



England & Wales mortality monitor – COVID-19 update – week 14 of 2020

Background

During the coronavirus pandemic we are publishing weekly updates to the CMI Mortality Monitor, in an abbreviated form. This update shows the position as at 3 April 2020 (week 14 of 2020), based on provisional deaths data published by the Office for National Statistics (ONS) on 14 April 2020. All updates are publicly available from the CMI pages of the Institute and Faculty of Actuaries website: <https://www.actuaries.org.uk/learn-and-develop/continuous-mortality-investigation/other-cmi-outputs/mortality-monitor>.

Summary

There were 59% more deaths registered in week 14 of 2020 than if standardised mortality rates had been the same as week 14 of 2019. The number of “excess” deaths is 76% higher than the number of registered deaths in the ONS data for week 14 where COVID-19 was mentioned on the death certificate.

The cumulative mortality improvement for 2020 is -1.2% as at 3 April 2020, compared to $+0.1\%$ as at 20 March 2020, before the coronavirus pandemic had a material impact. More recent data from Public Health England (PHE) for later periods suggests that the cumulative improvement will fall further.

Notes

Full details of the methods used for results based on the ONS data are included in [Working Paper 111](#). Our analysis is based on Standardised Mortality Rates (SMRs). These adjust the provisional weekly deaths data published by the ONS to allow for changes in the population over time.

This update is shorter than the standard quarterly update. We have included versions of Charts D and E from the standard quarterly monitor (retaining those names for consistency), which show results for males and females combined, for ages 20-100:

- Chart D shows cumulative standardised mortality (cSMR) for each year, relative to the average for 2010-2019.
- Chart E shows cumulative standardised mortality improvements (cSMRI) for each year (i.e. the progression of annual mortality improvements over the course of each year).
- Mortality rates and mortality improvements vary by age, and the results shown are sensitive to the age distribution of the chosen standard population.

Our calculations rely on data for registered deaths, and we are conscious that in recent weeks deaths may have been registered later than in previous years, because of restrictions on movement and increased pressure on the medical profession. Consequently, comparisons of mortality between 2020 and earlier years may not be on a like-for-like basis. Also, results for individual weeks may not be consistent between years due to the timing of public holidays.

Use of this document

Please note that:

- The CMI disclaims any liability from use of or reliance on these calculations, including in relation to financial transactions such as longevity swaps; and
- The CMI does not guarantee that it will continue to publish updates.

Please also see the reliances and limitations, disclaimer, and copyright notice on the final page of this document.

This document is categorised as a “Research Report” as defined in the Terms and Conditions.

TAS compliance

This paper is intended to analyse recent mortality in England & Wales. It complies with the principles in the Financial Reporting Council’s Technical Actuarial Standard “TAS 100: Principles for Technical Actuarial Work”. Any person using this paper should exercise judgement over its suitability and relevance for their purpose.



Results

Chart D shows cumulative standardised mortality rates compared to the 2010-2019 average. Cumulative mortality to 3 April 2020 (week 14 of 2020) is 0.9% below the 2010-19 average. It was 1.9% below the 2010-19 average at week 12, before the coronavirus pandemic had a material impact.

Chart D: Cumulative standardised mortality rate (cSMR) compared to the 2010-2019 average

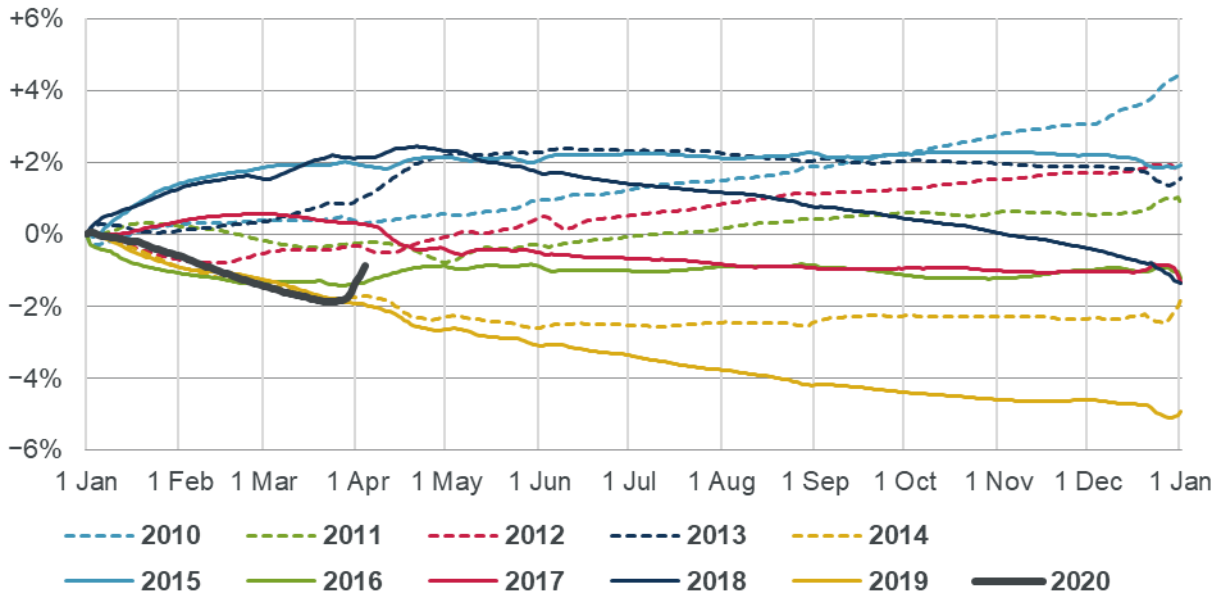
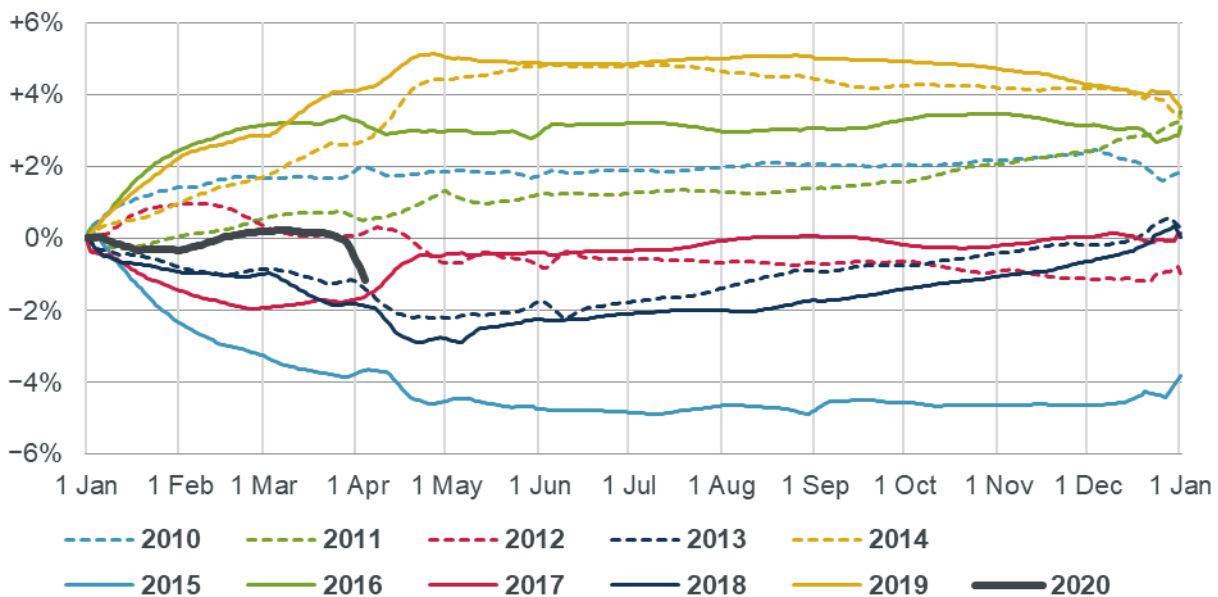


Chart E shows the cumulative annual standardised mortality improvement for 2020 and for the previous ten years. Note that Chart E shows cumulative improvements, so a higher value represents a higher improvement and lower mortality; whereas in Chart D a higher value represents higher mortality.

The cumulative mortality improvement is -1.2% as at 3 April 2020 (week 14 of 2020), compared to +0.1% as at week 12, before the coronavirus pandemic had a material impact, and -0.1% as at week 13. The change in cumulative mortality improvement in week 14 is the largest weekly change that we have seen in the weekly deaths data that is available since 1999.

Chart E: Cumulative annual standardised mortality improvement (cSMRI)





Impact of coronavirus on total deaths

The ONS data shows 3,475 deaths registered in week 14 “where COVID-19 was mentioned on the death certificate”. The overall impact of the coronavirus pandemic on total deaths may be different:

- There may have been some deaths that were wholly or partially due to COVID-19 but where COVID-19 was not mentioned on the death certificate.
- There may have been deaths from other causes that were indirectly linked to COVID-19; for example, if pressure on medical resources caused deaths that would not have occurred in the absence of the coronavirus.
- Some deaths where COVID-19 was mentioned on the death certificate may not be “excess” deaths, as the deceased might have died from some other cause in the same period, in the absence of the coronavirus.
- There may be indirect impacts on deaths due to restrictions on movement due to the coronavirus; for example, changes in traffic, pollution and mental health.

To consider the possible impact of the pandemic on total deaths, we have estimated the number of deaths that we would have seen in week 14 of 2020 if the SMRs for each gender and age-group had been the same in week 14 of 2020 as in week 14 of 2019. As mortality in the first 12 weeks of 2019 and 2020 was similar, as seen in Charts D and E, this gives a broad indication of “expected” mortality in the absence of the coronavirus pandemic. We can then subtract the expected deaths from actual deaths to estimate the “excess” deaths that, in the absence of other likely causes, may be attributable to the pandemic.

Table 1: Comparison of COVID-19 deaths and “excess” deaths

Description	Deaths in week 14 of 2020		
	Male	Female	Total
“Expected” registered deaths, if SMRs were the same in 2019 and 2020	5,150	5,124	10,275
Actual registered deaths, from all causes	8,794	7,593	16,387
“Excess” registered deaths (expected minus actual)	3,644	2,469	6,112
Deaths where COVID-19 was mentioned on the death certificate	2,126	1,349	3,475
Excess as a proportion of expected	71%	48%	59%

Table 1 shows that actual deaths are 59% higher than expected; 71% higher than expected for males and 48% higher for females. The 6,112 “excess” deaths are 76% higher than of the figure of 3,475 registered deaths reported by the ONS where COVID-19 was mentioned on the death certificate.

Results for later weeks

We intend to publish weekly updates to the mortality monitor during the coronavirus pandemic.

The results in this update use ONS data on registered deaths to 3 April 2020. More recent data is available from Public Health England (PHE), who publish daily information on deaths of those hospitalised who tested positive for coronavirus. The PHE figures are not directly comparable to the ONS figures, and could be higher or lower for any given week. That is because, although the PHE definition for COVID-19 deaths appears narrower than the ONS definition, PHE may report on deaths before they have been registered.

Table 2 shows that for the week ended 3 April 2020, 27% more COVID-19 deaths were registered in England & Wales than the number of deaths reported by PHE of those hospitalised in England & Wales who tested positive for coronavirus.



Table 2: Number of deaths reported by Public Health England of those hospitalised in England & Wales who tested positive for coronavirus

Period	Reported deaths
During the week ended 10 April 2020	4,986
During the week ended 3 April 2020	2,730

Based on the PHE figures for cumulative deaths reported on 13 April 2020, and allowing for both the 76% gap between “excess” deaths and registered COVID-19 deaths reported by the ONS, and the 27% gap between the figures for COVID-19 deaths reported by PHE and registered by the ONS, there could already be over 23,000 cumulative excess deaths in England & Wales, and over 25,000 in the UK. However, these figures are uncertain as the “gaps” could vary over time due to changes in testing and data collection.



Reliances and limitations

The purpose of the weekly mortality monitor is to provide regular updates on standardised mortality in England & Wales during the coronavirus pandemic, adjusting ONS data to allow for changes in the size and age of the population.

The CMI aims to produce high-quality outputs and takes considerable care to ensure that the mortality monitor and the accompanying spreadsheet of results are accurate. However:

- We cannot guarantee their accuracy (see the Disclaimer).
- There is a reliance on the data published by the ONS and described as provisional.
- We have also applied judgement and assumptions in deciding on the calculation methods and the presentation of results.
- Anyone using the results of the mortality monitor should ensure that it is appropriate for their particular use, and note that care is needed when estimating full year experience from partial year experience. This is particularly true during the coronavirus pandemic.

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