

Optimizing the Role of Urban Open Space in Supporting the Increasing of Public Awareness and Compliance with Health Protocols during the Pandemic

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ABSTRACT

The level of the spread of covid-19, which is still high in the city of Semarang, indicates the low level of public awareness in complying with health protocols. The role of urban open space in Semarang City needs to be optimized to support this effort by adding several facilities that did not exist before the pandemic, so that people comply with health protocols, wear masks, wash their hands frequently and maintain physical distance when carrying out their social activities. The aim of this study is to determine how to optimize the role of public open space in supporting efforts to maintain the health of urban communities based on public awareness in complying with health protocols when doing activities. The research was conducted in three open spaces in Semarang, Indonesia, using survey methods and a descriptive qualitative analysis by observing the physical condition of the park, the behavior of the people in doing their activities, and park management officers. The results show that the three locations are now equipped with supporting facilities, but they are less effective in forcing people to remain obedient when doing activities. The level of public awareness and compliance has not met expectations and most of the people are still ignorant. Therefore, there is still a need to add more attractive and more massive facilities and to give more socialisations so that urban open spaces can be safe and healthy locations to visit as well as to play a more optimal role in improving people's physical and mental health during the pandemic.

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1. Introduction

Cities are large-scale network systems that are interdependent. They consist of four main components (buildings, infrastructure,

social communities, and open space), which coexist and interact to create rich and livable urban functions (Koren & Rus, 2019). But New York and Rome are now ghost towns because the inhabitants of the city have to stay at home for the common good

(Honey-rosés et al., 2020). Some cities, such as Zurich in Switzerland, have even closed their city parks to the public (Kleinschroth & Kowarik, 2020).

Currently, worldwide restrictions on the use of public spaces are being unprecedented. The closure of urban open space during the Covid-19 pandemic has also become a policy taken by many city governments in Indonesia to prevent the increasingly massive transmission of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov2) and to protect public health. Although there is an increasing recognition of the use of urban open space as a strategy to make the city more sustainable (Jayakody et al., 2016), *Taman Indonesia Kaya* in Semarang City has also been closed for some times to avoid the increasing spread of SARS Cov2 in the community.

Semarang City is the capital of Central Java Province in Indonesia which covers an area of 373.70 km² with a population in 2019 of 1,814,110.00 people and a population density of 4855.00 people/km² (BPS of Semarang City, Data Series 2017-2019). This high number and population density is certainly very vulnerable to the spread of Covid-19. The city government has made various efforts to reduce the pace of the pandemic which has been going on for more than a year. Those efforts include closing public spaces to prevent mass crowds, and closing school and campus activities with a face-to-face concept, and turning them into online learning. Restrictions on micro-scale community activities are still in effect until now, but economic activities, such as traditional markets, restaurants, supermarkets and hotels, have been opened with several restrictions, namely the need to comply with health protocols.

However, until now, the city of Semarang still has a fairly high spread of covid-19, which is dominated by men in the 20-54 year-old group (Semarang City Government, 2020). This indicates the low level of public awareness in complying with health protocols, especially when doing activities outside. At the beginning of the pandemic, the Government urged people to pray, work and study from home, so that the number of community visits to urban open spaces decreased drastically. However, currently, population mobility is high and economic activity is starting to grow. Various socio-economic activities require people to come face to face with many people, but many of them who ignore health protocols are one of the reasons for the high pandemic rate in Semarang City.

Several urban open spaces that used to be the location for citizens to breathe fresh air in the middle of a busy city were closed. There is no crowd of people in this location since many citizens still prefer to stay at home and worry about their safety and health when doing activities in urban open spaces, such as city parks. The closure of the open park is to prevent the crowds, while the closed indoor shops and traditional markets are narrow and have much larger numbers of visitors. They are also crammed but open without the restrictions of health protocols, and are hard to comprehend. The closure of urban open space is very unfortunate because open space is safer than closed one.

Several previous studies revealed and showed the important role of urban public space, especially for the mental health of the people of a city during a pandemic (Pouso et al., 2021). Therefore, urban open spaces must be multi-functional and easy to adapt to the health protocols that have been established during this pandemic. This is the background of the importance of this research. The problem is, will urban open space be accessible to the wider community and lead to more massive transmission of SARS-Cov2? Can urban open space play a role in raising public awareness and compliance with the health protocols that have been established during the Covid-19 pandemic? How can we optimize it?

This study aims to determine the optimization of the role of urban open space in raising public awareness and compliance with health protocols during the Covid-19 pandemic by using methods of observing people's behavior and activities in the urban open space area of Semarang City which can be accessed by the public during the pandemic. The study was conducted using two data collection methods, namely field observations of active people in three city parks, namely *Taman Indonesia Kaya*, *Taman Bumi Rejo* and *Taman Sriqunting*, which has its own peculiarities, as well as conducting interviews with city park users who live in Semarang.

The closure of city parks by the city government becomes an effort to limit the movement of the citizens, so they are not exposed to Covid-19. However, this policy should consider the needs of the city community to be facilitated for open space which is still very insufficient. Moreover, they need fresh air and regular exercise to maintain their immunity. Therefore, the community welcomes the opening of city park access, so that they can relieve their saturation due to restrictions on activities and movements during the pandemic period in Semarang City.

The Covid-19 outbreak has indeed had a direct impact on all aspects of human life, and changed the way people use public space. The addition of some previously non-existent facilities, such as a hand basin, placed at the entrance area, is one of the ways to increase public hygiene habits and awareness while complying with health protocols during a pandemic. The habit of crowding when doing activities in public spaces must also be replaced by maintaining a safe distance of 1.00-2.00 meters with other people when communicating. This habit will also have implications for changes in open space design in the future. While the habit of using masks, which in the past was practiced by many sick people, in order not to transmit the disease to others, nowadays it is compulsory for everyone. Therefore, open space can actually be used to cultivate and increase public awareness in complying with health protocols during this pandemic.

UN Habitat (UN-Habitat, 2020a) reveals that the important function of urban public space as a shared space (whether as a green space, parks or playground) is to contribute in reducing stress levels, improving mental health and well-being of children's development. Meanwhile, according to Carmona (2019) the formal function of public space on a large scale is as the center of perception of settlements and the focus of life, activities and

public events. Meanwhile, on a small scale, public space functions as a place to rest, hang out, or play, as well as a visual break in the flow of roads in urban areas. The results of a research on the impact of urban green space on human mental health state that urban green space is only positively associated with attention, mood, and physical activity. For other health aspects, it cannot be generalized and still requires further research, but efforts to add or maintain the existing urban green space is highly recommended (Kondo et al., 2018).

Urban open space plays an important role for public health, especially during the Covid-19 pandemic around the world. This is supported by several studies that have been conducted. One of them was by Artur Jasiński (Jasiński, 2020), who analyzed various phenomena and questions about the future of metropolitan public spaces after the Covid-19 pandemic, as well as articles that highlight the Covid-19 crisis that can change our relationship with the public space fundamentally (Honey-rosés et al., 2020). The occurrence of the Covid-19 pandemic shows the importance of urban green space as an important element for sustainable cities (Kleinschroth & Kowarik, 2020). This was demonstrated in an interesting study that revealed a significant increase in outdoor recreational activities during the partial lockdown in Norway (Venter et al., 2020), where green space facilitates social distancing and thus indirectly reduces the spread of covid-19. The importance of green space has made it recommended that parks and green spaces be maintained so that they can be accessed for

physical and mental health during the Covid-19 pandemic and other pandemics (Slater et al., 2020).

In the midst of increasing population density and the intensity of urban development, public green open space is one of the basic needs of the community (Aswad & Damayanti, 2020). Green space management is even considered as a strategic intervention for public health (Rojas-rueda et al., 2019). The closure of parks by the city government can indeed be determined as an effort to limit the movement of citizens from not being exposed to Covid-19. However, this policy needs to consider the needs of the city community for facilitated open space. Moreover, citizens need fresh air and regular exercise to maintain their immunity. Meanwhile, visiting city parks can improve health as well as help meet individual needs for social interaction. The frequency of visits by citizens to the park during the pandemic has indeed decreased, but a visit once a week has been quite beneficial for citizens (Xie et al., 2020).

Several open spaces in Semarang city seem to be quite busy receiving local visits even though the pandemic has not yet subsided. Children, who are tired of playing in their house, are certainly very happy to get fresh air. They can run or play in quite large and crowded parks. Some of the community activities in the urban open space of Semarang City in Figure 1 include exercising, playing, sitting around, relaxing, learning and drawing (for some children), and doing recreation.



Figure 1 Sport, learning and community recreation activities in Taman Bumi Rejo, Taman Indonesia Kaya and Taman Srigunting Semarang City

The community's needs to be able to carry out activities in green space, as shown in figure 1, certainly needs to be accommodated. The relatively narrow urban settlement environment does not provide much open space which will cause the less optimal growth of children. Moreover, during the pandemic, they only study online from home. In addition, the opportunity to be able to visit and play in a quite large city park location will satisfy their needs. However, during the pandemic, many community activities in those three locations had ignored health protocols so that the existence and role of urban space facilities became less than optimal. In Figure 1, it can be seen that there are still many people who do not use masks, do not maintain social distance, and even actively swarm.

2. Methodology

2.1 Description of Study Area

This research is qualitative research conducted by direct observation and interviews with visitors and park management officers at three park locations. The observation was especially conducted when the park was visited by many people, such as in the morning and evening, on holidays and weekends, from March to April 2021. The study locations are in three parks in Semarang City, Central Java, namely *Taman Bumi Rejo* in Banyumanik District, *Taman Indonesia Kaya* on Jalan Menteri Supeno, Mugassari, and *Taman Srigunting* in the old city area (Figure 2). *Taman Bumi Rejo* is a neighbourhood park that is located around a

residential area and acts as a place for community activities in the morning, afternoon and holidays. Taman Indonesia Kaya is a downtown park located in the middle of the city, playing an important role as an oasis for the surrounding environment which is an office building. Likewise, *Taman Srigunting*, which is located

in the Old City Area, acts as a tourist park which is used for the community to relax and unwind when visiting this area.

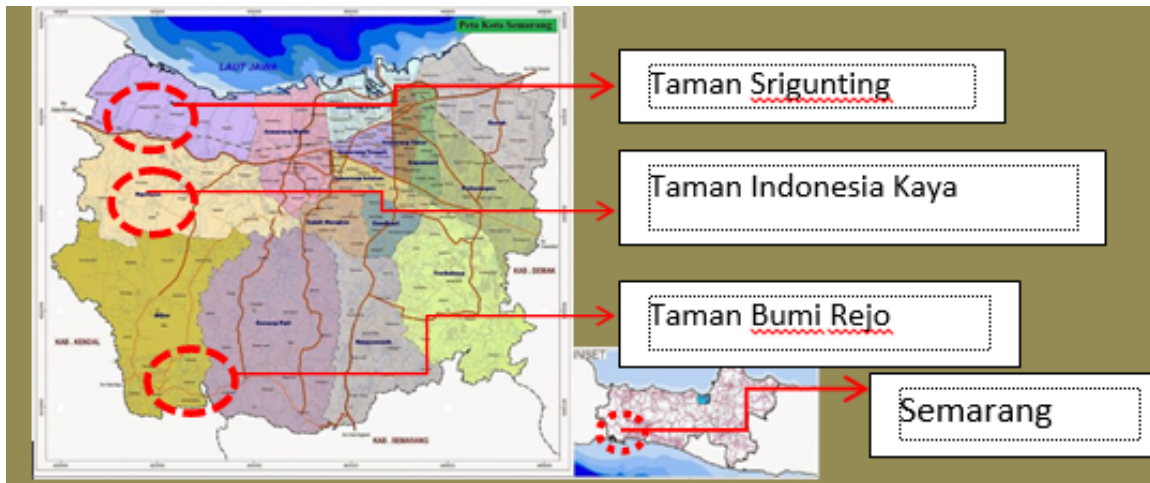


Figure 2 Semarang city parks – Taman Bumi Rejo, Taman Indonesia Kaya and Taman Srigunting

2.2 Data Collection

Primary data collection was gathered directly at the research sites, while secondary data was obtained from literature and previous research journals as well as existing maps. The data and actual information were collected to describe the phenomena that occur. Then, they are used to identify problems in the field, group them, make comparisons and evaluate them using descriptive methods. This method focuses on observations and natural conditions to systematically describe certain facts or characteristics.

The word "optimisation" is defined as the process of optimising something for the better (Sugiyanto & Sitohang, 2017) with the aim of minimising or maximizing. Therefore, according to the research objective to optimise the role of urban open space during the pandemic, direct observations were made based on three components: 1) park (facilities and equipment), whether its function and existence are optimal in supporting its role as a forum for community activities during the pandemic ; 2) park management officers, whether their roles are optimal in increasing public compliance with health protocols; 3) park users or visitors, where the behavior and variety of visitor activities reflect whether or not the role of urban open space is optimal in increasing public awareness and compliance with health protocols. Observations of people who were active in the park were carried out especially during peak hours, namely morning and evening, on holidays and weekends.

In accordance with the research objectives, the focus of observation was carried out since the community came to the park area, entered it, carried out their activities and then left the

park. The focus of the observations consists of: 1) whether they come and do their activities by implementing health protocols (wearing masks, washing their hands before entering and leaving the park and maintaining social distancing) or not; and 2) what kinds of activities people do in the park. Observations of the physical facilities provided in the park consist of: 1) hand-washing facilities: the availability of water and hand-washing soap; 2) seating facilities and other supporting garden functions; and 3) garden constituent elements, garden vegetation, zoning and garden structures. The observations of park management officers are: 1) whether they play a role in maintaining community compliance with health protocols; 2) whether they limit the number of visitors or prohibit visitors who do not comply with health protocols to enter the area. Observations at the location were followed by interviews with several visitors and park management officers to determine their interests and reasons for visiting the park as well as the frequency of visits during the pandemic, the purpose of their arrival, and the benefits of the park personally, as well as the park's operations to the management officers.

2.3 Data Analysis

After the process of physical observation and activities at the study sites, the data analysis process is carried out by calculating, grouping and reducing data. The calculation is performed to determine the percentage and level of community compliance in implementing health protocols when doing activities in the park. Meanwhile, the types of community activities in city parks are notable from direct observations which are recorded and documented in the form of photographs. Data from field observations, interviews and calculations were combined to

analyze whether the role of the observed components was optimal or not and whether the factors that influenced the level of community compliance with health protocols or not. Based on the results of observations and interviews from the three components, it will be concluded whether the role of urban open space has been optimal in increasing public awareness and compliance with health protocols during this pandemic, and how to optimize this role to reduce the spread of covid-19 in the community, which still not well controlled until now.

3.0 Result and discussion

3.1 Results Of Physical Observation Of The Study Area

3.1.1 Taman Bumi Rejo

Taman Bumi Rejo is located in Pudukpayung Village, Banyumanik District, Semarang City. It is near the Mega Permai housing complex and was originally only a football field (Christy et al.,

2019). It was built in the late of 2017 and later equipped with an amphitheater, volleyball court, jogging track and children's play area (Figure 3). Based on the scale of its service, *Taman Bumi Rejo* is a neighbourhood park that serves people around densely populated residential areas, namely Mega Residence Housing, Mega Bukit Mas, Griya Mandiri Housing, Banyumanik Real Residence Villa, Puduk Payung Sejati, and several other housing estates. It is an active park that can be used every day by the surrounding community. It is very crowded on weekends and holidays. Apart from being a microclimate regulator, this park also has social and cultural functions, such as absorbing rainwater, increasing comfort and beautifying the surrounding environment.

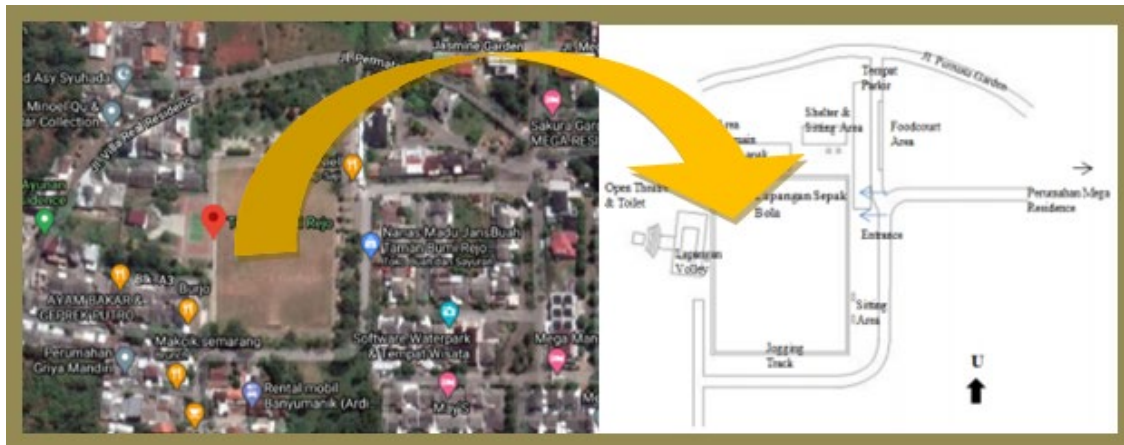


Figure 3 Taman Bumi Rejo Semarang (Source : Goggle Map Image, 2021; Christy et al.,2019)

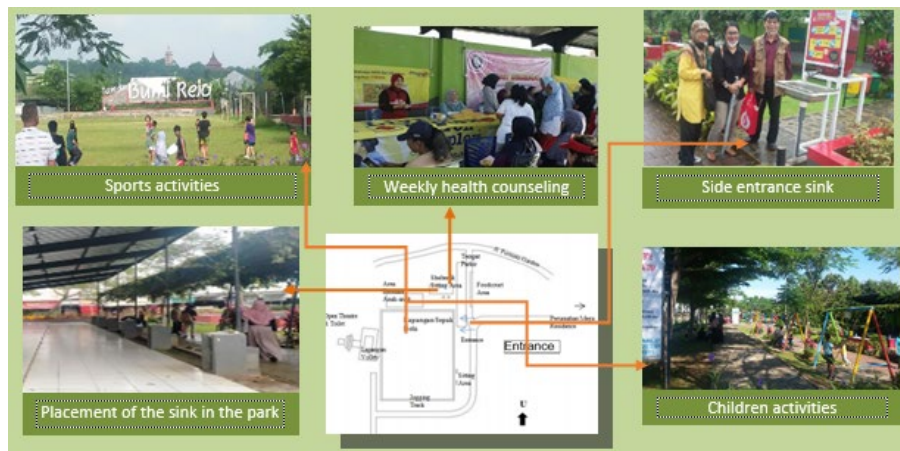


Figure 4 Community activities at Taman Bumi Rejo during the pandemic with adequate facilities. People are still ignoring the health's protocol.

As the response to the impact of the Covid-19 pandemic in Semarang City, the city government has equipped several park facilities in collaboration with several elements of society. There are 7 additional units of washing facilities completed with clean water and soap at Taman Bumi Rejo. One of them is placed at the entrance of the park (1 unit) and others are in the children's playground area. With the addition of this facility, it is expected that the level of public awareness and compliance with health protocols will increase. Moreover, people will feel more safe and more comfortable when they are active in it. Besides that, all users take care of each other so that there is no covid-19 transmission which prolongs the pandemic in the neighborhood of park location.

Community activities in *Taman Bumi Rejo* (Figure 4) include: doing sports and recreation, and also playing. It is also used as a place for social gathering and interaction, performing arts, and health counseling every Sunday (*Sunset_Sunday Sehat*). The characteristics of *Taman Bumi Rejo* visitors consist of various age groups that come from the surrounding neighborhood, especially children and adolescents. Park activities run every day, especially in the morning and evening, and will be very crowded with visitors on weekends and holidays. Conclusion: in figure 4 it can be seen that the large number of visitors and the variety of community activities in it show that the formal functions of *Taman Bumi Rejo* on a large and small scale (ecological, socio-cultural, aesthetic and economic) in accordance with Carmona (Carmona, 2019), are optimal. However, its role in increasing public awareness and compliance with health protocols has not been optimal. Many people neglect to wash their hands even though the facilities are adequate. There are also many people, especially at the age level of children and adolescents, who do not wear masks and do not maintain social distance when doing activities.

3.1.2 Taman Indonesia Kaya

Taman Indonesia Kaya, which is the new "face" of *Taman Menteri Supeno*, which is widely known as *Taman KB*, was built in 1973-1975. It was aimed in making use of the empty area, where *Jalan Menteri Supeno* and *Jalan Mugas* connect. The success of building this park as an active public open space can be seen from the increase in the number of visitors. However, it also raises other activities as a 'side effect', such as the existence of street vendors on pedestrian paths, parking of vehicles on the road, the presence of street children, and homeless people as well as prostitutes at night which make this park's image negative. But, due to the collaboration of various parties (local government, private companies, state-owned enterprises and community elements) *Taman KB* finally transformed into *Taman Indonesia Kaya*, which provides active public green open space and improving the image quality of the city of Semarang (Aswad & Damayanti, 2020).

Currently, *Taman Indonesia Kaya* can be accessed from 3 doors, the east door, the west door and the south door. The zones of the park include the cultural stage zone, fountain area, green area and *Pandawa Lima* Park (Figure 5). As in *Taman Bumi Rejo*, *Taman Indonesia Kaya* is currently also equipped with several units of hand-washing tubs at the entrance and inside of the park. It is expected that the strategic and easily visible placements of hand-washing tubs make it easier for park users or even people passing by in the area to use them. It can also increase public awareness to wash their hands more often to avoid exposure to the Covid-19 virus.



Figure 5 Zoning at Taman Indonesia Kaya (Source: Goggle Earth, 2021)

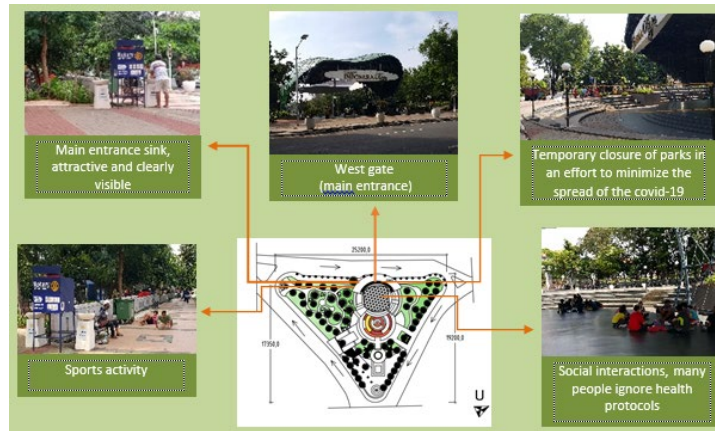


Figure 6 Community activities at Taman Indonesia Kaya during pandemic, people are still ignoring health's protocols.

Based on the nature of its services, *Taman Indonesia Kaya* is a city park that serves city-scale community activities. It is located right in the center of Semarang City and in office areas. Most of the park users are from various areas in the city of Semarang, from various age levels, office employees around the park and people from outside of Semarang city. It is interesting to visit this park because it is able to accommodate various community-scale activities at city scale. It is also in a strategic location in the city center and easy to reach. It is equipped with quite complete facilities, a comfortable garden atmosphere and a culinary center on the west side of the park and street vendors on the east side East. Due to the pandemic, this park was closed to prevent the spread of covid-19. But by the end of March 2021, the park has been reopened so that people can carry out activities in line with the health protocols. Reopening this park is a relief and in accordance with Slater's recommendation (Slater et al., 2020). Activities in the park (Figure 6) include: sports, a place for community interaction and socialization, a performance stage, a place for artist activities, photo spots, entertainment, and a place to relax. The facilities and elements in the park are quite complete, including: washbasins at all entrances, seats, trash cans, ram for disabled people, signs, prayer rooms, artists' rooms, toilets, reflection stones, ready-to-drink water taps, stage performances, fountains, ample natural lighting and attractive artificial lighting at night. Conclusion: The formal role of *Taman Indonesia Kaya* on a small and large scale according to Carmona (Carmona, 2019) is very successful. The facilities and equipment provided in this park to support efforts to increase public awareness in complying with health protocols are very good. However, considering that many people are still ignorant, the special role of parks in increasing public awareness in

complying with health protocols still needs to be further optimized

3.1.3 *Taman Srigunting*

Taman Srigunting is one of the landmarks of Semarang City. It is located in the heart of the *Kota Lama* area. This park used to become the center of the area in the colonial era, and it is currently in the administrative area of *Tanjung Mas* Village, North Semarang District (Figure 7). In the past, this park functioned as a *kerkhof* or burial for European citizens, but later it became a field called Parade Plein which was used for military parades (Setioko & Harsritanto, 2017). Currently, the field has been transformed into a communal space in the form of an active open park which is packed with people, especially during the daytime to the evening.

Physically, as a tourist park, the existence of *Taman Srigunting* is like an oasis among floors with paving block pavements and old buildings in the old city area with very few green areas (Figure 7). It is very successful in its ecological role in the Region. People, who happen to have recreation to this area and need a break to unwind, can just sit on a park bench. Currently, around *Taman Srigunting*, it is also equipped with a hand-washing tub.

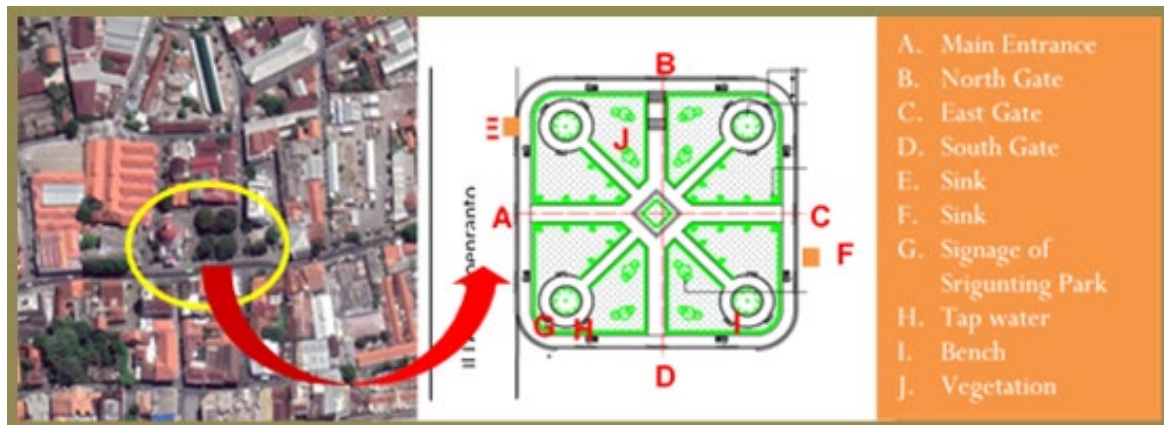


Figure 7 Taman Srigunting (Source: Goggle Earth, 2021)

As a recreational tourism park in Semarang City, *Taman Srigunting* is visited by tourists from various areas of the city outside Semarang. This city-scaled park is completed by attractive ancient buildings around the park and culinary tours. Besides supporting tourism in the city of Semarang, *Taman Srigunting*, which is located in a hot and dusty area, also operates to reduce pollution and produces oxygen. It becomes a place for community interaction as well as the identity of Semarang city. In accordance with its function, this park is never empty of visitors, especially on holidays. The activities carried out by visitors include: recreation, gathering, research and taking selfies. Visitors to this park consist of various age levels,

particularly teenagers because the location of the park and the ancient buildings around it are very suitable in accommodating youth creativity in sketching, photography, art and other activities. Various activities performed by the community (figure 8), show that the existence of this park is very meaningful in the area. From the results of observations, it can be said that the formal function of *Taman Srigunting* in the Kota Lama Area is optimal. However, during this pandemic, it is still not optimal in increasing public awareness in complying with the health protocol.

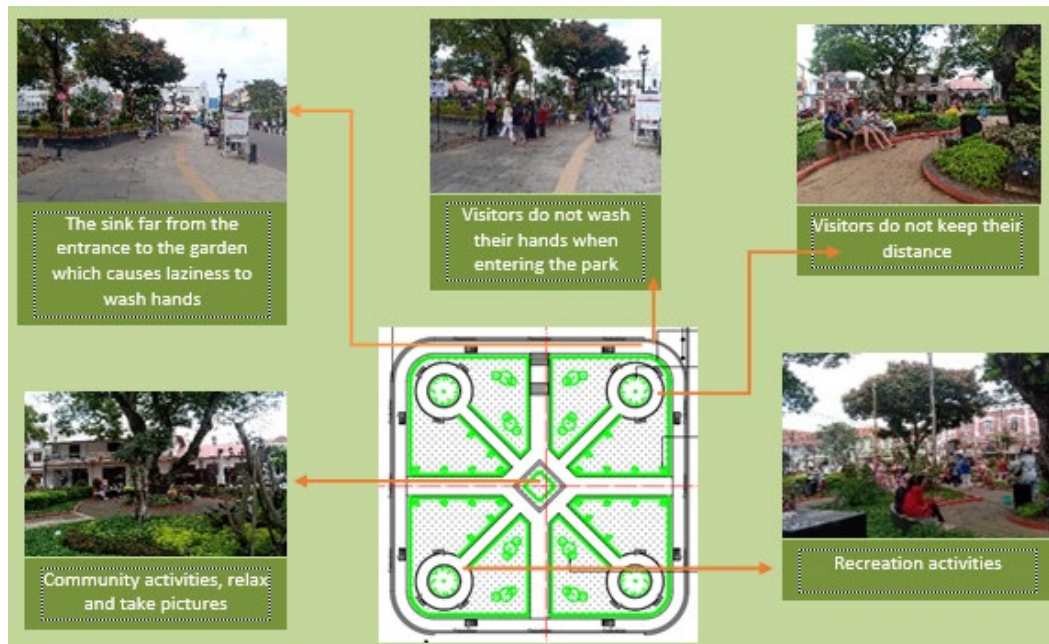


Figure 8 Community activities in Taman Srigunting (Site plan by Fx Denny Pradana, 2021 – Landscape Design Project)

3.2 Role of Park Management Officers

Based on the results of interviews, management officers of the three parks have so far only ascertained the cleanliness and maintenance of the parks. They also deal with the security issues, both the security of park facilities and the security of park visitors until this research was conducted. As the park management officers, the local government has not socialized their tasks in supervising park visitors in implementing the health protocol while doing activities. There is an inadequate number of personnel participating in supervising the implementation of the health protocol by the community while doing activities in the park. Therefore, it can be concluded that the role of management personnel to improve community compliance in implementing the health protocol is still not optimal.

3.3 Result of Observation in Community Activities and Implementation of Health Protocols in the Study Sites

Observations of community activities are carried out during peak hours, normally morning and evening during weekends

and holidays. The reason is because many people prefer these times to carry out activities in the park. Thus, the parks become crowded and filled with visitors. From the observation (table 1), it can be seen that the main activities of the community during the pandemic period (March-April 2021) in *Taman Bumi Rejo* were dominated by sports (in the morning) and continued by playing and relaxing (in the afternoon). In *Taman Indonesia Kaya*, the main activities of the community were recreation and relaxing, while the dominant activity in *Taman Srigunting* was recreation. This is in accordance with the theme of these parks. Time greatly affects the type of community activity, especially in *Taman Bumi Rejo*, which is located not far from residential areas. In the morning, many people came for jogging, running or doing other sports, such as soccer and self-defense (*pencak silat, taekwondo*). Meanwhile, in the afternoon, the park was dominated by children's play activities. Most of them were accompanied by their parents. However, in *Taman Indonesia Kaya* and *Taman Srigunting*, the difference in activity time did not significantly affect the patterns and types of community activities.

Table 1 Community Activities and Implementation of Health Protocols in City Parks

Activities	Taman Bumi Rejo (%)	Taman Indonesia Kaya (%)	Taman Srigunting (%)
Health Protocol's Conduct:			
Put on a mask	46.00 - 59.52	47.06 - 80.00	50.00 - 65.00
Washing hands	5.50 - 17.50	55.88 - 80.00	20.00 - 37.50
Maintain social distancing	10.00 - 20.00	38.23 - 46.00	25.00 - 27.50
Main activity in the park:			
Exercising	2.00 - 38.09	5.88 - 11.43	0.00
Playing	17.50 - 52.00	10.59 - 14.28	2.00 - 10.00
Recreation, resting / relaxing	30.00 - 44.00	61.76 - 74.29	75.00 - 83.00
Others (studying, hangout, etc.)	0.00 - 10.00	0.00 - 11.76	5.00 - 15.00
Number of visitors per hour	125-175	40-50	30-40
Number of observed visitors	40-50	25-35	20-25

Based on the results of the observations in Table 1, many adult visitors at *Taman Bumi Rejo* already wore masks when doing activities in the park, but most of the children and teenagers did not. Many of the visitors of all age groups also did not wear masks properly. Their masks only covered their chins due to the sports activities that they did. Most visitors at *Taman Bumi Rejo* seemed to ignore hand-washing activities as only 5.5-17.5% of them who washed their hands. This is very unfortunate because the city government has made efforts to equip a sufficient number of washing facilities, both at the entrance and inside the park. As for the activity of maintaining social distance, most visitors ignore it because they are used to intimate distance in their social interactions. Observations at *Taman Indonesia Kaya*

showed different results. Most of the people who visited the park washed their hands and wore masks, although some of them chose to remove their masks when taking selfies. Visitors at *Taman Srigunting* also preferred to remove their masks when taking selfies, but many of them were still reluctant to wash their hands before doing activities in the park or leaving the park. Outdoor recreational activities have experienced a significant increase in Norway (Venter et al., 2020). The intensity of community activities in several parks during the pandemic period has also increased. However, this condition has not been coincided by the most basic prevention effort, washing hands. There has not been a culture of washing hands even before the pandemic period, so that it takes a long time to instill awareness of the importance of washing hands. This is the next task of the city government to cultivate this habit in the

community through continuous socialization and education from an early age.

Ecological function, safety, health, recreation and landscape play important roles in supporting the environment. Public spaces (in this case City Parks) that remain open can have the opportunity to play a role in sharing information about how to prevent exposure to diseases, such as the importance of physical distance and hand-washing (Shimamoto, 2019; UN-Habitat, 2020b). The important role of green space for public health (Pouso et al., 2021; Rojas-rueda et al., 2019; Slater et al., 2020) should be further strengthened during the pandemic by intensifying outreach in all areas of the park. Regular and strict health protocol enforcement for all visitors should also be implemented by the managers of the malls, shopping centers and supermarkets. As the manager of the park, the city government needs to place special officers to closely supervise the

implementation of health protocols in all city parks. It is due to be able to increase public awareness and compliance, as well as to accelerate the culture of these habits to all levels of society to avoid the massive spread of covid-19 in the city of Semarang.

3.4 An Analysis of the Influence Factors of Park Visitors' Compliance Level

The focus of observations used as a factor that influences the level of compliance of visitors in this study consists of aspects of the park (function, provision of facilities, cleanliness), internal visitors (implementation of health protocols and place of origin) and park managers (role of officers, visitor restrictions and supervision). The results of the observations on the influence factor on the level of compliance of park visitors can be seen in table 2 below:

Table 2 Factors Influencing the Level of Community Compliance with Health Protocols

Observed elements	<i>Taman Bumi Rejo</i>	<i>Taman Indonesia Kaya</i>	<i>Taman Srigunting</i>	Influence Factors
Park:				
a. Park function	Neighborhood parks, recreation, sports	City parks, recreation, relaxation, stage performance	City parks, city identity, a place for taking selfies	The park's location and distance from the settlements affect the behavior and level of community compliance with health protocols
b. Provision of sinks for washing hands	<ul style="list-style-type: none"> - Available at side entrances and inside the park - Clear hand-washing instructions - The design is less attractive 	<ul style="list-style-type: none"> - Available in all entrance directions - The location of the sink is clearly visible and right at the entrance - The hand-washing instructions are very clear - Very attractive design 	<ul style="list-style-type: none"> - Available but located far from the main entrance and at the back door of the garden - The right and left side doors are not provided with a sink - Ordinary and less attractive design 	<ul style="list-style-type: none"> - Placement of the washing basin affects the willingness & simplicity of washing hands - The attractive-ness of washing basin design affects the willingness to wash hands
c. The marker of keeping distance	There is a keep the distance marker on the park bench.	There is a keeping distance marker on the park bench	There is no marker to keep the distance on the park bench	Clear keeping distance markers influence visitors to keep their distance
d. Park cleanliness	The condition of the park is quite clean and many visitors take advantage of the facilities in the park.	The condition of the park is clean and well maintained, many visitors take advantage of the facilities in the park	The condition of the park is clean and well-maintained, many visitors take advantage of the facilities in the park	The level of cleanliness of the park affects the desire to visit the park and take advantage of the facilities in the park
Visitors:				
a. Masks usage	Many visitors do not wear masks, and wear them improperly	The visitors' awareness of wearing masks is better	More visitors wear masks	There are still many visitors without masks. It shows a lack

b. Discipline on social distancing	Visitors do not keep their distance	Visitors do not keep their distance	Visitors do not keep their distance	of awareness and apprehension Visitors still ignore the rules of social distancing and they are used to a more intimate distance
c. Hand washing habits	Most visitors do not wash their hands	Most visitors wash their hands consciously	Some visitors are still reluctant to wash their hands	The location of the sink and the culture of washing hands often has not yet grown, affecting the number of visitors who are aware of doing it in the park
d. Origin of visitors	<ul style="list-style-type: none"> - Visitors are from residential areas around the park - Many visitors do not comply with health protocols 	<ul style="list-style-type: none"> - Visitors are from various regions in Semarang City and outside the city / province - Visitors only need to comply with health protocols 	<ul style="list-style-type: none"> - Visitors are from various regions in Semarang City and outside the city / province - Visitors do not comply with health protocols 	Visitors, who are from areas around the park, have the potential to disobey health protocols because they feel they are in their own territory
Park Management officers:				
a. The role of the officers in the park	The officer of the park is only in charge of caring for the garden	24-hour officers supervise the park	There are no park officers	The presence of park officers is very much needed and they play a role in monitoring the visitors' compliance with health protocols
b. Limitation on the number of visitors	The officers do not limit the number of visitors	The officers do not limit the number of visitors	The officers do not limit the number of visitors	The presence of park officers is needed to limit the number of visitors to avoid the crowds
c. Health protocol surveillance	There are no officers who supervise the implementation of health protocols	Officers supervise the implementation of health protocols	There are no officers who supervise the implementation of health protocols	The presence of officers is a key factor in the level of community

Some possibilities for people to be lazy for wearing masks or washing their hands when doing activities in these parks are the limited knowledge and understanding of the dangers of Covid-19 and a lack of awareness in the most basic prevention efforts. Meanwhile, the awareness of wearing masks is still being carried out by some visitors. Activities performed in an open space with enough fresh air and abundant sunshine is considered safer. However, the fact that there are still many Indonesians who take this virus lightly by disregarding the government's appeals is surely very concerning. Buana (Buana, 2020) relates the most appropriate conditions to this phenomenon with several types of cognitive bias, namely optimism bias, emotional bias and the Dunning-Kruger effect, which is caused by low literacy skills of

those who do not have access to information media and have minimal knowledge of the outbreak of the Covid-19 outbreak.

The Dunning-Kruger effect on people's cognition due to the lack of literacy skills and people's access to information media can be reduced by providing massive and continuous socialization to people of all ages in order to increase people's knowledge and understanding of the dangers of Covid-19 exposure.

The policy of closing parks should not be applied based on the number of people who do not comply with health protocols when doing activities in urban open spaces. Many experts recommend keeping green space accessible to the public because it plays an important role for the physical and mental health of the community (Slater et al., 2020), especially during times of pandemics. Citizens usually need an accessible urban green

space, particularly for physical exercise, relaxing and enjoying nature (Ugolini et al., 2020). In addition, public awareness can be increased by visiting green areas during crisis periods even though green area management is still being developed in this 'new normal' era (Uchiyama & Kohsaka, 2020). Therefore, making city parks accessible is very important to raise awareness, understanding and habituation of the community to new habits that are highly recommended during this pandemic to break the chain of the spread of Covid-19.

3.5 Optimizing the Role of Urban Open Space during the Covid-19 Pandemic

As recommended by previous researchers, city parks still need to be regularly accessed because they have an important role not only for the community's physical and mental health (Pouso et al., 2021; Rojas-rueda et al., 2019; Slater et al., 2020; Ugolini et al., 2020), but also for their social pleasure and engaging in different physical activities in society (Elfartas et al., 2019). The role of urban open space can be seen in the results of observations on the types of community activities (table 1), which are dominated by physical exercise, playing, resting, recreation, social interaction, learning, attending certain events and so on. Even for a sustainable city, urban green space has become an important element in this time of pandemic (Kleinschroth & Kowarik, 2020), and should be considered as a social and public health investment to balance relations with nature and protect against future pandemics (Geary et al., 2021). The limited number of open spaces in urban settlements

causes people to carry out these activities in urban-scale open spaces even though the location is a little far from residential areas. One of the examples is *Taman Indonesia Kaya*, which is visited by people around Semarang city. The temporary closure of parks and other public spaces limits community activities and calls for people to stay at home more during this pandemic era, and to comply with health protocols when doing activities outside the home. It prevents the parks from making a negative contribution to the physical and mental health of the community. Meanwhile, the body's immune system must be maintained in order to survive the transmission of SARS-Cov2, which cannot be predicted when it will end. This causes people to start getting bored at home and impatient to be able to return to their activities and social interactions.

On the other hand, the discipline of citizens in complying with health protocols when they are in activities is not good. This condition certainly makes it more difficult for the government to break the chain of the spread of Covid-19. The reluctance of the public to agree to health protocols when doing activities outside the home, such as wearing masks, washing hands frequently, maintaining distance and avoiding crowds, which is associated with several cognitive biases (Buana, 2020), can actually be circumvented by optimizing the role of urban open space during a pandemic. Optimizing the role of urban open space in increasing public awareness and compliance to comply with health protocols, including adding the function of parks as a

place for socialization and learning for the community with the following efforts:

1. Keeping park access open with strict health protocols so that the parks can play an optimal role in maintaining the physical and mental health of urban communities;
2. Placing competent officers to check the body temperature of visitors and supervise the implementation of health protocols, the entrance, exit doors and inside the park, and limit the number of visitors to avoid crowds;
3. Installing warning boards about the dangers of the spread of covid-19 in various visited park spots so that they are easily noticed by people of all ages;
4. Installing the attractive and clean design sinks with adequate numbers and equipment in a strategic and easily visible location for park visitors;
5. Installing distance markers with clear and contrasting colors on the benches to remind visitors to always be disciplined in maintaining physical distance from others.

4. Conclusion

The results of observations in the three parks show that there is a sufficient to excellent enthusiasm of the community for activities in urban open space during the Covid-19 pandemic in the City of Semarang. It is especially indicated in *Taman Bumi Rejo*, which is located not far from residential areas and its supporting facilities are quite complete. Therefore, the park's location and facilities are influential factors on people's interest in visiting a park and doing activities in it. However, the level of awareness in complying with health protocols in the three locations is still low, especially in terms of maintaining physical distance and hand-washing habits. The factors that influence the community's willingness to implement health protocols (washing hands) in the park include the presence of hand-washing facilities and supervisors in the park, the placement of the hand-washing basin, the design, washing soap facilities, hygiene and the presence of officers who supervise the community in implementation health protocol. Activities of wearing masks and doing physical distancing are largely influenced by the location of the park, the habit of wearing masks and maintaining uncultured social distancing, understanding and awareness of the community's personal self and the role of supervisors.

Based on the observations that have been conducted, there are several things that need to be done so that urban open space can perform a better and optimal role in increasing public awareness and compliance with health protocols during this pandemic, they are: appropriate provisions; adequate, clean, interesting, and well-designed washing facilities; strategic placement of the sink, easily visible sinks for visitors; installation of a more massive covid-19 warning board as a form of outreach to the general public in strategic locations; assigning competent officers to participate in supervising the implementation of public health protocols when doing activities in the park and limiting the number of park visitors to avoid crowds. Existing

urban open spaces, such as city parks, are considered as city facilities that need to be given special treatment in order to accommodate activities and functions according to community expectations.

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References

- Aswad, W. O. S. J., & Damayanti, M. (2020). Multi-Stakeholder Collaboration for the Provision of Public Open Space (Case of Taman Indonesia Kaya, Semarang) Multi-Stakeholder Collaboration for the Provision of Public Open Space (Case of Taman Indonesia Kaya, Semarang). *The 1st International Conference on Urban Design and Planning*. <https://doi.org/10.1088/1755-1315/409/1/012053>
- Badan Pusat Statistik Kota Semarang. (2021). Kepadatan Penduduk (Jiwa/km²), 2018-2020. Data Sensus. <https://semarangkota.bps.go.id/indicator/12/48/1/kepadatan-penduduk.html> accessed 30/03/2021
- Buana, D. R. (2020). Analisis Perilaku Masyarakat Indonesia dalam Menghadapi Pandemi Virus Corona (Covid-19) dan Kiat Menjaga Kesejahteraan Jiwa. *SALAM; Jurnal Sosial & Budaya Syar-*, 7(3): 217–226. <https://doi.org/DOI: 10.15408/jsbs.v7i3.15082>
- Carmona, M. (2019). Principles for public space design, planning to do better. *URBAN DESIGN International*, 24(1): 44–56. <https://doi.org/10.1057/s41289-018-0070-3>
- Christy, E. S., Jamila, R. F., Putra, G. P., & Harsitanto, B. I. (2019). Kajian Aksesibilitas pada Taman di Permukiman (Kasus: Taman Bumirejo, Pudak Payung, Semarang). *Modul*, 19(2): 104–109. <https://doi.org/10.14710/mdl.19.2.2019.104-109>
- Dinas Kesehatan Kota Semarang. (2021) Data Informasi Coronavirus (COVID-19) Semarang, <https://siagacorona.semarangkota.go.id/halaman/covid19>. accessed 30/03/2021
- Elfartas, H. O., Albeera, H. A., Said, I., & Momoh, J. U. (2019). Identifying Contextual Predictors of Urban Park Utilization among Inter-ethnic Groups in Malaysia. *Journal of Architecture and Urbanism*, 43(1): 123–130. <https://doi.org/https://doi.org/10.3846/jau.2019.6982>
- Geary, R. S., Wheeler, B., Lovell, R., Jepson, R., Hunter, R., & Rodgers, S. (2021). A call to action: Improving urban green spaces to reduce health inequalities exacerbated by COVID-19. *Preventive Medicine*, 145(July 2020): 106425. <https://doi.org/10.1016/j.ypmed.2021.106425>
- Honey-rosés, J., Anguelovski, I., Bohigas, J., Chireh, V., & Daher, C. (2020). The impact of COVID-19 on public space: an early review of the emerging questions – design, perceptions and inequities. *Cities & Health, April*, 1–18. <https://doi.org/10.31219/osf.io/rf7xa>
- Jasiński, A. (2020). Public space or safe space – remarks during the COVID-19 pandemic. *Technical Transactions. E2020020.*, 2020(020): 1–10. <https://doi.org/https://doi.org/10.37705/TechTrans/e2020020>
- Jayakody, C., Amaratunga, D., & Haigh, R. P. (2016). The use of Public Open Spaces for Disaster Resilient Urban Cities. *12th International Conference of the International Institute for Infrastructure Resilience and Reconstruction, August*, 146–152.
- Kleinschroth, F., & Kowarik, I. (2020). COVID- - 19 crisis demonstrates the urgent need for urban greenspaces. *Esajournals*, 318–319. <https://doi.org/10.1002/fee.2230>
- Kondo, M. C., Fluehr, J. M., Mckee, T., & Branas, C. C. (2018). Urban Green Space and Its Impact on Human Health. *International Journal of Environmental Research and Public Health*, 15(445): 1–28. <https://doi.org/10.3390/ijerph15030445>
- Koren, D., & Rus, K. (2019). The Potential of Open Space for Enhancing Urban Seismic Resilience: A literature Review. *Sustainability*, 11(5942): 1–20. <https://doi.org/doi:10.3390/su11215942>
- Pouso, S., Borja, Á., Fleming, L. E., Gómez-baggethun, E., White, M. P., & Uyarra, M. C. (2021). Science of the Total Environment Contact with blue-green spaces during the COVID-19 pandemic lockdown beneficial for mental health. *Science of the Total Environment*, 756: 143984. <https://doi.org/10.1016/j.scitotenv.2020.143984>
- Rojas-rueda, D., Nieuwenhuijsen, M. J., Gascon, M., Perez-leon, D., & Mudu, P. (2019). Green spaces and mortality: a systematic review and meta-analysis of cohort studies. *The Lancet Planetary Health*, 3(11): e469–e477. [https://doi.org/10.1016/S2542-5196\(19\)30215-3](https://doi.org/10.1016/S2542-5196(19)30215-3)
- Setioko, B., & Harsitanto, B. I. R. (2017). Transformasi Bentuk Dan Pola Ruang Komunal Di Kota Lama Semarang Transformasi Bentuk Dan Pola Ruang Komunal Di Kota Lama Semarang Departemen Arsitektur Fakultas Teknik, Universitas Diponegoro Semarang Abstrak Pendahuluan Transformasi Bentuk Dan Pola Ruan. *Modul*, 17(1): 11–16. <https://doi.org/https://doi.org/10.14710/mdl.17.1.2017.11-16>
- Shimamoto, K. (2019). Empirical Analysis on the Determinants of Urban Parks. *Journal of Urban and Regional Analysis*, XI(1): 87–102. <https://doi.org/https://doi.org/10.37043/JURA.2019.11.1.6>
- Slater, S. J., Christiana, R. W., & Gustat, J. (2020). Recommendations for Keeping Parks and Green Space Accessible for Mental and Physical Health. *Preventing Chronic Disease*, 17(August): 1–5. <https://doi.org/10.5888/pcd17.200204>
- Sugiyanto, E., & Sitohang, C. A. V. (2017). Optimalisasi Fungsi Ruang Terbuka Hijau Sebagai Ruang Publik Di Taman Ayodia Kota Jakarta Selatan. *Jurnal Populis*, 2(3): 205–218.
- Uchiyama, Y., & Kohsaka, R. (2020). Access and Use of Green Areas

during the COVID-19 Pandemic: Green Infrastructure Management in the “New Normal.” *Sustainability*, 12(9842): 1–9. <https://doi.org/doi:10.3390/su12239842>

Ugolini, F., Massetti, L., Calaza-martínez, P., Cari, P., Dobbs, C., Ostoi, S. K., Marin, A. M., Pearlmutter, D., Simoneti, M., Verli, A., & Sanesi, G. (2020). *Urban Forestry & Urban Greening Effects of the COVID-19 pandemic on the use and perceptions of urban green space: An international exploratory study*. 56(June): 1–9. <https://doi.org/10.1016/j.ufug.2020.126888>

UN-Habitat. (2020a). UN-Habitat Guidance on COVID-19 and Public Space. June 2020:1-4. UN-Habitat Global Public Space Programme Planning Finance and Economy Section, Urban Practices Branch. United Nations Human Settlements Programme. www.unhabitat.org. https://unhabitat.org/sites/default/files/2020/06/unhabitat_guidance_on_covid-19_and_public_space.pdf

UN-Habitat. (2020b). UN-Habitat key message on COVID-19 and public space May 2020: 1–5. UN-Habitat Global Public Space Programme Planning Finance and Economy Section, Urban Practices Branch. United Nations Human Settlements Programme. www.unhabitat.org. https://unhabitat.org/sites/default/files/2020/05/unh_covid19_ps_key_message.pdf

Venter, Z. S., Barton, D. N., Gundersen, V., Figari, H., & Nowell, M. (2020). Urban nature in a time of crisis: recreational use of green space increases during the COVID-19 outbreak in Oslo, Norway. *Environmental Research Letters*, 1–11. <https://doi.org/https://doi.org/10.1088/1748-9326/abb396>

Xie, J., Luo, S., Furuya, K., & Sun, D. (2020). Urban Parks as Green Buffers During the COVID-19 Pandemic. *Sustainability*, 12(6751): 1–17. <https://doi.org/doi:10.3390/su12176751>.