

Technical notes

Age standardised rate of premature mortality in males in the UK – Westminster Parliamentary Constituencies

Suggested citations (if using the premature mortality data further):

Office for National Statistics (ONS), released 17/4/2024, Custom request (unpublished), Age standardised rates of premature male mortality registered in 2021.

National Records of Scotland, released 14/3/2024, Custom request (unpublished), Age standardised rates of premature male mortality registered in 2021.

Department of Health Northern Ireland, released 25/1/2024, Custom request (unpublished), Age standardised rates of premature male mortality registered in 2021

Data sources:

The data reported in the map is from the year 2021, the most recent year of availability for the United Kingdom. It was accessed via three statistical agencies:

- for England and Wales, the Office of National Statistics (ONS)
 - Data received 17/4/2024
- for Scotland, the National Records of Scotland
 - Data received 14/3/2024
- and for Northern Ireland, Department of Health Northern Ireland
 - Data received 25/1/2024

All data was compiled and released in response to custom requests. Although approved for public release and use as it was requested it is not publicly available from any of the above sources (e.g. on official websites).

Premature mortality data is not currently available for the Channel Islands and the Isle of Man, as these locations did not fall under the remit of the agencies above.

Definition of premature mortality, rates and age-standardisation

Premature mortality: The data reported in the interactive map is based on a definition of 'premature mortality' being death before the age of 75.

While there is no universal standard for premature mortality the characterisation used for this data is applied in a range of jurisdictions. In addition, it is a relatively clear bright-line test, which doesn't include disease definitions, making it easy to implement across a range of jurisdictions.

All data was provided as age-standardised rates by the relevant statistical agency; see below for further information on 'rates' and 'age-standardisation'.

Rates: All premature mortality data is presented as a 'per 100,000' value. Based on the observed number of deaths in the constituency during 2021, this value represents the number of men who would have died out of a group of 100,000. The reason for using this rather than the actual number of deaths is that data presented as rates (i.e. 'per 100,000') accounts for differences in the size of a population.

For example, if location A is twice the size of location B, but the population is otherwise similar, it would be expected that there would be approximately twice as many deaths in location A. However, without knowing the population it might appear that the health of men is worse in location A. More concerning, if the number of deaths were the same in locations A and B it might not be immediately obvious that men are dying much more frequently in location B.

Using rates, and accounting for the different sizes of the population, remove this issue and allows for a more direct comparison of locations.

Age standardisation: All the rates are age standardised to account for differences in the demographics of different locations. Age standardisation recalculates the values to represent the rate if the age structure of all areas were similar. Since mortality rates vary significantly with age, age standardisation enables fairer comparisons by adjusting for variations in age structures, allowing for more accurate assessments of the true differences in mortality patterns.

For example, a constituency with a very young population (for example many urban areas) will have a comparatively low number of deaths, however, this is more related to the age of the population than the underlying health (and health services) of the population. If this was compared to an area with a moderate-to-old population, it would appear 'healthier' and can disguise underlying issues.

By standardising for age, researchers can better understand the underlying patterns in mortality trends and make more reliable comparisons across locations with very different age structures.

For the current data, the populations have been standardised to the 2013 European Standard Population (ESP). The use of a common standard population for all data (i.e. across all constituencies and statistical agencies) maximises the comparability of reported values.

It should be noted that because the data is age-standardised it may not reflect the true rates within the country. The primary purpose of the current data is to observe trends and compare across locations, hence the use of age-standardised data. For other uses,

for example provisioning of health services where the number of events (impacted by the underlying age structure in the area) is a critical feature, non-age standardised count data would be a more appropriate metric.

Calculated percentage differences: Where a percentage difference is reported in a constituency profile this comparison is based on the difference between the mean of the values of the comparable constituencies.

For example, Tooting is reported to have a premature mortality age-standardised rate (ASR) “17.5% lower than the United Kingdom average” and “16% lower than the London average”. In this case, the Tooting constituency ASR is compared to the average premature mortality ASR in UK and London constituencies, respectively.

As there is some variation in the population of constituencies, the average at the level of the constituency will be similar, but not identical to, an average value calculated on individual-level data for the given geographic grouping. Individual-level data is not currently available; however, additional geographic summary data based on individual-level data may be requested in the future, and this will be updated if and when this data becomes available.

Constituencies

Data is based on Westminster parliamentary constituencies as at June 2024, at this stage data is not available for the devolved parliaments the boundaries represent.

Location-based designations

To allow for logical grouping of constituencies, additional variables describing the location and demographics were created. The assignment of location-based designations, which included the country of the constituency, within England, the region of the constituency, the rurality of the constituency and the socio-economic status of the constituency, were based on data provided by the ONS. This data is all found in the National Statistics Postcode Lookup data and can be accessed via the ONS website (<https://geoportal.statistics.gov.uk/datasets/ons::national-statistics-postcode-lookup-2021-census-august-2023>) and is based on the 2021 census.

For the country and region, a single value was assigned for each electorate. For SES and rurality, the values were assigned at the level of the best fit post code. Each postcode

was assigned to an electorate. As such these values were aggregated to the constituency level based on lookup tables (also provided by the ONS).

Rural, mixed and urban

For rurality the 'ru11ind' from the National Statistics Postcode Lookup data was used to indicate the rurality of postcode for England, Wales and Scotland. This data was not available for Northern Ireland, so rurality was not assigned for any NI constituencies and they were marked with "Unclassified". The ru11ind was a multi-level categorical variable. To convert this to a binary 'Urban' or 'Rural' the classifications in the National Statistics Postcode Lookup User National Statistics Postcode Lookup User Guide were used (see point 31 in that document).

As many postcodes were included in any given constituency to derive a single 'rurality' value for the constituency, this data had to be aggregated. To achieve this the % of the postcode that were allocated to urban was then calculated for the constituency. As the classification at the postcode level was binary, i.e. urban or rural, to avoid situations where a constituency that was essentially an even mixture (for example, 51% urban and 49% rural) was classified solely into one of the binary classifications, a 'mixed' category was introduced. This was done to capture any impact seen in the data of with constituencies blended rurality.

Socio-economic status

Indices of multiple deprivation (IMD) were used to assess the relative socio-economic status of a location. Similar to the rurality indicator, different measurement tools were used in England, Wales, Scotland and Northern Ireland.

- Index of Multiple Deprivation
 - o <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>
- Welsh Index of Multiple Deprivation
 - o <https://www.gov.wales/welsh-index-multiple-deprivation?lang=en>
- Scottish Index of Multiple Deprivation 2020
 - o <https://www.gov.scot/collections/scottish-index-of-multiple-deprivation-2020/>
- Northern Ireland Multiple Deprivation Measure 2017 (NIMDM2017)
 - o <https://www.nisra.gov.uk/statistics/deprivation/northern-ireland-multiple-deprivation-measure-2017-nimdm2017#toc-1>

This deprivation data was available at a small area level (lower-layer super output areas) which could then be aggregated up to the constituency level.

The output of the tools used was a rank with '1' indicating the most deprived location. As the tools used were country specific, the ranking is within country. The least deprived locations rank was based on the number of small areas in the country. This ranged from 32,844 in England to 890 in Northern Ireland. To account for these differences in scale, the IMD values were rescaled as a value between 0 and 1 by dividing the IMD value for the current location by the maximum value for the country assigned to the location. In essence, the scores for England were divided by 32,844 to account for the large number of locations ranked, while NI data was divided by 890. This brought the value into a common scale.

When the values had been rescaled, the mean value for the small areas associated with each constituency was then calculated. The mean rank value for a given constituency was then placed into quartiles to represent decreasing deprivation with increasing quartile, i.e. quartile 1 represents the most deprived 20% of the population, quartile 5 represents the least deprived 20%.

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