cases reported in Chinese cities ([Wang, Brown, Zhong, Liu, & Mateo-Babiano, 2015](#)) but different from Kuala Lumpur or Isparta where cars are the most common access mode ([Özgüner, 2011](#); [Sreetheran, 2017](#)).

Among locations from which youth came to the parks, *home* is the most important, confirming that surveyed youth tended to go to parks closer to their homes. *School* and *other places* (which include friends' homes, cinemas, and malls) have significantly negative associations with the frequency of visits. Last but not least, *sport* proves to be predominant in predicting both frequency and duration. This finding shows the important role that parks play in youth's physical activities and health. This may further suggest that young people that go to parks are more athletic than those who do not.

The intercepts estimated for the four parks in the *frequency* model are similar, which might be explained by the geographical proximity of the parks to users' residence, school or work place. In the *duration* model, the slightly higher variation of the intercepts can be explained

by characteristics of parks. For example, in Indira Gandhi young users stayed for the longest period maybe because the park is larger and has more facilities and hence allows them to have more diverse activities than in Ngọc Lâm, the smallest park in this survey.

7. Conclusions

This study represents an exploratory step in understanding patterns of park access and use among youth in Hanoi. Some limitations are worth mentioning in this respect. The survey sample and sites do not represent the entire youth population nor all parks in the city. The relationships between park usage and characteristics of parks and their surrounding environment were not explicitly addressed in this study, which merit more in-depth investigations in the future. In addition, we did not survey non-users and may have missed obstacles to park access that hinder their usage in more important ways. However, the ability to specify other obstacles textually and the responses we received suggest that this was not an important issue. In choosing four parks of different sizes and varied locations across the city, we hope to have captured a diversity of parks, youth, and behaviours. Finally, the hot weather encountered while doing fieldwork, typical of Hanoi's summers, might have introduced a seasonal bias in the survey results. Respondents, like other Hanoi park users, are likely to have other patterns of park use in wintertime and activities may differ during the cooler seasons.

Our results confirm some tendencies of park use and access observed elsewhere, but also revealed cultural and place-specific particularities. For example, in contrast with Latin American cities, safety is not a problem in Hanoi. Youth in Hanoi go to the parks more often in the afternoon and during weekdays while in other studies, nights or weekends were the most common visiting period ([Wright Wendel et al., 2012](#)). The local indicators of walkability used in the questionnaire (such as traffic, street crossing, and crowded sidewalks), especially applicable to crowded Asian cities' contexts, prove to be major obstacles to parks for young people. Such cultural and context-specific differences should be considered in theories of park use, as well as in park planning. Creating a more favorable environment around parks could enhance ease of access and make them more attractive to potential users. For example, this could include easing the traffic, allowing longer crossing time for pedestrians, and planting more street trees. Finally, adding more sports facilities and recreational pathways in parks (to enable walking, running, etc.) are feasible interventions that may encourage more park use among youth in Hanoi.

Acknowledgements

This study was funded by Social Sciences and Humanities Research Council of Canada (grant numbers: 895-2017-1019 and 4048). We thank HealthBridge staff, Đinh Thị Diệu and Đoàn Thị The for their assistance during fieldwork.

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