

Population estimates for England and Wales quality and methods guide

What the population estimates statistics cover, how we produce them, and their quality and comparability. Includes definitions and latest, past and upcoming changes.

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1 . Overview

This guide provides quality and methods information for our mid-year population estimates.

We produce mid-year population estimates (MYEs), and the components of population change by single year of age and sex for countries, regions and local authorities in England and Wales. We produce these estimates using the cohort component method.

The methods and data sources used to produce the MYEs are regularly reviewed and enhanced where appropriate. This guide reflects current methods and provides a good level of detail for a broad range of users. Links to further information are provided for those who require more detail. We welcome your feedback on our first published version of this guide to help inform future updates and ensure we best meet user needs.

These are [accredited official statistics](#).

2 . Latest changes to quality and methods

We updated this guide on 29 July 2026. Important changes to quality and methods include:

- combining our previous Quality and methodology information with our Methodology guide into a single article
- improving our description of the quality of population estimates

On 11 May 2026, the Office for Statistics Regulation (OSR) published a [compliance check of Mid-year population estimates for England and Wales](#). The OSR identified four requirements which the Office for National Statistics (ONS) must meet in order for the statistics to retain accredited official statistics status, by the time of their publication in summer 2026. In summary, the ONS is required to:

- clearly and transparently explain the strengths and limitations of current mid-year population estimate (MYE) methods, and what it plans to do to address weaknesses
- clearly explain coronavirus (COVID-19) pandemic impacts on the MYEs, justify claims of after 2021 robustness, and actively engage users to ensure that its current guidance is helpful at highlighting any pandemic-related effects on the data
- strengthen how it communicates uncertainty and limitations, particularly for non-technical users, and improve the navigation and accessibility of quality and methodology information
- update and actively promote clearer guidance on which population estimates should be used for different purposes

For more information on latest, past and upcoming changes, go to [Changes and their effects on comparability over time](#).

3 . What the statistics cover

Geographic coverage

Mid-year population estimates (MYEs) and associated components of population change are produced for countries, regions and local authorities in England and Wales by single year of age and sex. MYEs are summed to give higher-level estimates for combined groups, such as total population within a local authority, region, country or age group.

Where possible, we look to use the latest geography boundaries available at the time of production. More information is available in How we are developing the statistics, at the end of the [Quality of the statistics](#) section.

We compile and publish population estimates for the UK, using official mid-year estimates:

- for England and Wales, produced by us at the Office for National Statistics (ONS)
- for Scotland, produced by the National Records of Scotland (NRS)
- for Northern Ireland, produced by the Northern Ireland Statistics and Research Agency (NISRA)

The cohort component method used to produce MYEs cannot be used to produce population estimates below local authority level or for other geographies, for example, national parks. This is because we do not have all the necessary data sources available for these geographies.

Instead, we use a ratio change method to generate population estimates for Super Output Areas from local authority estimates. This method is explained in more detail in Section 6 of our [Population estimates by output areas, electoral, health and other geographies quality and methodology information](#).

We are investigating options for improving methods for small area population estimates, as explained in our [Small Area Population Estimates in the transformed population estimation system: methods development article](#). One potential approach is to make use of geospatial methods and data sources. Our working paper, [Geospatial methods for small area population estimates: proof of concept](#), was reviewed by the Methodological Assurance Review Panel (MARP) in August 2024.

Time period

All estimates of the population relate to mid-year (30 June). Population flow estimates cover the 12-month period to mid-year.

Usual resident population

Our estimates are consistent with the UN definition of usual residence outlined in paragraphs 2.60 to 2.62 on page 82 in the [Principles and Recommendations for Population and Housing Censuses \(PDF, 3.76MB\)](#). This definition includes people who reside, or intend to reside, in the country for at least 12 months, whatever their nationality. Visitors and short-term migrants are excluded.

For some groups, the concept of usual residence is more difficult to define. Specific rules are used for these groups:

- higher education students and schoolchildren living away from home are considered usually resident at their term-time address
- members of the armed forces are considered usually resident at the address where they spend most of their time
- prisoners are usually resident in the prison estate if they have a sentence of 12 months or more
- population estimates include UK armed forces (UKAF) who are overseas on operations and temporary assignments if their last permanent station was in England and Wales; UKAF on overseas postings and any accompanying partners and children are not included

The usually resident population does not always coincide with the number of people found in an area at a particular point in time. Temporary residents who live in an area for less than 12 months, for example, draw on the same local services and amenities as usual residents. We are considering population estimates using alternative definitions and user requirements for these, starting with temporary international migrants. Early estimates for these were published in our [Population and migration estimates – exploring alternative definitions: May 2023 article](#).

Guidance on using different types of population estimates

We produce a range of population estimates and projections to meet different user needs. A comprehensive list of these population statistics sources is provided in our [Population Statistics Sources Guide](#).

4 . Where the data come from

We use a range of data sources to produce our mid-year population estimates (MYEs).

The starting point for the MYEs is the previous census; this provides the base population that we update each year for changes from births, deaths and migration. The majority of these are administrative data that have already been provided to government, for example, when people access public services, rather than data collected specifically for creating population estimates. We have been using administrative data for many years to produce population estimates, for example, by including data from birth, death and NHS patient registers.

Information about the data sources used is provided in our [Quality overview of data sources used in mid-2025 population estimates for England and Wales](#), including:

- why they have been selected
- how the data are collected
- their quality
- their bias
- their strengths
- their limitations

All input data are quality assured using a wide range of standard checks and expert assessment. More information on the quality assurance conducted throughout all stages of production and analysis is detailed in How we quality assure the data and statistics, in the [Quality of the statistics](#) section.

5 . How we produce the statistics

Overview

The mid-year population estimates (MYEs) are produced using the cohort component method.

In summary, the MYEs are produced in two steps. The first involves producing components that estimate population change (births, deaths, international migration and internal migration) and the second involves compiling estimates by adding population change in the reference period to the previous year's population estimates.

Creating components of population change

A variety of data sources are used to create initial estimates of the usual resident population as close to each mid-year point as possible and changes in the population over time between mid-year points.

Changes in the size of the population result from population flows:

- births
- deaths
- internal migration including cross-border flows, where people move between local authorities in England and Wales, or between England and Wales combined, and other countries within the UK
- international migration, where people move between the UK and the rest of the world

Births

Birth counts are obtained from the Civil Registration System of England and Wales. The MYE requires live births for each year ending 30 June, split by:

- mother's local authority of usual residence
- sex of the child

Births registered to mothers who are usually resident outside of England and Wales are included. Births to mothers who are usually resident in England and Wales that take place outside England and Wales are not generally included.

We assume that the number of births for the two groups are similar in number and, on average, balance each other out. We impute the local authorities of residence for these births using the distribution of births within England and Wales to usually resident mothers each year.

Our [Birth statistics in England and Wales quality and methodology information \(QMI\)](#) provides more information on the quality, strength and limitations of birth registration data.

Deaths

Death counts are obtained from the Civil Registration System of England and Wales. The MYE requires counts of deaths occurring in each year ending 30 June, split by:

- age, in years
- sex
- local authority of usual residence

Deaths occurring in England and Wales, of people who usually reside elsewhere are included. Deaths of usual residents, which occur outside England and Wales, are usually registered in the country where the death occurs, and so are not generally included.

We assume that the number of deaths for the two groups are similar in number and, on average, balance each other out. Local authorities of residence for these deaths are imputed using the distribution of deaths within England and Wales each year.

We make a small adjustment for anticipated late registrations to allow for deaths that were not yet registered at the time the data were extracted. The number of late registrations from two years ago by local authority, age and sex is used as a proxy for late registrations in the current year, on the assumption that the number of late registrations does not significantly vary year-to-year. Registration delays are explained in more detail in our [Impact of registration delays on mortality statistics in England and Wales datasets](#).

Our [Mortality statistics in England and Wales quality and methodology information \(QMI\)](#) provides more information on the quality, strength and limitations of death registration data.

Internal migration, including cross-border flows

We create an origin-destination matrix of internal migration including cross-border flows estimated to have occurred in each year ending 30 June, split by:

- age, in years, at mid-year
- sex
- local authority

The production of internal migration flows involves two separate processes. One involves creating internal migration flows between England and Wales and the rest of the UK, and the second creates internal migration flows within England and Wales. Internal migration flows within England and Wales are produced using:

- NHS Personal Demographics Service (PDS) data to identify transitions
- Higher Education Statistics Agency (HESA) data to better capture student moves to university
- Higher Education Leavers Methodology (HELM) to better capture people leaving higher education

Firstly, we estimate transitions, where a person changes their local authority of residence between one mid-year reference point and the next as an internal migrant. To produce the transitions data we:

- link together PDS and HESA data for the reference year
- link the PDS and HESA data for the reference year with our equivalent data for the previous year
- apply HELM
- Identify records and individuals whose local authority of residence in the reference year is different to the previous year

HELM involves the following steps.

Firstly, identifying where PDS records have not been updated for people who have left higher education.

Secondly, for records that previously linked to HESA but no longer do, the area of residence is imputed to better reflect the destinations of higher education leavers. Destination distributions are estimated using leavers from three years earlier who took more than a year to update their health registration. Three years is considered the optimal balance between capturing recent migration patterns and maximising the availability of updated registrations. We randomly assign each HE leaver with a destination based on the distribution for their study location.

As the method is informed by observed patterns of movement by past cohorts of higher education leavers, it is able to account for changes in behaviour over time. For each local authority in England and Wales, we generate two higher education leavers' distributions, one for males and one for females. The application of HELM does not account for any differences in patterns of movement by higher education leavers of different ages. The method recognises that many higher education leavers remain in their local authority of study.

Figure 1 shows the proportion of higher education leavers from two HELM distributions (as used in 2024 and 2025 internal migration) who were retained in their study local authority. The highest retention rates are found in areas without large higher education institutions and where we might expect students to commute to study. The lowest retention rates are found in more remote areas, which are home to higher education institutions.

Figure 1: Retention of higher education leavers in their local authority of residence the previous year

Percentage of higher education leavers, England and Wales, 2022 to 2023

Notes

1. Uses 2018 local authorities.
2. "Graduate remainers" includes higher education leavers who leave without graduating.

Scaling transitions to moves

The initial estimates of transitions are scaled up to better account for all the moves made during the year, including by those entering and exiting the population during the year who would otherwise be missed from internal migration flows. Scaling of transitions to moves is carried out by:

- deriving counts of transitions based on PDS stocks for pairs of Family Health Service Authority (FHSA) areas (aggregates of local authorities)
- deriving counts of moves based on PDS weekly updates for pairs of FHSA areas (aggregates of local authorities)
- creating scaling factors by dividing the number of moves by the number of transitions for each pair of FHSA areas
- applying the scaling factors to the initial estimate of transitions to provide an estimate of moves

In summary, estimates for 2017 onwards are based on PDS stock files, HESA data and PDS weekly updates, unless otherwise stated. Scaling factors derived from PDS stocks and PDS updates are applied to the transitions to give moves.

Before 2016, estimates are based on the NHS Central Register (NHSCR) and NHS Patient Register (PR). The NHSCR was discontinued in February 2016, consequently, for mid-2016, estimates were derived by combining the 2016 PR and 2015 NHSCR. Linear regression was applied to the scaling factors for 2012 to 2016 to ensure the scaling factors were consistent across the decade.

The impact of different stages of the internal migration method is shown in Figure 2. This shows the within England and Wales migration flows by single year of age and sex based on:

- PDS transitions only
- additional transitions including HESA and HELM, and our initial estimate for moves by those aged under 1 year
- additional moves added through the scaling-up of transitions data.

Figure 2 shows that using PDS alone would miss a significant amount of moves for age groups with large flows to and from study compared with transitions incorporating HESA and HELM. The number of moves in our final estimates are around 33% higher than our estimate of transitions.

Figure 2: Number of within England and Wales internal migration moves

Persons, mid-2025

Notes

1. As part of processing, local authority-level single year of age flows were rounded to the nearest 3.
2. Additional transitions include moves to and from study and moves by those aged under 1 year.
3. Additional moves include moves added by scaling.

Cross-border flows

Cross-border internal migration estimates are produced in collaboration with National Records of Scotland (NRS) and the Northern Ireland Statistics and Research Agency (NISRA). The production of cross-border flows involves sharing data between the three organisations. Additionally, the ONS, NRS, NISRA and Welsh Government meet regularly to discuss issues and progress, and to formally agree cross-border flows.

For England and Wales, we initially produce cross-border flows by identifying records in the PDS that are flagged as either having:

- a previous address in Scotland or Northern Ireland
- a move to Scotland or Northern Ireland

For flows to England and Wales, the PDS provides the total number of moves and the local authority, age and sex composition. For flows to the rest of the UK, we constrain our PDS data to estimates of flows to Scotland and Northern Ireland provided by NRS and NISRA.

Planned improvements to internal migration flows

As part of our plans to continuously improve the mid-year population estimates, we are investigating improvements to:

- the linkage between PDS and HESA data
- our approach for accounting for the moves made by those leaving higher education
- our approach for scaling transitions to moves

Special populations adjustments

Movements of serving members of the armed forces, their partners and children, and prisoners are not typically captured in the data sources used to estimate internal migration.

Armed forces and their partners and children

Population estimates include:

- UK armed forces (UKAF) and their partners and children when they are usually resident in England and Wales
- UKAF and their partners and children who are overseas on operations and temporary assignments if their last permanent station was in England and Wales
- foreign armed forces and their partners and children when they are usually resident in England and Wales

UKAF on overseas postings and any accompanying partners and children are not included.

Aggregated UKAF data from the Ministry of Defence (MoD) provides counts of military personnel by:

- age
- sex
- local authority of their military base

Census data are used to adjust the local authority of base to the local authority in which they are resident.

We estimate changes to the size and location of the UKAF population by comparing data for the current year with the previous year. This provides estimates of movers, joiners and leavers during the year. Those joining and leaving the UKAF are distributed to or from the civilian population using census data on the distribution of veterans from Census 2021.

The number of partners and children accompanying UKAF overseas is estimated using the ratio of partners and children per UKAF member from British Forces Germany (BFG) data on dependants accompanying UKAF stationed in Germany. Age and sex distributions from the BFG data are used to inform the age and sex profile of UKAF dependants. Local authority of residence is imputed for each net flow using a distribution derived from census for members of UKAF living with a partner.

All foreign armed forces personnel and their partners and children usually resident in England and Wales are exempt from immigration control. We receive data on all United States (US) military personnel and their partners and children based in England and Wales by:

- sex
- age
- military base

Before 2023, we only received data on US Air Force personnel. We supplemented this with data on the total number of US military personnel stationed in the UK. Foreign armed forces not from the US, who meet the usual residence definition, are considered very small in number and no data are available for these.

Estimated changes in the foreign armed forces population by local authority of residence, sex and age are derived by subtracting estimates for the previous year from the current year. Census data are used to adjust the local authority to reflect their usual residence, rather than their base. In instances where base-to-residence information is not available, personnel are assumed to live in the local authority of the base. This is a valid assumption, as most US armed forces live on base.

Children of foreign armed forces who are aged under 1 year and born in England and Wales are counted in the births data, so need to be removed from the special population adjustment. It is assumed that moves of these children, aged under 1 year, into and out of England and Wales, are broadly similar and cancel out.

Prisoners

For population estimates, a person is regarded as usually resident in a prison if they have been sentenced to serve 12 months or more. The Ministry of Justice (MoJ) provides data on the number of people resident in prisons in England and Wales by:

- prison name, which we use to assign local authority
- sex
- age

The estimated change in the prisoner population by local authority, sex and age is derived by subtracting estimates for the previous year from the current year.

Annual change in the size of the prisoner population needs to be reflected in the general population for England and Wales. Information on the previous, or next local authority of usual residence is not available for people joining or leaving the prison population. We use the local authority distribution of the total population in the previous year to proportionally distribute the inflows and outflows of prisoners to and from the general population of England and Wales.

Foreign national offenders who are deported following completion of their sentence, and ex-prisoners who move to Scotland or Northern Ireland, are not accounted for by this method. Because of difficulties in accurately estimating these moves, we assume that the flow of ex-prisoners returning to England and Wales from elsewhere balances out these flows.

International migration

We use the United Nations (UN) recommended definition of a long-term international migrant. This is a person who moves to a country other than that of their usual residence for a period of at least a year (12 months), so that the country of destination effectively becomes their new country of usual residence.

Our long-term international migration (LTIM) figures provide initial estimates for immigration and emigration occurring each year ending 30 June. Further information on the data sources and methods used for LTIM UK-level estimates is available in our [Provisional long-term international migration estimates: technical user guide](#). The methods and data sources used to produce EU+ and British nationals estimates were revised in November 2025 as outlined in our [Improving long-term international migration statistics, updating our methods and estimates: November 2025 article](#).

Our LTIM figures are disaggregated into age, sex and local authority from the LTIM estimates using several data sources:

- Home Office Borders and Immigration Data (HOBID)
- Asylum and resettled refugee data
- Registration and Population Interaction Database (RAPID) from the Department for Work and Pensions
- Higher Education Statistics Agency (HESA)
- NHS Personal Demographics Service (PDS)

For EU+ and non-EU+ nationals, UK-level estimates of immigration and emigration are now produced largely from HOBID, which includes age and sex.

For EU+ and non-EU+ nationals, estimates of immigration are disaggregated using:

- PDS for people aged under 18 years
- RAPID for people aged 18 years and over, with adjustments using HESA data for students not in employment

This adjustment is tailored for each local authority to account for areas that do not have a higher education institution.

Emigration estimates for EU+ and non-EU+ nationals are disaggregated in a similar way, except for people aged under 18 years. For this group, we create national child-to-adult emigration ratios by dividing national estimates of child emigrants by age and sex by the total number of adult emigrants by sex. We then multiply these ratios by the total number of adult emigrants by sex and local authority. This generates estimates of child emigration by age, sex and local authority.

The age and sex distribution from RAPID, HESA and PDS are then reconstrained to the age and sex totals from HOBID to ensure consistency between the two estimates. The final stage then takes the published UK-level LTIM estimates and constrains the distribution by age, sex and local authority to ensure consistency with the published UK-level LTIM estimates.

For British nationals, we use a similar process but in line with the revised UK-level LTIM estimates, the local authority estimates are largely produced using RAPID data alone. We use RAPID data by age, sex and local authority, along with adjustments by age and sex to account for known coverage limitations. We constrain the local level estimates to published UK-level LTIM estimates to ensure consistency.

We may update our approach as we continue to refine methods to provide the most accurate picture of international migration.

Further information on the data sources and methods used is available in our [Subnational long-term international migration methodology article](#).

Protecting confidentiality

Input data used to produce the MYEs are aggregate data by local authority, age and sex. In producing these estimates, statistical disclosure control is applied. Estimates of small counts should not be taken to refer to particular individuals.

For more information on how we protect sensitive data, see our [Data strategy web page](#).

6 . Quality of the statistics

Statistical designation

These statistics are labelled [accredited official statistics](#).

The Office for Statistics Regulation independently reviewed these accredited official statistics in March 2017. They comply with the standards of trustworthiness, quality and value in the [Code of Practice for Statistics](#) and should be labelled "accredited official statistics".

How we quality assure the data and statistics

We conduct rigorous quality assurance throughout the production and publication process. This involves using a range of standard checks and expert evaluation by specialists.

Input data

We explain how we quality assure and assess the accuracy and bias of data supplied in our [Quality overview of data sources used in mid-2025 mid-year population estimates for England and Wales methodology article](#).

We communicate with suppliers, both within the Office for National Statistics (ONS) and in external organisations, to improve and confirm our understanding of the data, their quality assurance checks and the reliability of the data.

We quality assure the data by comparing across different data sources to assess the plausibility of figures. Data suppliers are contacted when unusual patterns are found in data.

Processing

Processing follows established procedures, code and quality assurance checklists. Each component of the mid-year estimates is processed independently twice, and the results from each run are compared. Each component then undergoes a sign-off process in which analysts summarise patterns in the data, document any issues encountered during processing, and identify opportunities for future improvements.

Resultant estimates

We quality assure and analyse the resultant estimates:

- mid-year population estimates (MYEs) and the components of population change output are entered into a Power BI dashboard alongside administrative comparators; estimates for each local authority are individually checked against the Personal Demographics Service (PDS), Higher Education Statistics Agency (HESA), English and Welsh school censuses, and Council Tax data
- MYEs are compared against the latest version of the Statistical Population Dataset through another Power BI dashboard
- we use Microsoft Excel tools to understand what is affecting population change by age and sex for individual local authorities, and to look at the changing patterns of sex-ratios by single year of age
- we conduct revisions analysis to understand the impact of changes to components of population change on the overall population estimates

Published content

We check content thoroughly before publication to ensure:

- no errors or inaccuracies
- clarity and accessibility
- current and potential needs of users are met
- confidentiality requirements are met

We continue to conduct further analyses using additional data sources that become available, and feedback received from users.

Strengths and limitations

Strengths

- The estimates form the official population estimates of England and Wales, providing timely data between censuses.
- Information from administrative registers, such as the numbers of births and deaths, is considered to be very reliable.
- Estimates include data on moves between local authorities, and between countries of the UK (internal migration).
- Estimates are coherent with the latest available estimates of international migration based on administrative data.
- These estimates form the basis of coherent small-area population estimates, as published in our [Population estimates by output areas, electoral, health and other geographies, England and Wales statistical bulletins](#).
- Statistical measures of uncertainty and quality indicators accompany the estimates; we recommend users consult these when using these estimates.
- Population estimates form the basis of our official population projections.

Limitations

- The data are not counts, rather they are estimates created by combining many different data sources.
- The data sources used are the best available on a nationally consistent basis down to local authority level, but the estimates are subject to the coverage and error associated with these sources.
- Errors can accumulate over time, therefore population estimates for the years immediately following a census year tend to be more accurate than for those immediately before a census year.
- International migration methods and data sources are still being developed, and necessitate regular revisions to population estimates.
- The international migration subnational British estimates totals match the latest available UK-level total estimates, but the available age and sex breakdowns do not align.
- Population estimates for parts of England and Wales with higher levels of international and internal migration tend to have higher levels of statistical uncertainty. We recommend users consult the accompanying statistical measures of uncertainty and quality indicators when using these estimates.

European Statistical System Quality Dimensions

The ONS has developed Guidelines for measuring statistical quality based on the five [European Statistical System \(ESS\) Quality Dimensions \(PDF, 3.0MB\)](#). These are:

- relevance
- accuracy and reliability
- timeliness and punctuality
- comparability and coherence
- accessibility and clarity

We have integrated these considerations into the guide.

Accuracy and reliability

Population estimates are produced using a well-established demographic approach called the cohort component method. The data sources are the best available that are nationally consistent down to local authority level, but the estimates are subject to the coverage and error associated with these sources. Information from administrative registers such as the numbers of births and deaths are considered reliable.

Sampling error and statistical uncertainty

Mid-year population estimates are subject to statistical uncertainty related to the measurement of the census base they are rolled forward from, and from the measurement of each component of population change. Statistical uncertainty is lowest immediately following a census, and greatest immediately before the next census, as error accumulates over time.

Measuring uncertainty in the mid-year population estimates is complex because of the number of components included and because the cohort component approach relies on a range of estimation procedures and data sources, including census and administrative data. New methods for measuring uncertainty must be developed each time mid-year estimate methods change.

We provide measures of statistical uncertainty to accompany the estimates but these are still regarded as ongoing research and should be considered alongside other measures of quality such as the quality indicators and information about the past performance of mid-year estimates from the reconciliation and rebasing following Census 2021.

Our latest uncertainty measures show the increasing levels of uncertainty around population estimates as we move away from the previous census, reflecting the decreasing influence of the census base and the increasing influence of measures of migration on the population estimates.

In 2021, almost 93% (295) of local authorities had population estimates with uncertainty ranges that were less than 5% of their mid-year estimate; by 2025 almost 51% (161) of local authorities had population estimates with uncertainty ranges of less than 5%.

Figure 3: The level of uncertainty in population estimates increased through the decade

Bias-adjusted 95% uncertainty interval range, as a percentage of the mid-year estimates, England and Wales, 2021 to 2025

Assessing the performance of previous population estimates

Every decade, the mid-year estimates rolled forward from the previous census are compared with the population estimates based on the latest census as part of the reconciliation and [rebasings](#) exercise. Comparing the rolled-forward estimates for 2021 with the Census 2021-based estimates provides us with a relatively clear indication of the performance of the mid-year estimate method over a full 10-year period. Following Census 2021, we found that:

- 61% of local authorities had rolled forward population estimates within 2% of the Census 2021-based equivalent
- 89% of local authorities had rolled forward population estimates within 5% of the Census 2021-based equivalent

As part of the rebasing process, we made revisions to each component of change (births, deaths, international and internal migration changes, and changes to special populations), however, there inevitably remained some unattributed population change (UPC) that we could not allocate to a specific component of population change. Following the introduction of new methods and data:

- 64% of local authorities had UPC of 2% or less and 93% had UPC of 5% or less
- of the 23 local authorities with UPC of greater than 5%, 9 were in London and 5 more were local authorities with large numbers of students
- four local authorities had UPC of more than 10%; these are Islington, Isles of Scilly, Camden, and City of London

These comparisons indicate that the cohort component method provided a robust basis for producing population estimates for most areas in the previous intercensal period. Further, the adoption of new methods and data reduced the gap between rolled forward estimates and census base estimates for mid-2021. A summary dataset of local authority level rebasing, UPC and revisions after 2021 is available in our [Quality indicators for mid-2025 dataset](#).

Quality indicators

Each year we provide a set of quality indicators. These give an overview of issues that are likely to adversely affect the quality of population estimates. These include:

- the level of non-response in the census base
- the amount of churn in the population because of internal and international migration in the previous year
- the amount of population change from migration since the previous census
- the proportion of the population who are students
- the proportion of the population in the armed forces

Local authorities with high scores in these indicators are more likely to be of lower quality than local authorities with consistently low scores. Figure 4 is an interactive chart, which allows you to interrogate a selection of quality indicators and our main measure of statistical uncertainty for any local authority in England and Wales.

Amber Valley and City of London show the interplay between the quality indicators and the measures of statistical uncertainty. Amber Valley has a relatively low level of statistical uncertainty while City of London has a relatively high level of statistical uncertainty.

- Amber Valley is a largely rural local authority in Derbyshire, the census had low non-response, internal migration churn is average and international migration churn is relatively low.
- City of London is a small urban local authority with a university, the census had relatively high non-response and there has been a large amount of population change because of migration.

Figure 4: Quality indicators and statistical uncertainty at local authority level

Percentage, England and Wales local authorities, mid-2025

Main determinants of the accuracy of population estimates

The use of a cohort component method rolled forward from a census year means that the quality of the population estimates varies over time; specifically, the accuracy of the estimates tends to decline as we move further away from the census base. Estimates for non-census years account for each year's births, deaths, internal migration and international migration. For some areas, our estimates will begin to move further away from reflecting the true population with each subsequent release of the mid-year population estimates (MYEs).

The degree of drift relates to the amount of population "churn" (the total number of moves into and out of an area) that occurs. More rural areas tend to be more accurate than urban areas as the populations experience much lower levels of churn. The impacts of different components on each local authority are shown in the [Quality indicators tool](#).

Estimates for large population aggregations (for example, the total UK population) are more accurate (proportionally) than those for small aggregations (such as population of 25-year-old men in a single local authority district). Larger aggregations are more accurate because less processing and manipulation is involved in their calculation. For instance, internal migration equals zero for the total UK population.

Since the mid-year estimates are a product of a number of individual components, the impact of different errors, bias and sampling variability can be exacerbated or mitigated by errors, bias and sampling variability in other components of the process. A more detailed discussion of this, for the decade to 2011, is provided in our article [Further understanding of the causes of discrepancies between rolled forward and census based local authority mid-year population estimates for 2011 \(PDF, 1.570KB\)](#).

Long-term international migration

The quality of long-term international migration (LTIM) estimates is discussed in our [Admin-based long-term international migration estimates quality and methodology information \(QMI\) report](#).

Internal migration and accuracy

Internal migration flows are primarily based on changes in record-level patient registrations with GP surgeries. To account for migration of people within the UK, data are obtained for flows of migrants between each pair of local authorities in England and Wales, as well as for flows of migrants between England and Wales and the rest of the UK (cross-border flows).

There is inevitably a delay (lag) between people moving and the updating of GP patient registrations. Consequently, we use the change in patient registrations in the year to 31 July each year rather than 30 June to allow for delays in registrations. For higher education students, we know this approach is insufficient and additionally make use of data from the [Higher Education Statistics Agency](#) (HESA) to move students to study areas.

For graduates who have not updated their GP registration after leaving, we move them out of their student areas and distribute them to areas based on previous cohorts of university leavers (the Higher Education Leavers Methodology).

The extent to which internal migration affects each local authority area's population estimates is shown in our [Quality indicators](#).

How the coronavirus (COVID-19) pandemic affected Census 2021 outputs and subsequent population estimates is described in our [Impact of the coronavirus on Census 2021 article](#).

Revisions

Since 2021, mid-year population estimates have been regularly revised to account for improvements in data and methods relating to international and internal migration. Estimates will continue to be revised as part of our continuous improvement approach to developing population and migration statistics.

Further information on this can be found in our [Assessment of criteria for moving to admin-based population estimates as official estimates of population, England and Wales: 2026 article](#) from March 2026. A summary of the impact of each set of revisions since 2021 can be found in the mid-2025 edition of the [Quality indicators](#).

England and Wales, mid-2022 to mid-2024

The population estimates for mid-2022 to mid-2024 were revised alongside the publication of mid-2025 estimates to incorporate updated estimates of international migration based on [new methods and data](#).

The revisions to population estimates for 2022 to 2024 had the combined impact of reducing the mid-2024 population by 22,000 (0.03%). Within this overall change, the number of children aged 0 to 15 years was revised downwards by 139,000 (negative 1.2%), while the number of adults aged 16 years and over was revised upwards by 117,400 (0.2%). The revisions for estimates of children moved them more in line with data from administrative sources such as the school census and Personal Demographics Service.

UK, mid-2011 to mid-2023

Population estimates for mid-2011 to mid-2021 were revised to reflect updated estimates for Scotland published on 21 January 2025. Estimates for mid-2022 to mid-2023 were revised to incorporate updated estimates of international and internal migration for England and Wales, and international migration for Scotland.

England and Wales, mid-2022 and mid-2023

The population estimates for mid-2022 and mid-2023 were revised alongside the publication of mid-2024 to incorporate updated estimates of international and internal migration. For international migration, these revisions make the mid-year estimates consistent with the May 2025 publication of our [Long-term international migration, provisional: year ending December 2024 bulletin](#). For internal migration, these revisions allow us to use administrative data, which were unavailable when we originally processed the estimates.

England and Wales, mid-2022

Alongside the release of mid-year estimates for England and Wales for 2023, we revised the mid-2022 estimates to use an updated disaggregation of long-term international migration estimates. No revisions were made to the headline long-term international migration estimates.

UK, 2011 to mid-2022

On 15 July 2024, a set of population estimates for the UK covering 2011 to 2022 were published. These estimates have been rebased to the 2021 and 2022 Censuses across the UK. Estimates for England and Wales were previously published in November 2023, for Northern Ireland in June 2023, and for Scotland on 9 July 2024.

England and Wales, 2012 to mid-2020 (census rebasing)

The population estimates for mid-2012 to mid-2020, for England and Wales, were revised in November 2023 as part of the [reconciliation and rebasing project](#) following Census 2021.

Reconciliation and rebasing is a regular decennial project that ensures mid-year population estimates rolled forward from the previous census are consistent with estimates based on the most recent census. After we have made revisions caused by the known components of change (births, deaths, international and internal migration changes, and changes to special populations) there inevitably remains some unattributed population change (UPC) that needs to be allocated back across the decade.

How we are developing the statistics

We have adopted a model of continuous improvement of our population estimates, drawing on the research and experiences of developing admin-based population estimates (ABPEs). We will make iterative improvements to the data and methods that underpin the components of population change, with a focus on internal migration and disaggregation of long-term international migration (LTIM) estimates to local authority level.

ABPEs will not be adopted as official estimates. ABPE refers to a method of producing population estimates applying a statistical model to administrative data. [Administrative data](#) collected by other organisations for their own administrative or operational purposes continue to play a critical role, whichever method is used for population estimates.

7 . Changes and their effects on comparability over time

Comparability between ONS data sources

Our long-term international migration estimates, which are classified as official statistics in development, are used to generate the mid-year population estimates (MYEs).

Estimates of births and deaths used to calculate the MYEs are based on live births and deaths that occur during the year to the mid-year reference point, irrespective of the date when they were registered. These can differ slightly to those used in other Office for National Statistics (ONS) births and deaths statistics if the period reported is calendar year rather than mid-year. Estimates can also differ if the figures represent the number of events registered rather than the number that occurred.

Comparability of the statistics over time

Population estimates for England and Wales have been produced using the cohort component method since 1921. However, it is important to note that there have been method changes over a long period; these are summarised in our [2024 methodology guide](#).

Comparability of areas

England and Wales are subdivided into local areas, which are subject to change. For each release, we aim to use the latest geography boundaries available. However, we have been unable to accurately account for a small boundary change between Sheffield and Barnsley in 2024 and are currently using 2023 local authority boundaries for our 2025 release for this area. The geographical boundaries used in each release is clearly stated within the published datasets. The ONS Open Geography portal provides information on local authority boundaries over time.

Comparability across MYE releases

A fully comparable data time series of MYEs for 2011 to 2025 was published in July 2026 and incorporates methodological improvements and new and updated data sources. These include new estimates for migration. This supersedes and is not comparable with the previous MYE series published in July 2025, covering 2011 to 2024.

Each MYE release since mid-2022 has required revisions to population estimates for previous years. Revisions to population statistics have wide-reaching implications for users and producers of other statistical outputs. We manage the frequency of revisions to the published back series to balance accuracy and timeliness of the estimates with the need for stability.

Users may compare mid-year population estimates (MYEs) for individual local authorities with other data sources, for example, administrative records or anecdotal evidence. Comparisons between data sources should be treated with caution, as there are often definitional differences in the data collected. For example, whether the data differentiate between long-term or short-term migration, or whether they account for individuals who have left the country or local authority. Also, other data sources may cover only a subset of the population or measure daytime populations rather than the usual resident population.

Our quality assurance of the MYEs before publication includes comparing estimates with alternative sources to check plausibility and outliers.

8 . Users and uses of these statistics

The mid-year population estimates are essential building blocks for a wide range of official statistics. They are used directly as a base for other secondary population statistics, such as population projections, population estimates for the very old and population estimates for small geographical areas.

They are used for weighting survey estimates such as the Labour Force Survey and other social surveys to ensure that they are representative of the total population, and they are used as denominators for rates or ratios, for example, in health and economic indicators.

The mid-year population estimates are an important input for a wide number of economic and social statistics. Main users include central and local government, and the health sector, where they are used for planning and monitoring service delivery, resource allocation and managing the economy. Additionally, they are used by a wider range of organisations such as commercial companies (for market research), special interest groups and academia, as well as being of interest to the general public.

We engage with users and seek feedback through a range of activities including:

- webinars, which include question and answer sessions
- conferences
- meeting and working groups such as the Central Local Information Partnership (CLIP), the UK Population Theme Advisory Board (chaired by the Office for National Statistics (ONS) and including representatives from academia, the Welsh Government, National Records of Scotland (NRS) and the Northern Ireland Statistics and Research Agency (NISRA), the British Society for Population Studies (BSPS), Administrative Data Research UK (ADR UK), and the Royal Statistical Society (RSS)
- a working group to consider the impact of changing population estimates methods on funding formulae, models or other processes
- focused meetings with selected local authorities that represent important population features seen in some local areas; these local authorities are listed in [Section 3 of our January 2025 quarterly update](#)
- consultations
- asking for feedback in all our publications

We continue to explore new opportunities to collect user feedback to understand how to best meet user needs.

9 . Definitions

Cohort component approach

A standard demographic approach that estimates the size of the population using the components of population change to update a population base.

An estimate of the population in the following year is obtained by:

- ageing on by one year the previous year's population estimate
- adding those who were born during the year
- removing those who died during the year
- adding those who moved into the local authority
- removing those who moved out of the local authority

Components of change

Components of change are the factors that contribute to population change. This includes births and deaths (commonly referred to as natural change) and net migration. Migration includes movements of people between England and Wales and the various countries of the world (international migration) and between local authority areas within the UK (internal migration).

Internal migration

Describes moves made between local authorities, regions, or countries within the UK. Unlike international migration, there is no internationally agreed definition.

International migration

We use the United Nations (UN) recommended definition of a long-term international migrant: "a person who moves to a country other than that of his or her usual residence for a period of at least a year (12 months), so that the country of destination effectively becomes his or her new country of usual residence."

Net international migration is the difference between the number of people moving into and out of England and Wales from outside the UK.

EU+ migration refers to the migration of people from all current EU countries plus Norway, Iceland, Liechtenstein and Switzerland. Non-EU+ is the sum of the rest of the world, including the rest of Europe, not included in the EU+ category. British nationals are excluded from these numbers and separately defined. For the purposes of our estimates, we assume a British national is anyone who has a National Insurance number (NINo) and who is not included in the Migrant Worker Scan (MWS). More information is available in our [Long-term international migration, provisional: year ending December 2025 bulletin](#).

Mid-year population estimates

Population estimates produced using the cohort component method. This is a standard demographic method that estimates the size of the population using the components of population change to update a population base. These are [accredited official statistics](#).

Net migration

The difference between the number of people coming to live in an area (immigration) and the number of people leaving to live elsewhere (emigration). When more people are coming to the area than leaving, net migration is above zero and so adds to the population. Net migration takes account of both international and internal migration.

Statistical Population Dataset

Statistical Population Datasets (SPDs) are linked administrative data to which a set of inclusion rules are applied. These look for signs of activity, so that we can approximate the usually resident population. SPDs are created by combining a variety of data sources, including:

- income datasets
- health datasets
- education datasets covering schools, further education and higher education
- prisoners' data
- death registrations

Usually resident population

These data estimate the "usually resident population". This is the standard United Nations definition outlined on page 82 in the [Principles and Recommendations for Population and Housing Censuses \(PDF, 2.36MB\)](#). It includes only people who reside in a country for 12 months or more, making them usually resident in that country. Visitors and short-term migrants are excluded.

10 . Related links

[Population statistics and sources guide](#)

Methodology | Released 29 July 2026

A comparison of the different types of population estimates that are published or are planned for future publication.

[Quality overview of data sources used in mid-2025 population estimates for England and Wales](#)

Methodology | Released 29 July 2026

This quality overview provides descriptions of the strengths and limitations of all the individual administrative (admin) data sources used directly in producing the mid-2025 population estimates (MYEs) for local authorities (LAs) in England and Wales.

[Effect of the coronavirus pandemic on the quality of mid-year population estimates for England and Wales](#)

Methodology | Released 29 July 2026

An assessment of how the coronavirus (COVID-19) pandemic affected the production and quality of population estimates for England and Wales.

[Local authority quality of population estimates for England and Wales](#)

Methodology | Released 29 July 2026

Explores how uncertainty, as a measure of quality, can be introduced into the population estimates process, and the impact of this on local authorities.

11 . Cite this page

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