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# Reexamine the value of urban pocket parks under the impact of the COVID-19

Shu Liu <sup>\*,1</sup>, Xinhao Wang

DAAP School of Planning, University of Cincinnati, Cincinnati, OH, United States

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## ABSTRACT

While the focus of the wide-spread coronavirus is its impacts on people's lives and economic wellbeing around the world, the pandemic substantially limits people's available options of physical activities and exacerbates an enduring problem of large urban populations lack accessible green space to fulfill the essential physical and mental health needs. Under the current pandemic situation available green space is further reduced when some parks are closed or open with limited functions to reduce the spread of coronavirus. At the same time, the demand for green space has increased because of the unavailability of other activities. In this essay, we call the attention of urban planners and designers to pocket parks. Studies have shown that the tiny size of pocket parks makes them an easier fit into vacant properties scattered throughout the urban fabric. Therefore, pocket parks can improve health and encourage social cohesion of residents in often underserved high density urban neighborhoods. The potential of pocket parks in providing accessible urban green space to all urban population may have been considered desirable before the coronavirus outbreak and now it should be considered a necessary 'lifeline' to improve urban residents' health during the coronavirus. In addition, with the long-overlooked value of accessible urban green space waken by the global-scale crisis, proper attention and improvement strategy, such as introducing more pocket park could lead to a better future after the COVID-19.

## 1. Reexamine urban green space issues through the lens of COVID-19

The world-wide spread of COVID-19 not only causes loss of lives, economic prosperity, and our sense of well-being, it also brings substantial changes to people's behavior and habits as some daily activities become unavailable. To control and cut off the spread of the coronavirus, governments across the globe have imposed varying degrees of social distancing regulations and even lockdowns (Rogers et al., 2020, p.2). Such restrictions due to the pandemic has resulted in sufferings of physical and mental health, hence evoking people's urge for outdoor activities and face-to-face social contact. Activities like visiting parks, which many have "taken for granted" in normal circumstances (Xiang, 2020, pp.2–3), become less easily achievable because of the restrictions and/or forbidden as non-essential activities. While the lack of accessible parks for all urban population has been recognized as an urban issue by scholars and policy makers, the COVID-19 pandemic has exacerbated it (Honey-Rosés et al., 2020, p. 10; Patino and Poon, 2021; Asgaard et al., 2021). Within this context, we reexamine the enduring park accessibility

issue under the pandemic influence in order to prepare for the post-COVID-19 future. We propose to promote pocket parks as a feasible solution for increasing accessibility of more urban neighborhoods to green space, which could fulfill the basic physical, mental, and social needs of all urban populations.

## 2. The enduring issue of urban green space

Scholars from multiple disciplines have been drawn to the common urban problem that large urban populations lack accessible green space/public open space to fulfill the essential needs of maintaining physical and mental health (Currie, 2017, p.76; Gibson et al., 2019, p.387; Pinetl and Gearin, 2005, pp.380–381; Swanwick et al., 2003, pp.103–104). The problem of lack of accessible urban green space to large urban population can be interpreted in two ways - insufficient urban green space in urban areas and the uneven distribution of green space. While no rigid formula can be prescribed for the minimum amount of recreational space in urban areas, standards recognized by most US cities range from 0.625 to 1.05 acres (0.25 to 0.42 ha) per 100 residents (National

\* Corresponding author. Present address: 610 Foulke St, Cincinnati, OH 45220, United States.

E-mail addresses: [liu2s4@mail.uc.edu](mailto:liu2s4@mail.uc.edu) (S. Liu), [wangxo@ucmail.uc.edu](mailto:wangxo@ucmail.uc.edu) (X. Wang).

<sup>1</sup> Permanent address: 400 Deerfield Rd Morganville, NJ, 07751.

Recreation and Parks Association, 2000). These standards resemble the 0.6 acre (0.24 ha) per 100 residents suggested by the National Playing Fields Association (NPFA) in the UK (Nicholls, 2001, p.205). However, factors such as the rapid growing urban populations (Moeller, 1965, p.2; Wolch et al., 2005, p.6), a lack of funding and the difficulty in acquiring land (Pincetl and Gearin, 2005, pp. 368; Harnik and Simms, 2004, pp.8–9) often lead to lack of adequate park, recreation, and open space in many US cities. For example, Los Angeles is ranked among the lowest level of per capita open space with only about four acres (0.16 ha) per 100 residents (Pincetl and Gearin, 2005, p.368). Some other large and medium-sized US cities, including New York, Chicago, and Miami, have even lower rates (Sister et al., 2007a, p.6).

Besides the insufficient amount of total urban green space, there is also the problem of uneven distribution of parks and green space in urban areas, which exacerbates the problem that part of urban populations—in some cases, a large proportion—do not have direct or even any access to park resources within walking distance. For example, Sister et al. (2007b, p. 4) indicate that only 14 percent of the population in the Los Angeles Metropolitan Area have pedestrian access to green space (within 0.25 mi or 0.4 km). Similar phenomenon can also be witnessed in other cities in the USA and across the world, for example, in the UK, researches also identify that 64 percent of Sheffield households face the problem of public green spaces underprovided compared to the recommended standard (given by English Nature (EN), a UK government agency) that people would have access to nearest green space that no further than 300 m from their home (Barbosa et al., 2007, p. 187). According to the report of Green Visions Plan, a program with extensive field audits and data analysis on park resources in the Los Angeles Metropolitan Area, parks and other recreational open spaces and facilities are not equally distributed across the region. Sub-regions with less densely populated settlements and fewer residents (like West Ventura) have more parks within the area than other sub-regions with denser populations (such as South L.A.) (Sister et al., 2007a, p. 106). Such phenomenon of uneven distribution of parks can also be found in some other American cities (Boone et al., 2009, p.783; Talen, 2010, p.483), and according to the Trust for Public Land (TPL), about 100 million Americans do not have walking accessible park resources within a 10-minute walking distance (Ingraham, 2020; Surico, 2020). Many studies of park equity have identified that some uneven and unequal patterns in the distribution of parks and green space in urban areas are related to multiple factors such as socioeconomic condition and racial mixture level. Disadvantaged neighborhoods (usually are inner-city, low-income, high-density and of color) tend to have much lower level of accessible park benefits and resources (Wolch et al., 2005, pp.22–23; Sister et al., 2007b, pp. 3–4; Currie, 2017, p.76; Gibson et al., 2019, p. 387).

Even though people could reach parks beyond walking accessible distance, the proximity and easy access to parks would encourage more frequent use of these parks, which has been reported in many studies (Jasmani et al., 2017, p.241; Koramaz and Türkoğlu, 2018, p.346). The existence of walking accessible parks and other urban green space would affect the nearby residents' activity patterns by providing them a quality destination, increasing the tendency to walk, and making park visits more easily fit into a person's daily routines (Frank and Engelke, 2005, p.194; Alfonso et al., 2008, p.29; McCormack et al., 2010, p.721). In other words, the long travel distance to parks outside their neighborhoods, including urban parks, parks located in exurban locations and the further-away state and national parks, has been considered as one of the major reasons for the lower usage because of the longer time and energy needed (Wendel et al., 2012, p.281; Gibson et al., 2019, pp.388–389).

Therefore, the problem of large urban population lacking accessible urban green space (parks included) has already emerged in many US cities and attracted attention from scholars and professionals who develop various strategies to increase urban parks in cities. Some are promoting urban parks, regardless of park types, for making cities more attractive places for live and work with improved health and social

connections (Nilsson et al., 2010, pp.13–15; Swanwick et al., 2003, pp.94–95; Pincetl and Gearin, 2005, pp.367–368). Others promote specific types of urban parks, such as neighborhood parks that guarantee proximity to the nearby communities (Evenson et al., 2019, p.117; Patton-López et al., 2015, pp. S101–S102), or small-scale parks (less than three acres (1.2 ha) that can be developed in areas more easily accessible to urban residents and more widely distributed to different neighborhoods/communities (Armato, 2017, p. 1877; Peschardt et al., 2012, p.243).

### 3. Urban green space in the COVID-19 pandemic situation

While the enduring urban green space problem had emerged and attracted some attention before the pandemic, the current situation has exacerbated the problem to the forefront of the importance of urban green space accessible to residents on foot (Honey-Rosés et al., 2020, p. 10; Patino and Poon, 2021; Asgaard et al., 2021). During the early phase of the pandemic, the social distance requirements and/or lockdown policies imposed by many governments around world inevitably limited people's activities in everyday life. Some countries, (such as the USA, Spain, France, Italy, and Canada etc.) have put different levels of restrictions on public events, social gatherings, and public transport (Geng et al., 2020, p.553; Rogers et al., 2020, p.2; Yip and Chau, 2020, p.1), therefore many public space and facilities were shut down to limit the spread of the COVID-19. In some cases, public parks and green spaces were also included on the list. Unfortunately, the closure of parks limits and/or deprives of the opportunities of residents to stay physically active as well as mentally healthy and positive during the pandemic (Slater et al., 2020, p.0.1–2; Ugolini et al., 2020, p.1; Geng et al., 2020, p. 564; Asgaard et al., 2021). Such paradox of urban green space usages during the COVID-19, as well as other related changes and insights from the pandemic situation, will be explained in this section.

#### 3.1. The challenge of increasing demand for urban green space

As mentioned above, multiple countries (the USA included) have closed parks and other public places during the earlier months of the pandemic to control the virus spread (Fernandez and Hart, 2020; Slater et al., 2020, p.0.1–2; Geng et al., 2020, p. 564). Survey data has shown the reduction of park visits in fear of increasing the risk of possible contagion (Ugolini et al., 2020, p.8), including senior populations who are more vulnerable to the virus (Rice and Pan, 2020, p.17). However, neither the legal restriction on outdoor public space, nor the personal caution towards the pandemic risk can cut off people's need for parks and other urban green space.

Multiple studies on the effect of the pandemic on park usage have shown that the COVID-19 isolation has highlighted people's need for outdoor activities (especially doing physical exercise, relaxing and getting close to nature) and social interactions, which is translated into the increasing demand for parks and other available urban green space (Ugolini et al., 2020, p.1; Xie et al., 2020, pp.11–13; Geng et al., 2020, p.564). Some researchers emphasize the role of urban parks in reducing psychological burdens (such as poorer mental health, post-traumatic stress symptoms and other negative psychological impacts) caused by the COVID-19 pandemic (Geng et al., 2020, p.563; Slater et al., 2020, pp.1–2). Others point out the reduction on physical exercises due to restrictions on access to public space (Xie et al., 2020, pp.12–13), especially for vulnerable population who need to maintain some level of physical active to reduce the risk of chronic health problems (Rogers et al., 2020, p.2). In short, the social benefits of urban green infrastructure, which is connective matrices of urban green space that includes parks and other types of urban green space (Azagew and Worku, 2020, pp.1–2; Breuste et al., 2015, p.1), such as providing a place for meaningful in-person social activities, is of great importance (Fried et al., 2020, p.12; Geng et al., 2020, p.554). The article, *The Power of Parks in a Pandemic* by Surico (2020) points out that the various benefits

offered by parks seem more than mere added bonus, but “a critical lifeline for cities and their residents” during the pandemic.

### 3.2. *The compromised accessibility of urban parks for urban populations*

Not unlike many other negative impacts brought by the pandemic, the accessibility of urban parks has been greatly compromised. Some urban parks become completely unavailable as they are closed during the pandemic. For example, many trails, state parks, and national parks are closed in the USA to reduce crowding. Some parks, while remain open, become unreachable due to restrictions on transportation. For example, France’s lockdown and the mobility restrictions placed upon urban centers had lasted for months during the early period of the pandemic, severely limiting access to public space, including some parks (Asgaard et al., 2021). For those urban population who had to use public transportation to reach any urban parks before the pandemic, the re-strains or shut down of transportation options during the pandemic compromised or even completely cut off their park trips. According to a study on park visit during COVID-19 (Geng et al., 2020, p.556), among all the factors that are negatively correlated with the change in the number of park visits, which can be viewed as reasons for reducing park usage during the crisis, “the restrictions on public transport” is the second most significant factor (just behind the factor of “stay at home restrictions”), indicating that restrictions in transportation due to the pandemic have further decreased the number of park users.

### 3.3. *A reflection of the lack of alternatives to urban parks*

The increasing demand for parks and other urban green space as a necessity for maintaining physical and mental health during the COVID-19 has been noticed since the first phase of the pandemic. Meanwhile, COVID-19 transmission rates seemed to be lower outdoors than indoors (McGreevy, 2021; Geary et al., 2021, p.2), therefore some cities in the USA decided to reopen parks with pandemic precaution polices at the end of April 2020 (Sadiq et al., 2020, pp.70–71). According to the Google COVID-19 Community Mobility Reports (2020), the global number of park visitors had stopped the decreasing trend and started to increase in April 2020. The overcrowded scenes in many reopened parks are reported by different media outlets and discussed in articles on COVID-19 and park usages (Kummer, 2020; Fassett, 2020; The Trust for Public Land, 2020; Geng et al., 2020, p. 553). While large parks that provide diverse benefits and functions are most likely the preference of urban residents, the overcrowd reflects a common situation that most urban areas lack alternatives for outdoor activities when large parks are unavailable. Facing the large influx of park visitors rushing into the reopened parks, officials have conducted a series of rules and policies against the risk of virus spreading among crowds in parks. For example, visitors are required to maintain social distance and wear face masks (Flores and Weisfeldt, 2020; TIMES editorial board, 2020; Richard and WCPO staff, 2020), time limits have been set on park operating hours (Kummer, 2020), and the usage of the park facilities are strictly prohibited (Reynolds and Forgione, 2020; Richard and WCPO staff, 2020). To limit the number of users of parks and other public open space, the officials in Ventura, San Diego and Orange counties in California have kept beach-adjacent parking lots closed while gradually reopening their beaches, in hope that people would stay within their own neighborhoods (Reynolds and Forgione, 2020). Fig. 1 shows that a playground was still closed off after Ault Park in Cincinnati was reopened in May 2020.

The coronavirus crisis has made people realize the need for improving accessibility—especially walking accessibility to urban green space. While the quarantine and shut-down policies during the pandemic have increased urban populations’ urge for going outdoors, it also exacerbates the issue of inaccessible parks/green space in cities. Therefore, not only it is important to make parks accessible to all urban populations in normal circumstances, but it is also crucial in challenging times when people’s transit opportunities are compromised, such as in



**Fig. 1.** A photo of Ault Park (a regional park with a size of about 240 acres (97 ha) in Cincinnati, OH) shows that the playground at the re-opened park is still closed off, and a full parking lot indicating its popularity as soon as they reopen. (Photo taken on May 15, 2020 by the authors).

the current COVID-19 pandemic. As a result, planners and decision makers should rethink about the types and distributions of urban green space, aiming for urban green space within walking distance for all urban populations. In the next section, we will introduce a special type of urban parks, pocket parks, as a solution to increase park accessibility and a practical neighborhood improvement strategy.

## 4. Unique contribution of pocket parks in helping to fight the coronavirus

While researchers and professionals have been advocating for more urban green space for quite some time (Chiesura, 2004, pp.129–130; Jim and Chen, 2006, pp.347–348; Kim and Coseo, 2018, p 14), the experience of the deprivation of outdoor activities during the coronavirus pandemic is a reminder of the urgency of solving this problem. Since introducing more urban parks might not be effective enough for increasing accessible urban green space for everyone (as discussed earlier), some studies have provided alternative solutions to the problem, including turning available vacant lots into pocket parks in neighborhoods lacking park resources.

### 4.1. *Pocket park definition*

As a type of tiny urban parks that are accessible to the public, pocket parks (also called vest-pocket parks or miniparks) are usually created from vacant lots, and they can be in the urban fabric of different areas, such as business districts or most commonly residential neighborhoods (Blake n.d. p.1; Luks, 2001, p.96). The size of a pocket park usually has a size smaller than 1–3 acres (4,000–12,000 m<sup>2</sup>) (Faraci, 1967, p.4) or between 1–4 house lots (Marcus and Francis, 1997, p.149). The archival report of the emergence history of pocket parks in the USA by the Planning Advisory Service (Information Report no. 229) states that the actual park size is determined by land availability, instead of pre-established standards (Faraci, 1967, p. 3).

Just as definitions of open space, green space, and parks are used loosely and interchangeably (Currie, 2017, p.78; Swanwick et al., 2003, p.97), there are different classifications of pocket parks in the park typology. Among standards for park, recreation and open space, some have classified pocket parks as an independent category (Labuz, 2019, p.2; Cohen et al., 2016, p.419), while others list pocket parks as a subtype of local parks (which is up to 3 ac or 1.2 ha in size) (Currie, 2017, p.78; Wood et al., 2017, pp.65–66). Pocket parks can be seen as scaled-down neighborhood parks, which are intended to serve the immediate population (Moeller, 1965). The features and functions of



pocket parks have been discussed in many studies in different countries over the years. It is widely believed that quality pocket parks (well-maintained, safe and accessible) could serve similar functions as large urban parks even though the effects may be limited or highly dependent on surrounding conditions because of their small size (Lau et al., 2011, p.46; Lau et al., 2012, p.224; Ikin et al., 2013, p.51; Strohbach et al., 2013, pp. 77–78). With different components in their design, pocket parks could potentially provide one or multiple functions of other types of open space, contributing to the health and well-being of urban populations through multiple functions such as acting as a place for leisure/recreational activities and relaxation (Luks, 2001, p.96; Gibson and Canfield, 2016, p.743; Kerishnan et al., 2020, p.1; Hu, 2016, p.1503) and providing green outdoor exposure for psychological restoration (Peschardt and Stigsdotter, 2014, p.150). For example, pocket parks with facilities like benches and tables, and other landscape components such as a fountain may support socializing. Walk trails, small play areas or playground can fit in pocket parks (Forsyth and Musacchio, 2005, p.150) to host some activities. Pocket parks with green ground cover, trees and flowerbeds may provide a function like small natural parks or community gardens. Pocket parks with trails and open space could support simple physical activities; and pocket parks with equipment may be used as playgrounds or a playlots (Peschardt and Stigsdotter, 2014, p.150). Pocket parks may be specifically designed to support certain types of physical activity, such as skate parks or areas for ball games (Peschardt, 2014, pp.24–25). They also provide people with multiple opportunities in terms of recreation and support people health, community cohesion and city sustainability.

Pocket parks might also have site-specific functions created locally, such as for disaster mitigation or evacuation, education, art displays and much more. For example, pocket parks are built as evacuation sites in Japan, where earthquakes occur frequently (Hu, 2016, p. 1036). There are flood protection pocket parks that designed to promote some dual use spaces for protecting land from flooding (Babalís, 2020, 13). A pocket park in a campus called “Focus: HOPE” in Detroit provides users a pleasant place to enjoy the beauty of featured artwork (several murals and ornaments painted by local artists displayed in the planning beds under the murals) and embrace the heritage of the local African American community (Luks, 2001, pp.97–100). Pocket parks contribute to the diversity of urban parks in terms of size, function, and accessibility, which enhances the flexibility and effectiveness in fulfilling urban populations’ need for open space/green space (Currie, 2017, p.78).

#### 4.2. Pocket Park function as a part of the urban green infrastructure

Pocket parks are an integral part of an urban green infrastructure system which includes other vegetated surface in cities such as lawn space, street trees (Heckert and Rosan, 2016, p. 264), private spaces like domestic gardens and green roofs (Ferguson et al., 2018, p.137), in addition to parks and urban green space. The diverse and connectivity of various urban infrastructure system components can provide multiple environmental, social, psychological and health functions, as well as ecological services for urban residents (Geng et al., 2020, p. 564; Ugolini et al., 2020, p.2; Azagew and Worku, 2020, pp.1–2). Pocket parks throughout a city can function as “green stepping stones” in the urban green infrastructure system to complement large parks (Nordh and Østby, 2013, pp.12), as well as public and private open space corridors (Luks, 2001, p.96). For example, pocket parks in London are designed to be linked by green paths, making them part of a larger green space network (Hu, 2016, p. 1036). Pocket parks can also improve the overall performance of the whole urban green infrastructure system, such as providing permeable surface (Blake n.d. p.1; Abd El Aziz, 2017, p.52), improving urban biodiversity especially for bird species (Swamy, 2013, p.79; Armato, 2017, p.1869), and alleviating urban heat island intensity at the micro scale (Lin et al., 2017, pp.58–59).

Pocket parks also function as a convenient recreational destination for nearby residents. Even though some researchers challenge the

connection between park use and proximity to parks (Hillsdon et al., 2006, p.1132; Chen et al., 2018, p.139) because people may be willing to travel farther for bigger green spaces, many researchers suggest that high accessibility of parks is among factors that could potentially increase the frequency of nearby residents’ use of them (Brownson et al., 2009, S99; Sugiyama et al., 2010, pp.1755–1756). As easily accessible urban green space, pocket parks encourage nearby residents use them daily for physical activities and other outdoor recreational activities such as socializing, rest and restitution (Nordh and Østby, 2013, p.17; Cohen et al., 2014, S.20–24; Cohen et al., 2016, pp.424–425; Peschardt et al., 2016, p. 92; Abd El Aziz, 2017, p.52). Studies have shown that private gardens can help improve psychological health during the COVID-19 pandemic (Spano et al., 2021, p.1; Poortinga et al., 2021, p.7). Similarly, pocket parks can be easily accessible outdoor destinations for nearby residents to enjoy daily.

#### 4.3. Pocket parks’ contribution to urban neighborhoods

In addition to the features and functions of urban parks, pocket parks show four advantages in improving the quality of urban neighborhoods: 1) providing more potential sites to maximize proximity to urban populations, 2) becoming easily accessible to urban populations, 3) fostering community interaction and social bonds to nearby residents and 4) the advantages improving the disadvantaged neighborhoods, which will be explained in the following sections. Not only do these advantages make pocket parks effective choices in normal circumstances, but they also have special merits during abnormal situation such as the current coronavirus pandemic.

##### 4.3.1. More potential sites for neighborhood improvement

Vacant lots or abandoned properties in a neighborhood could cause a series of problems including public health concerns as they could pose elevated risks of providing harborage for rodents and other pests that might carry and spread diseases to humans (Park and Ciorici, 2013, pp. 385–387). Therefore, converting vacant lots into pocket parks can reduce the health concerns and risks associated with them. Turning negative externalities associated with property abandonment to desirable destinations also can act as catalyst for future development and bring substantial benefits to the area and residents (Park and Ciorici, 2013, pp.385–386; Currie, 2017, p.79). As an example, the Community Land Trust, a nonprofit organization has successfully redeveloped the vacant, underutilized spaces in neighborhoods of the urban core of Sacramento, transforming them from neighborhood burdens to neighborhood assets (Campbell, 2016, pp.10–11).

Because pocket parks require small size of land and can use vacant lots or other forgotten and wasted spaces such as street frontages and curved street corners (Curl and Wilson, 2015), they hold an advantage over large parks in having more available sites to maximize proximity to urban populations (Talen, 2010, p.478; Peschardt, 2014, p. 10). The London Pocket Park Program in 2009 serves as a successful example of turning underused or forgotten areas across the city into more usable and pleasant pocket parks for more urban population. A fund of £850,000 (US\$1,228,000) was dedicated to the creation of pocket parks across 17 London boroughs to improve local citizens’ quality of life through recreational offerings and contact with nature. The number of pocket parks increased to 100 by 2016 (Beatley, 2017, pp.200–201) with size up to 0.4 ha. Many pocket parks in London are around 0.02 ha, the size of a tennis court, providing welcoming public space for all people (Department for Communities and Local Government, 2015). In 2019, the ministry of housing, communities and local government in the UK continued to promote pocket parks via funding and launching more pocket parks to “help communities transform unloved, neglected or derelict areas into new green spaces” (Ministry of Housing, Communities and Local Government, 2019a, p.3). One of the ministry’s official document describes the reason for promoting pocket parks as their high capability of being developed from small plots of derelict land situated

as close as possible to the nearby communities (Ministry of Housing, Communities and Local Government, 2019b, p.1). In order to give residents and visitors a better computerized service and convenience, the official has mapped 100 pocket parks and created an app to show the collocation of them, as well as the travelling time reaching them (Armato, 2017, pp. S1874–1875). Turning vacant lots or abandoned lots to pocket parks can be an effective strategy with lower turn-over costs than developing larger parks. In addition, the actual development of facilities of pocket parks may involve residents who use them, which keeps costs at a minimum while benefiting those residents in increasing community bonds (Babalís, 2020, p.4).

4.3.2. Easy accessibility to urban populations

Many park-accessibility studies define a park as walking accessible if it is reachable within either approximately half-mile walking distance or roughly a 10–15-minute (Tilt et al., 2007, p. 373; Reyes et al., 2014 p.39; Knuiman et al., 2014, p.454). Since a pocket park is defined in the urban open space design guidelines to be able to serve up to a four-block radius, while most of its users are from within a one-two block radius (Marcus and Francis, 1997, p.151), high proximity to nearby neighborhoods and communities tends to be a common feature of pocket parks. Such feature can be seen in many studies of pocket parks around the world, such as the "Inner block parks," a vest pocket park program that develops outdoor recreation facilities in the interior of multiple underprivileged population concentrated neighborhoods in Baltimore, USA (Faraci, 1967, pp.7–8), the Parc du Portugal, a popular pocket park located in the heart of the Portuguese community in Montreal, Canada (Bild et al., 2018, p.111), and the new pocket park in the Left Over Space in Rod El Farag District, one of the most populated mixed use area in Cairo City, Egypt (Abd El Aziz, 2017, pp.54–58).

Since pocket parks tend to be highly walking accessible to nearby residents, they can serve as convenient everyday recreational destinations for the local resident. Take East Price Hill, a neighborhood in Cincinnati, USA as an example (Fig. 2), most residents would need to drive to several closest large parks—Glenway Woods Nature Preserve, Mt Echo Park, or Rapid Run Park in the adjunct West Price Hill neighborhood. Pocket parks, such as Glenway Park and Demsey Playground on the other hand, are located within walking distance (0.5 mi or 0.8 km).

The advantage that pocket parks are highly accessible has extra merits under extreme situations such as the current pandemic. While the usage of some large parks might be compromised, the more accessible pocket parks are more flexible at maintaining most of their functions for the nearby residents. As shown in Fig. 3, even though the facilities in

both pocket parks are closed (the children playing equipment in Glenway Park and the pool in Demsey Playground), the nearby residents can still walk to the parks on a daily basis. The high accessibility of those pocket parks to residents in nearby neighborhoods makes them convenient outdoor destinations.

4.3.3. Contribution to stronger community interaction and social bonds

As active public places highly accessible to nearby neighborhoods, pocket parks can foster community interaction and social bonds by providing opportunities for local residents to exchange information, socialize with each other and become acquainted with their neighbors (Gibson and Canfield, 2016, pp.732–736; Armato, 2017, p.1875; Nikšić and Watson, 2018, p.859; Nordh and Østby, 2013, pp.16–17; Mokhtar and Abdel Rehim, 2017, pp.6950–6951). Safe and well-maintained pocket parks can also contribute to strong community attachment and sense of place (Ayala-Azcárraga et al., 2019, p.27,33). More than 50 years ago, the vest-pocket park program in Philadelphia brought not only physical improvements, but also a positive social impact to local residents through involving them throughout the whole process. The high participation rates of local residents and full utilization of neighborhood resources promoted a sense of pride (Faraci, 1967, pp.4–7). More recently, an online article of the National Recreation and Park Association (NRPA) presents a similar conclusion that local parks accessible to communities have the power to strengthen community ties and potentially bring diverse populations together (NRPA, 2020). A recent issue brief on pocket parks of the NRPA (NRPA n.d., pp.1–2) points out that the four key qualities of a successful pocket parks are being accessible, comfortable, sociable places and allowing people to engage in activities. In addition, pocket parks created from coordinated community efforts can provide the benefits of making communities more sociable and empowering residents to make decisions that affect their community.

As mentioned earlier, local governments, including cities in the USA have decided to reopen parks with precaution polices. Such change would allow people to enjoy the functions and benefits of parks in helping them maintain physical and mental health, while at the same time remaining vigilant about the pandemic. Some scholars emphasize parks' role in releasing stress and resuming some level of social contact for residents to reduce negative psychological influences of the pandemic (Xie et al., 2020, p.11; Slater et al., 2020, pp.1–2; Geng et al., 2020, p.560). Pocket parks could be convenient places for nearby residents to relax, release stress, and social interact (with precaution to stay safe as well) that would help them stay positive against the crisis. In addition, an online article from Politico Magazine (2020) describes how

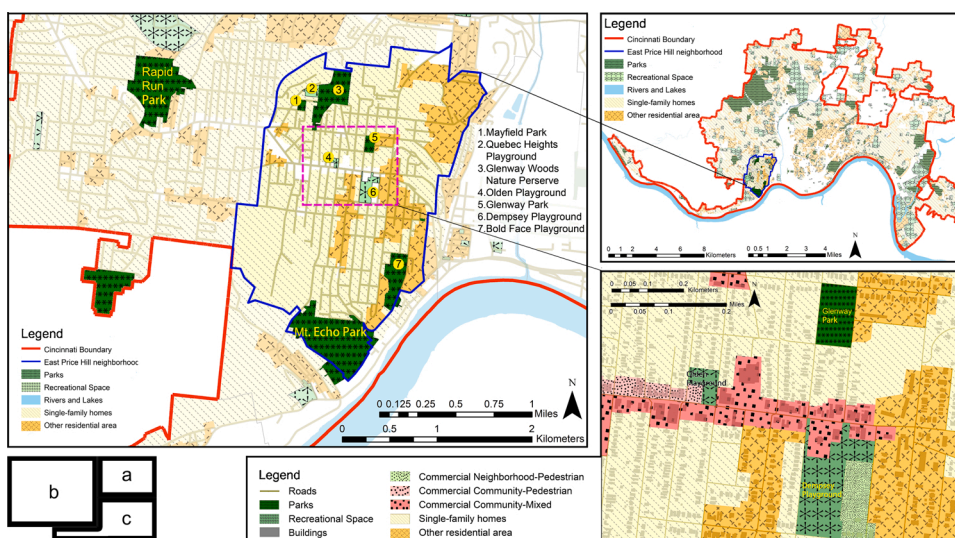


Fig. 2. Parks and other green space (such as playground, recreation common, gardens and more) in East Price Hill neighborhood, Cincinnati: a, the location of the neighborhood in Cincinnati; b, 8 parks and other green space in and around the neighborhood; c, highly accessible pocket parks (Olden Playground, Glenway Park and Demsey Playground) in the neighborhood (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article).





**Fig. 3.** Use of pocket parks located in local neighborhoods: a, a local resident walking to the Glenway Park and b, two people playing Frisbee with a dog on the green space of Demsey Playground, while the outdoor pool behind them is closed. Following the policy of closing facilities to prevent the spread of virus among park users, those pocket parks with high proximity could still provide nearby residents an available and convenient outdoor destination for recreational activities (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article).

(Both photos taken on May 13, 2020 by the authors).

coronavirus will change the world and suggests that during these challenging and disturbing times, community bonds are extremely important in keeping people connected and supporting each other through adversity. The existence of pocket parks that are highly accessible would foster such community bonds among residents and serve as sites for community organizations or volunteers to help residents deal with the pandemic.

#### 4.3.4. Advantages in improving disadvantaged neighborhoods' accessibility to urban green space

Several studies point out that the important insight from the COVID-19 is providing walking accessible urban green space to all urban residents. Some suggest more attention should be paid to the type of urban green space with high proximity to neighborhoods, including small green spaces and neighborhood parks (Honey-Rosés et al., 2020, pp. 8–10) and others emphasize improved urban planning strategy that integrates green spaces of different sizes within the fabric of cities and neighborhoods to benefit all residents (Ugolini et al., 2020, p.1). While people everywhere are experiencing hardship from the COVID-19 pandemic with substantially restrained available options for physical activities, low-income families in disadvantaged neighborhoods tend to suffer more than others (Vesoulis, 2020; Asgaard et al., 2021). Such disadvantage may have already existed in many US cities for decades, the pandemic put them in a worse situation. Residents in disadvantaged neighborhoods are in greater needs for accessible urban green space because they tend to have fewer private gardens or community-owned facilities for leisure opportunities (Moeller, 1965, p.2; Wolch et al., 2005, p.5) and possess much lower level of accessible park benefits and resources (Wolch et al., 2005, pp.22–23; Sister et al., 2007b, pp. 3–4; Dony et al., 2015, p. 91; Currie, 2017, p.76; Gibson et al., 2019, p. 387; Talen, 2010, p.483). In addition, low-income residents depend more on public transit for various activities (including leisure activities such as going to parks), hence are facing more serious problems of inaccessible parks when many public transits have reduced services or been shut down during the pandemic situation.

In addition, compared with larger green space projects, promoting small parks in scattered sites (which pocket parks tend to be) are less likely to trigger the effect of green gentrification/environmental gentrification (Checker, 2011, p.224; Wolch et al., 2014, p.241), which refers to new park projects drive up property values, cause the replacement of low-income and/or minority residents who are unlikely to afford the rising housing price with more affluent new residents (Gould and Lewis, 2012, p.114). Firstly, compared with the large areas of lands required by projects of large-scale parks, a new pocket park can fit into current lots within single or several blocks (Marcus and Francis, 1997, p.149). Secondly, the economic impact, such as increasing local housing price due to the construction of a new pocket park tend to be less than large-scale parks (Rigolon et al., 2020, p. 35). Thirdly, developing smaller-scale parks (pocket park included) would potentially stymie environmental gentrification (Curran and Hamilton, 2012,

p.1040; Rigolon et al., 2020, p. 31). For example, the “just green enough” approaches are applied to avoid the environmental gentrification through implementing initiatives that focus on smaller-scale parks (like pocket parks), to involve the community participation in planning, building and preserving affordable housing, and to reflect the culture of the residents (Rigolon et al., 2020, p. 31). Therefore, with all these advantages, as well as some extra attention and strategies concerning the green gentrification problem, pocket parks have the potential in improving disadvantaged neighborhoods' accessibility to urban green space, an effective way to improve the overall accessibility level, while also addressing the urban park equity problem, during and after the current pandemic.

## 5. Conclusion

The wide-spread coronavirus crisis has affected people's lives and economic prosperity around the world. However, it also calls for focused attention on various aspects of planning a healthier city unlike anything seen in a generation (Honey-Rosés et al., 2020, p. 8). Regarding the enduring problem of urban green space, the accessibility of urban neighborhoods to urban green space had been considered desirable before the coronavirus outbreak, and now should be considered a necessary lifeline to urban residents' health and well-being. Like anything that seriously disrupts an existing system, it can be treated as an opportunity for action (Holman, 2010, p.24). A series of recent researches have already addressed the attention to and appreciation of urban green space, especially in terms of their accessibility for all urban population, raised from the common stressful experience during the COVID-19 crisis (Honey-Rosés et al., 2020, p. 10, 12; Slater et al., 2020, p.2; Xie et al., 2020, pp.12–13; Geng et al., 2020, p554), which could potentially lead to more adaptive strategies that can contribute to the shared future of more accessible green space for everyone. To support such effort, we expect that pocket parks could be effective in increasing accessibility to all urban populations.

Pocket parks can have merits in many aspects and in this paper, we emphasize their advantages in improving accessibility to urban neighborhoods (especially the disadvantaged ones) to green space, which is of great importance during the current pandemic. Firstly, many potential sites throughout a city makes it a more feasible option to develop pocket parks than larger parks to maximize the proximity of urban green space to different urban communities. Secondly, the easy access of pocket parks would make them convenient daily outdoor activity destinations for nearby residents, which reduces the usage pressure of other urban parks during normal times and fills in the void when the larger urban parks are closed during abnormal situations like the coronavirus pandemic. Thirdly, pocket parks could contribute to fostering a stronger community bond. Finally, highly accessible pocket parks would improve living conditions of residents of disadvantaged neighborhoods and less likely to cause green gentrification issue comparing with larger-scale parks.

With the rollout of more vaccines, we are seeing the light at the end of the tunnel. While other professionals are addressing many long-lasting issues such as job losses, access to food, and health care infrastructure, planners, designers, architects, and landscape architects must make most use of the knowledge, experience, and insights they got from this pandemic to redesign cities to be more resilient to future disasters, including reappearing emergency like the current COVID-19 crisis. Riding on the crest of a wave with the awakened global interest in parks and open space that have been long overlooked or unnoticed by official and residents (Surico, 2020), we promote pocket parks to revive vacant lots throughout the urban fabric to benefit all urban population in different neighborhoods. Obviously, introducing more pocket parks could not single-handedly lessen all the long-lasting urban challenges (Baur and Tynon, 2010, p.199) and the current pandemic suffering. To maximize the potential of pocket parks in solving the problem of lack of accessible green space to urban population and minimizing negative effects, it is important to acknowledge the broader urban equity issues that become more visible under the influence of the pandemic and integrate them into the larger frame of urban studies. In addition, since there have been some concerns that different types of parks would become "green walls/barriers" that separate population with different socioeconomic status from each other or even as a practice of Jim Crow's "separate but equal" policy (Solecki and Welch, 1995, p.105) - upper income neighborhoods have access to large parks with more facilities while less wealthy parts of the city are left with small parks with less facilities (Mladenka and Hill, 1977, p.82; Byrne and Wolch, 2009, p.747; Byrne, 2012, p.598), pocket parks must be associated with efforts that avoid separating park users to different parks while adding more varieties of urban green space. It is extra important to make urban green infrastructure like a "green magnet" in improving interracial relations (Gobster, 1998, pp.53–55). Well-developed pocket parks can enhance existing urban green infrastructure system to deliver multiple functions and services to more urban population, especially those lacking easily accessible urban green space. Introducing more quality pocket parks would require the collaborations of policy makers, funding agencies, residents, and organizations with the same interest in a shared future of healthy cities (Çay, 2015, pp.308–309). Developing practical guidelines for pocket park development to ensure their success in improving urban neighborhoods would require more research.

### CRedit authorship contribution statement

**Shu Liu:** Methodology, Software, Investigation (field trip and taking photos), Writing - Original Draft. **Xinhao Wang:** Conceptualization, Validation, Investigation (field trip and taking photos), Writing - Review & Editing.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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