Statistical bulletin

Health inequalities by built-up area and ethnic group, England: March 2021 to May 2023

Rates of all-cause mortality and descriptive statistics, by built-up area, ethnic group and Census 2021 variables.

Contact:
Health Research Group
health.data@ons.gov.uk
+44 1329 444110

Release date:
16 October 2024

Next release:
To be announced

Table of contents

1 . Main points

- Age-standardised mortality rates (ASMRs) for all-cause mortality in England between March 2021 and May 2023 were lower in London for each decile of the Index of Multiple Deprivation (IMD) compared with major, large and medium, and small and minor built-up areas (BUAs); ASMRs were broadly similar for each decile of the IMD in major, large and medium, and small and minor BUAs.

- The pattern of ASMRs by IMD decile group was consistent across all BUA categories, with ASMRs being higher in the most-deprived IMD decile groups and lower among the least-deprived IMD decile groups; the BUA category with the largest difference in ASMR between the most- and least-deprived IMD decile group was large and medium BUAs.

- Patterns in ASMRs by ethnic group differed across BUA categories; in small and minor BUAs, the Bangladeshi ethnic group had the highest ASMR and the Chinese ethnic group had the lowest, while in major BUAs, the White British ethnic group had the highest ASMR and the Black African ethnic group had the lowest.

- The major BUA generally reported the highest ASMRs for all ethnic groups, except for the Pakistani, Bangladeshi, Black African, Black Other, Arab and Any Other Ethnic Group ethnic groups, whose highest ASMRs were predominantly in the small and minor, and large and medium BUAs.

- Across all BUA categories, the White British ethnic group generally had the highest ASMRs (major BUAs and London) or was among the highest (small and minor BUAs and large and medium BUAs).

- The small and minor BUA had the lowest age-standardised rate for having bad and very bad self-reported health, while London had the lowest age-standardised rate among disabled people; the major BUA had the highest rates for both of these.

2 . Data on health inequalities by built-up area and ethnic group

[Differences in Census 2021 characteristics and mortality rates, by built-up area and ethnic group](#)
Dataset | Released 16 October 2024
Descriptive data assessing Census 2021 characteristics and data examining mortality rates, by built-up area and ethnic group.

3 . Data sources and quality

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); and death registrations, from the ONS.

People enumerated in Census 2021 were securely linked to the NHS Personal Demographics Service (PDS) to obtain their NHS number (with 95.75% of persons in the census probabilistically and deterministically matched to persons in the PDS). For more details, see our [Census 2021 to Personal Demographics Service linkage report](#).

The linked study population for this analysis included 48.6 million people enumerated in England for whom we could obtain an NHS number and were able to link to their mortality data. We excluded individuals who did not have a linked NHS number, did not have sufficient data with which to derive their built-up area (BUA) category, were resident in Wales at the time of census, did not answer the ethnicity question within Census 2021, and were not usual residents in England. The linked dataset covered 86.6% of the usual residents of England who were enumerated at Census 2021.

Outcomes

The primary outcome was the rate of all-cause mortality at any time during the study follow-up period, 21 March 2021 (Census Day) to 31 May 2023. All-cause mortality (coded as a binary variable) was defined as deaths from any cause using the International Classification of Diseases, 10th Revision (ICD-10) codes.

The secondary outcomes were rates of:

- self-reported general health status, from Census 2021

- disability status, from Census 2021

- unpaid carer status, from Census 2021

Statistical analyses

Descriptive values were reported as median and interquartile range for continuous variables and number and percentage for categorical ones. All categorical values were rounded to the nearest five and counts less than 10 were suppressed for disclosure control purposes.

Age-standardised mortality rates (ASMRs) were estimated to allow comparisons between populations that contain different proportions of people of different ages. ASMRs for each ethnic group, or Index of Multiple Deprivation (IMD) decile group, and BUA category for all-cause mortality 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.

Follow-up time was calculated as the time from 21 March 2021 to the date of death or end of study (31 May 2023), whichever was earlier.

Age-standardised rates were estimated for self-reported health status, disability status and unpaid carer status by BUA category. Similar to the previous, estimates 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. These age-standardised rates are expressed per 100,000 people and can be interpreted as the number of cases that would be expected to occur if 100,000 people were assessed at a point in time.

All estimates were accompanied by 95% confidence intervals, which can be found in the accompanying dataset.

Collaboration

This analysis was produced in collaboration with the Office of the Chief Medical Officer.

Quality

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 and had sufficient data with which to derive the BUA category. The census provides information not available on death certificates, such as 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, or had sufficient data with which to derive the BUA category. The rate of linkage of people in the Census 2021 population to the PDS 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.

4 . Related links

[Towns and cities, characteristics of built-up areas, England and Wales: Census 2021](#)
Article | Released 2 August 2023
Characteristics of built-up areas (BUAs) in England (excluding London) and Wales. Characteristics include age and sex, country of birth, housing, qualifications and employment.

[Inequalities in mortality involving common physical health conditions, England: 21 March 2021 to 31 January 2023](#)
Bulletin | 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.

[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.

[Ethnic differences in life expectancy and mortality from selected causes in England and Wales: 2011 to 2014](#)
Article | Released 26 July 2021
Experimental analysis of ethnic differences in life expectancy and cause-specific mortality in England and Wales based on 2011 Census and death registrations.

5 . Cite this statistical bulletin

Office for National Statistics (ONS), released 10 October 2024, ONS website, statistical bulletin, [Health inequalities by built-up area and ethnic group, England: March 2021 to May 2023](#)