

## **Population Denominators by Broad Ethnic Group and White British: LAs in England and Wales**

The accompanying files contain estimated population denominators by broad ethnic group, and White British, for years 2011-15, for LAs in England and Wales. Please read the supporting information below carefully in order to use the information provided correctly.

### **Key Points on Using the Denominators**

These denominators are neither National Statistics nor standard published experimental statistics and have not been produced using methods which have undergone a formal Quality Assurance. They have been produced in response to a specific user request for aged-on Census distributions applied to standard population estimates. Two other similar sets of figures – one with a different disaggregation of the White Group and one with a more detailed classification for regions and countries – are also available.

The use of Census data means that figures can be derived for broad ethnic groups within Local Authorities, and the approach adopted is particularly appropriate where changes in derived rates over time are of interest. However, there are a number of sources of uncertainty and potential error in the figures as described in the *Quality Information* section. In particular:

- The figures will be less reliable the further they are from the base year of 2011.
- Estimates for small population subgroups (for example, ethnic minority groups in areas with small numbers of these) should be treated with great caution as they will be proportionally more affected by sampling and other errors. Care should be taken with interpreting the results of narrow age groups for local authorities, particularly for very high ages or for areas with a large number of students.
- The effect of international migration since 2011 on the ethnic distribution of the population is not reflected in the figures. This is likely to lead to some underestimate of, in particular, the Asian and Other groups increasing over time. This would be expected to have a larger absolute effect on areas with high levels of international migration.
- The error through not reflecting the impact of international migration is likely to be somewhat offset by the similar issue of not reflecting internal migration. However, particular care should be taken in interpreting results for ages 18-25 and for areas with a high number of students, which are liable to be particularly affected by internal migration.

## **Method Adopted**

The method adopted is as follows.

1. The distribution by ethnic group (by LA, sex and age (SYOA 0-84, 85-89, 90-94, 95-99, 100+) is taken from the 2011 Census (Table CT0709). Distributions for single years of age in the 85-89 range are derived by assuming that the ethnic distribution for the 85-89 group as a whole applies to each individual age within the range. Age groups 90-94, 95-99 and 100+ are combined to form a 90+ group (as used in the mid-year population estimates). This distribution is taken to apply at mid-2011.

2. Estimates for 2011 are produced by applying the distribution calculated in 1. to the mid-year population estimate for 2011.

To derive estimates for the next year:

3. The Census distribution is 'aged on' by one year - so the distribution relating to 0 year olds in 2011 relates to 1 year olds in 2012. It is assumed that the ethnic distribution for cohorts not born in 2011 is the same as the distribution of 0 year olds in 2011. Cohorts aged 89 are absorbed in the 90+ group after ageing on.

4. The 'aged-on' distribution is applied to the mid-year population estimate for 2012.

3 and 4 are repeated to produce estimates for 2013-2015.

The ethnic group classification used is the broad 5-way 2011 Census harmonised classification for outputs in England and Wales. We have also provided the White British element of the broad White group.

## Quality Information

There are a number of sources of uncertainty or error in the denominators provided.

### Uncertainty in the 2011 Census Estimates

There is uncertainty around the results of the 2011 Census arising from both sampling and non-sampling error, as described in the [2011 Census Quality and Methodology Information](#) document. The [Confidence Intervals for the 2011 Census](#) document provides confidence intervals for estimates by age groups and ethnic group.

### Uncertainty in the Mid-Year Population Estimates

The mid-year population estimates reflect uncertainty from the 2011 Census base, as described above, and from sampling and non-sampling errors in estimating the 'components of change' - most notably of international and internal migration. More information on this is provided in the [Population Estimates Quality and Methodology Information](#) document.

### Difference between the Census Date and Mid-Year

A simplifying assumption is made in this methodology that the ethnic group distribution observed in the 2011 Census (taken on 27 March 2011) is also that applying at 30 June 2011 (the reference date for standard population estimates for that year). The impact of this can be expected to be small compared to other sources of uncertainty in the figures.

### Ethnic Distributions of Births

As noted in the Method Adopted section, it is assumed that cohorts not born in 2011 have the ethnic distribution of those aged 0 in 2011. We can derive a broad estimate of the impact of this assumption by carrying out similar calculations for those aged 0-4 in 2011 compared to those aged 5 (so, approximately, assuming that cohorts not born in 2006 had the same ethnic distribution of those born in 2006. This comparison is summarised for broad groups in the table below.

**Table 1: Impact of Assuming Ethnic Distribution of 5 Year-Olds Applies to 0-4 Year-Olds; England and Wales, 2011**

	Population	Difference from assuming 5 year old distribution	Difference as % of population
White	48,209,395	8,132	0.0%
Mixed	1,224,400	-22,267	-1.8%
Asian	4,213,531	5,375	0.1%
Black	1,864,890	7,980	0.4%
Other	563,696	779	0.1%

Source: 2011 Census

### Ethnic Distributions of Deaths

Differences in numbers of deaths in each ethnic group due to differences in age/sex profiles or expressed as tapering of the age-profile of the LA population at higher ages, are reflected in the method adopted. No attempt is made to estimate differences in age-sex specific mortality rates for each ethnic group within a local authority. Table 2 shows that the proportion of the populations of ethnic minority groups in the higher age groups is relatively small, and it is not thought that the implicit assumption of the same mortality rates applying to each ethnic group (by age/sex/LA) is likely to have a material impact on the figures.

**Table 2: Proportion of Population Aged 65+ and 85+; England and Wales, 2011**

	Proportion aged 65+	Proportion aged 85+
All Groups	16.4%	2.2%
White	18.3%	2.5%
Mixed	2.9%	0.3%
Asian	5.7%	0.4%
Black	6.2%	0.4%
Other	4.6%	0.4%

Source: 2011 Census

### Ethnic Distributions of International Migrants

The method adopted does not model a change in the ethnic group distribution for an LA/sex/age group as a result of international migration. We can derive a very broad estimate of the likely impact of this assumption from the previously published Population Estimates by Ethnic Group (PEEGs), which estimated the ethnic composition of international migration inflows and outflows as part of the estimation process. Gross migration flows (that is, inflow plus outflow) in the year to mid-2009 were estimated as 960K, with gross flows between mid 2011 and mid-2015 estimated at 3,524K (c. 3.7 times the 2009 figure). This might suggest that very, very broadly, the impact for the entire period 2011-2015 would be 3-4 times the effect shown below (in practice, the effect will also be very substantially affected by the characteristics of these flows). See also the section below on internal migration.

**Table 3: Estimated Net Migration by Ethnic Group; England and Wales, year to mid-2009**

	Net migration (thousands)	Net migration as a % of 2008 population
White	17.0	0%
Mixed	6.8	1%
Asian	89.1	3%
Black	20.7	1%
Other	19.4	5%

*Source: Population Estimates by Ethnic Group 2009, ONS*

*Note: Table 3 based on a simple aggregation of the 2001 ethnic group classification, with Chinese reallocated to Asian.*

### Ethnic Distributions of Internal Migrants

The method adopted does not reflect the internal migration of different ethnic groups post-2011, which would affect the LA figures. As difficulty in estimating this component of change led to the discontinuation of the PEEGs, we have not used that source to attempt to quantify the likely impact of this assumption. In general, we would expect this error to counterbalance, to some extent, the issue of international migrants described above (so, there would be likely to be a net international migration inflow of ethnic minority groups into areas of existing concentrations of those groups, with a net internal migration outflow of those groups from those areas).

### Students

A particular example of the issues with international and internal migrants is provided by students. This population subgroup will typically not age-on within an area, but be replaced by a new population with the original age structure. Whilst areas with a large number of students will show the correct overall population structure (as the figures are constrained to the mid-year population estimates, which seek to reflect migration of students) the ethnic group distribution for students will be applied to older age groups. This means that, firstly, great care should be taken in interpreting agegroup data relating to the late teen/early twenties ages; and secondly, that areas with a high proportion of students at ages 18-21, of whom a large proportion move out of the area after finishing their studies, are likely to see some underestimate of ethnic groups disproportionately represented in the student population as this concentration of that group is applied to a smaller population in later years.

### Approximations for High Age Groups

Some approximations have been made in deriving the ethnic group distributions of ages above 85 (where some detailed figures are not available to protect confidentiality). The figures in Table 2 above illustrate that these approximations will not have a material impact on the expected use of the denominators.

### Merged Local Authorities

The figures are based on Census estimates which have combined the City of London and Westminster, and, separately, the Isles of Scilly and Cornwall, to protect confidentiality. Though separate estimates for each local authority have been provided, these are based on the assumption that the ethnic group distribution for the two merged areas applies to both individual local authorities within the merged areas. We advise not drawing conclusions based on the denominators for the Isles of Scilly or the City of London (which form by far the smaller part of the respective merged area).

### Consistency of Ethnic Group Identities

An individual may change their ethnic group identity over time or in different situations. This might be an issue if methods used in collecting data used in the numerators of the rates led to a material difference in how people classified themselves. We are unable to provide any quantification of any likely error or uncertainty due to this issue.

#### Consistency with Other Local Authority Figures

The figures provided here are consistent with the figures available separately with a different split of the White group.

#### Consistency with Regional Figures

Similar figures (with a more detailed ethnic categorisation) are available separately for regions. These figures will differ from the figures provided here as the regional figures cannot reflect subregional differences in population change (for example, a LA with a high proportion of ethnic minority population growing more quickly than the average) but are also less affected by the issues of internal migration and students mentioned above. The table below illustrates that group totals are not greatly affected by the difference in approach. However figures for individual age groups – particularly ages 19-22 – may differ. As noted previously, care should be taken with interpreting the results of narrow age groups for local authorities, particularly for very high ages or for areas with a large number of students.

**Table 4: Difference between Regional and Local Authority Totals, 2015**

<b>Region Name</b>	<b>White</b>	<b>of which White British</b>	<b>Mixed</b>	<b>Asian</b>	<b>Black</b>	<b>Other</b>
North East	0%	0%	0%	1%	1%	1%
North West	0%	0%	1%	0%	1%	0%
Yorkshire and The Humber	0%	0%	0%	-1%	1%	0%
East Midlands	0%	0%	1%	-1%	0%	-2%
West Midlands	0%	0%	0%	0%	0%	0%
East	0%	0%	0%	0%	0%	0%
London	0%	0%	0%	0%	0%	0%
South East	0%	0%	0%	-1%	-1%	-1%
South West	0%	0%	0%	-1%	0%	0%
England	0%	0%	0%	0%	0%	0%
England and Wales	0%	0%	0%	0%	0%	0%
Wales	0%	0%	1%	0%	1%	0%

Note: Table shows regional figure less local authority total as a percentage of the local authority total.

## **Annex: Data Sources**

Census Distributions from Table CT0709

Mid-Year Population Estimates from Table MYEB1 at

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>