



CMI mortality monitor – week 34 of 2023

This update is for week 34 of 2023, ending on 25 August 2023 and published on 5 September 2023. The [CMI website](#) has details of the calculation methods and previous updates.

Results are based on the date of registration of deaths. Using date of occurrence would give different results, particularly since late 2022. The appendix discusses this and estimates the impact.

Table 1: Deaths registered in England & Wales in week 34 of 2023

	Male	Female	Total
“Expected” registered deaths (based on week 34 of 2019)	4,879	4,492	9,371
Actual registered deaths, from all causes	5,154	4,932	10,086
Excess deaths (and as a percentage of expected)	275 (6%)	440 (10%)	715 (8%)
Mentions of COVID-19 on the death certificate	131	72	203

Table 2: Cumulative excess deaths

	England & Wales	United Kingdom
From the start of the pandemic (29 Feb 2020 to 25 August 2023)	181,800	203,700
From week 1 of 2023 (31 Dec 2022 to 25 August 2023)	28,500	32,200

Chart 1: Weekly standardised mortality rates in England & Wales for 2012 to 2023

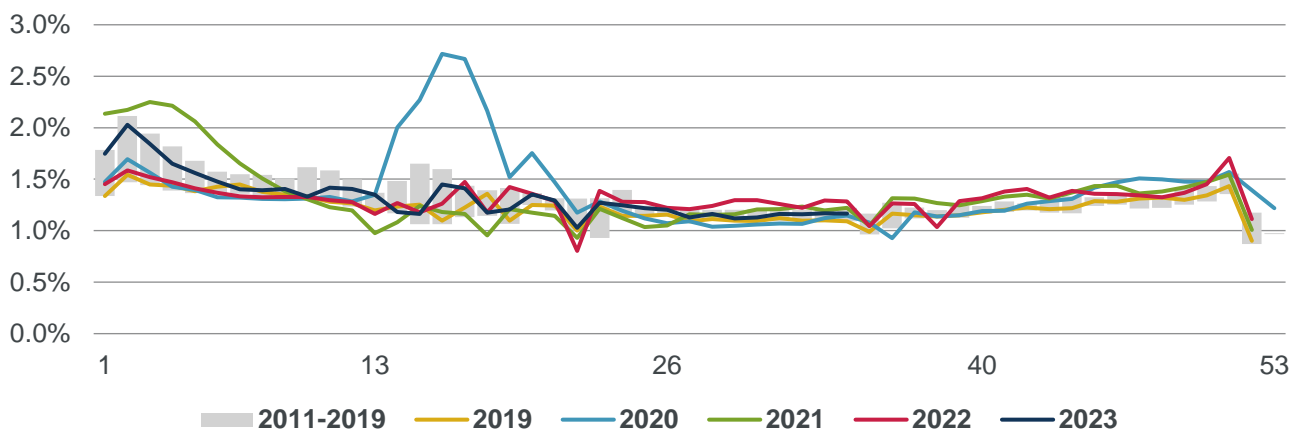


Chart 2: Weekly excess deaths and deaths with COVID on the death certificate – in the past 26 weeks

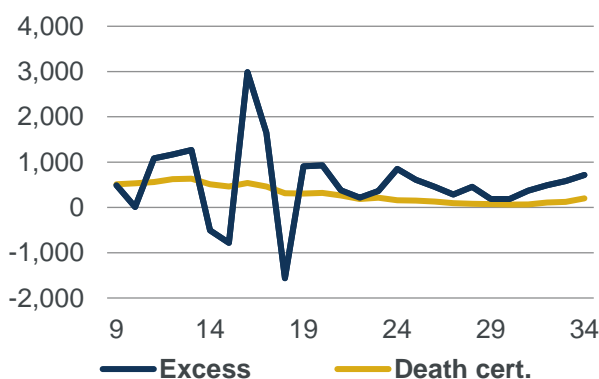


Chart 3: Weekly COVID deaths and Non-COVID excess (Excess minus COVID deaths) – in the past 26 weeks

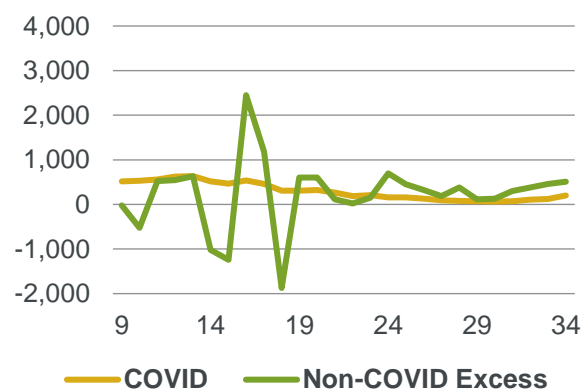




Chart 4 shows cumulative standardised mortality rates relative to cumulative mortality in 2019, as a proportion of mortality for 2019 as a whole. We use 2019 as the comparator as this is consistent with the excess deaths calculation above.

Under this measure, cumulative standardised mortality to week 34 of 2023 is 5.3% above 2019.

Chart 4: Cumulative standardised mortality rate compared to 2019

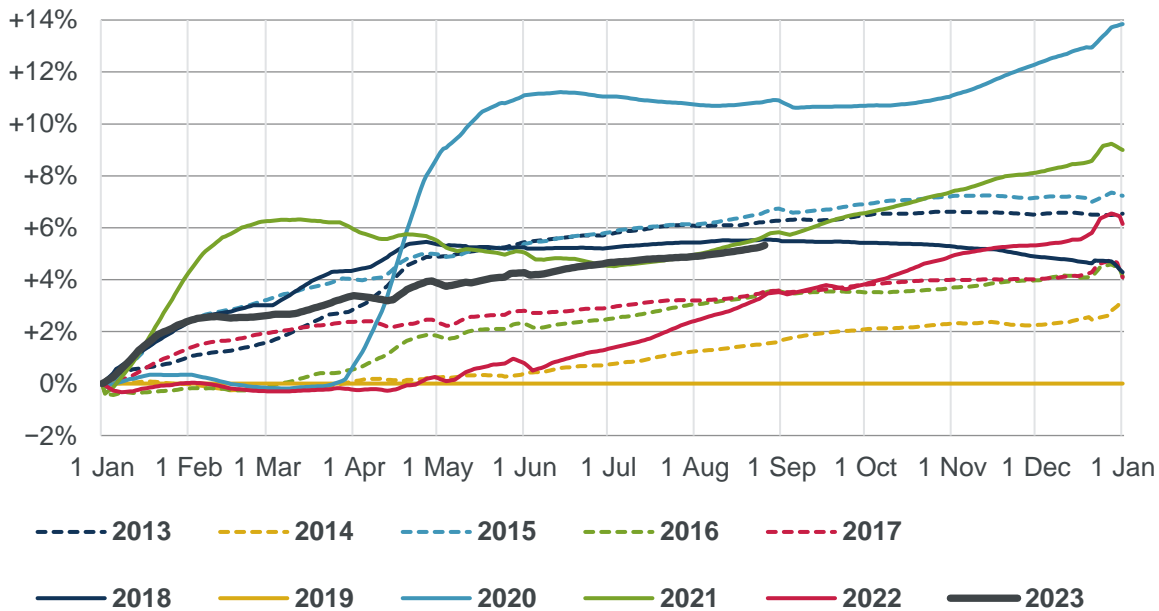
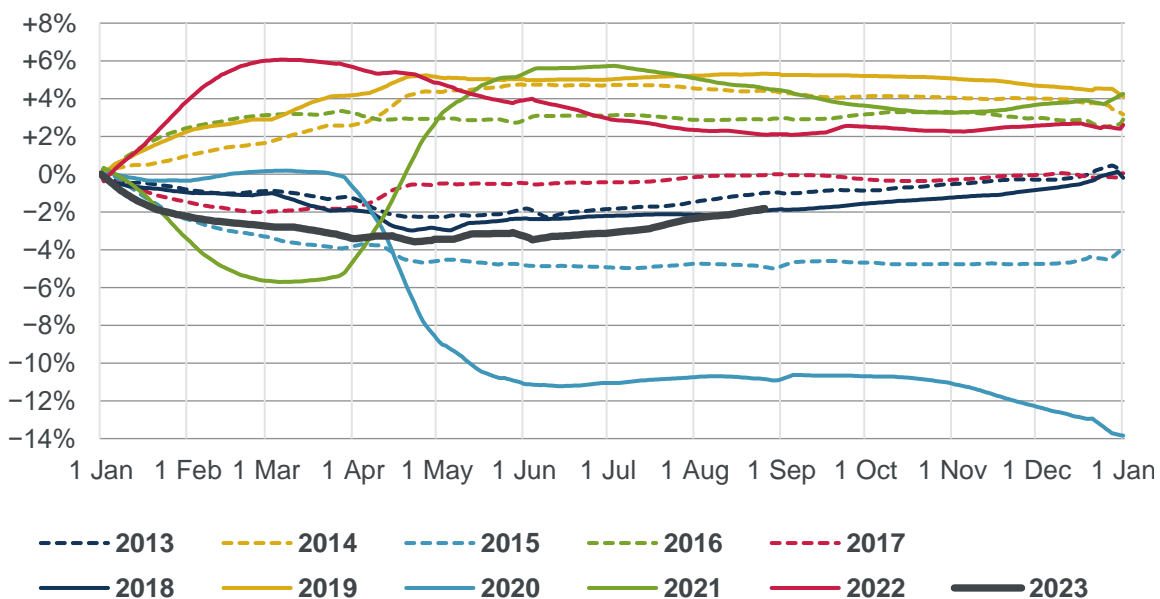


Chart 5 shows the cumulative annual standardised mortality improvement for 2023 and the previous ten years. The cumulative improvement for year N is the reduction in cumulative mortality from year N-1 to year N, as a proportion of full-year mortality for year N-1.

The cumulative mortality improvement to week 34 of 2023 (relative to 2022) is -1.8%.

The cumulative mortality improvement between 2019 and 2023 is -5.3% to week 34 of 2023.

Chart 5: Cumulative annual standardised mortality improvement





Data sources

The provisional weekly deaths are available from:

- ONS (England & Wales)
<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredinenglandandwales>
- NRS (Scotland)
<https://www.nrscotland.gov.uk/covid19stats>
- NISRA (Northern Ireland)
<https://www.nisra.gov.uk/statistics/death-statistics/weekly-death-registrations-northern-ireland>

Notes on method and data

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 control for changes in the size, age and gender distribution of the population over time. We note that mortality rates and mortality improvements vary by age, and the results shown are sensitive to the age distribution of the chosen standard population (the 2013 European Standard Population).

On 11 July 2023, we revised the population data used to produce the mortality monitor to reflect results of the 2021 census. The monitor for week of 26 of 2023 has details of the change and the impact on results. We note that the ONS expected to publish its own estimate of revised population data in September 2023, using a more detailed method and data and its estimates may differ.

Our calculations rely on data for registered deaths, and we are conscious that during the pandemic deaths may have been registered earlier or later than in previous years. Consequently, comparisons of mortality between years during the pandemic 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.

In addition, we noted in the mortality monitor for week 26 of 2023 that the difference between occurrences and registrations of deaths was particularly great around the end of 2022. We discuss this, and further evidence that the pattern of registrations in 2023 differs from earlier years, in the appendix.

Our calculations of excess and expected deaths are based on mortality in 2019. The monitor for week 1 of 2023 has further information on our choice of 2019.

Use of this document

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.

TAS compliance

This paper is intended to translate publicly available demographic information published by the Office for National Statistics and similar bodies into indicative mortality measures to illustrate recent mortality experience primarily in England & Wales. The paper is intended for use by actuaries and other parties interested in detailed mortality statistics and is for information only.

The paper complies with the principles in the Financial Reporting Council's Technical Actuarial Standard "TAS 100: General Actuarial Standards". Any person using this paper should exercise judgement over its suitability and relevance for their purpose.

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 allowing for changes in the size and age of the population.



The mortality monitor reports on all-cause and COVID-19 mortality. It does not offer any view on other causes of death or reasons for changes in mortality rates.

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 third parties, particularly the ONS data which is described as “provisional”. We are unable to quantify the impact on the results of the monitor of any future revisions to provisional data.
- 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.
- While the results allow for the 2021 census data published to date by the ONS, populations for years after 2011 are our own estimates. The final revised estimates published by the ONS are due in September 2023.



Appendix – Estimated results on an occurrences basis

This appendix considers how the results of the monitor for England & Wales would differ if they were based on death occurrences rather than death registrations.

Occurrences, registrations, and delays

Deaths data for a particular time period can be based on “occurrences” (when the deaths occurred) or based on “registrations” (when the death was registered).

There is typically a “registration delay” between the date of occurrence and date of registration. The registration delay is often short, as UK deaths should be registered within five days unless referred to a coroner, but delays of several years are possible in some cases.

Why we use registrations

The number of deaths in a period on an occurrences basis is uncertain for some time after that period due to registration delays. While it is possible to estimate the number of occurrences sooner, based on typical registration delays, these estimates are themselves uncertain.

Registrations are a timely and reasonable proxy for occurrences, as long as registration delays are stable, or reasonably stable, over time.

The mortality data published weekly by the ONS provides much more detail on a registrations basis than on an occurrences basis. The registrations data provides splits by gender and five-year age band, while the occurrences data only provides a total figure.

Registration delays

Chart A1 shows registration delays in the month following occurrence, based on monthly data published by the ONS¹. For deaths occurring in each month, we show the number of deaths registered in the following month as a percentage of the number registered within the month of occurrence. For example, data to the end of December 2022 shows 48,164 deaths occurring in December 2022, while data to the end of January 2023 shows 61,286 deaths occurring in December 2022, which is 27% higher. A higher percentage indicates a longer delay in registering deaths.

Chart A1: Registration delays in the month following occurrence – see text for details



The chart shows a fairly steady pattern for the first half of the period, but with the registration delay drifting upwards. The pattern changes dramatically in recent months, with large registration delays in December 2022, March 2023, and April 2023.

Chart A1 shows the registration delay between the month of occurrence and the following month. We have also looked at registration delays for later periods (e.g. between the following month and three months later, or between three months later and a year later). These delays are smaller and show a more stable pattern, without the sharp peaks of recent months.

¹

<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/monthlymortalityanalysisenglandandwales>

Estimated recent occurrences and registrations

We have estimated the number of occurrences in each month based on the number of occurrences registered by 31 July 2023 with an allowance for a typical historical pattern of monthly registration delays after that point. These estimates are necessarily uncertain, particularly for more recent periods where registration delays form a larger proportion of the estimate.

Chart A2 compares monthly death registrations with our estimate of monthly occurrences. Registrations and estimated occurrences tend to show peaks and troughs at similar times, but there are some notable differences, particularly for December 2022.

Chart A2: Estimated occurrences and registrations

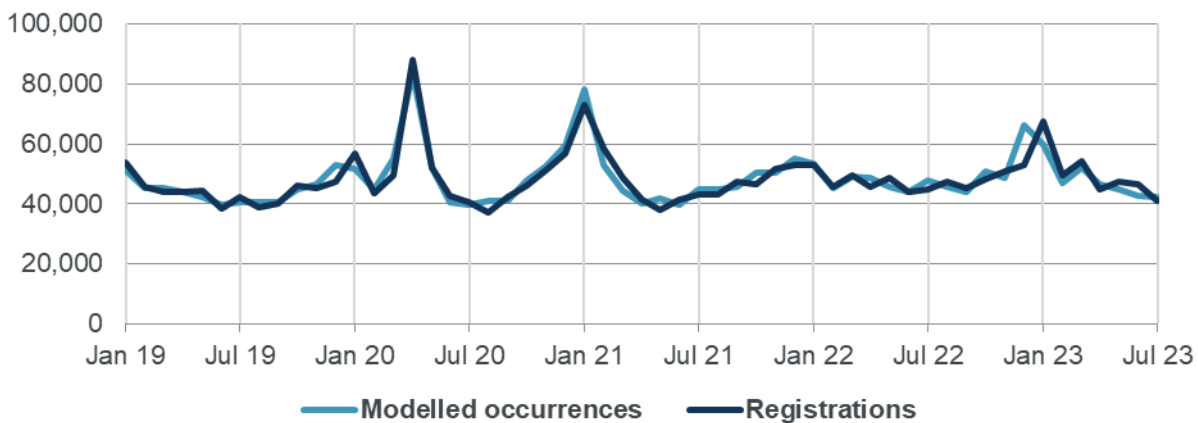


Table A1 considers the difference between modelled occurrences and registrations for calendar years 2019 to 2022 and for 1 January 2023 to 31 July 2023.

Table A1: Comparison of modelled occurrences and registration by year

Period	Modelled occurrences minus registrations		
	Number	Relative to 2019	Relative to 2019 (%)
2019	+4,800	-	-
2020	+1,600	-3,200	-0.6%
2021	+3,000	-1,800	-0.3%
2022	+13,400	+8,700	+1.6%
2023 – to 31 July	-16,200	-12,700	-2.4%

In 2019, 2020 and 2021 the difference between modelled occurrences and registrations was less than 1% of the number of deaths on either basis. The differences are more material for 2022 and for 2023 to date, due to the unusual registration delays shown in Chart A1.

We have not at this stage calculated ASMRs on an occurrences basis, due to a lack of detailed occurrences data by age and gender. If registration delays had the same impact on ASMRs as on deaths, and if there was no difference between registrations and occurrences after 31 July 2023, the cumulative ASMR for 2022 relative to 2019, shown in Chart 4 on a registrations basis, would be 1.6% higher, so around +7.8% rather than +6.2%; and the cumulative ASMR for 2023 to date relative to 2019 would be 2.4% lower, so around +2.9% rather than +5.3%. However, these figures are uncertain as we do not know how registration delays may have varied by age and gender, and what registration delays have been after 31 July 2023.



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