Coronavirus 'excess deaths': Why England and Wales have been hardest hit in Europe

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Credit: AI-generated image (disclaimer)

To get through the COVID-19 pandemic, we need good information. One hugely important statistic is how many people have died from the disease in various countries. But it's notoriously difficult to compare deaths in this way—each nation reports and counts deaths due to COVID-19 differently.

A more promising approach is to measure "excess deaths." The idea is pretty simple. You estimate how many deaths, from any cause, there would have been if there had been no pandemic. Then you count how many deaths there actually were. The difference between those numbers is the excess deaths. This is exactly what a major new study, published in *Nature Medicine*, has done for 21 countries.

Counting deaths from any cause means that we don't miss deaths resulting from the epidemic that weren't directly caused by the virus. For instance, people may have died because cancer services were reduced. That makes it easier to compare the total impact of the pandemic across different countries.

The new study looks only at 21 relatively rich countries, all in Europe apart from Australia and New Zealand. It excludes the U.S. and Germany, among others. Also it covers only the first wave of the pandemic, from mid-February to the end of May.

These countries have already been compared. The headline findings cover familiar ground, horrifying though it is. The study reports that 206,000 more people died than would have been expected to die without the pandemic. The researchers tell us that this is more than twice the number of deaths from diabetes or breast cancer in the 21 countries in a whole year.

National differences

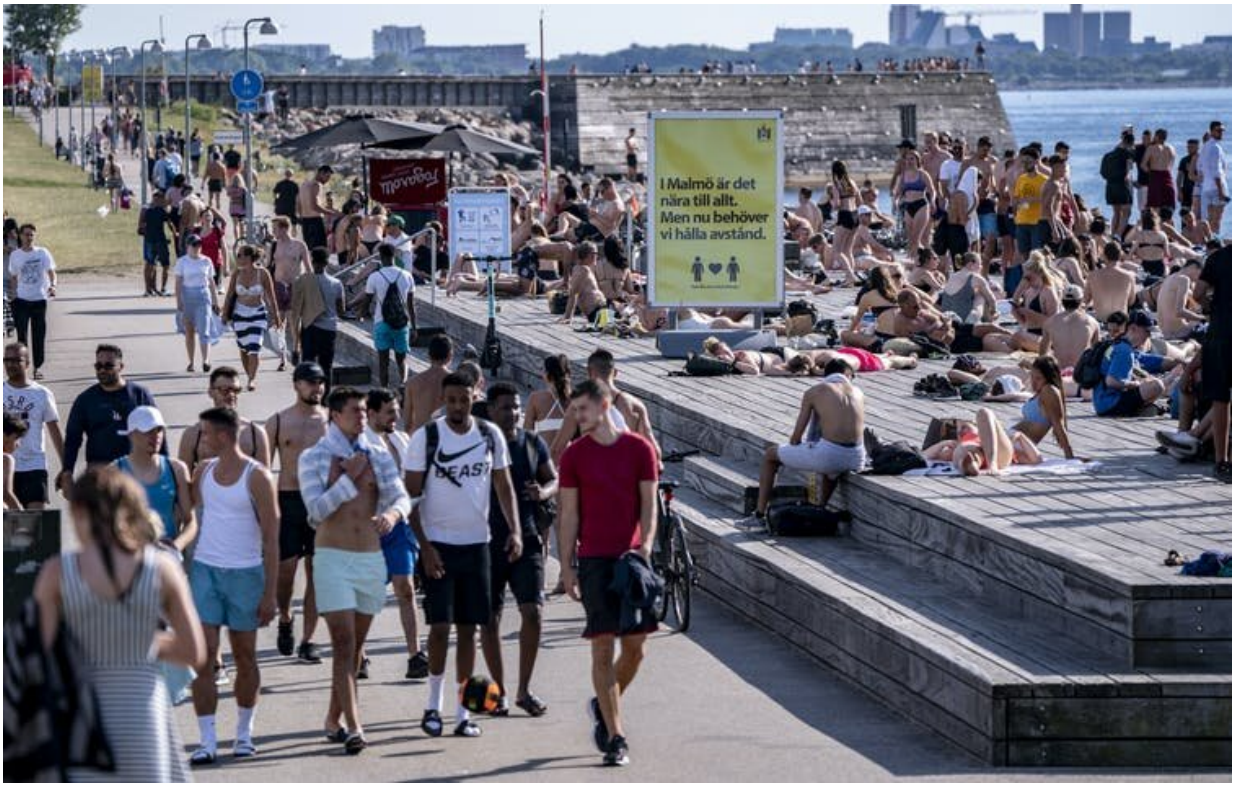
In ten of the countries, the researchers found little evidence of any excess deaths at all. This group includes Australia, New Zealand, five Eastern European countries, and all the Scandinavian countries except Sweden.

In six more countries, the researchers judged the number of excess

deaths as low (Austria, Switzerland, Portugal) or medium (France, the Netherlands, Sweden). The highest death tolls were in Belgium, Italy, Scotland, and Spain—with England and Wales topping the list at 57,300 excess deaths combined.

It is hard to explain the differences by just looking at demographics. Most countries have aging populations. And there seems to be no correlation between, for example, obesity and excess deaths—Spain has lower levels of obesity than Australia.

But nearly all the countries in the group that have experienced low excess deaths acted early in the pandemic by putting lockdowns or other restrictions in place. The countries with the highest excess deaths acted relatively late—including Italy, Spain and the UK. But the Netherlands also locked down relatively late, and its level of excess deaths was not so high.



Malmo, Sweden, June 2020. Credit: Johan Nilsson/TT/EPA

One exception is Sweden, which didn't have a compulsory lockdown at all but put in place many voluntary measures. It had considerably more excess deaths than its Scandinavian neighbors that did lock down, and this pattern remained for longer than almost all these countries. Overall though, Sweden had fewer excess deaths than several countries that did lock down—possibly due in part to relatively low levels of other illnesses, possibly because of high levels of compliance with the voluntary measures.

The study also notes that there is less per-capita spending on healthcare in the UK, Italy and Spain than there is in Austria, Norway, Sweden and Denmark. The latter countries were therefore probably better equipped to continue saving lives from a variety of conditions during the height of the pandemic.

These observations of national differences are inferences as the data in this study can only tell us what is happening in each individual country. But they will nevertheless be of great value in further investigations.

Promising approach

Excess deaths have been widely calculated and reported before, for instance by the Economist, the Financial Times, and the website Our World in Data. And those publications contain more up-to-date information than the new report does. So what's special about the new study?

One is that the study takes a comprehensive statistical modeling approach to estimating how many deaths would have occurred without the pandemic. That's often the hardest part of estimating excess deaths. Calculations have often used average deaths for, say, the past five years. That's simpler, but it can't take into account changes in the size of the population, or the effects of extreme weather on deaths in the past. The new study allows for these by using standard models for quantities that vary over time, that can bring in weather effects as well as longer-term trends.

Because of this approach, the new research can calculate the statistical uncertainty in the figures it reports. They do not simply report that there were 206,000 excess deaths across the 21 countries—they give a so-called *95% credible interval* for that estimate, saying that the true number could have been anywhere between 178,100 and 231,000 deaths. This estimation of the uncertainty shows what is known fairly precisely and what isn't.

Second, also because of the modeling approach, the new study can give detail for subgroups of the population that have often not been considered in earlier work. For instance, although it's widely said that more men than women die of COVID-19, these estimates of excess deaths indicate that the difference isn't perhaps as marked as has been reported.

Across all 21 countries there were 106,000 excess deaths in men and about 100,000 in women over the time period covered. In many of the countries, there were considerably more excess deaths in males than females in the early part of the pandemic. But later the balance changed to being roughly equal (for example in England and Wales), or even to there being more excess deaths in women (in Italy, Spain and France, for instance).

I'm looking forward to this approach being rolled forward to investigate more recent data. Things are constantly changing, we need to keep up with what's happening, and this modeling approach should help.

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