Big Data's Role in the Post-COVID Era

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Big Data serves a pivotal role in today's unpredictable socio-economic climate and will continue to do so in the post-COVID era. Data makes noise on two grounds: its creation and its application. With proper processing and storage support from edge hardware, the control and use of data will become more important than ever.
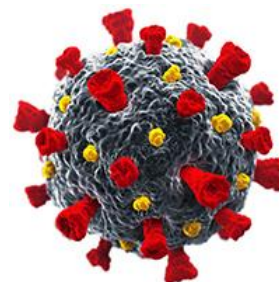
As the world adjusts to the post-COVID reality, data may hold the key to many of our new daily functions.

New routes for tracking and creating data

A number of emerging devices are poised to produce real-time, hyper-local personal health information meant to keep citizens safe and healthy in ways we haven't seen before; from stick-on sensors that provide 24/7 respiratory activity tracking, to AI-powered long distance body temperature scanners at the train station. It's not just new hardware either. Existing devices with new uses are also going to help. Smart watches to monitor quarantine compliance or Internet-connected thermometers to assess symptom trends are just two examples. Automated devices like these, combined with manual tools like contact tracing and healthcare check-in smartphone apps, create an entirely new sphere of health-related data.

On par with health data, novel approaches to behavioral data are also creating swaths of extremely valuable information relevant to COVID-era life. One obvious target lies in smartphone data. In the United States, government agencies are working on a collaboration between mobile advertising companies and the Centers for Disease Control and Prevention to monitor population movement in the interest of safety. Such information has already been used this way in many other world regions. In Southeast Asia, state efforts have focused on using mobile phone location data to track positive cases and enforce quarantine policies. In China alone, more than 11 million people were traced back to its Wuhan province from over 296 prefectures in 31 different provinces. Other avenues for geolocation have also been explored to track important new data. Google, for instance, introduced its Community Mobility Reports using Google Maps location

data. Similarly, Facebook used population movement intelligence combined with friendship pattern models to launch its [Disease Prevention Maps](#) initiative. Demographic information is vital for epidemiology, and it's turning up in spades.

New methods for creating health and behavioral data—location data in particular—stand as two prominent areas where much new information has been brought to bear, but these are by no means the only ones. Real-time trackers now appear on social media and news sites, and fresh statistical breakdowns have sprung up concerning everything from online education to supply chain design. The pandemic thus far has prodded us into becoming data-producing dynamos.

New applications for analyzing and implementing data

Creating volumes of new data sheds light on a plethora of additional challenges. Chief among these is how all this brand-new information can be aggregated, collated, standardized, and applied on a large scale. New data trackers and technical tools, after all, are only as good as the data analytics that grant clarity to the uncovered results. There is an abundance of new elements to understand. It can be challenging to make sense of the results, especially at a national or even global level. Fortunately, new ways of evaluating and employing new data have surfaced.

A critical way data is experiencing heightened use exists in public policy. Authorities worldwide have turned to advanced data analytics and AI tools like never before to inform measures meant to address aspects like business shutdowns, travel restrictions, stimulus measures, and self-isolation requirements, since the execution of such policies are contingent upon it. The primary reason stands in the simple fact that it's difficult to make new evidence-based policy when old evidence is no longer relevant. Making informed decisions requires not just a recognition of the value of all this new data but also a willingness to share and use the data in new ways. Alerting citizens to risk, mapping webs of potential new infections, and determining the need to isolate infected or at-risk individuals are tall tasks, and policymakers have turned to data analysis to fine-tune their public directives.

Besides new ways of applying data to policy decisions, another important use for our new information arrives in the form of predictive analytics. New types of data have bred new ways of calculating that data, forced to match it in both speed and scale. The [healthcare field](#), for instance, has developed a number of new forecasting models that translate the mountains of new data into forecasts for metrics like contact rates at six months out or more—and that's just the beginning. The pandemic has spurred on a vast, diverse, and incredible new realm of predictive data analysis: hospital bed availability, vaccine trial success rates, all varieties of financial impacts, false positive testing rates, electricity loads, death rates, popular opinion and sentiment, preferred lifestyle changes, and more. Data analytics are breaching new ground, and we'll likely see an increasing need through 2021 and beyond.

The edge of importance

With all the new data-production and data-analysis mechanisms, the infrastructure for housing, handling, and delivering data reaches increased importance. Since many of the new data instruments utilize IoT and require real-time computing power, response times and bandwidth

are more important than ever. Processing data closer to where the network originates becomes paramount. These new data schemes need scalable analytical processes and mobile applications, sure, but they need scale-out storage systems and flexible computing power just as much.

Edge computing now plays a crucial role in virus combat because being able to securely store, aggregate and quickly move data is, in a way, a battlefront unto itself. And many of these needs are not pandemic-temporary. Take, for example, remote work. It's not going anywhere, and edge computing is of vital importance for work-from-home, or work-from-anywhere, efforts to subsist. The edge, including strategically placed data centers, must stay sharp.

Looking ahead

Adopting a long-term viewpoint, the pandemic will likely catalyze some major business shifts that will persist long after it is gone, with data at the center. Years ago, with the rise of gamechangers like Airbnb and Uber, the world's leading economies began shifting into a data-driven state. Intangibles like software design, patents, research, and branding became as important as any physical assets. Quarantine periods have only made this shift more apparent as entities with largely intangible assets like Amazon Prime, Zoom, and Microsoft Teams have skyrocketed in popularity. The data-driven economy was already on its way, but COVID-19 has heaved it a hefty push.

In the world after the virus, data will ultimately be viewed as an asset, not simply a byproduct, and there is no turning back. We have seen new digital industries spring up, others shrink, and existing industries transformed—and data has been driving all new products and processes. The realization among stakeholders is starting to coalesce around the idea that when the pandemic fades, the value of software and intellectual property will not subside. Organizations that own more intellectual property—those that control data—will be more likely to receive investment and expand on market positions. What's more, any new opportunities will feature data-driven education and training systems to usher them forward. This wave has been coming for a while, but the virus has quickened its pace and we need to be ready with an agile and robust IT foundation that leverages the edge and next-generation solutions.

As our home and work lives remain in a state of uncertainty, the importance of data to the economy and our society marches firmly on. It's time to grasp it with both hands.