A Project entitled

Walking accessibility of urban parks in Hong Kong— Spatiality and supply efficacy

Submitted by

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Declaration

I, *Hui Pui Yau* declare that this research report represents my own work under the supervision of *Dr. CHOW Sin Yin, Alice*, and that it has not been submitted previously for examination to any tertiary institution.

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Abstract:

This study aims to evaluate the efficacy of urban parks in Hong Kong by scrutinizing their walking accessibility defined as the service range of green spaces for inhabitants. Official statistics and spatial qualitative data contribute to the research data collection. With the help of geographical information system (GIS), geoprocessing buffer and clip tools are capitalized to export maps for analysis. The results reveal a presence of spatial disparity in which urban parks in Kowloon and New Territories have relatively higher walking accessibility than that in Hong Kong Island when walking accessibility highly depends on the proximity of dwellers to urban parks. This proximity is attributed to urban planning, topography, and population density. Road connectivity is another indicator of park efficacy. Urban parks having stronger road connections are on both sides of Victoria Harbor especially Hong Kong Park having the lowest walking accessibility, whereas Po Kong Village Road Park with the highest walking accessibility has weak road connectivity impairing the park efficacy. Functions of urban parks can differ in new towns and old districts with varying land-use patterns. Regarding patterns discovered at urban parks in old towns, one is mainly concentrated by commercial land use when another is dominated by residential and institutional land uses in a provision of map evidence of Kowloon Park and Kowloon Tsai Park. For urban parks in new towns, the hypothesis is confirmed to serve a land-use diversity. Unique functions of those urban parks do not just serve residents in the vicinity but also potential workers and commuters to optimize the park efficacy. The research result is the first step comparing the walking accessibility of urban parks among district councils and bringing city planners new perspectives of urban park analysis in terms of road connection and land use patterns.

Content

1. INTRODUCTION

This research aims to explore the walking accessibility of urban parks in Hong Kong. In a target of investigating spatial disparity and efficacy of green spaces, walking accessibility is defined to calculate the service range of urban parks for residential populations by districts. The study begins with identifying the significance of an urban problem and reviewing past literature with a research gap. It then follows by research questions, related hypotheses, and methodology. Through GIS processing, analysis of urban parks' walking accessibility and road connectivity are conducted to figure out variations among council districts in Hong Kong. Map reading on land-use patterns served in urban parks is also scrutinized for a discussion of parks' functions.

2. BACKGROUND

2.1 Urban parks' definition and roles

Urban parks are important components of the urban landscape (Morency, 2014) and have beneficial functions. Quality of life and community cohesion can be positively facilitated (Groenewegen et al., 2006; Aspinall et al., 2012) in a natural environment or stress relief platform to enhance emotional wellness (Gong, Ng, Zheng, 2016). Smith et al., (2005) emphasize parks with rich biodiversity provide close contact with the ecological location when Smith et al., (2005) highlight the importance of urban parks on reinforcing air quality and alleviating the heat island effect. This reflects multi-dimensional urban parks highly maintain the stability of the urban environment and social functions (Chow, 2018). Urban parks being public recreational land uses involving people in mental health and physical activity, are particularly essential in compact cities (Chow et al., 2016) like Hong Kong. In pursuit of the previous urban parks' advantages, it should ensure that developable green spaces should be accessible to residents in the vicinity. A fundamental inquiry about the utilization of urban parks is an evaluation of their walking accessibility (Morency, 2014). This gives an insight into a worthwhile assessment from a geographical aspect.

2.2 Compact city in Hong Kong and urban services recommendations

The urban area in Hong Kong is renowned as one of the highest population density cities worldwide (Anthony, 2011). With a total area of 1106 km^2, Hong Kong has over 7.5 million people (Census and Statistics Department, 2020) residing in the built-up areas accounting for 25% of the total area in which the establishment of skyscrapers and the development of new town take place. Scarce flatland and high population density may lead to obstacles for the government to develop urban parks. There are resulting in more conflicts between recreational land uses of urban parks and increasing desire for natural resources (Shi et al, 2012). Some citizens even moved to other parts of the city mainly because of lacking green spaces (Van Herzele, Wiedemann, 2003; Skitmore, Wang & Zhang, 2015). Gong, Ng & Zheng (2016) also criticize Hong Kong urban parks for being fragmented attributed to tenuous connection and unsatisfactory accessibility. A possible shortage of urban parks without high accessibility is a concern in Hong Kong.

To minimize this problem, global and local societies provide standards for urban park accessibility. According to the Accessible Natural Greenspace Standard (ANGSt), citizens should access urban parks of "at least 2 hectares and not farther than 300 meters or 5 minutes walking distance" from their house (Marić et al., 2018, p.489). Notwithstanding detailed guidelines on urban parks with recommended vicinity, these may not apply to every country or city owing to different geographical conditions, cultural backgrounds, and political approaches (Sosea & Vîlcea, 2020). Hong Kong Planning Standards and Guidelines (HKPSG) thus have a local recommendation on the urban green area which should be placed in a reachable 500 meters radius being equivalent to 7 minutes in usual walking speed (Planning Department, 2016) inside a radial catchment from the home of citizens. Both criteria reflect that locating urban parks requires consideration and a decent park depends on levels of walking accessibility. Whether Hong Kong with a highly developed context can ensure the expected accessibility in different districts is of questionable and research value.

3. DEFINITION

3.1 Spatiality and spatial disparity

Spatial equality implies that every resident irrespective of gender, social status, and background has identical accessibility to community resources and spaces (Chang et al., 2019). Chen & Jim (2006) strengthen that urban parks as public goods should be equally accessible for residents no matter their ages, ethnicity, and geographical factors. Nonetheless, it seems that urbanism increasingly dominates and shapes urban paradigms (Freilich & Popowitz, 2010), influencing the "spatial structure and accessibility" to distinct public services (Dzialek, Huhndorf, 2017, p.5). If urban parks in some districts have limited accessibility, a spatial disparity among districts may be a consequence. For instance, urban parks in Hong Kong Island may be more inaccessible to residents than those in New Territories. A possible disparity of walking accessibility among districts may induce another problem leading to an uneven distribution of resources. As a result, the extent of walking accessibility of urban parks can be an evaluated indicator of green spaces' effectiveness. A consideration of walking accessibility of urban parks and its potential spatial equality is thus the salient features of this research.

3.2 Significance of walking accessibility

Accessibility embodies the ability to get access to activities or changes involving traveling to where the opportunities are situated (Handy, 2005). Zhang (2005) strengthens that is to analyze the systematic connection between geographical representation of destinations and traveling amount. In practical urban park studies, walking accessibility is defined as the simplicity of distance or walking time for pedestrians to reach urban parks (Jim et al, 2017; Karim et al., 2014) whereas Chen et al. (2020) academically identified walking accessibility of urban parks as the difficulty extent to overcome spatial resistance under the process of walking to the park from home. Shi et al. (2012) put forwards another definition of walking accessibility, in which to calculate the services range of urban parks offered to residents. This description matches with the objectives of this study since it aims to measure how many residential populations can be served in different urban parks to contribute quantitative results and analysis. Under consideration of data availability and relation to research idea, the definition described by Shi et al. (2012) is applied. The importance of defining walking accessibility in a developed city is to assist city planners to develop land uses (Evans et al., 2007), gain an understanding of environmental quality evaluation as well as highlight the significance of green area distribution (Shi et al., 2012).

3.3 Supply efficacy of urban parks

The concept of efficacy can be employed in qualitative research incorporating people's perceptions of the functional urban parks. Their efficacy is dependent on users' satisfaction level and ratings of recreational services (Lin et al., 2021) while attributed to residents' perspective on life quality improvement (Mehran et al, 2017). Determining walking accessibility is a useful exercise in evaluating the provision of green patches (Sister et al., 2010). Regarding the provision of urban parks, the efficacy can be positively affected by park utilization with an indicator of accessibility (Guo et al., 2020; Fariba & Simon, 2020) meaning walking accessibility of urban parks is determined to evaluate their efficacy in supply (Chen, Liang & Zhang, 2017). This research defines efficacy in terms of three dimensions. Firstly, urban parks are expected to serve a large number of residential populations within a certain distance buffer. That means more potential park users in the vicinity can be served. Secondly, residents can easily be accessible to urban parks with strong road connectedness. If roads are connective between housings and urban parks, it increases the likelihood of park utilization. Thirdly, urban parks can be considered to serve a great land-use diversity so that not only are residents served by urban parks, but also industrial workers, civil servants, educators, or tourists. In short, the efficacy of urban parks can be assessed through three aspects including residential population served by parks, accessibility, and land-use diversity served by parks.

4. LITERATURE REVIEW

4.1 Spatial accessibility studies of urban parks

Existing literature primarily paid more attention to social equity in green spaces. It was usually estimated unequal accessibility of urban parks in cities across ethnicity and socio-economic hierarchy when underprivileged populations tend to have weaker networks to urban parks (Fehrenbach et al., 2005; Xu, Yuan, Wang, 2017). In the local context, Chang et al. (2019) examine Hong Kong's urban park accessibility between two categories of residential housings involving the public and private ones reflecting the impoverished and wealthy groups correspondingly in Figures 1 and 2. It was found an absence of remarkable differences in walking accessibility among two housing types while discovering a spatial imbalance that private housing residents were more accessible to green spaces by mass transportation than that of public housing citizens.

As to the former, insignificant walking accessibility can be attributed to the high density of Hong Kong. It may be hard to prove a social disparity since most private and public housings are close-packed. The second finding of the spatial disparity can be arguable when most people get to green spaces for relaxation because of proximity to home (Kim & Lee, 2015). It is unlikely that residents visit parks by transportation. Most notably, creating cities as pedestrian-friendly has become essential to the development of new urbanism spatially reshaping urban structures (Kang, 2015). Walking which is expected for reducing automobile trips and strengthening street utilization as well as the public healthy lifestyle is deemed as an encouraging transport mode towards urban parks (Fraker et al., 1994). Contrasted with other transportation means, walking mode implying the fairness of urban parks (Chen, 2013) is the "highest embodiment of accessibility" (Chen et al., 2020, p.3). Walking accessibility is thereby at the core of the study.

Considering the distribution of green spaces, New Territories has the largest urban park area (66%), followed by Hong Kong Island (18%) and Kowloon with less than 16% (Woo, 2013) from Table 1. With different total land areas and built-up areas, it is reasonable to have a dispersed distribution of urban parks among the three regions. However, their study has still neglected the walking accessibilities of urban parks in three main district regions. This helps identify a research gap. A comparison of three regions and 18 district councils becomes a research field to discover any spatial variation or patterns in walking accessibility. A spatial disparity among district councils may be a possible consequence. To evaluate the supply efficacy of urban parks in a dense city, assessing the ease of access to urban parks is necessary for identifying

districts with less accessibility and analyzing reasons for such scarcity. Each district council has its population density. Any relationship between population density and walking accessibility is also worth discussing.

Apart from dissecting accessibility by districts, scholars researched different age groups accessing urban parks. Gong, Ng & Zheng (2016) estimated the walking accessibility among senior residents and ascertained that parks in New Territories have greater accessibility than that in Kowloon. Chow et al., (2016) added clarification in a study of nine chosen parks in Hong Kong that targeting the group of elderly being the dominant urban park users (71%) is important since they are more vulnerable and have limitations of physical mobility (Chen et al., 2019). At the same time, it is proved that teenagers and children were typical visitors in another research (Evenson et al., 2016). When walking accessibility is defined as the service range of urban parks for Hong Kong residents, it would be more comprehensive to record population proportions by age served around selected urban parks.

4.2 Road connectedness

Road network connecting segments to generate a transporting node offers alternatives for users (Dewi & Rakhmatulloh, 2019). The availability of adequate networks serves city movements especially walking activities. According to Project for Public Spaces (PPS), one of the criteria for accessibility is connectedness referring to link directness and influencing pedestrian access to recreational facilities (Das & Honiball, 2016). Even if urban parks serve a high population ratio within the districts, it cannot conclude high accessibility of parks since road connectivity may deter residents from walking to urban parks (Carvajal et al., 2020). Current studies commonly separate the investigation of the park walking accessibility and road connection. This research thus tends to fill in the research gap to figure out their possible correlation in Hong Kong since both of the variables can influence park accessibility. A well-accessible urban park is expected to have connective roads towards the place of residence and serve a large ratio of residential populations. Put forward by Victoria Transport Policy Institute (2017), it summarizes several effective ways of Connectivity Index quantifying how contiguous roadways connect a destinated place. This has brought insights on selecting a suitable measurement of road connectedness around Hong Kong urban parks.

4.3 Land use diversity and park functions

Previous literature scrutinizes accessibility of urban parks in aspects of housing types, age groups, and road connection, none has yet examined it from the perspective of land use surrounding urban parks. Hong Kong is known as a densely populated place having

compact urban layers in the development of towns (Cheung, 2018). In this dense city with competitive resources, the land is converted into different land uses including residential, commercial, institutional, industrial, recreational, and transportation types. Providing self-reliant and balanced communities with sufficient land-use diversity is one of the targets of the New Town Development Plan (NTDP) (Lo, 2013). As described by Pun (1987), new towns are developed to decentralize the crowded urban areas, especially in old districts. Discovering the service range of urban parks for different land-uses is worth comparing or contrast any land-use patterns found in old districts and new towns. Urban parks in two types of urban development may serve different kinds of land uses and may vary in park functions.

Summary

In early and recent literature, walking accessibility of urban parks is among the well-documented types of research. In Hong Kong, the focus of park walking accessibility studies has usually been a social disparity concerning age group and property types but emphasizing the spatial disparity among regions or district councils may generate important policy implications. Demographic statistics of residential populations can be collected to contribute to walking accessibility. As suggested by PPS, road connectivity is a determinant of walking accessibility. There is, nevertheless, the uncertainty that road networks surrounding urban parks in Hong Kong are connective enough to prove higher walking accessibility and park utilization. Since Geographic Information System (GIS) has many applications in current accessibility studies and road connection analysis, the operation of GIS in this study bears a close resemblance to previous research. Apart from investigating road connection and resident populations served by selected urban parks, it is not yet established whether land-use patterns served by different urban parks in old districts or new towns vary parks' functions. This research aims to broaden present knowledge of urban parks' walking accessibility in terms of spatial disparity, road connectivity, and park functions.

A conceptual framework is shown in Diagram 1 explaining the path of Sections 4.1, 4.2, and 4.3. Through analyzing the walking accessibility of urban parks, the park efficacy can be assessed in three ways as mentioned in Section 3.3. Therefore, the literature review begins with spatial distribution studies to indicate an implication of spatial disparity among urban parks in different district regions (Section 4.1). This relates to the first evaluation factor of park efficacy depending on the ratio of total residential populations served by urban parks. Road connectivity of green spaces mentioned in Section 4.2 will be analyzed to check any correlation with park walking accessibility to evaluate park efficacy in the accessibility aspect. Park walking

accessibility highlights how urban parks serve inhabitants living in housing estates categorized as residential land use. As well as fill in the research gap, the research investigates land use patterns served by urban parks (Section 4.3) to assess whether they can serve a land-use diversity resulting in higher efficacy.

Diagram 1. Conceptual framework of literature review

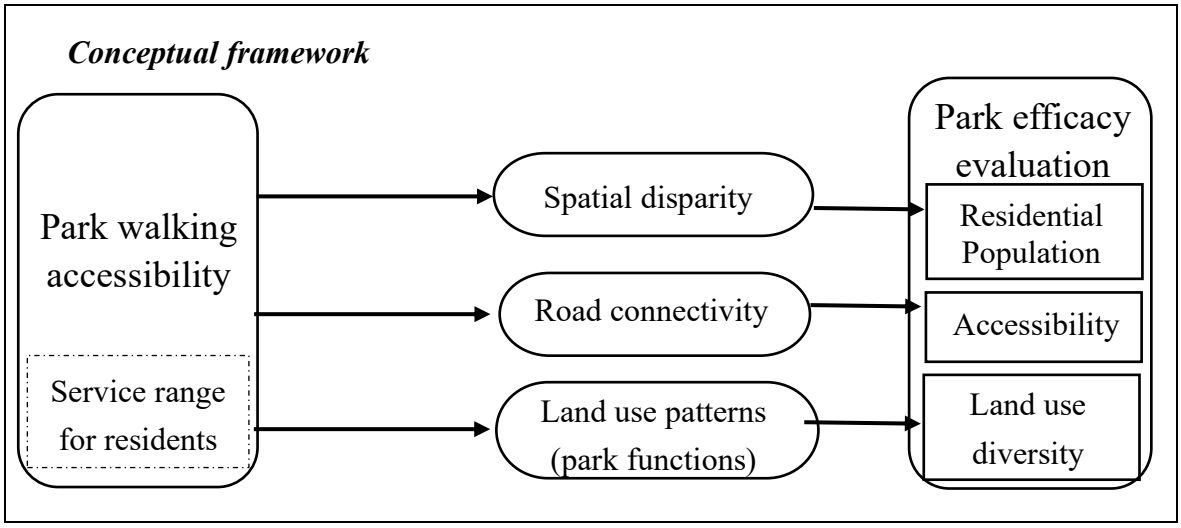


Table 1. Population, density proportion and green park area by district

ID No.	Council District	Population Number (*All Age Group*)	Population Density % (*number/km²*)	Green Park Area (*km²*)
Hong Kong Island		1,268,112	15,915	4.1
HK01	Central &Western	250,064	20,102	0.5
HK02	Wan Chai	155,196	15,788	0.5
HK03	Eastern	587,690	31,664	1.0
HK04	Southern	275,162	7,083	2.1
Kowloon		2,019,533	43,033	3.6
KLN01	Yau Tsim Mong	280,548	40,136	0.7
KLN02	Sham Shui Po	365,540	39,095	0.7
KLN03	Kowloon City	362,501	36,178	0.8
KLN04	Wong Tai Sin	423,521	45,540	0.7
KLN05	Kwun Tong	587,423	52,123	0.8
New Territories		3,573,635	22,421	14.9
NT01	Kwai Tsing	523,300	4,679	0.6
NT02	Tsuen Wan	288,728	6,057	0.5
NT03	Tuen Mun	502,035	3,858	0.9
NT04	Yuen Long	534,192	2,055	1.6
NT05	North	280,730	2,156	2.3
NT06	Tai Po	293,542	8,842	1.0
NT07	Sha Tin	607,544	3,135	1.3
NT08	Sai Kung	406,442	783	3.8
NT09	Islands	137,122	3,748	3.0
Land Total		6,861,280	6,352	22.7
Marine Total		3,066	--	--
Whole Territory Total		6,864,346	6,352	22.7

Figure. 1. Spatial distribution of Home Ownership Scheme (HOS) flats, Public rental housing (PRH) and private housing in Hong Kong↵

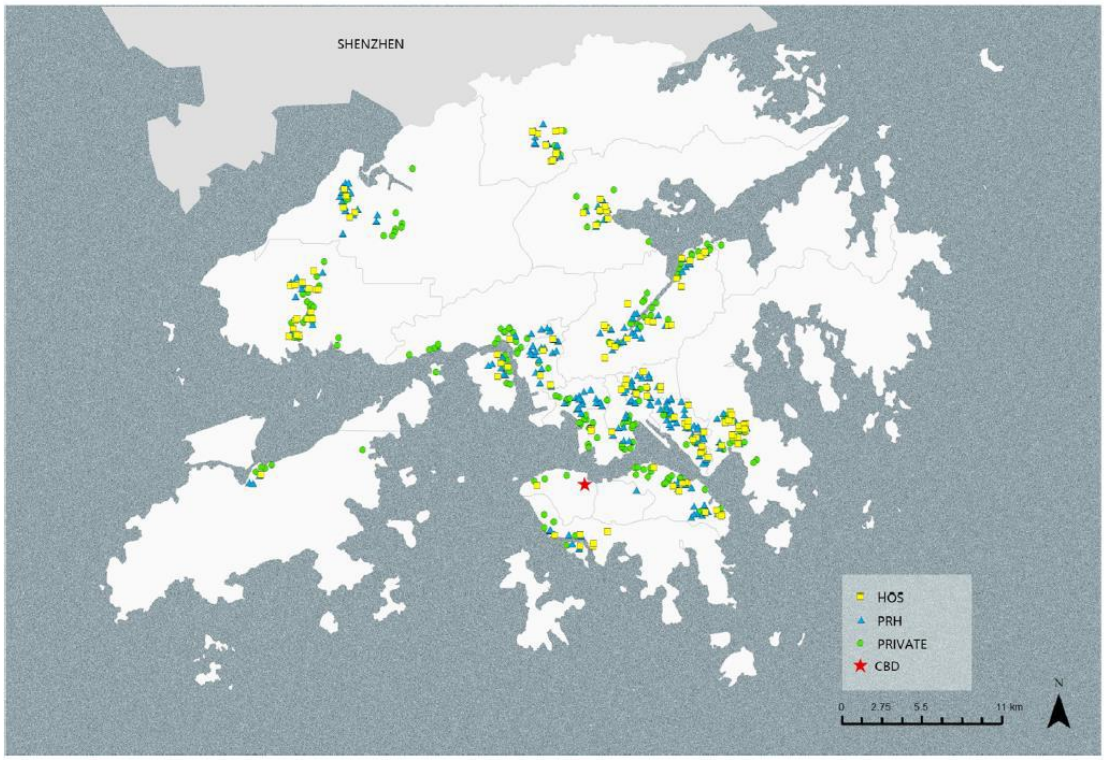
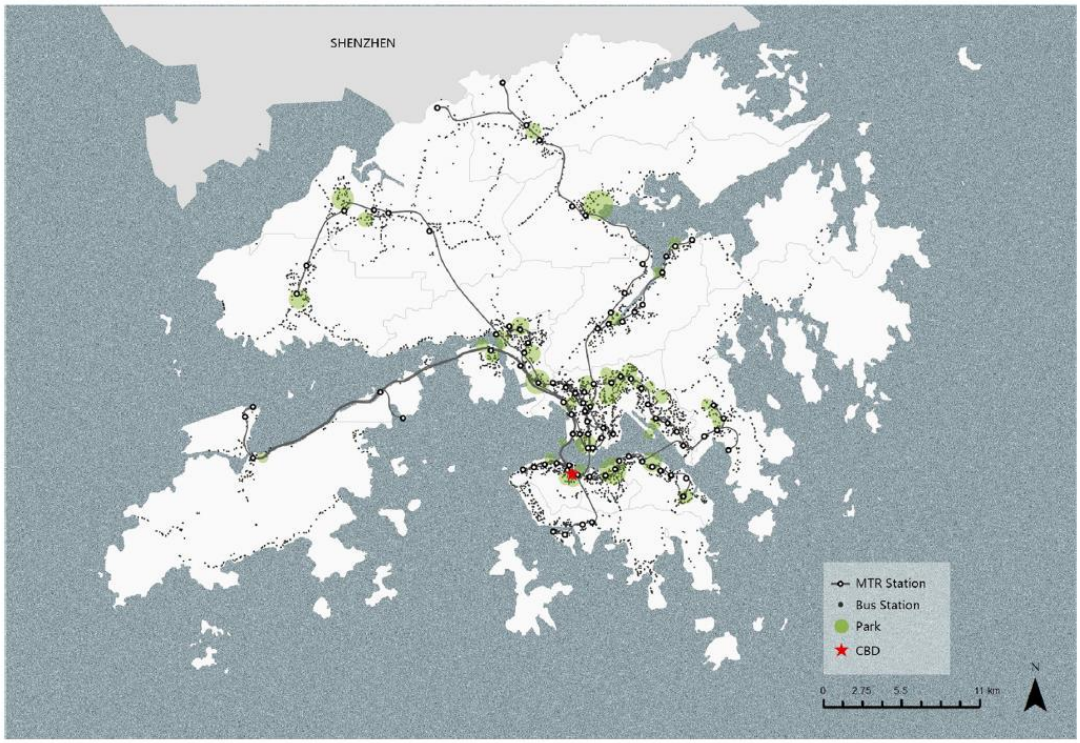


Figure 2. Spatial distribution of urban green parks and mass transportation stops and stations ↵



5. RESEARCH QUESTIONS & HYPOTHESES

To analyze the walking accessibility of urban parks, concrete research questions are introduced. When indicating a knowledge gap, it is necessary to identify accessibility variations among urban parks in different regions. This comes to the first research question:

A. What is the walking accessibility of urban parks in 3 regions and district councils?

Comparison and contrast will be conducted in the discussion. This sets the stage for the next step finding reasons for determining the extent of walking accessibility.

B. What factors have influenced the walking accessibility and efficacy of urban parks?

Walking accessibility is defined as a measurement of the serves range of urban parks offered for residential populations. It is also worth discovering park functions and how land-uses are served differently around urban parks in new towns or old districts. The last research question is suggested as:

C. How do the functions of urban parks differ in new towns or old districts with distinct land-use patterns?

Testable hypotheses are geared towards clarifying previous research questions and specifying data sources. To begin with, with a prediction of spatial disparity in walking accessibility, this helps direct investigation seeking for unique finings of walking accessibility. The first hypothesis is expressed as:

a. There is a presence of spatial disparity of walking accessibility among districts.

To facilitate data analysis, a temporary answer is set as the second hypothesis on the basis of an assumption that urban parks serving more residents living in a denser district.

bi. District councils with a higher population density have higher walking accessibility.

According to Project for Public Spaces, road connection is a criterion for accessibility. It is likely to influence the walking accessibility of urban parks. In alignment with the second research question, the third hypothesis indicates that:

bii. Urban parks having high walking accessibility have a stronger road connectedness.

Discussion on urban parks' functions cannot be reached unless land-use patterns served around has been found. As an extension of the third research question, land-use diversity is taken into account.

c. Compared to old districts, urban parks in new towns serve a greater land-use diversity.

A total of three research questions and four hypotheses not only guide data collection for the methodology Section but also relates to the gap reviewed in the literature review. Since most existing local studies mentioned in Section 4.1 ignore the spatiality analysis amidst districts in Hong Kong, the first testable hypothesis is designed to prove any spatial disparity among district regions and district councils. The second hypothesis is put forward as well to predict a positive relationship between population density and park walking accessibility in the same district councils. In Section 4.2, a well-accessible urban park is expected to have connective roads towards housing estates and serve a large ratio of residential populations. Therefore, a hypothesis testing a positive correlation between park walking accessibility and road connectivity thus refers to the research gap in the literature review. The fourth hypothesis suggesting a greater land use diversity served by urban parks in new towns is constructed based on another gap in Section 4.3 that the perspective of land use patterns served around urban parks is a rare issue on a local basis.

6. METHODOLOGY

Within the context of these hypotheses, the methodology is developed to undertake further analysis. This session is divided into data collection and data processing with implications.

6.1 Data collection

Hong Kong is located to the east of Pearl River estuary, north latitude 114° 10, east longitude 22° 18. Urban parks listed in the Leisure and Cultural Service Department (LCSD) are taken as the study object. A total of 18 district councils in regions of Hong Kong Island, Kowloon, and New Territories where urban parks take place are research areas.

According to the LCSD of Hong Kong, a total of 34 urban parks (243.285 hectares) are recorded. In this study, an urban park is selected from each district council to have a total of 17 parks (193.965 hectares) since there is an absence of an urban park in the southern district. When there is more than one urban park in the same district such as Sham Shui Po or Wong Tai Sin, the one with the highest land area is chosen. This selection is based on purposive sampling implying that bigger parks are expected to serve more people and land-uses.

In an approach of using GIS, data with appropriate formats were prepared. Base map of World Topography from Arcgis-online and Road network from Hong Kong GeoData Store is used. The road network consists of vectorization roads including primary, secondary, tertiary roads, footways, paths, steps, etc. Network junctions are also included. In the support of ArcGIS 10.8, shapefiles of urban parks and buildings were extracted into content layers. To measure the services range of urban parks for inhabitants, the ratio of total population served by the urban park in each district council is approximately calculated through organizing data of the 2016 Population By-census statistics from CENTAMAP, Census and Statistics Department, and Lands Department. Dividing the total population in corresponding district councils by the number of residential population within the buffer zone (Census and Statistics Department, 2016) can help get the ratio of population.

A concise definition of walking accessibility can make research purposeful to determine suitable methodology methods. If the concept is defined as whether urban dwellers can reach urban parks within a certain distance or time, and then the research method may draw a buffer on housing estates to see their surrounding reachable urban parks. This

can simply evaluate the fulfillment of meeting HKPSG standards among urban parks in different districts. However, adjusting the definition to service range investigation makes the result more meaningful. Taking urban parks as centers is aimed at calculating numbers of populations and observing land use patterns served within buffers.

6.2 Data processing

Buffer analysis method using straight line distance is thus employed to carry out the evaluation, roughly estimating strip regions with approximate accessibility. (Shi et al., 2012). Through geoprocessing, this study takes urban parks as centers and establishes a buffer with a 500m distance. As mentioned, in reference to HKPSG's recommendation, this buffer design is created. Residents within the buffer zone are counted as serving targets. Data is processed in ArcMap 10.8 to generate maps with scales and legends. Via map observation, demographic statistics by age are recorded.

Compared with the Network Analysis Method in a calculation of linear distances and time between the place of residence and urban parks (Han et al., 2010; Chen et al., 2020), Buffer analysis is simpler and more intuitive but may put less importance on accurate road development (Chen et al., 2020) incorporating 'center, chain, node and resistance' (p.2). Referring to the second research question and third hypothesis, road connectedness is considered to evaluate the accessibility of urban parks.

Comparing different calculating methods, the one with a perspective of street intersections is chosen under consideration of data collection and the research objective. The method reflects the greater the number of intersections within the buffer, the higher the connectedness degree (Victoria Transport Policy Institute, 2017). A well-connected network can depend on a variety of junctions. With increasing connectedness, route distance decreases, and travel options raises. Due to limited data, the street intersections are extracted from the road network dataset to measure the connectivity degree. It would be more accurate to use intersections of footways and residential roads but using a road network can still contribute an approximation of road connectedness as pedestrian paths are usually built along with road networks in urban areas. The data can also fulfill the research focus gaining an idea that road connection can be an indicator of urban parks' efficacy. Under this circumstance, the study selects street intersections calculations to fulfill the connectivity index of each urban park.

7. DISCUSSION

7.1 *Walking accessibility and spatial disparity*

Buffer analysis method and demographics data are used to receive the statistics of walking accessibility of the 17 urban parks. From a macro-perspective, a comparison of urban park accessibility among three main regions is revealed from Tables 2 and 3.

Walking accessibility means serving residential populations by urban parks within a 500m buffer zone. The higher the ratio of total population served, the greater the walking accessibility of that urban park in a specific district. It can be seen in Table 2, regarding the highest accessibility among three regions, Po Kong Village Road Park being the highest (93.67%) in Kowloon is more than twice the percentage of Victoria Park (45.23%) in Hong Kong Island. The maximum ratio of population covered in Victoria Park is still below half of the proportion. In New Territories, the highest ratio accounts for 75.43% from Tung Chung North Park. Considering the lowest level of walking accessibility among the three regions, the result shows similar variation. Hong Kong Park in Hong Kong Island has the lowest degree with 9.78% while the minimum walking accessibility of urban parks in New Territories and Kowloon account for 19.16% and 21.86% respectively. Table 3 offers additional support for this variance. Urban parks in Kowloon can serve nearly 40% of the total population followed by New Territories, whereas green spaces in Hong Kong Island serve only a quarter of the total population.

Table 2. The highest and lowest ratio of the population served by urban parks in the regions.

Region	*Ratio of total population/% in district councils*		*Urban Park*
Hong Kong Island	highest	45.23	Victoria Park
	lowest	9.78	Hong Kong Park
Kowloon	highest	93.67	Po Kong Village Road Park
	lowest	21.86	Jordon Valley Park
New Territories	highest	75.43	Tung Chung North Park
	lowest	19.16	Sha Tin Park

Table 3. Accessibility scope of urban parks in population

Regions	*Ratio of total population %*	*Population in service area*	*Total Population*
Hong Kong Island	21.96	74519	339387
Kowloon	39.9	314927	789229
New Territories	37.3	483151	1295216

Table 4 identifies the remaining discoveries of selected urban parks. As to urban parks in Hong Kong Island, the percentage of population coverage in Hong Kong Park and Quarry Bay Park are less than 20% arranged to the bottom of walking accessibilities among districts. As for parks in Kowloon, albeit an extreme value from Po Kong Village Park, the other urban parks have an estimated ratio from 20% to 40%. There are 9 urban parks in New Territories, among which 3 of them account for high walking accessibility serving more than half of the population in each district council including Islands, Tai Po, and Yuen Long. The rest are having a ratio of between 20% to 40%.

Statistics of age composition are recorded during data processing. Focusing on the right column of Table 4, a significant observation in demographics is found. Separating each region, the lowest the ratio of population coverage, the highest the senior population proportion served. This reflects urban parks with the least walking accessibility in the 3 regions that have the largest number of elderly residents living around. Senior people who are usually deemed as vulnerable park users with limited physical mobility have relatively unequal access opportunities to urban parks.

It is difficult for every urban park to have high walking accessibility for most residential populations, but it is expected that urban parks can equally serve inhabitants regardless of their living districts. The result shows a remarkable discrepancy. Previous findings have verified the first hypothesis reflecting a spatial disparity of walking accessibility in which urban parks in Kowloon and New Territories, overall, have higher walking accessibility than that in Hong Kong Island. This may end up an uneven distribution of green spaces. Not only do urban parks have a spatial disparity but also inequity accessibility for the aged. The variance is noteworthy identifying because it helps highlight urban parks in Hong Kong Island which can hardly serve a large amount of residential population in the vicinity and the disparity demonstrates a socio-demographic inequity in access to green spaces for older residents.

Table 4. Accessibility service and proportion of the senior population

Region	*District Council*	*Urban Park*	*Ratio of total population/%*	*Age proportion (+65)/%*
Hong	Central and western	Hong Kong Park	9.78	**20.50**
Kong	Eastern	Quarry Bay Park	19.51	16.40
Island	Wan Chai	Victoria Park	45.23	18.34
Kowloon	Kwun Tong	Jordan Valley Park	21.86	**22.00**
	Kowloon City	Kowloon Tsai Park	27.55	16.68
	Sham Shui Po	Lai Chi Kok Park	41.52	15.17
	Wong Tai Sin	Po Kong Village Road Park	93.67	15.20
	Yau Tsim Mong	Kowloon Park	22.38	16.97
New	Islands	Tung Chung North Park	75.43	11.20
Territories	Kwai Tsing	Central Kwai Chung Park	20.32	18.64
	North	North District Park	38.26	18.95
	Sai Kung	Hong Kong Velodrome Park	32.79	17.34
	Sha Tin	Sha Tin Park	19.16	**24.07**
	Tai Po	Tai Po Waterfront Park	50.22	20.36
	Tsuen Wan	Shing Mun Valley Park	35.44	19.78
	Tuen Mun	Tuen Mun Park	34.73	17.29
	Yuen Long	Tin Shui Wai Park	60.58	9.25

7.2 Walking accessibility and urban park efficacy

Continuing with the first research question, from a micro-perspective, accessibility analysis of urban parks in different district councils is conducted to justify previous spatial disparity with map evidence. Different colors are used to decode land uses in maps having functional zoning.

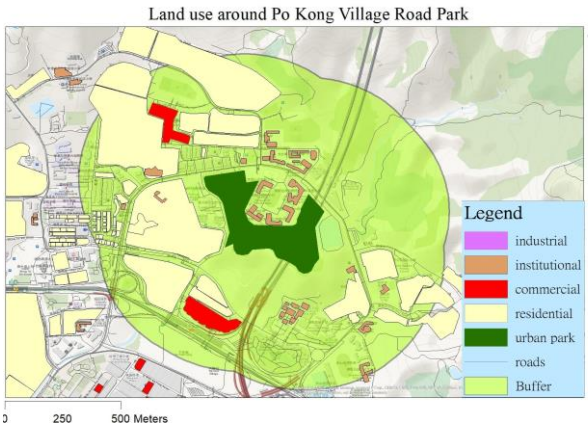
In a comparison of 17 urban parks, the top 3 and bottom 3 accessibility are ranked in Table 5. The highest walking accessibility goes to Po Kong Village Road Park in Wan Tai Sin district, followed by Tung Chun North Park in Islands district and then Tin Shui Wai Park in Yuen Long district. In contrast, Hong Kong Park, Sha Tin Park, and Quarry Bay Park have the least accessibility in ascending order.

Table 5. Ranking of accessibility service in district councils

Rank	*District Council*	*Urban Park*	*Ratio of total population/%*
1	Wong Tai Sin	Po Kong Village Road Park	93.67
2	Islands	Tung Chung North Park	75.43
3	Yuen Long	Tin Shui Wai Park	60.58
15	Eastern	Quarry Bay Park	19.51
16	Sha Tin	Sha Tin Park	19.16
17	Central and western	Hong Kong Park	9.78

Urban parks with the highest walking accessibility have in common that they are located in the center of residential estates or have proximity to concentrated housing estates. Maps provide evidence for this description. For instance, Maps 1a and 1b are dominated by residential land uses which are close to the urban parks. Concerning Map 1c, Tin Shui Wai Park is considerably encircled by both public and private housings such as Kenswood Court, Tin Yiu Estate, Tin Shui Estate, etc. This implies that urban parks in these three district councils have a high urban efficacy since a large proportion of people in residence are served under the same buffer distances.

Map 1a. Po Kong Village Road Park



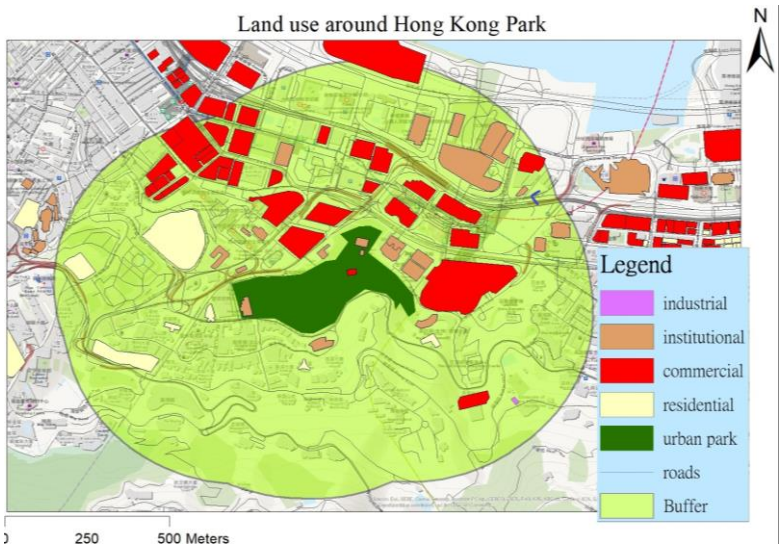
Map 1b. Tung Chung North Park

Map 1c. Tin Shui Wai Park

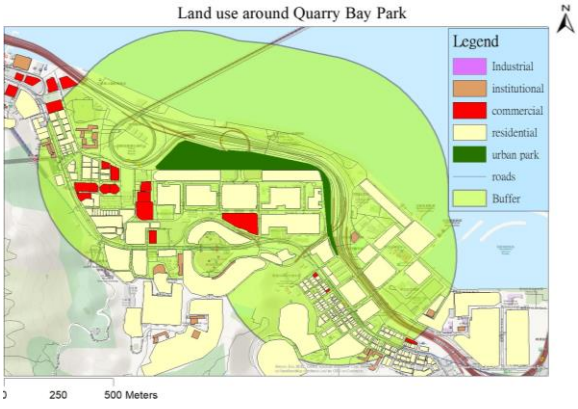
It is reasonable to understand why some urban parks have the least walking accessibility because they are far away from housing estates. Observing Map 2a, Hong Kong Park is mainly surrounded by commercial land use. Scare residential land uses can be found such as Government House on the west and Estoril Court on the south-west. This can be attributed to the urban planning intending to transform Victoria Barracks into commercial and administrative construction (Town Planning Board, 2019) for the development of Metropolitan Business Core. Less exposure to urban dwellers results in lowering walking accessibility and impairing park efficacy.

In the situations of Quarry Bay Park and Sha Tin Park, they serve a small number of inhabitants within the buffer zones. Evidence found points to geographical factors. Quarry Bay Park in Map 2b was built on flatland in the northeast of Siu Ma Shan. Affected by the topography, housings were likely to be planned and distributed along the coastline. It may be difficult to design a decent location of an urban park that is highly accessible to a concentrated residential population. For Sha Tin Park in Map 2c, it was built near the bank of Shing Mun River acting as a separation of the built-up area from the urban park. Despite the presence of bridges like Lek Yuen Bridge, a cycleway, and a footway linking housing estates across the river, it may limit the service range for the population in Sha Tin district. This study fairly correlates with Audi et al. (2010) stating urban planning is influenced by a multitude of components incorporating political reasons, geographical factors, and population density. Further extending the knowledge of walking accessibility, the accessibility can be subject to urban planning and geography and thus reflect the results in Table 5. Relationships between population density and walking accessibility are discussed through analyzing Table 6.

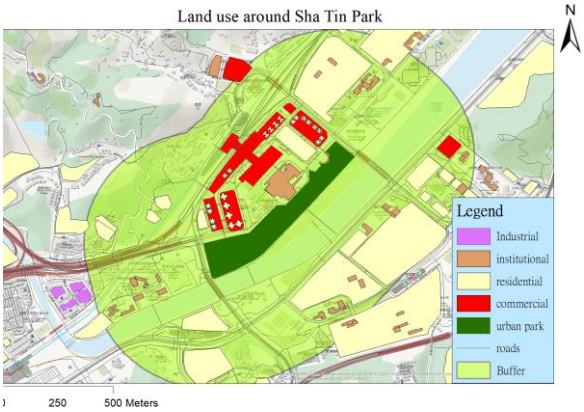
Map 2a. Hong Kong Park



Map 2b. Quarry Bay Park



Map 2c. Sha Tin Park



7.3 Walking accessibility and population density

Referring to the second hypothesis, it is expected that the higher the population density of a district, the higher the walking accessibility. However, the result in Table 6 has not confirmed this assumption, but it serves as a new insight. Observing urban parks in Hong Kong Island and New Territories first, it is found that the lowest the population density, the highest the walking accessibility of the service area. In Kowloon, vice versa.

It can be explained in an aspect of resource distribution. To satisfy the demand for increasing population in Hong Kong converted from a fishing village to a trading port since the 19th century, reclamation projects on Hong Kong Island North and Tung Chung New Town were launched in the 1850s to 1990s and 1980s to 1990s (CEDD, 2019). Victoria Park and Tung Chun North Park were developed on reclaimed land where recreational land uses are as important as housing and commercial buildings to support social development (CEDD, 2019) and people's living quality. Having a less population density in Wan Chai and Islands districts, the location of the urban parks can flexibly be planned to serve a large number of residents. In contrast, with a higher population density in Kowloon, flatlands are likely turned to residential land uses or other development instead of giving priority to urban parks. That was why the government has issued a sequence of reclamation measures and new town development to expand land for residential purposes.

Nevertheless, it can be argued that Wong Tai Sin with a high population density (45711 persons/km2) still has great walking accessibility in Po Kong Village Road Park (93.67%) while North District Park with a low density (2310 persons/km2) has a low accessibility level (38.26%). The analysis does not identify a significant correlation between district population density and service scope of urban parks for residents but highlights the importance of proximity. That means walking accessibility is highly dependent on how close most residential land uses are located around urban parks.

Population density is rather a factor affecting decisions on urban planning than a direct-correlated component with accessibility in statistics. Urban planning and geography aspects are the reasonable explanation for walking accessibility results. Higher walking accessibility of an urban park means its high proximity to people in residence. When more urban dwellers can be served, urban park efficacy is thereby affirmed.

Table 6. Accessibility service and population density

Region	*Urban Park*	*Ratio of total population/%*	*Population Density (persons/km^2)*
Hong Kong Island	Hong Kong Park	9.78	19391
	Quarry Bay Park	19.51	30861
	Victoria Park	**45.23**	**17137**
Kowloon	Jordan Valley Park	**21.86**	**57530**
	Kowloon Tsai Park	27.55	41802
	Lai Chi Kok Park	41.52	43381
	Po Kong Village Road Park	93.67	45711
	Kowloon Park	22.38	49046
New Territories	Tung Chung North Park	**75.43**	**886**
	Central Kwai Chung Park	20.32	22307
	North District Park	38.26	2310
	Hong Kong Velodrome Park	32.79	3563
	Sha Tin Park	19.16	9602
	Tai Po Waterfront Park	50.22	2233
	Shing Mun Valley Park	35.44	5149
	Tuen Mun Park	34.73	5894
	Tin Shui Wai Park	60.58	4435

7.4 Road connectivity and accessibility

The supply efficacy of urban parks also relates to parking utilization and accessibility which is attributed to road connection. Estimation of road intersections was done to detect the connectivity index of urban parks in Table 7.

In Table 7, the more the road intersections, the greatest the connectivity degree of that urban parks. Observing road intersections and the ratio of the population served, Jordan Valley Park and Tung Chung North Park share the same number, 78, of road intersections but have a great difference in the walking accessibilities. No significant correlation is identified between the two variables and this contradicts the second hypothesis. A unique finding is worth to being noted that, Hong Kong Park, has the highest degree of road connectedness while having the lowest walking accessibility. It

reflects that even though the urban park serves the least residential populations, its road connection is the strongest. Interestingly, urban parks with the top three highest street connectivity are from districts of Central and western, Wan Chai, and Yau Tsim Mong. Hong Kong Park in Figure 3a, in common with Victoria Park and Kowloon Park is situated on both sides of Victoria Harbor. Grid networks having many street junctions can be observed in Figures 3b and 3c. Strong road connectivity improves accessibility by accommodating more direct trips. More supporting alternative modes highlight higher walking mobility for pedestrians.

Table 7. Accessibility service and road intersections in descending order

District Council	*Urban Park*	*Road intersections*	*Ratio of total population %*
Central and western	Hong Kong Park	**412**	9.78%
Wan Chai	Victoria Park	**384**	45.23%
Yau Tsim Mong	Kowloon Park	**344**	22.38%
Eastern	Quarry Bay Park	316	19.51%
Sham Shui Po	Lai Chi Kok Park	308	41.52%
Tuen Mun	Tuen Mun Park	271	34.73%
Sha Tin	Sha Tin Park	233	19.16%
Kwai Tsing	Central Kwai Chung Park	200	20.32%
Kowloon City	Kowloon Tsai Park	199	27.55%
North	North District Park	187	38.26%
Yuen Long	Tin Shui Wai Park	181	60.58%
Tai Po	Tai Po Waterfront Park	172	50.22%
Wong Tai Sin	Po Kong Village Road Park	**170**	**93.67%**
Tsuen Wan	Shing Mun Valley Park	147	35.44%
Sai Kung	Hong Kong Velodrome Park	140	32.79%
Kwun Tong	Jordon Valley Park	**78**	**21.86%**
Islands	Tung Chung North Park	**78**	**75.43%**

Figure 3a. Hong Kong Park – Road intersections

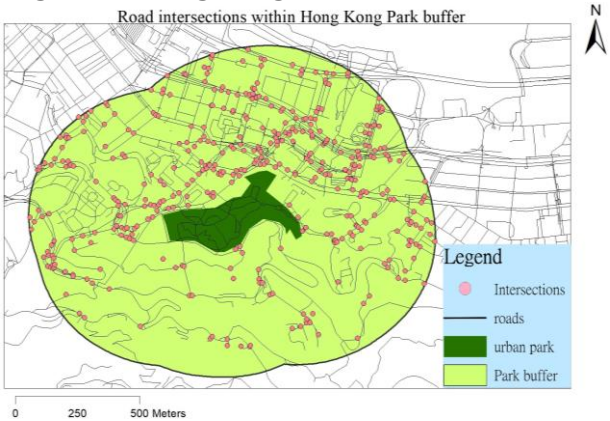


Figure 3b. Victoria Park – Road intersections

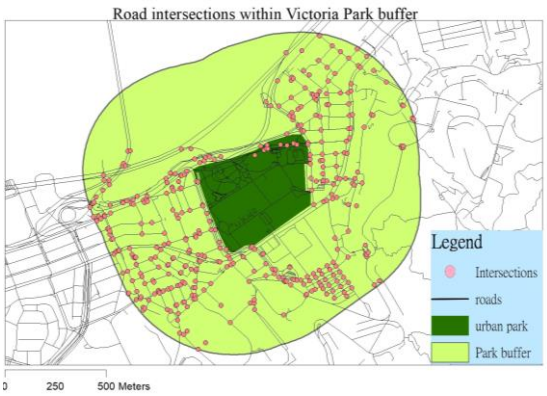
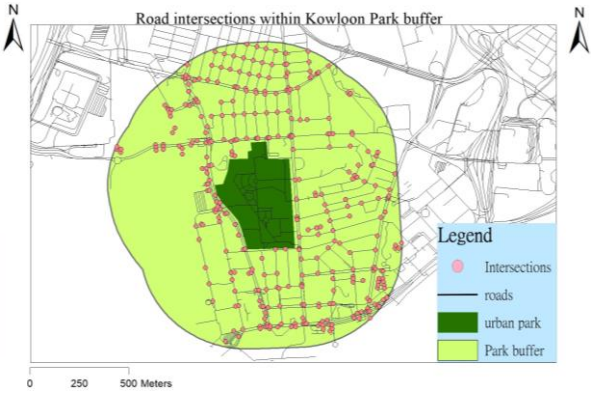


Figure 3c. Kowloon Park – Road intersections



After assessing the lowest walking accessibility of urban parks, it is necessary to mention the road connection of urban parks with the highest walking accessibility. Different from Hong Kong Park, Po Kong Village Road Park has the highest walking accessibility but has a relatively low road connection accounting for 170 street intersections. In the north and north-west of the park, secondary streets near urban parks are connected to footways, steps, and residential roads including Po Hang Lane and Yuk Wah Crescent linking to housing estates such as Tsz Hong Estate and Tsz Lok Estate in Figure 3d. However, for the southeast of the park, there are few road intersections. In Figure 3e, the gradient becomes steeper from Fu Sha Estates and Grand View Garden to the urban park. Due to the topographic factor, mountain roads are difficult to be built which may induce much construction cost and constraints on maintaining roads. Po Kong Village Road is thus the only non-motorized path for residents to climb up the slope to reach the park. The natural barrier may reduce walking feasibility and make roads less contiguous resulting in poor road connectivity. This negatively affects the accessibility and causes low efficacy of park since people can hardly approach there.

Figure 3d. Po Kong Village Road Park– Road intersections

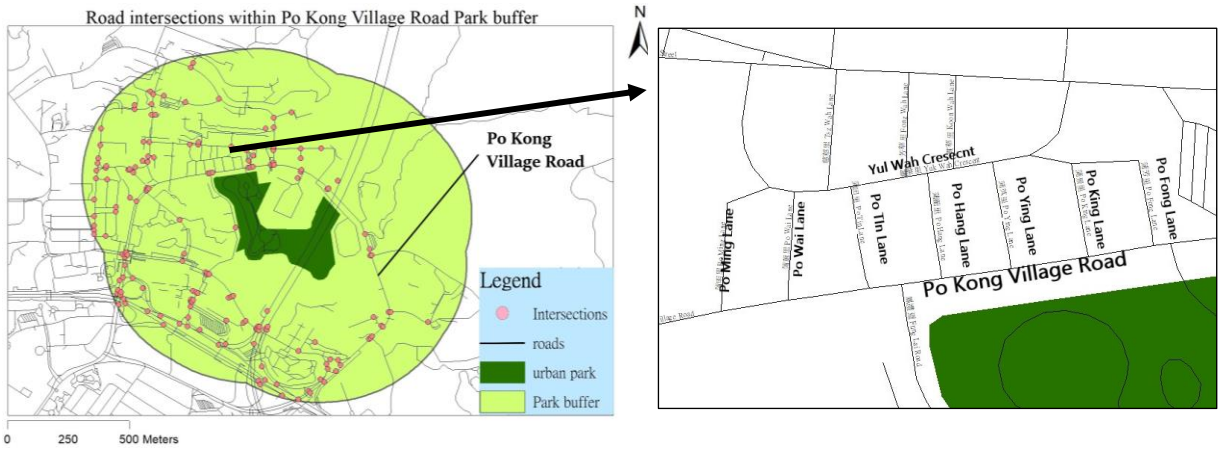
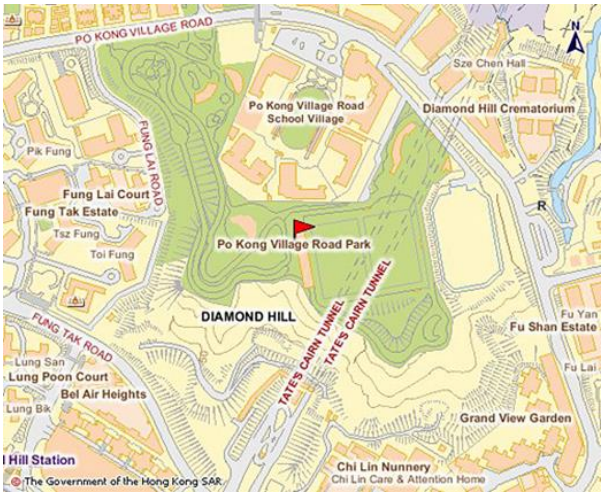


Figure 3e. Location Map of Po Kong Village Road Park



Leisure Cultural and Services Department (2014)

It is summarized that despite a higher residential population in proximity, the urban park can still have a weak road connectedness. Although Hong Kong Park serves a small amount of population within the Central and western district, it has higher accessibility by concerning the road connection. Urban park efficacy varies with different comparative factors including residential population coverage and road connectedness. This comes to a question that are urban parks merely aimed at serving residential populations? More importantly, urban parks being similar to Hong Kong Park with lower walking accessibility but higher road connection may have other serving targets. This viewpoint has deepened the investigation on the functions of different urban parks.

7.5 Land use patterns and park functions

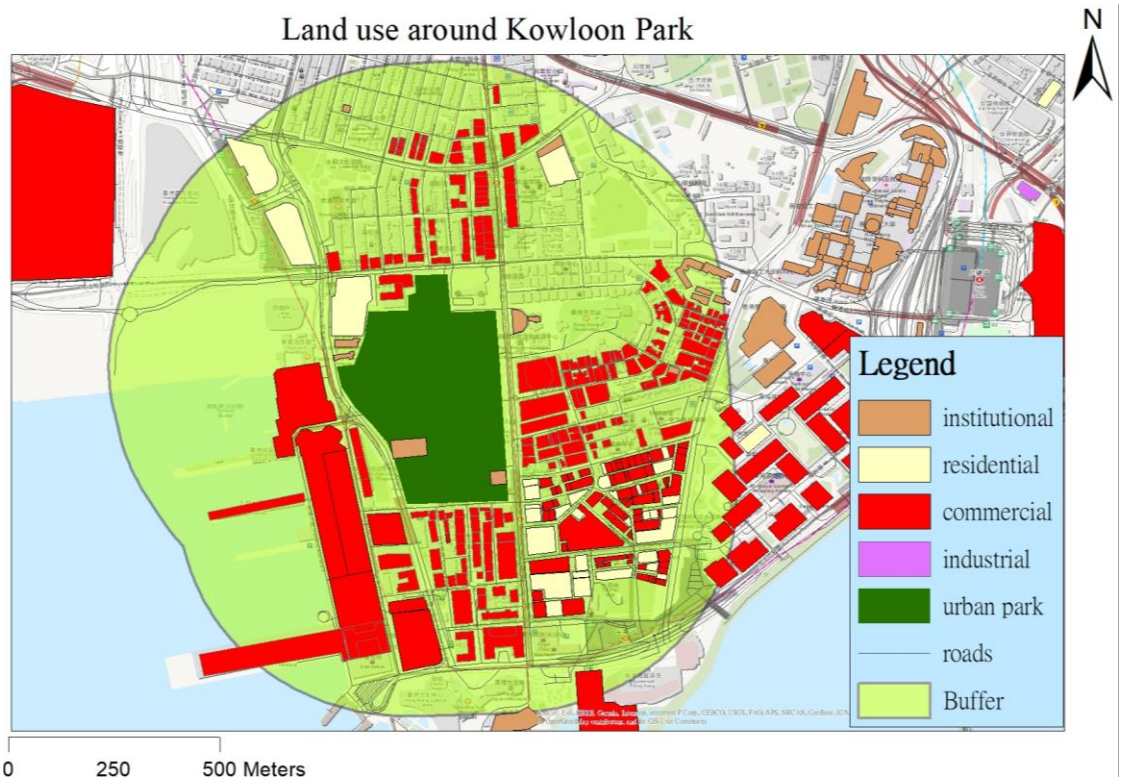
Answering the fourth research question, urban parks are divided into two groups according to their urban development — old towns and new towns to distinguish any land-use patterns served and analyze their unique park functions. It is expected that every park shares multi-dimensional benefits alike including enhancement of social inclusion, physical health, biodiversity, and air quality (Chan, 2005). This study focuses on how the unique functions of urban parks serving different land-use patterns vary in old towns and new towns. What land uses served by an urban park can reflect its unique functions. By observation, land-uses within the buffer zone are recorded. The results help answer the third research question as well as prove the fourth hypothesis indicating that urban parks in new towns serve greater land-use diversity in Table 8c than that in old districts in Table 8b and 8b.

It was found that there are two significant land-use patterns of urban parks in old districts. Referring to Table 8a, it is observed that urban parks near Victoria Harbor including Hong Kong Park, Quarry Bay Park, Victoria Park, and Kowloon Park are dominated by commercial land use. Kowloon Park in Figure 4a provides evidence showing that the buffer zone can be classified as a commercial zone where regional headquarters, international banks, hotels, and scattered private housings are located. The urban park can serve employers working nearby to have leisure activities during lunchtime or after work. It can also be served as a tourist spot for travelers to do recreation.

Table 8a. Old towns — Commercial land-use patterns

i. Old towns	
Urban park name	**The main land uses served**
Hong Kong Park	Commercial
Quarry Bay Park	Commercial, Residential
Victoria Park	Commercial, Residential
Kowloon Park	Commercial, Residential

Figure 4a.



The second finding of urban parks in old towns is coverage of both residential and institutional land uses. Representative parks in Table 8b incorporate Jordan Valley Park in Kwun Tong district, Kowloon Tsai Park in Kowloon City district, Lai Chi Kok Park in Sham Shui Po district, and Po Kong Village Road Park in Wong Tai Sin district. On closer inspection, Kowloon Tsai Park in Figure 4b demonstrates this kind of land use pattern. Blocks of housing are surrounding the park when schools such as Munsang College Primary school along Inverness Road and the campus of Baptist University in the northwest of the park are found. Considering the land uses served around the urban park, it is expected that residents, students, educators in the vicinity are serving targets for them to do active or passive recreations.

Table 8b. Old towns — Residential and institutional land-use patterns

ii. Old towns	
Urban park name	**The main land uses served**
Jordan Valley Park	Residential
Kowloon Tsai Park	Residential, Institutional
Lai Chi Kok Park	Residential, Institutional
Po Kong Village Road Park	Residential, Institutional

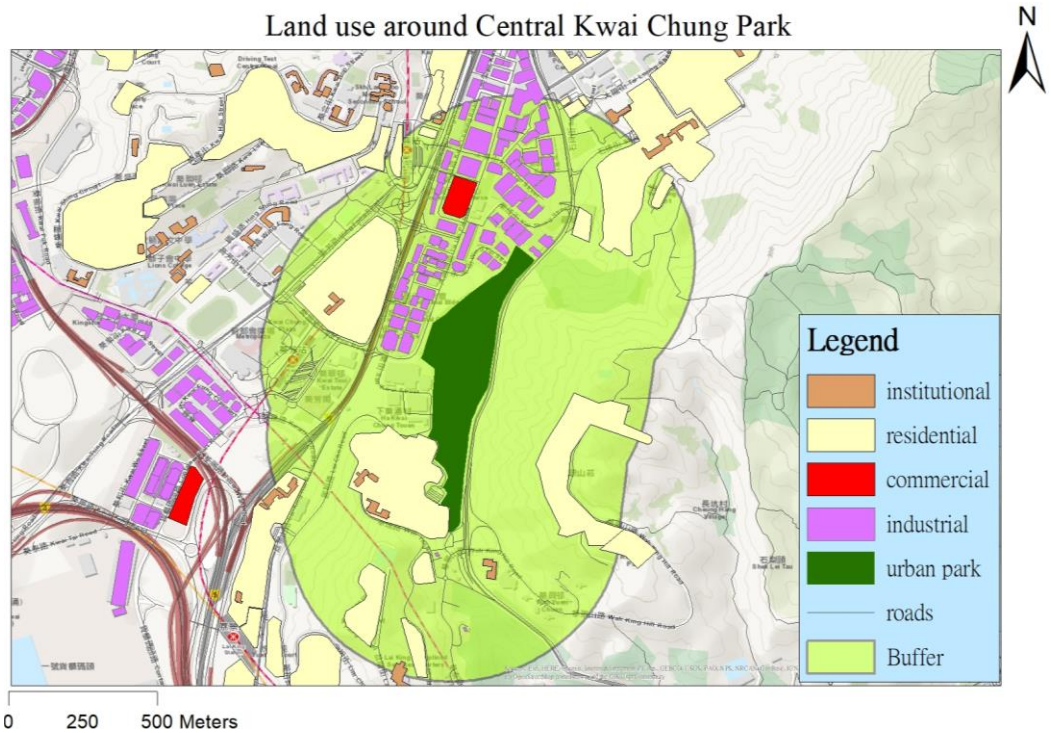
Figure 4b.

Observing Table 8c, urban parks in new towns, overall, serve a land-use diversity in which multiple land uses are served. Take Central Kwai Chung Park for example shown in Figure 4c. It was built along Castle Peak Road and linked to Lai You Estate. North urban park was formed by the amalgamation of industries including factory buildings and logistics centers with commercial land use, Commerce center, in the middle. The urban park not only serves residents of all ages in that district but also factory workers or commuters accessing surrounded places for different purposes. Urban park efficacy can be confirmed when more land uses are served meaning urban parks do not simply target inhabitants but cater to Hongkongers from all districts. This has shed light on the uniqueness of park functions.

Table 8c. New towns — Land use diversity

New towns	
Urban park name	**The main land uses served**
Central Kwai Chung Park	Residential, Industrial
Hong Kong Velodrome Park	Residential
Tung Chung North Park	Residential, Institutional, Commercial
North District Park	Residential, Institutional
Sha Tin Park	Residential, Institutional, Commercial
Tai Po Waterfront Park	Residential, Industrial
Shing Mun Valley Park	Residential, Institutional
Tuen Mun Park	Residential, Institutional, Industrial
Tin Shui Wai Park	Residential, Institutional

Figure 4c.



8. CONCLUSION & LIMITATION

This paper starts with an analysis of walking accessibility in an attempt to evaluate the supply efficacy of urban parks. The study capitalizes on the buffer method to measure the walking accessibility of 17 urban parks among district councils and uses map observation to scrutinize road connectivity index and park functions based on land use patterns served within the buffer zone. Comparing the findings among urban parks, the following points can be illustrated: There is a presence of spatial disparity in walking accessibility when urban parks in Kowloon and New Territories serve a higher proportion of residential populations than that of Hong Kong Island in Section 7.1. This finding shows a discrepancy in spatiality meaning that urban parks among the three regions have a great disparity concerning the ratio of the residential populations served in buffer zones. This may provide policy implications for city planners to examine the distribution of green space areas. A socio-demographic inequity is then proved when the lowest the walking accessibility of urban parks, the highest the senior residents' proportion served in each district region. Examples are Hong Kong Park in Hong Kong Island, Jordan Valley Park in Kowloon, and Sha Tin Park in New Territories. Parks with the lowest walking accessibility have the highest elder populations living in the vicinity.

In a comparison of urban parks in district councils in Section 7.2, Po Kong Village Road Park in Wong Tai Sin district has the highest walking accessibility, followed by Tung Chung Park and Tin Shui Wai Park. The common feature of the urban parks is that they are the center of surrounding residential land use or concentrated by housing estates. This emphasizes the importance of residents' proximity being an indicator of walking accessibility. On the other hand, Hong Kong Park in Central and western district, Sha Tin Park, and Quarry Bay Park have the lowest accessibility. Mentioning the case of Hong Kong Park, the reason for the low walking accessibility is attributed to urban planning as commercial land use dominates within the catchment area. The geographical factor can be another attribute to walking accessibility in the evidence of Sha Tin Park and Quarry Bay Park. This research can serve as a base for future studies on park utilization among age groups to see whether the utilization rate is higher in urban parks having higher walking accessibility.

It is also observed that population density has different correlations with walking accessibility among three regions reflecting an influence of population density on urban design, as well as urban park planning. Referring to the cases in Section 7.3 of Victoria Park in Wan Chai district and Tung Chung North Park in Island district, the highest the park walking accessibility, the lowest the population density in that district council. In

Kowloon, the relationship is in contrast with an example of the case of Jordan Valley Park.

To comprehensively discuss the accessibility of urban parks and park efficacy, it is fundamental to note the road connectivity within the buffer zones. Results showing that urban parks including Hong Kong Park, Victoria Park, and Kowloon Park with stronger road connections, are commonly located on both sides of Victoria Harbor in Sectio 7.4. There is an interesting relationship between walking accessibility and road connection highlighting the lowest the walking accessibility of urban parks, the highest the road connectedness. On contrary, the urban park with the highest walking accessibility has fewer contiguous roads limiting urban efficacy. A significant reason for this weak connection is the land gradient in the case of Po Kong Village Road Park where some residents need to go uphill slopes to reach the park through only one direct road. Despite a high number of residents in proximity are served by urban parks, urban dwellers within the buffer zone have a different extent of accessibility due to the road connectedness. As a result, park efficacy may be reduced as pedestrians can hardly access there. Future studies can focus on enhancing the accuracy of road connections by using different connectivity index methods.

Regarding the definition of park efficacy, land use diversity served by urban parks is considered in Section 7.5. It is found that urban parks in the old town have two specific land-use patterns: one is mainly concentrated by commercial land use whereas another one is dominated by residential and institutional land uses. Kowloon Tsai Park is an example of the second finding demonstrating private estates, public housings, secondary schools, and a university are major land uses served in the service area. For the functions of parks served similar land use pattern, residents, students, educators in the vicinity are potential park users doing leisure activities. In terms of urban parks in new towns, the fourth hypothesis is proved to have a land-use diversity served in those urban parks such as Tai Po Waterfront Park, Tuen Mun Park, and Sha Tin Park mainly in New Territories. In the case of Central Kwai Chung Park, there are residential housings, a commercial center, and an amalgamation of industries around the urban park which does not only aim to serve residents of all ages in Kwai Tsing district but also factory workers or commuters working nearby. This induces unique functions for urban parks in new towns. The urban park efficacy in new towns can be summarized as a higher level than that in old towns since the former serves a greater land-use diversity. This can be explained by the development objectives in new town projects offering self-reliant and balanced communities with sufficient and diversified land uses.

This study does not aim to test the highest efficacy among urban parks but rather provides insights into efficacy evaluation criteria for urban parks in terms of walking accessibility, road connectivity, and land-use diversity. Findings are analyzed followed by map evidence. The work was potentially limited in several ways. Beginning with the number of urban parks, it has only investigated a selection of 17 parks out of 34 in Hong Kong. Consequently, it may prove less accurate on walking accessibility and neglect some unique functions of urban parks. Secondly, the road connection is dependent on junctions of the road network instead of street intersections. This may thus cause deviation in data. Thirdly, map observation on road connection and land use may not comprehensively present the actual information in reality. Despite limited resources and testing, this project has gone some ways towards facilitating understanding of urban parks' inaccessibility and land uses. The result is hoped to offer an implication for research into evaluating urban parks' efficacy and functions. Comparison in walking accessibility, road connectivity, and spatiality of all urban parks in Hong Kong are future issues bringing knowledge to green area distribution.

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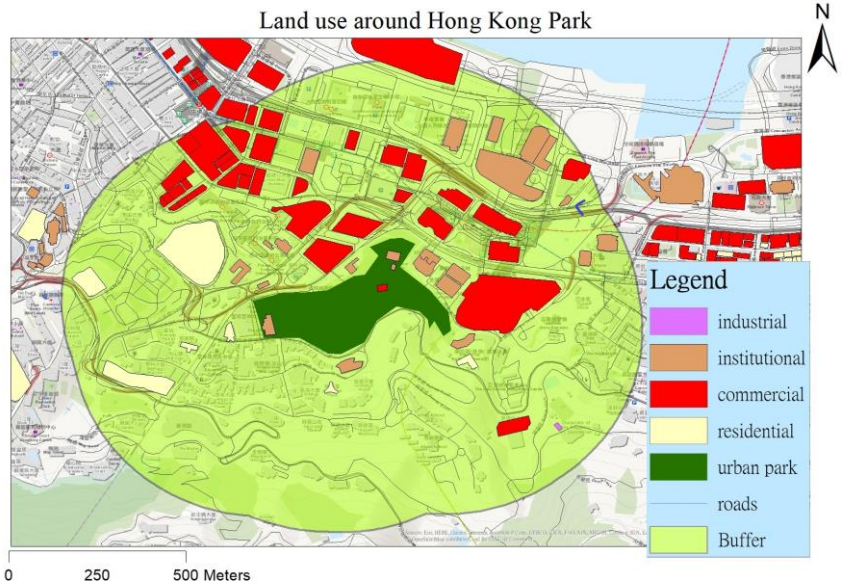
APPENDIX A - **Walking accessibility and age composition table**

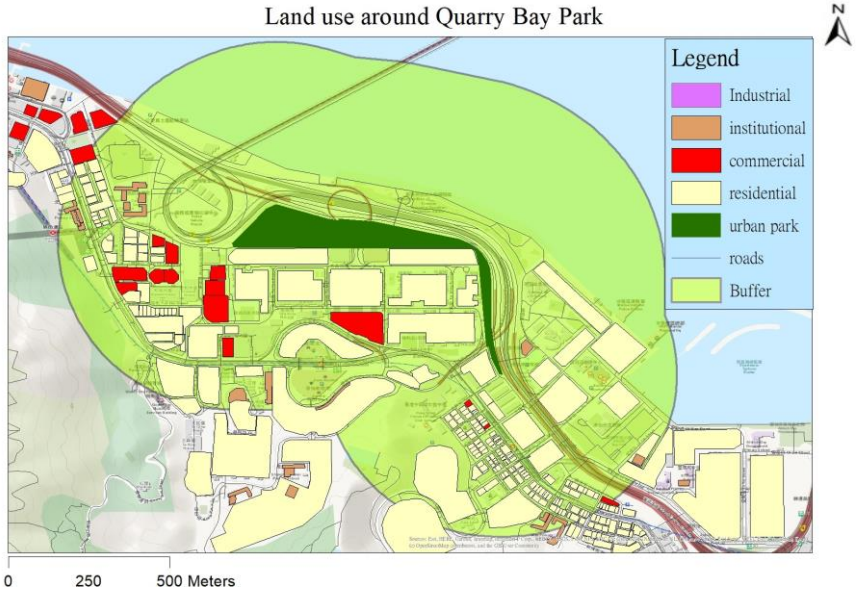
					Age composition %					
Region	District Council	Urban park	Population coverage	Ratio of total population %	< 15	15-39	40-64	65+	Pop. Density (persons/km^2)	Total Population
Hong Kong Island	Central and western	Hong Kong Park	8511	9.78	8.20	30.80	40.50	20.50	19391	87057
	Eastern	Quarry Bay Park	36517	19.51	12.50	32.50	38.60	16.40	30861	187134
	Wan Chai	Victoria Park	29491	45.23	9.41	32.19	40.07	18.34	17137	65196
Kowloon	Kwun Tong	Jordon Valley Park	49511	21.86	10.83	27.96	39.22	22.00	57530	226487
	Kowloon City	Kowloon Tsai Park	39234	27.55	11.78	32.68	38.86	16.68	41802	142409
	Sham Shui Po	Lai Chi Kok Park	61577	41.52	12.72	33.95	38.16	15.17	43381	148304
	Wong Tai Sin	Po Kong Village Road Park	136284	93.67	10.72	33.98	40.09	15.20	45711	145489
	Yau Tsim Mong	Kowloon Park	28321	22.38	8.45	34.42	40.06	16.97	49046	126540
New Territories	Islands	Tung Chung North Park	41512	75.43	9.80	39.90	39.20	11.20	886	55035
	Kwai Tsing	Central Kwai Chung Park	35521	20.32	9.82	33.78	35.26	18.64	22307	174800
	North	North District Park	40743	38.26	8.43	33.52	38.66	18.95	2310	106483
	Sai Kung	Hong Kong Velodrome Park	48508	32.79	6.98	37.13	38.53	17.34	3563	147945
	Sha Tin	Sha Tin Park	42506	19.16%	8.58	19.87	47.48	24.07	9602	221821
	Tai Po	Tai Po Waterfront Park	49885	50.22%	8.60	14.90	56.10	20.36	2233	99339
	Tsuen Wan	Shing Mun Valley Park	38663	35.44%	8.38	29.10	42.73	19.78	5149	109079
	Tuen Mun	Tuen Mun Park	60216	34.73%	10.77	33.12	38.82	17.29	5894	173378
	Yuen Long	Tin Shui Wai Park	125597	60.58%	12.27	26.08	52.40	9.25	4435	207336

APPENDIX B – **Land use around urban parks in Hong Kong Island**

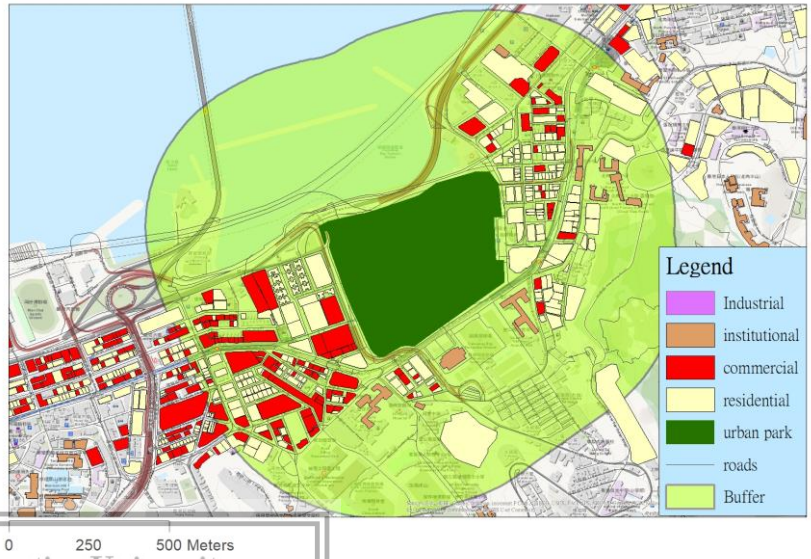
Land use around Hong Kong Park



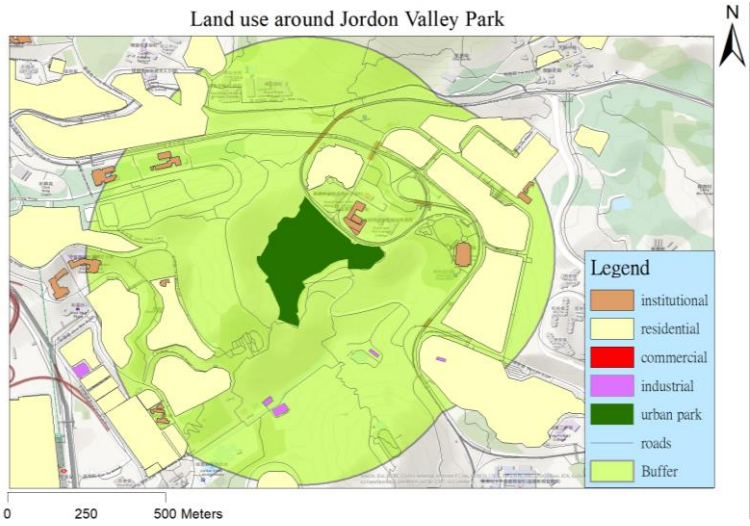
Land use around Quarry Bay Park

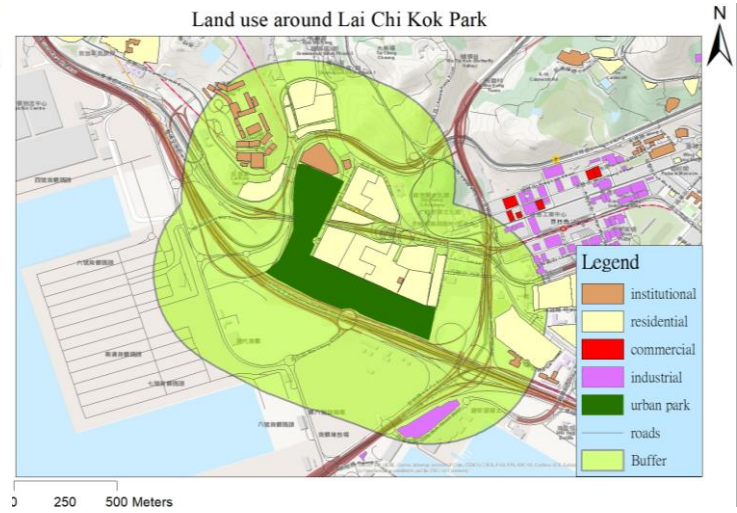


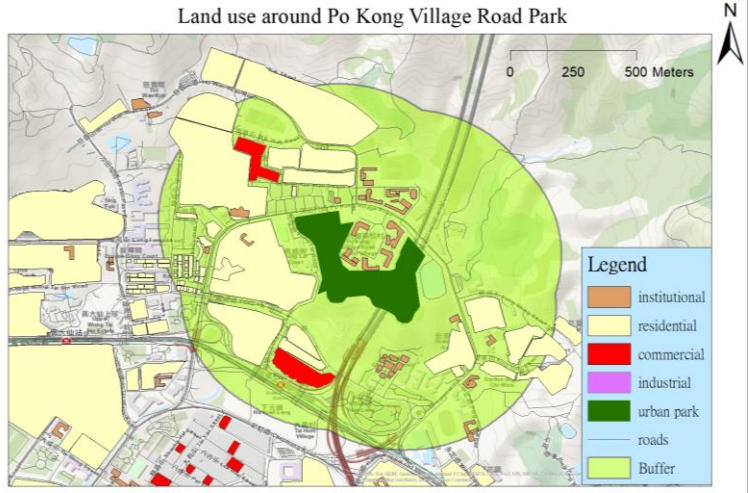
Land use around Victoria Park

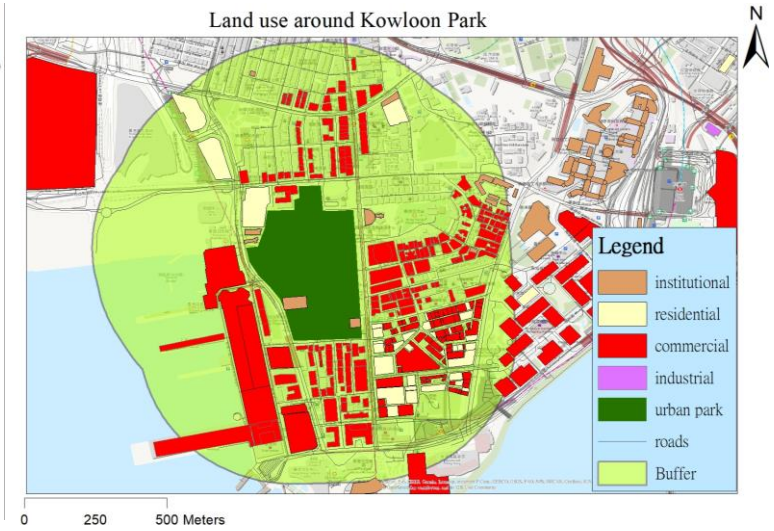


APPENDIX C – **Land use around urban parks in Kowloon**





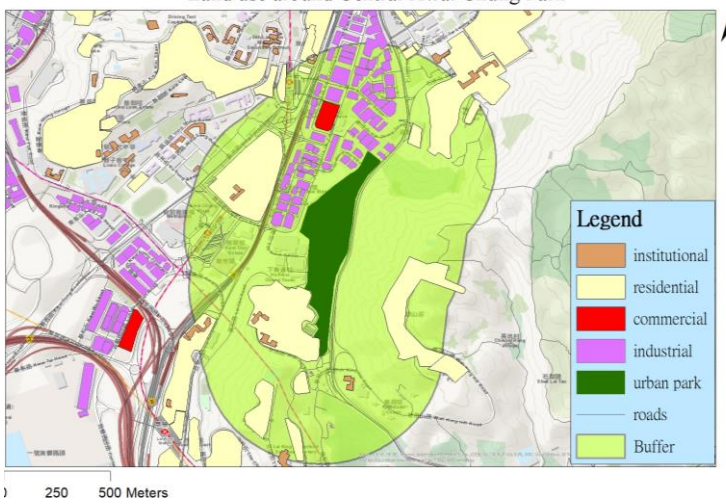




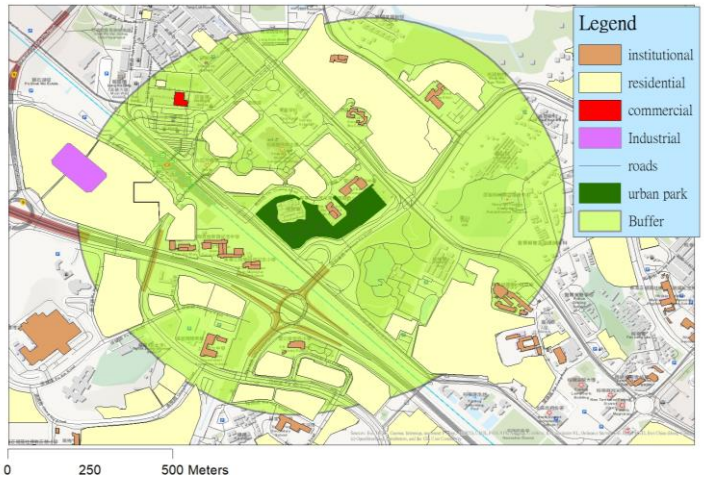
APPENDIX D – **Land use around urban parks in New Territories**

Land use around Tung Chung North Park

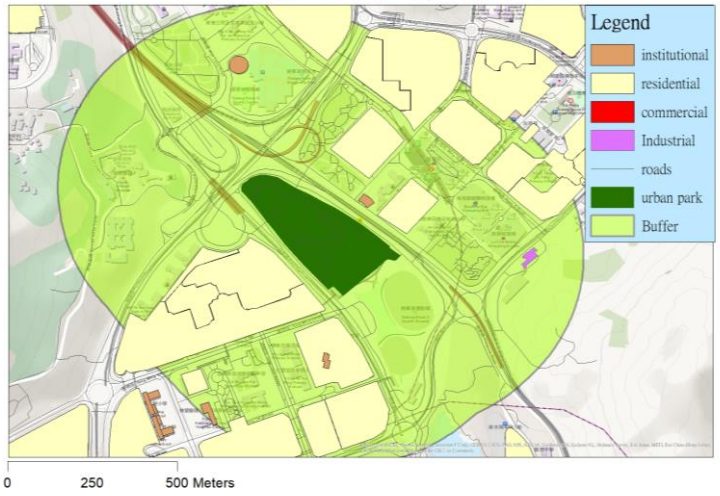
Land use around Central Kwai Chung Park



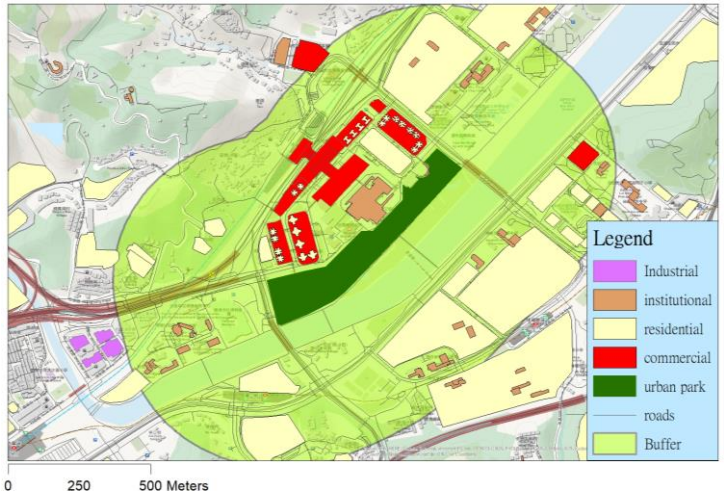
Land use around North District Park



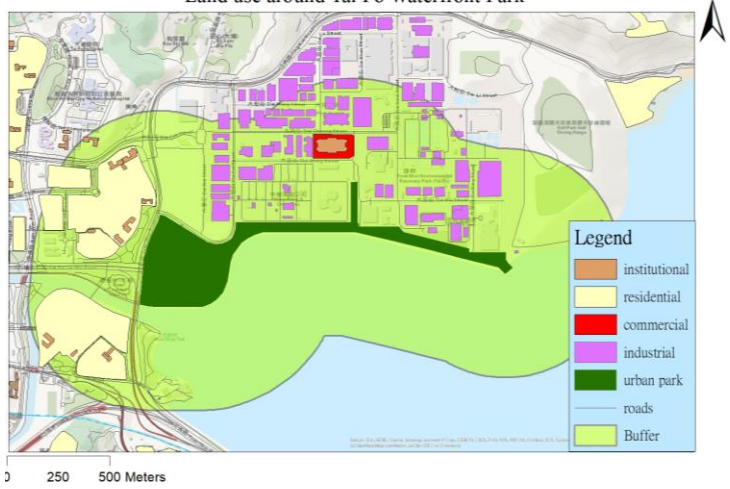
Land use around Hong Kong Velodrome Park



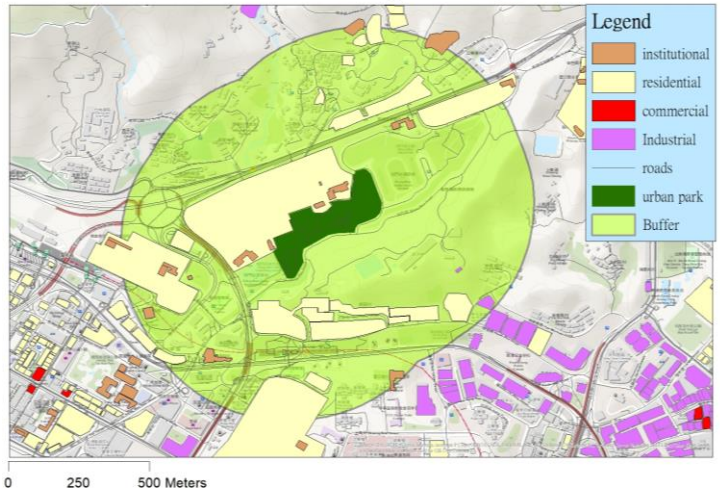
Land use around Sha Tin Park



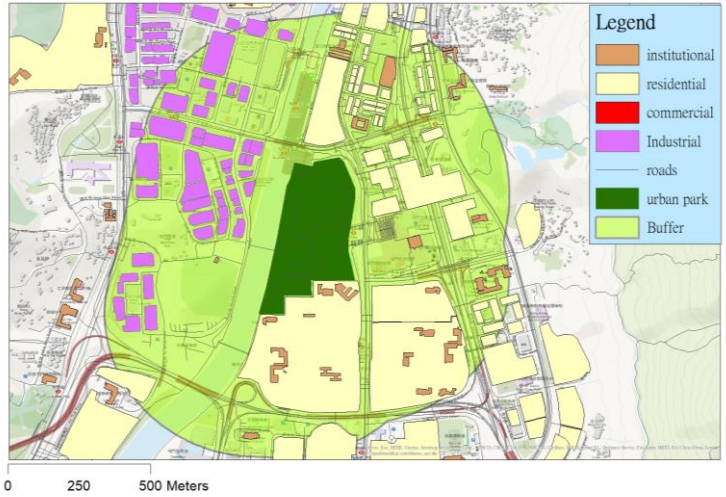
Land use around Tai Po Waterfront Park



Land use around Shing Mun Valley Park



Land use around Tuen Mun Park



Land use around Tin Shui Wai Park