Mutant variations and the danger of lockdowns

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Have non-pharmaceutical interventions, including lockdowns and social distancing, enabled more dangerous virus variants to thrive?

By

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At the beginning of 2020 we embarked upon a nationwide epidemiological experiment in an attempt to reduce the mortality burden of the novel SARS-CoV-2 virus. The premise of the experiment, though never formally defined, was to trial the efficacy of non-pharmaceutical interventions with respect to the infection rate and subsequent death toll of an airborne respiratory virus.

The hypothesis was treated as a foregone conclusion and presented with little doubt. A significant reduction in person-to-person interactions within a population will lead to a decreased infection rate and reduce the number of deaths associated with the virus. The scientific community were so confident in this hypothesis that they did not present it as a hypothesis at all. The experiment was not defined as an experiment. The resulting data was subsequently ignored.

> No matter how certain we are of the outcome, good science is about asking questions

It's easy to see why. Given our most basic understanding of how viruses spread from one person to another, any measures that suppress the transmission of viruses should inevitably lead to a reduction in associated mortality. But given that we have never actually investigated this correlation in a real-world setting, perhaps assumptions based on our "most basic understanding" are not sufficient. No matter how certain we are of the outcome, good science is about asking questions. If the answers contradict your assumptions then those answers should bring about a shift in your understanding.

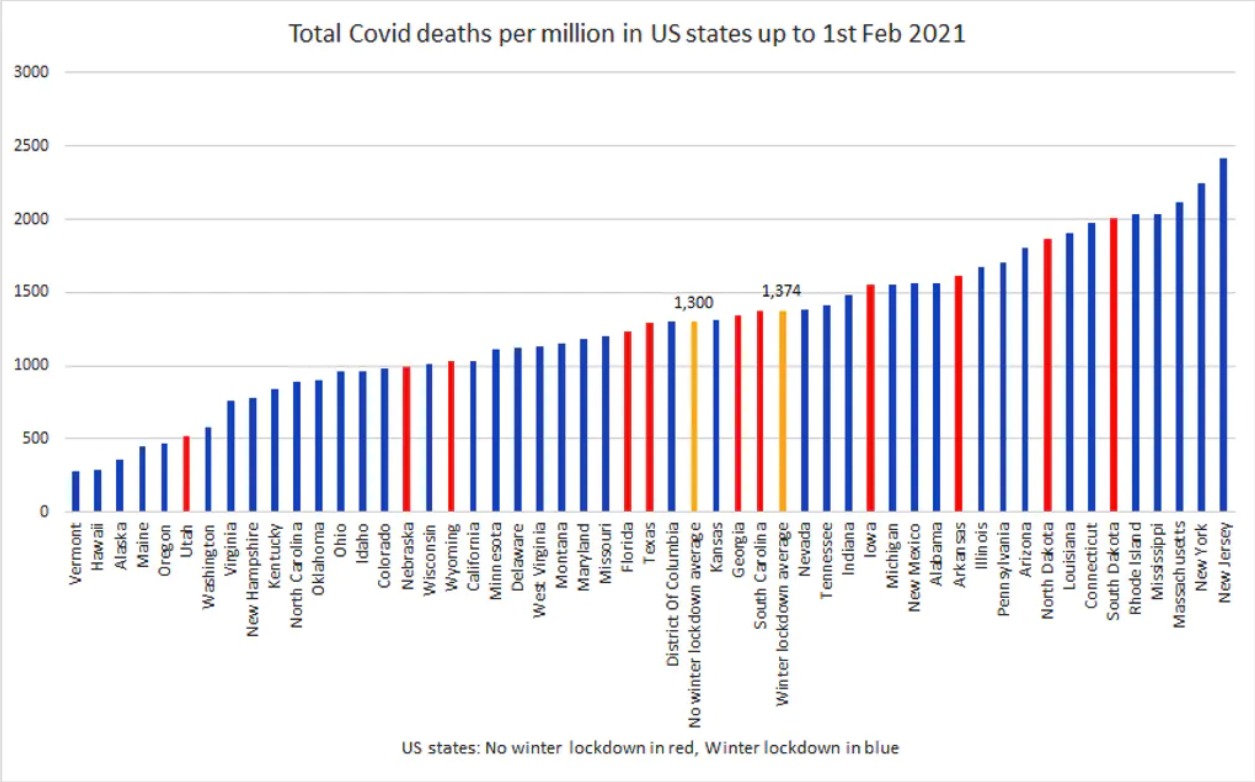
One year into the great experiment, we have a wealth of global data to inform our conclusions. This data largely contradicts the confident hypothesis with which we embarked upon this journey and has therefore been ignored. Scientists and politicians have clutched at straws, manipulated data or simply ignored the evidence in an attempt to safeguard the integrity of the original idea.

But the evidence is clear. The United Kingdom has implemented strict lockdown measures throughout the crisis, intermittently closing down the hospitality industry, mandating face coverings, enforcing social distancing and banning households from mixing. Our friends in Sweden had a much softer lockdown, only closing schools and colleges for older children, never mandating face coverings and keeping pubs and restaurants open throughout. Both the UK and Sweden have lived with SARS-CoV-2 for

almost a year with very different results. The logic of our hypothesis dictates that Sweden should have seen a much higher number of coronavirus-related deaths (relative to their population) than the UK. The reality is that Sweden's death rate is considerably lower.

This information alone is not enough to refute our hypothesis. We are only comparing two countries after all, and there are many other variables at play such as population density, climate and demography. Simply comparing data from two countries with two very different approaches to the situation is not enough to provide an answer. But it should be enough to warrant more questions.

Is there a correlation between the stringency of non-pharmaceutical interventions and the mortality burden of SARS-CoV-2? Perhaps the best source of data for this is the USA, where different states implemented different measures.



There are some caveats to this data. First, New Jersey, with the most "Covid deaths per million", has the highest population density of all the states. Alaska has the lowest. The simple fact that the red lines on this graph do not cluster on the right extremity does not disprove the efficacy of lockdowns. Furthermore, there is no statistical difference between the lockdown average and non-lockdown average in this data, so no-one could claim that lockdowns lead to *more* Covid deaths based on this evidence alone.

> The evidence should drive us to reconsider what we know and apply our knowledge in a different way

South Dakota, with a very low population density, appears to buck the expected trend. Is this because of the lack of lockdown? Possibly. But Florida, with a very high population density (eighth in the country) appears much *lower* than it should, despite the lack of lockdown. Nebraska and Wyoming are both higher on this list than they should be, while

Utah is a bit lower. Georgia and South Carolina are a little lower than we would expect, while Iowa and North Dakota are significantly higher. If we introduce climate as a factor, taking average temperatures into account, then we would expect to see North Dakota somewhere near the top, while New Jersey should be much lower down. There are many variables at play but the data should be sufficient to call the efficacy of lockdowns into question – especially given the high cost of such measures.

The reason we are so reluctant to accept that lockdowns and indeed other non-pharmaceutical interventions (NPIs) have little to no impact on the mortality burden of the SARS-CoV-2 virus is that it's difficult to find an explanation for it. However, rather than denying the evidence in the absence of an explanation, the evidence should drive us to reconsider what we know and apply our knowledge in a different way.

One possible explanation for the ineffectiveness of non-pharmaceutical interventions lies in our understanding of evolution. We all understand that humans evolved to become more intelligent over millions of years, but this did not happen by design. Humans that were born with larger brains owing to a random, spontaneous, genetic mutation had an advantage over those with smaller brains and were therefore more likely to survive and reproduce. The more intelligent "strain" of humans dominated and displaced the competition. But a species only evolves in this way when it is put under pressure. Without environmental challenges to overcome there would have been no fight for survival and the more intelligent "strains" of human beings would have had no advantage. In other words, if living on earth was easy we would still be apes.

In the microscopic world, genetic mutations are more common and therefore evolution happens at an accelerated rate. This is why doctors are reluctant to prescribe antibiotics since overuse of this intervention could lead to the evolution of superbugs.

Some people find this idea hard to grasp. Why and how are bacteria able to mutate in order to overcome threats to their existence? After all, they are not sentient. They do not understand their environment or "decide" to fight back. But in reality it is not the introduction of antibiotics that stimulates the mutation of antibiotic-resistant bacteria. These mutations are happening anyway, spontaneously, randomly. New bacterial variants are emerging all the time and some of them *happen* to be resistant to antibiotics. This would still be the case if antibiotics didn't exist.

In a world without antibiotics, the antibiotic-resistant mutations do not have any advantage over other bacterial variants. They are a flash in the pan. Brief and rare. But when you introduce antibiotics into the mix, you confer an advantage on the antibiotic-resistant bacteria, allowing them to thrive, multiply, dominate and displace. This is why we have to be very careful with antibiotics and consider when it is appropriate and necessary to use them. Antibiotics save many lives, but if used irresponsibly over a long period of time they could wipe out a species.

Imagine if we were to administer antibiotics to every single member of society once a month to pre-empt any possible infections. It's likely we would see a sharp reduction in bacteria-related mortality, such as bacterial pneumonia, but only in the short term.

Infectious bacteria would quickly evolve into antibiotic-resistant superbugs, rendering our preventative interventions redundant and threatening the safety of everyone on earth.

Viruses and bacteria are not so very different. Just like bacteria, viruses mutate spontaneously and randomly, giving rise to thousands of different variants or mutations of the same virus. Most of these mutations make no difference to how the virus interacts with our immune system and confers no real advantage on the variant in question. However, some mutations may change the nature of the virus itself in the following key areas:

- **Virulence:** how likely the virus is to make us seriously ill, leading to an increased risk of hospitalisation and death;
- **Transmissibility:** how easily the virus is passed from one infected individual to another;
- **Detectability:** how easily the virus can be detected by certain methods of testing.

At present, there are over 4000 known variants of the SARS-CoV-2 virus. Some of these viruses will be less virulent than the original; others will be more virulent. Some will be more transmissible than the original; others will be less transmissible. Some will be more easily detected with PCR testing; others will be less easily detected.

All of these factors confer advantages and disadvantages on the variants in question, but the extent of these advantages is dependent on the pressures of the environment in which they exist. Non-pharmaceutical interventions have, for the first time, dramatically altered the context of that environment.

In any species, a mutation that leads to increased strength or intelligence is likely to be advantageous and will therefore dominate the competition and become more prevalent. In a hostile environment, the advantage of these mutations is exaggerated and the prevalence of advantageous genetic variants increases even more. This is how organisms evolve to deal with threats.

A more transmissible variant of a virus has a clear advantage over a less transmissible variant; but if we put pressure on the virus, we confer an even greater advantage on those more contagious variants.

> In a world of social distancing, we are conferring a greater advantage on the more transmissible variants of that virus

Imagine two countries at war with one another. One has missiles with a range of 4000 miles, while the other has missiles with a range of 3500 miles. If the countries are only 3000 miles apart neither country has an advantage in the fight. Even though one set of missiles has a longer range, they are no more likely to find their target. Now apply this logic to two variations of a virus, one of which is more transmissible than the other. In an environment with regular close-contact between people as they gather in crowds, the more transmissible variant does not have such a distinct advantage over the others and is less likely to dominate and displace the less-transmissible variant. The less transmissible

variant is still finding its target, infecting that person, making them sick and leaving them (in the vast majority of cases) with natural immunity, leaving the more transmissible variant with fewer targets to choose from.

In a world of social distancing, stay-at-home orders, face coverings and a ban on mass gatherings, we are no-doubt suppressing the virus. But we are conferring a greater advantage on the more transmissible variants of that virus. Effectively we are moving our two warring countries further apart so that only the longer-range missiles are able to find their targets. Suddenly it is clearer which of these countries will win the war. The more-transmissible viral variants will dominate and displace the less transmissible variants at an accelerated rate. In this way, it is possible that our efforts to suppress the virus are hastening the evolution of NPI-resistant variants, much like the use of antibiotics hastens the evolution of antibiotic-resistant bacteria.

In the same way, some random, spontaneous mutations of the SARS-CoV-2 virus will be harder to detect with PCR testing due to differences in their spike protein, for example. If we rely on testing and tracing as a way of controlling the virus, then the less detectable variants will have an advantage over those we can identify, and they will become more prevalent.

> Non-pharmaceutical interventions have essentially levelled the playing field

Now to the most important aspect – *virulence*. In the context of normal human behaviour, variations that have mutated to become more virulent are at a distinct disadvantage. This is because, prior to 2020, we only stayed at home if we were too sick to go out. If we had a bit of a sore throat and a runny nose, we would still go to work. We would still go to school. We would still attend sports events, theatre, cinema, clubs, rock concerts, parties, festivals, protests and religious services. This meant that the more virulent strains, which were more likely to make people very ill, had a naturally occurring disadvantage compared with less virulent strains. This is why viruses usually evolve to become *less deadly* over time. The less virulent variants tend to dominate because we spread them more, infecting more people and conferring natural immunity before those people come into contact with a rarer, more virulent variant.

Non-pharmaceutical interventions have essentially levelled the playing field. If everyone is staying at home, regardless of how unwell they might feel, then the less virulent variants lose their advantage. Moreover, it could be argued that we are not levelling the playing field at all, but rather tipping the scales in favour of the more virulent variants. After all, while those with mild symptoms are confined to their homes, those with severe symptoms are forced to leave their homes and transition to a crowded environment full of vulnerable people. Hospital.

There is already some evidence emerging to support this theory. The Kent variant is reported to be more transmissible and more deadly, while the South Africa variant is more likely to make people severely ill. Is it a coincidence that the prevalence of these variants emerged in countries with very strict measures in place throughout the

pandemic? Is it a coincidence that the Kent variant dominated following a period of regional and national UK lockdowns? If lockdowns are the key to stopping these dangerous mutations, then where is the Swedish variant? Where is the India variant?

The recent USA variant has been branded "the devil", since it is thought to be more contagious and more likely to make people severely ill. But did this variant become prevalent in Florida or South Dakota where measures are more relaxed? No. It emerged in California following a sustained period of stay-at-home orders and business closures.

> If we continue to play God, while ignoring the evidence and data, we may live to regret it

Could these subtle evolutionary mechanisms be the answer to the mystery of lockdowns? While we are reducing the spread of the virus, we are simultaneously encouraging the virus to become more virulent and more transmissible, thus negating any positive effect on the overall mortality burden and diminishing the returns of our interventions? Meanwhile, these interventions are destroying livelihoods, demolishing our culture, threatening our democracy and, by the government's own admission, putting thousands of lives in danger.

There are still a great many unsolved mysteries in virology. This global experiment is shedding light on some of those mysteries and we have a collective responsibility to take heed of the evidence.

We cannot allow NPIs to become the "new normal". This may be the equivalent of the widespread pre-emptive administration of antibiotics to healthy individuals. Evidence suggests that our old way of life was keeping us safe, protecting the NHS and saving lives, while our new way of life is in danger of ushering in a new era of deadly viral mutations that we cannot hope to control or treat. As in many areas of science, we are attempting to cheat death by manipulating nature (in this case, our *own* nature) and nature will eventually fight back. If we continue to play God, while ignoring the evidence and data, we may live to regret it.

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