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Monitoring the R-citizen in the time of coronavirus

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Introduction

Ever since the Spanish influenza pandemic of 1918 it has become increasingly essential to understand how diseases spread both within and between countries. Spanish flu killed millions of people, already weakened by the first world war. Since then we have had SARS, MERS, and Ebola, a raft of emerging diseases (Green 2020). Our modelling techniques for analysing the transmission and spread of disease have improved immensely with increases in computing power and the advent of machine learning and artificial intelligence (Adam 2020). Representations of such modelling are prominent in COVID-19 discourse and frequently drawn upon and articulated by news media, governments, and public health officials.

The single most necessary element for modelling and tracking is data, lots of data. Machine learning consumes infinite amounts of data, and data enables computers to predict future behaviours with precision. We are interested to consider a range of questions only some of which we address in this chapter: how the data is gathered and who supplies it. To enable this analysis, we also ask under what conditions do we give the data? Do we consent? If so, is it with informed consent? Are we even aware we have provided data? What kinds of data are we providing? In times of crisis, how can we generate data for appropriate purposes, such as tracking and tracing? How are the issues around data communicated to us during a global pandemic? What 'trade-offs' are expected or anticipated by public health officials and governments in relation to contact tracing apps? To what extent do news media interrogate data, and what are their evolving expectations of citizens? And how do different people respond to data issues in the public sphere via social media platforms like Twitter? How can we trust them not to abuse their positions of authority? We examine the discourses around these concerns with the assistance of examples from a number of countries that are tackling this.

COVID-19 has raised the issue of tracking infected individuals to a level not seen before with the exception of surveillance in China (Pan 2010; Liang et al 2018). Because of the catastrophic consequences of the virus, it is not one that can be left to the exigencies of herd immunity, a kind of communal resistance to the virus after the majority have been infected. COVID affects people differentially according to age, ethnicity, class, among other things (Holmes et al 2020; Khunti 2020). Its long-term consequences are emerging and evolving in unexpected ways (Yelin et al 2020). The physiological and mental health impacts are severe and when added to the economic effects, COVID is a disease of tremendous import and moment (Lupton 2020a).

The experiences of different countries tackling COVID vary tremendously from "safer" countries such as Taiwan, Thailand, South Korea, New Zealand and Australia, to "dangerous" ones such as the US, Brazil, the UK, France, Spain, if not the whole of Europe.[1] Successive waves have wreaked havoc in this last group making it difficult to understand, model and plan a coherent response to the virus. For them lockdown is a normal way of life which is creating resistance and rebellion. Leaders during the first wave of 2020 like Trump, Bolsanaro and Orbán reject the severity and magnitude of the virus leaving their populaces to the mercy of the disease and underfunded health systems (Lassa and Booth 2020).

[1] See WHO Coronavirus Disease (COVID-19) Dashboard, 27 October 2020, https://COVID19.who.int/?gclid=Cj0KCQjwreT8BRDTARIsAJLI0KI2_MIjOOI6VShAt5GeXRWHcF4ZcozqsGW79gO1srFrQ0JRrw7WU8caAuCYEALw_wcB.

An oft repeated phrase by officials is "track, trace and isolate."[2] While it is easy to promote, it has not been so easy to implement. Knowing if someone is infected with the virus requires a sophisticated and coherent approach to identifying people who may have been in contact with infected persons, testing them and, if infected, tracking the others telling them to get tested and then isolate themselves. The personnel required include medical, police, border authorities, civil servants—local and central, testing laboratories, call centres, and more. All must work in a harmonious fashion so that as one part of the procedure is done, another can seamlessly take over. The population as a whole must have trust in its government and its intentions and comply or else resistance arises. Experience thus far has shown how ineptly these procedures have been put into place.

Drawing from scholarly writings, official reports, and media commentary, this chapter explores the ways in which different countries have attempted to introduce tracking and tracing measures. We examine the technological shortcomings combined with the impact of new public management as a form of governance and administration in this. In addition, we explore the manner in which the messaging around COVID has been transmitted to the populace, particularly in the UK. These messages are often confusing, contradictory and counter-intuitive. The UK is important because it made many claims about the excellence of its handling of COVID which subsequent events have shown not to be true. If we distinguish the trajectory of COVID in the US from that in the UK, we see the first was characterised by denial, disinformation and ineptitude while the latter was a victim of political ineptitude.

This also brings into play our concept of the "R citizen", an artificial construct that emerges from the datafication of people inside disease vectors. With epidemics and pandemics, it easy to lose sight of people, as individuals, families, communities and more. These groups become aggregated as statistics are subject to a variety of statistical tests, e.g. standard variations, chi square, Pearson's R, to name a few. While we mean no disrespect to statistical analysis, there is a tendency not to heed who comprises those statistics. The R citizen is a particularly fraught individual who inhabits contradictory worlds of agency and patiency and whose supreme state of being is to become a zero. Quite simply R is the rate at which individuals infect others. R_0 means no one is infected and R_1 signifies one person infects another person and so on. Thus R values less than one indicate the disease will die out but where it is above R_1 the disease will grow and prosper (Bauch 2020). Our desire to capture worlds through big data and statistics pushes us to objectify our units of analysis so that we forget their subjectivity and agency (Brookes 1980; Porter 2004). And the concept of R_0 exemplifies this forgetting.

Datafication takes activities and codes them and turns them into data (Stein et al 2018). It is a classic instance of the audit society wherein verification is paramount and people can be managed (Power 1997). In this process people become algorithmically grouped and identified according to identifiers that connect them to others, e.g. ethnicity or gender (Mittelstadt 2017). How this information is used is of particular interest to algorithmically grouped people and means that issues of informed consent, privacy, and ethical use of data have to be addressed not to groups but individuals. R values therefore algorithmically group people according to their disease spreading propensities so datafication has enormous consequences for individuals' sense of being, reputation, and community. The R citizen therefore has to be accorded full rights and not merely be categorised as a quantum of COVID. Digital data assemblages cannot be uncoupled from whom generated them. The ethics of datafication forces us to be aware of the strands that connect our data to our selves and our bodies.

[2] See WHO coronavirus briefing, 18 March 2020, https://www.weforum.org/agenda/2020/03/testing-tracing-backbone-who-coronavirus-wednesdays-briefing/.

In the next section we turn our attention to the processes and technologies of tracking and tracing, those that create the R citizen. We focus in particular on useful case studies arising from the pandemic responses in the UK and Taiwan. We select these two countries because they represent polar opposites in their handling of COVID. Both were aware of an impending pandemic: Taiwan was prepared while the UK ignored the results of its own pandemic war games in 2016 and therefore faced COVID woefully unprepared (Pegg 2020).

The Technologies of Tracing

Essentially there are two means of tracking and tracing. One is manually to track individuals' movements asking with whom they have met and where.[3] This can be laborious and time-consuming with high degrees of human error, although has proved successful in Singapore and Australia. The present track and trace system in the UK is largely manual and has illuminated the shortcomings of the manual approach improperly handled—lack of data supply and mobility, poor training for trackers, inadequate communication between the various sectors involved, and slow test and response times (Vize 2020). It has been exacerbated by a new public management (NPM) ideology which insists on the private rather than the public sector undertaking these duties (Lane 2000; Monbiot 2020).[4] Although this is an important part of the process of dealing with the novel coronavirus, in this paper we are more concerned with the electronic and technological approaches to coronavirus track and tracing which we treat as the second method.

The second method is to deploy technology through the use of "apps" (software programs), although there still remains a significant human element. In her recent paper on the sociology of apps Deborah Lupton (2020b) lays out the landscape of apps. They appear to fall into four key groups: those that are for self-monitoring; game-based apps; apps for services, e.g. banking, tax, dating, and shopping; and apps that are provided by state agencies for monitoring purposes. Examples of the first include the various health apps—heart rate, meditation, number of steps taken—that enable us to observe our own bodily functions with a view to ensuring our bodies (and minds) remain healthy. All of these, Apple, Fitbit, Strava, etc, collect data from the apps, to which users agree when signing long and turgid "End User Legal Agreements" (EULA). These are written in obfuscatory language designed by lawyers to capture every eventuality, witting or unwitting (Terasaki 2013). Needless to say, hardly anyone reads these EULAs, instead flicking through to the end and agreeing (Cakebread 2017). The extent to which data is given is almost without limit, the trade-off for the user being that the service is provided for "free". But as Zuboff (2019) has amply demonstrated, there is nothing free about these services. Users pay in data over which they have little future control. The data is primarily used to target advertising at the data generators. Typical instances are the sorts of commercials that appear in Facebook and Instagram feeds, or suggested buying options in Google searches.

Large numbers of users are unaware what kinds of data they are providing, how much and where it ultimately ends up. According to Zuboff, data is the most tradeable commodity in the world today. Not only is it used by the social media companies to target advertising but it is also sold on to data brokers (Reike et al 2015; Crain 2018) who then sell large data sets to advertising companies and others who are creating mass advertising campaigns and the like. These are crucially important issues when attempting to persuade a population to download and use a COVID tracing app. The integrity and openness of government when addressing people cannot

[3] See, e.g. Contact Tracing Resources for Health Departments: Resources for Conducting Contact Tracing to Stop the Spread of COVID-19, https://www.cdc.gov/coronavirus/2019-ncov/php/open-america/contact-tracing-resources.html.

[4] Monbiot (2020) describes how outsourcing tracking and tracing to the private sector in the UK has resulted in teenagers taking on roles above their experience levels (such as counselling the bereaved) with minimal training in order to appease the adherents of NPM.

fail or be impugned. Given the necessity of these standards, it is disheartening to see how some governments failed dismally to match their overtures with the reality.

The reasons for this outcome lie in the sets of prior questions that must be asked. These include under what conditions do we give the data? Do we consent? If so, is it with informed consent? Or is the data taken from us without consent? Are we even aware we have provided data? What kinds of data are we providing? We should anticipate that data gatherers will vacuum up everything they can, regardless of its immediate relevance because the algorithm might come up with ways of incorporating previously unused data. Then, we must ask how is this data going to be used? Does it contain identifiable elements so that we can pinpoint individuals? Or will it be anonymised so that its main uses are in aggregate? In terms of use, who will use it? Will it be shared? And in the case of coronavirus is it just the health ministries that will use it or will it be used by immigration agencies, labour departments or law enforcement? And most importantly, how long will these data be kept for? Will they be destroyed after the pandemic is over or will they endure, and perhaps be added to (Lucivero et al 2020)? These questions highlight the new complexities that digital technologies pose for leaders managing risk and crisis responses, which impacts on how people trust these technologies, and casts a light on the new challenges for persuading people to use them.

A good source for tracking contact tracing apps is the website top10vpn, which as of mid-October 2020 showed 120 such apps in 71 countries.[5] For a full taxonomy of contract tracing apps see Chowdhury et al (2020). At the time of writing the most downloaded app is AarogyaSetu in India with 100million, 45 apps use Google and Apple's API,[6] 58 use Bluetooth and 30 use GPS and 26 use a mix of Bluetooth and GPS. Nineteen of the apps, with over 4m downloads, have no dedicated privacy policy. Google and Apple's API use decentralised functions thereby protecting users' privacy. Yet in an analysis of 47 such apps in 28 countries top10vpn found:

- 25 apps (53%) do not disclose how long they will store users' data for
- 28 apps (60%) have no publicly stated anonymity measures
- 24 apps (51%) contain Google and Facebook tracking
- 9 apps contain Google AdSense trackers
- 11 apps contain Google conversion tracking and re-marketing code
- 7 apps include code from Facebook

Thus, to what extent users' personal data is being harvested for commercial use is an open and ethically concerning question. The lack of uniform rules is something that requires tackling at supra-regional and transnational levels such as the EU and UN.

Tracking a Pandemic

As COVID-19 took on the characteristics of a pandemic, which the WHO defines as "the worldwide spread of a new disease",[7] new measures had to be put in place. The difference between COVID-19 and other pandemics was noted by the WHO in terms of how the response would be fashioned:

[5] See https://www.top10vpn.com/research/investigations/COVID-19-digital-rights-tracker/ (last accessed 12 January 2021).
[6] API stands for application programming interface which is a software intermediary that allows two applications to communicate with each other.
[7] What is a pandemic? World Health Organization, 24 October 2010, https://www.who.int/csr/disease/swineflu/frequently_asked_questions/pandemic/en/.

> Describing the situation as a pandemic does not change WHO's assessment of the threat posed by this virus. It doesn't change what WHO is doing, and it doesn't change what countries should do.
>
> We have never before seen a pandemic sparked by a coronavirus. This is the first pandemic caused by a coronavirus.
>
> And we have never before seen a pandemic that can be controlled, at the same time. WHO has been in full response mode since we were notified of the first cases.
>
> And we have called every day for countries to take urgent and aggressive action. We have rung the alarm bell loud and clear.[8]

The aspect of control was new and WHO spelled out the means necessary to begin to control the virus:

> If countries detect, test, treat, isolate, trace, and mobilize their people in the response, those with a handful of cases can prevent those cases becoming clusters, and those clusters becoming community transmission…Let me summarize it in four key areas. First, prepare and be ready. Second, detect, protect and treat. Third, reduce transmission. Fourth, innovate and learn.[9]

Detection became the prime activity since, if it were successfully implemented, the progress of the disease could be both monitored and controlled and R would decline to zero. With large numbers of people involved, automated systems became a necessity. Those with the most experience in tracking and tracing were the countries across Asia that had dealt with earlier viruses like SARS, H1N1, and MERS. Their latent and explicit knowledge empowered them to initiate the WHO procedures. Most importantly, there was no discussion about the reality and materiality of the disease; it was real and palpable unlike the responses in the US and Brazil where it was initially treated as a kind of influenza.

Shaw et al (2020) examined the measures governments in China, South Korea, and Japan, took to engage with COVID. China and South Korea were similar but different in their strategies: China with a strong central government imposed its will which was also followed by local government; Korea disseminated information rapidly and transparently and the government (central and local) held true to their democratic principles. Both China and Korea implemented strong tracking and monitoring regimes to track and restrict the spread of the virus. Korea made great use of big data analysis including credit card histories, CCTV analysis, etc and disclosed the results through the mobile phone networks and government websites (Shaw et al 2020:7). In both countries, citizens showed support and compassion for each other (Shaw et al 2020:8, 10). Both acted early with China's greater case numbers forcing other countries into action.

Nevertheless, two particular examples of digital (and manual) track and trace stand out in the world. They are Taiwan, which is marked by significant success and the UK, which is stigmatised by chaotic failure.[10] Shaw et al (2020:4) show that Taiwan was preparing as early as 31 December

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[8] WHO Director-General's opening remarks at the media briefing on COVID-19—11 March 2020, https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-COVID-19---11-march-2020.

[9] Id.

[10] For one of the best descriptions of how Taiwan dealt with COVID-19 see MD, "Pandemic update: MD on how to defeat COVID" *Private Eye*, number 1534, 6 November-19 November 2020, pp 8-9.

2019 to defend against inbound passengers from Wuhan—14 isolation, mask wearing, temperature checks). And in early January, Taiwan sent its own experts to Wuhan "to identify disease spread" (id). No other country acted so swiftly and early. The collective memory of earlier epidemics was fresh in the government and scientific consciousness and as a result Taiwan was prepared. Wang et al (2020) show that Taiwan was very proactive in seeking out patients and isolating them but with support in quarantine of food and health checks. Taiwan's actions in the first 50 days from December 2019 enabled it to suppress case numbers dramatically (Lin et al 2020). Three distinct measures lent success to Taiwan's defence. First, strict border quarantine for incoming travellers to Taiwan with cases reported to a central database and subsequent follow-up by local government officials. Second, early case detection, especially at airports, with home isolation ensured by visits. As numbers grew technological support via smartphones supplemented visits with, later, artificial intelligence chatbots providing support information. Technology became an important part of law enforcement in this field. The key aspects were the cross-checking of databases, as mentioned below, aligned with the use of social media outlets to jog people's memories and the use of smartphones to update people on the situation, as well as geolocation through GPS in cars and phones (Summers et al 2020). Third, social norms of the acceptance of wearing masks had been established with the SARS outbreak of 2003. The government took upon itself to distribute masks as widely as possible with strong messages urging people to wear them. There was an implicit fourth measure which was the establishment of a centre to combat communicable diseases in 1990 (Summers et al 2020). Taiwan's approach was integrated across all sectors of government which had built up Taiwan's healthcare facilities in expectation of further pandemics and, as a result, Taiwan avoided a lockdown (Summers et al 2020). One point stands out in that Taiwan did not use or create a standalone app but rather used its National Health Insurance and immigration databases to cross-check and track people, after which a mix of QR codes and SMS were used to monitor people. This stands in contrast to Lupton's idea that almost any human action or desire can be "appified" or fulfilled by a well-designed app (2020, p.3).

The UK, however, acted very differently, but it is important to note that the populations of the two countries are different with Taiwan with 23 million and the UK with 66 million people. Scally et al (2020) encapsulate the response in their article subtitle, "too little, too late, too flawed." Government and its cadre of scientists only began to act after Italy and Spain had begun to take containment measures, then barely. By late March the chief medical officer downgraded the COVID threat from level 4 to level 3 and proposed a form of herd immunity as a form of "treatment".[11] Public health was under-prepared, personal protective equipment was scant, and few containment measures were taken. Schools were not closed until 20 March. Scally et al (2020, p.2) regard a central cause as the failure of the scientific advisory group to remain separate from political influence, keep all its ruminations private, and to have no public health experts within it. Nor did it have any members from minority groups (including black, Asian and other ethnic minorities, and the disability sector), for whom communication needed to be carefully tailored and specific in its approach. Public health, in contrast to Taiwan, seemed marginalised. The government relied on poorly formed behavioural evidence that marked out "behavioural fatigue" as a strategic reason for acting slowly.

According to Sibony (2020) behaviouralists advising government framed the choices around herd immunity, social distancing, and lockdowns as choices between avoiding deaths and saving lives with the former having a stronger impact and resonance. This problem of mixed messaging works directly against best practice principles in health and crisis communication. If one thing is

[11] Editorial, "The Guardian View on Herd Immunity: Yes It Was Part of the Plan", *Guardian* 29 April 2020, https://www.theguardian.com/commentisfree/2020/apr/29/the-guardian-view-on-herd-immunity-yes-it-was-part-of-the-plan (last accessed 14 January 2021).

certain about communicating to citizens during a global health crisis, it is that mixed messages from government and public health leaders create confusion and exacerbate uncertainty and potential resistance amongst citizens and communities (Turner, Skubisz & Rimal 2011). For example, the UK offered little support for those consigned to quarantine, although the welfare systems gave some benefits, they were never seen as adequate. According to a study by Smith et al (2020) non-adherence was associated with: men, younger age groups, having a dependent child in the household, lower socio-economic grade, greater hardship during the pandemic, and working in a key sector. It disvalued the lives of its citizens and because it failed to engage local communities, support structures never appeared as they did in Asia.

The UK was further distinguished from other successful countries in that it relied on private suppliers for centralised testing and tracing (Wise 2020). The government response was marred by poor preparation and training, inadequate oversight, and exclusion of local authorities' public health expertise and facilities who understood their areas and populations. The private sector sought the cheapest ways to supply testing by, for example, locating testing centres in out-of-town areas and concentrating the test analysis in a few laboratories. The testing service was never able to keep up with demand. Mixed messages were transmitted to the populace, for example, "if in doubt, get tested" and "only get tested if you are showing symptoms". It became impossible for people to understand a single rational message with resulting massive confusion.[12]

Taiwan and UK Technologies

Both the UK and Taiwan came to rely on technology as means of easing the difficulties of testing and tracing. Great faith came to be placed in apps on smartphones. Taiwan appears to be one of the most successful countries in instituting a form of "participatory self-surveillance", not based on a self-standing COVID app, where the population "partnered" with the government as did many other hackers who built tools that prevented runs on masks via "vTaiwan" (https://info.vtaiwan.tw/), for example (Kluth 2020). Taiwan's approach was seen as a counter to the more draconian of South Korea and China and even within the west the tactics might be resisted as too intrusive. Even though the Taiwan method of tracking its quarantined seems harsh in some respects—who has access to the data? how long is it stored for? how transparent are the systems?—the government softened the effects through its compassionate social care program which supported people in quarantine (Lin et al 2020b). Quarantine was free, food was provided, along with medical and psychological support (Lee et al 2020). Taiwan used a centralised database created by the National Health Insurance (NHI), which meant all medical information was accessible to medical officials. Government also used data from Customs and Immigration to discern when people had travelled between Wuhan and Taiwan to assist in tracking others who might be infected (Lin et al 2020a).

The UK exacerbated the situation in two ways. One was by dismissing the opinions of experts or bending them to their political will; and the second was in its app development which displayed government's reluctance to adopt already proven measures such as Google's and Apple's API. Instead, it was intent on creating a "world beating app" of its own, more than an effective one (Hoar & Nicholson 2020). The original version of the app used a centralised data collection method based on Bluetooth. This original version cost £10m to develop (Mari 2020). Two obstacles emerged: Apple phones failed to keep their Bluetooth connections open if the app was not being actively used; and the app failed to operate on older smartphones. Eventually the UK

[12] Some of the most shrewd reporting on COVID matters in the UK is by the magazine *Private Eye* and its medical correspondent, MD (Dr Phil Hammond), which lies behind a paywall. MD has catalogued the continuing failure of the UK government to institute "world-beating" testing systems, protect care home inhabitants, respond to local concerns versus the success of its cronyism in awarding contracts and jobs to friends of government ministers without proper tendering in defiance of government ethical rules.

moved to the Google-Apple decentralised system but not before wasting large amounts of money on untested projects and seeding distrust among the populace about the integrity of the app. Government paid around £36m to create the COVID app (Mari 2020). Around 5million apps have been downloaded but as Moon et al (2020) suggest its efficacy is in doubt. Furthermore, Kobie (2020) reinforces this interpretation that it is no longer a technological problem but more of a people problem in that people are confused by how to download and also use QR codes, which are required for registration when entering restaurants and the like. This is exacerbated by the growing digital divide between younger and older people (ONS 2019). The ONS pointed out the numbers of people over 65 who are non-internet users are growing, which militates against app use.

A better response was projected had support been offered for those in quarantine along with better messaging. The UK government's parsimony only reinforced reluctance to participate in disease prevention. For example, Smith and colleagues (2020) show that 70 per cent of their survey respondents intended to self-isolate on learning of their symptoms; instead only 18 per cent actually quarantined for the due period. It was similar with reporting contacts—actuality was lower than intention as people worried about the safety of data, integrity of data collection, and perceived accuracy and reliability of the tracking system (Smith et al 2020). A significant part of the blame was laid at the adoption of centralised systems operated by private companies and the exclusion of primary care providers at the start of the pandemic (Harding-Edgar et al 2020). They concluded, with resignation,

> Despite the failings of this largely private, highly centralised NHS Test and Trace system, it has been reported that the government intends to scale up testing to deliver weekly tests for the whole population. Deloitte and a slew of commercial companies are being contracted to deliver them under Operation Moonshot, a plan to ramp up tests to 10 million a day, at a cost of 100 billion pounds – 70% of the annual NHS budget for England. Ten million tests a day will generate 10,000 people testing falsely positive a day and result in unnecessary isolation and hardship for them and their contacts (Harding-Edgar et al, p. 430)

Moon et al (2020) argue a Find, Test, Trace, Isolate, and Support (FTTIS) framework is essential for containment of COVID. Their research shows that few countries have a system fit for purpose, especially in Europe and they posit five lessons for a successful FTTIS:

> Lessons from comparisons across…countries
> **Find:** Combining active and passive case-finding approaches, identifying high-risk groups and using effective, tailored communication strategies are all imperative.
> **Test:** The accuracy, utility, and reliability of tests depends on the procedures used for sample collection and handling, and processing. Leveraging existing laboratory networks enables rapid scale up of quality-assured tests.
> **Trace:** Centralised, decentralised and digital contact tracing may be complementary, with careful consideration of how data can be shared across the FTTIS systems while protecting privacy.
> **Isolate:** FTTIS systems should include some form of monitoring of individuals in isolation and quarantine to promote adherence and wellbeing.
> **Support:** Offering practical, financial, and material support to individuals in isolation and quarantine promotes adherence and wellbeing (Moon et al 2020, p.16).

The model above harks back to the Taiwanese and some other Asian models, especially in the practical and financial supports offered, something with which the west has been reticent to

engage. Even where contact tracing apps have been met with relatively little controversy, such as in Australia, their use is at best limited (Ahmed et al 2020). If adoption rates are below 50-60 per cent, the efficacy of apps is substantially diminished and weakened (Levy & Stewart 2020). Genuine fears of state surveillance and monitoring and invasion of privacy have created resistance to adoption (Fahey & Hino 2020).[13] The UK is an exemplary case of where the messaging around the app over-larded the anticipated benefits. First the app relied on central data storage generating fears around privacy. Second the app was technologically impoverished working on some phones and not others, especially older phones. Third enormous amounts of public funds were wasted on an app that never came to fruition after being continuously lauded as "world-beating" by politicians. Even in the limited bounds of the Isle of Wight the app was unable to keep track of people. Fourth the app, even when appropriate technology had been adopted, ultimately relied on an outsourced set of contact tracers whose incompetence, when compared to local authority tracers, rendered the utility of the app futile.

The C-19 National Foresight Group (C-19 2020) researched the claimed success of the UK government's messaging during the height of the COVID lockdown during the summer months of 2020 (Butler 2020). They found overuse of hyperbolic language, lack of humility, a reluctance to use straightforward language, secretive issuing of messages late at night, and an emphasis on what people should not do rather than what they could do, all of which reduced trust in government (C-19 2020:6). The message was:

> The government has been consistently criticised by MPs and council leaders for hyping-up policies as "world-beating", for setting then failing to hit self-imposed targets, such as on COVID testing, and for adopting a centralised, top-down approach that cuts local partners out of policy decision-making (Butler 2020).

The refusal by central government to engage with local governments and other groups has intensified the belief that government is incompetent and uninterested in cultivating local expertise (Butler 2020). According to Kim & Kreps (2020) these failures in communication are because communication is mistakenly seen as a precursor to action rather than a particular type of action itself which demands substantial investment by government to engender trust among the populace. A particular glaring example of communication gone awry, and a pivotal moment in the government's management of COVID, was the handling by government of the Dominic Cummings affair (McKie et al 2020). Cummings, the prime minister's chief adviser took a number of long-distance trips with his family in England in breach of the COVID lockdown guidelines. One such car ride was supposedly to test his eyesight. He and the government defended his actions as being within the guidelines and the spirit of the law. A public outcry was heard and trust in the government messaging plummeted as Cummings and government politicians scorned public sentiment. In a letter to the prime minister 26 health academics and advisers were reported to say:

> public faith in the government is essential if the COVID-19 crisis is to be tackled effectively…However, they make clear that trust has been "badly damaged by the recently reported actions of Dominic Cummings, including his failure to stand down or resign in the public interest", and by the prime minister's refusal to dismiss him (McKie et al 2020).[14]

[13] Singapore has announced it will provide COVID tracing data to the police to assist with criminal investigations heightening fears over privacy breaches (Taylor 2021).
[14] On a separate issue Dominic Cummings was sacked from his post in December 2020 (Syal 2020). The fallout from his ill-fated drive had never receded in the following 8 months.

The abandonment of trust in government is not something that is recovered by technological means. Indeed, technology is at best an auxiliary support to human action. Where technology does not live up to expectations or is over-promised as in the UK, it can be detrimental to the COVID effort. For example, because of the large numbers of apps (120 according to top10vpn) there has been little or no coordination on the kinds of measures to incorporate in order to enhance adoption (id.). Leith & Farrell (2020) showed how German, Italian and Swiss apps were unable to communicate on a tram. At the moment we have little research on compliance globally. Country specific research provides a glimpse through cultural lenses. For example, Kuiper et al (2020) showed that compliance free of repression was high in the Netherlands as it was in Israel (de Bruijn et al 2020) where people felt they had a moral duty to abide by the law. But in the US compliance declined as restrictions were lifted from May 2020 onwards, and indeed resistance became entrenched with the impending presidential election (Reinders-Folmer et al 2020). Overall, given we are experiencing a *global* pandemic, the lack of engagement with and dialogue over compliance is deeply worrying and will continue without international effort to win compliance.

Conclusion

The lessons are stark. The R citizen is caught in an ideological void that often privileges the market and NPM over their welfare. R citizens are chastised for not obeying the rules where often the messages have been so confusing that even the rule creators have shown they don't always understand their own norms. The R citizen has the shakiest hold on their data. We see that even where privacy is assured leakages occur that benefit technology companies. And if this point is unclear, it should be emphasised that *all data* has value. In the case of more authoritarian societies we see, as in Singapore, a predilection to give data collected for COVID purposes to the police to help them apprehend criminals. The R citizen has no idea about how their data will be used in future. No government has given categorical assurances on the destruction or warehousing of data. The datafied R citizen will endure in this compromised fashion as another component in surveillance capitalism.

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