Public health in a crisis

The smart-city response to the covid-19 pandemic

Urban planning relies on cutting-edge technology to optimise the provision of resources and improve quality of life for city dwellers. While these technologies can be put to many uses—from enhancing environmental sustainability to boosting business competitiveness— few applications are currently of greater importance than improving public-health outcomes given the rapid spread of covid-19, the novel respiratory disease sweeping the globe. Yet as a survey by The Economist Intelligence Unit, sponsored by Nutanix, shows, in normal times public health often receives little attention compared with other priorities for smart-city development. The current pandemic could alter this dynamic for years to come.

In the survey, which was conducted before the outbreak started, residents of 19 cities around the world rank personal health ninth out of eleven potential priorities for smart-city development. Only equality of access to city services and cultural and recreational activities are considered lesser areas of focus. Among all cities, only São Paulo places personal health within the top three; New York, one of the cities currently hardest-hit by the covid-19 pandemic, ranks it last.

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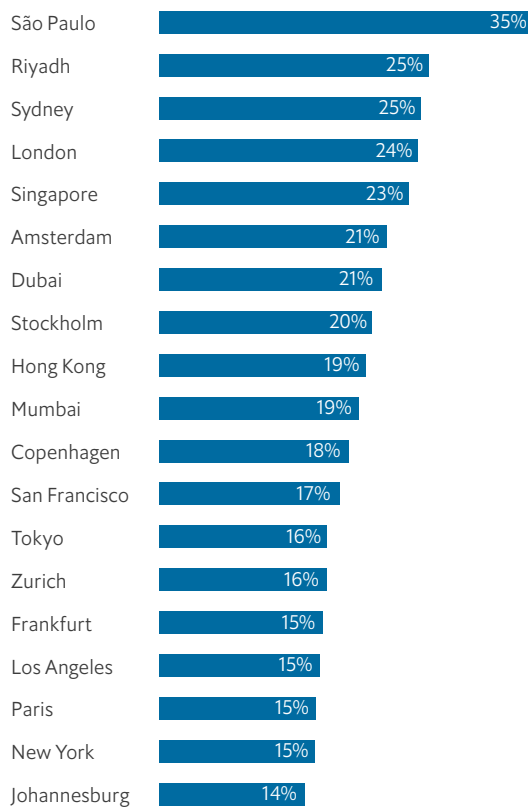
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Figure 1: Smart and salutary
% of residents selecting personal health as the chief desired benefit of smart-city initiatives

City	%
São Paulo	35%
Riyadh	25%
Sydney	25%
London	24%
Singapore	23%
Amsterdam	21%
Dubai	21%
Stockholm	20%
Hong Kong	19%
Mumbai	19%
Copenhagen	18%
San Francisco	17%
Tokyo	16%
Zurich	16%
Frankfurt	15%
Los Angeles	15%
Paris	15%
New York	15%
Johannesburg	14%

Source: The Economist Intelligence Unit

Constantino Sakellarides, emeritus professor of health policy at NOVA University Lisbon's National School of Public Health and author of numerous papers on smart-city responses to pandemics, says that changes in community habits and practices are particularly slow to advance in the aftermath of public-health emergencies. This is particularly true of outbreaks like the 2009 swine flu pandemic that are less severe than initially feared. "We were surprised that there was so little social memory ingrained after these outbreaks, especially given the progress we saw on the technological and biomedical fronts. It was like we were looking at two different worlds."

Dr Sakellarides notes the exception of SARS which struck many Asian economies in 2003 and is widely credited with laying the infrastructure for a stronger response to covid-19 than exists in Western countries. Yet even in Hong Kong and Singapore, two of the cities most affected by SARS, smart-city development and personal health are not necessarily strongly linked in public consciousness: the latter ranks it seventh as a smart-city priority; the former, tenth.

Re-wiring the urban fabric

If community mindsets are slow to evolve, how public officials use technology in the service of public health will likely advance much more quickly. Dr Sakellarides sees promise in three trends: geolocation—which has already been used as a contagion-containment measure in many cities[2]— artificial intelligence (AI) and blockchain. Indeed, the covid-19 pandemic is pushing many cities to experiment with these technologies faster and on a wider scale than ever before.[3] Seoul, widely credited with mounting one of the world's most successful responses, has been using a combination of mobile apps, drones and AI to track and contain the outbreak,[4] while blockchain companies around the world are racing to develop applications that facilitate information sharing.[5,6]

[2] "Creating the coronopticon", *The Economist*, March 26th 2020.
[3] Jack Shenker, "Cities after coronavirus: how Covid-19 could radically alter urban life", *The Guardian*, March 26th 2020.
[4] Chang May Choon, "South Korea throws up innovative tech solutions in coronavirus fight", *The Straits Times*, March 19th 2020.
[5] Samuel Haig, "World Health Organization Launches Blockchain Platform to Fight COVID-19", *Cointelegraph*, March 28th 2020.
[6] Samuel Haig, "Berkeley Blockchain Incubator Welcomes Startup Fighting COVID-19", *Cointelegraph*, March 30th 2020.

In a pandemic, the public will probably know that they are giving up personal information in exchange for the greater good, and will do so willingly. Whether they then demand these surveillance mechanisms be shut off once the threat passes—and whether governments will do so—remains an open question.

Some of the most powerful smart-city innovations in public health may also be the most invasive. Much has been written about the civil-liberties implications of containment measures in China, such as a colour-coded app that determines freedom of movement or an algorithm that can detect how many people in crowds are wearing face masks.[7] In our separate article on the privacy implications of smart-city development, we note that the biggest risk is often lack of awareness of how much and what types of personal data companies and urban authorities are collecting from citizens.[8] In the context of a pandemic, the public will probably know that they are giving up personal information in exchange for the greater good, and will do so willingly. Whether they then demand these surveillance mechanisms be shut off once the threat passes—and whether governments will do so—remains an open question.
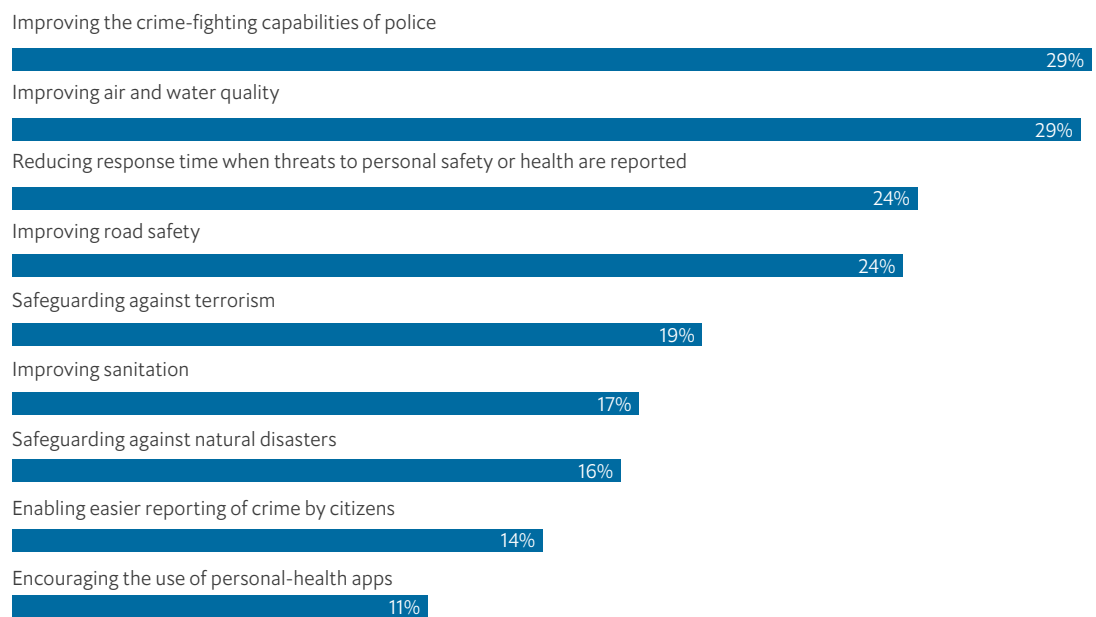
Priorities of public health

The public response to the rapid roll-out of smart-city technologies to combat the crisis will likely depend on its degree of success. Incremental tweaks could prove longer-lasting than more sweeping measures, especially if they reduce response time to public-health emergencies—the third-highest priority of surveyed citizens when asked what health-related measures they want urban officials to focus on. The pandemic is spurring a burst of high-tech solutions meant to facilitate effective emergency response, from contactless payments and smart space management in Chicago parking garages[9] to granular maps illustrating possible food access issues during quarantine in the San Francisco Bay Area.[10]

Improving sanitation garners interest from a comparatively smaller share of

Figure 2: Down and dirty
When it comes to the personal health and safety of you and/or your family, which of the following do you believe should be the main priorities of smart-city development? (% of residents, average across all cities)

Improving the crime-fighting capabilities of police
29%

Improving air and water quality
29%

Reducing response time when threats to personal safety or health are reported
24%

Improving road safety
24%

Safeguarding against terrorism
19%

Improving sanitation
17%

Safeguarding against natural disasters
16%

Enabling easier reporting of crime by citizens
14%

Encouraging the use of personal-health apps
11%

Source: The Economist Intelligence Unit

[7] Bruno Maçães, "Covid-19 and the Question Concerning Technology", *City Journal*, April 1st 2020.
[8] "The primacy of privacy: Safeguarding urban intelligence in an age of unease", *The Economist Intelligence Unit*, 2019.
[9] "Millennium Gateway Innovation Lab Members Announce COVID-19 Emergency Response", *City Tech Collaborative*, March 25th 2020.
[10] Joe DiStefano, "COVID-19: Mapping and Measuring Community Impact with UrbanFootprint", *UrbanFootprint*, March 20th 2020.

respondents—a finding that the current crisis could change. The only places where sanitation ranks highly are São Paulo, Mumbai and Hong Kong, all dense, tropical cities that regularly face small outbreaks of diseases like dengue fever. As paranoia over cleanliness grows worldwide due to the pandemic, other cities' citizens will likely join them in demanding greater clean-up measures in their hometowns.

Apps in waiting

The pandemic could also cause already-rapid growth in personal-health apps to skyrocket[11] despite their ostensibly tenuous link to smart-city initiatives: "encouraging the use of personal-health apps" receives the lowest rank of importance in our survey by some measure (see Figure 2).
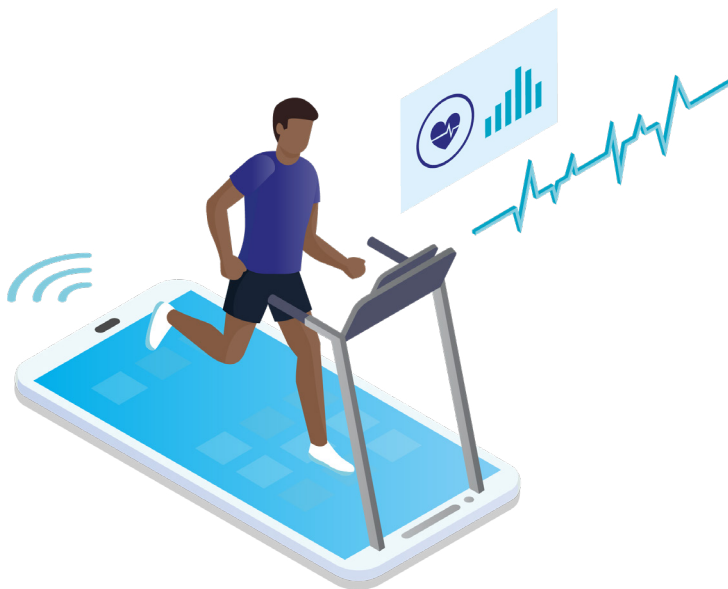
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Physicians focus on clinical outcomes and biological processes; patients focus on pain and function. [Personal health] apps need to integrate that "personal narrative" in order to deliver the best outcome.

Constantino Sakellarides,
NOVA University Lisbon

Dr Sakellarides notes that personal-health apps need to bridge the gap between physicians and patients in order to go mainstream. "Physicians focus on clinical outcomes and biological processes; patients focus on pain and function. These apps need to integrate that 'personal narrative' in order to deliver the best outcome."

Yet as the covid-19 crisis rages, use cases for personal-health apps are surging,[12] demonstrating that it often takes a crisis to instigate widespread change. City officials would be wise to take note, both of these developments and others, where the use of smart technologies—ones that maintain principles of privacy and respect for human rights—could aid their management of the worst public-health crisis in a century.

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[11] "mHealth Apps Market Size Worth $236.0 Billion By 2026 | CAGR: 44.7%", *Grand View Research*, June 2019.
[12] "Roundup: Tech's role in tracking, testing, treating COVID-19", *MobiHealthNews*, April 10th 2020.