



COVID-19 crisis demonstrates the urgent need for urban greenspaces

Recent acceleration of urban growth rates has put greenspaces under pressure in cities worldwide, despite the well-known health benefits they provide for city dwellers. We contend that the COVID-19 pandemic highlights the vital importance of urban greenspaces as an essential quality-of-life element in sustainable cities.

Governments around the world have resorted to unprecedented measures to slow or prevent the spread of the novel coronavirus SARS-CoV-2 following the declaration of a global pandemic by the World Health Organization. These measures include stepwise restrictions in individual mobility and public life. In many cities throughout Europe, public parks remained open initially (Figure 1, top), but enforcement of “social distancing” in these areas proved increasingly difficult. Consequently, numerous municipalities across the continent restricted – with varying degrees of stringency – access to and

use of public greenspaces to help encourage physical distancing (Barton *et al.* 2020). Several cities, such as Zurich, Switzerland, went a step further and closed city parks to the public (Figure 1, bottom left).

The public health benefits derived from regular exposure to natural environments have been widely demonstrated (Hartig *et al.* 2014), and this relationship is of particular importance to residents of urban areas (Douglas 2012; McKinney and VerBerkmoes 2020). While visual access to greenspace alone can be beneficial, here we focus on the physical use of urban greenspace. Being outside in fresh air is among the most important leisure activities for improving human well-being, and is also among the most popular; in a study across five European cities, Fischer *et al.* (2018) found that 94% of respondents were active users of parks. We hypothesized that during the COVID-19 lockdowns, short-distance outdoor activities were likely to be even more popular than before the pandemic because of the perceived constraints of the various stay-at-home orders and lockdowns.

To test this, we used Google Trends to estimate changes in online searches for basic activities typically carried out

in urban green areas, such as walking, before and after the onset of the pandemic. Google Trends provides proportional data of search queries conducted over time in the Google search engine (Choi and Varian 2012), and has been used to provide real-time estimates for health care demand (Nuti *et al.* 2014), disease outbreaks, and consumption trends (Vosen and Schmidt 2011), among other issues. In the web-based interface (<http://trends.google.com>), we entered the expression “go for a walk” together with – for comparative purposes – “go shopping” and “eat out” as other popular urban activities. We then did the same for the equivalent German terms “spazieren gehen”, “einkaufen gehen”, and “essen gehen”. We visually inspected the proportion of global search requests from April 2019 to March 2020. Although we expected our searches of the English and German terms to provide indications about the situation in several countries across different continents, many other countries were not represented, including those with comparatively strict (eg France) and more relaxed (eg Brazil) lockdown measures.

We detected a sudden increase in Google search requests for “go for a walk” and “spazieren gehen” after 15 Mar 2020, a date that coincides with the initiation of lockdown measures in many countries (Figure 1, bottom right; see WebFigure 1 for German terms). We associated the sudden increase in searches for “going for a walk” with (1) the desire of people now stuck at home to go outside for short periods of the day and (2) the concern that such activities may not be permitted, as evidenced, for example, by searches for “coronavirus can I go for a walk”. While an internet search alone does not necessarily reflect whether an individual actually went outside, it is indicative of their interest in doing so. By way of comparison, proportional increases in the other search terms we used (“go shopping” and “eat out”) were much lower over the same time-span.

As such, the COVID-19 pandemic provides a new way of looking at the

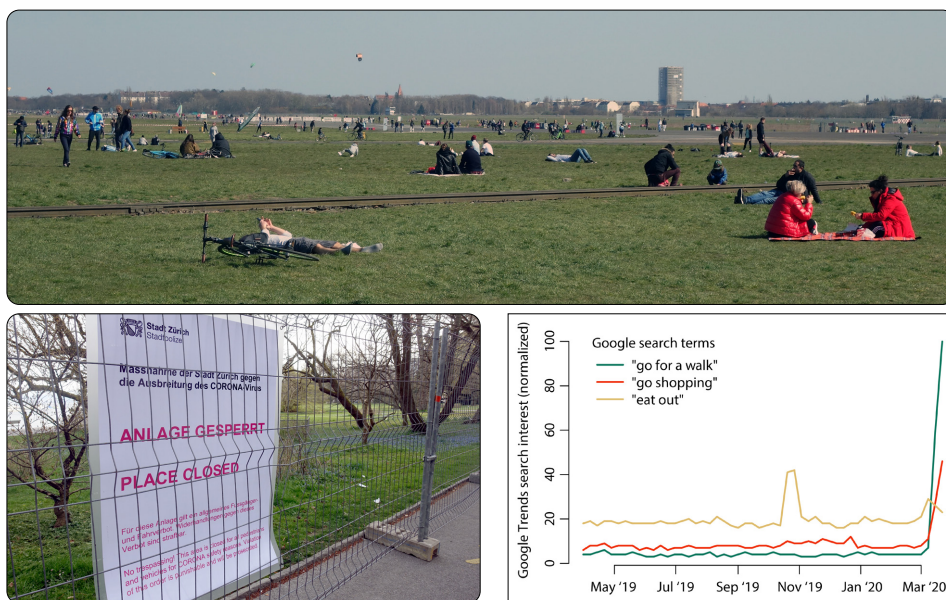


Figure 1. (top) Tempelhofer Feld in Berlin, Germany, provides more than enough space for adequate social distancing during the COVID-19 crisis. (bottom left) A park in the city center of Zurich, Switzerland, that was closed during the pandemic to prevent overcrowding. (bottom right) Proportional interest in global Google search queries based on the keywords “go for a walk”, “go shopping”, and “eat out” from April 2019 to March 2020.

value that urban residents place on greenspaces. The surge in interest in going for short walks is not, unfortunately, matched by the supply of parks in which residents of densely populated urban quarters can take walks (Haaland and Konijnendijk van den Bosch 2015; Boulton *et al.* 2018). In addition, access to urban greenspaces is typically unequal across urban landscapes, varying with social and economic status (Haase *et al.* 2017). The desire to seek recreation and solace in green settings during times of crisis (Samuelsson *et al.* 2020) might impress upon people the importance of the greenspaces near their doorsteps and increase their appreciation of these areas and the biodiversity they contain. The coronavirus pandemic could therefore result in a reshaping of the values that people have for greenspaces, and thereby increase pressure, through social and political actions, for enhancing urban environments. Furthermore, given the well-documented health benefits of exposure to natural environments, we emphasize that urban greenspaces are not only useful for providing people with a means for stress release during times of societal disruption, such as a pandemic, but can also help people to physically and mentally prepare for such times. By providing urban residents areas to exercise and socialize regularly, greenspaces promote physical and psychological well-being, which in turn improves resistance to, as well as the ability to cope with, new pathogens.

In several cities across Europe, short-term actions were implemented in response to the increased need for public space during the pandemic; for example, numerous roads in Berlin, Germany, were temporarily closed to vehicles and converted to bike- and footpaths. Along with other researchers (Honey-Rosés *et al.* 2020; Venter *et al.* 2020), we argue that in the long run the COVID-19 crisis should be seen as an impetus for more sustainable city planning in general. Given the stiff competition for available land in urban areas, creating more greenspaces will be a perpetual challenge. In

addition to establishing new parks, innovative ideas are also needed, such as integrating greenways into transportation corridors, or allowing access to informal greenspaces (Rupprecht and Byrne 2014) like naturally revegetated vacant lands (Kowarik 2018).

The acute COVID-19 crisis underscores the importance of preserving and further developing urban green infrastructure. Many people have suggested that the world will be fundamentally changed by the experience of the crisis; we urge that expanded development of urban greenspaces be part of that change.

■ Acknowledgements

FK is funded by the European Union Horizon 2020 program (grant agreement number 690268). We thank J Ghazoul for helpful comments on the text.

Fritz Kleinschroth^{1*} and Ingo Kowarik²

¹*Ecosystem Management, Department of Environmental Systems Science, ETH Zurich, Zurich, Switzerland* *(fritz.kln@gmail.com); ²*Ecosystem Science/Plant Ecology, Institute for Ecology, TU Berlin, Berlin, Germany*

Barton D, Haase D, Mascarenhas A, *et al.* 2020. Enabling access to greenspace during the covid-19 pandemic – perspectives from five cities. New York, NY: The Nature of Cities. <https://bit.ly/2XzJfAP>. Viewed 3 Jun 2020.

Boulton C, Dedekorkut-Howes A, and Byrne J. 2018. Factors shaping urban greenspace provision: a systematic review of the literature. *Landscape Urban Plan* **178**: 82–101.

Choi H and Varian H. 2012. Predicting the present with Google Trends. *Econ Rec* **88**: 2–9.

Douglas I. 2012. Urban ecology and urban ecosystems: understanding the links to human health and well-being. *Curr Opin Env Sust* **4**: 385–92.

Fischer LK, Honold J, Botzat A, *et al.* 2018. Recreational ecosystem services in European cities: sociocultural and geographical contexts matter for park use. *Ecosyst Serv* **31**: 455–67.

Haaland C and Konijnendijk van den Bosch C. 2015. Challenges and strategies for urban green-space planning in cities undergoing densification: a review. *Urban For Urban Gree* **14**: 760–71.

Haase D, Kabisch S, Haase A, *et al.* 2017. Greening cities – to be socially inclusive? About the alleged paradox of society and ecology in cities. *Habitat Int* **64**: 41–48.

Hartig T, Mitchell R, de Vries S, and Frumkin H. 2014. Nature and health. *Annu Rev Publ Health* **35**: 207–28.

Honey-Rosés J, Anguelovski I, Bohigas J, *et al.* 2020. The impact of COVID-19 on public space: a review of the emerging questions. *OSF Preprints*. doi.org/10.31219/osf.io/rf7xa.

Kowarik I. 2018. Urban wilderness: supply, demand, and access. *Urban For Urban Gree* **29**: 336–47.

McKinney ML and VerBerkmoes A. 2020. Beneficial health outcomes of natural green infrastructure in cities. *Curr Landsc Ecol Rep* **5**: 35–44.

Nuti SV, Wayda B, Ranasinghe I, *et al.* 2014. The use of Google Trends in health care research: a systematic review. *PLoS ONE* **9**: e109583.

Rupprecht CDD and Byrne JA. 2014. Informal urban greenspace: a typology and trilingual systematic review of its role for urban residents and trends in the literature. *Urban For Urban Gree* **13**: 597–611.

Samuelsson K, Barthel S, Colding J, *et al.* 2020. Urban nature as a source of resilience during social distancing amidst the coronavirus pandemic. *OSF Preprints*. doi.org/10.31219/osf.io/3wx5a.

Venter ZS, Barton DN, Gundersen V, and Figari H. 2020. Urban nature in a time of crisis: recreational use of green space increases during the COVID-19 outbreak in Oslo, Norway: SocArXiv. doi.org/10.31235/osf.io/kbdum.

Vosen S and Schmidt T. 2011. Forecasting private consumption: survey-based indicators vs Google Trends. *J Forecasting* **30**: 565–78.

■ Supporting Information

Additional, web-only material may be found in the online version of this article at <http://onlinelibrary.wiley.com/doi/10.1002/fee.2230/supinfo>