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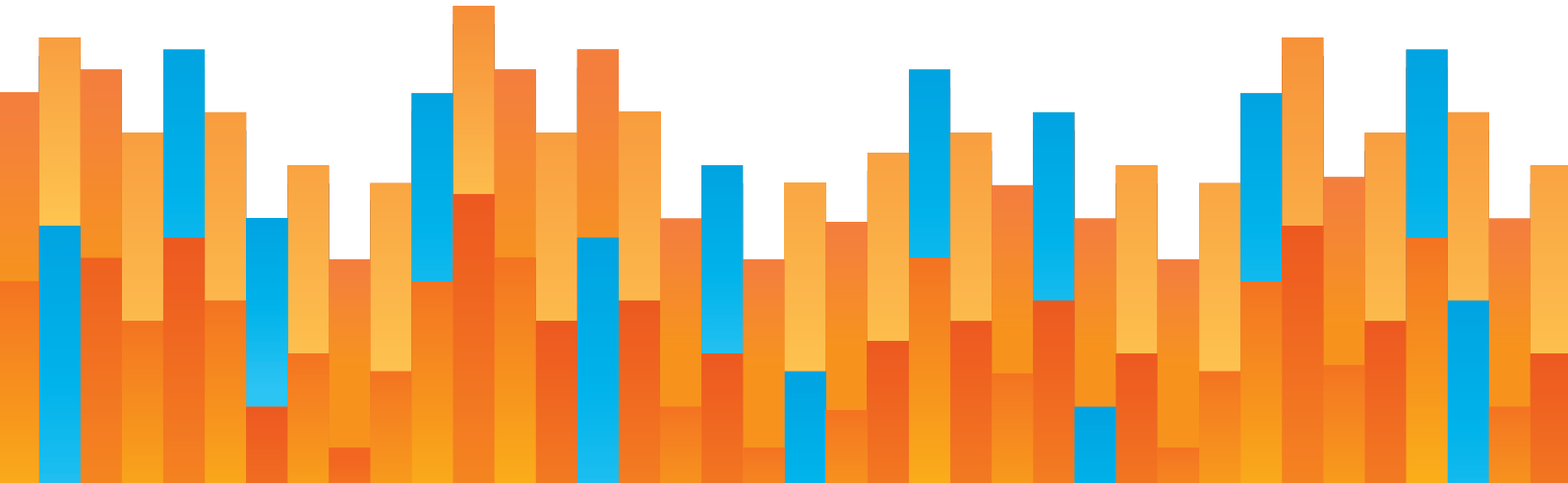
RECOVERY FROM THE CORONAVIRUS CRISIS

MONITOR-TEST-TRACE-ISOLATE: POLICIES FOR UNDERSTANDING AND REACTING TO COVID-19 INFECTIONS

by Julian Morris

July 2020



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EXECUTIVE SUMMARY

Several countries reduced the incidence of and eventually eliminated Covid-19 largely by implementing systems for identifying those who have or might have Covid-19 and encouraging them to self-isolate until they are no longer infectious. States, municipalities and private organizations looking to reduce the threat posed by Covid-19, both now and in the future, may wish to consider adopting similar systems.

> *The systems put in place in other countries relied in part on actions taken by government-run health systems. While some states might choose to follow that practice, similar systems can be implemented largely or even completely by the private sector.*

The systems put in place in other countries relied in part on actions taken by government-run health systems. While some states might choose to follow that practice, similar systems can be implemented largely or even completely by the private sector. Moreover, as Iceland has demonstrated, such systems can be implemented entirely voluntarily. And regardless of whether states and/or municipalities choose to implement such systems, it is not necessary to create new federal or state agencies in order to achieve any of this.

This brief describes such an approach. To do so, it seeks to integrate insights from the relatively successful strategies adopted in Taiwan, South Korea, Hong Kong, Singapore, Iceland and Germany, along with novel technologies that enable contact tracing and sharing of verified Covid-19 status while preserving privacy and autonomy. And we add to this another potentially highly cost-effective strategy, symptom monitoring, which was not available earlier due to lack of data, but can now be implemented and in so doing could help identify clusters almost as effectively has extensive testing and at much lower cost.

Finally, we discuss ways in which data from testing and symptom monitoring can be used by companies and other organizations to determine what kinds of activities and what kinds of personal protective equipment are appropriate given the level of infection risk implied by the data.

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BRIEFS IN THIS SERIES

Reason's series of policy briefs on *Recovery from the Coronavirus Crisis* includes:

- *Covid-19 Lockdown Problems and Alternative Strategies to Reopening the Economy*
- *Covid-19: Lessons from the Past and Other Jurisdictions*
- *The Covid-19 Status App: A Risk-Based Tool to Enable Businesses to Reopen While Limiting the Spread of SARS-CoV-2*
- *Monitor-Test-Trace-Isolate: Policies for Understanding and Reacting to Covid-19 Infections*
- *Risk Management Tools for Covid-19: Information on Activity Risks and Industry Standards*
- *PPE: How to Increase Production and Distribution of Masks Amid Covid-19*

PART 1

IMPLEMENT WIDESPREAD POPULATION SCREENING, AS WELL AS TARGETED TESTING AND CONTACT TRACING

By testing an open invitation sample of the population for the presence of the virus, it should be possible quickly to identify the general location of disease clusters that can be deemed "high risk." This will then enable more-effective targeted testing and contact tracing.

By simultaneously testing for the presence of antibodies to the virus, it should be possible to assess how widespread the virus has been in the population—and how many people have now recovered and likely have some immunity (based on the proportion of people who test positive for antibodies but negative for the virus). A high prevalence of people with antibodies and a low prevalence of the disease may also indicate that the virus

prevalence has peaked, though this can only be fully determined by undertaking repeated testing for the virus.

This testing protocol may be summarized as follows:

1. Undertake population screening and contact tracing:
    a) Offer testing to an open invitation sample of the population for the virus and for antibodies to the virus.
    b) Trace and offer testing to the contacts of those who test positive.

2. Undertake targeted testing and contact tracing:
    a) Offer testing to anyone who is symptomatic and anyone in a high-risk area. (Mobile testing units, such as those that were established in Daegu, South Korea, and now in several parts of the U.S. are likely an effective way to do this.[1])
    b) Trace and test the contacts of anyone who tests positive, using a combination of human tracers and contact tracing apps.

1.1 HOW MUCH TESTING?

In Iceland, deCODE Genetics, which did the population sampling, has been screening an average of 750 people per day, with a peak of 1,619 (on April 5th), while NUHI, which did the targeted testing, has been performing about 300 targeted tests per day, with a peak of 867 (also on April 5th). Scaling such a program to the U.S., whose population is about 1,000 times the size of Iceland's, would entail running perhaps a million tests of each type per day, with a peak of about 2.5 million. Of course, the number and intensity of testing in any jurisdiction would likely vary considerably depending on the estimated local prevalence, which could likely be established within a few days.

While it may seem odd to suggest that the U.S. adopt a test-and-trace program modeled in part on a program implemented on an island with a population of 364,000, it is not as crazy

1 KLTV Digital Media Staff. "Mobile Covid-19 testing sites available in Harrison, Panola, Rusk counties." KLTV.com, April 23, 2020. https://www.kltv.com/2020/04/23/rusk-county-oem-offers-free-mobile-testing-covid-one-day-only/; Dobrzyn, Erin. "INTERACTIVE MAP: Here's where to get your drive-thru coronavirus test." clickorlando.com, April 24, 2020. https://www.clickorlando.com/news/local/2020/03/18/interactive-map-where-to-get-your-drive-through-coronavirus-test/

as it sounds. First, Reykjavik, Iceland's capital and largest city, has a population of approximately 127,000 and population density of 1,200 per square mile.[2] That is similar to many U.S. towns and cities. For example, Abilene, Texas, has a population of 122,000 and a density of 1,145 per square mile, while Athens-Clarke County, Georgia, has a population of 123,000 and a density of 1,060 per square mile.[3] Second, it is also worth reiterating that both Taiwan (population c. 24 million) and South Korea (population c. 52 million), successfully implemented somewhat similar programs of test-trace-isolate.[4]

…the fundamental point is that test-trace-isolate demonstrably contains clusters of Covid-19 by enabling people to discover whether they have the virus or might have been exposed to it, so that they can then take appropriate action (i.e. self-isolation if infected).

But regardless of any similarities or differences in demographics, the fundamental point is that test-trace-isolate demonstrably contains clusters of Covid-19 by enabling people to discover whether they have the virus or might have been exposed to it, so that they can then take appropriate action (i.e. self-isolation if infected). Prima facie, that seems far less onerous than the lockdowns that are currently in place throughout much of the U.S. So, it would seem to make sense for towns, cities, counties, and even states to find locally tailored ways effectively to implement test-trace-isolate *instead of lockdowns*.

While test-trace-isolate is in some respects the gold standard approach, in many jurisdictions it might not be either possible or necessary to undertake testing at such enormous scale. Certainly, massive testing should not be considered a pre-requisite for removing lockdowns. In locations that have already had widespread outbreaks, such as the

2 Statistics Iceland: https://px.hagstofa.is/pxen/pxweb/en/Ibuar/Ibuar__mannfjoldi__2_byggdir__Byggdakjarnar/MAN03106.px/table/tableViewLayout1/?rxid=est-ac091780-5f9c-4401-a9d4-ae1bdc5cce02

3 Maciag, Mike. "Population Density for U.S. Cities Statistics." *Governing.com*, November 29, 2017. https://www.governing.com/gov-data/population-density-land-area-cities-map.html

4 See the companion brief *Covid-19: Lessons from the Past and Other Jurisdictions*. https://reason.org/policy-brief/recovery-coronavirus-crisis/

New York City metro area (which includes suburban New York state, Connecticut and New Jersey), and where the incidence is now declining, alternative approaches might be considered.

1.2 WHO WOULD CONDUCT THE TESTS?

Larger jurisdictions that have implemented effective testing programs have relied on the private sector to conduct tests. Given the very large number of private hospitals, clinics, urgent care centers, and independent medical practitioners, as well as numerous large-scale and many, many smaller scale testing facilities around the country, such an approach would make a lot of sense here.

1.3 HOW WOULD TESTING BE FUNDED?

In principle, health insurance companies might fund and coordinate the implementation of widespread and targeted testing and contact tracing, on the basis that such testing would systematically reduce the incidence of Covid-19 and thereby reduce the costs associated with treating covered patients. However, a large proportion of people requiring treatment are elderly and so likely covered not by private insurance but by Medicare. While Medicare does cover the costs of testing for both the virus and antibodies,[5] working collaboratively with private insurance companies to undertake wider screening is an entirely different proposition.

One paradoxical problem is that identification and containment of contagions has been considered a responsibility of government-run public health systems. As a result, private insurance-based systems have been crowded out. But, at least in the case of Covid-19, those public health systems have performed poorly. Yet, even universal testing would be inexpensive compared to the economic costs of lockdowns, or the cost of massive stimulus packages.

The same problems apply to the use of prophylactic therapies and any vaccine that might be developed. Again, some kind of federal involvement seems likely, though insurance might provide coverage for a vaccine since that is straightforwardly preventative.

[5] U.S. Centers for Medicare & Medicaid Services. “Coronavirus disease 2019 (Covid-19).” https://www.medicare.gov/coverage/coronavirus-disease-2019-covid-19-tests

PART 2

SYMPTOM MONITORING AS AN ALTERNATIVE AND ADJUNCT TO TESTING

While widespread testing may be considered the gold standard for identifying both the extent of Covid-19 and the location of clusters, implementing such testing is costly and complicated. Fortunately, there is another approach that could offer much of the benefits of such testing at a fraction of the cost: the use of Internet-enabled devices to track symptoms.

At the most basic level, data from Internet-enabled thermometers, such as those sold by Kinsa, provides coarse insights into the extent of atypical influenza-like symptoms. Indeed, Kinsa has produced maps that show the incidence of such symptoms across the U.S. were evident weeks before major outbreaks of Covid-19 became apparent.[6]

[6] Kinsa, *Releasing soon: Real-time Atypical Rt Metric*, June 28, 2020, https://www.kinsahealth.co/releasing-soon-real-time-atypical-rt-metric/

Another approach is to rely on symptoms self-reported through a smartphone app. In the U.K., about four million people have participated in a symptom tracking study using the C-19 app.[7] A study was undertaken using data from about 2.5 million U.K. users of the app, of whom about 16,000 had an RT-PCR test (to identify the presence of SARS-CoV-2). By correlating reported symptoms and other characteristics of the app users (such as age and sex) with the outcome of the tests, a team of researchers developed an algorithm that has a sensitivity of 0.65 (meaning that it produces false negatives about 35% of the time) and a specificity of 0.78 (meaning that it produces false positives about 22% of the time).[8] While it would not be appropriate to rely exclusively on such symptom monitoring to determine an individual's Covid-19 status, it is nonetheless a helpful guide as to the likely prevalence of Covid-19.

> *While widespread testing may be considered the gold standard for identifying both the extent of Covid-19 and the location of clusters, implementing such testing is costly and complicated.*

Sophisticated symptom monitoring systems that utilize both "hard" data, such as temperature from a thermometer, as well as "soft" (self-input) data could potentially offer higher levels of accuracy. In principle it might be possible using such systems to identify cases of Covid-19 that would normally be considered "asymptomatic" or at least pre-symptomatic. Indeed, companies such as VirusIQ are seeking to develop just such systems.[9]

Since symptom monitoring though the use of thermometers and apps is inexpensive compared to testing, it could become the first line of defense against not only Covid-19 but all manner of exotic viral diseases. Testing then becomes the second line—and is offered to individuals whose symptoms strongly indicate the presence of a virus (in this case SARS-CoV-2). This leads to an iteration of the test-trace-isolate model discussed above: Monitor-test-trace-isolate.

7 Covid Symptom Study, https://covid.joinzoe.com/

8 Menni, Cristina et al. "Real-time tracking of self-reported symptoms to predict potential Covid-19," *Nature Medicine*, 11 May 2020, https://www.nature.com/articles/s41591-020-0916-2

9 VirusIQ, Screening as a Service, https://virusiq.health/screening-tests

PART 3

MOTIVATING PEOPLE TO PARTICIPATE IN MONITOR-TEST-TRACE-ISOLATE

> *For monitor-test-trace-isolate (MTTI) to work most effectively, it requires high rates of participation.*

For monitor-test-trace-isolate (MTTI) to work most effectively, it requires high rates of participation. But even at lower participation rates, it can have real value. Since participation must be not be mandated by government, but voluntary, even if required by an employer or membership group, we will consider some possible mechanisms to achieve higher voluntary participation. But first, we discuss the role of contact tracing.

Julian Morris

3.1

WHAT IS CONTACT TRACING, WHY DOES IT MATTER, AND WHY SHOULD IT BE VOLUNTARY?

There is some confusion about the purpose of contact tracing. One way to think about it is as an extension of what most people would do as a matter of course. Faced with a positive test result for Covid-19, or any other potentially serious contagious disease, a responsible adult would isolate themselves, consult their doctor, and inform friends, family and others with whom they have had contact, and who may then want to get tested. This implies that it is important to avoid stigmatizing those with Covid-19; people should feel obliged to inform others they have contracted it and not fear stigma. Unfortunately, the simplistic "just stay home" policies may have created stigma by implying that testing positive for the virus means you were being bad and not doing what you were told. Indeed, some states are already having difficulty convincing people they should get tested.[10]

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Contact tracing in its most basic form is about informing those who might have been exposed. When done manually, it involves, first, interviewing people who have tested positive in order to establish where they have been and, most importantly, with whom they have had contact and, secondly, contacting those people to tell them they may have been exposed and should consider getting tested ASAP.[11] The more complete the information

[10] Thompson, Steve, Juliet Eilperin and Brady Dennis. "As coronavirus testing expands, a new problem emerges: Not enough people to test." *Washington Post*. May 17, 2020. https://www.washingtonpost.com/health/as-coronavirus-testing-expands-a-new-problem-arises-not-enough-people-to-test/2020/05/17/3f3297de-8bcd-11ea-8ac1-bfb250876b7a_story.html

[11] Center for Disease Control and Prevention. *Contact Tracing: Part of a Multipronged Approach to Fight the Covid-19 Pandemic*. https://www.cdc.gov/coronavirus/2019-ncov/php/principles-contact-tracing.html See also Molteni, Megan, "I Enrolled in a Coronavirus Contact Tracing Academy." *Wired*. May 15, 2020.

about contacts is, and the more quickly follow up occurs, the more likely the information is to be useful in helping people avoid spreading the virus. Because of this, technology could in theory make this process much easier and quicker—we discuss that in section 3.5.

Although contact tracing has been used widely in the U.S. in the past, for example to limit the spread of HIV,[12] it is easy to understand how people might fear being threatened or forced to disclose all their contacts if they test positive, or being forced to use a contact tracing technology. Such mandatory contact tracing would clearly violate rights to privacy. It would also create a fear of getting tested that might lead many to avoid testing, and could lead to organized evasion of tracing. All of which would undermine any benefits of contact tracing. So voluntary participation is key.

3.2 HOW MIGHT CONTACT TRACING BE IMPLEMENTED?

In Iceland, contact tracing was undertaken by a team of 50 people. If such an approach were to be scaled for the U.S., the number of contact tracers would likely be in the tens of thousands. However, this number could be reduced if an appreciable number of people download and use a contact tracing app (see discussion in section 3.5).

> *"Most government health agencies are attempting to provide some testing and tracing in their jurisdictions. But we need not rely on that to achieve better risk mitigation and management."*

https://www.wired.com/story/i-enrolled-in-a-coronavirus-contact-tracing-academy/ and Vogelstein, Fred and Will Knight. "Health Officials Say 'No Thanks' to Contact-Tracing Tech." *Wired*. May 8, 2020. https://www.wired.com/story/health-officials-no-thanks-contact-tracing-tech/

12 Macke, Beth A. and Julie E Maher, Partner notification in the United States: An evidence-based review. *American Journal of Preventative Medicine*. Vol. 17(3). October 1, 1999. 230-42. https://doi.org/10.1016/S0749-3797(99)00076-8

Most government health agencies are attempting to provide some testing and tracing in their jurisdictions. But we need not rely on that to achieve better risk mitigation and management. Notwithstanding the crowding out and coordination problems identified in section 1.3, private insurance companies might offer incentives for insured individuals to obtain tests and participate in tracing and isolation in order to reduce their exposure to medical costs.

3.3 VOLUNTARY SELF-ISOLATION FOR THOSE WHO HAVE OR MIGHT HAVE COVID-19

Ideally, anyone who has Covid-19 symptoms should isolate themselves until they have been tested or until they are no longer symptomatic—and for a minimum of two weeks after the onset of symptoms. This is because a person who is symptomatic may infect others—and infectivity typically lasts for about two weeks following the onset of symptoms.[13] In addition, anyone who tests positive should self-isolate, regardless of whether they have symptoms, for a minimum of two weeks. This is because asymptomatic carriers of Covid-19 can be infectious.[14] Furthermore, individuals who have been in close proximity with someone who has Covid-19 for a significant duration should also self-isolate and obtain a test.

While such self-isolation is desirable, it should be encouraged, not mandatory, let alone a criminal matter. Odd examples of using police to enforce self-isolation[15] or social distancing[16] have already cropped up. Neither is, or should be, a criminal matter, with very few exceptions.

13 He, Xi., et al. "Temporal dynamics in viral shedding and transmissibility of Covid-19." *Nature Medicine*, April 15, 2020. https://www.nature.com/articles/s41591-020-0869-5

14 Ibid.

15 Otterman, Sharon. "As the Nation Begins Virus Tracing, It Could Learn From This N.J. City." *New York Times*. May 21, 2020. https://www.nytimes.com/2020/05/21/nyregion/contact-tracing-paterson-nj.html

16 Tuccille, J.D. "Public Health Measures Enforced by Violence Aren't as Healthy as Governments Pretend." *Reason*. May 18, 2020. https://reason.com/2020/05/18/public-health-measures-enforced-by-violence-arent-as-healthy-as-governments-pretend/

> *…individuals who have been in close proximity with someone who has Covid-19 for a significant duration should also self-isolate and obtain a test…. While such self-isolation is desirable, it should be encouraged, not mandatory, let alone a criminal matter.*

Even those who are self-isolating have many good reasons to leave their home or not answer their phone. They might not want to answer their phone. They might be going to the doctor, the pharmacy, or to visit someone who has already had the virus or who has consented to the visit. For the police to try to force people to stay home because they are infected is wrong and absurd and is increasingly being questioned by the courts.[17]

Likewise, social distancing. Crude government rules with little constitutional basis saying "no groups larger than 4 (or 6 or 10 or whatever) persons" fails to recognize many legitimate and consensual exceptions. These are rules of thumb that help people behave in a safer fashion and should not be legislated. Involving police in trying to determine compliance with such rules leads to nonsense like that cited above.

Property rights clearly establish that in private spaces, including businesses and homes, the owners can set what rules they want. They can require masks, require six feet of space between people, etc. Or not. And customers and visitors can choose to do as the owners ask or move on. Likewise, government agencies can set rules for their facilities.

> *In the absence of a local ordinance to the contrary, someone who knows they are infected with Covid-19 has no legal obligation to stay away from others, even when asked to do so.*

[17] Sullum, Jacob. "A Pandemic Does Not Suspend the Rule of Law." *Reason*. May 20, 2020. https://reason.com/2020/05/20/a-pandemic-does-not-suspend-the-rule-of-law/

Public spaces are perhaps the most challenging. In the absence of a local ordinance to the contrary, someone who knows they are infected with Covid-19 has no legal obligation to stay away from others, even when asked to do so. (An exception exists for someone who intentionally seeks to infect someone, which could be a criminal offense.) The solution would be for local governments that wish to impose limits on social distancing in public spaces to pass ordinances that establish clear rules—and post those rules visibly (much like rules are posted regarding smoking in public places). The establishment of such rules would prevent many conflicts. Not all governments would choose to establish such rules, in which case people who want to be cautious will know there are no rules for those who might be infected, and so avoid public spaces. Or, if rules are posted, everyone will know they are expected to keep their distance. Minimizing the need for police to deal with interpersonal conflicts should be the goal.

3.4 CONTACT TRACING APPS

Widespread adoption of contact tracing apps, which enable users to be informed when they have been in close contact with a person who has recently tested positive, can help individuals know whether they should self-isolate and seek testing. One of the big advantages of such apps over manual contact tracing is the speed with which individuals are notified after a contact is identified as having Covid-19.[18]

One of the big advantages of such apps over manual contact tracing is the speed with which individuals are notified after a contact is identified as having Covid-19.

But we caution against the development and use of contact tracing apps by government. The Chinese government has been using an app that continuously traces people and notifies them if they have been in close contact with someone who might have Covid-19. Access to transportation systems as well as any public building requires users to

[18] See companion brief *The Covid-19 Status App: A Risk-Based Tool to Enable Businesses to Reopen While Limiting the Spread of SARS-CoV-2*. https://reason.org/policy-brief/recovery-coronavirus-crisis/

demonstrate their Covid-19 status using their Health Status QR Code, which is generated by the app.[19] Hong Kong introduced a mandatory 14-day quarantine for individuals deemed high risk, all those subject to the quarantine are issued a wristband that they are forced to wear, and they are also required to use the *Stayhomesafe* app that connects to the wristband via a QR code—and enables more-effective contact tracing.[20] South Korea also introduced similar smartphone-based contact tracing apps.[21]

While the use of these apps has likely helped contain outbreaks, such intrusive systems are anathema in most Western democracies.

While the use of these apps has likely helped contain outbreaks, such intrusive systems are anathema in most Western democracies. For Americans to be willing to use a contact tracing app, they will likely need to be provided with very clear information about how the data collected will be used, with whom it will be shared and on what terms. Ideally, no information would be shared with any government or government agency. To the extent that information from any such app is shared with any government agency, it will also likely be necessary to ensure that such information is being shared on a limited basis only, that the data will be stored by the agency for a limited time, and that the entire program will be sunsetted.[22]

19 Ankel, Sophia. "As China lifts its coronavirus lockdowns, authorities are using a color-coded health system to dictate where citizens can go. Here's how it works." *Business Insider*. Apr 7, 2020. https://www.businessinsider.com/coronavirus-china-health-software-color-coded-how-it-works-2020-4

20 The Government of Hong Kong Special Administrative Region. " 'StayHomeSafe' Mobile App User Guide." https://www.coronavirus.gov.hk/eng/stay-home-safe.html

21 Ghaffary, Shirin. "What the US can learn from other countries using phones to track Covid-19." *Vox Recode*. April 22, 2020. https://www.vox.com/recode/2020/4/18/21224178/covid-19-tech-tracking-phones-china-singapore-taiwan-korea-google-apple-contact-tracing-digital

22 Kazaryan Ashkhen. "How we can embrace technology to fight coronavirus while protecting privacy rights." *Washington Examiner*. April 22, 2020. https://www.washingtonexaminer.com/opinion/how-we-can-embrace-technology-to-fight-coronavirus-while-protecting-privacy-rights. And for a deeper dive into the privacy and policy considerations of contact tracing systems see Ada Lovelace Institute. *Exit through the App Store?* April 2020. https://www.adalovelaceinstitute.org/wp-content/uploads/2020/04/Ada-Lovelace-Institute-Rapid-Evidence-Review-Exit-through-the-App-Store-April-2020-1.pdf

Perhaps more than government and private health insurance, many businesses are likely to want to have their employees tested. Indeed, some larger employers are already doing this. Similarly, businesses may encourage employees to use a contact tracing app (see section 3.5) in order to make it easier to inform employees and even customers if a staff member tests positive. Managing staffing while operating in a way to reduce infection risk to staff and customers, and the liability that comes with it, can only be helped by better information tools. (See also the discussion of a Covid-19 status app below.)

These are all voluntary but collective ways test-trace-isolate can be useful to reduce and manage Covid-19 risks.

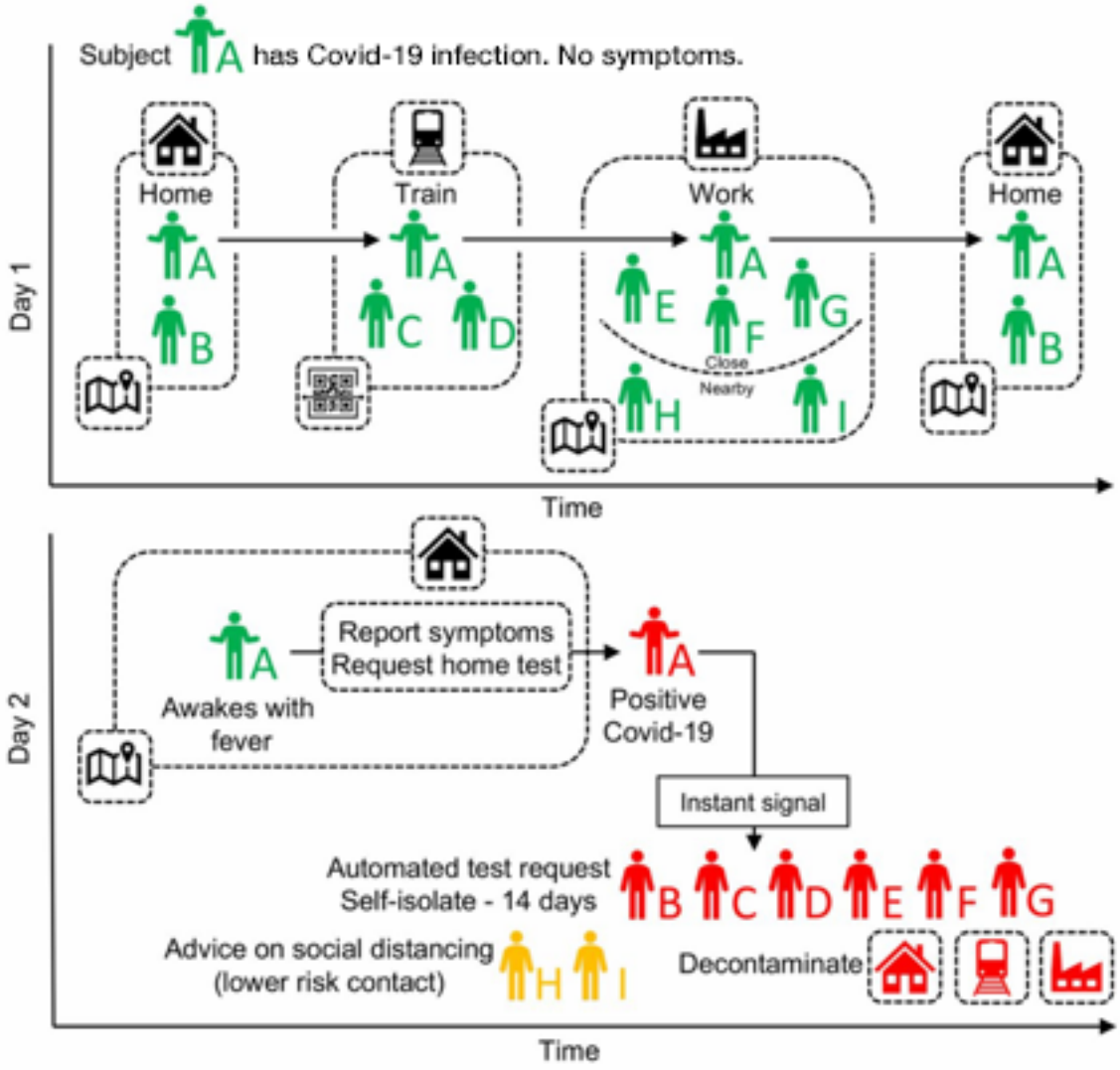
3.5 PRIVACY- AND AUTONOMY-PRESERVING CONTACT TRACING APPS

In March, a group of scientists at Oxford University developed and published a contact tracing system that would enable individuals to be notified if they have come into contact with an infected person without knowing the identity of that person.

In March, a group of scientists at Oxford University developed and published a contact tracing system that would enable individuals to be notified if they have come into contact with an infected person without knowing the identity of that person. The system uses a smartphone app that would share anonymized contact information with nearby smartphones also running the app.[23] Users of the app use a home test to evaluate their status, they then input the result into the app, which then notifies all the phones it has come into contact with. Those potentially infected contacts can then self-isolate for 14 days, during which time they obtain a test, upload the results and, if positive, their contacts will be notified, and so on. The basic schema is shown in Figure 1.

[23] Ferretti, Luca et al. "Quantifying SARS-CoV-2 transmission suggests epidemic control with digital contact tracing." *Science*. 31 March 2020. https://science.sciencemag.org/content/early/2020/04/09/science.abb6936

FIGURE 1: ANONYMIZING CONTACT TRACING APP



Source: Ferretti et al., *Science*, 31 March 2020.

A similar system has now been developed by Google and Apple and implemented as an application programming interface (API) for use in approved apps. The API uses low-energy bluetooth to share anonymized and frequently changing keys with other users of the same app, thereby preventing users from knowing the identity of those who have Covid-19. This API has the significant advantage of being available on practically every single smartphone on the planet. Cross-platform interoperability means that potentially there will be very few dark spots.

3.6 MOTIVATING PARTICIPATION

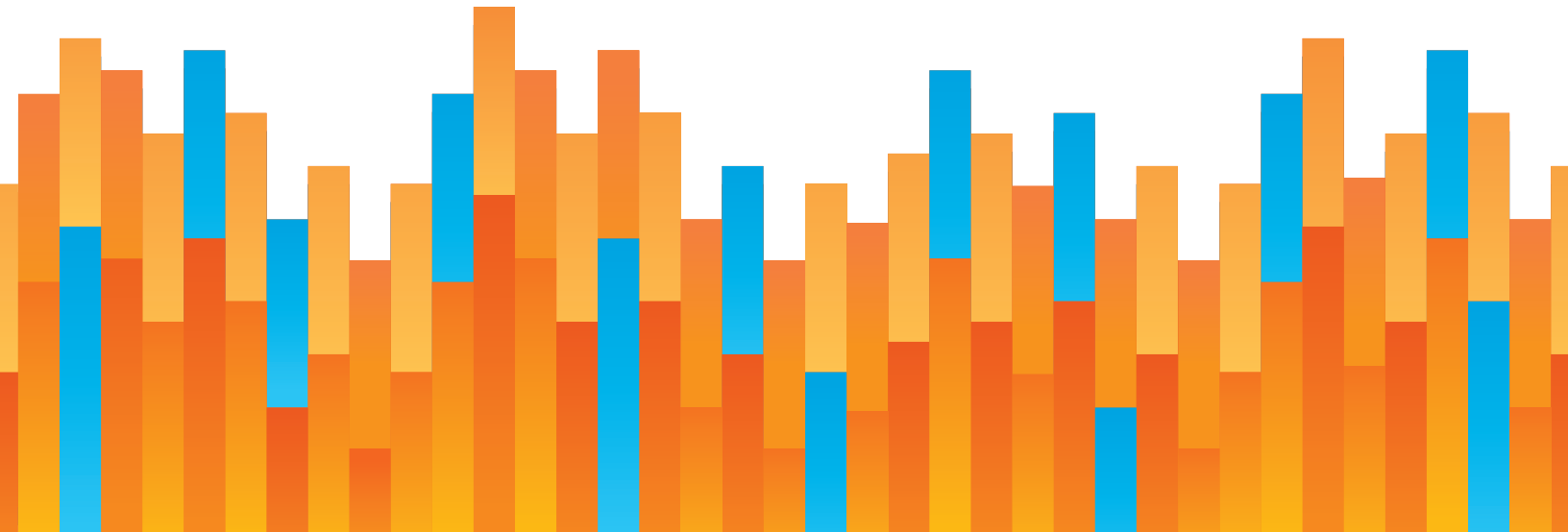
In order to motivate people to download and use such an app, some organizations might use a person's Covid-19 status to determine their ability to engage in certain high-contact activities—especially those where the use of masks is inconvenient or impractical. We explain how such a status app might work in *The Covid-19 Status App: A Risk-Based Tool to Enable Businesses to Reopen While Limiting the Spread of SARS-CoV-2.*[24]

[24] Morris, Julian and Adrian Moore. "The Covid-19 Status App: A Risk-Based Tool to Enable Businesses to Reopen While Limiting the Spread of SARS-CoV-19." https://reason.org/policy-brief/recovery-coronavirus-crisis/

PART 4

CONCLUSIONS

The combination of symptom monitoring, testing, and contact tracing offers a powerful suite of tools that can help identify the incidence of Covid-19 both at a population level and at the level of the individual. As such, they can help inform decisions taken by individuals, businesses and other organizations, including governments. By encouraging self-isolation of individuals who have or may have Covid-19 based on evidence from symptoms and/or tests, these tools can also help reduce the spread of the disease.

ABOUT THE AUTHOR

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