



## CMI mortality monitor – data update from week 29 of 2024

### Background

The CMI mortality monitor relies on estimates of the England & Wales population by age and gender.

We use ONS population estimates where these are available but also need to make our own estimates for the latest period. We update the population estimates from time to time when the ONS publishes new data, to:

- replace CMI estimates with ONS estimates when these become available; and
- replace existing ONS estimates with revised ONS estimates.

Such updates to population estimates affect the results of the mortality monitor. We have previously included analysis of the impact of changes to population estimates in appendices to mortality monitors, but are now publishing such analysis in standalone documents, like this one.

### Changes to population estimates from week 29 of 2024

The latest update relates to population estimates published by the ONS on 15 July 2024:

- The ONS published its official estimate of the mid-2023 population (using the census rollforward approach). This replaces the CMI estimate previously used in the monitor.
- The ONS revised its estimate of the mid-2022 population.
- We make our own estimates of the age distribution of the population at ages 85, as described in Working Paper 106. Although the ONS has not changed its population estimates for years before 2022, its changes for 2022 and 2023 lead us to revise our population estimates at individual ages 85 and above, although not the total population, in earlier years.

### Impact on results – overall

This section shows the impact on the “headline” results – unisex figures for ages 20-100. We show results for the “previous” dataset (used for weeks 26-28 of 2024), the “new” dataset (used from week 29 of 2024), and the differences between them. Tables 1 and 2 show:

- the cumulative SMR relative to the 2014-2023 average (as in Chart 2 of the weekly monitor and Chart D of the quarterly monitor); and
- the cumulative mortality improvement (as in Chart 3 of the weekly monitor and Chart E of the quarterly monitor).

In each case, figures for 2014 to 2023 are for the full year and those for 2024 are as at week 29.

Tables 1 and 2 show that the greatest changes in relative SMR and mortality improvement are for 2023, with lower changes in 2024 and other years.



**Table 1: Cumulative standardised mortality rate (cSMR) compared to the 2014-2023 average**

Year	Previous	New	Absolute difference
2014	-1.99%	-2.12%	-0.12%
2015	+1.82%	+1.69%	-0.12%
2016	-1.22%	-1.34%	-0.11%
2017	-1.14%	-1.24%	-0.10%
2018	-0.73%	-0.81%	-0.08%
2019	-4.75%	-4.79%	-0.05%
2020	+8.45%	+8.44%	-0.00%
2021	+2.36%	+2.40%	+0.03%
2022	-0.89%	-0.78%	+0.10%
2023	-1.90%	-1.45%	+0.45%
2024 (week 29)	-3.25%	-2.95%	+0.29%

**Table 2: Cumulative annual standardised mortality improvement (cSMRI)**

Year	Previous	New	Absolute difference
2014	+3.12%	+3.12%	-0.00%
2015	-3.89%	-3.89%	-0.00%
2016	+2.99%	+2.98%	-0.01%
2017	-0.09%	-0.10%	-0.01%
2018	-0.41%	-0.43%	-0.02%
2019	+4.05%	+4.01%	-0.03%
2020	-13.85%	-13.90%	-0.05%
2021	+5.61%	+5.58%	-0.03%
2022	+3.17%	+3.11%	-0.07%
2023	+1.03%	+0.67%	-0.35%
2024 (week 29)	+3.18%	+3.09%	-0.09%



### Impact on results – by age and gender

Tables 3 and 4 show how the “difference” items from Tables 1 and 2 respectively vary by age and sex. Table 3 shows that the differences are greatest for the youngest and oldest ages (20-44 and 85+) for both males and females. Table 4 shows this is also the case for mortality improvements in 2022, 2023 and 2024 to date, and that mortality improvements prior to 2022 have only changed for ages 85+.

Tables 5 and 6 show the values of cumulative relative mortality and cumulative mortality improvements for the New dataset.

**Table 3: Absolute difference in cumulative standardised mortality rate (cSMR) compared to the 2014-2023 average between Previous and New datasets, by age and sex**

Year	M 20-44	M 45-64	M 65-74	M 75-84	M 85+	F 20-44	F 45-64	F 65-74	F 75-84	F 85+
2014	+0.1%	-0.0%	-0.0%	-0.0%	-0.3%	+0.1%	-0.0%	-0.0%	-0.0%	-0.3%
2015	+0.1%	-0.0%	-0.0%	-0.0%	-0.3%	+0.1%	-0.0%	-0.0%	-0.0%	-0.3%
2016	+0.1%	-0.0%	-0.0%	-0.0%	-0.3%	+0.1%	-0.0%	-0.0%	-0.0%	-0.3%
2017	+0.1%	-0.0%	-0.0%	-0.0%	-0.2%	+0.1%	-0.0%	-0.0%	-0.0%	-0.2%
2018	+0.1%	-0.0%	-0.0%	-0.0%	-0.2%	+0.1%	-0.0%	-0.0%	-0.0%	-0.2%
2019	+0.1%	-0.0%	-0.0%	-0.0%	-0.1%	+0.1%	-0.0%	-0.0%	-0.0%	-0.1%
2020	+0.1%	-0.0%	-0.0%	-0.0%	+0.0%	+0.1%	-0.0%	-0.0%	-0.0%	-0.0%
2021	+0.1%	-0.0%	-0.0%	-0.0%	+0.1%	+0.1%	-0.0%	-0.0%	-0.0%	+0.1%
2022	+0.1%	-0.0%	-0.0%	-0.0%	+0.3%	+0.1%	+0.0%	-0.0%	-0.0%	+0.2%
2023	-1.1%	+0.0%	+0.0%	+0.2%	+1.0%	-0.7%	+0.0%	+0.0%	+0.1%	+1.1%
2024 (week 29)	-0.7%	+0.0%	+0.0%	+0.1%	+0.7%	-0.4%	-0.0%	+0.0%	+0.1%	+0.8%

**Table 4: Absolute difference in cumulative annual standardised mortality improvement (cSMRI) between Previous and New datasets, by age and sex**

Year	M 20-44	M 45-64	M 65-74	M 75-84	M 85+	F 20-44	F 45-64	F 65-74	F 75-84	F 85+
2014	-	-	-	-	-0.0%	-	-	-	-	+0.0%
2015	-	-	-	-	-0.0%	-	-	-	-	+0.0%
2016	-	-	-	-	-0.0%	-	-	-	-	-0.0%
2017	-	-	-	-	-0.0%	-	-	-	-	-0.0%
2018	-	-	-	-	-0.1%	-	-	-	-	-0.0%
2019	-	-	-	-	-0.1%	-	-	-	-	-0.1%
2020	-	-	-	-	-0.1%	-	-	-	-	-0.1%
2021	-	-	-	-	-0.1%	-	-	-	-	-0.1%
2022	+0.0%	-0.0%	-0.0%	-0.0%	-0.2%	+0.0%	-0.0%	-0.0%	-0.0%	-0.1%
2023	+1.2%	-0.0%	-0.0%	-0.2%	-0.7%	+0.7%	-0.0%	-0.0%	-0.1%	-0.9%
2024 (week 29)	+0.2%	-0.0%	-0.0%	-0.0%	-0.2%	+0.2%	+0.0%	-0.0%	-0.0%	-0.2%



**Table 5: Cumulative standardised mortality rate (cSMR) compared to the 2014-2023 average for the New dataset, by age and sex**

Year	M 20-44	M 45-64	M 65-74	M 75-84	M 85+	F 20-44	F 45-64	F 65-74	F 75-84	F 85+
2014	-4.4%	-3.7%	-0.4%	-0.7%	-2.9%	-0.2%	-2.4%	-0.6%	-0.9%	-3.9%
2015	-4.3%	-2.8%	-0.2%	+2.3%	+2.3%	-3.3%	-1.6%	+1.4%	+3.4%	+3.6%
2016	-0.9%	-3.5%	-1.5%	-0.1%	-2.3%	-2.6%	+0.2%	+0.1%	-0.4%	-1.8%
2017	-5.2%	-4.1%	-2.3%	-0.5%	-1.3%	-5.1%	-3.4%	-2.0%	+0.0%	+0.3%
2018	+0.9%	-3.3%	-1.8%	-1.6%	-0.3%	-2.8%	-1.5%	-1.3%	-0.5%	+0.9%
2019	-4.0%	-5.3%	-5.0%	-5.0%	-4.6%	-4.0%	-4.2%	-4.5%	-4.8%	-4.9%
2020	+1.4%	+8.3%	+7.5%	+10.1%	+10.6%	+2.3%	+5.3%	+4.5%	+7.2%	+8.7%
2021	+9.6%	+10.9%	+4.4%	+2.1%	-0.1%	+7.8%	+7.1%	+3.5%	+0.9%	-0.0%
2022	+1.8%	+1.1%	-0.1%	-2.8%	-0.1%	+3.8%	+0.5%	-0.2%	-1.8%	-1.2%
2023	+5.1%	+2.3%	-0.6%	-3.9%	-1.3%	+4.1%	-0.1%	-1.0%	-3.2%	-1.6%
2024 (week 29)	+0.6%	-0.7%	-1.8%	-4.6%	-3.1%	+0.8%	-1.0%	-2.2%	-4.3%	-3.0%

**Table 6: Cumulative annual standardised mortality improvement (cSMRI) for the New dataset, by age and sex**

Year	M 20-44	M 45-64	M 65-74	M 75-84	M 85+	F 20-44	F 45-64	F 65-74	F 75-84	F 85+
2014	-0.1%	+1.5%	+2.1%	+3.6%	+3.4%	-3.7%	+1.2%	+2.0%	+3.6%	+4.5%
2015	-0.2%	-0.9%	-0.1%	-3.0%	-5.4%	+3.1%	-0.9%	-2.0%	-4.4%	-7.8%
2016	-3.6%	+0.7%	+1.3%	+2.4%	+4.5%	-0.8%	-1.8%	+1.3%	+3.7%	+5.3%
2017	+4.3%	+0.6%	+0.7%	+0.4%	-1.0%	+2.6%	+3.6%	+2.1%	-0.4%	-2.2%
2018	-6.4%	-0.8%	-0.4%	+1.1%	-1.0%	-2.5%	-2.0%	-0.7%	+0.5%	-0.6%
2019	+4.9%	+2.1%	+3.3%	+3.4%	+4.3%	+1.2%	+2.7%	+3.2%	+4.3%	+5.7%
2020	-5.7%	-14.4%	-13.2%	-15.9%	-15.9%	-6.5%	-10.0%	-9.4%	-12.6%	-14.3%
2021	-8.1%	-2.3%	+2.9%	+7.2%	+9.7%	-5.4%	-1.7%	+0.9%	+5.9%	+8.0%
2022	+7.1%	+8.9%	+4.3%	+4.8%	-0.1%	+3.7%	+6.1%	+3.6%	+2.7%	+1.2%
2023	-3.2%	-1.2%	+0.5%	+1.1%	+1.2%	-0.3%	+0.6%	+0.8%	+1.5%	+0.3%
2024 (week 29)	+3.3%	+2.6%	+2.6%	+3.6%	+3.0%	+3.7%	+1.5%	+2.9%	+3.8%	+3.1%



## Data sources

The provisional weekly deaths are available from:

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

The population estimates are available from:

- <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/estimatesofthepopulationforenglandandwales>

## Notes on methods and data

Full details of the methods used for the mortality monitor 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).

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.

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## TAS compliance

This paper is intended to illustrate the impact of changes to mid-year population estimates on results from the CMI mortality monitor. 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, COVID-19, and influenza and pneumonia 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 the ONS 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.



- Population estimates for the latest years reflect our own estimates and are less certain than published ONS figures for earlier years.

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