



Census 2001

Methodology

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Introduction

A census of population and housing, even in a country as small as Northern Ireland, is a major undertaking and much time, effort and resources are devoted to it. At a national level it is the largest single statistical exercise carried out by Government - indeed at one stage during the 1991 census around 150,000 people were employed on it in the United Kingdom as a whole.

Data collected in a census have many uses - foremost perhaps being the provision of an accurate population count at local level. In addition, the rich detail of census data provides essential information to plan and deliver services to the population as a whole and to various subgroups within it.

Due to the size of this undertaking and the importance attached to it, the census thus requires a considerable amount of planning and resources.

Planning for the 2001 Census began as far back as 1993, a date necessitated by the scale of the project being undertaken. Extensive preparations were required including putting the necessary [legislation](#) in place, developing the [forms](#) to be used and setting up and testing the mechanisms by which the Census was undertaken. Key to this process was [consultation](#) with census users and the general public to ensure that the census struck the appropriate balance between the needs of Government, business and academia with the requirement that the public was not over burdened by the process and crucially that the [confidentiality](#) of their responses was guaranteed.

The 2001 Census was taken on Sunday 29th April 2001. Prior to this date over 3,000 [Census field staff](#) distributed over 600,000 Census forms to every household and communal establishment in Northern Ireland which were then posted back to Census Office. This exercise was supported by an extensive [publicity](#) campaign which included television adverts and a large scale poster campaign. Minority groups were supported by the [community liaison](#) programme which encouraged these groups to participate in the Census and provided resources to ease the burden of completion. A telephone and e-mail helpline was set up to assist the public with any difficulties they had in completing the Census form.

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2001 Census Publicity Campaign

Census publicity commenced on 2nd April 2001. Below is a range of the material released as part of this campaign, downloadable in PDF format:

Factsheets

1. [The Census](#)
2. [Why we need a Census](#)
3. [Census 2001 - What's New?](#)
4. [Counting Everyone In - The Big Challenge](#)
5. [The Census Organisation](#)
6. [Census Jobs](#)
7. [The Census and the Law](#)
8. [Census Taking Through the Ages](#)
9. [The Census Questions](#)

Door-to-Door material

1. [Advance Round Leaflet](#)
2. [Delivery Leaflet 1](#)
3. [Delivery Leaflet 2](#)
4. [Information Leaflet](#)
5. [Collection Reminder 1](#)
6. [Collection Reminder 2](#)
7. [Collection Reminder 3](#)
8. [Guidance Notes for the Managers of Communal Establishments](#)

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Community Liaison

Several initiatives were undertaken by the Census Office in order to provide as much assistance as possible to members of the public and minority groups (such as those whose first language is not English) who required help in completing their Census form. The primary initiatives were:

Helplines and information

A telephone helpline was set up to answer queries and provide advice about form completion. This included a text phone for the Deaf and a special e-mail address for those preferring to use electronic media. Both were manned between 8am and 8pm, seven days a week from the middle of April to the end of June, at which point all Census forms were requested to be returned. Additionally a Census publicity web site was set up containing fact sheets and general Census information as well as crucial contact information.

The Community Liaison Programme

As part of the Census Community Liaison Programme, Census Office contacted a number of community and voluntary sector groups to inform them about the Census. The objectives were to:

- encourage local communities to participate;
- ensure that assistance is available to those who may have difficulty in completing their Census form.

The focus of the contacts made were the special needs groups, ethnic communities and community groups. A number of initiatives to assist these groups included the availability of a telephone helpline, a text phone for the deaf, Braille and large print information leaflets and audio tapes for the visually impaired, signed videos, translation leaflets in 8 languages and the provision of interpreters for non-English speakers, should this prove necessary. The leaflets provided are as follows

1. [Arabic](#)
2. [Bengali](#)
3. [Chinese](#)
4. [Hindu](#)
5. [Irish](#)
6. [Punjabi](#)
7. [Ulster-Scots](#)
8. [Urdu](#)

Census Office also worked closely with representatives of the Irish Traveller community and the homeless.

Help from Enumerators

In addition to these initiatives, Census field staff were asked to work in partnership with representatives of the voluntary sector to provide assistance to special needs groups where this was necessary. To further assist those whose first language was not English, field staff were provided with a language identity card which comprised a simple paragraph in 8 languages so the householder could point to the language they recognised and thus be sent the translation leaflets. The [language identity card](#) is provided in PDF format.

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Confidentiality

All aspects of the Census operation must be acceptable to the public and comply with statutory requirements. Usage of the information collected in the 2001 Census will comply fully with census legislation and the requirements of the Data Protection Act 1998 and will be used solely for the production of statistics and research. Currently, under the terms of the Census Act (Northern Ireland) 1969, census records in Northern Ireland remain permanently closed and legal penalties for the unlawful disclosure of personal census information are in place.

The following additional principles govern the treatment of the information given in the Census returns:

- Only persons under the management of the Registrars General, or agents acting on their behalf, will have access to personal census information.
- In most cases one form will cover all members of the household and will be returned by post; but people will, if they wish, be able to give personal information on a separate form in a way that will not reveal it to others in their household or establishment, or to the enumerator.
- All members of the census organisation and agents providing services to the Registrars General in connection with the Census Acts will be given strict instructions, and will be required to sign legal undertakings, about confidentiality. They will be liable to prosecution for any breaches of the law.
- The physical security of census documents containing personal information held in the Census Offices, by field staff or by authorised agents will be strictly enforced.
- The computer systems handling census data will have strict safeguards to prevent unauthorised access to the information held.
- In releasing statistics from the Census, all possible steps will be taken to prevent the inadvertent disclosure of information about identifiable individuals and households.

Recognising the value of the independent reviews that had been carried out on the 1971, 1981 and 1991 Censuses the UK Government stated in the White Paper that the Census Offices would undertake a similar review, or reviews, of the confidentiality and security arrangements for the 2001 Census and would publish the outcome of such reviews before the Census. Consequently, the three Registrars General commissioned reviews from independent experts to assess the arrangements to safeguard the physical and IT security of the data collection and processing operations and the statistical confidentiality of the published output. The Census Office accepted all the recommendations made and took all necessary action to implement protection against the risks identified in the data collection review and have incorporated all the recommendations on statistical confidentiality into the proposed output plans. The [report on the reviews on security and confidentiality](#) is available in PDF format.

Although the original Census forms will be destroyed, images of the questionnaires will be retained and held in safe custody by the Public Record Office, Northern Ireland. Precautions will also be taken so that published tabulations and abstracts of statistical data do not reveal any information about identifiable individuals or households. Special precautions may apply particularly to statistical output for small areas.

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Consulting the Public

The Government's proposals for the Census of the population in the United Kingdom, held on 29 April 2001, were published on 4 March 1999 in a White Paper. In deciding which topics to cover Census Offices consulted on user needs in conjunction with their Census Advisory Groups. Northern Ireland Departments, who represented the views of the non-departmental public bodies, were also consulted. Besides this, less formal consultation has taken place through information papers, a series of consultation roadshows, and correspondence. The Census Offices have welcomed views and submissions on the census from any source with or without invitation. The Census Office for Northern Ireland has taken account of all the comments received since the publication of the White Paper in deciding what [topics](#) to include in the Census Order. The Census Order balances the cases made for specific topics by Census users against the public acceptability of the questions, whether or not they can be asked in a way that gives reliable information, and alternative methods of collecting information.

The Government believes that the topics to be included in the 2001 Census are those that are most needed by the public sector, businesses and the professions. It also considers it essential that the Census should be generally acceptable to the public and should not be an unreasonable burden on them.

Furthermore, the Government will uphold the well-established tradition of maintaining the highest levels of census [confidentiality](#). All aspects of the census data collection operation and the processing and dissemination of results will comply with Census Confidentiality and Data Protection law. The information collected in the 2001 Census will be used solely for the production of statistics.

The [2001 Census of Population White Paper](#) can be obtained in PDF format.

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Enumeration

In contrast with previous censuses, forms were hand delivered by enumerators to a member of each household with respondents asked to return their completed form by post. This offers a cost effective and convenient way of collecting information from the majority of the population and enabled resources to be targeted at those groups in the population (young, elderly, etc.) that were more reluctant or less able to respond. Despite the efficiency savings that the post-back approach brought, the task was still a huge undertaking and involved the hand delivery of over 600,000 forms to households and communal establishments. This task meant the creation of some 3,000 mainly part-time jobs which are described below:

Census Area Managers

The most senior appointments were the six Census Area Managers (CAMs) who had responsibility for the conduct of the Census in areas with a population of around 300,000.

Census Area Managers were each responsible for the training of up to 20 Census District Managers and for the general management and control of the Census operation in their areas.

Time in post: from 1 September 2000 to 30 June 2001.

Census District Managers

Census Area Managers recruited a total of 97 Census District Managers (CDMs) responsible for areas with a population of about 20,000.

Duties included interviewing Census Enumerators and training 2 to 4 Census Team Leaders and up to 30 Census Enumerators for their allocated area. They were responsible for managing the day-to-day running of the Census in their area and were required to make regular reports on progress.

Time in post: from 30 October 2000 to 23 June 2001.

Census Team Leaders

Below the Census District Managers were some 280 Census Team Leaders (CTLs). Census Team Leaders assisted the Census District Managers with administrative tasks and training, acting as team leaders for up to 10 Enumerators.

Time in post: from 19 February 2001 to 16 June 2001

Census Enumerators

Finally, a force of about 2,600 Census Enumerators delivered Census forms to every single address in the country. They were also responsible for the collection of the completed forms that they had originally delivered, from the Royal Mail and recording their receipt.

Time in post: from 20 March 2001 to 21 May 2001.

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Legislation

The duty for carrying out a Census rests with the Registrar General for Northern Ireland. He is also responsible for authorising all Census returns and ensuring that the system is fit for the purpose of taking the Census. All procedural and other changes are conducted in accordance with well-established procedures for consultation with users and decisions are authorised by a series of Census Boards including the United Kingdom Census Committee.

There are three pieces of legislation that provide the basis for the conduct of the Census:

[The Census Act](#)

The Census Act (Northern Ireland) 1969 is the authoritative primary legislation that determines the topics that can be included in the Census. Any questions not authorised by the Census Act can only be introduced by a change in the legislation. The Act gives powers for taking a census from time to time provided that, at the commencement of the year in which the census is to be taken, at least five years have elapsed since the commencement of the year in which a census was last taken. The Act also gives powers for the making of an Order in Council directing the census to be taken on a particular day.

[The Census Order](#)

For each Census, Parliament is required to approve two pieces of secondary legislation – the Census Order and the Census Regulations. The Census Order specifies the date when the Census will be taken, those who are required to fill in the forms and the topics/questions to be asked. For the 2001 Census, the Order came into operation on 23rd June 2000. Separate Orders have been made for England and Wales and for Scotland.

[The Census Regulations](#)

The Census Regulations, laid in June 2000, specified the detailed arrangements for the conduct of the Census in Northern Ireland. The Regulations included facsimile copies of the census forms, information on field procedures and arrangements for the recruitment of field staff.

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Coverage and Statistical Methodology

The Census processing project aims to create as a final result a database that at person level reflects the most accurate estimate of the Northern Ireland population possible. This is achieved in two stages. Firstly the tick-box and hand-written information which the public provide on Census forms are scanned in and processed using optical recognition technology. Secondly the results of a Census Coverage Survey, designed to measure how the census did in counting households and people by interviewing a cross-section of the population, are carefully matched with the results from the 2001 Census to highlight under enumeration with additional individuals being imputed to produce a final database in the [one number census](#) process.

The paper "[The methodological approach to the 2001 Census](#)" gives further detail on the processes used in the census to achieve complete information for the whole population. This paper includes summary information on impact of these processes on key variables, including religion and community background. It also contains detail on the broader analysis of religion and community background questions.

The 2001 Census question on Irish language ([see Annex 1-2001 Census question on Irish Language](#)) was designed to determine the proportion of the population who have knowledge of the Irish language. The question, which asked respondents to tick all boxes that applied, addresses four component parts of knowledge, the abilities to understand, speak, read and write Irish. It is acknowledged that the 2001 Census question treats, for example, the ability to speak Irish as a simple 'yes' / 'no' dichotomy, whereas in practice, people who claim to be able to speak Irish will range from those who are fluent to those who have a very limited vocabulary.

In order to address this, Census Office commissioned a question in the September 1999 Omnibus Survey to examine the distribution of fluency amongst those claiming to have some knowledge of Irish. The purpose of the 1999 survey was to aid further understanding and interpretation of the outputs from the 2001 Census.

A [short paper detailing this analysis on the Irish Language Question](#) is available.

All statistical outputs were subjected to [disclosure control processes](#) to protect the confidentiality of individual Census responses.

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The One Number Census

The One Number Census (ONC) project aims to integrate the 2001 Census counts with the estimated underenumeration. First it will provide a new base for the mid-year population estimates at the Local Authority District (LAD) level, and second it will adjust the Census database itself for the estimated undercount so that all statistics add to 'One Number' - the national estimate of the population.

The primary source in estimating the underenumeration will be the Census Coverage Survey (CCS). This has a notably different design to the Census Validation Survey undertaken following the 1991 Census.

The project derives its name from the intention to eliminate different population counts so that all census outputs add to one number - the national population estimate which has been adjusted for underenumeration. Furthermore the mid-year population estimates will be based on these ONC population estimates and there will be transparency between them.

The ONC Project considered the methodology separately for England and Wales, Scotland and Northern Ireland. The high-level methodology presented here is consistent throughout the UK. Although there are some differences, these are mainly associated with the design and practical aspects of the Census Coverage Survey and the use of health board areas during the Quality Assurance process in Scotland.

Why is a One Number Census necessary?

The primary aim of the Census is to provide a snapshot of the entire population and thus provide high quality counts of the population for small areas across the country. These statistics are used for many important purposes. In particular, they provide a new base for the mid-year population estimates which are used to help distribute central government support to local authorities. They also allow central and local government as well as health authorities to plan health, education, transport and housing needs for the years ahead.

Every effort was made to ensure everyone was counted in 2001 and a number of initiatives were introduced to maximise coverage. However, no census is perfect and some people will have been missed. Therefore, it is accepted practice throughout almost all similar census-taking countries to assess the extent of any underenumeration, usually by means of a post-enumeration survey.

How will a One Number Census be achieved?

The key ONC stages can be summarised as follows:

1. A Census Coverage Survey (CCS), undertaken independently of the Census, was designed to establish the coverage of the 2001 Census. For the CCS, the UK was divided into one hundred and twelve areas (3 in Northern Ireland), each with a population of about 500,000. These areas are known as 'design groups' and are made up of whole LADs or groups of smaller LADs. The CCS took place in all of these design groups.
2. The CCS records are matched with those from the Census using a combination of automated and clerical matching.
3. Design group populations, by age and sex, are estimated using a combination of standard estimation techniques and are used to estimate Local Authority District populations by age and sex.
4. Households and individuals estimated to be missed by the Census are imputed to produce a fully adjusted Census database.
5. All ONC population estimates are quality assured using demographic analysis and aggregate level administrative data.

Consultation

It is important that users of census data have confidence in the 2001 Census figures produced by the One Number Census. Acceptance was sought in a number of ways, including:

- The composition of the Census Advisory Group;
- The consultation process with census user groups;
- A Series A RSS paper (Brown et al, 1999);
- Several RSS seminars;
- The Census Consultation paper '[2001 - A One Number Census](#)' (Available in PDF format);
- The Spring 1999 Consultation paper 'A Guide to the One Number Census';
- A workshop devoted to the One Number Census project in May 1998; and
- Special workshops held in conjunction with Census Output Roadshows during April/May 1999 and September/October 2001.

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Disclosure Control

The protection of the confidentiality of personal Census information is paramount, and a number of protection measures will be used to prevent the inadvertent disclosure of information about identifiable individuals. In particular:

- a sample of Census records will be swapped between geographical locations in the output database, adding a small amount of uncertainty to Census outputs.
- minimum thresholds of numbers of households and individuals will apply before output is produced. These will be 40 households and 100 individuals for Census Area Statistics and 400 households and 1,000 people for Standard Tables. Desirable Census output that falls below these threshold criteria will be examined on a case-by-case basis.
- the smallest area for which commissioned output will be released is a Census Output Area which contains approximately 125 households. All other areas will be amalgamations of these areas.
- all outputs will be subject to small cell adjustment, that is, for those cells in output tables where the cell count is small, the count will be adjusted.
 - only small counts are adjusted
 - information on what constitutes a small cell count cannot be provided as this may compromise confidentiality protection
 - the magnitude of the adjustment will generally have little impact on the conclusions that can validly be drawn from the data
 - totals and subtotals in tables are calculated as the sum of the adjusted data so that all tables are internally additive; within tables, totals and subtotals are the sum of the adjusted constituent counts
 - tables are independently adjusted; this means that counts of the same population in two different tables may not necessarily be the same
 - tables for higher geographical levels are independently adjusted, and, therefore, will not necessarily be the sum of the lower geographical component units
 - caution should be taken in interpreting small cell counts as they are impacted to a greater proportion than larger cells
 - some small cells will be randomly altered to zero. Caution should be exercised in deducing that there are no people or households in an area having particular characteristics
 - when calculating proportions, percentages or ratios from cross-classified or small area tables, the random error introduced can be ignored except when very small cells are involved, in which case the impact on percentages and ratios can be significant

Although this paper on [small cell adjustment](#) (option 2) is written from an England and Wales perspective, the small cell adjustment methodology is the same as that used in Northern Ireland.

- All output tables have been assessed for disclosure risk and data utility. A general principle has been applied to the design of all the 2001 Census Output of making the average cell count in a table greater than or equal to one.
- A condition of use included in all end user licenses is that the Census material shall not be used to attempt to derive information relating to an identified person or household nor shall a claim be made that such information has been obtained or derived.

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