

Statistical bulletin

Inequalities in mortality involving common physical health conditions, England: 21 March 2021 to 31 January 2023

Rates of mortality involving cancers, cardiovascular diseases, chronic kidney disease, dementia, diabetes, and respiratory diseases, by Census 2021 variables. Experimental Statistics.

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Table of contents

1. [Main points](#)
2. [Mortality involving physical health conditions, by sociodemographic characteristics and geography](#)
3. [Inequalities in mortality involving common physical health conditions, England data](#)
4. [Measuring the data](#)
5. [Strengths and limitations](#)
6. [Related links](#)
7. [Cite this statistical bulletin](#)

1 . Main points

- Age-standardised mortality rates (ASMRs) were higher among males than females for all-cause mortality and most individual conditions; however, females had higher rates of mortality involving asthma and dementia.
- ASMRs for all-cause mortality and most individual conditions were generally highest in the most deprived areas and among people who were long-term unemployed or had never worked; the largest differences by deprivation were observed for mortality involving chronic obstructive pulmonary disease, followed by lung cancer and asthma.
- The ASMR for all-cause mortality was higher for the White British population than for other ethnic groups; the White British group also had higher mortality rates than most ethnic minority groups for several types of cancers, chronic obstructive pulmonary disease, and dementia.
- Out of all ethnic groups, the Bangladeshi and Pakistani groups had the highest ASMRs for many individual conditions including diabetes, chronic kidney disease, ischaemic heart disease, hypertension, stroke, myocardial infarction, asthma, pneumonia, and coronavirus (COVID-19); the Black Caribbean group had the highest ASMRs for blood cancer and prostate cancer.
- There were differences in some of the patterns by ethnicity between males and females; for example, the Bangladeshi group had among the highest ASMRs for chronic obstructive pulmonary disease and lung cancer among males, whereas this was not true for females.
- ASMRs for all-cause mortality and most, though not all, individual conditions were generally higher in the north of England and the Midlands than in the south of England and London.

Warning: These are [Experimental Statistics](#), which are statistics that are in the testing phase and not yet fully developed. We advise caution when using the data.

2 . Mortality involving physical health conditions, by sociodemographic characteristics and geography

Reducing health inequalities is an important priority for the UK government and the NHS, as set out in the Department of Health and Social Care's [policy paper for the Major Conditions Strategy](#). In this release, we used Census 2021 data linked to death registrations to calculate age-standardised mortality rates (ASMRs) by sociodemographic characteristics and geography for any cause, as well as for the following health conditions:

- cancers
- cardiovascular diseases
- chronic kidney disease
- dementia (including Alzheimer's disease)
- diabetes
- respiratory diseases

Musculoskeletal disorders and mental ill health are also included as part of the Major Conditions Strategy. However, these conditions were not included in this analysis. While mortality is only a part of the population health burden for many of the conditions reported in this release, this is particularly true for musculoskeletal disorders and mental health conditions.

The mortality rates in this release are based on deaths where a given health condition was mentioned anywhere on the death certificate, either as the underlying cause of death or a contributing factor. In contrast, our previous [Leading causes of death article](#) and our [Mortality from leading causes of death by ethnic group article](#) were based only on the underlying cause of death. Therefore, the rates in this release are likely to be higher than those reported in previous publications from the Office for National Statistics and other sources that focus on underlying cause of death.

The mortality rates in this release represent the rate of death involving each health condition, or any cause, in the general population. Therefore, variation in the ASMR across groups reflects a combination of differences in the prevalence of the health condition and differences in risk of death among people with that health condition.

Figure 1 allows users to select the health condition of interest from the drop-down menu to display charts showing mortality rates involving that condition by the following characteristics:

- age group
- sex
- Index of Multiple Deprivation (IMD) decile group
- National Statistics Socio-Economic Classification (NS-SEC)
- ethnicity
- region
- Upper Tier Local Authority

All the underlying data are available in the [accompanying dataset](#), including additional cross-tabulations of ASMRs by ethnicity and IMD, and ethnicity and NS-SEC. The estimates for ethnicity by deprivation and NS-SEC should be treated with caution because of relatively small sample sizes and therefore a relatively high degree of statistical uncertainty.

Figure 1: There are sociodemographic and geographic inequalities in rates of mortality from all causes and from mortality involving many physical health conditions

Age-standardised mortality rates for deaths from all causes and for individual conditions, by sociodemographic characteristics and geography

Notes:

1. Office for National Statistics (ONS) figures based on deaths occurring between 21 March 2021 and 31 January 2023, and registered by 17 April 2023, among usual residents of England who responded to the Census 2021 and could be linked to the 2019 Personal Demographics Service.
2. Rates by National Statistics Socio-Economic Classification (NS-SEC) only include people aged 16 years and over who were not full-time students and could be assigned to an NS-SEC category. For people who were not working (for example, retired people), NS-SEC was based on their most recent main job.
3. Rates are based on deaths where a given health condition was mentioned anywhere on the death certificate, either as the underlying cause of death or a contributing factor.
4. Rates have been suppressed where the number of deaths occurring in a group was fewer than 10.

3 . Inequalities in mortality involving common physical health conditions, England data

[Inequalities in mortality involving common physical conditions, England](#)

Dataset | Released 31 August 2023

Rates of mortality involving cancers, cardiovascular diseases, chronic kidney disease, dementia, diabetes, and respiratory diseases, by Census 2021 variables. Experimental Statistics.

4 . Measuring the data

Data sources

This analysis used data from the following linked data sources:

- [Census 2021](#) (to derive sociodemographic and geographical characteristics), from the Office for National Statistics (ONS)
- Death registrations, from the ONS

The study population comprised usual residents of England who responded to Census 2021 and could be linked to the 2019 Personal Demographics Service; the linked dataset covered 94.6% of the usual residents of England who were enumerated at Census 2021.

Outcomes

Deaths involving each of the health conditions were defined as deaths occurring between 21 March 2021 (Census Day in 2021) and 31 January 2023 where any of the relevant [International Classification of Diseases, 10th Revision \(ICD-10\)](#) codes for that condition were mentioned anywhere on the death certificate (including Part I and Part II). This includes deaths where a given health condition was recorded as the underlying cause of death and deaths where the health condition contributed to the death but was not part of the causal sequence leading directly to death. As a result, individual deaths will be included in the rates for more than one condition if the death certificate mentioned an ICD-10 code for multiple conditions. This definition was used to be as inclusive as possible, because some of the conditions of interest are unlikely to be recorded as the underlying cause of death despite contributing to the death. In addition, the number of deaths for all-cause mortality does not equal the sum of the deaths from the individual causes because the rates for all-cause mortality include all deaths, not just those involving the individual conditions reported in this release.

The ICD-10 code lists used for this analysis are available in the [accompanying dataset](#). The ICD-10 code lists for some conditions differ from previous ONS publications on cause-specific mortality. Therefore, the rates in this release are not comparable with previous publications.

Statistical analyses

Age-standardised mortality rates (ASMRs) are used to allow comparisons between populations that contain different proportions of people of different ages. ASMRs for each condition were calculated as the weighted sum of age-specific rates in five-year age bands. The age-specific weights represent the overall age distribution in the observed study population. ASMRs are expressed per 100,000 person-years and can be interpreted as the number of deaths that would be expected to occur if 100,000 people were each followed up for one year.

Collaboration

This analysis was produced in collaboration with the Department of Health and Social Care and the Office for Health Improvement and Disparities, particularly Alistair Rose and Nuria Casadevall, with input from clinical experts from across the NHS.

5 . Strengths and limitations

The main strength of this analysis is the use of a population-level dataset, covering all usual residents of England who were enumerated at Census 2021 who could be linked to an NHS number. The Census provides information not available on death certificates, such as socioeconomic classification and self-reported ethnicity, which enables granular estimates of mortality to be calculated by these characteristics. Census 2021 covered around 97% of the population, and therefore is the most representative data source available to produce statistics about the population living in England.

However, not all people living in England in March 2021 were enumerated at Census 2021 (for example, because of non-response), and of those who were, not all could be linked to an NHS number via the Personal Demographics Service (PDS) and onward to death registrations data. The proportion of people in the Census 2021 population who are in our linked study cohort is lowest among males, people aged 20 to 29 years, and people from ethnic minority groups. For more details, see our [Census 2021 to Personal Demographics Service linkage report](#).

6 . Related links

[Leading causes of death, UK: 2001 to 2018](#)

Article | Released 27 March 2020

Registered leading causes of death by age, sex and country.

[Mortality from leading causes of death by ethnic group, England and Wales: 2012 to 2019](#)

Article | Released 19 August 2021

Experimental analysis of ethnic differences in mortality and cause-specific mortality in England and Wales based on 2011 Census and death registrations.

[Avoidable mortality in Great Britain: 2020](#)

Bulletin | Released 7 March 2022

Deaths from causes considered avoidable, treatable or preventable given timely and effective healthcare or public health interventions in those aged under 75 years.

[Health state life expectancies by national deprivation deciles, England: 2018 to 2020](#)

Bulletin | Released 25 April 2022

Life expectancy and years expected to live in “Good” health and “Disability-free” using national indices of deprivation to measure socioeconomic inequalities in England.

[Trend in life expectancy by National Socioeconomic Classification, England and Wales: 1982 to 1986 and 2012 to 2016](#)

Bulletin | Released 23 August 2022

Estimates of life expectancy by personal socioeconomic position using the National Statistics Socioeconomic Classification based on occupation.

[Estimating the number of people with cardiovascular or respiratory conditions living in poverty, England: 2021](#)

Bulletin | Released 16 December 2022

An experimental analysis estimating the number of people with cardiovascular and respiratory conditions living in poverty in private households in England.

7 . Cite this statistical bulletin

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