

Article

# Rebasing and reconciliation of mid-year population estimates following Census 2021, England and Wales: 2022

An update for users of population statistics, explaining the process used to integrate Census 2021 data into population estimates (2012 to 2021).

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# 1 . Overview of using the latest data to inform population estimates

Following Census 2021, and the publication of the first results ([Population and household estimates, England and Wales: Census 2021](#)), the Office for National Statistics (ONS) is now carrying out reconciliation and rebasing of the mid-year population estimates (MYE) it produces. This process happens every 10 years following the census. It is particularly important following the 2021 Census because the coronavirus (COVID-19) pandemic is likely to have increased the uncertainty around the MYEs more than would ordinarily be the case. It is likely that many people's movements over the last two years may not reflect longer-term trends.

The purpose of this article is to provide further information on what the reconciliation and rebasing process is, why it is undertaken and to enable you to consider any potential impacts it could have on your use of our statistics.

Our [Population statistics and sources guide](#) contains broader information about the different types of population estimate that are planned over 2022 and 2023, including the planned publication of 2021 MYEs in late 2022.

## 2 . Impact of reconciliation and rebasing on users of population statistics

Reconciliation and rebasing will be of interest to, and potentially impact on, anyone who uses the Office for National Statistics' (ONS') population estimates, demographic outputs, surveys, or projections. Anything that uses the estimates of the population (see our [Quality and methodology information \(QMI\) for Census 2021](#)) at a national or local level is likely to be affected by rebasing. The rebased estimates will become the official population estimates, replacing the existing series from mid-2012 to mid-2020. In addition, anyone who uses population estimates as denominators to calculate rates will be interested in the plans for reconciliations and rebasing.

Census 2021 gives us the end-point population level for the decade since 2011. This means we are now able to compare the mid-year estimates (MYEs) throughout the previous decade with the Census 2021 data and use these data to revise the timeseries of previous MYEs (including the components of change in these). The official population estimates for mid-2012 to mid-2020 will be revised, to incorporate the data we now have available from Census 2021.

If you use MYEs for planning, indicators, resource allocation or projections you will need to be aware of our plans and consider what impacts it will have on your use of historical ONS population statistics.

When the reconciliation and rebasing process has been completed the rebased annual components of change will be used to inform assumptions for 2021-based projections. Starting the development of assumptions from using the rebased components of change will provide the best possible long-term assumptions for projections.

We also plan to make comparisons of the projections to the rebased MYEs to show the difference between projections and later estimates, including components of change. The ONS has made such comparisons in the past after the 2011, 2001 and 1991 Censuses which help us to identify where assumption setting can be improved. Comparisons of this type are also helpful for projections' users for understanding uncertainty in assumptions and projections.

## Reconciliation of census based mid-year population estimates

Census 2021 gave us a high-quality estimate of the population of England and Wales on Census Day 2021. We, the ONS, are now using the Census Day estimates in our standard process to produce mid-year population estimates for mid-2021. More details are available about the [Methods for producing Mid-2021 population estimates](#) rolled forward from Census 2021.

Reconciliation is the process of comparing the new official mid-year population estimates for mid-2021 (derived from using Census 2021 data), with the mid-year population estimates for mid-2021 which would have been developed in the absence of a census (mid-2021 estimates rolled forward from mid-2020 estimates).

The comparison of the two different types of population estimates will show how much inter-censal drift there has been. For example, how much potential error has affected the population statistics system over the years between 2011 and 2021, as we add in vital events (births and deaths) and migration. We will then be able to explain where this drift has come from and attribute it to different components of change. An example of how this was done following the 2011 Census can be found in our [Explaining the Difference between the 2011 Census Estimates and the Rolled-Forward Population Estimates report \(PDF, 363 KB\)](#). However, this compares Census Day estimates rather than mid-year.

## Rebasing population estimates from mid-2012 to mid-2020

Rebasing follows on from the reconciliation process and aims to spread the differences observed out across the last decade in a plausible fashion (to reflect years of the decade when a component of change was contributing to that difference), apportioned to the most likely component of change. An example of how this was done following 2011 Census is also available for both the national and subnational time series. For more information on the national, please see our [Methods used to revise the national population estimates for mid-2002 to mid-2010 paper \(PDF, 172 KB\)](#). For more information on the sub-national, please see our updated [Methods used to revise the national population estimates for mid-2002 to mid-2010 paper \(PDF, 641 KB\)](#).

## Benefits of the reconciliation and rebasing process

It is important that population estimates are revised to use the best available information, to ensure that we, the ONS produce the highest quality population statistics. Rebasing our historical estimates and using the highest quality estimates for 2021 allows us to ensure that our national and subnational projections have the best possible input data for the development of assumptions for the projections.

The rebasing exercise also allows us to incorporate other improvements, such as improved methodology for distribution of internal migration, to our historical time series, which have developed over the decade to aim for the most consistent methods we can, to aid comparability. This is also of benefit for development of assumptions to be used in population projections. For more information on the improved methodology, please see our [Population estimates for the UK, mid-2019: methods guide](#).

## **3 . Potential scale of changes to population estimates and components of change**

Until the final estimates of both rolled forward and census-based populations are processed, we are unable to exactly measure the difference and scale of potential changes to national and subnational estimates. This information, and potential causes of difference, will form the centrepiece of the reconciliation report.

We do know that the Census 2021 estimate of population in England and Wales was slightly smaller than the mid-2020 population estimate. Therefore, it is likely that there will be small revisions back across the decade and England and Wales, to ensure a credible time series. It is important to note that these revisions will not be applied uniformly across time or area and will recognise local variations in population change. We will produce a "Census Day minus one year" estimate, to allow us to better understand how much of the difference between census estimates and mid-year estimates occurred in the year leading up to census, which was during the coronavirus (COVID-19) pandemic.

Our goal is to attribute any changes to the most likely component of change so users can understand the causes of the inter-censal drift and can use the information to inform their planning and work. It is likely we will not be able to attribute all change to a particular component. This would occur when sufficient data or methods are not currently available to inform us about which component it should be attributed to, but we are aiming to minimise or eliminate this where possible.

## **4 . Provisional timetable for outputs from reconciliation and rebasing**

We will explore the data thoroughly to understand any differences as far as is possible and to understand the impacts of coronavirus (COVID-19) on previous population estimates. As a result, we have planned a series of provisional publication dates which we will look to confirm as the work progresses.

### **2021 mid-year estimates (MYEs) including mid-2021 population estimates rolled forward from the 2011 Census**

- The content will include the official estimates of population for mid-2021.
- The provisional publication date is November 2022.

### **Reconciliation: differences between rolled forward MYEs and the 2021 Census based MYEs by causal component at national and local level**

- The content will explain sources of differences, final methods used in reconciliation and proposals for rebasing.
- The provisional publication date is early 2023.

### **Rebasing at national level**

- The content will include rebased population estimates at the national level for mid-2012 and mid-2020.
- The provisional publication date is early 2023.

### **Rebasing at local authority district level**

- The content will include rebased population estimates at the local authority district level for mid-2012.
- The provisional publication date is spring 2023.

## Rebasing methodology

- The content will include a final report summarising the methods used for the rebasing of mid-year population estimates.
- The provisional publication date is spring 2023.

## 5 . Future developments

### Transformation of the population and migration statistics system

Alongside the reconciliation and rebasing of mid-year population estimates, we are continuing to transform our population, migration and social statistics. This is to meet the need for more timely and frequent statistics that enable us to understand our population and how it changes on an ongoing basis. In July 2022, we announced our ambition for a new Dynamic Population Model, building on our earlier research to develop admin-based population estimates. This sets a clear path for the future of population statistics to produce timely population at national and local authority level.

The detail of this is outside the scope of this update, but more information can be found in our [Dynamic population model for England and Wales: July 2022 article](#). Further updates to the research are planned for Autumn 2022.

### Providing feedback and staying informed

We welcome your feedback on our population statistics and planned outputs. We have also launched our [Local population statistics insight feedback framework](#). This enables users of population statistics to provide feedback and suggested data sources for us to better understand the quality of our estimates.

If you would like more details about the reconciliation and rebasing projects or the transformation population statistics are undergoing, please contact us. We can also help you to understand which population estimates you should be using at different times. Email [pop.info@ons.gov.uk](mailto:pop.info@ons.gov.uk) for help and support.

To receive the latest updates and our Population Statistics newsletter, sign up to the [Office for National Statistics migration and population statistics mailing list](#). For more information on how we process stakeholders' personal data, read our [Privacy information for our stakeholders](#).

## 6 . Related Links

### [Population statistics and sources guide](#)

Article | Released 15 July 2022

A comparison of the different types of population estimate that are planned for or are published in 2022 and early 2023.

### [Review of population estimates and projections produced by the Office for National Statistics](#)

Review | Released 10 May 2021

A summary of the Office for National Statistics review of population estimates and projections.

### [Population and household estimates, England and Wales: Census 2021](#)

Statistical Bulletin | Released 28 June 2022

Census 2021 rounded population and household estimates for local authorities in England and Wales, by sex and five-year age group.

### [Update on research and plans for population estimates and projections: May 2022](#)

Article | Released 26 May 2022

Outline of completed, ongoing and future work addressing recommendations in the Office for Statistics Regulation (OSR) review of ONS population estimates and projections.

## 7 . Cite this article

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