

As global governments grapple with the Covid-19 pandemic, a lot of uncertainty remains. Not only about how this humanitarian disaster will evolve and what world we will find ourselves living in once we emerge from lockdown, but also around the true nature of the disease.

There are a lot of important questions being asked about Covid-19 at the moment:

- How widespread is it? How many cases are really out there?
- How deadly is it? What is the underlying fatality rate, allowing for unidentified cases?
- What is the underlying transmission rate, including asymptomatic cases?
- What is the impact of testing policy on reported cases?
- How many people died because of Covid-19, as opposed to just dying with the disease?

Unfortunately, in this newsletter, we're not really going to answer any of these questions, although we may allude to a suggestion for the last one.

Hard data

The difficulty with most analysis around Covid-19 is that it relies on consistent and comprehensive reporting of cases. Different countries have different testing policies and these policies have changed over time.

Then there is the question of asymptomatic cases; in the absence of widespread randomised testing it is difficult to get a handle on the true number of cases. Iceland has made a start on widespread testing, although it's early days for drawing any conclusions from this.

In this paper, we attempt at some preliminary analysis by simplifying the issue into two questions:

- How many people have died?
- How many of those people had Covid-19 mentioned on their death certificate?

Reporting on the number of deaths (from any cause) is assumed reliable. And one might expect Covid-19 testing of critical patients tends to be reasonably comprehensive. So these two metrics hopefully won't mislead us, although there are some challenges with the second which are noted later in this article.

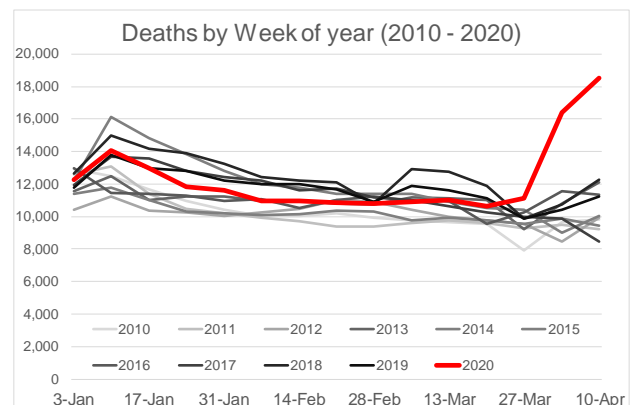
We analysed UK deaths, specifically England and Wales. The UK ranks quite highly in terms of death numbers on a global scale, and the Office for National Statistics ('ONS') has published useful information that is timely and comprehensive. With that said, the data is a couple of weeks old, but we'll update this newsletter as more is released. You can find the most recent version of this newsletter [here](#).

Total deaths

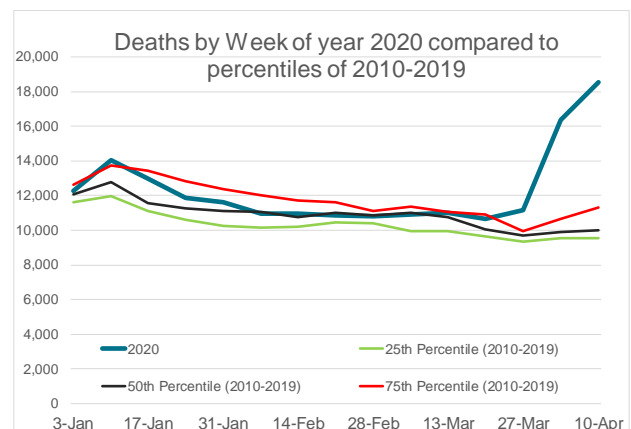
The following chart plots the number of weekly deaths in England and Wales, from any cause, for each year from 2010 to 2020. We're specifically looking at the 14 weeks from the beginning of January to the 3rd of April.

UK population growth over the last decade has been around 0.6-0.8% pa, so we would expect the lines to migrate upwards. Nevertheless, it can be seen that death numbers have remained fairly stable, slightly decreasing as the UK moves out of the coldest winter months.

Clearly 2020 is emerging as an outlier.



To reduce some of the noise, we've plotted 2020 deaths versus the 25th, 50th and 75th percentile death numbers from 2010 to 2019.



We can see that, up until the middle of March, 2020 was tracking quite similarly to other years in terms of deaths numbers. Then the week ending 3 April 2020 shows a significant spike in deaths with a further increase the following week. Both of these weeks show a greater number of deaths than any other week in this data.

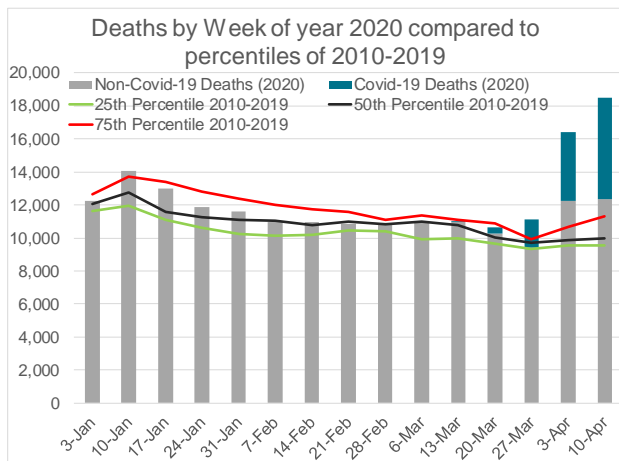
The 3 April spike occurred 72 days after the first reported case in the UK (22 January) and 21 days after the first reported death with Covid-19 (13 March).

Covid-19 deaths

Is this spike due to Covid-19? The following chart splits the 2020 deaths between those that mentioned Covid-19 on the death certificate, and those that didn't.

The presence of Covid-19 on the death certificate doesn't necessarily mean that the patient would still be alive had it not been for Covid-19. Especially in the cases of older or frail patients, Covid-19 may have led to a reduction in life expectancy that was already quite short.

There are also difficulties with how the cause of death is reported. Some countries report as a Covid-19 death what others might refer to as pneumonia. But comparing Covid-19 and non-Covid-19 deaths does help to put some context around the numbers we're hearing.



Think of the total height of each bar as a solid, reliable data point, whilst the split between Covid-19 and non-Covid-19 is bit more open to reporting practices. The totals of the last three weeks have both been above the range given by 2010-2019 data. However, there are differences when we consider the breakdown.

First let's consider the week ending 27 March. The median number of deaths this week for 2010-2019 was around 9,700. Recent weeks in 2020 had been tracking at around 10,800 deaths. The actual number of deaths this week in 2020 was around 11,100. This is slightly above recent weeks and well

above the average for 2010-2019. Of these deaths, 1,700 were classified as Covid-19 deaths.

There are two ways we might interpret what happened here:

- The 1,700 Covid-19 deaths wouldn't have happened in the absence of this pandemic. This week would have seen a lower total than usual and we have 1,700 excess deaths. Or,
- In the absence of this pandemic, the number of deaths this week would have been more in line with recent weeks, or possibly the historical average for the week in question. This implies a much lower number of excess deaths.

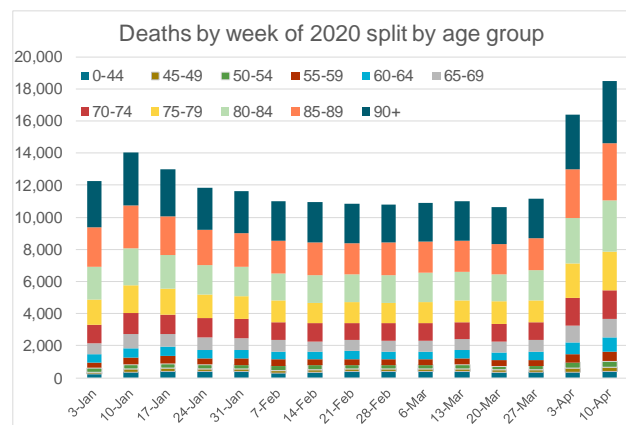
It gets more interesting when we look at the week ending 3 April: 4,100 Covid-19 deaths out of a total of 16,300 deaths. The total is around 5,500 above the recent average (10,800), but these excess deaths are only partially explained by the number of reported Covid-19 deaths.

That is to say, the grey bar is much higher than the previous grey bars, and well above the range given by 2010-2019. Have some Covid-19 deaths been missed, or has another factor increased mortality?

Looking at the week ended 10 April we see a similar picture, but more extreme. A similar number of non-Covid-19 deaths to the week before (around 12,400) but an increase in non-Covid-19 deaths to about 6,150.

Deaths by age group

It has been well publicised that Covid-19 is more serious for older people and those with pre-existing conditions. The following analysis seems to support this as it looks at the breakdown in deaths (from all causes) by age.

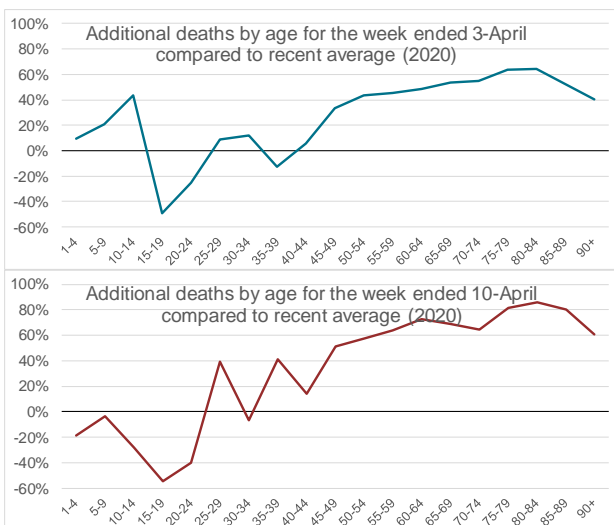


Deaths in under 45 year olds had been typically running at around 360 per week (including infant deaths). There is no appreciable increase in deaths of under 45 year olds in the most recent week.

Above this age, all groups show a notable increase. The charts on the next page provide some more detail on the size of the increase for each age group, shown separately for the two most recent



weeks. The number of deaths at lower ages is very low, hence the more erratic pattern when expressed as a percentage increase.



For both of these weeks the percentage increase in deaths peaks at around 80-84 years old.

Conclusion

Looking at the three most recent weeks in England and Wales we have:

- Week ending 27 March: slightly more deaths than usual, but fewer than usual if you exclude deaths reported as Covid-19 on the death certificate.
- Weeks ending 3 April and 10 April: Far more deaths than usual. Even ignoring Covid-19 deaths the numbers are higher than usual.

The number of deaths each week in a population the size of England and Wales is generally very stable. The high number of non-Covid-19 (reported) deaths in the last two weeks seems anomalous. This suggests either:

- Underreporting of Covid-19 deaths, or
- An additional cause of deaths, not Covid-19, but possibly related in some way.

In this simple analysis we have tried to stick to the facts and hard data (i.e. how many people have died), without getting bogged down in discussions about testing rates, asymptomatic cases and non-fatal case reporting practices. But what we can see certainly presents an interesting picture worth exploring further.

Further information

We hope to update this analysis as more data is released, and possibly look at other countries too.

If you would like to receive any further information around the information in this newsletter, then please get in touch with one of the authors below.

ABOUT MELVILLE JESSUP WEAVER		
Melville Jessup Weaver is a New Zealand firm of consulting actuaries providing advice on superannuation, insurance and investment consulting. The firm, established in 1992, has offices in Auckland and Wellington and is an alliance partner of Willis Towers Watson, a leading global services company and is located on the web at willistowerswatson.com .		
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