

VIEWPOINT

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Designing Density Better for Cities and Nature



COVID-19's rapid spread in confined spaces has led to some criticism of high urban density. Professor Stephen Cairns, Director of the Singapore-ETH Centre's Future Cities Laboratory, explains why this perception is flawed, and calls for better design of density to benefit both cities and the natural world.



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The outbreak of the COVID-19 pandemic in early 2020 triggered widespread anxiety about the role of high urban population densities in spreading the virus. As we learnt, the virus was transmitted through respiratory droplets and contact. Maintaining physical distance and avoiding close, unprotected contact was essential if we were to stop its spread. This led many to assume that densely populated cities were dangerous places to be in.

In Europe and North America, the anxiety erupted in a slew of city-sceptical headlines, such as The New York Times' "Density is New York City's Big 'Enemy' in the Coronavirus Fight", and Bloomberg's "New York and San Francisco Can't Assume They'll Bounce Back".

This was understandable. But as more information about COVID-19 became available, the perceived link between disease transmission and population density became less credible. Cities with high densities, such as New York, did indeed record high numbers of infections. But Manhattan, the city's most densely populated borough, had lower infection rates than some suburban areas. High density cities such as Shanghai, Tokyo and Hong Kong had relatively low per capita infection rates. Conversely, cities with relatively low densities, like Detroit and Dublin, had comparatively high infection rates.

The current evidence suggests that population density tells us little about how cities interact with the pandemic. For dense cities that proved resilient to the virus, a variety of factors have been significant. For example, healthcare access and the ability to work from home were crucial in Manhattan. In Mumbai's Dharavi, one of the world's most densely populated slums, the quality of grassroots collective action helped mitigate early infection numbers. High density alone does not predict high infection rates; how density and urban policy is designed matters.

Urban designers, planners and policymakers are thus presented with two related challenges. The first is to intensify efforts to widen and maximise the benefits of urban density for residents, such as in the areas of healthcare, the economy and the living environment. This can be done by, for example, co-locating diverse services, amenities and complementary jobs for convenience, thus reducing travel demand. Underlying these efforts is the need to reduce inequities in healthcare and prevent non-communicable diseases through active mobility, thereby reducing the risk of COVID-19 mortality.

The second challenge is perhaps less familiar but increasingly important. It involves considering the benefits that urban density can deliver to regions surrounding cities. If cities integrate

carbon-neutral policies and circular economy principles, the benefits of urban density could extend to regions far beyond them. This is because reducing cities' ecological—as well as physical—footprints would reduce pressure on their surrounding natural ecosystems and agricultural regions.

The way in which urban density can benefit not only cities but also natural ecosystems is emerging as an especially important factor to reduce the likelihood of future pandemics. COVID-19 is a uniquely global phenomenon, and its emergence now is no coincidence. Globalisation and rapid urbanisation have led to unprecedented patterns of demographic growth and interconnectedness. These in turn have become essential mechanisms of disease transmission. Quite simply, cities are pressed up against natural ecosystems and their biodiversity as never before, and an increased threat of zoonotic diseases is but one profound consequence. This can only mean that further pandemics are likely. Indeed, COVID-19, as UN Secretary-General António Guterres has put it, is a “dress rehearsal”.

Clearly, harnessing the benefits of urban density becomes ever more critical. How might this be achieved?



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The history of urban design and planning around the world offers a rich catalogue of approaches. Singapore's planners, architects, engineers and urban designers contributed a relatively recent chapter to this long history. They embraced the modernist high-rise building form, innovating technologically and integrating principles of liveability. Today, Singapore supports a population density of about 8,000 people/km². The country features passively-cooled housing blocks, with open ground floors, situated in green, landscaped new towns. These towns provide amenities, education, commerce and jobs—all accessible by efficient public transit. Ongoing innovation in dense, green and low-carbon urban design continues to enrich this endeavour.

Designing density better, especially in rapidly urbanising regions of the world, can build upon this tradition. First, density needs to be measured in more nuanced ways. These methods should consider not only the spatial aspects of what is built in a city, but also the temporal, in terms of the various ways in which those spaces are occupied and used over the course of a day or week.

There is also a need to assess the quality and sustainability of how a built environment is put together: What sort of materials and construction

methods are being employed? Do designs for such spaces support opportunities for mixed-use living and working? What transportation options are available to access services, and how is green space integrated?

Finally, we need to harness the potential of digitalisation to enhance communication, community identity and social solidarity in cities. This will help us to better appreciate how the “cyber-physical” city can improve the quality of everyday life.

Realising the promise of urban density will not be easy, not least if COVID-19 is a harbinger of further challenges to come. As a complex enterprise, designing density intensifies the need for multi-sectoral and interdisciplinary collaboration. It is clear that new compacts will be needed between public health and urban design, transport planning and architecture, and businesses, community and government. Perhaps the most important new compact, one underlying all of these, will be between cities and nature, encompassing innovative human and non-human kinds of density. 🌱