Park users’ perception and preference of public park in Bogor City post Large Scale Social Restriction (LSSR)

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Abstract. On 31st March 2020, Indonesia pulls out a large scale social restriction (LSSR) policy to depress the spread of Covid19. The regulation leads to the lay-off of schools, workplaces, worship places, and public facilities, including public parks. Despite the time, it is only a matter of time until the new normal and reopening of all public facilities. For that, public parks as public facilities should be prepared in a way before it is reopened so as not to worsen the situation or even create a new pandemic wave. It is an excellent opportunity to build better by applying health protocol for a healthier future, and transforming the future sustainable landscape. This research is studying two public parks in Bogor City, a satellite city of the megapolitan Jakarta area, which affected the most by Covid19, i.e.,, Sempur Park and Kencana Park. This research aims to explore users’ perceptions and preferences of using public parks to plan health protocol for public parks in the new normal era. Data collected through an online questionnaire survey. As much as 192 responses are analyzed. Data and instruments are valid and reliable, with an overall Cronbach alpha value of 0.896. Results showed that the perception of park use pre-LSSR and post-LSSR was significantly different. The trend of park use was similar but at different levels. This indicates that the motivation and willingness to visit and use public parks is decreasing, therefore applying health protocol is a necessity in the future. This study also found that existing parks perceived to be quite appropriate in accordance with health protocols and need to be moderately modified. Another finding was that the considered most required health protocols application were procurement of handwashing facility, park benches placed at least 1 meter apart, and solitary park bench. It is elicited that despite the type of park, the visitors’ preference was the same.

Keywords: health protocol, new normal, parks, perception, preference

1. Introduction
The Covid-19 pandemic is a global threat that affects health, economic, and social aspect. On 30th January, WHO declared the Covid-19 outbreak as a public health emergency of international [1]. With thousands of cases reported all over the world within one month, and still increasing, the declaration announced along with various recommendations regarding early detection of infection, isolating and treating infected patients, contact tracing, and social distancing measures that correspond to the level of risk in each country, with hope to slow down and hopefully limit the virus spread. To contain the COVID-19 epidemic, one of the non-pharmacological control measures is reducing the transmission rate in the population through (physical) social distancing [2]. Social distancing measures were initially introduced by the World Health Organization in response to the exponentially global coronavirus spread. The measures were general and were subject to governments’
interpretations, so they may respond to the level of risk in each country or even local neighborhood. These interpretations range from minor physical distancing measures to lockdown. On 31st March 2020, Indonesia pulls out a large-scale social restriction (LSSR) policy to depress the spread of Covid19, which leads to the closures of schools, workplaces, worship places, and public facilities, including public parks. Social distancing is widely recognized as the most effective approach to depress COVID-19 cases [3][4], yet it has simultaneously disrupted the daily lives of entire humankind wherever it was implemented [5].

During these extraordinary circumstances of social distancing, urban nature offers resilience for maintaining well-being [5] by providing opportunities to escape from household confinement and enjoy well-being positivity [6], provide a connection with nature and the outside world [7], also maintain social relationships even with limited distance [8]. Cities’ nature areas are proven repeatedly played a crucial security role in times of crisis [9][10]. One example is public park. Public park is a free accessed place which lets people be in touch with nature and able to do many various activities at the place. Parks offer a unique setting within the urban landscape, present opportunities for nature enjoyment, physical activity, social interaction, and escape [11]. Park visitation as a recreational activity is a form of nature-based tourism, by definition, is undertaken in a natural setting where either the recreational activity or visitor experience depends on, or is enhanced by, the natural environment [12]. Physical elements and activities at public open space significantly proven to offer many benefits to quality of life such as health, social interaction, and economic value and its quality relate to the usability depend on people needs and perception which if not meet, public open space becomes useless and unsuccessful [13].

Despite the time, it is only a matter of time until the new normal and reopening of all public facilities. For that, public parks as public facilities should be prepared in a way before it is reopened so as not to worsen the situation or even create a new pandemic wave, as the likelihood of new pandemic outbreaks is continuously on the rise, partly because humanity is continuing to urbanize [5]. Planners may see this as an excellent opportunity to build better by applying health protocol for a healthier future and as a transformation for the future sustainable landscape.

Perception provides an essential basis for the planning and management of green open spaces including parks without exception [2]. However, studies showed that human perception of the environment is subjective and personal. It differs from person to person [14]. Thus the benefits derived from urban green spaces and its objective properties are interpreted individually [15]. Attributes such as safety, aesthetics, amenities, maintenance, and proximity are essential for encouraging park use [16]. Therefore, the analysis of perceptual information on green spaces is necessary. This research aims to explore users’ perceptions and preferences of using public parks in order to plan health protocol for public parks in the new normal era. Objectives of this study are: 1) discover distinction of public parks use in pre-LSSR and post-LSSR period, 2) identify users’ perception of existing parks regarding health protocol, and 3) acquire preference of health protocol application in public parks.

2. Methods
The authors studied two parks in Bogor City, West Java, Indonesia, named Sempur Park and Kencana Park. Kencana Park is a general public park; meanwhile Sempur Park is sports thematic public park. Both are very well-known parks that many people visit from all over Bogor, also from outside the city, thus chosen for this study. Sempur Park is located in the center of Bogor City, next to Bogor Botanical Garden, while Kencana Park is located 350
meters north of Sempur Park. With 1,25 hectares of area, Sempur Park offers running tracks, grass fields, children’s playground, reading corner, basketball court, rock climbing, skateboard arena, and culinary area. Kencana Park has a 4,795,56 m² area with a leafy and calm ambiance, which is excellent for relaxing and sightseeing. On the other hand, Kencana Park also offers a culinary area which serves much traditional foods of Bogor. Hence many visitors visit this park for its food. Activities in Sempur Park are mainly active, while activities in Kencana Park are generally passive.

Table 1 Question items perception and preference variables

| Variables                              | Sempur Park                              | Kencana Park               |
|----------------------------------------|------------------------------------------|---------------------------|
| Perception of Park Use                 | To rest or relax.                        |                           |
|                                        | Connection with nature.                  |                           |
|                                        | Close to living quarters.                |                           |
|                                        | To see the iconic structure.             |                           |
|                                        | Work or work reasons.                    |                           |
|                                        | To socialize (get together, chat, meet new people). |   |
|                                        | To taste various culinary delights.      |                           |
|                                        | For sports or physical exercise.         |                           |
|                                        | To see a festival or event.              |                           |
|                                        | To shop.                                 |                           |
|                                        | To find joy.                             |                           |
|                                        | Because of the view.                     |                           |
|                                        | To show it off on social media.          |                           |
|                                        | Just looking around.                     |                           |
| Perception of Existing Health Protocol in Public Parks | Hygiene facilities | Hygiene facilities |
|                                        | Pedestrian                              | Pedestrian                |
|                                        | Park benches                            | Park benches              |
|                                        | Grass fields                            | Spaciousness              |
| Perception of Existing Health Protocol in Public Parks | Running track | Vegetation arrangements |
|                                        | Basketball court                        | Sitting area              |
| Perception of Existing Health Protocol in Public Parks | Plaza in Expression park | Plaza |
|                                        | Sitting area in Expression park          |                           |
| Perception of Existing Health Protocol in Public Parks | Skateboard arena. |                           |
|                                        | Woodhouse in Kaulinan park.              |                           |
| Perception of Existing Health Protocol in Public Parks | Park benches in Kaulinan park |                           |
| Perception of Existing Health Protocol in Public Parks | Playground in Kaulinan park |                           |
| Perception of Existing Health Protocol in Public Parks | Canteen area |                           |
| Preference of Health Protocol Application for Public Parks | Procurement of hand washing facility | Procurement of hand washing facility |
| Perception of Existing Health Protocol in Public Parks | Solitary park bench | Solitary park bench |
| Perception of Existing Health Protocol in Public Parks | Park benches placed at least 1 meter apart | Park benches placed at least 1 meter apart |
| Perception of Existing Health Protocol in Public Parks | Vegetation hedge as space/seat dividers | Vegetation hedge as space/seat dividers |
| Perception of Existing Health Protocol in Public Parks | Use of less dense vegetation to maximize sunlight | Use of less dense vegetation to maximize sunlight |
| Perception of Existing Health Protocol in Public Parks | One entrance - one exit | One entrance - one exit |
| Perception of Existing Health Protocol in Public Parks | Usable running track reduction | Wider pedestrian (at least 2 meters) |

This study was conducted through several steps namely preparation, data collection through a questionnaire survey, and statistical analysis. Before the analysis is carried out, a
series of tests are carried out on the data to ensure that the data obtained is good, robust, and sufficient for further statistical analysis. The analysis used in this research are descriptive analysis, correlation analysis using Spearman correlation test, and comparative analysis using Mann Whitney test. Mann Whitney and Spearman analysis were conducted to comprehend park users’ perception and preference thoroughly.

The questionnaire survey was conducted in June-July 2020. The questionnaire was spread online due to the impossibility of face-to-face interviews regarding the pandemic. This potential bias should be minded concerning study results. Hence, the questionnaire was spread widely through various social media, messages, and mouth-to-mouth to high schools, workplaces communities, neighborhood communities, universities, and many other communities within Bogor city. They were thus reaching an expansive and diverse range of the city’s society. Respondents were selected using a snowball sampling technique. Respondents are adult citizens of Bogor who have visited both parks and willing to fill the questionnaire. The questionnaire consists of demography variables (i.e., age, gender, domicile residence, marital status, educational background, occupation), visitation characteristics (i.e., distance, companion, frequency, length of stay, time, transportation), also perception and preference variables. Demography and visitation characteristics questions were asked in multiple-choice questions, while perception and preference questions were asked in 5-scale Likert. The same set of park use perception questions were asked for the pre-LSSR and post-LSSR periods to distinguish the differences. Questions of perception and preference variables are listed in Table 1.

Perception and preference about health protocol were asked through a questionnaire with representing photos. Question items in the perception variable are arranged based on the existing park facilities in each park. The results were assessed by the mean value of each question item and categorized into five assessments, as shown in Table 2. Question items in the preference variable asked were health protocols which possible to apply in the park, arranged according to the existing facilities in each park. Health protocol preferences asked in this study are in the respects of landscape architecture perspective, which are limited to applications in spatial planning and landscape elements i.e., hardscape and softscape elements.

| Mean Value | Rank           | Action           |
|------------|----------------|------------------|
| 1,00 ≤ M ≤ 1,80 | Very inappropriate | Total modification |
| 1,80 ≤ M ≤ 2,60 | Inappropriate    | Major modification|
| 2,60 ≤ M ≤ 3,40 | Quite appropriate | Moderate modification|
| 3,40 ≤ M ≤ 4,20 | Appropriate      | Minor modification|
| 4,20 ≤ M ≤ 5,00 | Very appropriate | No modification  |

This survey managed to gather 231 responses in total with 192 completed responses, thus the margin of error level is 7.04%, and the confidence level is 95%. All respondents were Bogor citizens. The result showed that the research instrument is valid and reliable with a Cronbach alpha value of 0.896. Comparison analysis was conducted using the Mann Whitney test with a threshold of Asymp. Sig < 0.05. Correlation analysis was conducted to explore the correlation between perception and preference variables with demography and visitation characteristics variables using Spearman analysis with a threshold of Sig. < 0.05.
3. Results and discussions
3.1. Demography and visitation characteristics

Of 192 respondents, as many as 87 respondents were male (45.3%) and 105 people were female (54.7%). A total of 13 people were under 20 years old (6.8%), 95 people aged 20-29 years (49.5%), 29 people aged 30-39 years (15.1%), 27 people aged 40-49 years (14.1%), 26 people aged 50-59 years (13.5%), and 1% aged 60 years or more. Most of respondents were married and had children (52.6%), while 35.9% were unmarried, 9.9% married but did not have children, and others for 1.6%. Respondents’ educational background were varying. As much as 2.1% graduated from junior high school / equivalent, 12.5% were high school graduates / equivalent, more than half of the respondents (59.4%) had diploma or bachelor degree, 21.4% were master graduates, and 4.7% of respondents had doctoral degree. Most of the respondents were private employees (37%). Others were students (15.6%), civil servants (14.6%), self-employed (13.5%), housewives (10.9%), educational staff (3.1%), freelance workers or not working (2.1%), and others (3.1%). The demographics of respondents can be seen in Figure 1. It can be concluded that visitors are generally women aged 20-29 who are married and have children, work as private employee with a diploma or bachelor degree.

**Figure 1** Respondents’ demography

**Figure 2** Visitation characteristics of Sempur Park
In general, visitors of Sempur Park were domiciled in areas more than 3 km from the park. Visitors usually came by a private car with their family in the morning, between 07.00 - 10.00 AM. Visitors regularly visited Sempur Park once a month or less and spent 1-2 hours in the park. Visitation characteristics of Sempur Park is shown in Figure 2. Similar to Sempur Park, visitors of Kencana Park were also live in areas more than 3 kilometers from Kencana Park, usually visited the park by driving private car along with the family in the morning, between 07.00 – 10.00 AM once a month or less. However, the LOS of Kencana Park is shorter. Visitors mostly spent less than an hour in this park. This is probably because the size of Kencana Park is smaller than Sempur Park, and because Sempur Park offers more complete facilities than Kencana Park such as sport facilities and children playground. Visitation characteristics of Kencana Park is shown in Figure 3.

![Figure 3 Visitation characteristics of Kencana Park](image)

Further, this study would like to distinguish visitation characteristics of both parks. Figure 4 shows the comparison between the two parks. Mann Whitney analysis was conducted with results shown in Table 3. Results showed that visitation characteristics between Sempur Park and Kencana Park were significantly different in frequency, LOS, and
time visit. This may be due to different function of the two parks. Kencana Park is general park while Sempur Park is sports thematic park. Sempur Park often used for jogging therefore morning intensity is high. Moreover, usually flea market is held every weekend morning, thus many visitors came.

3.2. Perception of park use

Pre-LSSR, users usually visited Sempur Park for physical exercise (M = 4.12 SD = 0.819), to found joy (M = 3.73 SD = 0.868), and gastronomic reasons (M = 3.71 SD = 1.043). After the LSSR, the user’s motivations to visit Sempur Park were for physical exercise (M = 3.69 SD = 1.041), to connect with nature (M = 3.31 SD = 1.114), and to enjoy the scenery (M = 3.24 SD = 1.067). For Kencana Park, users visited Kencana Parkpre-LSSR mainly for gastronomic reasons (M = 3.92 SD = 0.950), to rest or relax (M = 3.44 SD = 1.091), and found joy (M = 3.44 SD = 1.037). Post-LSSR, users stated that they might visit Kencana Park for gastronomic reasons (M = 3.53 SD = 1.121), to find joy (M = 3.10 SD = 1.153), and to rest or relax (M = 3.04 SD = 1.186). The Mann Whitney test was conducted to determine differences in perceptions of park use pre-LSSR and post-LSSR. The results showed that the perception of public park use in general differed that significantly (p = 0.003 α = 0.05). Comparison test was also carried out for each park, namely Sempur Park and Kencana Park. The study showed that perceptions of the use of Sempur Park before and after LSSR (p = 0.000 α = 0.05) and Kencana Park before and after LSSR (p = 0.027 α = 0.05) also differed significantly, as shown in Table 4. This proves that Covid19 changes perception of public parks use. It was apparent the trends for pre-LSSR and post-LSSR were similar, but at different levels. This indicates that the people’s motivation and willingness to visit and use public parks is decreasing, despite the prohibition of using public places by the government, therefore applying health protocol on the design is a necessity.

| Table 3 | Comparison analysis of visitation characteristics |
| Distance | Companion | Frequency* | LOS* | Time Visit* | Transportation |
| Mann-Whitney U | 18322,0 | 18384,5 | 15998,0 | 14696,0 | 14367,0 | 18165,5 |
| Wilcoxon W | 36850,0 | 36912,5 | 34526,0 | 33224,0 | 32895,0 | 36693,5 |
| Z | -0,130 | -0,047 | -3,046 | -3,778 | -4,188 | -0,263 |
| Asymp. Sig. (2-tailed) | 0,896 | 0,962 | 0,002 | 0,000 | 0,000 | 0,793 |

Grouping Variable: Park
*Significantly different at 95% level

| Table 4 | Comparison analysis of park use perception pre-LSSR and post-LSSR |
| Sempur Park | Kencana Park | Public Park |
| Mann-Whitney U | 14500,000 | 16022,500 | 15169,500 |
| Wilcoxon W | 33028,000 | 34550,500 | 33697,500 |
| Z | -3,616 | -2,216 | -3,000 |
| Asymp. Sig. (2-tailed) / (p) | 0,000 | 0,027 | 0,003 |

Spearman rho's correlation coefficient was conducted to identify factors that affect perception, by assess the relationship between perception variables, pre-LSSR and post-
LSSR, with demographic variables and visitation characteristic variables. Results shown in Table 5. The results indicated that prior to LSSR, the older the visitor is, married, the longer the LOS, the lower the frequency of visits to the park, and the male gender, had higher motivation and a better perception of park use. While after the LSSR, the older the visitors, the closer home range, the lower the frequency of visits to the park, and the male gender is more likely to visit public parks in LSSR period. This is due to the decreasing people’s motivation to visit public places, and probably correlates with the LSSR regulation which lowers people’s mobility thus only people in the neighborhood will visit, either to stop by or only pass by.

3.3. Perceptions about suitability of health protocols in public parks

In addition to understand the user’s perceptions of using public parks post-LSSR, this study also analyzes user’s perception of the suitability of existing facilities in the park regarding Covid-19 health protocol. The results showed that visitors perceived the existing Kencana Park facilities (M = 3.283 SD = 0.733) as a whole to be slightly better than Sempur Park (M = 3.121 SD = 0.683), although both parks considered in the same category, which is quite appropriate in accordance with health protocols and necessarily modified moderately. Area setting of Kencana Park was more detached while Sempur Park was more open thus allows crowding. The vegetation arrangements (M = 3.54 SD = 0.824) and pedestrians (M = 3.44 SD = 0.872) in Kencana Park were deemed appropriate and only minor modification needed to meet health protocols. Meanwhile, cleanliness facilities (M = 3.32 SD = 0.992), park benches (M = 3.20 SD = 1.026), spaciousness (M = 3.18 SD = 0.978), sitting area (M = 3.15 SD = 0.978), and the plaza (M = 3.14 SD = 0.979) is considered quite suitable and needs moderate modification. There were no elements that are considered inappropriate and very inappropriate in Kencana Park.

Table 5 Factors affect perception of park use

|                | PRE-LSSR |                  | N  | POST-LSSR |                  | N  |
|----------------|----------|------------------|----|-----------|------------------|----|
|                | Correlation Coefficient (r) | Sig. (2-tailed) / (p) | N  | Correlation Coefficient (r) | Sig. (2-tailed) / (p) | N  |
| Park           | -157**   | 0.002            | 384 | -0.083    | 0.103            | 384 |
| Age            | 186**    | 0.000            | 384 | 246**     | 0.000            | 384 |
| Gender         | -107*    | 0.035            | 384 | -106*     | 0.038            | 384 |
| Status         | 126*     | 0.013            | 384 | 0.061     | 0.235            | 384 |
| Education      | 0.055    | 0.282            | 384 | 0.084     | 0.100            | 384 |
| Occupation     | -109*    | 0.033            | 384 | -103*     | 0.043            | 384 |
| Distance       | 0.073    | 0.153            | 384 | 0.107*    | 0.036            | 384 |
| Companion      | -0.035   | 0.494            | 384 | -0.083    | 0.015            | 384 |
| Frequency      | -119*    | 0.019            | 384 | -120*     | 0.019            | 384 |
| LOS            | 161**    | 0.002            | 384 | 0.065     | 0.204            | 384 |
| Time visit     | -0.089   | 0.082            | 384 | -0.058    | 0.025            | 384 |
| Transport      | 0.086    | 0.092            | 384 | 0.057     | 0.267            | 384 |
| Pre            | 186**    | 0.000            | 384 | -107*     | 0.035            | 384 |
| Post           | 246**    | 0.000            | 384 | -106*     | 0.038            | 384 |

**. Correlation is significant at 0.01 level (2-tailed).
*  Correlation is significant at 0.05 level (2-tailed).
On the other hand, for Sempur Park, visitors perceived that only the grass field (M = 3.65 SD = 0.849) and the running track (M = 3.62 SD = 0.872) were compliant with the health protocol so that only minor modification needed. Meanwhile, pedestrians (M = 3.38 SD = 0.913), basketball court area (M = 3.26 SD = 0.828), hygiene facilities (M = 3.20 SD = 1.004), plazas in expression parks (M = 3.12 SD = 0.887), skateboard arena (M = 3.07 SD = 0.857), sitting area in expression park (M = 3.01 SD = 0.963), park benches in grass field (M = 2.99 SD = 1.021), park benches in Kaulinan Park (M = 2.92 SD = 0.965), playground in Kaulinan Park (M = 2.87 SD = 0.968), wood house in Kaulinan Park (M = 2.84 SD = 1.003), and canteen area (M = 2.65 SD = 0.965) is categorized as quite appropriate and needs moderate modification.

3.4. Preference of health protocol application in public parks

After acquire user’s perceptions of the existing park facilities suitability regarding health protocol, this study also tried to identify what kind of health protocols visitors preferred and desired. This study discovered that preference for health protocol application in both parks has a similar trend. This suggests that despite the type of the park, the preference is the same. Results showed that procurement of hand washing facility is the most preferred (Sempur Park: M = 4.40 SD = 1.211, Kencana Park: M = 4.46 SD = 1.033), followed by park benches placed at least 1 meter apart (Sempur Park: M = 4.20 SD = 1.172, Kencana Park: M = 4.24 SD = 1.017), and solitary park bench (Sempur Park: M = 4.07 SD = 1.180, Kencana Park: M = 4, 16 SD = 1.062). Comparison test was carried out to confirm this similar preference trend between Sempur Park and Kencana Park (α = 0.05). The results are presented in Table 6. The test confirmed the hypothesis that whilst the type of park is different, the preferences are the same.

| Item 1 | Item 2 | Item 3 | Item 4 | Item 5 | Item 6 | Item 7 |
|--------|--------|--------|--------|--------|--------|--------|
| Mann-Whitney U | 18208,5 | 17993,5 | 18123,5 | 17620,5 | 16424,5 | 18089,5 | 11526,5 |
| Wilcoxon W | 36736,5 | 36521,5 | 36651,5 | 36148,5 | 34952,5 | 36617,5 | 30054,5 |
| Z | -0,257 | -0,435 | -0,313 | -0,773 | -1,913 | -0,334 | -6,563 |
| Asymp. Sig. (2-tailed) | 0,797 | 0,663 | 0,755 | 0,439 | 0,056 | 0,738 | 0,000 |

a. Grouping Variable: Park

4. Conclusion

This study adds to the knowledge of perception and preference study of landscape architecture. It also provides subsidiary comprehension for the future sustainable landscape, especially regarding health protocol, which is currently an essential issue due to the Covid-19 pandemic. This study is useful as direction and consideration in city landscape development. This study found that the park use perception of Sempur Park and Kencana Park between pre-LSSR and post-LSSR have similar trends but differed significantly. This indicates that the people’s motivation and willingness to visit and use public parks is decreasing, therefore applying health protocol on the park redesign is a necessity. The results indicated that before LSSR, the older the visitor is, married, the longer the LOS, the lower the frequency of visits to the park, and the male gender had higher motivation and a better perception of park use. While after the LSSR, the older the visitors,
the closer the home range, the lower the frequency of visits to the park, and the male gender is more likely to visit public parks in the LSSR period. This study also tried to convey visitors’ perception about the suitability of existing park with health protocol. It is discovered that visitors perceived Kencana Park to be slightly better than Sempur Park, although both parks considered to be quite appropriate in accordance with health protocols and necessarily modified moderately. It is also elicited that visitors’ preference is the same for any kind of parks and the considered most required health protocols application are procurement of handwashing facility, park benches placed at least 1 meter apart, and a solitary park bench. It is suggested to provide these elements in every park as the primary standard required health protocol for public parks.

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