

Information paper

Quality and Methodology Information

General details

Title of output:	2011 Census - Population and Household Estimates for England and Wales: March 2011
Designation:	National Statistics
Geographic coverage:	England and Wales, Local Authority, County, Region, Output Area, Lower Layer Super Output Area, Middle Layer Super Output Area, Ward
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Executive summary

Every ten years since 1801, apart from 1941, the nation has set aside one day for the census – an estimate of all people and households in England and Wales. It is the most complete source of information about the population that we have. Every effort is made to include everyone, and that is why the census is so important. It is the only survey which provides a detailed picture of the entire population, and is unique because it covers everyone at the same time and asks the same core questions everywhere. This makes it easy to compare different parts of the country. However no census is perfect and some people are inevitably missed. ONS therefore uses complex statistical techniques to adjust the census counts for those people missed by the census. The information the census provides allows central and local government, health authorities and many other organisations to target their resources more effectively and to plan housing, education, health and transport services for years to come. The latest census was held on Sunday 27 March 2011. This paper describes the methodology used to produce the 2011 Census estimates and gives information about the quality of the census statistics..

This document contains the following sections:

- Output quality
- About the output
- How the output is created
- Validation and quality assurance
- Concepts and definitions
- Other information, relating to quality trade-offs and user needs, and
- Sources for further information or advice

Output quality

This document provides a range of information that describes the quality of the output and details any points that should be noted when using the output.

ONS has developed [Guidelines for Measuring Statistical Quality](#)¹; these are based upon the six European Statistical System (ESS) quality dimensions. This document addresses these quality dimensions and other important quality characteristics, which are:

- Relevance
- Timeliness and punctuality
- Comparability
- Coherence
- Accuracy
- Output quality trade-offs
- Assessment of user needs and perceptions, and
- Accessibility and clarity

More information is provided about these quality dimensions in the sections below.

About the output

Relevance

Relevance is the degree to which the statistical outputs meet users' needs.

The census provides a once-in-a-decade opportunity to get an accurate, comprehensive and consistent picture of the most valuable resource of England and Wales – its population. The census provides the only source of directly comparable statistics for both small areas and minority population groups across England and Wales. It is used as a ten yearly benchmark for ONS's annual mid-year population estimates (MYEs) which are vital to central and local government for planning, monitoring and resource allocation. The 2011 Census of England and Wales was taken on 27 March 2011.

2011 Census statistics will be released in phases over two years; more information on the content and timing of releases is available online in the [2011 Census Prospectus](#)². These will delve further into the data and look at detailed population characteristics at local authority and ward levels as well as community characteristics at smaller geographical areas such as output areas.

The key users of census data include central and local government, the health sector, business, the education and academic community and members of the public. Key uses of census data include:

- allocating financial resources from central government
- targeting investment and aiding investment decisions
- planning and monitoring social and geographical change
- policy making and monitoring, and
- academic and market research

Extensive consultation was undertaken with users of census data around the design and development of the 2011 Census questionnaire, the operation of the census, the statistical processes and the statistical output. More information about the consultations carried out can be found in the **Assessment of User Needs and Perceptions** section below.

ONS carefully evaluated all the suggestions submitted by users. The changes made for 2011 are those identified as being most needed by the major users of census information or those that would result in more reliable and accurate data. As a result of these consultations, new questions were developed and some existing questions were redeveloped so that more user needs are met. Consultation on the content of the census has always resulted in much larger demand from users for questions than can feasibly be met, and the 2011 Census was no different. To meet the demand from users for census questions would have required over six pages of questions per person; when finalised, the 2011 Census questionnaire contained four pages of questions per person. Some questions were not included because the case made was not as strong as for other topics or questions; some were not included because question testing found they were not acceptable to the public, so resulted in an unacceptable drop in response rate (for example income); and some were not included because testing found the results were not reliable (for example sexual identity). ONS believes that the 2011 Census questionnaire and census operational arrangements achieved a reasonable balance between the demands from users of census information, the burden on the public, and the concerns of the public in respect of the privacy of their information.

More details of the changes made for 2011 are given in the **Comparability and Coherence** section below.

Timeliness and punctuality

Timeliness refers to the lapse of time between publication and the period to which the data refer. Punctuality refers to the gap between planned and actual publication dates.

The breadth and depth of census statistics means that the 2011 Census estimates will be released in stages. The timetable is planned around user need and ONS' aim to ensure that statistics are released as soon as they are ready.

The first 2011 Census estimates were published on 16 July 2012 - 16 months after census day, 27 March 2011. This first release included usually resident population estimates for England and Wales at regional and local authority level by age and sex, and estimates of occupied households. These statistics were required for use in resource allocation and planning procedures undertaken by the Department for Communities and Local Government for local authorities in England and by government departments such as the Department of Health for public health.

The time lag between census day and 16 July reflected the time needed to carry out the Census Coverage Survey (CCS), to process the large volumes of census questionnaires (more than 20 million), to carry out complex statistical processes to produce population estimates adjusted for under and overcoverage, and to fully quality assure the estimates. This has resulted in a consistent and complete set of census outputs which improves the quality and usefulness of the 2011 Census for users, but takes slightly longer to produce than simply outputting the results without the benefit of statistical estimation and quality assurance.

On 22 October 2012, estimates of the number of residents of England and Wales who have a second address elsewhere by broad age group, sex, reason for the second address (working, holiday or other reason) and local authority were published.

On 23 November 2012, the 2011 Census population and household estimates for small areas in England and Wales were published. These included estimates for output areas (OAs), Lower Layer Super Output Areas (LSOAs), Middle Layer Super Output Areas (MSOAs) and wards (electoral divisions in Wales).

Statistics on people with second addresses were published earlier than planned as the information was ready to publish and there was a user need. This information helps central and local government better understand the total number of people that may require services in their areas.

Although the statistical processing and quality assurance of the data is complete, work remains to be done to tabulate and check the results and ensure that the protection of personal information is guaranteed when detailed information is prepared for small geographic areas. The time lag between releases reflects the amount of time required to complete these tasks.

More information on the content and timetable of future releases is available online in the [2011 Census Prospectus](#)². The [Publication Hub Release Calendar](#)³ provides forthcoming dates of releases.

For more details on related releases, the [UK National Statistics Publication Hub](#)⁴ is available online and provides 12 months' advance notice of release dates. If there are any changes to the pre-announced release schedule, public attention will be drawn to the change, and the reason for the change will be explained fully, as set out in the [Code of Practice for Official Statistics](#)⁵.

How the output is created

A key objective of the 2011 Census is to provide high quality estimates that are required by key users on a consistent and comparable basis for small areas and small population groups.

Around 25 million pre-addressed questionnaires were posted out to all households using a specially developed national address register. Special enumerators delivered questionnaires by hand to people living in residential care homes, hospitals, hostels, boarding schools, university halls of residence, mobile home parks, marinas, military bases and other communal establishments. Householders were given the choice to submit their answers to census questions online or by post. The questionnaires were electronically tracked allowing ONS to count the number of postal returns received, and importantly, to identify addresses for which a completed questionnaire had not yet been returned. This information was then used to deploy a team of around 30,000 collectors to focus the follow-up procedures on households and communal establishments who had not returned a completed questionnaire in those areas where response was lower.

Every effort was made to ensure everyone was counted in the 2011 Census, however no census is perfect and some people are inevitably missed. This undercount does not occur uniformly across all geographical areas or across other sub-groups of the population such as age-sex groups. To fill this gap, ONS developed a [Coverage Assessment and Adjustment Methodology](#)⁶ (CAA) which built on the [2001 One Number Census](#)⁷ (ONC) approach. The methodology involved the use of standard statistical techniques, similar to those used by many other countries, for measuring the level of undercount in the census and providing an assessment of the characteristics of individuals and households missed. ONS then used this information to adjust the 2011 Census counts to include estimates of people and households not counted. This methodology was researched and developed over a number of years in consultation with academics, statisticians, demographers and users of census data. An [Independent Review of Coverage Assessment, Adjustment and Quality Assurance](#)⁸ methodology took place in 2011. The review team stated 'we feel that the further procedures for Quality Assurance and adjustment significantly strengthen ONS's strategy for successful population estimation'.

The key stages of the method used to produce 2011 Census estimates can be summarised as follows:

- 2011 Census field work was carried out to enumerate the population
- data from census questionnaires was scanned, captured, coded and cleaned
- the CCS was undertaken independently to establish the coverage of the census
- the CAA process was carried out to adjust the census data using the results of the CCS, and
- the census estimates were quality assured to ensure they were the best they could be

Census Coverage Survey

The purpose of the CCS was to improve the accuracy of census results by estimating the number and characteristics of people missed by the census. It was an independent voluntary survey involving the re-enumeration of all households and individuals in a sample of postcodes. A representative sample of 1.5 per cent of all postcodes in England and Wales, covering 335,000 households, was included in the CCS. The response rate for the CCS was 90 per cent which is very high for a voluntary questionnaire.

Coverage Assessment and Adjustment

The aim of this methodology was to identify and adjust for the number of people and households not counted in the 2011 Census, those counted more than once, and those counted in the wrong place. It involved a number of stages:

- the CCS records were matched with those from the 2011 Census using a combination of automated and clerical matching
- the matched census and CCS data were used within a Dual System Estimation (DSE) technique to estimate the number of people and households missed by both the census and CCS
- the 2011 Census database was searched for duplicates and the CCS was used to estimate the level of overcount (those counted more than once) in the census
- populations for each local authority by age and sex were then estimated, balancing over and underestimates, using a combination of statistical regression and small area estimation techniques, and
- households and people estimated to have been missed by the census were then imputed into the census database

More details about the methodology can be found on the [2011 Census Methodology](#)⁹ and [Quality assurance and methodology papers](#)¹⁰ pages of the ONS website.

Quality assurance (QA) procedures were built into all stages of the CAA process and the 2011 Census estimates were subject to a rigorous QA process. This followed an agreed strategy which had been the subject of wide consultation with census users. Further information about the QA process can be found on the [2011 Census Data Quality Assurance](#)¹¹ and on the pages mentioned above.

Validation and quality assurance

Accuracy

Accuracy is the degree of closeness between an estimate and the true value.

There is no single overall measure of the accuracy of a census; however there are several indicators of its quality. The main threats to accuracy are sampling errors and non-sampling errors.

Sampling error

Although the CAA methodology estimated and adjusted the census counts for those who did not respond to the census, estimates of the population were effectively based on a sample and are therefore subject to sampling error. As with any sample, different people would be selected if the sample was randomly drawn again and slightly different estimates would be produced based on this different sample. The spread of these estimates is known as the sampling variability. Confidence intervals are used to present the sampling variability.

A 95 per cent confidence interval is a range within which the true population parameter would fall for 95 per cent of all possible samples that could have been selected. It is a standard way of expressing the statistical accuracy of a survey based estimate. If an estimate has a large error level, the corresponding confidence interval will be very wide. For England and Wales as a whole, the national population estimate had a 95 per cent confidence interval of +/- 0.15 per cent, suggesting that the true population count is expected to be within plus or minus 83,000 of the census estimate. For more information see [Confidence Intervals for the 2011 Census](#)¹².

The sampling error associated with the 2011 Census estimates is mainly dependent on the CCS sample size, the size of the population, the census response rate, the CCS response rate and the degree of similarity of the population the error level relates to. At a national level, the overall error will be smaller than the error associated with a local authority, particularly one that has a low response rate or an area that has a diverse population. Sample sizes do vary between local authorities and age-sex groups and therefore some error levels may be

smaller or larger than average.

Sampling error was minimised in the 2011 Census in several ways. The census fieldwork was designed to maximise overall response and minimise differences in response rates in specific areas and among particular population sub-groups. This was done using an up-to-date address register which was developed together with a questionnaire tracking system to monitor return rates in real time. This information was used to target field staff to areas with lower response rates with the aim of reducing variability of response between areas and improve response in the lowest responding areas. In addition, the CCS was designed so that the sample was large enough to ensure that the accuracy of the estimates met quality targets, was representative of areas across England and Wales, and took into account the characteristics of areas that were hard to enumerate.

The 2011 CCS successfully achieved over 300,000 interviews and from it, it was therefore estimated that 6.1 per cent of the population was missed by the 2011 Census. For more information see [2011 Census Coverage Survey Summary](#)¹³.

Non-sampling errors

Non-sampling error is the difference between an estimated value and the true value which is not due to sampling variation. In the case of the census, non-sampling error can occur in most parts of the data collection and production process and can arise from four main sources:

- coverage error
- non-response error
- measurement error and
- processing error

Coverage error arises from an inability to sample the entire population. Undercoverage would bias the results and make them less reliable. Reasons for undercoverage include non-return of questionnaires, and households not receiving a questionnaire because their household's address was missed by the address register. Due to the CAA methodology, which adjusted the 2011 Census for undercoverage, the coverage for England and Wales in estimated outputs is close to 100 per cent.

Overcoverage can also occur because:

- duplicate returns were received from the same household
- duplicate returns were received from one individual (for example, a student is counted at their term-time address and also counted at their home address by their parents)
- an individual was counted in the wrong location (for example, a student is counted by their parents at their home address, but missed at their term-time address), and
- errors were made by the individual, census collector or processing system (for example, people who are not usual residents of England and Wales, a baby born after census day, or someone who died before census day were incorrectly included)

Several processes were developed to correct for such overcount. More information is available in [Overcount estimation and adjustment](#)¹⁴.

Non-response error is the error that occurs from failing to obtain some or all of the information from a member of the population. There are two sources of non-response error in the census; person/household non-response and item non-response. Person non-response error occurs because an individual does not respond to the census and household non-response occurs when an entire household fails to respond. The 2011 Census person response rate is the number of usual residents whose individual details were completed on a returned questionnaire, divided by the estimate of the number of usual residents. For 2011, person response rates for England and Wales were estimated to be 94 per cent. Person response rates varied across geographic areas, age and population groups. Details of person and household response rates are available in [Response rates in the 2011 Census](#)¹⁵.

Item non-response refers to missing or inconsistent values associated with a particular question, or set of questions, in an otherwise complete census questionnaire. Missing values occur typically when a respondent does not know or refuses to answer a particular question. Inconsistent values occur when responses to two or more questions are incompatible. For instance, the data from one part of the questionnaire might indicate that the respondent is five years old, and the data from another part of the questionnaire might indicate that the respondent is in full-time employment. Item non-response can lead to bias in estimates derived from the data. Item imputation was applied to the census data to compensate for such bias by generating an estimated value where the answers to census questions were missing or inconsistent. By using actual data from other respondents with similar characteristics, the imputation process served to estimate and reflect accurately the distributional properties of a complete and consistent dataset. Information on item response, imputation rates and the methodology used for imputation will be published with future releases of census data.

Measurement error is the error that occurs from failing to collect the correct information from respondents. Sources of measurement error in a census include a poorly designed questionnaire, errors by field staff or errors made by the respondent. Not all these errors can be measured. In the summer of 2011, ONS carried out the Census Quality Survey (CQS) which was a small-sample voluntary survey to evaluate the information people provided on their census questionnaires. A team of interviewers visited selected households to ask census questions again in a face-to-face interview. The aim was to assess people's understanding of the questions and measure the accuracy of information collected in the census for all household members. The results of the CQS will be published with the second release of 2011 Census data.

Processing error can be introduced by processes applied to the data before the final estimates are produced. It includes errors in geographical assignment, data capture, coding, data load, and editing of the data as well as in the CAA process described above. It is not possible to calculate processing error exactly; however various measures were taken during each process which can be used as estimates of processing quality. More information on the quality of different processes will be published with future releases of census data.

A number of steps were taken to maximise response rates and reduce bias and errors in the census, including:

- the census questionnaire was well designed and extensively tested
- the field operation was managed to maximise response rates and reduce variability using the address register and questionnaire tracking system
- nationwide and local publicity campaigns took place to explain the purpose and value of the 2011 Census, encourage householders to return completed questionnaires, and give the public assurances about confidentiality and data security
- ONS worked closely with local authorities and community groups to encourage participation in the census by all
- help was provided to the public via a 2011 Census website and telephone help-line
- questionnaires submitted online were automatically validated

Bias can be introduced into estimates if the assumptions on which a methodology is based are not met, for example, the DSE method relies on the independence between the census and CCS. The CAA methodology was designed to assess and address forms of bias which may have resulted from any violation in the underpinning assumptions. More information about the assessments and adjustments carried out are described in [The 2011 Census Coverage Assessment and Adjustment Process](#)¹⁶.

Comparability and coherence

Comparability is the degree to which data can be compared over time and domain, for example, at geographic level. Coherence is the degree to which data derived from different sources or methods, but refer to the same topic, are similar.

Census information is available for the last 210 years - every ten years since 1801, except for 1941 when no census was held due to the Second World War. While a census gives an excellent snapshot of the country at the time, changes in definitions, questions, categories used to present results, and geographical boundaries mean that direct comparisons between one census and another does not necessarily give the best estimate of broad population change. This is particularly true for comparisons of population estimates between the 2011 and 2001 Censuses as the 2001 Census is known to have underestimated the population. More information about the reasons for this is given in the [Local Authority Population Studies: Full report](#)¹⁷. Further studies led to ONS adjusting the 2001 [Mid-year Population Estimates](#)¹⁸ (MYEs) for England and Wales by 275,000 to take account of this underestimation, however the 2001 census database itself was not revised. For this reason, the best source to compare with the 2011 Census results to calculate population change over the decade at national and local authority level is the 2001 ONS MYEs.

The census in England and Wales gathers data on the population at the time of the census – in the case of 2011 this was the 27 March. The annual MYEs provide updated estimates of the population as of 30 June between census years by ageing the previous year's population by one year (one year and three months in the first year after the census) and accounting for births, deaths and migration estimated to have occurred during the year. During census years the MYEs are calculated by ageing the population by the period of time between the census and 30 June and using information on the components of population change during that period to update the population base. On 25 September 2012, ONS released mid-2011 [population estimates](#) for England and Wales which were based on the results of the 2011 Census, updated to the mid-year reference date. The 2011 Census population estimates will also be used to rebase the MYEs going back to mid-2002 to ensure a consistent time-series. These revised estimates for mid-2002 to mid-2010 are due to be published in December 2012 for England and Wales and March 2013 at subnational level within England and Wales. The revised back-series for the UK as a whole is expected to be published later in 2013. Specific publication dates for revised figures have been announced on the [Publication Hub Release Calendar](#)³.

Mid-2011 population estimates for Middle and Lower Layer Super Output Areas are due to be published in spring 2013. Estimates for wards, parliamentary constituencies and National Parks will follow the publication of these estimates. Population estimates for smaller geographies for mid-2002 to mid-2010 will also be revised to take account of the results of the 2011 Census and to ensure that they remain consistent with population estimates for local authority areas. The revised estimates are likely to be published later in 2013.

More information about the methodology for producing the MYEs is published in [Population Estimates Methodology Guides](#).¹⁹

For the 2011 Census, comparability has been retained with the 2001 Census and other ONS population statistics where possible, as this was a key design principle in the development of the questionnaire and the processing of the statistics. It was also a strong message gathered from users during the output consultation. However, changes were made to the questions and questionnaire to improve the quality of the data collected and to reflect societal changes in the decade. The main differences between the 2001 and 2011 Census estimates published to date are listed below.

- The 2011 questionnaire provided explicit guidance about who should be included as a usual resident, ensuring that the England and Wales census used the same definition of usual residence as required by the United Nations Economic Commission for Europe (UNECE) regulations and as used in the ONS MYEs. This will deliver closer comparability between the census results, the MYEs and population estimates from other countries
- The 'household' definition has been improved to make it easier to understand, more relevant to current living arrangements and to ensure consistency with the UNECE definition
- Two new questions about second residence were introduced in 2011. Together with the information on usual address, responses to these new questions will provide users with more information about complex living arrangements, and will help reconcile the census estimates with the MYEs. The information will be particularly useful for housing and transport planning as required by local authorities who will want to know the estimated number of people who stay within their area and use local services during the week but who have a usual residence elsewhere
- The 2011 Census is the first census of England and Wales to capture information on short-term residents through the inclusion of new questions on date of entry into the UK for in-residents and their intention to stay. This addition is a direct result of user consultation and reflects the changing needs of census users. The definition used in the UK for short-term residents is coherent with ONS's Short-Term Migration estimates for England and Wales; however there are some subtle differences (see the **Concepts and Definitions** section below)
- Maintaining stability in small area geography to allow comparisons over time was key for the 2011 Census. Changes to 2001 Output Areas (OAs) and Super Output Areas (SOAs) were necessary however in areas where the 2011 Census indicated there has been significant population change since 2001. The majority (97.4%) of the 2001 OAs remain unchanged meaning that they can be directly compared with 2001. Of the other OAs:
 - almost two per cent (1.8%) have been split into two or more OAs. For these, direct comparisons can be made between estimates for the single 2001 OA and the estimates of the two or more 2011 OAs aggregated together.
 - around one per cent (0.6%) were merged with one or more other 2001 OAs so direct comparisons can be made between the estimates from the 2001 OAs, aggregated together, and the single 2011 OA's estimates.
 - the remaining 0.1% have been redesigned mainly because of local authority boundary. These cannot easily be compared to an equivalent 2001 OAs, and therefore like for like comparisons of 2001 and 2011 estimates in these instances are not possible.

More information about the changes in small area geography between 2001 and 2011 are available in [A Beginner's Guide to Geography](#)²⁰. For the reasons given above, the best source to compare with the 2011 Census results to calculate population change over the decade at larger geographies of local authority and above is the 2001 ONS MYEs.

- 2011 Census estimates for output geographies are aggregations of whole OAs, best-fitted to the geographies that were current as at 31 December 2011. This is the method used to produce all 2011 Census and national statistics, so that statistics estimates produced on the same geography are consistent, comparable and non-disclosive. The only exception to this are the estimates for national parks which are exact-fit, as best-fit estimates were considered to be inappropriate for this largely rural geography. [An overview of best-fitting](#)²¹ explains how 2011 Census estimates were built from output areas²¹

More detail about the comparability between the 2011 and 2001 England and Wales Censuses is available on the ONS website [Developing the Questionnaires](#)²².

Users often compare population estimates for individual local authorities to the numbers of people registered on other data sources, for example administrative records. These other data sources were used extensively in the quality assurance of the 2011 Census estimates, however comparisons between datasets should be treated with caution. These datasets were set up for specific administrative purposes so are not designed to measure the whole population. There are definitional differences to the census in the data collected, differences in recording practices and data quality issues. Many administrative datasets will include people who are not 'usually resident' in a local authority according to the census definition. For example, the GP Patient Register and National Insurance registers will include people who are living in the UK for less than 12 months, or whose family home is in another part of the UK. The census questionnaire was designed to explicitly identify such people and, through processing, they were excluded from the usually resident population estimate.

A paper summarising the strengths and limitations of each source in relation to these topics has been published in [Overview of Administrative Comparator Data Used in 2011 Census Quality Assurance](#)²³ and comparator data for each local authority can be downloaded from the 2011 [Census quality assurance pack](#)²⁴ from the ONS website. An analysis of the differences between GP Patient Registers and the 2011 Census is published in [Comparison between 2011 Census estimates and the GP NHS Patient Register](#)²⁵.

[National Records of Scotland](#) (NRS) is responsible for disseminating 2011 Census statistics for Scotland and [Northern Ireland Statistics and Research Agency](#) (NISRA) is responsible for disseminating 2011 Census statistics for Northern Ireland. The UK population estimates will be collated by ONS. The first release of UK population estimates will be on 17 December 2011 and will cover the UK and individual country estimates by five-year age bands. Subsequent releases will include single year of age estimates for UK and the individual countries, plus five-year age bands for regional and local authority areas across the UK. More information on the content and timetable of future UK releases is available online in the [2011 Census Prospectus](#)² and the [Publication Hub Release Calendar](#)³.

Concepts and definitions

Concepts and definitions describe the legislation governing the output, and a description of the classifications used in the output.

The census in England and Wales is required by law under the 1920 Census Act, as amended by the Census (Amendment) Act 2000 and the Statistics and Registration Service Act 2007.

The definitions used for the 2011 Census are consistent with the standard UNECE recommended definitions and have also been adopted by Scotland, Northern Ireland and the rest of the European Union. For more information about definitions see the [2011 Census Definitions](#)²⁶.

Other information

Output quality trade-offs

Trade-offs are the extent to which different dimensions of quality are balanced against each other.

As mentioned in the **Relevance** section above, there is a trade-off between what users want from a census and the quality of the resulting data. The inclusion of questions on topics that are sensitive or difficult to answer could have a significantly adverse effect on the census as a whole, particularly the level of response.

There is also a balance to be struck between user needs, accuracy and the timeliness of results. Census estimates which have not been subject to Coverage Assessment and Adjustment, or detailed quality assurance processes could be produced more quickly. However these would not produce the complete and consistent census estimates that users require, and would not accurately reflect the population.

There is a trade-off between relevance to users and consistency and comparability with previous censuses. While continuity between censuses is extremely valuable, the census must also adapt to reflect the changes in society.

Assessment of user needs and perceptions

The processes for finding out about users and uses, and their views on the statistical products

The design and content of the 2011 Census has been shaped by three principal determinants:

- the demands and requirements of users of census statistics
- the evaluation of the 2001 Census, and
- the advice and guidance of international census agencies and organisations with experience of similar operations

The main users of census data, who were invited to take part in all user consultation, are described in the **Relevance** section of this report. For a description of the key uses of census data, see the [Census 2011 White Paper: Helping to Shape Tomorrow](#)²⁷ and the [Census 2011 Outputs](#)²⁸ web page.

Consultations took place through a structure of formal advisory committees, topic-related working groups and public meetings, via media events such as ONS consultation and information papers, and the 2011 Census website. The consultation was undertaken around the design and development of the 2011 Census questionnaire, the operation of the census, statistical processes and the statistical output.

The Census 2011 consultation process began in 2003 by looking at lessons learnt from the 2001 Census. This process continued through to 2011, involving a variety of consultation methods to meet different census user needs, culminating in Output Roadshows run across England and Wales enabling users to provide feedback on the evolving census outputs design and content.

Details of the process undertaken to develop the content of the 2011 Census questionnaire for England and Wales are in the report [The 2011 Census: Final questionnaire content for England and Wales](#)²⁹.

For further information on the Census 2011 consultation process and results see www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/census-consultations/index.html.

For further information on the Census 2011 outputs consultation see www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/census-consultations/closed-census-consultations/2011-output-consultation---main-statistical-outputs/index.html.

For further information on the Census 2011 geography consultation see <http://www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/census-consultations/closed-census-consultations/2011-census-geography-outputs-consultation/index.html>.

Sources for further information or advice

Accessibility and clarity

Accessibility is the ease with which users are able to access the data, also reflecting the format in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the release details, illustrations and accompanying advice.

ONS's recommended format for accessible content is a combination of HTML web pages for narrative, charts and graphs, with data being provided in usable formats such as CSV and Excel. The ONS website also offers users the option to download the narrative in PDF format. In some instances other software may be used, or may be available on request. Available formats for content published on the ONS website but not produced by the ONS, or referenced on the ONS website but stored elsewhere, may vary. For further information please refer to the contact details at the beginning of this document.

For information regarding conditions of access to data, please refer to the links below:

- Terms and conditions (for data on the website): <http://www.ons.gov.uk/ons/site-information/information/terms-and-conditions/index.html>
- Copyright and reuse of published data: <http://www.ons.gov.uk/ons/site-information/information/creative-commons-license/index.html>
- Pre-release access (including conditions of access): <http://www.ons.gov.uk/ons/guide-method/the-national-statistics-standard/code-of-practice/pre-release-access/index.html>
- Access to unpublished data: <http://www.ons.gov.uk/ons/about-ons/who-we-are/services/unpublished-data/index.html>
- Access to microdata via the Virtual Microdata Laboratory: <http://www.ons.gov.uk/ons/about-ons/who-we-are/services/vml/index.html>
- Accessibility: <http://www.ons.gov.uk/ons/site-information/information/accessibility/index.html>

Future 2011 Census statistics will be released on the main Office for National Statistics (ONS) website, as well as the Neighbourhood Statistics (NeSS) website and the Nomis website. All standard outputs are free under the [Open Government Licence](#)³⁰. Users will be able to find and select 2011 Census outputs, and choose to download or view the statistics online. Supporting reference materials will accompany the statistics.

Each release will be accompanied by commentaries, metadata, look-up files, a glossary of terms, definitions of variables, and data visualisations as appropriate. These supporting documents will aid the clarity and understanding of the census data and ensure they are used appropriately.

The data will be released in stages, and a series of specialist products are planned to follow. These include data on alternative population bases, microdata samples, flow data (origin/destination data) and statistics on small populations. Some of these later releases will be available via the Virtual Microdata Laboratory (VML) which is hosted by ONS. This will be available to approved researchers and other interested parties through a rigorous vetting procedure.

As well as developing the main ONS website to accommodate users' needs for accessible, online statistics for use and exploration, published census data will be directly accessible to third parties to power their own websites and applications, using an Application Programming Interface (API).

Useful links

Office for National Statistics (ONS) website

<http://www.ons.gov.uk/ons/index.html>

2011 Census website

<http://www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/index.html>

2001 Census website

<http://www.ons.gov.uk/ons/guide-method/census/census-2001/index.html>

MYEs data tables

<http://www.ons.gov.uk/ons/publications/all-releases.html?definition=tcm:77-22371>

MYEs Statistical Bulletin

<http://www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-uk--england-and-wales--scotland-and-northern-ireland/mid-2010-population-estimates/annual-mid-year-population-estimates--2010.pdf>

Latest on 'Population Estimates'

<http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Population+Estimates>

Latest on 'Population Change'

<http://www.statistics.gov.uk/cci/nugget.asp?ID=950> - This is a section that contains population estimates and population projections which is listed at the bottom of the taxonomies on this page -

<http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Population>

Population Estimates Analysis Tool

<http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-231847>

UK Population Pyramid

<http://www.ons.gov.uk/ons/guide-method/understanding-ons-statistics/interactive-content/dvc1-uk-population-pyramid-link.html>

England and Wales Population Pyramid

<http://www.neighbourhood.statistics.gov.uk/HTMLDocs/dvc2/EWPyramid.html>

Quality and Methodology Reports

<http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-information/index.html>

MYEs Short Methods Guide

<http://www.ons.gov.uk/ons/guide-method/method-quality/specific/population-and-migration/pop-ests/mid-year-population-estimates-short-methods-guide.pdf>

Improving Population and Migration Statistics

<http://www.ons.gov.uk/ons/guide-method/method-quality/imps/index.html>

2011 Census in Scotland

<http://www.gro-scotland.gov.uk/census/>

Scotland Population Data

<http://www.gro-scotland.gov.uk/statistics/theme/population/estimates/index.html>

2011 Census in Northern Ireland

<http://www.nisra.gov.uk/Census/2011Census.html>

Northern Ireland Population Data
<http://www.nisra.gov.uk/demography/default.asp3.htm>

Migration
<http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=International+Migration>

Internal Migration
<http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Migration+within+the+UK>

Neighbourhood Statistics (NESS)
<http://www.neighbourhood.statistics.gov.uk/dissemination/>

Nomis website
<http://www.nomisweb.co.uk/>

References

	Title of Reference	Website Location
1	Guidelines for Measuring Statistical Quality	http://www.ons.gov.uk/ons/guide-method/method-quality/quality/guidelines-for-measuring-statistical-quality/index.html
2	2011 Census Prospectus	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-prospectus/index.html
3	Publication Hub Release Calendar	http://www.statistics.gov.uk/hub/release-calendar/index.html
4	UK National Statistics Publication Hub	http://www.statistics.gov.uk/hub/index.html
5	Code of Practice for Official Statistics	http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html
6	Coverage Assessment and Adjustment (CAA) Methodology	http://www.ons.gov.uk/ons/guide-method/census/2011/how-our-census-works/how-we-took-the-2011-census/how-we-processed-the-information/coverage-assessment-and-adjustment-processes/index.html
7	One Number Census	http://www.ons.gov.uk/ons/guide-method/census/census-2001/design-and-conduct/the-one-number-census/index.html
8	Independent Review of Coverage Assessment, Adjustment and Quality Assurance	http://www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/the-2011-census-project/independent-assessments/independent-review-of-coverage-assessment--adjustment-and-quality-assurance/index.html
9	2011 Census Methodology	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-prospectus/methods-and-reference-material/2011-census-methodology/index.html
10	First release: quality assurance and methodology papers	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/first-release--quality-assurance-and-methodology-papers/index.html
11	2011 Census Data Quality Assurance	http://www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/processing-the-information/data-quality-assurance/index.html
12	Confidence Intervals for the 2011 Census	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/first-release--quality-assurance-and-methodology-papers/confidence-intervals-for-the-2011-census.pdf
13	2011 Census Coverage Survey Summary	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/first-release--quality-assurance-and-methodology-papers/census-coverage-survey-summary.pdf
14	Overcount estimation and adjustment	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/first-release--quality-assurance-and-methodology-papers/overcount-estimation-and-adjustment.pdf
15	Response rates in the 2011 Census	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/first-release--quality-assurance-and-methodology-papers/response-rates-in-the-2011-census.pdf
16	The 2011 Census Coverage	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-

	Assessment and Adjustment Process	census-data/2011-first-release/first-release--quality-assurance-and-methodology-papers/coverage-assessment-and-adjustment-process.pdf
17	Local Authority Population Studies: Full report	http://www.ons.gov.uk/ons/guide-method/method-quality/specific/population-and-migration/pop-ests/local-authority-population-studies/index.html
18	Mid-Year Population Estimates	http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Population+Estimates+by+Age+and+Sex
19	Population Estimates Methodology Guides	http://www.ons.gov.uk/ons/guide-method/method-quality/specific/population-and-migration/pop-ests/index.html
20	A Beginners Guide to Geography	http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/index.html
21	Best-fitting overview	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-prospectus/new-developments-for-2011-census-results/2011-census-geography/exact-fit-and-best-fit-estimates/BFOverview.pdf
22	Developing the Questionnaires	http://www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/collecting-the-information/developing-the-questionnaires/index.html
23	Overview of Administrative Comparator Data Used in 2011 Census Quality Assurance	http://www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/processing-the-information/data-quality-assurance/index.html
24	Census Quality Assurance pack	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/local-authority-quality-assurance/index.html
25	Comparison between 2011 Census estimates and the GP NHS Patient Register	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/first-release--quality-assurance-and-methodology-papers/index.html
26	2011 Census Definitions	http://www.ons.gov.uk/ons/guide-method/census/2011/census-data/2011-census-data/2011-first-release/2011-census-glossary/index.html
27	Census 2011 White Paper: Helping to Shape Tomorrow	http://www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/the-2011-census-project/legislation/index.html
28	Census 2011 Outputs	http://www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/producing-and-delivering-data/2011-census-outputs/index.html
29	The 2011 Census: Final questionnaire content for England and Wales	http://www.ons.gov.uk/ons/guide-method/census/2011/the-2011-census/2011-census-questionnaire-content/index.html
30	Open Government Licence	http://www.nationalarchives.gov.uk/doc/open-government-licence/