

## 4 Census Coverage Survey

### Introduction

- 4.1 Every effort is made to ensure everyone is counted in a census. However, no census is perfect and some people are inevitably missed. This undercount does not usually occur uniformly across all geographical areas or evenly across sub-groups of the population. The measurement of small populations – one of the main reasons for carrying out a census – is becoming increasingly difficult. This is a big issue in terms of resource allocation, because the people who are missed (such as the elderly, young males in inner city areas, recent migrants) tend to be those who attract higher levels of funding. Therefore money may be wrongly allocated if the census is not adjusted.
- 4.2 It is a widely accepted practice when conducting a traditional census that an assessment of coverage should be part of the statistical operation. The 2001 Census represented the first real attempt to fully integrate the census and coverage measurement processes, resulting in the development of the One Number Census (ONC) methodology. The aim at that time was to provide a population estimate that would be the basis for the 2001 mid-year estimate, and to which all census tabulations would add. The ONC estimated the undercount in the 2001 Census to be 6.1 per cent of the total population in England and Wales (see also paragraphs 5.54 to 5.55).
- 4.3 A Census Coverage Survey (CCS) was the key source of information on the extent and distribution of the census undercount in 2001. The CCS was a separate sample survey carried out over a three to four week period after the field work for the census itself had been concluded. It took the form of a short interview (10 to 15 minutes) to check on the coverage of households and people within households, and to collect some basic demographic characteristics (such as age, sex, marital status, ethnic group and economic activity). The information obtained from the survey was used, in conjunction with the census data, to produce a consistent set of census-based estimates, which formed the new base for the series of annual mid-year population estimates for local and health authorities.
- 4.4 The 2001 methodology was a big step forward. The CCS had covered around 325,000 households (about 1 per cent of all households) and achieved an interview completion rate of 90.8 per cent. This information helped to adjust the main 2001 Census estimate with the addition of around 1.5 million households and 3.1 million individuals. Both the Statistics Commission and the Local Government Association published reviews that concluded that the census adjustment methodology used in 2001 was the best available and that no alternative approach would have produced more reliable results overall (see paragraph 5.55).
- 4.5 The improvement to the accuracy of population estimation as a result of the 2001 CCS and the associated coverage adjustment methodology convinced ONS, early on in the planning for the 2011 Census, to include a similar coverage survey. But given that the 2001 CCS was the first of its kind, there were inevitably improvements that could be made based on the lessons learned.

## Design and fieldwork

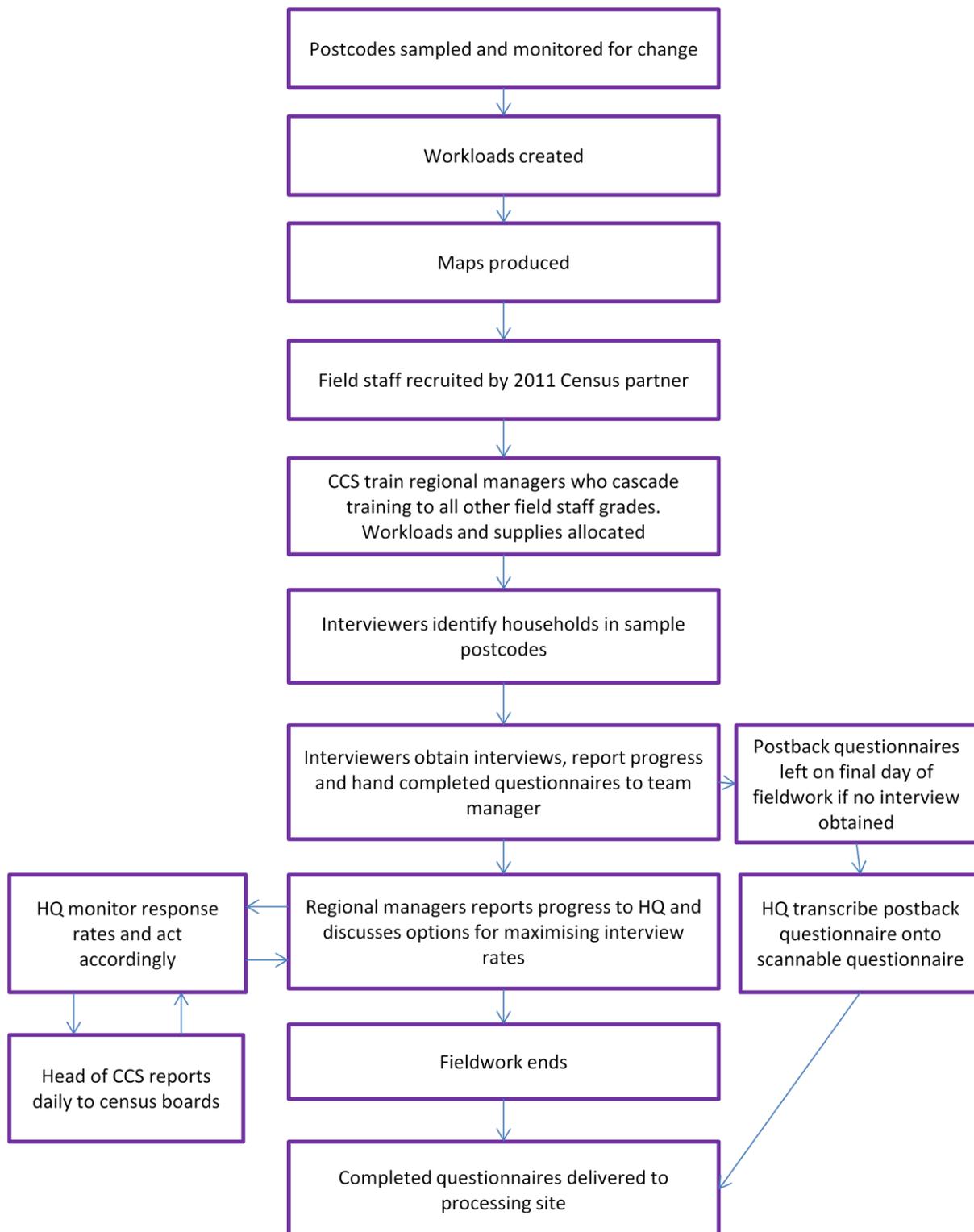
- 4.6 To measure coverage in the 2011 Census and adjust the census database for those estimated to have been missed, ONS conducted a Census Coverage Survey across England and Wales. This was a voluntary survey carried out independently of the census. It took place over a four-week period (6 May to 2 June 2011), starting six weeks after census day – a start date that was eight days later after census day than had been the case in 2001 as a result of the longer census fieldwork period. The CCS sample included 17,400 postcodes (some 1.5 per cent of all postcodes) containing nearly 340,000 households. While this sample size was similar to that in 2001, the sample design was revised using the information on coverage patterns to address some of the lessons from 2001.
- 4.7 The sample design, which ensured that the sample was spread across all local authorities, is described in the 2011 Census Coverage Assessment CCS sample sizes and Estimation Areas for local authorities<sup>36</sup>. The survey was a stratified two-stage sample, first selecting output areas by local authority and the hard-to-count (HtC) index, and then selecting approximately half the postcodes from within those output areas<sup>37</sup>. The numbers of sampled postcodes by estimation area and local authority, and the process for deciding to remove some of these postcodes from the sample where no data was collected, are set out in other reports<sup>38</sup>.
- 4.8 The design and implementation of the 2011 CCS closely followed the successful 2001 CCS. As noted in paragraph 4.4, the 2001 CCS had achieved a 90.8 per cent interview completion rate (defined as ‘the number of completed household interviews at sampled households as a percentage of households within the workload’) Note that ‘interviews’ here included self-completion questionnaires returned by the householders in response to the ‘post-back’ facility made available where no other contact had been possible. Further improvements were implemented for 2011 such as:
- increased stratification of the sample to improve overall population estimates. This resulted in more postcodes being drawn from the areas where census response was expected to be lower
  - more flexible working hours for interviewers enabling them to work their contracted hours whenever they wanted, and therefore increase the range of times at which they could obtain interviews; and
  - extended fieldwork for low response areas where CCS interview completion rates were lower than expected

This led to a 90.4 per cent interview completion rate in 2011 – exceeding the initial target rate of 87 per cent and despite the sample being skewed much more towards harder-to-count areas than had been the case in 2001.

- 4.9 A key requirement of the CCS was that its process of data collection should be independent from the census itself. Consequently, although recruitment processes were developed in line with the main census recruitment, training was handled differently. As in 2001, a ‘cascade’ approach was adopted, whereby HQ staff trained the regional managers, and this training was cascaded through the staffing structure. Any CCS fieldworkers who worked on the census were not made aware of the CCS sampled postcodes until after the census, and they did not conduct CCS interviews in postcode areas that they had worked in during the census. Unlike the census collectors who were provided with address lists, CCS interviewers used maps to

- construct their own address list and independently identify all households in their area.
- 4.10 In the fieldwork, interviewers attempted to contact household members for every household in their allocated postcodes, in order to verify the household's existence. To reduce interview times, the questionnaire consisted of a subset of key social and demographic questions from the census. To maximise coverage, questions about household members likely to be counted elsewhere or likely to be missed (for example, those temporarily out of the UK), were included.
  - 4.11 The field force consisted of three tiers: 22 regional managers, 308 team managers and 5,468 interviewers (including 1,232 'standbys'). The regional managers reported to one of six survey managers at HQ in ONS.
  - 4.12 Following the construction of their address list, the interviewers conducted doorstep interviews with a member of each household. A telephone-based interpretation service contractor (the Big Word) was used when necessary. The interviewers made repeated attempts to gain an interview, returning to non-responding households at different times of the day and on different days of the week.
  - 4.13 They were mentored by experienced household/social survey interviewers from ONS HQ. These were trained to: answer queries on field procedures; accompany the more hesitant CCS interviewers to help them gain confidence; and help to overcome interviewees' reluctance or refusal to take part. Their questioning was more probing on areas such as missing populations (for example young babies), and on residents who were possibly counted elsewhere.
  - 4.14 To achieve high response rates there was also a self-completion questionnaire and post-back option, for households where contact was not made. This was used towards the end of the fieldwork and only after several unsuccessful visits. The self-completion questionnaires contributed 5.7 percentage points to the final interview completion rate. In some areas, where interview rates were lower than expected, the fieldwork was extended. Where no contact was made dummy forms were completed by interviewers, who recorded some basic information about household characteristics that was used in assessing CCS coverage.
  - 4.15 In some areas fieldwork was challenging and included difficult to access buildings, large proportions of vacant properties and/or second homes. An additional 5 per cent of households were expected to be discovered during the address listing phase, but interviewers actually found 14 per cent more households. Following the fieldwork, some 700 sampled postcodes (4 per cent) were removed from the estimation process. This was for a number of reasons and included cases where: no valid interviews were achieved; there were no residential households; all households had moved since census day; or there had been recruitment difficulties and not all postcodes were able to be covered. Many of these outcomes were expected, and the estimation process was designed to identify and remove such postcodes to ensure they did not impinge on quality. However, these challenges did not affect the strategy of skewing the sample towards the harder-to-count areas.
  - 4.16 Progress on interview success rates was reported up the management chain to HQ every two days. This was useful in flagging-up areas with unexpectedly poor completion rates that needed more work, and allowed resources to be assigned more effectively. This process flow is summarised in figure 4.1.

**Figure 4.1 The high-level CCS process flow**



## Survey response rates, refusal rates and sample sizes

- 4.17 Household response rates in the CCS are defined as *the number of valid responses achieved divided by the number of occupied households found by either the census or the CCS*. This includes households that were missed by the CCS but found in the census. Similarly, person response rates in the CCS are defined as *the number of persons within valid interviewed households in the CCS divided by the number of persons in households found by either the census or CCS*. This is different to an interview completion rate which, as noted above, was 90.4 per cent, and which included interviews that were not included in the estimation process (for example, communal establishments and responses from households that moved in between the census and CCS). The data used to calculate response rates are from the coverage matching process.
- 4.18 For England and Wales as a whole, the 2011 CCS achieved an 87.3 per cent household response rate on this basis (the equivalent figure for 2001 was 79.8 per cent). The coverage survey person response rate for England and Wales as a whole was 87.0 per cent (the equivalent figure in 2001 was 88.4 per cent). The seeming anomaly of having higher household response rates in 2011 but lower person response is an impact of having a skewed sample. This may be explained by both the size of households being smaller in the skewed sample, and the lower coverage of persons within the responding households. It may also be due to some of the adjustments made in 2011 that were not part of the census coverage process in 2001 (making direct comparisons between the two surveys difficult).
- 4.19 Household refusal rates in the CCS were defined as the number of refusals divided by the number of occupied households found by either the census or the CCS; that is, using the same denominator as for response rates.
- 4.20 The number of postcodes selected (16,723) in the sample is defined as those that were used in the estimation process. An innovation for the 2011 CCS was having a 'flexible' sample that could be decided late in the process to increase the sample in areas that had showed poor census completion rates. In some areas, therefore this initiative allowed the CCS team to increase the number of interviews conducted. It involved giving some interviewers in those areas two or three more postcodes – about 250 extra households – to interview. ONS planned the flexible sample so that it could be invoked in up to 100 local authority areas. In the event, 392 additional postcodes (2.7 per cent of the final total number) were sampled across 44 local authorities.
- 4.21 Table 4.1 shows the response rates, refusal rates and postcode sample sizes for the English regions and Wales. The highest response was in the North East region, and the lowest, not unexpectedly, in London.
- 4.22 The response rates by local authority area ranged from 73 per cent in Wellingborough to 97 per cent in Cannock Chase (compared with a range of 67-99 per cent in 2001). Of the 348 local authority areas, only 16 (4.6 per cent) had a response rate below 80 per cent (in 2001 the proportion, 23 per cent, was five times greater), and 168, just under half, achieved a response rate of 90 per cent or more (compared with 188 in 2001). The CCS exceeded its objective of ensuring that an interview completion rate of 80 per cent or more was achieved in least 95 per cent of LAs. In fact, the completion rate target was exceeded in 98 per cent of areas.

**Table 4.1** Census Coverage Survey household response rates, refusal rates and sample sizes for English regions and Wales

English regions and Wales	Household response rate (%)	Person response rate (%)	Household refusal rate (%)	Postcode sample size
North East	91.4	90.9	0.1	786
North West	89.1	89.1	0.1	2,173
Yorkshire and Humberside	89.7	89.4	0.2	1,421
East Midlands	89.5	89.4	0.1	1,012
West Midlands	87.8	87.1	0.2	1,377
East of England	88.8	88.7	0.2	1,630
Inner London	79.6	79.4	0.3	1,431
Outer London	83.3	82.8	0.3	1,733
South East	89.6	89.6	0.2	2,454
South West	88.6	88.6	0.2	1,632
England	87.2	87.0	0.2	15,649
Wales	87.8	87.6	0.3	1,074
<b>England and Wales</b>	<b>87.3</b>	<b>87.0</b>	<b>0.2</b>	<b>16,723</b>

## Performance

4.23 In developing and undertaking the CCS, the objective was to assess coverage of the 2011 Census by building robust operational processes and associated infrastructure; recruiting sufficient staff to deliver a successful CCS, and managing the research, development, testing and implementation of all CCS procedures in the field and at census HQ.

4.24 More specific targets were set to measure the objectives, which were:

- to achieve an overall interview completion rate for England and Wales of 90 per cent or above initially, but this was later revised to 87 per cent to reflect the revised CCS sample design, which increased the difficulty of some of the postcode samples chosen compared to 2001, and
- to ensure at least 95 per cent of local authorities achieved an interview completion rate of 80 per cent or higher

As has been noted the CCS exceeded both targets in that:

- the interview rate achieved for England and Wales was 90.4 per cent; and
- the interview rate for local authorities of 80 per cent or higher was met for 98 per cent of them

4.25 While there were some challenges in its implementation, such as ensuring there were sufficient field staff and reserves in all areas (see chapter 10), overall, the CCS was considered very successful considering the interview rate achieved with a sample targeted more towards harder to count areas.