Lockdowns increase even COVID deaths

[Lockdowns have caused at least 36 times more harms in Australia than any benefits (even more harms than that in developing nations).

But – globally – do they actually reduce COVID deaths?]

Sanjeev Sabhlok and Jason Gavrilis (independent researchers)

This paper available at: http://sanjeev.sabhlokcity.com/Misc/DraftPaper-lockdowns.pdf

Data used in this paper at: https://github.com/jazon7/Oxford_COVID-19_-_Our_World_in_Data

“I can’t help, but think the safest place for an airborne virus would be to be outside. We had ... all sorts of policies ... [w]here I remember seeing people being accosted while hanging out alone on the beach.” - Jan Jekielek, Epoch Times

“untargeted lockdowns allowed the virus to wreak havoc since the government took its eye off the ball. Eighty per cent of the government’s effort went in “controlling” the broader society instead of focusing on aged care homes. As I will keep repeating throughout this book so no one forgets: many elderly deaths we have had could have been averted if the original pandemic plan had been followed.” – Sanjeev Sabhlok in *The Great Hysteria and The Broken State.*

Preliminary draft 20 June 2022

Comments or suggestions invited at sabhlok@gmail.com

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Abstract

This paper examines whether lockdowns increase or decrease COVID deaths. The OxCGRT database\(^2\) with its Stringency Index (SI) is one of the most significant tools available today to determine whether, and to what extent, various non-pharmaceutical interventions (NPIs) “worked” to reduce COVID fatalities. The database, however, has significant inbuilt shortcomings which hugely distort nature of NPIs and so, like with a carnival mirror, we are barely able to catch a true glimpse of reality. Studies that unquestioningly make use of it are likely to become illustrations of the well-known “garbage-in-garbage-out” adage rather than meaningful findings to inform public policy. The SI cannot help us make the most basic distinction: between nations (basically Scandinavian nations, mainly Sweden) that took a risk-based approach from nations that did took aggressive zero-COVID approaches.

On top of this risk are studies that jumped the gun and produced “recommendations” early in the pandemic. Such studies do not take into account the different distribution of COVID deaths under the risk-based (mitigation) scenario and the zero-COVID (eradication) scenario. The true impact only emerges over a medium to longer term, so patience is necessary to tease out the true effects of NPIs. Correcting for some of the shortcomings of OxCGT is possible with a lot of work, but another way is to try to retrieve some value from the database by using some of its components that do weakly distinguish Sweden from other nations.

The second part of the paper then uses these components to test whether lockdowns “worked” by using COVID deaths data from Worldometer. Despite the significant shortcomings of using such data on deaths, the paper finds that, on average, lockdowns increased COVID deaths. This is not the first study to show this. Regardless of whether lockdowns increase deaths, this much is conclusive: that they do not decrease COVID deaths in the medium to long-term.

The third part of the paper considers biological and behavioural concepts to explain why this might be the case.

**Authors’ contributions** SS led the project conceptualisation and JG undertook the data analysis. The authors consulted with Martin Lally for validation of the methodology. The authors have approved the final version and will ensure any questions related to any part of their work will be appropriately investigated, resolved and documented. The authors read and approved the final manuscript.

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\(^2\) https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker; https://www.nature.com/articles/s41562-021-01079-8
1. Executive Summary

[To be built at the end]
2. Introduction

City-wide, state wide, or nation-wide lockdowns are mandatory mass-quarantine – a form of non-pharmaceutical intervention (NPI), and may include curfews during certain hours.

These were never implemented for any respiratory pandemic in the past (a few failed attempts were made in the past for Ebola\(^3\)), and never recommended in any pre-2020 public health journal or official pandemic plan or the October 2019 World Health Organisation guidelines for pandemics\(^4\).

![Summary of NPI recommendations from WHO's October 2019 guidelines for respiratory pandemics](figure-xx)

Table 1. Recommendations on the use of NPIs by severity level

<table>
<thead>
<tr>
<th>SEVERITY</th>
<th>PANDEMIC(^6)</th>
<th>EPIDEMIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any</td>
<td>Hand hygiene&lt;br&gt;Respiratory etiquette&lt;br&gt;Face masks for symptomatic individuals&lt;br&gt;Surface and object cleaning&lt;br&gt;Increased ventilation&lt;br&gt;Isolation of sick individuals&lt;br&gt;Travel advice</td>
<td>Hand hygiene&lt;br&gt;Respiratory etiquette&lt;br&gt;Face masks for symptomatic individuals&lt;br&gt;Surface and object cleaning&lt;br&gt;Increased ventilation&lt;br&gt;Isolation of sick individuals&lt;br&gt;Travel advice</td>
</tr>
<tr>
<td>Moderate</td>
<td>As above, plus&lt;br&gt;Avoiding crowding</td>
<td>As above, plus&lt;br&gt;Avoiding crowding</td>
</tr>
<tr>
<td>High</td>
<td>As above, plus&lt;br&gt;Face masks for public school measures and closures</td>
<td>As above, plus&lt;br&gt;Face masks for public school measures and closures</td>
</tr>
<tr>
<td>Extraordinary</td>
<td>As above, plus&lt;br&gt;Workplace measures and closures and internal travel restrictions</td>
<td>As above, plus&lt;br&gt;Workplace measures and closures and internal travel restrictions</td>
</tr>
<tr>
<td>Not recommended in any circumstances</td>
<td>UV light&lt;br&gt;Modifying humidity&lt;br&gt;Contact tracing&lt;br&gt;Quarantine of exposed individuals&lt;br&gt;Entry and exit screening&lt;br&gt;Border closure</td>
<td>UV light&lt;br&gt;Modifying humidity&lt;br&gt;Contact tracing&lt;br&gt;Quarantine of exposed individuals&lt;br&gt;Entry and exit screening&lt;br&gt;Internal travel restrictions&lt;br&gt;Border closure</td>
</tr>
</tbody>
</table>

These entirely experimental measures were invented by Chinese leadership in Wuhan. In a short period of a few weeks, the WHO-China Joint Mission on Coronavirus Disease 2019 co-led by Bruce Aylward concluded on 24 February 2020 that “China’s uncompromising and rigorous use of non-pharmaceutical measures to contain transmission of the COVID-19 virus in multiple settings provides vital lessons for the global response”\(^5\). The world apparently had “vital lessons” to learn from the world’s first ever implementation of lockdowns – without the slightest scientific evaluation of these totalitarian measures.

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It is a mystery how the WHO could confidently overturn, in February 2020, decades, if not hundreds of years, of known science about pandemic management without even the slightest attempt of a scientific evaluation. The Chinese lockdown invention and the WHO's endorsement of these policies not only upturn all standard risk-based, targeted approach, but these indiscriminate restrictions on people also breach international human rights obligations.

Nevertheless, almost all nations other than a few such as Sweden buckled to the political pressure exercised by the WHO and obeyed the WHO's complete reversal of its pandemic guidance. One nation, Sweden, however, was vigorous in its defence of the known science. The head of the Swedish Public Health Agency, Anders Tegnell, provided the world with a masterclass on public health by explaining the logic of his actions at each step. He explained in the course of many interviews with journalists from across the world how Sweden was following the standard, well-established science and others were not. He exclaimed on 24 June 2020 that “It was as if the world had gone mad, and everything we had discussed was forgotten”6.

The adage, “act in haste, repent at leisure”, applies to lockdowns. A number of cost-benefit analyses have now been conducted (none by any government agency) and confirm that lockdowns have caused devastation, including many additional non-COVID deaths.7 That part is now settled science: that lockdowns are an extremely harmful public policy.

The only question is whether lockdowns at least do what they claim to do: reduce COVID deaths. This paper answers this question in the negative. We show how lockdowns increase even COVID deaths, and propose some reasons why this might be the case.

2.1 Early literature which suggested that lockdowns increase COVID deaths

The possibility of lockdowns causing additional COVID deaths was being canvassed by mid-2020 by a few researchers based on a comparison of COVID deaths in Sweden with those in other nations like the UK (Figure xx). It was increasingly becoming evident that nations which imposed severe lockdowns were not reducing COVID deaths and were probably increasing them.

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7 E.g. see a recent cost benefit analysis for Australia by Gigi Foster at: https://www.thegreatcovidpanic.com/_files/ugd/23eb94_920d5ddd484640ce8dfca8f045b14886.pdf (Do lockdowns and border closures serve the “greater good”).
Similarly, South Dakota (population 0.885 million) did not have lockdowns while North Dakota (0.762 million) did. Figure xx shows that their COVID death outcomes were virtually identical (South Dakota’s COVID death rate was 2,526 per million, while North Dakota’s COVID death rate was 2,312 per million). At a minimum, North Dakota subjected itself to a lot of pain for very little apparent gain.

Figure 5.2: Comparison of COVID deaths in North Dakota (with lockdowns) and South Dakota (without lockdowns), Source: Worldometer, October 2021

Many other comparisons have been done, such as between Florida and other states. These comparative studies have found that states with lower restrictions have either outperformed the more restrictive states, or at least have done comparably well, in terms of COVID outcomes.8

There are too many strong pieces of evidence to support this hunch, that lockdowns increase COVID deaths. For example, over 55 lockdown countries have a higher COVID-19 death rate than Sweden even though Sweden has an exceptionally high elderly population (data from Worldometer).

There is a booming cottage industry since 2020 of studies that look into the impacts of the 2020 lockdowns on COVID fatalities. Some of these studies and observations include:

- On 20 May 2020, Elaine He at Bloomberg reported “there’s little correlation between the severity of a nation’s restrictions and whether it managed to curb excess fatalities.”9
- A June 2020 study published in Advance by Stefan Homburg and Christof Kuhbandner found that the data “strongly suggests” that “the UK lockdown was both superfluous (it did not prevent an otherwise explosive

8 E.g., http://youtu.be/_DOwDAbibQI (“Ivor Cummins: Florida Wins the Science War - Hands Down - no problemo!!!”).
behavior of the spread of the coronavirus) and ineffective (it did not slow down the death growth rate visibly).”

- In a 21 July 2020 cross-country study published in The Lancet, Rabail Chaudhry et al. concluded that “[r]apid border closures, full lockdowns, and wide-spread testing were not associated with COVID-19 mortality per million people”.

- 12 August 2020: Liu, Yang, et. al., “The impact of non-pharmaceutical interventions on SARS-CoV-2 transmission across 130 countries and territories”. The study concluded that “there was limited added value to introducing stay-at-home orders as an addition to other physical distancing measures”.

- In an August 2020 paper published with the National Bureau of Economic Research, authors Andrew Atkeson et al. found that covid-19 deaths followed a similar pattern “virtually everywhere in the world” and that “[f]ailing to account for this familiar pattern risks overstating the importance of policy mandated NPIs for shaping the progression of this deadly pandemic”.

- 14 October 2020: Brauner, Jan M. et. al., “The effectiveness of eight nonpharmaceutical interventions against COVID-19 in 41 countries”. The study concluded that “closing schools and universities was highly effective; that banning gatherings and closing high-risk businesses was effective, but closing most other businesses had limited further benefit; and that many countries may have been able to reduce R below 1 without issuing a stay-at-home order”.

- 13 November 2020: In his complaint to the International Criminal Court, Sanjeev Sabhlok wrote “data now suggests that lockdowns may increase COVID deaths”.

- On 19 November 2020 a paper by De Larochelambert et al. found that “[s]tringency of the measures settled to fight pandemia, including lockdown, did not appear to be linked with death rate” and that other factors outside governments’ short-term control actually drove COVID death rates, such as prevailing life expectancy, co-morbidities, and latitude; “[r]egarding government’s actions (i.e., containment and stringency index), no association was found with the outcome, suggesting that the other studied factors were more important in the Covid-19 mortality than political measures implemented to fight the virus, except for the economic support index.”

- On 24 December 2020, Eran Bendavid et al. noted the following in their study, “Assessing mandatory stay-at-home and business closure effects on the spread of COVID”:
  [W]e fail to find strong evidence supporting a role for more restrictive NPIs in the control of COVID in early 2020. We do not question the role of all public health interventions, or of coordinated communications about the epidemic, but we fail to find an additional benefit of stay-at-home orders and business closures. The data cannot fully exclude the possibility of some benefits. However, even if they exist, these benefits may not match the numerous harms of these aggressive measures. More targeted public health interventions that more effectively reduce transmissions may be important for future epidemic control without the harms of highly restrictive measures.
• 3 February 2021: Paul Frijters wrote on 3 February 2021:

The 10 countries above 5 million inhabitants with the highest reported covid death count per million at this moment are Belgium, the UK, Czechia, Italy, USA, Bulgaria, Hungary, Spain, Portugal, and Peru. The curious aspect is that each of these countries has had a particularly severe lockdown policy in most of its territory. Moreover, in pretty much each case the large glut of covid-deaths came after the imposition of lockdowns, most clearly in the second wave in the UK and the US.18

• 13 February 2021: Chisadza et al. (2021)19 find that stricter lockdowns (higher OxCGRT stringency index) increase COVID-19 mortality by 0.01 deaths/million per stringency point.

• 13 April 2021: Christopher R. Berry, et al showed that “shelter-in-place orders had no detectable health benefits”20

• June 2021: Virat Agarwal et al.21 examined 43 countries and all US states, looking for a positive link between shelter-in-place (“SIP”) orders and excess deaths. The only countries in which they observed a fall in the trajectory of excess deaths were Australia, New Zealand and Malta. “All three countries are islands,” they reported. “In every other country, we observe either no visual change in excess deaths or increases in excess deaths.”

• July 2021: A July 202122 and January 202223 analysis by Martin Lally of 33 European countries found that COVID deaths are higher the greater the stringency of lockdowns in a country.

2.2 Lockdown impacts on COVID deaths known only at the end of the pandemic

Lockdowns are generally not imposed in a single episode. For instance, lockdowns in Melbourne in Australia continued over the course of 18 months, in multiple episodes. Each episode was different, some more stringent than others. While many harms of lockdowns emerged early in the piece, the impact of lockdowns on COVID deaths has been relatively more difficult to assess, given the innumerable and interacting variables involved.

Johan Giesecke pointed out a vital factor about lockdowns at the outset of the pandemic:

*Interviewer*: But you think that at the end of the day they’re all pretty much going to end up with the same fatalities, the same results, the same deaths regardless of what measures they took. Explain that.

*Giesecke*: Yep. .. [T]he other thing with a lockdown is – when you open it you will have more cases, so the countries who pride themselves in having few deaths now will get these deaths when they start lifting the lockdown.24

Ultimately, lockdown nations have to open up and then the devastation they were pushing into future finally occurs. The correct method is to consider overall COVID deaths at the end of the pandemic.

We see the issue of duration showing up in Australia at the moment. Island nations like Australia and New Zealand in the Southern hemisphere had peak summer when COVID first hit their shores in late 2019 or early 2020, which means its spread was naturally contained and then shut down their borders. This enabled them to better prevent COVID from spreading but they could not prevent the “cat” from getting “out of the bag”. The


24 https://www.youtube.com/watch?v=2SiUmsMLW0o
moment lockdowns ended (e.g. in Melbourne on 22 October 2021\textsuperscript{25}) and borders opened in the first half of 2022, COVID spread rapidly in Australia.

The elderly who had been saved from exposure to COVID for two years, were ready to succumb due to the dry tinder effect. This has indeed been happening on a large scale in Australia (Figure xx).

![Image](image-url) 6,369 deaths in 2022

Gigi Foster generously estimated that a max of around 10k deaths were "saved" by lockdowns in Australia - till 2021.

In 2022, in less than half the year, 6,369 out of these 10,000 have already been lost.

This suggests that analyses conducted too early in the piece cannot provide any meaningful information on the true effect of lockdowns. Many early studies “jumped the gun” and declared lockdowns to be effective\textsuperscript{26} but such studies were inevitably flawed.

While the pandemic is not yet over, by looking at data at the end of 2021, it is expected that most effects of lockdowns will be included. In due course, this analysis can be replicated to also include 2022: that’s when the true results of lockdowns be fully known.

2.3 Data integrity issue with COVID deaths

One of the severe limitations of this and other studies that are based on reported official data on COVID deaths is that such data virtually never match with total deaths. There are three kinds of possibilities, as shown in Figure xx.

![Image](image-url) Three notional categories of reported COVID deaths

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\textsuperscript{25} https://www.nytimes.com/2020/10/28/world/australia/melbourne-lockdown-ends.html

\textsuperscript{26} https://www.reuters.com/article/uk-factcheck-lockdowns-idUSKBN2842WS
COVID is a respiratory disease and if it were on par with the seasonal flu, or it merely displaces deaths that would have normally occurred from the flu (e.g. category C), then we would have no evidence of any pandemic in the overall mortality data. What matters is excess deaths caused by COVID beyond what is “normal” (i.e. category B). Reported COVID deaths that take the total figure beyond actual deaths (Category A) are fictitious COVID deaths. These are necessarily due to causes other than COVID.

Reported COVID deaths are the sum of A, B and C categories but we are only interested in categories B and C. It is challenging to split reported COVID deaths into these three components. Category A “deaths” – the non-existent deaths – are the most pernicious.

There is a way to derive a meaningful calculation for Category B, illustrated below using Sweden’s data.

Sweden undertook minimally appropriate restrictions, almost all of them voluntary. We can assume, for simplicity, that all excess deaths in Sweden in 2020 and 2021 were caused by COVID, even though there must have been at least some excess deaths from other reasons (for example, due to reductions in visits to GPs and hospitals by people too scared to venture there). This allows us to make an initial estimate of the size of Category B in Figure xx, which reflects approximately how many more deaths occurred in Sweden due to COVID than what we would have expected in normal times from a respiratory virus.

Despite criticisms that its elderly were inadequately cocooned at the start of the pandemic, Sweden ended up with relatively few excess deaths in 2020. Figure xx shows that if the dry tinder effect of 2019 is combined with the presence of the COVID pandemic in 2020, the mortality rate drops close to the trend (90.6 per 10,000 is the average across the two years, which is the same as the mortality rate for 2018). Its 2020 death rate – even if taken in isolation – was lower than the average death rate from 2000-2021. Such “business as usual” results were achieved without any lockdowns, mandatory masks, quarantines, or extended border closures. This simple calculation suggests that there were zero deaths in category B in Sweden.

Figure xx: The death rate of Sweden over the past 20 years: COVID was evidently not a severe pandemic

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But using deaths in 2017-2019 in Sweden as a baseline, Nobel laureate Michael Levitt has found that 2,996 excess deaths occurred in Sweden in 2020, representing around 3% of its expected annual deaths. We can use Levitt’s analysis to be a credible upper estimate of Sweden’s excess COVID deaths (Category B).

But here is the problem: that this figure of around 3,000 excess deaths from COVID is vastly lower than the 10,000 odd reported COVID deaths in Sweden in 2020. We therefore need to keep in mind that similar errors likely plague the reported COVID deaths of all nations. All one hopes, while using the Worldometer data, is that such errors are not all biased in one direction, and that they therefore cancel each other out.

There is an alternative: to look only at excess deaths data, but as we have noted above in the case of Sweden, identifying excess deaths correctly is a challenge in itself, and we are not aware at the moment of any readily available dataset on excess deaths that would be comprehensively superior to using raw data from Worldometer.


3.1 The OxCGRT database and Stringency Index

A large-scale COVID policy (mainly NPIs) database constructed by the Blavatnik School of Government at the University of Oxford, called OxCGRT, tracks different 23 policy responses (such as school closures, travel restrictions, vaccination policy) since 1 January 2020 in more than 180 countries.

One of the more popular indices created out of this database is the Stringency Index, comprising the sum of 9 components – it is the mathematical average of 9 variables, with some additional weights.

Quoting from the Oxford university’s text:

The stringency index is calculated using the policy indicators C1 – C8 and H1. The value of the index on any given day is the average of nine sub-indices pertaining to the individual policy indicators, each taking a value between 0 and 100:

\[ l = \frac{1}{9} \sum_{j=1}^{9} l_j \]

Indicators C1 to C7 and H1 have an additional flag corresponding to whether the policy has been applied locally, in specific areas/circumstances, or generally, nationwide. We define \( G \) to be 0 if the policy is targeted and 1 if general. Note that a policy can only be general if it has a non-zero value, since a zero value corresponds to no measures being taken.

Because different indicators \( j \) have different maximum values \( N_j \) in their ordinal scales, we weight the additional contribution of a general policy by the average number of ordinal points across the eight indicators that have the targeted/general qualification. This ensures that general policies are not “over-contributing” to indicators with fewer ordinal points or “under-contributing” to indicators with more ordinal points. Specifically:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>NPI being coded</th>
<th>( N_j )</th>
<th>Targeted/General?</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>closings of schools and universities</td>
<td>3 (0, 1, 2, 3)</td>
<td>Yes</td>
</tr>
<tr>
<td>C2</td>
<td>closings of workplaces</td>
<td>3 (0, 1, 2, 3)</td>
<td>Yes</td>
</tr>
<tr>
<td>C3</td>
<td>cancelling public events</td>
<td>2 (0, 1, 2)</td>
<td>Yes</td>
</tr>
<tr>
<td>C4</td>
<td>limits on gatherings</td>
<td>4 (0, 1, 2, 3)</td>
<td>Yes</td>
</tr>
<tr>
<td>C5</td>
<td>closing of public transport</td>
<td>2 (0, 1, 2)</td>
<td>Yes</td>
</tr>
<tr>
<td>C6</td>
<td>orders to &quot;shelter-in-place&quot; and otherwise confine to the home</td>
<td>3 (0, 1, 2, 3)</td>
<td>Yes</td>
</tr>
<tr>
<td>C7</td>
<td>restrictions on internal movement between cities/regions</td>
<td>2 (0, 1, 2)</td>
<td>Yes</td>
</tr>
<tr>
<td>C8</td>
<td>restrictions on international travel</td>
<td>4 (0, 1, 2, 3)</td>
<td>No</td>
</tr>
<tr>
<td>H1</td>
<td>presence of public info campaigns</td>
<td>2 (0, 1, 2)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.2 Illustrative studies that make use of the OxCGRT database

There are a number of studies that make use the OxCGRT database to consider the overall effect of lockdowns on COVID deaths. A few of them are outlined below.

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30 https://www.bsg.ox.ac.uk/sites/default/files/Calculation%20and%20presentation%20of%20the%20Stringency%20Index.pdf
3.2.1 Lally’s study of 33 European nations

A July 2021 and January 2022 analysis by Martin Lally of 33 European countries confirms that the more stringent a country’s policies in terms of lockdowns and border restrictions, the greater its COVID deaths. The European nations are considered as comparable to Australia: “similar (on average) to Australia in ethnicity, cultural norms, demographics, GDP per capita, and the quality of their health care systems”. The results using the OxCGRT database are outlined below.

Regressing the death rate per 1m \(D\) up to 31 December 2020 on the maximum Stringency Index value \(S\), the population density \(PD\) (in millions per 1,000 square miles), and date of first death \(FD\), in days from 15 February yields the following result:

\[
D = 273.9 + 7.34S + 473.1PD - 12.3FD
\]

The \(R^2\) is 0.29, and the \(p\) values are 0.66, 0.27, 0.10 and 0.10 respectively. The coefficient on \(S\) is statistically insignificant and the sign on it is ‘wrong’ (positive rather than negative).

A positive estimated coefficient on the stringency index implies that COVID deaths are higher the greater the stringency applied in a country.

3.2.2 Jonas Herby meta-analysis of many OxCGRT studies

In January 2022, Jonas Herby, Lars Jonung, and Steve H. Hanke conducted a meta-analysis of 24 studies (out of 34 initially shortlisted) that look into the effect of lockdowns on COVID deaths. They were separated into three groups: lockdown stringency index studies, shelter-in-place-order (SIPO) studies, and specific NPI studies.

Out of these 34 studies, most (29) use data collected before September 1st, 2020 and 10 use data collected before May 1st, 2020. Only one study uses data from 2021. Seven studies analyze the effect of SIPOs, 10 analyze the effect of stricter lockdowns (measured by the OxCGRT stringency index), 16 studies analyze specific NIP’s independently, and one study analyzes other measures (length of lockdown).

Further, most studies use the number of official COVID-19 deaths as the dependent variable but one of these looks at excess mortality. Some of the studies used in the Herby et al. meta-analysis, that use the OxCGRT database are listed below. The results of these studies in brief: “stringency index studies find that lockdowns in Europe and the United States only reduced COVID-19 mortality by 0.2% on average”.

- **10 November 2020:** Stockenhuber (2020) find no significant effect of stricter lockdowns (higher OxCGRT stringency index).
- **13 February 2021:** Chisadza et al. (2021) find that stricter lockdowns (higher OxCGRT stringency index) increase COVID-19 mortality by 0.01 deaths/million per stringency point.
- **25 March 2021:** Berry et al. (2021) find that SIPOs increase COVID-19 mortality by 1% after 14 days.

• 29 March 2021: A study by Christian Bjørnskov that looks at total excess mortality found “no clear association between lockdown policies and mortality”\(^{37}\).

The study also found that “(SIPOs) were also ineffective… They only reduced COVID-19 mortality by 2.9%.” Overall, the study finds that “lockdown policies are ill-founded and should be rejected as a pandemic policy instrument”.

Among other self-identified limitations, this meta-analysis has two shortcomings in relation to stringency:

a) The data used in the cited studies are from the early period of the pandemic. These results are unlikely to be reflective of the true effect of lockdowns – which can take time to emerge (as noted in section xx of this paper).

b) The Herby study assumes the validity of the OxCGRT database. The study’s own definition of lockdowns is unrelated to a risk-based approach to public health. Thus, the Herby study does not distinguish between risk-based closures of schools (e.g. the higher years of schools in Sweden) from inverted-risk policies in which the lower school classes are closed. It also conflates recommended (partial) school closures in Sweden with compulsion, so it finds that even Sweden had imposed “lockdowns”\(^{38}\) in March 2020.

Its definition of lockdowns:

**Compulsory** non-pharmaceutical interventions (NPIs), commonly known as “lockdowns” – policies that restrict internal movement, close schools and businesses, and ban international travel – have been mandated in one form or another in almost every country.

The Herby study does note that Sweden did the “least” in terms of NPIs, which is also not precisely what Sweden’s risk-based approach should be labelled.

Virtually all countries in the world implemented mandated NPIs in response to the COVID-19 pandemic. Hence, most estimates are relative to “doing the least,” which in many Western countries means relative to doing as Sweden has done”.

This paper overcomes these shortcomings (a) by extending the duration to end-2021, and by (b) including an alternative to the standard Stringency Index.

### 3.3 Other lockdown indices

Another lockdown index created during this period is the Bank of Canada COVID-19 stringency index\(^{39}\). This takes the Oxford database and adds a few more variables. This paper does not consider this alternative index.

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\(^{38}\) It notes: “Of the 186 countries covered by the Oxford COVID-19 Government Response Tracker (OxCGRT), only Comoros, an island country in the Indian Ocean, did not impose at least one NPI before the end of March 2020”, thus excluding Sweden from the list of nations that did not lockdown.

\(^{39}\) https://www.bankofcanada.ca/2021/02/staff-analytical-note-2021-1/.
4. Review of the OxCGRT coding system and Stringency Index

The OxCGRT database is invaluable in order to try to understand which NPIs works and which does not. Coding the intensity of NPIs is an important exercise for public health policy. It is somewhat surprising that such a system was not already in place before COVID. Developing such a system would normally require significant thought, but it appears that OxCGRT was created in haste and implemented even before various countries had taken a stance on the policies they would implement. Therefore, while it does a tolerably good job on some variables, it fails in many ways to reflect the true nature of actual policies implemented.

A proper design of such a database would necessarily take into account the societal impacts of NPIs. For instance, in relation to the NPI of social distancing, in 2007, "Donald Henderson of the University of Pittsburgh Medical Center cautioned against relying on models that do not take into consideration the adverse effects or practical constraints that such public health interventions would entail. Accepting such models uncritically, he warned, could result in policies that “take a perfectly manageable epidemic and turn it into a national disaster.”

When we do not consider such societal impacts, we end up in disaster, as has been with the case of advice prompted by epidemiological models which are divorced from such analysis. On 12 May 2022, one of the SAGE members in the UK admitted the failure of epidemiological models:

Professor John Edmunds said the models were only supposed to be ‘one component’ of decision-making but were leaned on too much by ministers. He accepted the models failed to account for the economic harm and the knock-on health effects that lockdowns caused. Professor Edmunds admitted that these harms ‘in principle’ could have been factored into models ‘but in practice they were not’.

OxCGRT codes the intensity of NPIs, with codes vaguely “related” to the costs imposed on society by NPIs, but this has not been consciously designed and essentially the database is unencumbered by theoretical underpinnings. Not linking NPIs to their costs (and benefits) can create risks for those policy makers who naively assume that findings based on the OxCGRT database are directly actionable.

4.1 Two options to build in NPI costs into the coding system

NPIs are not cost-less. They can impose not just economic and health costs, they can also undermine the foundation of Western civilisation by engaging human rights. A coding system that does not consider these costs is arbitrary and not grounded in reality.

There are two theoretically sound options to code NPIs in a manner that takes into account their impacts. The first is to code based on the dollar value of societal impacts of NPIs. The second is to create risk-based coding systems for specific pandemics, such as for COVID: these would be largely risk-based.

A risk-matrix that takes into account the risk, severity, harm, costs, and the science should underpin such a coding system. For example, in the field of occupational health and safety (OHS) a mechanistic approach for OHS coding interventions could lead to an Index in which “testing and tagging of equipment” (such as the electrical lead of a toaster or a computer) is weighted equally with preventative arrangements for falls from heights of construction workers. But the probability of harm and magnitude of harm is of an entirely different order in these two cases, with the dollar magnitude of compensation claims (including standardised estimates of the value of a death) providing far more useful insights than any other method. Experts in OHS would probably not accept a coding system for OHS interventions which is unrelated to the risks involved.

These concepts are outlined below.

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40 https://www.ncbi.nlm.nih.gov/books/NBK54157/#summary.s15
41 Daily Mail. “SAGE models were too ‘scary’ and held too much weight... says lockdown architect behind them! No10 Covid expert admits death forecasts were ‘eye watering’ and should have considered economy”, 12 May 2022, https://archive.ph/7Viff.
4.1.1 **Coding based on standardised dollar impact of NPIs**

Under such a system, a generic method could be used to code all pandemics. Rankings could be based on the standardised dollar costs to society (say, per million persons) of the NPIs, or an equivalent in terms of QALYs or WELLBYs. For instance, stay-at-home mandates could then have a number associated with each type. Being sealed inside the house – like they did with (fake) videos from China – could end up with a cost of $1 billion per million persons per month. A stay-at-home order like Melbourne’s (with a 23 hour requirement to stay at home, including an 8-hour curfew) could cost $0.5 billion per month. Such lockdowns not just affect millions of people (being untargeted, broad-brush, across-society measures), they also vastly increased panic/hysteria/mental health issues in the community.

By now there should be sufficient material to create approximations of cost impacts for each such NPI, but this approach is challenging. So a simpler alternative could be considered. Acknowledging that mandatory policies necessarily have a grossly disproportionate impact on the community, the scale would need to non-linear. Instead of values 2 and 3 for different kinds of stay-at-home orders (as used in the current OxCGRT database), we could use values 4 and 9, instead (squares) or 8 and 27 (cubes). Under such a regime, the 23-hour lockdowns in Melbourne with an 8-hour curfew would be coded as a 20. Instead, by allocating 1 to recommended stay-at-home orders and 3 to extreme lockdowns, the Oxford database glosses over the vastly different impacts of these policies.

4.1.2 **Coding based on risk-assessment of specific pandemics**

A second method would be more nuanced. “No action” is very unlikely to be an appropriate response for a pandemic like COVID. And for more lethal pandemics, even certain coercive actions could be appropriate (e.g. closure of some workplaces).

Depending on the virus, both too little and excessive interventions can cause more harm than good (Figure xx). Inaction might be too little. Optimal intervention may include a recommendation to increase hygiene. And there’s an area when interventions are excessive - e.g. lockdowns.

![Figure xx: A risk-based framework for NPIs](image)

Each NPI would need to go through its own ethics and cost-benefit analysis. Any act of coercion (mandatory NPIs) engages a vast set of human rights. This needs to be built into the assessment. A risk-based approach to a disease like COVID would consider its biological characteristics of transmission, its infection fatality rate (IFR) and the age-distribution of risk (which is heavily skewed towards the elderly). Only that would yield the appropriate response for individual NPIs.

The entire business of public health is about risk assessment and proportionality. Consider Australia’s pandemic plan in which there is a well-graded system in place to assess the proportionality of responses. The lowest level of clinical severity was “Scenario one”, in which:

- The majority of cases are likely to experience mild to moderate clinical features. People in at-risk groups and those with comorbidities may experience more severe illness. Strategies to support at-risk groups, once they are identified, may be required (e.g. people with underlying illness, people with immunocompromised conditions, aged care, infants, Aboriginal and Torres Strait Islander peoples, remote communities). At the peak of the outbreak, and increasingly when transmissibility is higher, primary care and hospital services may become stretched in areas associated with respiratory illness and acute care.

There was never a situation anywhere in Australia during the COVID pandemic in which Australia’s health services were “stretched” in any way. The severity of this pandemic never exceeded Scenario one. Therefore, rather mild, voluntary measures were called for.
Stay-at-home orders do not form part of the recommendations of any pre-2020 scientific book, pandemic plan or WHO guidelines. The few references in the literature to such an option are negative, such as the 2006 article co-authored by Donald Henderson, the great epidemiologist of the 20th century:

There are no historical observations or scientific studies that support the confinement by quarantine of groups of possibly infected people for extended periods to slow the spread of influenza. A World Health Organization Writing Group, after reviewing the literature and considering contemporary international experience, concluded that “forced isolation and quarantine are ineffective and impractical.” Despite this recommendation by experts, mandatory large-scale quarantine continues to be considered as an option by some authorities and government officials. The interest in quarantine reflects the views and conditions prevalent more than 50 years ago, when much less was known about the epidemiology of infectious diseases and when there was far less international and domestic travel in a less densely populated world. It is difficult to identify circumstances in the past half-century when large-scale quarantine has been effectively used in the control of any disease. The negative consequences of large-scale quarantine are so extreme (forced confinement of sick people with the well; complete restriction of movement of large populations; difficulty in getting critical supplies, medicines, and food to people inside the quarantine zone) that this mitigation measure should be eliminated from serious consideration.

Gauden Galea, the WHO’s representative in China on 24 January 2020: “trying to contain a city of 11 million people is new to science. The lockdown of 11 million people is unprecedented in public health history, so it is certainly not a recommendation the WHO has made.” Lockdowns directly breach international human rights obligations and are therefore in an entirely different league to routine public health policies. And so lockdowns should be coded “out of the ballpark”, i.e. at a level that greatly exceeds any other measure.

**Example**

In a hypothetical case (since this is not the place for such analysis), a risk-based approach to school closures for COVID could make the following recommendation:

- Keep schools open for younger classes where children are not affected by the disease. Schools being kept open also provide young parents (including health workers) with a place to drop off their children while they work.
- Close the higher classes of schools since children can study from home, then evaluate and review.

The Oxford database design team could have queried the literature and the experts: What are the standard, well-accepted NPIs for a pandemic like COVID – NPIs for which benefits exceed harms? Such NPIs could then be coded as 0, regardless of what numbers are given to other (less “stringent” and more “stringent”) measures. NPIs that are at the appropriate level could be coded as 0, with those which are “too little” being given a negative value e.g. -1, -2, and those which are “excessive” being coded positively – ideally all these numeric codes being linked with their net cost to society.

This approach would have been much easier than the first one (about estimating the costs to society and ranking by dollars). That is because everyone who mattered knew precisely what should be done for different types of pandemics. Formal guidance was documented in national and state pandemic plans. Public health science required targeted restrictions to prevent high levels of harm (such as for the elderly in aged care centres), with only recommendations elsewhere.

Illustratively, Victoria’s 10 March 2020 pandemic plan said that “COVID-19 is assessed as being of moderate clinical severity”. It took a risk-based approach and “focused on protecting vulnerable Victorians”. It explained that “older Victorians and people with chronic diseases are known to be at greater risk of COVID-19 infection”.

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And it said that it would “ramp up risk reduction activity [for] at-risk groups”. Lockdowns were not even remotely part of the policy mix under such a targeted approach.

4.2 Review of the OxCGRT coding system

The OxCGRT database uses neither of the approaches outlined above. Instead, it takes a mechanistic approach with codes (numbers) allocated to different severity of NPIs. These codes are largely unrelated either to the magnitude of societal harm of an NPI or to the COVID risks involved. To that extent, the Oxford database does not incorporate insights from public health such as the W.H.O.’s October 2019 guidelines.

The use of the term “Stringency Index” suggests a well-considered capacity to compare the “stringency” of NPIs. A knot can be just right, too tight or too loose. Likewise, stringency can be at the “correct level”, “too low” or “too high”. But the OxCGRT database cannot be translated into any such categorisation.

4.2.1 Absence of a risk-based approach

The standard science of managing pandemics is about mitigation, to ensure that we keep the burdens on the health system in check. But except for Sweden and perhaps for a couple of other nations, most declared a zero-COVID strategy: eradication of the virus from within their country. That led to polices not only unprecedented but in fact, forbidden by the public health literature. The basic question at the design stage of the OxCGRT database should therefore have been: How do we distinguish zero-COVID nations from others. Zero-COVID nations mostly followed coercive measures, the mitigation nations followed mainly voluntary measures. This distinction should have been the first port of call in the design of the OxCGRT database. However, the absence of a risk-based approach linked with the known scientific literature is evident throughout the OxCGRT database.

In a risk-based approach, the **appropriate level of stringency** of an NPI depends on many factors, including the clinical severity of a pandemic - had COVID been severe, the appropriate level of stringency would have to be relatively high. Some implications of a knowledge-based and risk-based approach could include:

- OxCGRT designers should have known, among other things, that lockdowns are an experiment never implemented anywhere before in the world. A key design principle of the OxCGRT database would therefore have been to distinguish lockdown effects from any other effects.
- Currently the database codes “no measures” as 0, whereas inaction might represent a failure of the public health response and should probably be coded negatively, such as -1.
- Recommended measures allow people to carry on with their life, with precautions. They are not asked to produce justification for their presence on the streets. They are not fined, beaten, arrested for moving about. Likewise, a mask recommendation is a peaceful suggestion to our good sense. But with a mask mandate people are fined, or worse – beaten up by the police – which is detrimental to community wellbeing. Recommended NPIs are classified as 1 in most cases. But a recommendation is probably best coded as 0, particularly for the COVID pandemic. Voluntary measures (such as governmental recommendations, information campaigns, access to mass testing, voluntary social distancing) should not be coded higher than 0 for COVID.
- A mandated policy is backed by the brute force of the police. It is an act of violence by the state on the community on the basis that it is for their overall benefit. But just like we can’t go about assaulting people except in self-defence, there is a much higher (human rights) standard for the application of force by the government. The Oxford database does try to capture this difference, to an extent. Consider a government (e.g. Sweden) which recommends that people work from home where possible and another (e.g. Australia, India) which uses the police to ensure that no one is in the streets. The Oxford database codes the first of these as 1, the second as a 2 or 3. But the relative impact on society of these measures is vastly different – by an order of magnitude.
- The masking component is largely unusable since the most fundamental question is not asked: the kind of mask required or recommended. Since covid largely spreads by aerosols, not droplets, the distinction between various types of masks becomes even more important. Only a tightly fitted N95 mask can provide any protection against aerosol-driven viruses. But there again, any meaningful impact would only occur in high-risk settings. The only thing that mask mandates outdoors (coded as 4) can tell us is about the state of hysteria in a society. Later in this paper we do make use of this code (H6) mainly because of this – that it provides useful information about the indiscriminate over-reach of the government.
• For schools (C1) the coding design is entirely unusable. The code 2 “require closing (only some levels or categories, eg just high school, or just public schools)” is problematic. There is a vast difference between requiring senior classes to study online from home and requiring little children in primary school to do so. Equating entirely different policy interventions effectively muddles up the meaning of this code. The code “1” for C1 is also problematic. For instance, by 2 June 2020, all schools in the Australian Capital Territory returned to face-to-face education. A range of relatively mild measures were implemented including a “school cleaning plan” to ensure regular cleaning of high-touch surfaces, and strong social distancing requirements for those over the age of 25 including parents. For the most part, schools operated normally during this period. Since these (relatively mild) measures are not “no measures”, these have been coded as 1. Instead, such measures should have been allowed to be coded as 0 since these are risk-based actions and definitely not excessive or harmful.

• On 5 August 2020, in Queensland45, it was stated that while schools are open, “Physical distancing measures between adults remain in place”. It is unclear whether these were mandatory, nor is it clear whether these qualify as “significant”, but most volunteers have coded this as 1.

• The codes often conflate recommendations with mandates, barely distinguishing them in the relative magnitude of the scale. This inevitably biases the database towards more restrictive policies.

• The coding also considers recommendations which are complied with by the community to be mandates. The fact that Public Health Agency of Sweden had developed a relationship of trust with the community is ignored, and recommendations are given the status of a mandate.

• Untenable assumptions: The codes are replete with assumptions, e.g. for C2 “recommend closing (or recommend work from home) or all businesses open with alterations resulting in significant differences compared to non-Covid-19 operation”. This assumes that a non-binding recommendation (which is non-enforceable) is somehow equivalent to businesses being open but with significant “alterations” (which are mandatory). It is unclear how these two can be treated on par, since “alterations” cause severe additional economic and wellbeing harm, while “recommendations” do not. Consider code 1 for C1: “recommend closing or all schools open with alterations resulting in significant differences compared to non-Covid-19 operations”. But this code effectively picks up different things. If a government recommends closing its own (government) schools, it amounts to a mandate. Private schools would find it hard to remain open in the presence of such a recommendation. The “equivalent” NPI of schools being open with alterations can mean many kinds of alterations, some of which cause significant harm to children. The word “significant” is not well-defined so subject to interpretation of the volunteer who creates the code.

• Coding inconsistencies. A small army of volunteers across the world does the coding, so some inconsistencies are inevitable. For instance, it appears in the coding for Hungary for C7 that some volunteers have conflated C7 with C6. Such errors can potentially be ironed out – albeit at a great cost of time and effort.

• Actual NPIs don’t fit the codes: The coding does not take into account a range of real-world complexities. This is inevitable, for it is impossible to specify the hundreds of varieties of distinctions that can be made in different contexts with NPIs. But the differentiation built into the codes is often either not sufficient, or in some cases, directly misleading.

  o Consider E1 (income support). In this case, during April 2022, there was no Victorian direct cash payment to people who lost their jobs or couldn’t work due to COVID. However, emergency accommodation was available to people in Victoria who need support to quarantine or isolate safely because of a COVID-19 diagnosis or a close contact. Food and essential items support were also available but only for the most vulnerable and in need. Any such support was likely to be well below 50% of someone’s salary but not entirely zero. The coding options for such a situation do not exist, so many people have coded it as 1 (“government is replacing less than 50% of lost salary”), but this code is likely to mislead.

Or consider C8 (international travel controls) for which the options include 0 - no restrictions, 1 - screening arrivals, 2 - quarantine arrivals from some or all regions and 3 - ban arrivals from some regions. During April 2022, in Australia there continued to be screening of all international arrivals into Australia with a ban on the unvaccinated (Australian permanent residents and citizens can travel to Australia regardless of vaccination status). Australian citizens/ permanent residents who enter without vaccine “may need to complete a mandatory quarantine period”, so this code is not quite accurate - there is no scope to reflect this information.

- **Complexity of directions:** There have been many cases of businesses and not-for-profit organisations not quite able to grasp the implications of various official directives which are worded in bureaucratic language and are complex and convoluted. Consider the coding of H8 (Aged care) in the Northern Territory. The 19 August 2021 “COVID-19 Directions (No. 48) 2021: Directions for Aged Care Facilities” were amended on 24 December 2021. In this, there is a distinction between vaccinated and unvaccinated visitors: “a person who does not have an up-to-date vaccination against influenza”. Since this refers to the flu and not the COVID vaccine, this is treated by some volunteers as 1, others as 2, and some treat this as a vaccine differential policy, others not.

- **Not possible to code consistently:** Consider C3 which records public event cancellations. There are a vast array of public event orders which do not fit neatly into “2 - require cancelling” or “0 - no measures”. In such cases, volunteers have coded this as 1. The coding should at least have allowed for a wider range of options. Likewise, the masks policy (H6) is hard to code (and this is not just about the lack of specificity about the kind of mask). For example, on 7 August 2020 the guideline of the Australian Capital Territory stated: “Masks are not required in the ACT”. We could assume, then, that the code 0 (“no policy”) should apply. But that would be incorrect since there is a policy on masks. Further, the government seems to believe that masks work. They claim that “masks are just one line of defence against COVID-19” (which means they work). And they recommend its use under certain circumstances (e.g. if you have COVID-like symptoms such as coughing and sneezing, and need to leave your home for an essential reason, are in quarantine or self-isolation and need to leave your home for medical attention, etc.).

- **Coding errors:** It is unclear whether there has been any diligent check on coding. But during the process of sub-national coding for Australia, Sanjeev Sabhlok found enormous errors which – if replicated elsewhere in the world – make the database almost entirely unusable. For instance, for C8 (International travel controls), most volunteers had coded Queensland as “2” since March 20-2020 because the state required a quarantine for arrivals. They entirely ignored the fact that Australia’s borders had been sealed tight and shut both ways (foreigners could not enter Australia, nor Australians leave the country). This was a restriction that should have been coded far greater than 4 (if such an option existed), but most volunteers missed even that, thus making mincemeat of the database. Someone using this database will think that Australia had very mild border restrictions even though the magnitude of its restrictions competed with North Korea’s.

### 4.2.2 Failure to distinguish Sweden from other nations

A great debate has raged over the past two years about Sweden. It has been attacked by the media, politicians and public health officials across the world because it allegedly took a “relaxed” approach to the pandemic compared with other nations. While Sweden ranks relatively low on the Stringency Index for most of the duration of the past two years, at times it has been coded as being more stringent than the USA. That is an “in-your-face” absurdity which tells us that something is fundamentally wrong with the database.

As illustrated below, the OxCGRT database tends to “over-code” Sweden. Sweden – which followed a risk-based mitigation strategy consistent with the pre-covid scientific literature, comes out in the Oxford database as a relatively stringent country.

4.2.2.1 School closures (C1)

Sweden, which had most grades in school open throughout the pandemic and was cited globally as an example of a nation which kept its schools open, is coded (for C1) as a 2G which stands for “require closing only some levels or categories, eg just high school, or just public schools”. This coding of 2 is on par with heavily stringent nations for school closures, for instance Australia’s policy has been coded as 2T (targeted – i.e. in some states).

Clearly this is incorrect. Sweden’s policy was both risk-based and considered options that cause the least harm. Sweden recommended that all primary and lower secondary schools (up to age 16) remain open for face-to-face teaching while upper secondary students could study from home. On the other hand, in some states in Australia, schools simply shut down and every child was forced to study from home. Australia’s policy caused significant harms to children but has been given the same score as Sweden.

Not just that, a strict reading of the OxCGRT coding would allocate Sweden a score of 1G since its school policy was a recommendation but it has been coded as a mandate (2G) since most schools complied with the recommendation.

Vincenzo Alfano⁴⁹ conducted a study based on the OxCGRT database and concluded that “school closure is effective in reducing the number of people who are infected with COVID-19”. Such studies, which uncritically use of the OxCGRT database are likely to end up with not just wrong, but even dangerous recommendations. If such studies are accepted, official guidelines and pandemic plans may soon call for schools being shut down even for a virus like COVID which has virtually no impact on children’s health.

The risk of COVID transmission from leaving schools open has been miniscule. A comparison by the Public Health Agency of Sweden in June 2020 (which continued with face-to-face schooling till upper secondary, i.e. till age 16) showed no statistical difference in paediatric COVID cases and no increased risk to teachers compared to other professions.⁵⁰ Statista shows a total of 23 reported deaths from COVID of children below the age of 19 through 13 April 2022 in Sweden.⁵¹ Data from various countries confirms that very few of these children are likely to have died directly from COVID, as most had serious co-morbidities. For a risk of this insignificant magnitude, similar to or lower than from the flu, there was never any reason to shut down schools anywhere in the world. But misguided use of the OxCGRT database could doom the education of children to an excessive response from governments even in the future.

4.2.2.2 International border closures (C8)

Another example of over-coding of Sweden is for the component C8, or international border controls.

On 30 March 2020, CNBC reported: “Unlike its immediate neighbors Denmark, Finland and Norway Sweden has not closed its borders or its schools”⁵². On 21 April 2020, Anders Tegnell said: “Closing borders, in my opinion, is ridiculous, because COVID-19 is in every European country now”⁵³. On 3 June 2020, Al-Jazeera published a chart which showed Sweden as having open borders (green).

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⁵² https://www.cnbc.com/2020/03/30/sweden-coronavirus-approach-is-very-different-from-the-rest-of-europe.html

⁵³ https://www.nature.com/articles/d41586-020-01098-x
Nevertheless, Sweden has been coded as 3 on C8, suggesting that Sweden had major border closures for much of the duration of the pandemic.

It is true that since 19 March 2020, a ban applied in Sweden to “all foreign citizens travelling to Sweden from all countries except EU Member States, the United Kingdom, Norway, Iceland, Liechtenstein and Switzerland”. But as a 17 April 2020 news report clarified: “Swedish citizens are not affected by this measure, pointing out that the entry ban does not prevent travel within the EU”. In comparison with Australia where both incoming and outcoming travel was banned for over two years, the ability of Swedish citizens to travel within the EU would have provided significant mental comfort to its citizens. The ordinal scale value of 3 for Sweden on this measure over-states the actual restriction. In due course, Sweden extended the list of countries from which foreigners might enter, but it continued to be coded as 3.

4.2.2.3 Stay-at-home orders (C6)

The code for C6 ranges from 0 to 4. On many days, e.g. 8 November 2020, the code allocated for the stay-at-home component (C6) in Sweden and Australia is the same (1G). But Sweden never had stay-at-home orders. A recommendation to work from home where possible is definitely not a stay-at-home order – which applies to all persons and all workplaces. An approach by which a work from home recommendation (not mandate) is treated equivalent to a stay-at-home order is incorrect. This becomes even more of a concern when we note that Australia’s policymakers were drumming up hysteria on a daily basis throughout 2020 and 2021, calling COVID a once-in-100-year event54, while in Sweden, Anders Tegnell was calming down the people. The level of irrationality and hysteria across Australia was astronomically higher than in Sweden.

Further, Melbourne gets a rating (2) for most of the duration of its lockdowns in the OxCGRT sub-national database but its restrictions were enormously harmful. Restrictions of 23 hours including a 9-hour curfew with a 5 km border as well as a “ring of steel” around Melbourne were extremely severe in their impact. Saying that Sweden had a restriction of 1 and Melbourne a restriction of 2 makes no sense.

4.2.3 Stringency Index weights probably don’t help

The weakness of coding in the OxCGRT database pointed out above have been compounded by weighting the 9 components of the Severity Index almost equally.

This probably distorts things further. For example, it makes no sense to weigh public transport restrictions in the Stringency Index equally with stay-at-home restrictions. Stay-at-home restrictions affect an entire city or nation while public transport restrictions affect only those who use it. The negative impact of stay-at-home restrictions is for the entire day, while public transport restrictions impact people only for a short duration. And people can use alternatives like a personal car (which they did), but there is no option available when one is locked for 23 hours inside the house, with an 8-hour curfew at night, and allowed to go out for one hour within 5km of the house – and when international borders and states borders are also closed.

The uncorrected SI can therefore distort reality, like a carnival mirror.

4.3 Retrieving value from the database: Total Restrictions

Foster and Sabhlok (2022) have proposed that a simple sum of C2, C6, C7 and H6 (Workplace closing, Restrictions on internal movement, Stay at home requirements and Facial Coverings) could potentially give us a meaningful measure of the severity of lockdowns. This index is being called Total Restrictions for the purposes of this paper. The components C6 and H6 have many shortcomings, as noted above, but these are included because there is nothing better to go by.

Mask mandates are among the most intrusive and physical manifestations of the power of the State over the people. Nothing says: “I the government control your life”, as much as mask mandates outdoors in open parks, enforced through brute force (this happened even in so-called Western nations, such as Australia, with Melbourne seeing innumerable police brutalities in the name of public health). Not wearing a mask outdoors publicly signalled “disobedience”, enabling the police to identify and pounce on the disobedient. Further, when people saw others wearing masks, it must have increased overall panic and hysteria. Due to this ability to proxy the level of hysteria in a society, these (H6) are included in the Total Restrictions index.

Figure xx shows that this index can better distinguish the risk-based, less mandatory approach of Sweden and other Scandinavian nations, compared with the Stringency Index.

Figure xx: Comparing the impact of the Stringency Index and the Total Restrictions index in Europe

The chart on the left of Figure xx is based on the uncorrected Oxford Stringency Index, the one on the right uses Total Restrictions. Neither is perfect but the latter seems at least better able to distinguish Sweden’s approach from that of other nations.

The map of the world in Figure xx is based on Total Restrictions
To try to control for the fact that the ordinal scale of the OxCGRT database does not recognise the non-linearities of impacts involved, the regressions in this paper will cube the Total Restrictions index.
We undertake a few simple OLS regressions to understand the impact of lockdowns. Data from Worldometer is used as a proxy for actual COVID deaths. The well-understood weaknesses of Worldometer create complications and limitations pointed out in the first chapter are, however, unavoidable. Any analysis of COVID deaths that does not control for actual COVID deaths will potentially mislead but excess death data that is reliable is hard to come by.

5.1 Basis for identification of independent variables

Theoretically, there are two major variables that predict COVID deaths: the population structure (the more the proportion of the elderly, the higher the death rate) and vaccine uptake (the higher the uptake, the lower the death rate). The policy variable is either of Stringency Index or Total Restrictions.

5.1.1 Correlations

Some of the correlates of COVID deaths (from Worldometer) in 2020 and 2021 in Europe are illustrated in Figure xx. [DN: make a clean chart]
Note that the correlations both for stringency and total restrictions (the lockdown variables) are in the opposite direction to what has been claimed by politicians and the media since the 24 February 2020 WHO report came out (based on just a few weeks of data). This suggests that the more stringent the lockdowns, the more the COVID deaths. This will be tested through OLS regressions, below.

**Total deaths per million vs max_stringency as of 2020-12-30**

![Scatterplot for the Stringency Index and Total Restrictions, Europe, as at 30 December 2020](image)

**Total deaths per million vs total_restrictions as of 2020-12-30**

![Scatterplot for the Stringency Index and Total Restrictions, Europe, as at 30 December 2020](image)

*Figure xx*: Scatterplot for the Stringency Index and Total Restrictions, Europe, as at 30 December 2020
When considered globally (Figure xx), the correlation drops considerably, but the direction is still opposite to what many policy makers have claimed.

5.1.2 Correlation matrix

The correlation matrix for some of the variables that were considered for this study is provided below:

It appears from this that there is a cluster of variables (human development index, life expectancy, median age, obesity) that are related to the level of development in a society. Likewise, the extreme poor have significantly lower diabetes and obesity. So we have just included one of these variables.
COVID causes greater harm to the elderly, so the proportion of elderly in a society is a good predictor of the level of COVID deaths per million. From the correlation matrix, the median age is identified as a strong predictor, so it is used for this study.

5.1.3 Variables considered but not included

Population density seems to be correlated in 2020 but not in 2021. We have decided not to use this variable since its theoretical predictive capacity is unclear. It seems self-evident that a respiratory virus will spread more densely inside heavily populated tall multi-storied buildings or in dense indoor marketplaces, but in general people do not live so densely in most countries. Even in Bangladesh, with its high density, most people live in wide open spaces in villages.

Latitude was used in some regressions since it might reflect Vitamin D deficiency. But latitude correlations have a sign contrary to what is expected (higher latitudes have fewer deaths). This suggests that this variable is probably not capturing Vitamin D deficiency but something else (e.g. income/ quality of the health care system). We have therefore excluded latitude.

Obesity: In the USA mortality seems to have been higher than in many countries arguably because of its high levels of obesity. But it turns out that obesity is correlated to other economic development variables (correlation matrix above). We have therefore decided to exclude it from the final regressions.

5.2 Regression 1: using the Stringency Index

5.2.1 European results

For this, the raw owid (i.e. vaccine) and Oxford Government Restrictions database were extracted and merged into one large data set (~82mb). The main data was then split into three smaller datasets:

- Europe 2020-12-30 (click to download .csv)
- Europe 2021-12-30 (click to download .csv)
- Europe 2022-05-20 (click to download .csv)

Variables such as total restrictions and total restrictions cubed were created.

Summary of the results:

Europe up to 2020-12-30. The same as reported above The Total Restriction cubed variable significantly increases the strength of correlation with deaths per million compared to Maximum Stringency.

For Europe 2021-12-30 and 2022-05-20, the strength of correlation of Total restriction cubed is reduced and becomes non-significant compared to 2020-12-30. However, a few other variables show stronger correlations including people vaccinated per hundred, life expectancy, and latitude.

Detailed results are available at: https://github.com/jazon7/Oxford_COVID-19_-_Our_World_in_Data/blob/main/03_Analysis.md

5.2.2 Global results

5.3 Regression 2: using Total Restrictions

This yields the following results:

5.3.1 European results

5.3.2 Global results
5.4 Testing for reverse causality

It is possible that governments increase the severity of lockdowns when COVID deaths increase? As Lally notes in his 2022 paper:\textsuperscript{55}

One possibility is that reverse causality applies, i.e., the choice of policy is influenced by the death rate as well as the death rate being affected by the policy choice. The Appendix investigates this possibility and concludes that it does not operate.

A second possibility is that, even without government restrictions, people will take actions to lower their risks in a pandemic and the incremental effect of government actions may then be too little to be statistically significant.

\textsuperscript{55} https://link.springer.com/content/pdf/10.1007/s40592-021-00148-y.pdf
Part 3: Why lockdowns cause more COVID deaths

The increase in non-COVID deaths from lockdowns is huge and has been extensively proven. The net impact on society of lockdowns is therefore devastating. But do lockdowns at least reduce COVID deaths. This paper provides very strong evidence that lockdowns did not reduce COVID deaths. Instead, it provides weak evidence that lockdowns increased COVID deaths.

Even the possibility that lockdowns might have increased COVID deaths requires an explanation. There are a number of possible reasons why might lockdowns increase transmission of COVID and vulnerability to COVID.

6. Consequences of inverting the standard risk-based approach

Lockdown nations focus their energy on trying to prevent low-risk people (such as the young) from contracting the virus. This inverted focus, being the opposite of a risk-based approach, has consequences.

“untargeted lockdowns allowed the virus to wreak havoc since the government took its eye off the ball. Eighty per cent of the government's effort went in “controlling” the broader society instead of focusing on aged care homes. As I will keep repeating throughout this book so no one forgets: many elderly deaths we have had could have been averted if the original pandemic plan had been followed.” – Sanjeev Sabhlok in The Great Hysteria and The Broken State.

6.1 Reduced head space to deal with the virus

Lockdowns require the political and health leadership to deal with entirely self-created problems, including the mass confusion (and even mass-protests) created by insistence on locking up the young who are at little or no risk from COVID. In Victoria, for instance, the news has been full of cases of police brutality and anger in the streets of Victoria during the lockdowns, which necessarily diverted the mental energy of the leadership. This meant that the energy and time for thinking and planning to save the high-risk lives by cocooning and caring for the elderly was adversely impacted. As a result, more of the elderly die from COVID.

6.1.2 Delays the natural barrier to the virus by reducing infections among the young

Herd immunity is a law of nature for all infectious disease – regardless of whether it comes from recovery from infection or from a vaccine. Respiratory viruses peak fairly quickly, with those who’ve recovered becoming immune, which then makes it hard for the virus to infect others. It is the young who form a wall against COVID by recovering from an infection. Lockdowns stop the development of such immunity among the young who therefore cannot act as barriers to the spread of disease.

6.2 Increased transmission of SARC-CoV2

As Lally notes:

lockdowns will in some cases increase the risk of transmission to high-risk individuals, and this at least partly offsets the reduction in risks achieved in other ways. For example, lockdowns will have caused some young people to return to live with their older parents, perhaps because of the loss of their job or closure of the university they were attending, and if already infected to thereby infect their parents, who are at much greater risk of death.

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56 E.g. A cost benefit analysis of Australia’s lockdowns by Gigi Foster: https://www.thegreatcovidpanic.com/_files/ugd/23eb94_920d5ddd484640ee8dfca8f045b14886.pdf
**6.2.1 Increased exposure of the elderly outside aged-care homes**

It is possible that stringent protections might actually be implemented in aged-care homes during lockdowns but many of the elderly (or not-so-elderly) live in their own home. According to Lally “lockdowns induce some behaviours that increase the death rate, such as young people returning to live with their older parents, due to loss of their job or closure of the university they were attending, and if already infected to thereby infect their parents, who are at much greater risk of death”\(^\text{57}\).  

**6.2.2 Concentration of people in restricted markets**

With many markets closed, people are funneled into a few open supermarkets. This increases the density of the virus in these places, potentially increasing transmission. This has been pointed out also in the Herby and Hanke study\(^\text{58}\):

> If people voluntarily adjust their behavior to the risk of the pandemic, closing down non-essential businesses may simply reallocate consumer visits away from “nonessential” to “essential” businesses, as shown by Goolsbee and Syverson (2021), with limited impact on the total number of contacts.

**6.2.3 Being cooped indoors increased transmission**

Just like with the Black Plague where a form of lockdowns were first implemented, when people are cooped indoors, the disease can spread more than less. In this case, aerosol transmission meant that people living indoors were more vulnerable should a member of the household get infected by COVID from outside. In a normal case, people would distribute their activity, but by staying at home the intensity of aerosol transmission might have increased.

In fact, there are arguments in the respiratory virus literature that one of the reasons for the peaking of such viruses during winter is that people are cooped up inside their homes or in confined spaces. Lockdowns mimicked this situation wonderfully, thereby increasing transmission.

Herbe and Hanke also point this out:

> lock downs have limited peoples’ access to safe (outdoor) places such as beaches, parks, and zoos, or included outdoor mask mandates or strict outdoor gathering restrictions, pushing people to meet at less safe (indoor) places. Indeed, we do find some evidence that limiting gatherings was counterproductive and increased COVID-19 mortality.

**6.2.4 Covid-congestion effects in hospitals and testing queues**


This points a situation (based on a factual account) in which the hospital Emergency department is worried about being criticised for letting patients mingle, so they care a filter - they ask all comers get a covid-test (or questionnaire). The covid-infected are subsequently moved to a sealed part of the hospital with the uninfected going to another part. This is inevitable since space is at a premium in hospitals so queues necessarily form when such an approach is taken. However, the very act of sorting and queuing patients for a test can create a more crowded space in which infection is better transmitted.

Frijters suggests that covid-congestion effects can be of three types: physical covid-congestion effects, mental-health mediated covid-congestion effects, and reflection-limiting covid-congestion effects.

> A recent Scottish study found 2/3 of serious covid cases were due to infections in hospitals, exactly in line with the mechanisms of described in the post. The whole song and dance about what the general population should or

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should not do is largely irrelevant for the issue of serious covid cases. https://www.medrxiv.org/content/10.1101/2021.03.02.21252734v1

(one of the comments in Paul’s article)

6.2.5 **Behavioural change when people are lulled into dropping their guard**

Herby and Hanke\(^9\) cite a study by Atkeson (2021) which points out that lockdowns might create a behavioural response which may “counteract the effect completely, as people respond to the lower risk by changing behavior”. For instance, “If closing bars and restaurants causes the prevalence of the disease to fall toward zero, the demand for costly disease prevention efforts like social distancing and increased focus on hygiene also falls towards zero, and the disease will return”.

6.3 Increased vulnerability to COVID

6.3.1 **Fear-induced reduction in timely treatment of COVID**

This is a consequence of fear and propaganda – with the result that COVID affected people end up in hospital at a more advanced stage than they would otherwise.

many people with genuine health problems get too afraid to go to hospital or their GPs because they fear, not without cause, that they might get infected there. Yet, in turn, that means they get more ill before they are forced to seek help anyway which makes them more vulnerable when they actually do turn up.\(^{50}\)

6.3.2 **Reduced innate immunity to COVID**

Workplace closures, lockdowns (including internal restrictions on movement) and masking policies cause a sense of panic. Negative spillovers then ensue, from reduced immunity due to stress and avoidance of sunlight which then reduces Vitamin D, which is a protective against respiratory disease like COVID.

I can’t help, but think the safest place for an airborne virus would be to be outside. We had ... all sorts of policies ... [w]here I remember seeing like people being accosted while hanging out alone on the beach.”
- Jan Jekielek, *Epoch Times*\(^{61}\)

The stronger a lockdown, the greater this effect since greater is the fear signal communicated to the community.

When a health system scares the hell out of a large population because it genuinely wants to tell people there is a problem they should be aware of, that population becomes far more anxious about any sign of covid than before. Their anxiety slowly reduces their resilience. Hordes of anxious people then want to get tested and be reassured, whilst chronic anxiety weakens the immune system of millions that then makes them more vulnerable to all kinds of diseases.\(^{62}\)

6.3.3 **Reduced adaptive immunity (cross-reactivity) to COVID**

Sunetra Gupta’s studies re: international travel. Border closures reduced cross-reactivity to COVID.

The fact that people were not getting the common cold because of social distancing reduced their cross-reactivity.


\(^{50}\) https://clubtroppo.com.au/2021/02/03/covid-congestion-effects-why-are-lockdowns-so-deadly/

\(^{60}\) https://www.theepochtimes.com/gigi-foster-did-our-pandemic-policies-kill-more-people-than-they-saved_4523360.html


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6.3.4 Increased obesity and diabetes

Related to the reduction in immunity is the increase in vulnerability of people to COVID fatalities since lockdowns increase a sedentary lifestyle, increasing obesity and diabetes. These are proven co-morbidities that increase risk of COVID deaths.

6.3.5 Lockdowns increase the proportion of the vulnerable

In March 2021, epidemiologist Dr Raghib Ali compared countries with early lockdowns and those with late lockdowns. He found either no difference between them in endpoint COVID outcomes, or that (as discussed earlier) nations that locked down earlier ended up with more deaths:

Based on current trends, it seems likely that many of these countries that we thought were doing well due to their early lockdowns and small first waves will end up having higher excess mortality than the UK, including Czechia, Poland, Portugal, and many others…On the so called two-week ‘circuit breaker lockdowns,’ it should also be remembered that Wales did follow SAGEs advice – but ended up with the same level of infections and deaths as England as it just postponed more infections to the winter months.53

Raghib Ali In his words, one reason why many nations that implemented early lockdowns ended up with even more total COVID deaths is that “by effectively delaying part of the first wave from the spring until the second wave in the winter, this meant that many countries had a higher proportion of the population still susceptible to infection, and so led to even higher death tolls as health systems struggled to cope.”

7. Discussion and conclusion

Researchers untrained in public health are likely use the Stringency Index and other elements of the OxCGRT data without consideration of its extreme limitation, and without regard to the nature of the public health hazard that arose in late 2019/early 2020 through COVID, or to the costs and benefits of various NPIs. Such research output would amount to untrained persons trying to rediscover virology, immunology, epidemiology and public health, on the basis that the database is “the” oracle which will somehow help them achieve “new wisdom” for humanity. Sadly, most such research will necessarily be a form of garbage, only contributing to the increase in confusion in the public health discipline. Existent pre-2020 science was – and remains – vastly more valuable than any new information that this database can help produce, since it takes a purely 

ad hoc and mechanistic approach.

Its users must thoroughly understand the biological science involved and the limitations both of ordinal scales (dollar values are always best) and the theoretical inappropriateness of summing up unrelated elements to create an average “index”.

Nothing can be done about this now, but in the future, such databases should be designed well in advance of any pandemic with a consensus formed among the public health experts about the kinds of restrictions that would be considered risk-based (and therefore appropriate) for different kinds of virus. Such risk-based of restrictions would then be given the code 0 and other restrictions a higher or lower code, as appropriate.

7.1 Conclusion

The Herby and Hanke meta-analysis concluded that: “The evidence fails to confirm that lockdowns have a significant effect in reducing COVID-19 mortality. The effect is little to none”. It added that “lockdowns … have had devastating effects. They have contributed to reducing economic activity, raising unemployment, reducing schooling, causing political unrest, contributing to domestic violence, and undermining liberal democracy. These costs to society must be compared to the benefits of lockdowns, which our meta-analysis has shown are marginal at best. Such a standard benefit-cost calculation leads to a strong conclusion: lockdowns should be rejected out of hand as a pandemic policy instrument”.

This study, however, finds that there even COVID deaths tend to increase the moment lockdowns commence. This effect has been seen more strongly in Europe, but even globally something on the lines depicted in Figure xx seems to be happening.

Figure xx: A stylised summary of this study’s conclusion
8. ATTACHMENT

8.1 Replication Martin Lally’s results

Martin Lally (2022) tested data from 33 countries in analysis: Austria, Albania, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

The Lally (2022) analysis was replicated in this study, and further variables added and considered.

8.1.1 Replication of the Lally results

This initial work considered only 29 countries, with the same variables used in the Lally (2022) paper. The results below:

\[
D = 202 + 8.26S + 0.64PD - 8.89FD ; R^2 = 0.26
\]

Note that population_density does not typically show up as significant variable in our data but it was significant for Lally’s analysis run on 30-12-20.

If the max_stringency to total restrictions (as per the revised index), the model improves.

\[
D = 365 + 0.27S + 0.43PD - 4.67FD ; R^2 = 0.29
\]

The results are summarised below.

8.1.2 Test bed for the main regressions – in Europe

For Europe 2022-05-20, regressing Total deaths per million by total restrictions cubed + people vaccinated per hundred + life expectancy + latitude gives a \( R^2 \) of 0.83
Coefficients:

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<th>S.Error</th>
<th>t value</th>
<th>Pval</th>
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<td>4922.02</td>
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<tr>
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<td>24.30</td>
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</tr>
</tbody>
</table>

R-squared: 0.8334, Adjusted R-squared: 0.7918

This could have something to do with the minimal deaths per million in the Scandinavian countries vs. south Europe?