

Utilization of Public Space in Public Rental Housing Estates

Under the Outbreak of COVID-19

Supervisor: Dr. LEE Wai Ying, Joanna

Research Background

- The outbreak of COVID-19 in Hong Kong has affected numerous residents in public rental housing (PRH) estates
- Shrouded in fear of infection, residents' utilization of public spaces in PRH estates are believed to be affected
- The research provides an overview of utilization of public spaces in PRH estates
- The findings contribute to future planning of public spaces in PRH estates to enhance the resilience of the low-income community

Research Objectives

- To understand the type and distribution of public spaces in PRH estates
- To investigate utilization level and activities carried out in public spaces in PRH estates during the pandemic
- To evaluate whether the purposes of public spaces (in terms of public health and social interaction) are achieved through utilization during the pandemic.
- To identify the reasons affecting utilization in public spaces in PRH estates during the pandemic
- To provide recommendations on the planning of public spaces in PRH estates to be addressed in future

Research Questions (RQs)

- What are the physical settings of the public spaces in PRH estates?
- How is the utilization of public spaces in PRH estates affected by the pandemic?
 - What is the mode of utilization of public spaces in PRH estates under the pandemic?
 - What is the effectiveness of utilization of public spaces in PRH estates under the pandemic?
- What are the reasons that explain utilization of public spaces in public rental housing estates during the pandemic?
- What could be done to improve the public spaces in PRH estates in future?

Mode of Utilization?

Usage, user behavior and activities

Dimensions	Measurements
User	Quantity; Type; Temporality
Activity	Frequency; Diversity; Adaptability

(Bunawardi et al., 2016; Civic Exchange, 2018; PPS, n.d.; Putriatami et al., 2020; Wojnarowska, 2016)

Effectiveness of Utilization?

Outcomes Achieved

Dimensions	Measurements
Social Interaction	Form; Intensity
Public Health	Perceived Health Benefits

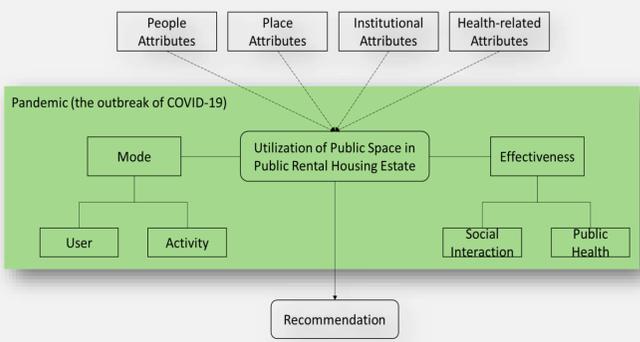
(Gehl, 1987; Ludvigsen, 2005; O' Connor, 2020)

Attributes Affecting Utilization?

Attributes	Measurements
People	Age; Gender; Education; Employment
Place	Accessibility; Environment; Preference Against Non-local Public Spaces
Institutional	Governance
Health-related	Perceived safety; Cleaning Facilities; Personal Space

(Bunawardi et al., 2016; Civic Exchange, 2018; HKPSI, n.d.; James, 2020; Kan, 1975; O' Connor, 2020; Pasaogullari & Doratli, 2004; Rahman et al., 2018; Schipperijn et al., 2010)

Conceptual Framework



Data Collection

- Questionnaires were distributed to all residents in PRH estates
- Observation in Choi Hung, Tsz Lok and On Tat to provide periphery data
- Interviews were conducted with PRH estates in select estates
- Secondary sources were analyzed to support discussion section

Data Analysis

- Paired-sample t-test** for comparing change of utilization during the pandemic
- Independent sample t-test** for comparing utilization between genders
- One-way ANOVA** for comparing utilization between age, employment and education groups
- Correlation analysis** between utilization and place/institutional/health-related attributes
- Qualitative analysis** based on interviews, questionnaires and secondary sources

Major Findings

Type of public spaces

- Playground
- Sit-out area
- Sport ground
- Open space
- Elderly Facilities

Distribution of public spaces

Choi Hung	Tsz Lok	On Tat
Scattered	Divided into three clusters	Divided into two parts situated around the site

Mode of Utilization: User

Quantity	Number of uses per month	Number of users
	1 to 3 times*	56 to 184
	Average staying time	
	Less than 0.5 hours*	

Number of uses during the pandemic

Main User Groups

Lower educational attainment Retired and Homemakers	Elderly Male	Elderly and Children Female
Day variation	Day variation	Day variation
Reduce the use at weekend more than on weekdays, compared to before the pandemic	More users at weekend	Vary among estates
Temporality	Temporality	Temporality
	Reduce the use at weekend more than on weekdays, compared to before the pandemic	Vary among estates

*Significant difference found between before and during the pandemic at 0.01 level

Mode of Utilization: Activity

Frequency	Main activities	High-risk activities found
	Passing by (83%) Walking (43%) Killing time by oneself (36%) Relaxing or resting (28%)	Passing by; Relaxing or resting Socializing; Team sports

Diversity	Adaptability														
Significant drop in pair 1,4,5,6 during the pandemic	Lower participation in special events														
<table border="1"> <thead> <tr> <th>Activities</th> <th>T-value</th> </tr> </thead> <tbody> <tr> <td>Pair 1: Optional</td> <td>9.84*</td> </tr> <tr> <td>Pair 2: Necessary</td> <td>-1.14</td> </tr> <tr> <td>Pair 3: Individual</td> <td>2.21</td> </tr> <tr> <td>Pair 4: Social</td> <td>9.77*</td> </tr> <tr> <td>Pair 5: Active</td> <td>7.31*</td> </tr> <tr> <td>Pair 6: Passive</td> <td>9.13*</td> </tr> </tbody> </table>	Activities	T-value	Pair 1: Optional	9.84*	Pair 2: Necessary	-1.14	Pair 3: Individual	2.21	Pair 4: Social	9.77*	Pair 5: Active	7.31*	Pair 6: Passive	9.13*	
Activities	T-value														
Pair 1: Optional	9.84*														
Pair 2: Necessary	-1.14														
Pair 3: Individual	2.21														
Pair 4: Social	9.77*														
Pair 5: Active	7.31*														
Pair 6: Passive	9.13*														

*Significant difference found between before and during the pandemic at 0.01 level

Factor Affecting Utilization

Attributes significantly correlated with at least half of the modes or effectiveness of Utilization

1. Perceived Safety	2. Cleaning Facilities	3. Personal Space
4. Accessibility	5. Preference	6. Environment
7. Governance	8. Employment	9. Education

- It is the overriding factor.
- It contributes to perceived cleanliness.
- It contributes to perceived safety.
- 4+5. Accessible places provided for low-income users leads to reducing travel time to recreational spaces which reduce risks of infection.
- Air ventilation enhances perceived safety. The presence of greening as biophilic design enhances perceived mental benefits.
- Security guards prevent social distancing and gathering measures which enhances perceived safety of using and interacting with other estate residents.
- The retired and homemakers brought their (grand)children to the site for relieving "boredom".
- People with lower educational attainment are less concerned about the risks and use public spaces more often.

Effectiveness of Utilization

Form	Mean Value of Drop
Collective Action	3.94
Dialogue	3.69
Shared Focus	3.01
Distributed Attention	3.59

Intensity	Mean Value of Drop
Family or Friends	3.48
Acquaintances or strangers	4.03

Stronger mental benefits than physical benefits

Perceived Benefits	Mean Value
Physically before pandemic	3.82
Mentally before pandemic	3.81
Physically during pandemic	3.04
Mentally during pandemic	3.28

Implications

- Open, large public spaces that enable shared focus, better air ventilation, and personal space
- Multi-level elevated public spaces that enhance personal space within the estate with limited spaces
- Revision of the Planning Standards and Guidelines
 - Personal space
 - Role of public spaces in PRH estates as both individually-oriented and community-oriented