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A Comparative Study of Use Patterns of Open Spaces in the Wanchai District of Hong Kong

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Abstract. Whilst Hong Kong is suffering from a limited supply of developable land in its major urban areas, some open spaces are frequently criticized as inconvenient for users, consequently leading to an ineffective use pattern. How to enhance the performance of open space is therefore a critical issue faced by city planners. In this case, this paper takes 14 open spaces in the Wanchai District of Hong Kong as samples, and compares and analyses the use patterns of different types of open spaces in terms of mean number of users, time pattern and user profiles, in order to provide a reference for the planning and provision of open spaces in the urban area of Hong Kong. As a result, this study reveals that open spaces in Wanchai show different patterns of use, which are somehow related to their types and locations. Of all the sample open spaces, playgrounds exhibit a much higher mean use than others. The distribution of mean use in pocket parks is relatively consistent. In contrast, the distribution of mean use in gardens is not consistent throughout the day. While there is still a need to increase the provision of open space in the Wanchai District, the efficiency of the use of the gardens north of Gloucester Road should be improved.

Keywords. Use patterns, performance of open space, Wanchai of Hong Kong

1. Introduction

Urban open space plays an important role in people's lives, especially in high-density cities like Hong Kong. Although high-density cities have been increasingly criticized for causing overcrowding and other environmental health problems [1-3], the provision of open space has been introduced into the planning process as an obvious measure to overcome the negative effects of dense development. As the importance of open space is increasingly recognized, its design and performance have attracted the attention of many authors. Among them, there is a consensus that the success of an open space depends largely on the extent to which it attracts people to enter and how far it is used and occupied [4, 5]. Therefore, this paper takes the open spaces in the Wanchai District of Hong Kong as a sample. Through site observation, this study compares and analyses the use patterns of different types of open spaces in terms of mean number of users, time pattern and user profiles. Hopefully, the finding can provide a reference for the planning and provision of open spaces in the urban area of Hong Kong.

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2. Literature Review

In literature, traditional medieval and renaissance urban squares in Europe are famous for their success in bringing vibrancy and dynamism to the environment, a number of authors, therefore, examine these traditional squares in order to find ways of improving the performance of modern urban spaces [6-8].

In contrast, some other authors focus on studying contemporary urban open spaces, with the aim of producing design guidelines. For example, some authors [9, 10], who believe that public open space is the single most important element in establishing the livability of a city, suggest a number of spatial elements that are essential to the creation of a successful open space. Similarly, Marcus and Francis [11] point out that the success of an open space depends largely on its location and the design details, and then present a set of systematic guidelines to help professionals create pleasant, comfortable, supportive and beautiful 'people places'. Similar studies can be found by Joardar and Neill [12] who, after studying 10 public squares in downtown Vancouver, suggest that the subtle difference in the configuration of the space itself has a significant effect on how people perceive and use that space. In addition to highlighting the impact of the design details and functional elements, some authors address the importance of non-physical factors. For example, Burden [13] points out that good maintenance is also an essential feature that contributes to the success of open spaces. Some other authors [14] also state that the provision of human needs and uses is the basic requirement for the success of a space.

From the above review, it is found that previous authors have realized that, apart from the aesthetics and artistic effect emphasized in traditional urban squares, the success of open spaces is largely linked to whether they have satisfied people's needs and whether they have been well used. In this case, analyzing the use patterns of different spaces can help understand the performance of these spaces, and then identify if they have satisfied the planning and design intentions.

3. Comparative Analysis of Use Patterns among the Sample Spaces

Wanchai is one of the oldest districts in Hong Kong. Resulting from different stages of land reclamation carried out by the government, the urban fabric of Wanchai has displayed a 'Segment-line' pattern, where different characteristic urban structures are stratified chronologically from the hillside to the harbor. In addition, there are a variety of open spaces scattered throughout the district, including gardens, playgrounds, pocket parks (Sitting-out area, SOA), waterfronts, etc. Therefore, the selection of open spaces in Wanchai can reflect the characteristics of open spaces in Hong Kong's high-density environment. As a result, 14 open spaces were selected for comparative analysis, including six pocket parks (SOA), three playgrounds, and five gardens (Figure 1).

3.1. Mean Number of Users of the Sample Spaces (Mean Use)

As the mean number of users throughout the day (defined as mean use in this study) is an important measure for analyzing and evaluating the performance of the open space, the mean use of the sample spaces is illustrated in Table 1.

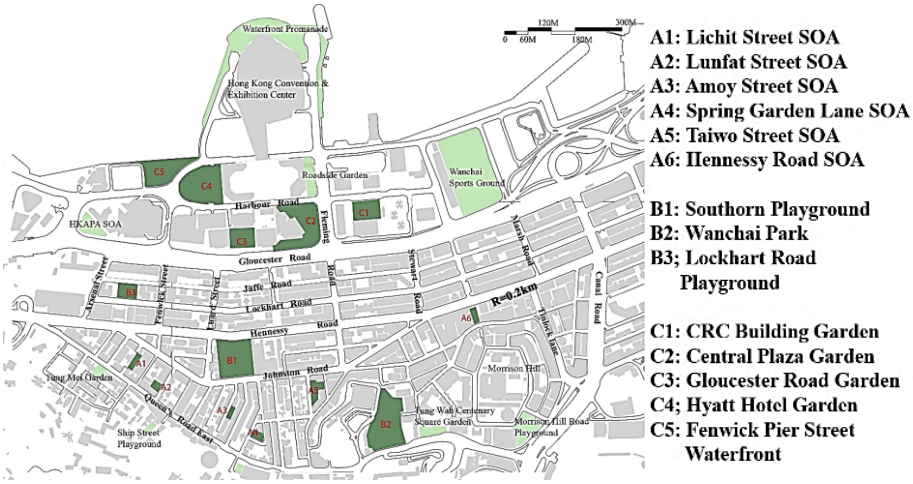


Figure 1. Distribution of 14 sample spaces.

Table 1. Mean number of users of the sample spaces.

Name of open space	Mean no. of users—all data	Mean no. of users—weekday	Mean no. of users—weekend	Name of open space	Mean no. of users—all data	Mean no. of users—weekday	Mean no. of users—weekend
Lichit	5.35	5.69	4.71	WCpark	102.15	90.69	123.43
Lunfat	4.65	5.154	3.71	Lockhart	33.47	25.769	50.17
Amoy	0.9	1.385	0	CRC	32.68	32.31	33.5
Spring	18.45	16.692	21.7	Central	20.84	22	18.33
Taiwo	17.65	19	15.14	Gloucester	12.32	17.3	1.5
Hennessy	8.65	8.9	8.14	Hyatt	18.21	20.08	14.17
Southern	221.45	223.08	218.4	Waterfront	12.68	9.85	18.8

The table shows that there is a wide range of mean use within the sample spaces, ranging from 221.45 (Southorn Playground) to 0.9 (Amoy St. SOA). Of the 14 samples, two cases have a mean use above 100. They are Southorn Playground and Wanchai Park. Four samples (Lichit, Lunfat, Amoy and Hennessy SOAs) have a mean number of users less than 10, while the remaining eight cases have a mean daily use ranging from 12.32 (Gloucester Road Garden) to 33.47 (Lockhart Road Playground).

When the data is broken down on weekdays and weekends, the results show that the mean use on weekdays is similar to the overall data set; while on weekends, some cases change. Five spaces have higher usage on weekends than on weekdays. These are Spring SOA, Lockhart Playground, Wanchai Park, and Waterfront. On the other hand, the remaining spaces show a lower mean number of users on weekends. It can be observed that the spaces in Type B (Playgrounds) are used more intensively on weekends, indicating that their internal facilities can attract more users on weekends.

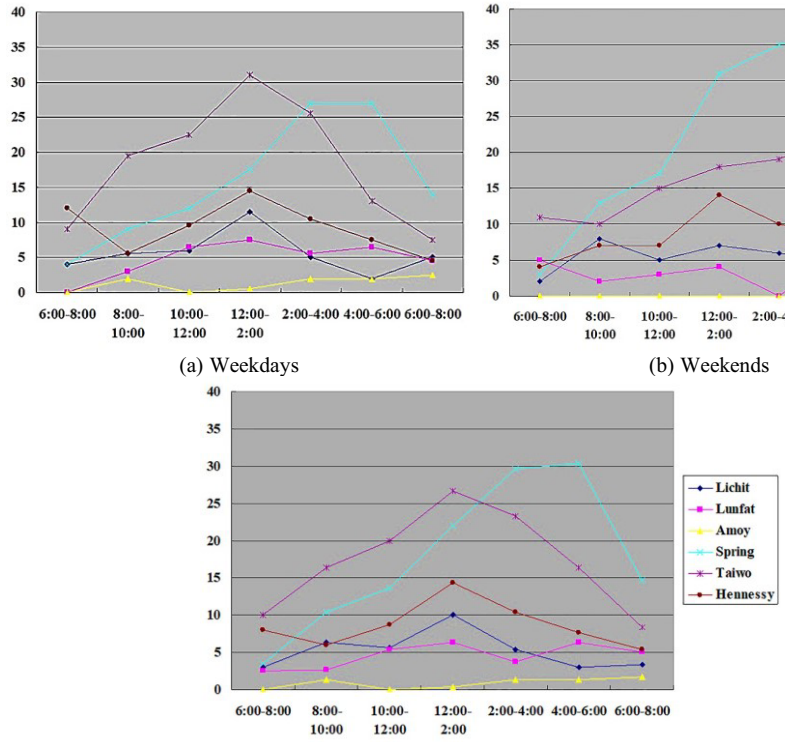
3.2. Distribution of Mean Use throughout the Day (Time Pattern)

The distribution of mean use over different periods, defined as time patterns, is another way of analyzing the performance of open space. In order to clearly illustrate the time patterns of different spaces, the mean use of each type of open space is reported and

compared separately.

- Type A: Pocket parks (SOA)

The mean use of the pocket parks tends to follow a consistent pattern (Figure 2). Spaces with higher levels of use during peak periods also have higher levels of use during off-peak periods. For example, Spring Garden Lane and Taiwo St. SOA continue to have the highest levels of use at all times, while Amoy St. SOA is underused throughout the day. In general, mean use peaks at lunchtime for all Type A samples, with only Spring Garden Lane SOA peaking between 4:00 pm and 6:00 pm. A similar pattern is obtained for mean use on weekdays. That is, the mean use for the four samples peaks at lunchtime, while the other two cases, Spring Garden Lane and Lunfat St. SOA, tend to have higher occupancy rates after 4:00 pm. A similar distribution of mean use is also found on weekends. However, there are three cases where mean uses peak after 4:00 pm rather than at lunchtime. These are Spring Garden Lane, Taiwo and Lunfat St. SOAs.



(a) Weekdays

(b) Weekends

(c) All Data

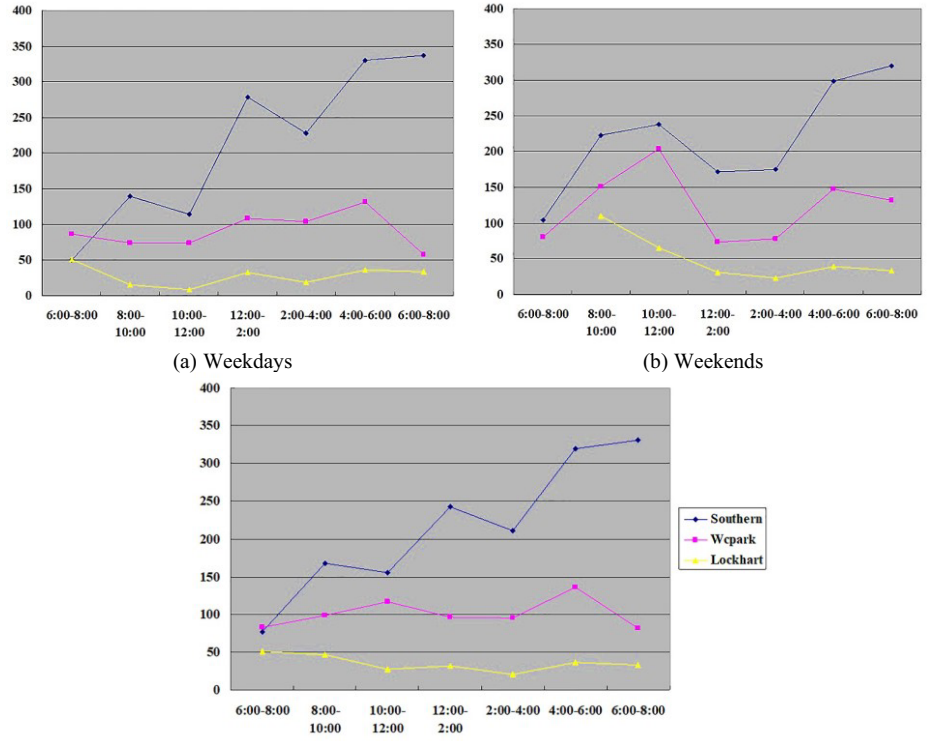
Figure 2. Distribution of mean use of Type A open spaces.

- Type B: Playgrounds

Overall, there are three Type B open spaces in Wanchai District. These spaces provide facilities such as playgrounds, and they demonstrate a significantly higher mean use than the rest of the sample (Figure 3).

The distribution pattern of mean use is consistent across all data for the three spaces, ranked in descending order: Southorn Playground, Wanchai Park and Lockhart Road Playground. A similar distribution of mean use can be found on both weekdays and

weekends but with different peaks. Mean use on weekdays peaks at lunchtime and after 4:00 pm, while on weekends, the mean number of users tends to peak between 10:00 am and 12:00 pm and after 4:00 pm. Viewed as a whole, the distribution of mean use of Type B samples is consistent throughout the day, but the time pattern differs between weekdays and weekends.



(a) Weekdays

(b) Weekends

(c) All data

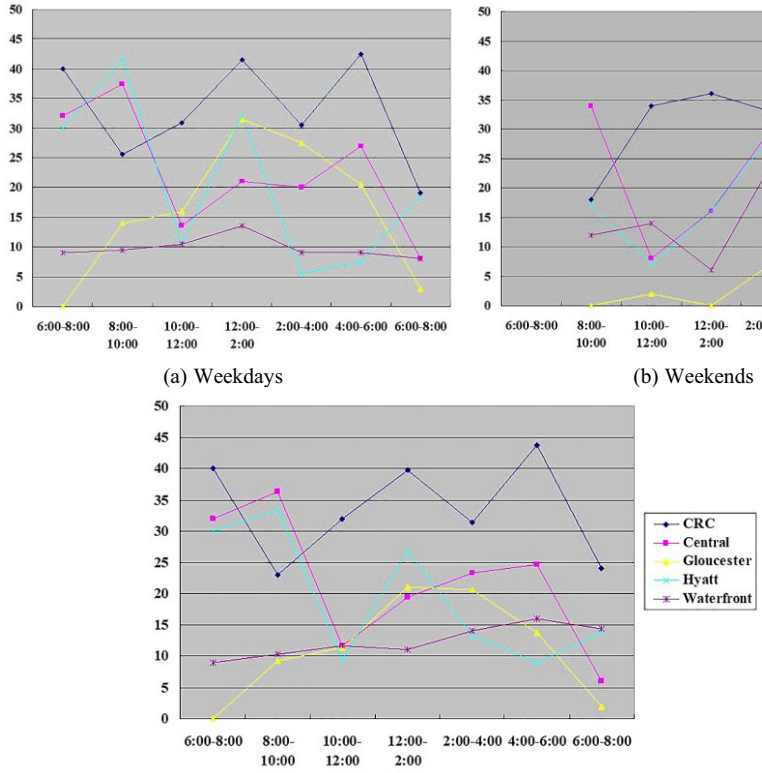
Figure 3. Distribution of mean use of Type B open spaces.

- Type C: Gardens

Compared to pocket parks, the selected gardens are characterized by their larger size, better design quality and richer landscape and natural environment (Figure 4):

The graphs show that there is no consistent distribution of mean use across the five sample spaces, meaning that the mean use of different spaces fluctuates in different periods. However, in general, CRC Garden tends to have higher mean use during the day than in other cases, while Fenwick Pier Street Waterfront tends to be under-utilized at all times of the day.

A similar use pattern can be seen when looking only at the mean use on weekdays. As shown (Figure 4), in three cases (CRC Garden, Central Plaza Garden and Hyatt Hotel Garden) the mean use peaks between 8:00 am and 10:00 am, 12:00 pm and 2:00 pm, and 4:00 pm and 6:00 pm, while in the other two samples the mean use peaks only at noon. On weekends, however, a different distribution pattern of mean use is observed. That is, CRC has the highest level of use, while Gloucester Road Garden is barely used, and the remaining three gardens show alternating higher numbers of users at different times.



(a) Weekdays

(b) Weekends

(c) All data

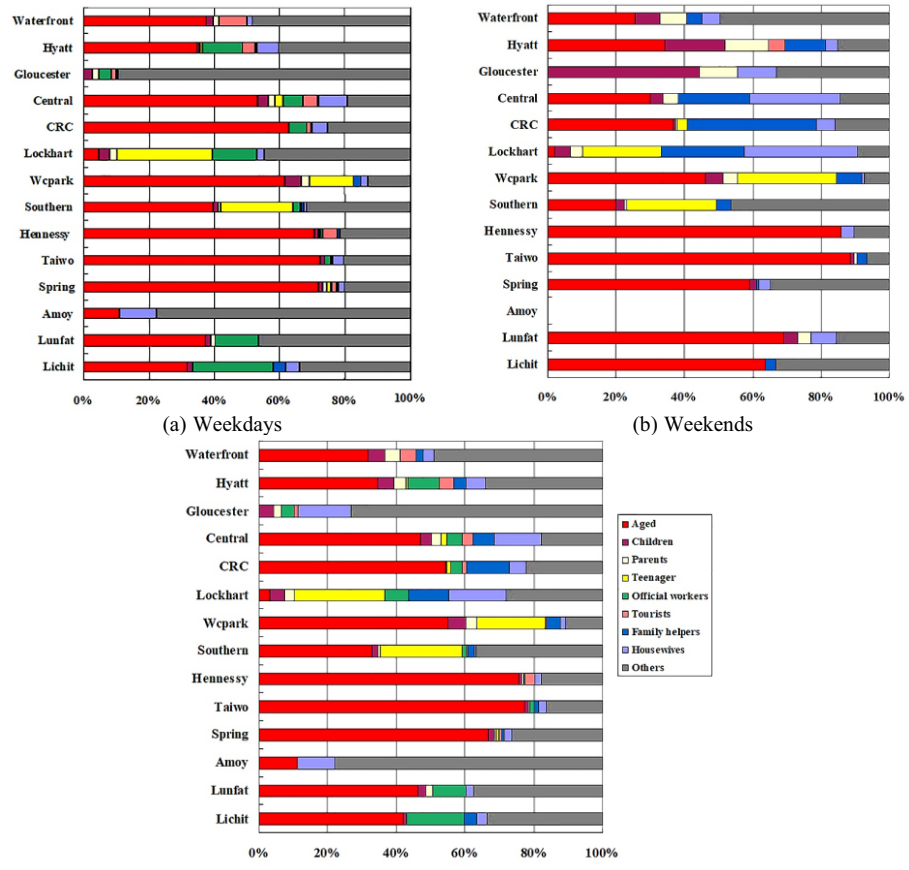
Figure 4. Distribution of mean use of Type C open spaces.

3.3. User Profiles within the Sample Spaces

Another way of assessing the performance of open spaces is to examine their user profile. As shown by Figure 5, the aged are the main users of most of the selected spaces, accounting for 40.2% of the total number of users across all samples, implying that the recreational open spaces in Wanchai District are predominately used by the aged. In addition, in six of the 14 samples, the aged account for more than 50% of all users. These samples are Spring, Taiwo and Hennessy SOAs, Wanchai Park, CRC Building Garden and Central Plaza Garden, while in the other five cases, including Lichit and Lunfat SOAs, Southorn Playground, Hyatt Hotel Garden and Fenwick Pier St. Waterfront, about 30%-45% of the users are the aged. On the other hand, in the remaining three cases, there are few elderly users during the day.

Teenagers are another important category of users in Hong Kong, accounting for 16.3% of all sample users. However, they are mainly recorded in Type B spaces. In addition, office workers are recorded in 11 sample spaces, accounting for 2.2% of all sample users, and are mainly present during lunchtimes on weekdays. In contrast, foreign family helpers account for 3.82% of the total number of users in all sample spaces, appearing mainly on Sundays, housewives account for 3.44% and “others” account for 29% of the total. “Others” in this study mainly refer to those who are not easily identifiable, but who are mostly men aged between 40 and 50.

The weekday user profile is similar to the analysis of all data. The aged continue to be the main users in the space, accounting for 44.3% of the total number of users in all sample spaces. Compared to the user profile on weekdays, different characteristics are illustrated on weekends. Firstly, there are fewer categories of users. Secondly, the aged continue to be the main users of most spaces, accounting for more than 50% of the total in five cases, namely Lichit, Lunfat, Spring Garden Lane, Taiwo and Hennessy Road SOAs, and 20-45% of the total in six cases, with the remaining three spaces rarely used by the aged. Another important category using these spaces on weekends is foreign family helpers. They are recorded in ten sample spaces, representing between 5% and 40% of all users. Of these, CRC Garden is the most popular destination for domestic helpers, whose mean number accounts for 40% of the whole day. The other two most popular spaces for family helpers are Central Plaza Garden and Lockhart Playground, whose mean number account for 20% and 25% of all users respectively. The third feature is that, on weekends, the three playgrounds tend to be occupied by teenagers, who account for 30% of all users. In addition, there is a higher proportion of housewives and children and their parents on weekends than on weekdays in the 10 sample spaces.



(a) Weekdays

(b) Weekends

(c) All data

Figure 5. User profiles of the sample spaces.

The above analysis can be summarized as follows:

- The aged are the main users of the sample spaces in Wanchai District, accounting for 40% of the total number of users, with six cases exceeding 50% and five cases ranging from 25% to 35%. Three open spaces have a consistent proportion of teenagers both on weekdays and weekends, and all are playgrounds.
- The user profile on weekdays is more diverse than on weekends.
- Some office workers are recorded in 11 spaces on weekdays, but they represent only a small proportion of all users. This finding differs from previous studies where office workers have always been found to be the main users of urban spaces.
- On weekends, the number of foreign family helpers and housewives increases significantly in the 10 sample spaces, accounting for 9.38% and 5.1% of the total number of users respectively. Similarly, the number of children and their parents increases slightly on weekends, implying that recreational open spaces are optional places for family activities.

4. Discussion and Conclusions

(1) Open spaces in Wanchai show different patterns of use, which are somehow related to their types and locations.

(2) Of all the sample open spaces, playgrounds as a whole exhibit a much higher mean use than the rest, implying that the sports facilities within them may attract an extra number of users, such as teenagers. The distribution of mean use in pocket parks (SOA) is consistent, meaning that the spaces with more users on weekdays also have higher levels of use on weekends. Also, the spaces with higher mean use during peak hours have higher mean use during off-peak hours. This implies that the mean use of pocket parks tends to be independent of the operational state of the surrounding facilities and the presence of different user groups. In contrast, the distribution of mean use of Type C open spaces is not consistent throughout the day. That is, different sample spaces show higher levels of use at different times of the day. In other words, the use of the Type C sample spaces is more purposeful than impulsive.

(3) The aged are the main users of open space in Wanchai District, reflecting the possible lack of community facilities. Older people in the community can only concentrate on the open space in the city center for leisure and social activities, which leads to a certain crowding out of use by women and office workers.

(4) While there is still a need to increase the provision of open space in the Wanchai District, the efficiency of the use of the gardens north of Gloucester Road should be improved. As most of these gardens are privatized public spaces, improvement measures include improving the accessibility of these open spaces and strengthening the links to the urban road network. At the same time, the openness of these gardens should be increased by providing more facilities to encourage users to stay, rather than allowing them to become a tool for private developers to gain plot ratio incentives.

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