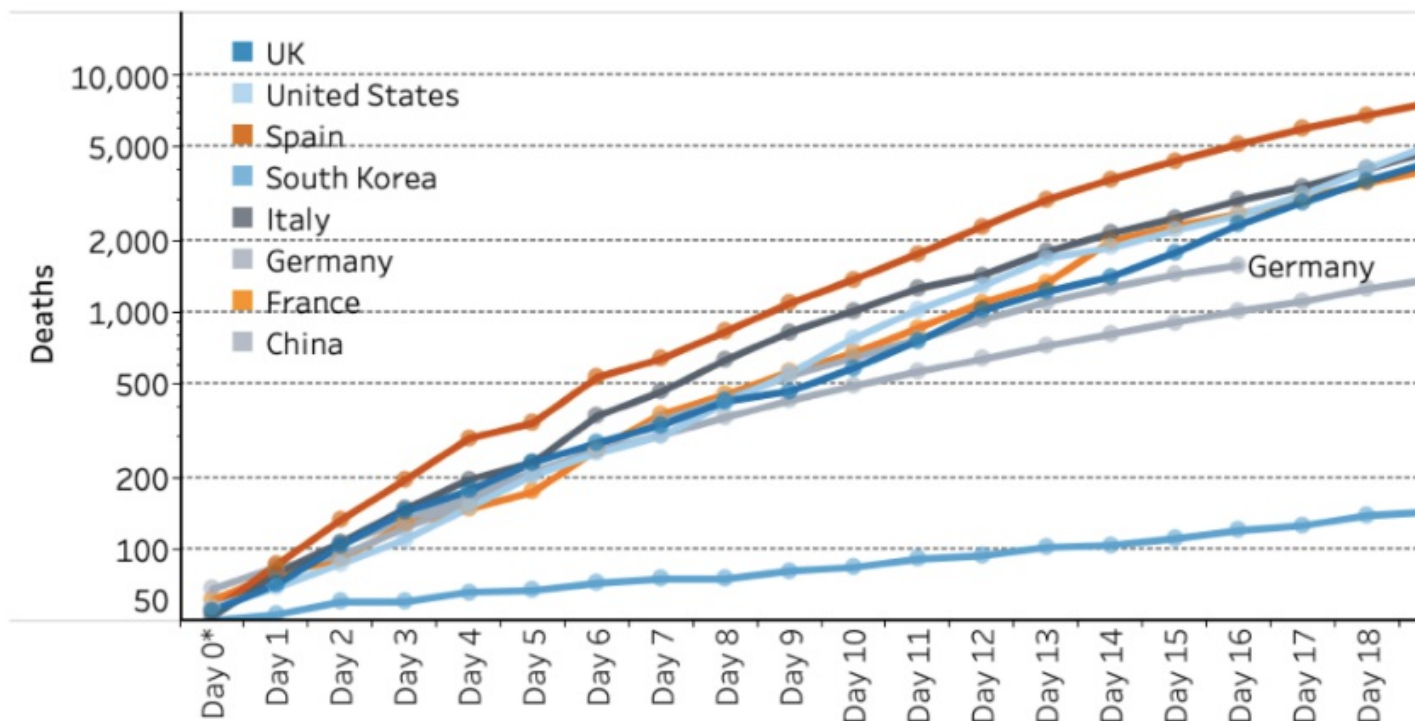


How we count the number of Covid-19 deaths matters



The number of Covid-19 deaths by country is widely used by governments and the media as a vital measure of the pandemic. A typical example is the slide below used for many weeks at the daily [UK government briefings](#).

Figure 1. Global death comparison (UK government’s cabinet office briefing rooms chart)



Notes: Countries are aligned by stage of the outbreak. Day 0 equals the first day 50 deaths were reported (Confidence: deaths are reasonably accurate, but international reporting lags are unclear, so may not be comparing exactly like for like.) Source: Public Health England, Worldometer. Reporting of UK deaths may lag by up to several days. Logarithmic scale. This chart is reproduced

here under an [Open Government licence](#) for public sector information.

A common reaction to these charts is illustrated by a tweet from one of the most inquisitive and analytical journalists, [Andrew Neil](#):

“Ignoring Chinese, whose figures can’t be trusted, the depressing thing is how close all the other lines are, despite different approaches. South Korea is the only outlier”

But in reality, there are huge variations in outcomes (to date), raising profound issues about policy choices being made in response to the virus, and providing rich opportunities to learn about how to manage this pandemic, and as importantly, any future ones.

In large part, the design choices for the chart above drive the erroneous impression that there is little variation in results. The logarithmic scale visually compresses the lines. Including countries only after 50 deaths removes many smaller or more successful countries, such as Taiwan or Hong Kong. Countries following other strategies, such as Sweden, are not included. Not adjusting for population size is obviously misleading. Even the definition of a Covid death needs standardising: deaths in hospital or also in care homes: tested or suspected infection; dying from or with Covid-19.

The UK government belatedly made three adjustments to its chart: it removed China from the chart due to concerns about the veracity of its data; switched to a linear axis; and most recently has added deaths outside hospitals (if a positive viral test). Whilst welcome, these changes are insufficient to provide citizens with the information needed to assess the policy response to the virus, and to identify possible learnings.

What and how things are measured makes a difference. Measurement has three main functions: to signal what is important, to assess whether results are as expected, and to enable learning especially through comparison. There is a real danger that the prime measures used have failed on all three dimensions.

It’s a well-known mantra that “what gets measured gets done”. If what gets measured is overly focussed on hospital Covid-19 deaths, does that cause policy to under-focus on Covid-19 deaths outside of hospitals (such as in care homes), deaths caused by government policy (such as halting cancer treatments), reductions in economic prosperity (with all its links to longevity and health as well as prosperity), and other second-order effects (ranging from domestic abuse and mental health issues through to reduced air pollution and traffic accidents)? Societies and economies are complex adaptive systems, encompassing a wide range of goals and trade-offs. Specific measures can be profoundly reductionist and run the risk of creating unintended consequences.

The broader scoreboard of the international responses to the pandemic will need constructing, but a first step is to measure relative Covid-19 death rates more insightfully. Death rates provide the best comparator between countries, despite [some issues](#), in large part because the different testing strategies make cases (infections) and case mortality rates (deaths/infections) hard to interpret across countries.

An obvious first adjustment is to use deaths per capita. Headlines that the United States now has more deaths than Italy are as insightful as saying it has more cars. The table below looks at deaths as of 30 April, and deaths per million of population. Taiwan, Hong Kong, Singapore, South Korea and Australia have the lowest mortality rates, with less than 5 deaths per million of population. Belgium, Spain and Italy the highest with over 400 deaths per million of population. Far from there being no differences, the lowest and highest mortality rates per capita differ by a factor of 600-fold.

Figure 2. Deaths and deaths per million of population

	DEATHS	POPULATION	DEATHS
	<i>30-Apr</i>	<i>000s</i>	<i>per million</i>
TAIWAN	6	23,817	0
HONG KONG	4	7,497	1
SINGAPORE	15	5,850	3
AUSTRALIA	92	25,500	4
S. KOREA	247	51,269	5
AUSTRIA	584	9,006	65
GERMANY	6,623	83,784	79
USA	63,856	331,003	193
SWITZERLAND	1,737	8,655	201
SWEDEN	2,586	10,099	256
FRANCE	24,376	65,274	373
UK	26,771	67,886	394
ITALY	27,967	60,462	463
SPAIN	24,543	46,755	525
BELGIUM	7,594	11,590	655
Source: Worldometers, United Nations			

We also know that over [90% of deaths](#) occur in the over 60s and 80% in the over 70s. Comparing deaths per million of over-70-year olds in the population shows a similar picture to the per capita chart, but emphasises Korea's success in protecting its older population.

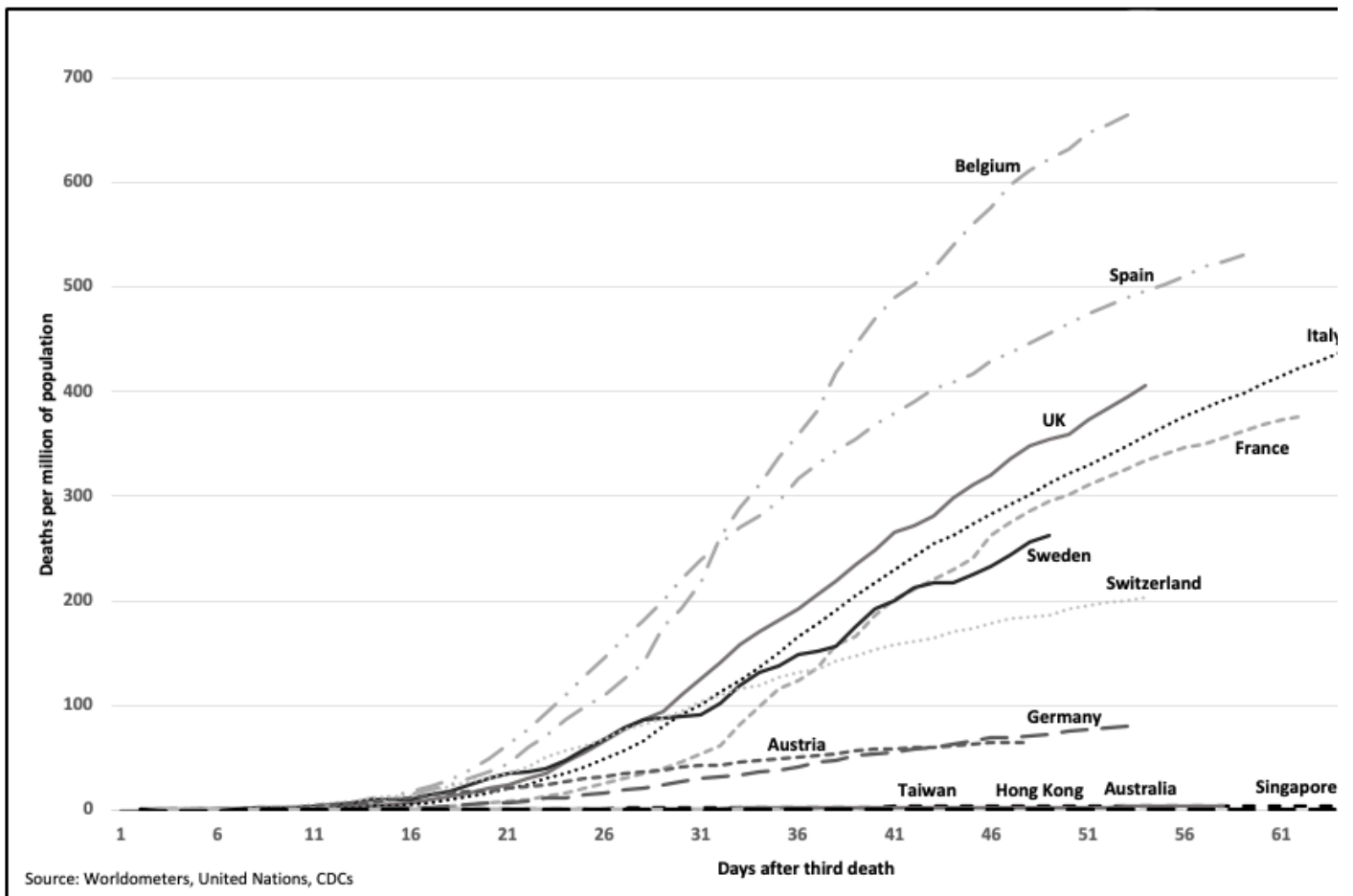
Figure 3. Deaths per million of over-70-year olds in the population

	DEATHS (30 April)	POPULATION (over 70)	DEATHS All pop	DEATHS > 70 y.o.
	<i>30-Apr</i>	<i>000s</i>	<i>per million</i>	<i>per million</i>
TAIWAN	6	5,054	0	1
HONG KONG	4	1,877	1	2
SINGAPORE	15	1,028	3	15
S. KOREA	247	11118	5	22
AUSTRALIA	92	1275	4	72
AUSTRIA	584	2397	65	244
GERMANY	6,623	25347	79	261
SWITZERLAND	1,737	2271	201	765
USA	63,856	74063	193	862
SWEDEN	2,586	2740	256	944
FRANCE	24,376	18422	373	1323
ITALY	27,967	19425	463	1440
UK	26,771	17327	394	1545
SPAIN	24,543	13115	525	1871
BELGIUM	7,594	3028	655	2508
Source: Worldometers, United Nations				

Cross-country comparisons must adjust for countries being at different stages of the pandemic. The UK government chart does this by looking after the first 50 deaths. However, this excludes smaller and more successful countries (such as Taiwan with 24 million people and only 6 deaths), and countries with better infection control (for example, South Korea had its first death on 20 February but only passed 50 deaths on 8 March). The average time between the first death and the third is **around 3 days and around 4 days** between the third and the 50th death.

The chart below looks at the progression of deaths per million from day 1 (the third death) onwards. There is again a very wide range of outcomes ranging from less than 1 death per million of population to over 600.

Figure 4. Progression of Covid-19 deaths per capita in days after third death



To allow comparison of countries at the same stage of the pandemic, the table below notes the deaths per million of population on the 30th day after that third death, and the 45th day. These are again very divergent.

Figure 5. Deaths per million of population on the 30th day and the 45th day

	DEATHS day 30 <i>per million</i>	DEATHS day 45 <i>per million</i>	Adjustment for non- tested deaths
BELGIUM	218	576	
SPAIN	240	429	▲
ITALY	101	283	▲
FRANCE	54	263	
UK	110	255	▲
SWEDEN	31	233	
SWITZERLAND	103	179	
GERMANY	31	69	
AUSTRIA	43	43	
S. KOREA	2	4	
AUSTRALIA	1.2	3	
HONG KONG	0.5	0.5	
SINGAPORE	0.1	0.4	
TAIWAN	0.3	n/a	
Source: Worldometers, United Nations			

The top five countries need some adjustment (the rest are either comprehensive or non-material). Belgium tops the table partly because it includes deaths in [care homes](#) (53% of the total) and includes 94% of care-home deaths suspected, but not tested, of having Covid. France also includes [51% of the deaths](#) that have occurred outside hospitals, of which about three quarters were suspected. The UK has started to include [non-hospital deaths](#), but only those confirmed by testing, so if suspected cases are included its [death rate will rise](#). The same applies for Spain and Italy that do not include suspected but untested outside-hospital deaths.

There is some emerging data on [excess deaths](#) (deaths in a specific week versus the average of the last five years) to test reported Covid-19 deaths. But it is not a panacea since it includes deaths from Covid and from cancelled cancer treatments. It also does not tell a very different picture than existing data (so far).

Figure 6. Number of excess deaths

	COVID DEATHS	EXCESS DEATHS
	<i>26-Apr</i>	<i>26-Apr</i>
ITALY	26,644	21,500
SPAIN	23,190	27,600
FRANCE	22,856	16,500
UK (Eng & Wales)	22,530	15,600
BELGIUM	7,094	5,200
NETHERLANDS	4,475	6,200
SWEDEN	2,194	1,300
SWITZERLAND	1,610	1,500
PORTUGAL	903	1,000
AUSTRIA	542	500
DENMARK	422	100
Source: Worldometers, FT		

Easily the best results to date are from the stringent 'isolate, test, trace and quarantine' strategies used by Taiwan, Singapore, Hong Kong, Australia and South Korea. It is an approach that requires great preparation, organisation and execution. The key risk is how these countries will do if there is a second or subsequent wave. If that does not occur, or they manage it, even at many multiples of their deaths to date, they will be the key place to look for future learnings.

Sweden has taken the most radical policy by not using lockdowns, not closing its health service to other conditions and keeping its economy running. It is presumably the best insured against a second wave. If it has achieved this at a death rate that is in line with those who have taken more damaging actions, it will illustrate a superior strategy to that pursued elsewhere in Europe and provide enormous future learnings.

The countries that took the now 'standard' approach have the highest death rates, but with considerable variation that will provide lessons. Why did France do much better than Italy or Spain? What is it in the German, Austrian and Swiss modified adoption of the high testing and tracing model used by Taiwan etc, that has worked so well? But the more important learning will be whether the more radical Taiwanese or Swedish model represents a superior strategy to optimising the standard approach.

The narrow measure of hospital deaths represents an incomplete signal. It needs to be placed alongside measures of society's broader objectives. Deemphasising deaths outside hospital has not helped steer optimal resource allocation and execution. And the incomplete approach to comparisons with other countries' results does not maximise the opportunity to learn. Whilst a final assessment of the policy response to the pandemic is incomplete until the possibility of future waves is known, there is much that can be done to better contrast the journeys taken to date.

Also by Neil Monnery:

[Adjusting Covid-19 expectations to the age profile of deaths](#)



Notes:

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- *This blog post expresses the views of its author(s), not the position of LSE Business Review or the London School of Economics.*
 - Featured [image](#) by [Tobias Rehbein](#) on [Unsplash](#)
 - *When you leave a comment, you're agreeing to our [Comment Policy](#)*
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Neil Monnery studied at Exeter College, Oxford, and at the Harvard Business School. Between 1983 and 2004, he worked at The Boston Consulting Group as a director and senior vice president. He was group strategy director of WH Smith between 2004 and 2014 and chairman of Smiths News. He is a director at Ashridge Strategic Management Centre and author of *Safe As Houses? A Historical Analysis of Property Prices* (2011), *Architect of Prosperity: Sir John Cowperthwaite and the Making of Hong Kong* (2017) and *A Tale of Two Economies: Hong Kong, Cuba and the two men who shaped them* (2019).