

Further statistical modelling will provide estimates for individual LAs (which add up to the EA totals) using data from the other LAs in the EA.

In 2011, an assessment will be made of people who made more than one return. The Census database will be searched for such cases to estimate the extent of the 'overcount', and the estimates will take account of this.

#### *c) Accuracy and Quality Assurance of the Census estimates*

The accuracy of the census estimates depends on a number of factors, the most important of which is the census response rate. If the census response is high, the quality of the resulting estimates will be better.

All the census estimates will be checked using demographic analysis, survey data and administrative registers (some of which will be those that are held by LAs) to ensure the estimates are plausible. This will involve a series of aggregate level quality checks, grouped by variables such as age and sex. A panel of experts (demographers, statistical methodologists etc.) will provide quality assurance and will assess the estimates for the LAs and EAs. Contingency strategies will be developed and used if initial estimates are rejected.

#### *d) Adjusting the census database*

The last step is to add the households and persons estimated to have been missed onto the Census database. These adjustments are made by using the patterns observed in the CCS to indicate the types of households and persons to be imputed, ensuring that the numbers of imputed records equal the Census

estimates. Households will be imputed into postcodes using information from the Census fieldwork on where households did not make a return. This adjusted database will be used to generate all tabulations from the 2011 Census.

### **Consultation**

It is important that key users have confidence in the Census estimates. This is the first in a series of communications with Census users to explain the methods being developed for the 2011 Census. More communications will follow as the methods are developed further. In autumn 2008, methodology papers will be presented at a series of open meetings. There will also be an on-line consultation in 2009. The final methodology for measuring coverage will be published in 2010.

### **Technical documentation is available at:**

[www.ons.gov.uk/census/2011-census/  
process-info/statistical-meth/index.html](http://www.ons.gov.uk/census/2011-census/process-info/statistical-meth/index.html)

**Email:** [census\\_consultations@ons.gov.uk](mailto:census_consultations@ons.gov.uk)



# How are Census estimates produced?

Coverage assessment  
and adjustment in  
the 2011 UK Census



*This short guide explains how census estimates are produced.*

*The Census provides a benchmark for annual mid year population estimates used by Government to calculate the size of grants it allocates to local government and health authorities.*

*It provides the most complete picture of life in our cities, towns, suburbs and rural areas.*

# 2011 Census Coverage Assessment and Adjustment

*The 2011 Census is designed to count everyone and every effort will be made to ensure that everyone is counted.*

There are a number of new innovations in the design of the 2011 Census to help achieve this. For the first time, a post-out methodology will be adopted, which will rely on the construction of a reliable household frame and a robust publicity campaign. This allows resources to be redirected into the follow-up operation, where the field force will be flexible in order to be able to react quickly to areas of poor response. Respondents will also be able to complete their Census questionnaire on line for the first time.

However, carrying out a census is increasingly hard and the numbers of people and households missed is becoming more significant. This undercount does not occur uniformly across geographical areas or across other sub-groups, such as age and sex groups.

## How many were missed in 2001, and were they included in the results?

In the 2001 UK Census, the One Number Census (ONC) project estimated and adjusted for the number of people and households not counted in the 2001 Census. The aim was to provide 'one number' – the census estimate - and for all census outputs to be consistent with this estimate. The One Number Census estimated the undercount in the 2001 Census to be 6% of the population – meaning the Census achieved an estimated 94% response (94% in England and Wales,

96% in Scotland and 95% in Northern Ireland). This response varied widely across Local Authorities (LAs) (the equivalent to District Councils in Northern Ireland) – whilst most LAs had response rates higher than 95%, there were around 10% of LAs with a response rate lower than 90% and the lowest was 64%.

The Census results were adjusted to take account of the missed population. Thus all census outputs included those individuals and households estimated to have been missed. For some LAs this meant that their Census results included around 20,000 individuals who had not been counted, but had been estimated through the ONC.

## Lessons learnt from 2001 and plans for 2011 Census

For the majority of LAs the 2001 Census results were of high quality. However in a few areas local enumeration problems resulted in estimates that were too low. The innovations in the 2011 Census Design are addressing these problems. In terms of measuring coverage in the 2011 Census, the Census offices (the Office for National Statistics (ONS) in England and Wales, The General Register Office for Scotland (GROS) and the Northern Ireland Statistics and Research Agency (NISRA)) are planning to build on the ONC and develop an improved coverage assessment methodology. It is important to recognise that census population outputs are estimates based upon a combination of the census and the Census Coverage Survey (CCS).

## Summary of the method to estimate how many people are missed

### a) The Census Coverage Survey

The CCS will be carried out 6 weeks after census day and will involve an independent count of all households and individuals in a sample of postcodes. The survey will be designed to estimate the level of undercount in the Census, allowing an assessment of the characteristics of individuals and households missed by the Census. A representative sample of around 16,500 postcodes (which is about 320,000 households) will be surveyed in England & Wales. Scotland and Northern Ireland will also carry out a large CCS. Every LA will include some sampled postcodes.

After the fieldwork, the CCS records will be compared with those from the Census, in order to identify households and people missed by the Census or CCS. Identical records will be automatically matched and clerical matching will be used for likely matches and for checking unmatched records.

### b) Estimating the population

The undercount will be estimated within groups of LAs with similar coverage patterns, called Estimation Areas (EAs), to ensure that sample sizes are adequate. Similar LAs will be grouped together using a national classification.

Within these EAs, the estimates of population in the CCS areas will be generalised to the areas not covered by the CCS using standard statistical techniques.