COVID-19 in a social context

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This opinion piece briefly highlights and explores some statistical issues and concepts in the context of dynamics of human behaviour, including sources of variation, past behaviour, feedback effect, and problems with definition and measurement. It is the author's opinion that New Zealand could have managed and controlled COVID-19 without having to go into lockdown. Valuable time was lost due to the feedback effects of trying to protect the economy as long as possible which led to the introduction of COVID-19 into New Zealand. But then the government reacted responsibly and implemented lockdown at a major cost to the economy.

The biggest problem we face is the gap in data and in our knowledge. We seem to go through the same issues at every life event, certainly the same statistical issues resurface time and again, including knowledge based on insufficient data, problems with definition and measuring outcome variables, 'unsupported' confirmatory political statements and media reporting. Unsurprisingly, there has been no exception in the case of COVID-19. Statisticians have been quick to point out such issues with data. There are also, human behaviour issues that can confound and affect not only policy and decision making but also the pandemic outcomes. Some of the problems such as defining and measuring outcomes are fairly obvious, e.g. presentation of recovery and death rates as the number of deaths or recoveries divided by the number of infections is simplistic, because we do not know the number in the community who are infected. Furthermore, for some months the public has been exposed to a style of media reporting that focuses on numbers, e.g. the daily number of new infections and deaths are the main feature of trend lines. We do need this kind of information to track the progress of the pandemic, but, it does seems that a total focus on reporting numbers has removed the human aspect from this event. The impact of COVID-19 seems to target the 'social' aspects of human behaviour. For example, focussing on the economy alone (e.g. https://time.com/5805683/trump-administration-coronavirus/), means paying a high price in human life over and above high rates of infection and death; those infected must recover in isolation, and in severe cases may die alone. The need for being with a loved one and being able to say good bye is a natural human behaviour. It is not known what the impact will be on survivors experiencing the trauma of not being able to provide comfort and say good bye. The suicide literature may provide some indication as to how the sudden loss of a loved one (without the ability to say goodbye) can affect families (Shahtahmasebi, 2016; Shahtahmasebi, 2014; Shahtahmasebi & Aupouri-Mclean, 2011).

Unsurprisingly, racism was one of the first noticeable social disharmonies resulting from COVID-19. Although there has been media hype about the virus originating in China,

unfortunately due to public ignorance, anyone with Asian features were targeted. In New Zealand (NZ), Asian looking citizens were/are openly abused both verbally and physically (e.g. see https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12305279; https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12304816). The situation is not helped when the US directly accuses and blames China for the virus (https://www.theguardian.com/us-news/2020/apr/30/donald-trump-coronavirus-chinese-lab-claim), which will fuel further hostility towards Asians (https://www.stuff.co.nz/national/crime/121377383/photographer-assaulted-in-christchurchs-cbd).

Since the outbreak of the COVID-19 pandemic the world has observed various methods of public control, from self-isolation, to enforced isolation, to border closures, and lockdown. In order to lift lockdowns, mobile applications are being developed to monitor people's movements to enable contact tracing in case of infections (https://www.theguardian.com/australia-news/2020/may/03/coronavirus-apps-how-australias-covidsafe-compares-to-other-countries-contact-tracing-technology). Inevitably, the question arises if the virus will be the foundation for "big brother" style social monitoring to become the norm (e.g. see https://www.msn.com/en-au/news/coronavirus/australias-leading-coronavirus-expert-at-the-world-health-organisation-refuses-to-download-the-covidsafe-app-despite-scott-morrison-saying-its-our-key-to-lifting-lockdowns/ar-BB13wtuy?li=BB10rWgN). Other examples of feedback effect include panic buying leading to more panic buying despite repeated reassurances from respective governments that supermarkets were well-stocked so there were no reason to panic buy.

These two instances provide examples of how the feedback effect informed policy; in the former, fear of the virus and a heavy emphasis on physical distancing - thus the need for contact tracing has made the idea of central monitoring of people's movement more agreeable While in the latter; authorities and supermarkets were caught by surprise by failing to anticipate the feedback effect and in the absence of appropriate strategies, the fear of lockdown led to panic buying and empty supermarket shelves.

News reports show that New Zealand has achieved what few other countries have managed in preventing the spread of COVID-19 (https://www.bbc.com/news/world-asia-52344299). Jacinda Ardern, the NZ Prime Minister, claims trust in science as the reason for this achievement. Most countries' efforts to combat the virus were led by scientists. Global statistics show wide variations in outcomes between countries (https://www.worldometers.info/coronavirus/#countries). So, how confident can we be that it was trust in the science that worked in NZ? Why would the science work in NZ and not in other countries? Have other countries also followed the same scientific advice?

Outcome statistics (as at May 9, 2020) for NZ show 1492 infections and 21 deaths due to the virus, and Vietnam has had 288 infections and no reported deaths (https://www.worldometers.info/coronavirus/#countries). Similarly, Hong Kong, Taiwan, Jordan, Palestine, also have reported low infection and death rates. How does Vietnam define

and explain their success, while developed countries, including, USA, Spain, Italy, France, the UK, and Germany are reporting high rates of infection and death?

We must remind ourselves that political hype, and the huge gaps in our knowledge mean contradictory scientific advice, confusion, and ineffective policies.

Set in a global context, there are huge variations in outcomes between countries, in part, this is due to geographical boundaries and borders, and cultural-political behaviour.

During the period 31 December 2019 and 7 January 2020, unsuspecting visitors to and from China became carriers of the virus and exported it to the rest of the world.

It is plausible that without the cover up in China, the lag-time-effect in infection rates would have been eliminated and those countries connected to China would have prevented or contained the spread of the virus. But this is only an assumption without substantive theory, because despite the risk of infection, tourists and travellers continued to travel right until the lock down and border closures. Governments, including New Zealand and Australia agonised over organising mercy flights to get their citizens out. Some of these citizens are still stranded in foreign countries.

Beyond the lag-time-effect, one major factor was the difference in attitudes and beliefs in how to deal with the spread of the virus between politicians – which exacerbated the lag-time-effect allowing the virus to change status from epidemic to pandemic.

One major consequence is that in some countries the lag-time became a lead-time-effect, currently after only a few weeks the US is leading in both the number of infections and deaths due to COVID-19 followed by Spain, Italy, UK, Russia, France, and Germany (https://www.worldometers.info/coronavirus/#countries).

We still don't know enough about this virus. So far, it is understood that it infects through human to human contact. It is also understood that sanitiser or soap can be effective in killing the virus. Frequently cleaned surfaces, and hands will contribute in staying infection-free.

It is also understood that the virus has an incubation period of 2-14 days, and some people may not show any symptoms, but we do not know why this is the case or who the asymptomatic people are.

Initially politicians, including the NZ government were slow to react fearing the possible total destruction of the tourism and associated industries. Subsequently the NZ government placed restrictions on China and Iran, and justified a lack of urgency to close or even tighten borders to visitors, by claiming that western style democracies such as Italy and Korea have well-developed health care systems (https://www.beehive.govt.nz/release/travel-restrictions-reconfirmed-precaution-against-covid-19). This was at a time when Italy, USA and Spain's infection and more alarming death rates went through the roof. This can be interpreted as a race-based decision rather than a scientific or evidence-based policy.

However, we do know that viruses have to have a large capacity to mutate in order to survive. We do not know what form the virus will take, e.g. will it become less aggressive, or develop into several strands of various strengths. We do know that COVID-19's interaction with the host environment becomes more aggressive in people with pre-existing health conditions and more deadly in older age groups.

Herd immunity as a means of containing the virus has been mentioned. But immunity of the herd comes at a cost which restricts our moral, social and political freedom. In other words, herd immunity implies widespread infection in the population, and in the case of Covid-19 it also means high rates of mortality. And those governments, such as the UK and the US, whose initial interventions inclined towards herd immunity changed their approach very quickly when faced with exponential infection and death rates (https://www.bbc.com/news/science-environment-51892402, https://www.bbc.com/news/health-51915302, https://www.bbc.com/news/health-51915302, https://www.businessinsider.com.au/donald-trump-uk-herd-immunity-coronavirus-catastrophic-boris-johnson-covid-2020-4?r=US&IR=T).

The question arises as to why the same available data on the virus has led to different opinions about how to combat the virus. This difference in opinion suggests that in the absence of full information, undue emphasis may be placed on other factors and social processes such as economic, health care, and the rate of infection and mortality. In general, social perceptions and attitudes inflate or deflate the perceived effects of an outcome leading to subjective decision making (Short, 1997), which must be accounted for (Shahtahmasebi & Berridge, 2010).

So, given the scant knowledge about Covid-19, any scientific advice is more likely to be informed personal opinion based models using the same available data. Thus, an environment is created where politicians pick and choose from a host of opinions to justify their political actions. In the initial stage, the desire to protect the economy, appears to have led most governments to overestimate their respective health care systems and underestimate the virus.

Another example of past behaviour and feedback effects in this pandemic from the New Zealand experience include compliance. For months, the NZ media has covered nothing but COVID-19. Images of war-torn Syria, and other Middle East crises; people dying and being displaced in some distant land were no longer reported. The first signs of a threat from the virus in NZ (and Australia) led to panic buying. When the lockdown was announced on March23 New Zealanders were expecting an infection and mortality rate similar to the rest of the world. So it is not surprising that the public adopted a self-preserving approach of accepting a lockdown for 5-6 weeks. Would New Zealanders (or indeed other countries) have been compliant had the lockdown been announced earlier when the virus was in its early epidemic stage?

Silver lining

The purpose of highlighting that there is a silver lining to this adverse global event is not to make a political statement but to promote statistical concepts such as the feedback effect and past behaviour effect.

COVID-19 has provided the world with an opportunity to redeem itself. The world should ditch zombie economic, social and health policies ideas/policies (https://www.theguardian.com/books/2020/may/03/arguing-with-zombies-review-paul-krugman-trump-republicans). An economy is a man-made system which we should be able to tweak to suit ourselves and our environment. COVID-19 has also provided us with a unique opportunity to change. But instead, world leaders and the media are rushing to get us back to where things were before the pandemic. For example, New Zealand politicians are pressing to get the economy back to the way it was (https://www.rnz.co.nz/news/world/415250/back-at-work-british-pm-boris-johnson-faces-lockdown-catch-22), the public having had a chance to detox themselves off processed fast food could not wait to reintroduce such food into their diet. The media reports long queues for fast food as New Zealand moved from level 4 lock down to level 3 https://www.rnz.co.nz/news/national/415259/live-covid-19-updates-from-new-zealand-and-around-the-world-on-28-april).

COVID-19 has achieved, in a short space of time, what the world's most powerful countries has been unable to do for decades. The lockdown seems to have put the brake on the fast pace of life globally, enforced staying at home or working from home, and created the opportunity for more family time. As a result domestic and international travelling has been reduced by at least 80%, and, air pollution has substantially reduced (https://www.nationalgeographic.com/science/2020/04/pollution-made-the-pandemic-worse-but-lockdowns-clean-the-sky/) – it is time for the world to take a step back and re-think our future rather than rush into getting back to "normal" and in the process close off this window of opportunity (https://www.rnz.co.nz/news/world/412509/trump-insists-economy-can-restart-soon-despite-spread-of-covid-19, https://www.nzherald.co.nz/world/news/article.cfm?c_id=2&objectid=12325236).

Such global feedback effects are rare, and, although a result of political intervention policies in response to a different adverse problem, are certainly never created by any political will or actions. The world has paid a hefty price for this window of opportunity, but nothing like what it will cost the next generation(s) if we do not take heed and learn from the current predicament the world finds itself in.

However, the consequences of the global political response to COVID-19 demonstrate the relationship between the various processes, including, politics, social, health, economic, education, and environment. It is possible to take advantage of this opportunity to understand and manage the relationship between various processes for the common good through innovative and visionary policy development – for a discussion see (Shahtahmasebi, 2006).

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