UK is not like China!

By Matt Fletcher for

COVID-19 Actuaries Response Group - Learn. Share. Educate. Influence.

A new paper "An international comparison of the second derivative of COVID-19 deaths after implementation of social distancing measures" has received some attention over the weekend. Perhaps because it was published by individuals from the same university, the paper has attracted comparisons with the Imperial College London study that we reviewed in our first bulletin, with some commentators even claiming that the authors of that study have dramatically revised down their fatality estimates. It is important to note that the authors of this new paper are **not** part of the team that advised the UK Government. Our view is that the conclusions in the paper are not valid.

The authors, from the Department of Electrical and Electronic Engineering, took data on daily fatality rates in eight countries (China, Italy, Spain, France, USA, UK, Netherlands, Germany and South Korea). They noted that the trajectory of deaths in each country after social distancing and lockdown strategies had been put in place appeared to mirror that of China. They then used the shape of deaths in China (specifically the second derivative i.e. how fast the increase in deaths was slowing) to predict the pattern of deaths in the other countries.

Their modelling suggested that the total number of deaths from COVID-19 in the UK would be between 4,700 and 7,100, and that the maximum number of deaths in a single day in the UK would be around 260. Similar conclusions were also drawn for the other countries, as set out in the table.

Table 1: Estimates (actual for China for 20/03/2020) of the total COVID-19 deaths and the maximum daily deaths (3-day average) based on the listed countries following the growth trajectory of China from 20/03/2020. Lower and upper sensitivities are based on an offset from the current best match to China's trajectory of plus or minus one day. The date of maximum daily deaths corresponds to the estimated value.

	Total deaths			Maximum daily deaths			
	Estimate	Lower sensitivity	Upper sensitivity	Estimate	Lower sensitivity	Upper sensitivity	Date
China	3280	Actual	to date	150	Actual	to date	23/02/2020
Italy	28000	25000	32000	1300	1200	1500	27/03/2020
Spain	46000	37000	60000	2200	1700	2800	04/04/2020
France	18000	14000	23000	800	660	1100	08/04/2020
USA	28000	22000	41000	1300	1000	1900	08/04/2020
UK	5700	4700	7100	260	210	330	05/04/2020
Netherlands	6000	4700	7500	280	220	350	24/03/2020
Germany	4000	3200	5300	190	150	250	09/03/2020
South Korea	150	140	160	2	2	2	06/04/2020

Despite this paper being based on data up to 24th March, various estimates can already be shown to be incorrect. For example, we have already seen 260 daily COVID-19 deaths, a figure that the team did not expect to see until their forecast peak on 5th April.

Whilst it is not inherently a bad idea to consider how the trajectory of a country's COVID-19 outbreak might develop, by comparing it to other countries whose outbreaks started at an earlier date and which have implemented comparable control strategies, our view is that it is irresponsible, and potentially dangerous (as it risks undermining social distancing measures) to draw strong conclusions from such a simple analysis.

In particular, the conclusions set out are based mainly on the pattern experienced by China. This is unlikely to be a sensible comparator for most of the countries listed, as they have not introduced control measures as strong as those introduced by the Chinese Government and have indicated no intention to do so.

Finally, it is unclear to us why Imperial's Department for Electrical and Electronic Engineering has chosen to publish a paper on COVID-19.

References

Pike, W.T and Saini, V - An international comparison of the second derivative of COVID-19 deaths after implementation of social distancing measures
https://www.medrxiv.org/content/10.1101/2020.03.25.20041475v1.full.pdf