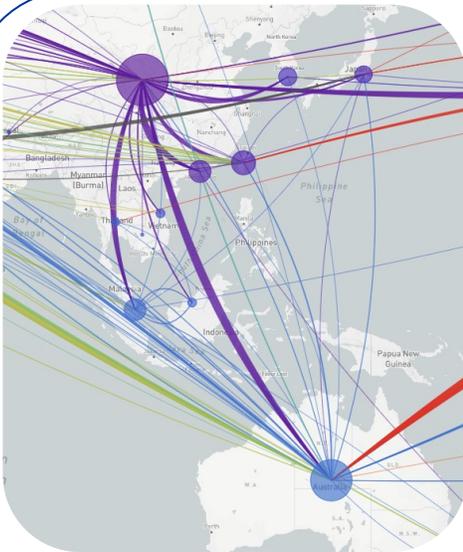


*These COVID-19 Analytical Snapshots are designed to capture the latest information and analysis in a fast-moving environment. Topics will be repeated from time to time as analysis develops. If you have an item to include, please email us at [research@iom.int](mailto:research@iom.int).*



Source: [Nextstrain](#)

### The role of big data in understanding COVID-19

“ This is, in essence, a big data problem. We’re trying to track the spread of a disease around the world.

[James Hendler](#), Rensselaer Polytechnic Institute

Understanding how COVID-19 spreads is crucial to stopping the virus. [Nextstrain](#) is an open-sourced project which uses big data to provide data, sequencing, and visualizations showing the [evolution and spread](#) of [COVID-19](#). By sharing the genetic sequencing of 700 cases of the virus, for example, the project contributed to the [corroboration](#) of the assessment that the virus’s virulence (or severity) has not changed as it has spread to other countries.

### Tracing COVID-19 using new tech

Technology has been central to government efforts to combat the spread of COVID-19. In [China](#), for example, citizens must have the correct health code in order to pass checkpoints, while those in China’s [Hong Kong Special Administrative Region](#) wear wristbands that use geofenced technology. In [Russia](#), meanwhile, facial recognition technology is combined with urban center security camera monitoring.

In Singapore, citizens have been encouraged to install the contact tracing app [TraceTogether](#), which uses Bluetooth signals to identify if users have come into contact with anyone exposed to COVID-19. Based on the Singapore app, the Australian government is encouraging its population to download its [COVIDsafe app](#). In [South Korea](#), private developers have developed similar apps.

[Apple and Google](#)—whose operating systems power 99% of the world’s smartphones—are collaborating to develop their own contact tracing technology. This involves a decentralized / anonymised contact tracing system, and the companies have pledged to [disable the service](#) once the outbreak of the virus has been contained.



### Population surveillance: a COVID-19 legacy?

Many have raised [concerns](#) that once the current crisis has passed, governments could repurpose surveillance technology to track and monitor groups of interest, including [migrants](#). However, in some countries the ability to surveil populations through the use of new technology already exists. In the US, for example, AI facial recognition technology is used by immigration authorities to conduct [mass monitoring](#) of people in traffic flows to detect undocumented migrants.



## Tracking innovations around the world

The surge in innovations to support and strengthen the response to COVID-19 can be visualized on the [Coronavirus Innovation Map](#).

Launched by StartupBlink, together with the Health Innovation Exchange and the Moscow Agency of Innovations, the map is a directory of hundreds of innovations and provides information on [five categories](#) of innovation: prevention, diagnosis, treatment, information, and life and business adaptation, as well as showing ways in which people can get medicines without leaving their home.

View the map [here](#).



Source: [Coronavirus Innovation Map](#)



## The COVID-19 innovation challenge

The California-based 3D modelling company [CAD Crowd](#) has launched a month-long prototypes competition, calling for inventions to help prevent the spread of COVID-19. To date there have been 138 entries, ranging from hands-free door openers to UV light disinfectant cash drawers.

## The risks of rapid data generation

While [new technologies](#) are making it possible to gather and analyze huge quantities of data in near real-time that can tell us about the virus's characteristics, such as its transmissibility and fatality rate, the data produced can be inaccurate.

This means that an open peer review process is vital in ensuring that what is discovered is reliable, although even this process can be supported by AI tools that [assist funders](#) in identifying specialists to peer review proposals.



## Treating COVID-19 with AI

As healthcare systems around the world come under immense [strain](#), machine learning is being used to [develop solutions](#).

Several tools have been adopted to triage patients, from [radiology software](#) that is capable of scanning a patient and calculating a probability of infection in 10 minutes, to [chatbots](#) that diagnose users based on their symptoms and medical history and advise them on whether to stay at home or seek medical help. Machine learning tools are also being used to [rapidly screen](#) for antibodies with a high probability of success, and could soon be used to predict how the virus will impact healthcare [resource needs](#).

## Innovation in conflict zones

A team of 12 volunteers in Idlib—the last rebel stronghold in Syria, where many hospitals lie in ruin—have used homemade equipment to design a [makeshift ventilator](#) to combat the pandemic, with plans to build hundreds more.

This COVID-19 Analytical Snapshot has been produced by [IOM Research](#) ([research@iom.int](mailto:research@iom.int)).

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