
UK response to requirements of the UK Statistics Authority special assessment of the 2011 Censuses in the UK

Introduction

On 8 March 2010, the UK Statistics Authority published their report on phase 1 of the special assessment of the 2011 Censuses in the UK¹. It was a very positive assessment that generally indicated the censuses are on track for compliance with the code and achieving National Statistics accreditation. The assessment team identified four essential requirements to be addressed by census offices and a number of suggestions that could help improve planning for the remaining phases of the 2011 Census.

A response to the four requirements was requested by the end of July 2010, with clear plans or evidence of how these requirements will be satisfied. This paper sets out the UK response to these requirements.

1 Background

Under the provisions of the Statistics and Registration Services Act 2007, the UK Statistics Authority has a statutory function to assess sets of statistics against the Code of Practice for Official Statistics² with a view to determining whether it is appropriate for the statistics to be designated, or to retain their designation, as National Statistics. As the census is not a regular statistical output the normal assessment process is not applicable. Therefore, as part of this obligation, the Authority is undertaking a series of 'special' assessments of the 2011 Censuses in the UK to assess compliance with the code of practice by looking at the censuses' plans and processes over three phases:

- Phase 1 – assesses compliance with the Code of Practice in respect of those aspects of the Code for which it was practicable at December 2009.
- Phase 2 – will assess compliance with the remaining practices of the Code, to include, for example, provisional assessment of plans for the publication of various census outputs. This phase will allow the Statistics Authority to decide whether the census outputs may be designated as National Statistics in accordance with the requirements of the Statistics and Registration Services Act.
- Phase 3 – will involve an assessment of the outputs in light of users' views.

2 UK response to UKSA requirements

2.1. Response to requirement 1

Requirement 1 states:

“Publish explanations of how the census estimates relating to the resident population, based on 12-month residency, will be derived from the information collected about three and six-month residency.”

An explanation of the different population bases to be used for enumeration and outputs in the 2011 Census in England, Wales and Northern Ireland is outlined below. It also explains the rationale for each, and the process agreed for moving from enumeration to outputs.

¹ The phase 1 assessment report is at www.statisticsauthority.gov.uk/assessment/assessment-reports/assessment-report-28---census-phase-1--8-march-2010.pdf

² The Code of Practice is available on the UK Statistics Authority website at www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html

A separate paper, outlining the equivalent bases and process for Scotland, is being prepared by GROS.

2.1.1. Initial agreement on Population Base

The three UK statistical offices agreed in 2005 that the population base to be used for enumeration in the 2011 Census should be *Usual Residents and Visitors*. This was consistent with the Registrars General agreement to harmonise the three UK Censuses as closely as possible.

This decision was reached after extensive research and consultation, summarised in the paper: "*Selection of the population base for the 2011 Census enumeration*"³

At that time, the exact definition of a usual resident to be used had not been finalised, as this was planned for agreement after further consultation and extensive questionnaire testing.

2.1.2. Population base for enumeration

At the time of the 2007 Census Test, it was assumed that the enumeration base for the 2011 Census would be broadly consistent with that used in 2001, but with the addition of visitors, and the questionnaire reflected this.

However, further consultation identified increasing requirements for information on short-term migrants and it was agreed that the Census enumeration base⁴ would be expanded to meet this need. To achieve this, it was agreed that a full Census return would be collected from everyone who has been, or intends to be, resident in the UK for a period of three months or more in the 2011 Census.

This enumeration base has been evaluated through qualitative cognitive testing and quantitative postal tests and ONS is confident that it will collect the required information in the 2011 Census.⁵

2.1.3. Main population base for outputs

After reviewing the 2001 Census and a series of discussions between Census and demography staff across all three UK statistical offices, it has been agreed that the main output base for the 2011 Census should be *Usual Residents*. It has also been agreed that usual residents should be defined as those people who have been, or intend to be, a resident of the UK for a period of 12 months or more.⁶

This population base will be used for all main outputs from the 2011 Census, across the whole of the UK, and the process for identifying the usual residents in the outputs database in England, Wales and Northern Ireland is outlined in section 5. In addition to this, a subset of outputs (yet to be defined) will be produced for the short-term (not usually resident; in the UK for 3 – 12 months) population.

2.1.4. Identifying usual residents

To make it possible to distinguish between usual residents and short-term migrants in the census database when producing outputs, ONS has developed and tested a

³ www.statistics.gov.uk/about/consultations/downloads/2011Census_consultation_population_base.pdf

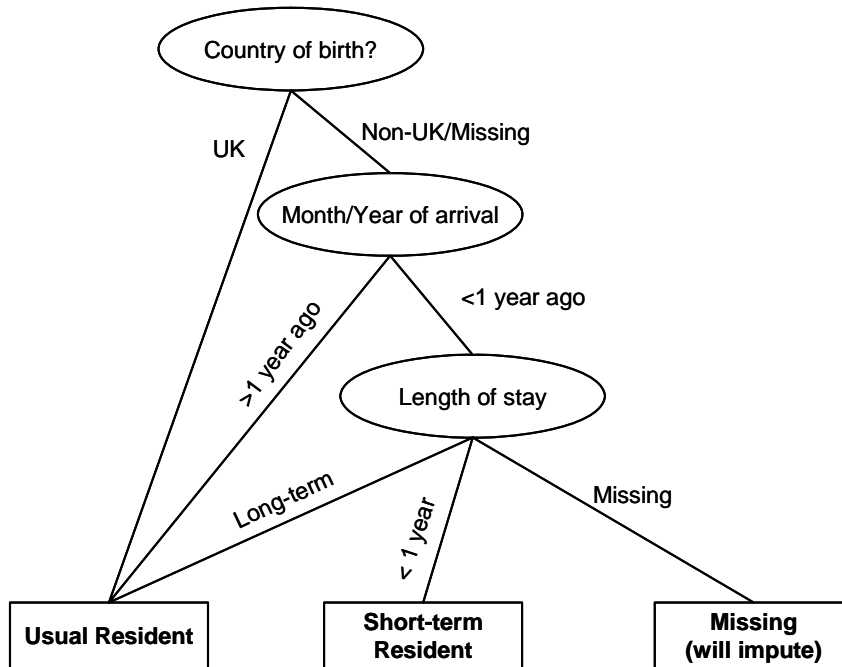
⁴ The Census in England, Wales and Northern Ireland will be expanded to collect this information, but the same strength of requirement has not been identified in Scotland.

⁵ More information on the requirement and testing of the intention to stay question can be found at: www.ons.gov.uk/census/2011-census/2011-census-questionnaire-content/recommended-questions---migration.pdf

⁶ This is consistent with the UN definition of usual residence: <http://unstats.un.org/unsd/demographic/sconcerns/migration/migrmethods.htm#B>

question on *Intended length of stay in the UK*. Respondents who have lived in the UK for less than 12 months will be asked to indicate whether their overall stay is likely to be less than 6 months, less than 12 months or long-term.

This information is used, together with responses to *Country of Birth* and *Month and Year of Arrival* to identify all usual residents, as shown below:



All people born in the UK are assumed to be usually resident, although in reality a very small proportion will not be, to avoid confusion for the majority of respondents.

Missing responses to these questions will be imputed, using the same methodology as for the rest of the data, based on respondents with similar characteristics. This will enable these people to also be categorised as either a usual or short-term resident.

2.1.5. Risk of using Intention to stay question

For all questions included in the census for the first time⁷, there is a risk that it will be unacceptable or confusing to respondents, or that the data collected will be inaccurate or incomplete. These risks are perceived as particularly high for the *Intention to stay* question, as it is a sensitive subject, and because the information is required to identify the population required to produce all main census outputs.

As with all questions developed for the census, this question has been thoroughly tested⁸, and ONS are confident that it is acceptable to, and understood by respondents, who were able to answer the question confidently and accurately.

However, when the question was included in the 2009 Census Rehearsal in England and Wales, a far higher level of item non-response (24.5 per cent) was experienced than anticipated. As non-response for other questions was significantly lower, this was a cause for concern and further analysis was undertaken.

⁷ Although this question has not been asked in any previous UK census, respondents' intention to stay would have been one of the factors considered when self-defining their residence status in the 2001 Census

⁸ Comprehensive testing programme discussed in this paper:

<http://www.ons.gov.uk/census/2011-census/2011-census.../recommended-questionnaire-content-for-england-and-wales.pdf>

This analysis showed that 68 per cent of these non-responders were students, almost half of whom had arrived in the UK within the last month. It is considered probable that, as the Rehearsal was held in October, at the start of the college/university term, whereas the Census will be held when this cohort will have been in the UK for 6 months, the level of item non-response among them will be significantly reduced. If students are excluded, the level of item non-response to this question is comparable to that for others, and lower than for several.

Of the remaining non-respondents to this question, 6.2 per cent (of all non-respondents) had been in the UK for more than 11 months, and their non-response is likely to be because they consider themselves usually resident.

More generally, respondents not answering this question had usually answered others sufficiently accurately (over 90 per cent of non-student adults had answered the labour market questions) to enable imputation with confidence.

After considering the analysis summarised above, together with the different dates for Census and Rehearsal which is likely to significantly reduce the number of recent arrivals in the UK, ONS are confident that this information will be of sufficient quality to allow the accurate differentiation between usual and short-term residents in the 2011 Census. To help ensure this, significant extra guidance will be available, through the census web-site and contact centre, to assist recent immigrants in general, and students in particular.

2.2. Response to requirement 2

Requirement 2 states:

“Publish information on how discontinuities (relating to the introduction of the 12 month residency base) between population estimates from the 2001 and 2011 Censuses will be measured and explained.”

2.2.1. 2001 / 2011 Census

The 2001 Census outputs throughout the UK were based on 'self-assessed' usual residence. The lead instruction on 2001 questionnaire said 'list all members of your household who usually live at this address ... include anyone who is temporarily away from home on the night but who usually lives at this address.' The phrase 'usually lives' was not defined anywhere on the questionnaire. Within the detailed guidance material produced for the 2001 Census, there was reference to a 'six-month rule'. However, the number of census respondents who were aware of, and influenced by, this guidance definition of usually resident is likely to have been negligibly small. Thus in practice the 2001 Census used self assessed usual residence for respondents.

This use of 'self-assessed' usual residence in the UK in 2001 is not unique. Among other English-speaking census offices, New Zealand is probably the most open about this. Annex 1 is taken from the Statistics New Zealand website which notes that 'most people know where they usually live'. The New Zealand website material acknowledges that there is a strict time-bound definition, but this is not incorporated in the census form.

Societal change and increased globalisation means it is important that measurement of population also changes. Since 2001, in particular with the expansion of the European Union and greater freedom (for larger numbers of people) to move within the EU, there is greater interest in numbers of people who are perhaps living in areas for less than one year but making use of local services.

Accordingly, while still focusing on usual residence, the censuses are encouraging short-term migrants to participate in the census. The different census offices have taken slightly different approaches reflecting different local needs. E&W and NI are encouraging all those present for three months or more to complete a census return, and using an 'intention to stay' question to distinguish short-term migrants and usual residents.

Scotland has gone with a slightly different approach, opting to enumerate anyone here for six months or more. An intention to stay question was not included in the Scottish census as GROS, and Scottish users, felt that other questions should take priority.

2.2.2. Population Estimates

Mid-year population estimates (MYEs) throughout the UK are based on the UN definition of usual residence. In particular, in relation to migration, the estimates are based on a 12 month residence rule⁹.

The inter-censal population estimates use the 2001 Census as a benchmark and are rolled forward each year from the census using births, deaths and migration data. The 2001 Census results, produced using the "self-defined" definition, were not significantly adjusted to account for the definitional differences, but small adjustments, using evidence from the Longitudinal Study, were made to include people outside the UK for less than 12 months.

It is noted that one of the objectives of the MYE series is the production of a time series of population numbers that can be compared over time, making allowance for definitional issues (for example, the Census counts some members of the armed forces in different locations to the MYEs) and practical issues (different Census dates in different Census years). Because of this, users wishing to compare population estimates over time are routinely advised to use the MYE series, even if comparing two Census years such as 2001 and 2011.

2.2.3. Intercensal changes

There have been a number of changes between the 2001 and 2011 Censuses, to procedures, questionnaires and definitions, as is common practise for every census. One of these changes, is to the definition of usual residence.

When making changes to the questionnaire and definitions, the three UK census offices conducted extensive user consultation, to ensure understanding of changing and competing requirements for information, and to give users opportunities to comment on proposals.

As part of this consultation, the ONS Centre for Demography established the "Population Definitions Working Group", with representatives from across central and local government and academia, to advise on definitional issues for the 2011 Census. The final recommendations of that group concluded that *"an effective and unambiguous working definition of usual residence is required, in order to prevent respondents avoiding their legal obligation to comply with the Census on grounds that they do not have a 'usual residence'"*.

The change in the population base to be used meets this recommendation, and has been discussed with users through the Census Advisory Groups and other meetings. No users have expressed concern at any potential discontinuity caused by this change and, along with all other changes to the questionnaire and definitions, it is widely supported.

⁹ unstats.un.org/unsd/demographic/sconcerns/migration/migrmethods.htm#B

The primary purpose of the relevant changes to the 2011 Census form is to make usual residence a more transparent and clearer concept to the user. The new questions attempt to guide the respondent to ensure that they are enumerated and subsequently correctly classified as a usual resident, or not, in the outputs. The 2011 approach takes respondents through the definition of usual residence, and should not introduce any substantive discontinuity with the current MYE series, although there may be a difference between censuses, because some respondents in 2001 may have self-defined (or been guided to do so) as usually resident, if in the UK for six months or more, or have excluded household members outside the UK for 6-12 months.

In summary, it is anticipated that any discontinuity, should indeed any exist, will be small. Further, the census population estimate itself is subject to statistical error, for example sampling error associated with the Census Coverage Survey. This latter source alone was estimated as leading to a 95% confidence interval for the population of England and Wales in 2001 of about +/- 104,000.

Therefore, the census offices conclude that, while a potentially small discontinuity may exist, its effect is likely to be small in the context of the existing uncertainty around the census population estimates.

2.2.4. Post-censal analysis

Following the 2001 Census, a small number of local authorities across England and Wales asked ONS to review their census population estimates, as they were lower than anticipated. To address this, ONS undertook the Manchester and Westminster matching projects, and the Local Authority Population Studies project, to review the population estimates for all areas¹⁰.

Following the completion of these projects, adjustments were made to the MYEs for a small number of areas, to correct errors in the Census results (which were not changed).

The analysis completed in these projects has been used to inform the main Quality Assurance strategy for the 2011 Census, and contingency plans if the census estimates appear incorrect, and the three UK statistical offices are confident that no such post-censal adjustments will be required.

If there are concerns about the population when compared with previous MYEs and other data sources, a range of analyses will be undertaken to understand and explain any genuine difference or to inform any decision to re-estimate the population. This work would include an assessment of whether the change is due to the definitional changes to the enumeration and output population bases (using "intention to stay" information to assess whether the 6-12 month resident population may have previously self-defined as usually resident). This analysis would be included in any metadata used to explain differences, where they exist.

2.3. Response to requirement 3

Requirement 3 states:

"Publish plans for how participation in both the census and the follow-up surveys will be maximised, in the light of the low response rates in the Census rehearsal."

The response covers the three census offices responsible for carrying out the censuses in the UK: ONS (England & Wales), NISRA (Northern Ireland) and GROS (Scotland). Where appropriate, differences in approach between the census offices have been noted.

¹⁰ http://www.statistics.gov.uk/about/Methodology_by_theme/LAStudies.asp

2.3.1. Participation in 2011 Census

2.3.1.1. Findings from the 2009 Rehearsal in England & Wales

ONS's overall objective from the rehearsal was to confirm the viability of the final 2011 Census field procedures and supporting systems by integrating them and running them in the same timescale as the 2011 Census. We wanted to minimise the risk of failure in 2011 particularly by rehearsing new and innovative procedures and systems. Our expectation at the outset was to prove to ourselves and external stakeholders that our plans would work, and also identify areas where we needed to make improvements for 2011.

The rehearsal successfully demonstrated that our field procedures and supporting systems worked, and worked together.

However, despite all our systems working, recruiting sufficient numbers of good quality staff and a successful roll-out and penetration of our publicity and engagement strategies, the questionnaire return rate was not as high as we had expected. The final return rate for the rehearsal was 41 per cent, around 10 per cent less than we expected. This shortfall was observed across all areas, but was particularly marked in the geographic areas that were identified in advance as being the most difficult. In addition to a low overall return rate, we had a very poor return rate from students in halls of residence and the processes in place did not identify the non-responders to enable follow-up.

2.3.1.2. Improvements for 2011 arising from the UK census rehearsals

Given the findings from the rehearsal, most of the significant changes being implemented are designed to improve return rates, particularly in the most difficult geographic areas. The main improvements are:

- increasing the resources we are putting into follow-up by approximately half a million extra hours. This results in an increase from 24,540 collectors to 29,160;
- putting a greater proportion of resources into areas where achieving high return rates is thought to be more challenging;
- increasing the resources put into managing the field operation particularly in challenging areas. This means increasing the number of area managers from 118 to 157 and reducing the average number of staff a coordinator manages from 15 to 12 in the more challenging areas. As a result the number of coordinators has increased from 1,760 to 2,190;
- increasing publicity spend;
- increasing community engagement activities;
- we have upped our engagement with the university authorities, who are supportive about helping us to enumerate their students in halls. The improved process will identify when each individual student's questionnaire has been returned, and thus enable field staff to target follow-up on non-responders our procedures for enumerating university halls of residence failed.

A full evaluation report¹¹ of the England & Wales rehearsal was published in May 2010.

In Scotland, where the return rate at the rehearsal was also disappointing (at 44%), the main changes planned are to:

- increase the resources allocated to publicity;
- strengthen community engagement activities;
- redesign the process of enumeration of students in managed accommodation, including increased liaison with university staff.

¹¹ www.ons.gov.uk/census/2011-census/2009-census-rehearsal/index.html

The rehearsal response rate in Northern Ireland was also low at 29%. However, there were at least two mitigating circumstances for this. First, the rehearsal was very small in size, covering in total only 5,000 households in two very separate locations. Accordingly, there was no publicity at all for the rehearsal save the materials delivered with the forms. Second, the two areas were chosen deliberately because they would test procedures in difficult areas. For example, one area was selected because of recent new build, to test our processes for adding new addresses identified during fieldwork. In one rehearsal ED, over 100 new addresses were located by the enumerator during their address check. Because of the resource involved, only a proportion of these were followed up fully, restraining the response rate. An evaluation of the NISRA rehearsal can be found at www.nisranew.nisra.gov.uk/Census/pdf/2009%20Census%20Rehearsal%20evaluation.pdf

2.3.2. 2011 Census design

Section 2.3.1.2 listed the specific improvements resulting from the rehearsal. A fuller description of the overall census design for England & Wales is provided in the Census White Paper¹², but a few of the key design features intended to maximise response are:

2.3.2.1. Allocation of field staff

Field resources are being allocated to areas based on expected return rates: the lower the expected return rate in an area, the more field staff will be allocated. Overall, around three times more effort is being put into non-response follow-up in 2011 than in 2001. Detailed local allocations, including a comparison with 2001 resources, will be published in the autumn.

2.3.2.2. Community engagement and community advisors

To encourage participation in the 2011 Census amongst key population groups, 41 community advisors (CA) will start six months ahead of the census. Each CA will be responsible for engaging with a specific key population group within a particular area. Drawing on their experience and understanding of the key population group, together with any necessary language skills, community advisors will carry out direct liaison with members of the community to engage them in the census process and ultimately encourage a response.

2.3.2.3. Management information

Real time information on return rates will be available from the questionnaire tracking system. This information will be used to identify under-performing and quickly implement remedial action, including:

- starting follow-up earlier;
- deploying additional, or moving, field staff resources;
- sending targeted reminder letters;
- commissioning further publicity.

2.3.2.4. Publicity

A full and extensive publicity plan to support the field operation is being developed. The messaging and delivery channel for these messages will tie in with the different phases of the operation: The three publicity phases are:

¹² www.ons.gov.uk/census/2011-census/2011-census-questionnaire-content/2011-census-white-paper--english-.pdf

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- Before the census - The first phase will educate the general public about the upcoming 2011 Census, its benefits, requirement by law and relevance to individuals and communities.
 - Around census day - The second phase will advise the general public that it is time to complete their census questionnaires (as required by law) and builds on the goodwill/understanding created during the first phase.
 - After census day – This phase will remind the general public that the 2011 Census is mandatory and outline the consequences of non-compliance.

2.3.3. Census Coverage Survey (CCS)

The CCS is a survey of approximately 1% of households conducted after the census. Results from the CCS are matched back to the census to estimate the levels of under-enumeration in the census. The CCS rehearsal achieved significantly higher return rates than the census rehearsal response rates (79% compared to 41%). Overall the CCS processes worked well in the rehearsal and no significant design changes were identified.

The design of the 2011 CCS is specifically focused on maximising response and deploys a number of key initiatives to achieve this aim:

- Householders are provided with a short pre-interview card to inform them that they have been selected and will subsequently be visited.
- CCS consists of a short doorstep interview increasing the likelihood of someone participating there and then.
- Looking to recruit people with persuasion skills and, wherever possible, survey experience.
- Interviewers are trained in doorstep techniques, similar to those employed by other ONS social surveys, to achieve a response;
- Resources have been allocated so that interviewers can make up to 10 visits to obtain a response.
- A number of experienced ONS social survey interviewers will be deployed within each management area to mentor the other interviewers with their experience.

2.3.4. Census Quality Survey

The Census Quality Survey is a face to face interview of about 4,500 householders that tests the accuracy of responses to the self-completed census questionnaire by re-asking the census questions. This information is then compared to their original census responses to determine the accuracy of the responses. The results are published alongside the outputs to provide users with additional information on the accuracy of the census responses. This survey was not conducted after the rehearsal in England & Wales.

A fuller paper outlining the statistical design for the 2011 Census Quality Survey in England & Wales and the key changes since 2001 is here:

<http://www.ons.gov.uk/census/2011-census/consultations/user-adv-groups/census-adv-groups/data-quality/index.html>.

To maximise response, the Census Quality Survey will:

- Send each household in the sample an advanced letter telling them about the survey for which they have been selected.
- Be carried out entirely using experienced ONS social survey interviewers who are fully trained, in doorstep techniques on how to 'sell' the survey, avoid refusal and maximising contact, e.g. through making a minimum of four calls at an address at different times of the day before classifying an address as a non-contact.
- Set survey response targets upon which field managers and regional managers will have their performance assessed.

- Be supported by an enquiry line managing queries from both the public (survey respondents) and field interviewers. Enquiry line operators are trained to convert reluctant respondents as well as dealing with any survey specific queries.

2.4. Response to requirement 4

The “*Special Assessment of the 2011 Censuses in the UK: Phase 1¹³*” Requirement 4 states:

“Publish estimates, with methods, of the times taken to complete the paper and online versions of the Census questionnaire, based on data from the Census Rehearsals.”

The response covers the three census offices responsible for carrying out the censuses in the UK: ONS (England & Wales), NISRA (Northern Ireland) and GROS (Scotland). As the questionnaires and internet systems are very similar across the three countries it is likely that the results from the England & Wales analysis will be applicable to on-line completion in Scotland and Northern Ireland.

Requirement 4 states that times should be published for completion of the census questionnaire on paper and online. No information is available from the rehearsal or previous testing that will provide a robust estimate of the length of time to complete the paper questionnaire. To provide this information a further, separate exercise would be needed to collect information on the length of time taken to complete the paper questionnaire. The length of time taken to complete the questionnaire depends on a number of factors and will vary from household to household. The contents of the two response media are identical, and thus no difference is expected between the times taken to complete a return on paper or online.

2.4.1. Summary of results

The census rehearsal in England & Wales provided respondents, for the first time, the option of completing their questionnaire on-line. On-line completion also provided information on the length of time taken to complete the census questionnaire. An analysis of questionnaires completed on-line during the rehearsal showed the following:

- On average it takes about 30 minutes to complete the questionnaire for a four person household.
- The average time it took for any sized household to complete the questionnaire was 23 minutes.
- It takes an average of 6 minutes to complete the household questions.
- It takes a further 9 minutes each for person 1 and person 2 (most likely to be adults who have to complete the vast majority of all of the questions).
- It takes about a further 3 minutes for each additional person after that (most likely to be children who have a reduced number of questions).

Table 1 provides a breakdown of average completion times by size of household.

Table 1 – Average completion time for online census rehearsal questionnaire, by size of household (England and Wales)

Number of people in the household	Number of internet responses	Average time taken (min:sec)	Average additional time per person (min:sec)
0	86	05:47	
1	617	15:12	9:25

¹³ <http://www.statisticsauthority.gov.uk/assessment/assessment-reports/assessment-report-28---census-phase-6178-march-2010.pdf>

2	1006	24:00	8:48
3	396	26:58	2:58
4	356	29:37	2:39
5	125	32:13	2:36
6	34	35:48	3:35
7	21	41:16	5:28
Total	2,641	23:14	

2.4.2. Methodology

The analysis was completed based on a sample of 2,641 internet responses during the census rehearsal in England & Wales. The analysis excludes households greater than a size of seven as the numbers were small. It also excludes all internet responses that took longer than an hour to complete the questionnaire. The metrics provided from the internet system only provide a log-on and submission time. It is not possible to tell from the information available whether the household completed it in one sitting or whether they saved their questionnaire and returned later and completed the questionnaire – which would overestimate the true time. Therefore it was assumed that anyone completing the questionnaire in less than one hour is a good proxy for those completing it in one sitting. This accounted for about 85% of those who responded online.

Since the rehearsal some small changes have occurred in the census questionnaire (online and paper) but these are minimal and it is assumed that they will not significantly affect completion times.