Development of admin-based household estimates by size for local authorities in England and Wales: 2021

The methodology used to produce household estimates by size based on administrative data sources for 2021.

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1 . Overview of admin-based household estimates by size

This article provides supporting quality and methods information for our Admin-based household estimates by size for local authorities in England and Wales: 2021 bulletin.

Detailed statistics on the number of households and their characteristics are produced from the census for England and Wales every 10 years. In between census years, the Office for National Statistics (ONS) produces survey-based estimates on the number of households and their characteristics, but these provide less detailed, or granular, data.

Therefore, we are developing an alternative method based on administrative data sources, called the admin-based household estimates (ABHE), which have the potential to be more granular than our survey-based method, and can be produced on an annual basis.

This article builds on our previous Admin-based household estimates for 2021 article and 2021 to 2023 time series bulletin. These outputs focused on the first two stages of our estimation process, which creates the admin-based household estimates. In this article, we present the next stage of our estimation process, which aims to estimate number of households by size for 2021, for England and Wales, at three geographic levels:

- England and Wales
- Wales and the regions of England
- local authority

The analysis in this article compares ABHE, ONS survey-based household estimates and counts from unadjusted administrative data with Census 2021, which provides our best estimate of true household size numbers.

Our findings show that ABHE align well with Census 2021 for some household sizes, but for others substantial variation in alignment remains across the three geographic levels presented. The patterns of over- and underestimation are influenced by the Labour Force Survey (LFS) household-size distribution for England and Wales used in the estimation method.

ABHE and the survey-based estimates show comparable alignment to Census 2021 for England and Wales across the household sizes. However, for Wales and the regions of England, the relative performance varies, but in general ABHE show marginal improvements over the survey-based estimates.

An important strength of ABHE is that they provide estimates by household-size at the local authority level, which is not available in the survey-based estimates.

The findings provide valuable evidence to guide future methodological improvements and assess the potential for producing official household estimates by household size.

2 . Household statistics available for England and Wales

Currently, the Office for National Statistics (ONS) publishes the official household estimates for England and its regions annually in our Families and households in the UK bulletin. The estimates are derived from Quarter 2 (April to June) of the Labour Force Survey (LFS). The publication also includes estimates for Wales, but these are not the official household estimates for Wales.

The official household estimates for Wales are produced and published by the Welsh Government. They are based on the previous census and mid-year population estimates.

Household estimates at a local authority level are also made available by the ONS on an ad hoc basis. These estimates are based on the Annual Population Survey (APS) and they are not badged as accredited official statistics. No household size breakdown is available. The APS is not a standalone survey. It combines Waves 1 and 5 from the LFS main sample (a quarterly sample) and Waves 1 to 4 from the annual local boost sample.

Finally, Census 2021 household statistics are available in our Household and resident characteristics, England and Wales bulletin.

Our user guide on household estimates and projections provides further detail on the coherence and comparability of household estimates across the UK.

3 . Producing admin-based household estimates by size

Admin-based household estimates (ABHE) are produced from administrative data inputs and use a multi-stage estimation process. The estimation process aims to:

- align the administrative data more closely with the census definition of a household (rather than using occupied address as a proxy for households)
- adjust for coverage gaps, errors and address mis-recording in the administrative data inputs

Administrative data have historically used "occupied address" as a proxy for the "household" definition used by census and other household surveys. This is because the administrative data lack information on shared facilities used within the census definition. A population and migration statistics transformation case study published in June 2023 considered the occupied address versus household definition and, from census data, estimates that the difference in definitions affects fewer than 1% of occupied addresses.

Starting with the Statistical Population Dataset (SPD) (currently version 5.1), we assign a Unique Property Reference Number (UPRN) to each record. The ABHE use two of the administrative datasets created from this process:

- the admin-based occupied address dataset (ABOAD)
- the admin-based communal establishment dataset (ABCED)

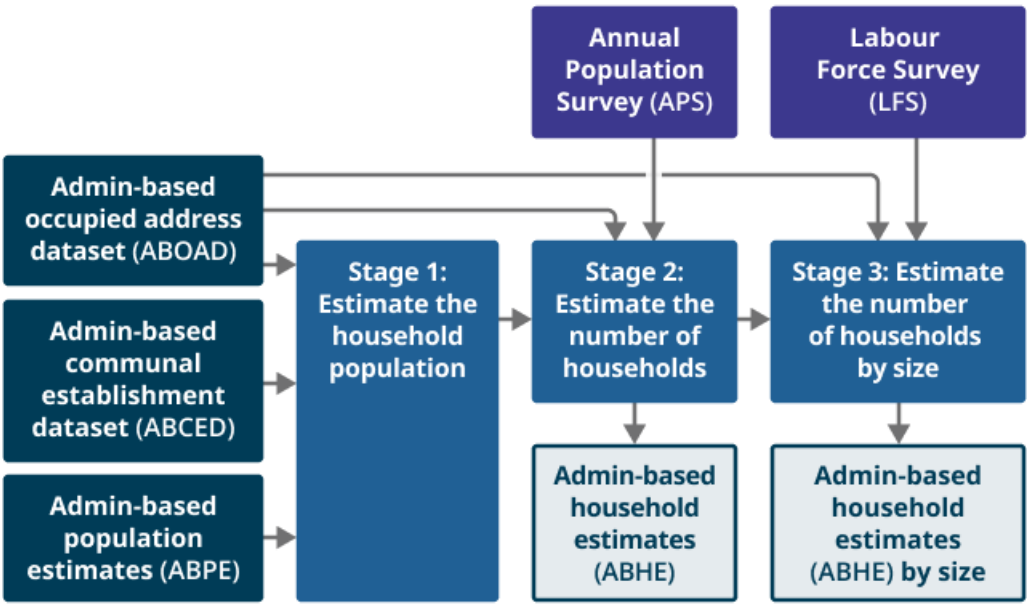
These two datasets are used in a multi-stage estimation process, which has the following three stages:

- Stage 1: estimate the household population
- Stage 2: estimate the number of households
- Stage 3: estimate the number of households by size

The administrative datasets and the multi-stage estimation process are set out in detail in a paper presented to the Methodological Assurance Review Panel (MARP) in November 2025. The paper Research on producing admin-based estimates of the number and size of households for local authorities in England and Wales (PDF, 268KB) has been published on the UK Statistics Authority website. A high-level summary of the estimation process follows and is presented schematically in Figure 1.

Figure 1: The estimation methodology for admin-based household estimates

Stage 1: estimate the household population



Source: Office for National Statistics

To produce ABHE, we start with population estimates for England and Wales. Our method currently uses the admin-based population estimates (ABPEs). However, as explained in our Assessment of criteria for moving to admin-based population estimates as official estimates of population, England and Wales article, published in March 2026, ABPEs will not be adopted as official population estimates. We will therefore aim to use the mid-year population estimates in future ABHE releases.

The population estimates provide the usually resident population of England and Wales, broken down by local authority, age and sex. Age is broken down by single year until the age of 90 years, after which it is aggregated into one age group.

The first step is to remove communal establishment residents from the population estimates as they do not form part of the household population. A similar adjustment is made to the mid-year population estimates when they are used to produce survey weights and household projections.

To do this, we use ABCED and ABOAD to calculate the proportion of communal establishment residents, by age and sex. We then apply these proportions to the population estimates to remove communal establishment residents, by age and sex. This leaves us an estimate of the household population.

Stage 2: estimate the number of households

To convert the household population estimate into ABHE, we start by calculating the household representative rate (HRR) using weighted auxiliary data from the Annual Population Survey (APS). The HRR is the proportion of people in each demographic group (defined by age and sex) who were identified as the household reference person (HRP). The HRP serves as a reference point, to characterise a whole household.

We apply the HRR to the household population estimate, disaggregated by age and sex, to estimate the number of households for each demographic group. These are then summed to produce the total number of households for England and Wales.

To allocate this total number of households across local authorities in England and Wales, we use ABOAD. To do this, the proportions of occupied addresses in each local authority are calculated and used to distribute households across the local authorities. As part of this process, we also remove implausibly large households (containing 31 or more people) from ABOAD to align with Census 2021 methodology.

Stage 3: estimate the number of households by size

To create breakdowns of the number of households by size, we use a small area estimation method called the Structure Preserving Estimator (SPREE). SPREE combines benchmark data sources that provide row and column totals in a table, with a data source that provides a likely distribution structure.

The number of households from ABHE provide the local authority totals (the rows) and LFS estimates provide the household-size totals (the columns).

Before applying SPREE, the proportion of one-, two-, three-, four-, and five or more people households from the LFS are applied to the ABHE total for England and Wales. This produces household-size totals that sum to the overall ABHE total.

ABOAD provides the likely distribution structure of households by size, and by local authority.

SPREE repeatedly adjusts the rows and the columns of the likely distribution structure from ABOAD until the estimates are consistent with both the ABHE local authority totals (the rows) and LFS-based household-size totals (the columns).

4 . Impact of survey quality on admin-based household estimates

This article presents comparisons of the Labour Force Survey (LFS) household estimates for England and Wales, as well as Wales and the regions of England, with Census 2021.

In addition, the Annual Population Survey (APS) and LFS data are used in our estimation methodology. Stage 2 of our estimation process uses APS data to convert from the household population estimate to a number of households estimate. Stage 3 of our estimation process uses the household size proportions for England and Wales from the LFS. Therefore, it is important to note the following points.

The household weighting scheme used for LFS- and APS-based household estimates for 2021 has not been updated to reflect Census 2021. The weighting scheme ensures LFS and APS results are representative of the whole population according to the most recently available population statistics, and compensates for biases and non-response to the survey. Revisions will be made when the updated weighting scheme is implemented, which will result in changes to the data and comparisons presented in this article.

LFS and APS data collection from 2020 to 2023 was affected by restrictions that were first put in place in March 2020 to limit the spread of coronavirus (COVID-19). These restrictions affected our ability to conduct household surveys and reduced response rates. Further information is available in our Labour Force Survey performance and quality monitoring reports.

In October 2024, the accredited official statistics status of APS-based outputs was suspended in a letter from the Office for Statistics Regulation (OSR). At the same time, the Office for National Statistics (ONS) provided an assessment of APS quality in a letter to the Office for Statistics Regulation. This concluded that the total sample size is still relatively large at a national level, where results would remain reasonably robust, with a small increase in variability compared with the pre-coronavirus pandemic period. Our ABHE methodology uses APS data at a national level (England and Wales).

In September 2026, we published an Annual Population Survey quality update, which explains the long-term challenges with the survey and more recent operational and strategic changes and what this means for the quality and use of APS statistics. This includes the recent removal of the Scottish boost and reduction of the English boost. Once these changes have fully fed through, APS sample sizes are expected to be lower than they are now. These data are not yet available, and we will assess the impact of this on our ABHE methodology in future research updates.

Measures of quality such as confidence intervals (to show the levels of uncertainty associated with survey estimates) are presented in Data related to families and households in the UK. Users are advised to consult these quality measures when interpreting the LFS estimates.

We are transforming the LFS into the Transformed Labour Force Survey (TLFS). When household weights are available on the TLFS, we will assess how we can use these data in our estimation process, and we will carry out comparisons. More information is available in our latest Labour market transformation – update on progress and plans article.

5 . Comparing admin-based household estimates by size with Census 2021

This section evaluates the quality of our admin-based household estimates (ABHE) by size, using Census 2021 as the benchmark. To understand the effect of the estimation method, the unadjusted administrative data, called the admin-based occupied address dataset (ABOAD) are also compared with Census 2021 for England and Wales.

In addition, where available, we also compare our survey-based household estimates to Census 2021 to assess relative performance across sources. All numbers are rounded to one decimal place.

England and Wales

The ABHE to Census 2021 relative bias distribution for England and Wales is very similar to the Labour Force Survey (LFS) relative bias distribution (Figure 2). This is because the methodology uses the LFS household-size distribution for England and Wales.

For one-person households, ABHE are within 5% of Census 2021, with a relative bias of negative 4.4%. However, ABHE are less closely aligned with Census 2021 than the unadjusted administrative data, ABOAD, which has a relative bias to Census 2021 of negative 0.4% (Figure 2). This happens because the ABHE methodology broadly aligns it to the LFS relative bias distribution, which is negative 3.9% for one-person households.

For two- and three- person households, Figure 2 shows that ABHE compare favourably with Census 2021, with a relative bias at 0.0% and 0.3%, respectively. Our survey-based estimates, based on the LFS, also compare favourably with Census 2021 for these household sizes, with a relative bias of 0.6% and 0.3%, respectively. ABOAD has a large negative relative bias for two-person households (negative 18.7%).

Four-person households in Figure 2 show the largest relative bias to Census 2021 for both ABHE and the LFS-based estimates, at 12.6% and 13.2%, respectively. ABOAD has a large negative relative bias for four-person households (negative 14.8%).

Estimates for households of five or more people in Figure 2 also show notable differences to Census 2021, with relative biases of negative 7.3% for ABHE and negative 6.8% for the LFS-based estimate. ABOAD has a smaller relative bias of negative 0.8%. This happens because the ABHE methodology broadly aligns it to the LFS relative bias distribution.

The results show that the ABHE method succeeds in compensating for the large ABOAD undercount in two- and four-person households, but the bias distribution from the LFS is introduced into ABHE. Overall, ABHE and the LFS show comparable alignment with Census 2021 across household sizes.

Figure 2: Admin-based household estimates align closely with census for two- and three-person households, but show larger differences for four-person and five or more people households

Household estimates by size, relative bias to census for England and Wales, 2021

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Notes:

1. The weighting scheme used for Labour Force Survey-based household estimates for 2021 has not been updated to reflect Census 2021. Revisions will be made to the back series, which will result in changes to the comparisons presented in this chart, when this update is implemented.

2. ABOAD measures occupied addresses which are a proxy for households.

Figure 3 shows the household size distribution for census, ABOAD, ABHE and LFS-based estimates. ABHE and the LFS-based estimates have the same household size distribution because the ABHE size breakdown is derived from the LFS-based distribution.

The proportion of two-person households (34.2%) and three-person households (16.0%) in ABHE are very similar to the Census 2021 proportions. However, the proportions of one-person and five or more people households in the ABHE are lower than in Census 2021. In contrast, the proportion of four-person households in ABHE is higher than in Census 2021, at 14.5% compared with 12.8%.

ABOAD has a higher proportion of one-person households and a lower proportion of two-person households when compared with Census 2021. The remaining size bands are within 1.1 percentage points of the Census 2021 proportions.

Figure 3: Admin-based household estimate proportions align closely with census for two- and three-person households, but are lower for one-person and five or more people households, and higher for four-person households

Household estimates by size, proportions for England and Wales, 2021

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Notes:

1. The weighting scheme used for Labour Force Survey-based household estimates for 2021 has not been updated to reflect Census 2021. Revisions will be made to the back series, which will result in changes to the comparisons presented in this chart, when this update is implemented.

2. ABOAD measures occupied addresses which are a proxy for households.

Wales and the regions of England

The ABHE to Census 2021 relative bias distribution for Wales and the regions of England (Figure 4) broadly aligns to the LFS relative bias distribution presented in Figure 2 at the start of Section 5: Comparing admin-based household estimates by size with Census 2021. This is because the methodology uses the LFS household-size distribution for England and Wales.

ABHE underestimate the number of one-person households in Wales and the regions of England compared with Census 2021. Five of the 10 areas are within 5% of Census 2021, and all are within 10%. London has the largest relative bias, at negative 8.6% (Figure 4).

For two-person households, Figure 4 shows that ABHE are within 5% of Census 2021 in Wales and all the regions of England. Wales has the largest relative bias, at negative 4.5%.

ABHE are also within 5% of Census 2021 for three-person households across Wales and the regions of England. London and Wales have the largest relative biases, at negative 4.4% and negative 3.6%, respectively.

For four-person households, ABHE overestimate across Wales and the regions of England, with many large relative biases (Figure 4). None of the 10 areas are within 5% of Census 2021, and only three are within 10% of census. The North West has the largest relative bias, at 19.5%.

ABHE generally underestimate households with five or more people in Wales and the regions of England (Figure 4). London is the only area within 5% of Census 2021, with a relative bias of 0.9%.

The relative performance of ABHE compared with the LFS estimates in Figure 4 varies across Wales and the regions of England, and across household sizes. In general, ABHE do show some minor improvements over LFS estimates, which are increasingly affected by sampling variability at more detailed geographic levels.

Further insights to help explain the results are set out in Section 6: Factors contributing to differences between admin-based household estimates by size and Census 2021.

The relative bias of the unadjusted administrative data, ABOAD, to Census 2021 is not presented for Wales and the regions of England in Figure 4. However, the bias pattern generally follows England and Wales-level aggregates presented in Figure 2. ABOAD consistently undercounts two-person and four-person households for Wales and the regions of England, with a relative bias to Census 2021 of negative 15% or greater for two-person households, and nearly negative 10% or greater for four-person households.

Welsh Government estimates are not presented in Figure 4, but they align closely with Census 2021, with relative biases of less than 1% for all household sizes except for three-person households. This alignment is expected as the estimates are based on Census 2021 and mid-year population estimates.

Figure 4: Admin-based household estimates generally align well with census for two- and three-person households, but align less well for the other household sizes

Household estimates by size, relative bias to census for Wales and the regions of England, 2021

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Notes:

1. The weighting scheme used for Labour Force Survey-based household estimates for 2021 has not been updated to reflect Census 2021. Revisions will be made to the back series, which will result in changes to the comparisons presented in this chart, when this update is implemented.

Local authority

The Survey-based household estimates published by the Office for National Statistics (ONS) on an ad hoc basis do not provide breakdowns by size at the local authority level. Therefore, these estimates cannot be compared with Census 2021.

The Official household estimates for Wales, produced and published by the Welsh Government, do contain household size breakdowns at a local authority level. However, we do not present the Welsh data because these estimates are based on census and mid-year population estimates and, as expected, generally align closely with Census 2021 (within 5.3%).

The relative bias of ABHE to Census 2021 by size is presented in Figure 5. Table 1 lists the top 10 local authorities with the largest relative bias to Census 2021, by size.

The ABHE to Census 2021 relative bias distribution for the local authorities (Figure 5) very broadly aligns with the LFS bias distribution presented in Figure 2. This is because the methodology uses the LFS household-size distribution for England and Wales.

There are several other reasons that influence the comparisons at a local authority level and these insights are set out in Section 6: Factors contributing to differences between admin-based household estimates by size and Census 2021.

For most local authorities (240 of 318), ABHE underestimate the number of one-person households (Figure 5). The median relative bias to Census 2021 is negative 2.8%. Six of the top 10 local authorities with the largest relative bias are in London (Table 1).

ABHE for two-person households in Figure 5 have both over- and underestimation at the local authority level, with a small median relative bias of 0.1% to Census 2021. The 10 local authorities with the largest relative bias to Census 2021 are presented in Table 1. Of the 10 listed with the largest relative bias, seven are in London.

For three-person households, there is both over- and underestimation relative to Census 2021 (Figure 5). The median relative bias to census is 0.0%. Table 1 presents the 10 local authorities with the largest relative bias between the ABHE and Census 2021 for three-person households, and all but one of the local authorities are in London.

ABHE overestimate the number of four-person households in almost all local authorities, with only three local authorities showing an underestimate (Figure 5). Four-person households have a median relative bias to Census 2021 of 12.3%, which is a substantial overestimate.

The geographic pattern for four-person households with the largest relative bias to census differs from the smaller household sizes (Table 1). Only one London local authority appears among the 10 local authorities with the largest relative bias, while eight local authorities from the North West appear in this group.

This pattern is caused by the way the LFS household-size distribution for England and Wales is used in the ABHE estimation process. Many London local authorities have an underestimate in total ABHE households (as seen in our previous Admin-based household estimates for 2021 article), while the LFS household-size distribution overestimates the number of four-person households. Therefore, applying the LFS household-size distribution brings the ABHE for local authorities in London for four-person households closer to Census 2021. However, in other regions where the total number of households are not underestimated to the same extent, applying the same LFS household-size distribution contributes to the overestimation present.

Figure 5 shows that ABHE underestimate households of five or more people in most local authorities, with 283 out of 318 local authorities having estimates below Census 2021. The median relative bias to Census 2021 is negative 8.5%. Table 1 shows that the largest relative biases are geographically mixed, although three of the 10 local authorities with the largest biases are in the South West.

These results show that the performance of ABHE by size varies substantially across local authorities when compared with Census 2021. Two- and three- person households show the closest overall alignment, with median relative biases close to zero.

In contrast, there are some substantial differences for four-person and five or more people households, where ABHE generally overestimate four-person households and underestimate five or more people households. One-person households are also generally underestimated, although the median relative bias is smaller. These findings are broadly consistent with the pattern seen for England and Wales presented in Figure 2, which is caused by the LFS household-size distribution for England and Wales.

London local authorities account for many of the largest relative biases for one-, two- and three- person households. Further insights to help explain why ABHE differ from Census 2021, and why this may affect London more than other areas, are discussed in Section 6: Factors contributing to differences between admin-based household estimates by size and Census 2021.

Figure 5: Admin-based household estimates align most closely with census for two- and three-person households; local authorities in London account for many of the largest differences for one-, two- and three-person households

Admin-based household estimates by size, relative bias to census for the local authorities of England and Wales, 2021

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Notes:

1. Results are presented for 318 local authorities based on 2023 local authority boundaries, rather than the 331 local authorities that existed in 2021. This is so we have consistency across the time series in future releases.

Table 1: Top 10 local authorities with the largest admin-based household estimates relative bias to Census 2021

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6 . Factors contributing to differences between admin-based household estimates by size and Census 2021

Differences between admin-based household estimates (ABHE) by size and Census 2021 may reflect data and coverage limitations, as well as local population and housing characteristics such as complex address structures and high population turnover. These factors are considered in more detail in this section.

Data coverage and quality

Labour Force Survey household-size distribution

To produce ABHE by size, the method applies the Labour Force Survey (LFS) household-size distribution for England and Wales (as explained in Section 3: Producing admin-based household estimates by size). Consequently, any limitations in the LFS distribution are carried through to the ABHE by size.

For example, the LFS weighting scheme for 2021 has not been updated to reflect Census 2021. Once implemented, this update will change the LFS household-size distribution and, therefore, the ABHE by size.

Coverage of the Statistical Population Dataset

ABHE are produced using the admin-based occupied address dataset (ABOAD), which is derived from the Statistical Population Dataset (SPD). Coverage limitations in the SPD therefore feed through to ABOAD and, in turn, into the ABHE.

The analysis presented in this article is based on version 5.1 of the SPD. Previous comparisons between version 4.0 and Census 2021 identified overcoverage for London and undercoverage in Wales, as detailed in our Developing Statistical Population Datasets, England and Wales: 2021 article. Although improvements were made in version 5.1, similar coverage patterns remain.

Address information in administrative data

ABOAD is the main admin dataset used to produce ABHE. Several aspects of its production may contribute to differences between ABHE and Census 2021.

In England, address data for children are available from the English School Census, whereas the Welsh School Census does not capture full address information. Therefore, in Wales, the Personal Demographic Services (PDS) is the only source of address information for both adults and children in ABOAD for Wales.

Addresses recorded in Welsh may present a challenge in the production of ABOAD. These addresses might reduce the effectiveness of the Address Index Matching Service (AIMS) at matching the address string to the correct Unique Property Reference Number (UPRN).

The SPD assigns records to a local authority using data sources containing either addresses or other geographic identifiers, such as post codes. ABOAD can only use sources containing addresses. Consequently, the local authority assigned to a record in the SPD may be replaced by a different local authority on ABOAD, effectively moving some records between local authorities.

The process used to create ABOAD and the admin-based communal establishment dataset (ABCED) results in records that cannot be classified as either a household or a communal establishment; these records are referred to as residuals. This typically occurs when a record on the admin data has not been matched to a UPRN, or when the matched UPRN is not recognised as a residential address.

AIMS may not be able to match a UPRN to a record on the administrative data because of a poor-quality address string or limited address information being supplied. Areas with an above-average proportion of residual records are more likely to be underestimated because these records are excluded from household estimates.

Local population and housing characteristics

Complex address structures

Complex address structures, where a single building contains multiple occupied addresses with similar address strings, are a known source of undercoverage in ABOAD. This can occur when AIMS matches the address string to a neighbouring address, causing records from several addresses to be grouped under fewer occupied addresses. This creates undercoverage of addresses in both the ABOAD and ABHE.

It can also affect ABHE by size by underestimating the number of smaller households and overestimating the number of larger households. Complex address structures are more common in London and therefore this problem has a larger effect on this region. More than half (54.0%) of households in London lived in a flat, maisonette or apartment according to the Census 2021 data on accommodation type for England and Wales.

Multiple households living at a single occupied address

ABHE are likely to underestimate household counts in areas where the proportion of occupied addresses containing multiple households is higher than the average for England and Wales. This is because the ABHE method adjusts for the difference between occupied addresses and households at the England and Wales level, rather than separately for individual geographic areas.

Houses in multiple occupation (HMOs) are likely to contribute to this issue, particularly where an HMO contains more than one household. Therefore, a higher prevalence of HMOs in an area, may result in higher underestimation in ABHE. This may also affect estimates by household size, potentially underestimating the number of smaller households and overestimating the number of larger households. HMOs are more common in densely populated urban centres such as Oxford and Wandsworth, according to Census 2021 data on the number of dwellings that are HMO.

High population turnover

High population turnover occurs when people move frequently, which is especially common among young adults. ABOAD relies on people's interactions with services such as registering with a General Practitioner (GP), to identify their address. People who move frequently, may not update their details promptly, or at all when they move into or leave an address. This can result in records being assigned to previous addresses or omitted from the dataset.

High population turnover can therefore lead to either under- or overcoverage, depending on how these movements are captured in administrative data. It can also affect ABHE by size. For example, an address may appear unoccupied if its residents are not recorded, while another address may appear to contain a larger household if both former and current residents are assigned to it. Areas with a university presence or a high proportion of young adults will be particularly affected by high population turnover.

7 . Strengths of admin-based household estimates by size

The results show that the admin-based household estimates (ABHE) by size method can successfully adjust for some of the limitations in the unadjusted administrative data. In particular, it compensates for the substantial undercount of two- and four-person households in the admin-based occupied address dataset (ABOAD).

However, the pattern of relative bias from the Labour Force Survey (LFS) household-size distribution for England and Wales is introduced across all three geographies presented.

At the England and Wales level, ABHE and LFS-based estimates show comparable alignment with Census 2021 as expected. Both ABHE and LFS-based estimates show closer alignment to Census 2021 for two- and three-person households than for other household sizes.

For Wales and the regions of England, the relative performance of ABHE compared with LFS estimates varies, but in general, ABHE does show some minor improvements over LFS-based estimates.

An important strength of the ABHE is that they can produce household-size estimates at local authority level, where the survey-based estimates used in this analysis do not. At this level, differences to Census 2021 vary by household size and area. Some of this variation is caused by local population and housing characteristics affecting the administrative data, including complex address structures, living arrangements and population turnover.

These findings show the potential of administrative data to provide more granular household statistics, while identifying where further methodological development is needed.

8 . Future development of admin-based household estimates

We plan to move to using the mid-year population estimates as the population total for admin-based household estimates (ABHE) as well as using a more recent version of the Statistical Population Dataset (SPD) to build the unadjusted administrative data. Both changes will result in revisions to the ABHE back series. We will publish an update on our progress in 2027.

Further development of the ABHE will be informed by our user needs work, including feedback on the household-size estimates produced in this article.

To help shape this work, we would like to hear from users. Please let us know how we can improve the ABHE and tell us about their potential uses. Please email your feedback to pop.info@ons.gov.uk.

9 . Definitions

Address Index Matching Service

An address matching algorithm developed in-house at the Office for National Statistics (ONS) that matches the address string from administrative records to Unique Property Reference Numbers (UPRN), assigning records to an address.

Administrative data

Collections of data maintained for administrative reasons, for example, registrations, transactions, or record keeping. They are used for operational purposes, and their statistical use is secondary. These sources are typically managed by other government bodies.

Communal establishment

A place providing managed residential accommodation. "Managed" here means full-time or part-time supervision of the accommodation, such as care homes, student halls of residence, hospitals, or prisons. The census and other surveys such as the Labour Force Survey do not consider communal establishments to be households.

Household

One person living alone or a group of people (not necessarily related) living at the same address who share cooking facilities and share a living room or sitting room or dining area. A household can consist of a single family, more than one family or no families in the case of a group of unrelated people.

Household reference person

The householder, who is the household member who owns the accommodation, is legally responsible for the rent; or occupies the accommodation as reward for their employment, or through some relationship to its owner who is not a member of the household. If there are joint householders, the one with the highest income is the household reference person (HRP). If their income is the same, then the eldest one is the HRP.

Median relative bias

Median relative bias shows the typical size of the relative difference between an estimate and a reference source, such as the census. It is calculated by taking the median of the relative bias for a group. A lower median relative bias means the estimates are generally closer to the reference.

Occupied address

A private residential property with at least one usual resident living in it.

Relative bias

Relative bias shows how much an estimate differs from the reference source, expressed as a percentage. A positive value means the estimate is higher than the reference source (an overestimate), while a negative value means it is lower than the reference source (an underestimate).

Structure Preserving Estimator

The Structure Preserving Estimator (SPREE) uses small area estimation techniques to combine and draw strength from several data sources using a method known as iterative proportional fitting (IPF). SPREE combines row and column benchmarks from an allocation structure with a proxy structure to create estimates.

Unique Property Reference Number

The Unique Property Reference Number (UPRN) is a unique identifier for every address in Great Britain. It is allocated by local government and Ordnance Survey (OS). They provide every place with a consistent identifier throughout its lifecycle, from planning through to demolition.

Usually resident population

The usually resident population is everyone usually resident in England and Wales.

We are currently adopting the United Nations (UN) definition of "usually resident" - that is, the place at which a person has lived continuously for at least 12 months, not including temporary absences for holidays or work assignments, or intends to live for at least 12 months (United Nations, 2008).

10 . Data sources

Admin-based living arrangements dataset

The admin-based living arrangements dataset (ABLAD) is a record-level dataset that aims to assign people in the Statistical Population Dataset (SPD) to addresses using a Unique Property Reference Number (UPRN).

Admin-based occupied address dataset

The admin-based occupied address dataset (ABOAD) is a subset of ABLAD, which contains record-level data of people linked to private residential addresses (known as occupied addresses) using administrative data.

Admin-based communal establishment dataset

The admin-based communal establishment dataset (ABCED) is a subset of ABLAD, which contains record-level data of people linked to communal establishments (for example, care homes, student halls of residences and prisons) using administrative data.

Admin-based population estimates

Admin-based population estimates (ABPE) are estimates of the total population of England and Wales disaggregated by local authority, sex and birth cohort based on administrative data and statistical modelling (Dynamic Population Model).

ABPE will not be adopted as official population estimates, as explained in our Assessment of criteria for moving to admin-based population estimates as official estimates of population, England and Wales article published in March 2026. We will continue to improve the population estimates using administrative data and we will aim to use the mid-year population estimates in future ABHE releases.

Annual Population Survey

The Annual Population Survey (APS) is a UK household survey that combines Waves 1 and 5 from the Labour Force Survey (LFS) with a local sample boost.

Lower achieved sample sizes in recent years have increased uncertainty in APS estimates, particularly at the local authority level. However, achieved sample sizes began to improve following the implementation of our Surveys and Economic Statistics Improvement Plan. All APS derived outputs are now labelled as official statistics.

The APS local sample boost has been reduced from 2026 onwards.

APS household data for 2011 to 2026 will be re-weighted following Census 2021.

Labour Force Survey

The UK's largest household study, providing official employment and unemployment measures. For household statistics, the Office for National Statistics (ONS) uses April to June data to produce intercensal household estimates, excluding most communal establishments. These estimates are not the official household estimates for Wales, Scotland or Northern Ireland, as each produces its own official household statistics.

Statistical Population Dataset

The Statistical Population Dataset (SPD) is tabular data that aims to capturethe usually resident populationon a reference date (30June)for a given year within England andWales.It is constructed from administrative sources that are linked together, and the combined evidence is used to derive who is usually resident and their characteristics of age,sexand geographic location.

For more information on Version 4.0 of the SPD, see our Developing SPDs, England and Wales: 2021 article. Version 5.1 of the SPD is used for the estimates produced in this release.

11 . Data on producing admin-based household estimates by size

Admin-based household estimates by size for local authorities in England and Wales: 2021
Dataset | Released 10 November 2026
Estimates of the number of households by size based on administrative data sources. These estimates are official statistics in development.

12 . Related links

Admin-based household estimates by size for local authorities in England and Wales: 2021
Bulletin | Released 10 November 2026
Estimates of the number of households by size for 2021, based on administrative data sources.

Admin-based household estimates for local authorities in England and Wales: 2021 to 2023
Bulletin | Released 8 September 2026
Estimates of the number of households for 2021 to 2023, based on administrative data sources.

Admin-based household estimates for local authorities in England and Wales: 2021
Article | Released 8 December 2025
Estimates of the number of households for 2021, based on administrative data sources compared with Census 2021 and other official statistics.

Household and resident characteristics, England and Wales: Census 2021
Bulletin | Released 2 November 2022
Household size, household composition, household deprivation status, and people's marital and civil partnership status, Census 2021 data.

Welsh Government household estimates
External webpage | Released 28 January 2026
Data by household type, population and average size.

Families and households in the UK: 2025
Bulletin | Released 17 April 2026
Estimates of families (with and without children) and household types, including people living alone in the UK in 2025.

13 . Cite this page

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