Subnational population projections QMI

Quality and methodology information for subnational population projections, detailing the strengths and limitations of the data, methods used and data uses and users.

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Release date:
17 July 2025

Next release:
To be announced

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1 . Output information

- Product name: Subnational population projections for England
- Statistical designation: accredited official statistics
- Data collection: using existing data
- Frequency: every two years
- How compiled: Administrative data, survey data and projections methodology
- Geographic coverage: Local authority, region and Sub Integrated Care Boards – England
- Related publications: National population projections and Subnational population projections for England

2 . About this Quality and Methodology Information report

This Quality and Methodology Information (QMI) report contains information on the quality characteristics of the data (including the European Statistical System's five dimensions of quality) as well as the methods used to create it.

The information in this report will help you to:

- understand the strengths and limitations of the data
- learn about existing uses and users of the data
- understand the methods used to create the data
- decide suitable uses for the data
- reduce the risk of misusing the data

3 . Important points

- Subnational population projections provide statistics on potential future population levels, based on the continuation of recent demographic trends and assumptions used in the national population projections.
- Projections relate to the usually resident population and do not include people who come to or leave the country for less than 12 months.
- Projections are not forecasts and do not attempt to predict the impact of future political and economic changes or local development policies.
- Since projections are produced in a consistent way, they can be used as a common framework for informing local-level policy and planning; local areas are advised to supplement them with any local information they have.
- Users should be aware that projections become increasingly uncertain as they go forward into the future, particularly for smaller geographic areas and detailed age and sex breakdowns.
- Population projections can indicate that existing trends and policies are likely to lead to outcomes that are judged undesirable, and if new policies are then introduced, they may result in the original projections not being realised; however, this means the projections will have fulfilled one of their prime functions: to show the consequences of present demographic trends with sufficient notice for any necessary action to be taken.

4 . Quality summary

Overview

Subnational population projections give an indication of the possible size and structure of the future population, based on the continuation of recent demographic trends. They are usually produced every two years and project the population for each year of a 25-year period from the base year.

They are produced using the cohort component methodology and are based on the local authority mid-year population estimates. The cohort component method is a standard demographic method that uses high-quality data sources to inform the three major components of population change: natural change (births, deaths and ageing), migration and special populations.

Assumptions made about future fertility, mortality and migration at local authority level are based upon recent observed trends from the components of change, which are published with the latest mid-year population estimates. The assumptions mainly use five years' worth of trend data with one exception: the 10-year migration variant uses 10 years of data for the migration components. They are constrained to the equivalent national population projections for England. This means that all local authorities are scaled proportionally, such that they sum to the equivalent national population projections for England.

Each new set of subnational population projections supersedes the previous set. Comparisons can be made with earlier sets to show how the projections have changed over time and to assess their accuracy by comparing projections with the final population estimates for a given year. However, these comparisons are not straightforward. More information can be found in the subsection on Comparability over time.

In the 2022-based SNPPs there is no projection that has been defined as the principal projection. Following the recommendation to use the National population projections: 2022-based migration category variant instead of the NPP principal projection, we recommend use of this variant in place of what would normally be a principal projection because of its fit with our Long-term international migration, provisional: year ending December 2024 bulletin. Other variant subnational population projections are produced using broadly the same methods as what is normally defined as the principal projection, with specific differences dependent on the variant in question. The high migration, low migration, zero net migration, 10-year migration and migration category variants were published in June 2025.

Projections produced by other organisations may not be comparable with these projections since they will use different methodologies, may not be constrained to national population projections and, in some cases, use additional local data.

More information on the methodology used for the subnational population projections can be found in Section 6: Methods used to produce the subnational population projections data and in our Methodology used to produce the 2022-based subnational population projections for England.

Uses and users

Subnational population projections are produced in a consistent way across all areas and use a robust methodology so that they are relevant for all types of users. They are used in a number of ways, including: for local planning of health, education and other service provisions; as a basis for household projections; and as a basis for projections produced by other organisations. Dependent on the timing of central government planning rounds, they are also sometimes used in the assessment of local authority needs and funding.

Strengths and limitations

Strengths

- These data provide users with an indication of the potential size, and age and sex structure of the future population of local authorities in England.
- Each set of subnational population projections uses the same methods for projecting the population for all local authorities in England, so that data for one local authority are comparable with data for other local authorities.

Limitations

- The assumptions used in subnational population projections are based on past trends. However, demographic behaviour is inherently uncertain, so projections become increasingly uncertain the further they are carried forward.

- The subnational population projections may be subject to additional inaccuracy if any of the components such as births, deaths, internal migration and international migration used to produce the projections are inaccurate.

- Population projections are not predictions of the future; they are an illustration of future population size and structure based on assumed levels of fertility, mortality, and migration.

- In recent years, the UK has experienced relatively rapid demographic change, including declines in fertility rates, large fluctuations in international migration and continued change in mortality; given the magnitude and pace of these changes, it is particularly challenging to make assumptions at a local authority level about future components of population change required for projections.

- Variant population projections are illustrations of alternative scenarios and are not quantified measures of uncertainty.

Improvements

Since the 2018-based subnational population projection, improved estimates of internal migration have been included in this release and prisoners are again treated as part of the static population (resulting in the age distribution of prisoners in each area staying constant through the projection). A list of methodology changes over time in past releases is also contained within Annex A: Changes to the subnational population projections' methodology, of our Methodology used to produce the 2018-based subnational population projections for England.

5 . Quality characteristics of the subnational population projections data

Relevance

(The degree to which the statistical output meets users' needs.)

Subnational population projections (SNPPs) are demographic, trend-based projections indicating potential levels of the future population, and they are used primarily for planning purposes. While our national population projections inform policy and planning at the national level, the subnational population projections inform policy and planning at the local level. Uses include, but are not limited to:

- allocation of resources from central government to local areas
- healthcare and education provision
- emergency service provision
- household projections
- business development
- calculation of local rates, measures and indicators
- academic and market research

A robust and objective methodology is employed to create subnational population projections that are relevant for all types of users.

The projections take no account of local development aims, policies on growth, capacity to accommodate population change or economic factors that could impact the population in the future. As with the national population projections, they also do not try to predict any potential demographic consequences of political or economic changes.

Subnational projections are currently produced up to 25 years ahead from the base year. This provides a sufficiently long time series to enable analysis and planning but avoids going too far into the future when values become increasingly uncertain. They can be combined with the population estimates to create a time series from 1971.

Subnational population projections were a main variable used by the Ministry of Housing, Communities and Local Government (MHCLG) in the assessment of local authority need in financial year ending March 2014. The MHCLG may use SNPPs again in similar future assessments.

The advantage of using population projections for planning is that the time element is built in. For example, if an area is increasing or decreasing in population over time, then this will be accounted for. However, there is a limitation in that the projections are demographic and trend-based, taking no account of the growth policies of an area. In addition, they do not predict changing demographic patterns over time; they simply provide an indication of population levels arising if the underlying assumptions are realised.

The subnational population projections are also used as an input into the household projections, which were previously produced by the MHCLG but are now produced by the Office for National Statistics (ONS). These are used to help regional house planning and monitoring. The household projections themselves are also trend-based projections; therefore, the subnational population projections are suitable for this purpose.

The Department of Health and Social Care (DHSC) uses subnational population projections for resource planning and healthcare provision. The age and sex structure of the projections is important for this purpose. Subnational population projections are supplied at Sub Integrated Care Board level for DHSC purposes.

Local authorities use subnational population projections as a starting point for local level planning and monitoring. Since the population projections do not consider local growth policies, local authorities are advised to also use any local information in producing their plans. The population projections are used in the calculation of local rates and measures, which provide indicators for future requirements of local services.

Our users' views are important to us in terms of methodological changes and outputs produced so we will continue to give opportunities to provide feedback on any aspects of both current and future projections. Examples of this include our engagement in 2024 on User needs from 2022-based national, subnational and household projections.

Population and Household Projections, as part of Demography within the Office for National Statistics (ONS), routinely considers what user needs are not being met by their published statistics. This is done using evidence from user engagement activities and contact with users. This process enables us to understand unmet user needs and, if appropriate, consider the inclusion of new outputs in the divisional workplan.

Accuracy and reliability

(The degree of closeness between an estimate and the true value.)

Subnational population projections are demographic, trend-based projections indicating likely size and age structure of the future population if the underlying trends and assumptions about future levels of components of change are realised. They are based on levels of births, deaths and migration observed over a five-year reference period leading up to the base year (or a 10-year reference period for the migration components in the 10-year migration variant).

However, projections are not forecasts and, because of the inherent uncertainty of demographic behaviour, any set of projections will inevitably differ from actual future outcomes to a greater or lesser extent. As such, the subnational population projections should be used as a starting point and supplemented with local information for planning purposes.

The subnational population projections use the latest available population estimates and are inevitably dependent on the accuracy of these estimates. The most recent release of 2022-based subnational population projections is based on the Population estimates for the UK, England, Wales, Scotland, and Northern Ireland: mid-2022 and component data.

For further information on the accuracy of the population estimates, refer to the Mid-year population estimates QMI.

Fertility and mortality rates are based upon registration data and are believed to be relatively reliable as the basis for projection. The internal and international migration components of change are more difficult to estimate and project, and this is particularly the case for the local distribution of international migrants.

Since the 2018-based projections, we treat prisoners as a static population, meaning the age distribution of prisoners in each area is kept constant (the overall number of prisoners and the sex distribution were already constant). This avoids the previous situation in which the age distribution of prisoners increased over time, with the unrealistic result that in 25 years' time most prisoners would be middle-aged.

In addition, the components of population change are constrained to match those of the national population projections, so the local trends will be scaled. This means that there may be differences between recent trends locally and the assumptions used in the subnational population projections.

For example, five years' worth of data are used to create the local international migration trends in the subnational population projections, except for the 10-year migration variant where 10 years of data are used. However, the national population projections use different models and a much longer time series in setting the national long-term assumptions. Therefore, it is likely that the assumptions made for international migration will be at a different level to a simple average of the last five (or 10) years' worth of local data.

Different users may have different opinions on whether five years or 10 years of migration data are most representative of the likely long-term local trend. There is no right or wrong in this; it will vary by area and the users' individual perspectives.

Users should also be aware, regardless of whether five or 10 years of trend data are used, that any change in actual population dynamics (for example, a speeding up of growth) during the trend period might not be fully reflected in the assumptions being used for future years, as the averaging process has a dampening effect on such changes.

The constraining process also means that any factors that cause the actual population to differ from the projections at the national level will also affect the projections at the subnational level. Further information on the assumptions used in the national population projections is available in our latest National population projections: 2022-based. Further information on the accuracy of the national population projections can be found in our National population projections quality and methodology information.

The projections take no account of the following factors, which could lead to differences between the projections and actual population change:

- local development aims
- policies on growth capacity of a given area to accommodate population change
- political or economic factors that could impact the population in future
- any international factors that may affect the UK population

Rigorous quality assurance is carried out at all stages of production. Specific procedures include:

- scrutinising input data to investigate the accuracy of any abnormal values
- scrutinising trends in the total population and components of change projected over time for plausibility
- comparing current projections with previous projections and population estimates, to see where large changes are taking place and understand the reasons for these
- examining sex ratios to find any areas of imbalance
- checking output tables to ensure that there are no errors or inaccuracies during the creation of published tables

Comparisons with previous sets of projections have been carried out to examine how they eventually differed from the final mid-year population estimates for a given year. This gives an indication of how close the projections have been to the estimates when they were published.

Unattributable population change

Following the 2011 Census, a component of population change referred to as unattributable population change (UPC) was defined. After the 2021 Census, this component was identified again, and was the remaining difference between the rolled-forward 2021 population estimates and the 2021 census-based population estimates, once methodological changes and estimated errors in the components had been taken into account. The UPC for England was 18,303.

To produce the revised series of population estimates for the last decade, the UPC was apportioned across each of the 10 years using the cohort component method, which takes account of the fact that individuals age as the decade progresses. An explanation of this methodology can be found in our Rebasing of mid-year population estimates following Census 2021, England and Wales article.

No adjustment for UPC has been made in the 2022-based projections or in the series of population estimates based on Census 2021. This is because UPC may not be replicated in continuing subnational trends in the same way after Census 2021.

Issues relating to the accuracy of particular components

Area-specific adjustments

As far as possible, the projections are produced using a standard method for all areas. In a very small number of cases, it is reasonable to believe that mortality, fertility or migration observed in an area over the trend estimation period may be a poor indicator of the true underlying trend that should be projected. For the 2022-based projections, adjustments to mitigate this were:

- any instances of exceptionally high fertility rates (by single year of age of mother) and mortality rates (by single year of age and sex) were capped at five times the corresponding national figure
- Isles of Scilly fertility rates (by single year of age of mother) and mortality rates (by single year of age and sex) were set at the national rates
- City of London mortality rates (by single year of age and sex) were set at the national rates
- the assumed proportion of people of any individual age and sex group moving out of an area (assumed out-migration probabilities) was capped at a maximum rate of 0.75
- internal out-migration probabilities for Oadby and Wigston males aged 19 to 25 years were set equal to the corresponding probabilities for females, to address the issue of student migration described in this section

All of these adjustments have precedents in previous sets of projections.

Students

Areas with large numbers of students present particular issues in estimating internal out-migration probabilities at ages 20 to 22 years. This is partly because of the known issue of students, especially males, delaying reregistering with a General Practitioner (GP) when they move out of an area at the end of their studies. Particular care should be taken in using or interpreting age distributions in the early 20s for local authorities with substantial student populations.

Coventry and Warwick

A specific adjustment is made in the mid-year population estimates to allow for migration to and from a large university campus, which is allocated, based on its postcode, to Coventry but has halls of residence on both sides of the border between Coventry and Warwick. The subnational population projections reflect this adjustment in the base population for the projection. However, the adjustment is not replicated in the projections themselves. The impact of this process is complex but is liable to have a minor impact over time on the size and age structure of Coventry and Warwick's projected populations.

City of London and Isles of Scilly

Reliable projection of trends is particularly difficult for the two very small local authorities, City of London and Isles of Scilly. As noted previously, national mortality and fertility rates have been used in place of the observed local authority rates where appropriate. Users are advised to take particular care when using projections for these areas.

Sub Integrated Care Board

Projections for Sub Integrated Care Board (SICB) are derived from the projections for local authorities. Where a SICB contains only part of a local authority, it is implicitly assumed that rates of population change in that part of the local authority are the same as across the local authority as a whole. Users of SICB projections are advised to consider how any deviation from this assumption might affect their conclusions from analysis of the projections.

Coherence and comparability

(Coherence is the degree to which data that are derived from different sources or methods, but refer to the same topic, are similar. Comparability is the degree to which data can be compared over time and domain, for example, geographic level.)

Coherence

The subnational population projections are consistent with the mid-year population estimates at local authority level, which form the starting point (base year) for projecting forward. They are also consistent with the national population projections for a given base year.

"Consistent" in this instance means that the total population and components of population change across all local authorities in England sum to those presented in the national projection for England.

Subnational population projections across the four nations of the UK have broadly similar methods with some of these being constrained to the respective national population projections.

Further details about the differences between the subnational projections of the different countries of the UK can be found in our methodology, Subnational population projections across the UK: a comparison of data sources and methods. This article reflects the methodology and data sources in the 2018-based subnational population projections for England, and the other countries of the UK, which were available at the time it was written.

Subnational population projections may be generated by other organisations. For example, some local authorities and academics produce their own set of subnational population projections. However, these often use a different methodology from that used for the ONS projections and therefore produce different results. Important methodological differences include:

- not taking account of moves between areas in the same way
- trying to take account of economic factors or local policy decisions about issues such as future population levels, housing development and economic initiatives
- not needing to apply a consistent and objective methodology for all areas within England
- not needing to constrain to the national population projections nor follow the assumptions associated with them
- using different definitions of migration and population

When attempting to compare the ONS projections with projections created by other organisations, careful attention must be paid to any differences in assumptions, methodologies and definitions being used.

The Greater London Authority produces projections of both the size and characteristics of the future resident population for all local authorities in London. In addition, they produce projections for all local authorities in England. This is primarily to assist in strategic planning across the wider region and to help those authorities that border London to understand the implications of their projections. Users should be aware that these projections are produced using a different methodology to that used by the ONS.

A challenge of producing projections and a time series based on historical data is that the quality of the data may not be consistent over the designated time period. For example, the 10-year migration variant was produced with input data where the methodology changed during the 10-year period. This means that any changes over time are liable to reflect a combination of both real-world and methodological differences.

Comparability over time

Each projection is internally consistent, so it can be interpreted as a consistent time series of projected populations for each year of the projection period.

Comparability over time can also be used to describe the comparability of different sets of projections. Each set of subnational population projections is unique and is produced using trends based on the best data available at that time, including the latest population estimates. Therefore, each new set of projections supersedes the previous set. Although projections are broadly comparable over time, like-for-like comparisons are not straightforward. However, it is possible to observe what effect the most recent demographic trends, when built into projections for the future, have on the possible future population of local areas.

Subnational population projections dating back to 2010-based are available in our Subnational population projections for England Statistical bulletins, please email us at pop.info@ons.gov.uk regarding earlier sets of projections.

There are a number of issues that need to be considered when different sets of subnational population projections are compared. These issues are summarised as follows:

- until the 2003-based subnational population projections, the full 25-year period was only available every four or five years; in intervening years, short-term 10-year projections were produced using the same assumptions on levels of components of change as the previous set of long-term projections while updating the base-year populations to take account of the latest population estimates

- the 2003-based subnational population projections were an interim set that was produced when methodological changes in the population estimates resulted in a revised back series

- the 2004-based subnational population projections used a different methodology for the distribution of international migration than previous sets of projections; the method used was brought more into line with that used for the production of the official mid-year population estimates

- the revised 2004-based subnational population projections updated the 2004-based projections to take account of revised population estimates using new methods introduced in 2007; the same methodology was used for the 2006-based projections

- the 2008-based subnational population projections used a different methodology for the distribution of internal and international migration than previous sets of projections as they incorporated further developments of the Migration Statistics Improvement Programme (MSIP), and no longer used the Rogers-Castro curve when calculating internal migration

- the 2010-based subnational population projections used a different methodology for the distribution of international immigrants, which in turn affected estimates of emigrants and included improvements to internal migration of students; further details are available from the release by the MSIP

- the interim 2011-based subnational population projections used the mid-2011 population estimates rolled forward from the 2011 Census results as the base, but the assumptions made on future trends were the same as those used in the 2010-based projections

- the interim 2011-based, the 2012-based and the 2014-based subnational population projections incorporated information from the 2011 Census, so care is needed if comparisons are made with earlier sets of projections; in addition, the new internal migration methods were introduced and used in the 2012-based subnational population projections onwards

- the 2016-based subnational population projections include the Revised population estimates for England and Wales: mid-2012 to mid-2016 and components of change, published in March 2018; they also include a number of changes to the methodology and source data, which are described in our 2016-based subnational population projections for England: changes to methodology and source data, published in January 2018

- the 2018-based subnational population projections use a new methodology for the internal migration when accounting for the movements of the highly mobile population leaving higher education each year; they also treat prisoners as a static population and include adjustments for people from Syria granted humanitarian protection, armed forces returning from Germany and their dependants

- the 2022-based subnational population projections include the revised Population estimates for England and Wales: mid-2022 together with the Rebasing of mid-year population estimates following Census 2021, England and Wales; they also use the admin-based migration estimates

The Comparing subnational population projections with estimates report published in 2025 considers the subnational population projections produced since the 2011 Census up to and including the 2018-based projections. The Subnational Population Projections Accuracy Report published in 2016 considers the accuracy of the 2004-based, 2006-based, 2008-based and 2010-based subnational population projections when compared with the mid-year population estimates for 2011 based on the 2011 Census. The report concludes that it is difficult to determine what is causing the differences seen, because of the many changes in methodology and resulting revisions that occurred during the decade, outlined previously. An accuracy report was published in 2008 that considered the accuracy of the projections from the 1996-based subnational population projections to the revised 2004-based subnational population projections.

Accessibility and clarity

(Accessibility is the ease with which users are able to access the data, also reflecting the format in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the release details, illustrations and accompanying advice.)

Subnational population projections are available online and can be downloaded free of charge in Microsoft Excel and CSV format. Graphs, textual background information and supporting documents are provided as part of each release.

Any additional enquires regarding subnational population projections can be made via email to pop.info@ons.gov.uk or by telephone on +44 (0)1329 444661. Additional data requests will be met where this is possible. Metadata describing the limitations of additional data are provided with individual requests. These requests are also published on the ONS website.

Our recommended format for accessible content is a combination of HTML web pages for narrative, charts and graphs, with data being provided in usable formats such as CSV and Excel. We also offer users the option to download the narrative in PDF format. In some instances, other software may be used or may be available on request. For further information, please refer to the contact details in the previous paragraph.

For information regarding conditions of access to data, please refer to the following:

- Terms and conditions (for data on the website)
- Freedom of Information (FOI)
- Accessibility

Timeliness and punctuality

(Timeliness refers to the lapse of time between publication and the period to which the data refer. Punctuality refers to the gap between planned and actual publication dates.)

Subnational population projections (SNPPs) were typically published in May, around two years after the base year. This timeframe was because the subnational population projections are based on input data that are not available until late in the year after the base year. The time between then and May was historically needed for the production and quality assurance of the projections.

It has been over five years since our Subnational population projections for England: 2018-based bulletin. Since 2020, we have engaged with users who provided feedback that they wanted the next release to benefit from Census 2021 data and rebased population estimates and components of change. Delays to the release in 2025 arose from technical difficulties in running the systems that generate the SNPPs and to allow sufficient time for quality assurance of the results. Furthermore, the SNPPs require National population projections (NPPs) data, which was delayed into January 2025 from an originally planned release date in November 2024 to incorporate more up-to-date data. The 2022-based NPPs included all new assumptions benefitting from rebased population data.

Following the release of the 2021 Census data for England and Wales, the population estimates for mid-2012 to mid-2020 were rebased to ensure a consistent time series. More information is available in our Rebasing of mid-year population estimates following Census 2021, England and Wales bulletin. This rebasing involved identifying parts of the population estimates that were under- or over-estimated between 2012 and 2020, using 2021 Census data and other sources. This allowed the inclusion of the latest international migration data from the long-term international migration release of November 2023.

In terms of punctuality, all previous sets of projections have been published to schedule on pre-announced dates.

In special circumstances, interim sets of projections may be produced, using modified methods and the most recent data available. An example of this is the interim 2011-based subnational population projections, which were produced shortly after the 2011 Census results. This set of projections was published to satisfy a strong user requirement for projections that took on board the results of the 2011 Census, sooner than the normal publication timetable.

For more details on related releases, the release calendar provides 12 months' advance notice of release dates. In the unlikely event of a change to the pre-announced release schedule, public attention will be drawn to the change and the reasons for the change explained at the same time, as set out in the Code of Practice for Statistics .

Concepts and definitions (including list of changes to definitions)

(Concepts and definitions describe the legislation governing the output and a description of the classifications used in the output.)

Usually resident

Population estimates and projections estimate the "usually resident" population only. This is the standard UN definition and includes only people who reside in a country for 12 months or more. As such, visitors and short-term migrants are excluded.

Components of change

These can be described as population changes between one year and the next year owing to various components. The two categories of population change are natural change (the difference between births and deaths) and net migration, covering movements of people between England and the various countries of the world (international migration), between England and the constituent countries of the UK (cross-border migration) and between local areas within England (internal migration). By projecting estimates of these various individual components of the population, their effects can be added together to provide a projection of the population at selected points into the future.

Mid-year

This is 30 June of any given year, where the period from one mid-year to the next is from the first day of July year x until 30 June of year x+1.

Geography (including list of changes to boundaries)

The 2022-based subnational population projections provide information at region, county, local authority, Sub Integrated Care Board levels and NHS region levels using the geographic boundaries, names and codes existing as at mid-2022. All variant projections use the same geographies and boundaries as the 2022-based subnational migration category variant projection.

The 2022-based subnational population projections for the migration category variant are available on the region, county and local authority geographic boundaries, names and codes existing as at mid-2023, which reflect more recent changes made to local authority geographies in April 2023. The 2022-based migration category variant projections also provide information at Sub Integrated Care Board and NHS region levels, using the geographic boundaries, names and codes existing as at mid-2023. Sub Integrated Care Board has been used as the health geography for this release because of its ability to be aggregated to Integrated Care Boards (ICBs) and former clinical commissioning groups (CCGs).

Projections for geographies as of mid-2022 differ from those for geographies as of mid-2023. Mid-2023 projections included local authority mergers that took place in April 2023. The projections, which are based on the mid-2023 geographies, are not based on an aggregation of the affected local authorities' projections from the mid-2022 geographies.

For local authorities where no local authority boundary changes have occurred, the projections also differ slightly between the two types of geography. These differences are introduced through our constraining process, as we are constraining data across multiple local authorities.

There are larger differences between geographies for local authorities that have been affected by local authority mergers. These differences are mainly introduced by changes to internal migration data. Many moves are not considered internal migration when a local authority merges with another. However, this is considered internal migration in the mid-2022 version of the projections, before the mergers took place. There are also small differences in the projected number of births and deaths between the two types of geography.

Deciding which version of the geographies to use depends on the planned use of the variant projections. This is because some are only available for the base year local authority boundaries (mid-2022) and not for those as of mid-2023. For users that want to compare the migration category variant to the other variants, we suggest using the boundaries as of the base year (mid-2022). For users that do not need to make comparisons between variants, then the latest version (mid-2023 boundaries) can be used.

Output quality

This report provides a range of information that describes the quality of the data and identifies the issues that should be noted when using the output.

We have developed Guidelines for measuring statistical quality based on the European Statistical System's five dimensions of quality. This report addresses the quality dimensions and important quality characteristics, which are:

- relevance
- timeliness and punctuality
- accuracy
- coherence and comparability
- output quality trade-offs
- assessment of user needs and perceptions
- accessibility and clarity

Subnational population projections give an indication of the possible future resident population in each administrative area (regions, counties, local authorities and health areas) in England by sex and single year of age. It is currently not possible to calculate projections for any further breakdowns such as by ethnicity, marital status or lower-level geographies, because of limitations in the availability of data and the lack of a robust methodology required for such projections.

Subnational population projections since the 2014-based are published unrounded, by sex and single year of age, to enable users to carry out further analysis. However, the projections are not presented as reliable at this level of detail. Therefore, users are advised to aggregate the data to at least five-year age groups and round to the nearest 100 people if quoted in any documentation.

Occasionally, there may be significant user demand for a set of projections at a point in time when only some of the required input data are available. For example, when new census results are published, there is a time lag before rebased population estimates are available to provide base data and a further lag until a revised historical series becomes available to calculate the trend data.

Depending on the timing of the projections, this may affect the quality of the output produced. For example, for the interim 2011-based subnational population projections, the population estimates were updated with census results making the base more accurate. However, as trend data were not updated at the same time, the resulting projections of future change may not have been as accurate as they could have been.

6 . Methods used to produce the subnational population projections data

How we collect the data, main data sources and accuracy

Subnational population projections are calculated using the internationally-recognised cohort component method and are consistent with our national population projections based on the same base year. They use the national population projections, the local authority population estimates and associated components of change, which inform projected births, deaths and migration (internal, cross-border within the UK and international, including asylum seekers). More information on how these components are derived can be found in our Mid-year population estimates QMI.

In addition, the projections use data on home and foreign armed forces and data on the dependants of foreign armed forces.

The 2022-based projections take our Population estimates for the UK, England, Wales, Scotland, and Northern Ireland: mid-2022 for local authorities in England as their starting point. Change in population is calculated by modelling trends. Data for five preceding years are used, so for example, the 2022-based projections trends are based on data from the years ending mid-2018 to mid-2022. The projections based on these trends are constrained to the assumptions made for the principal national population projection for the equivalent base year.

The projections model splits the armed forces and prisoner populations and the civilian population and treats them differently. The populations of armed forces and prisoners are each treated as a "static population" whose size, and age and sex structure is assumed to be constant over the projection period. These armed forces include home and foreign armed forces based in England together with the dependants of foreign armed forces based in England. Prisoners are those serving prison sentences over six months. Dependants of home armed forces are treated as part of the civilian population.

A summary of the major steps in the production process is as follows:

- start with the mid-year population estimate for the base year
- remove the static population to produce a civilian population
- age on the population by one year
- apply local fertility and mortality rates to the aged-on population to calculate projected numbers of births, which are added to the population, and projected deaths, which are taken out of the population
- adjust the population for internal migration (movement between areas within England) and cross-border migration (movement between England and the other countries of the UK)
- adjust the population for international migration (movement between England and countries outside of the UK); this includes asylum seekers
- add back the static population
- constrain the sum of local authority population projections to the population projection for England for that year; the population at the end of each cycle becomes the base population of the next cycle

As an example, for the 2022-based subnational projections, the change projected for mid-2022 to mid-2023 is applied to the mid-2022 base to produce a population projection for mid-2023. This process is repeated for each year of the projection period. Each component (except internal migration) is constrained to its respective total in the 2022-based national population projection for England.

The 2022-based subnational projections include other variant projections featuring different levels of migration. The high international migration and low international migration variants are produced broadly using the same methods as the 2022-based subnational population projections main release (migration category variant), except that the totals are constrained to match the corresponding data in the 2022-based high and low migration variant national population projections for England.

The 2022-based 10-year migration variant uses 10 years (years ending mid-2013 to mid-2022) of input data for international migration (including asylum seekers), internal migration and cross-border migration. The 10-year migration variant is consistent with the principal subnational population projections in that all components are constrained to the principal 2022-based population projection for England. However, because it uses a longer time series of migration input data, the distribution of migration at local authority level is different.

The 2022-based zero net migration variant uses data from the national projections zero net migration variant, which is built on the assumption that net international and cross-border migration is zero from the base year onwards. For the subnational projections we do assume that internal migration will still occur. This variant allows users to understand population change in their area in the absence of any international or cross-border migration.

The 2022-based migration category variant has been used to produce our headline and bulletin statistics because of its better fit with the latest provisional data to the year ending December 2024 in our Long-term international migration, provisional: year ending December 2024 bulletin, in comparison to the principal projection in the NPPs. This variant is specifically focussed on observed levels of immigration types and its implications on stay rates and levels of emigration. In the short-term it has a steeper decline in net international migration compared with our principal projection. This reflects the recent rise in immigration, particularly of students, which may lead to higher emigration and thus lower net migration in the short term. Further information on the method can be found in the University of Oxford's Why are the latest net migration figures not a reliable guide to future trends? report. This type of method has also been used by the Office for Budget Responsibility, as described in their Net migration forecast and its impact on the economy report.

The 2022-based subnational principal projections used new methods and data sources to calculate internal migration that were first used in the 2018-based subnational population projections. For comparison, an alternative internal migration variant was also produced for the 2018-based projections, combining data from the historical and new methods. This also had a different distribution of migration at local authority level to the main projection, and was constrained to the principal 2018-based population projection for England.

More detailed information can be found in the Methodology used to produce the 2022-based subnational population projections for England.

Changes to the methodology and data sources

Changes were made to the methodology regarding internal migration and how prisoners are treated since the 2018-based subnational population projections (SNPPs). More detail can be found in our Methodology used to produce the 2022-based subnational population projections for England. Since the release of the 2018-based SNPPs we have completed a reconciliation and rebasing process where the later led to the release of Rebasing of mid-year population estimates following Census 2021, England and Wales, which included updated components of change. These have been included in the construction of this latest set of SNPPs.

How we quality assure and validate the data

The 2022-based subnational population projections use data from various sources including population estimates, births, deaths, internal migration, cross-border migration and international migration. All of these have undergone quality checks by data suppliers. Within the projections process, each local authority projection is quality assured and validated through a range of quality assurance processes to ensure the components are aligned with what is expected for each area and the total figures are constrained to the national figures.

How we disseminate the data

The subnational population projections and variant subnational population projections are disseminated through the ONS website. Stakeholders are alerted to new releases through various media channels, email and newsletters.

7 . Other information

Assessment of user needs and perceptions

(The processes for finding out about uses and users and their views on the statistical products.)

As stated in Section 5: Relevance subsection, it has been normal practice to consult with users as a standard part of the release cycle. Evidence from these consultations, along with any other information from user engagement, provides an opportunity for new requirements to be considered and for any problems with the projections to be highlighted and reviewed.

The Office for National Statistics (ONS) Population and Household Projections team regularly provides advice and support to customers on how to use projections, and in doing so the team keeps a record of user requirements. Such needs are considered during production of the statistics and, where possible, provision is made to accommodate new customer needs. Any unmet user need is considered as part of the future divisional work plan.

In 2024, we consulted with users on their needs for 2022-based subnational projections. Based on the respondents' feedback, we released SNPPs by the Sub Integrated Care Board geographies and to reflect recent local authority boundary changes. We produced new variant projections, interactive maps to allow users to compare a local authorities in England, and reformatted data tables to meet user needs. More information can be found in our Response summary: User needs from 2022-based national, subnational and household projections engagement (PDF, 392KB).

Actual population change is almost certain to differ from what is projected. Because updated projections are usually produced every two years, we do not go back and change old projections retrospectively. However, in the unlikely event that a production error or a major revision to the source data causes our latest projections to be substantially inaccurate, we would consider the best approach in line with our revisions policy for publication statistics.

The latest subnational population projections for Wales are 2018-based, published on 27 February 2020. Subnational population projections for Wales are available from StatsWales. The latest subnational population projections for Scotland are 2018-based, published on 24 March 2020. Subnational population projections for Scotland are available from the National Records of Scotland. The latest subnational population projections for Northern Ireland are 2018-based, published on 30 April 2020. Subnational population projections for Northern Ireland are available from the Northern Ireland Statistics and Research Agency.

In January 2017, the responsibility for household projections was transferred to the ONS. The most recent household projections for England are published in our Household projections for England: 2018-based bulletin. For future releases please see the ONS Release Calendar. Previous releases of household projections can be found on the Ministry of Housing, Communities and Local Government (MHCLG) website. Queries on household projections should be directed to pop.info@ons.gov.uk.

The Variant national population projections for the UK and subnational population projections and household projections for England: user guide was published in 2021. It details the methodology, assumptions, and how variants differ from principal projections and how they can be applied in planning and policy contexts.

8 . Related links

Subnational population projections for England: 2022-based
Bulletin | Released 24 June 2025
Indicate potential future population size of English local and health authorities. Widely used in planning -- for example labour market, housing, health and education.

Methodology used to produce the 2022-based subnational population projections for England
Methodology | Released 24 June 2025
Methods used to produce the 2022-based subnational population projections.

Subnational population projections across the UK: a comparison of data sources and methods
Methodology | Released 10 March 2021
User guidance, uses, assumptions and methodology for the subnational population projections for each constituent country of the UK.

National population projections: 2022-based
Bulletin | Released 28 January 2025
The potential future population size of the UK and its constituent countries. These statistics are widely used in planning, including fiscal projections, health, education and pensions.

Comparing subnational population projections to estimates report
Methodology | Released 24 June 2025
Methodology on the comparison of subnational population projections from 1971 to 2022 with population estimates, births, long-term international migration, and deaths, including measures of error.

9 . Cite this methodology

Office for National Statistics (ONS), released 24 June 2025, ONS website, quality and methodology information report, Subnational population projections: quality and methodology information