Scotland's Census
Shaping our future

Scotland's Census 2011 General Report

October 2015

Laid before the Scottish Parliament under Section 4(1) of the Census Act 1920
SG/2015/191

National Records of Scotland

Contents

Foreword

Tim Ellis, Registrar General for Scotland

Scotland's Census 2011 marked the 150th anniversary since the Registrar General for Scotland was given the responsibility for organising the census in Scotland.

When making his case for taking the first census in 1801, the statistician John Rickman stated that 'the intimate knowledge of any country must form the rational basis of legislation and policy.' The census provides us with that intimate, but impartial, knowledge and tells us who we are, how we work and how we live in Scotland in the 21st Century.

Detailed statistics from the census describe the characteristics of an area or community, such as how many men and women there are and their ages, ethnic group, education level and a broad range of other characteristics. The answers people give to the census are used to help government develop policies and initiatives, to help local authorities plan services and to make effective use of resources that benefit the people of Scotland, and to inform planning for a wide range of third sector and private sector bodies.

The census is the only survey of its kind to ask everyone in Scotland the same questions at the same time. No other survey provides the richness and range of information that the census does. It is widely acknowledged as playing a fundamental and unique role in the provision of comprehensive and robust population statistics.

The planning and execution of the census operation is vast and complicated and the processing and production of the data complex and time consuming. It is a costly exercise to undertake - the whole 2011 Scotland's Census Programme cost just under £64 million – and one which everyone is required by law to participate in. We need to be sure that we are collecting the right information in the best and most efficient way.

Every census has its unique features - new developments and innovations to meet changing user needs and changes in society. Scotland's Census 2011 was no exception. Perhaps most significantly, it was the first time that Scotland had carried out all of the data collection

and processing activities independently of the other Census offices in the UK.

Also for the first time, there was the option of making an online response through a secure facility, following practice that is becoming increasingly adopted internationally. Around 20 per of all returns were made this way which reduced the volume of paper questionnaires to be processed and allowed quality checks to be embedded into responses before they were submitted.

New questions were added on national identity, the nature of long term health condition, year of arrival to the UK, proficiency in English and Scots language. These new questions reflected the changing requirements of users. In addition, some existing questions were amended to better reflect current user needs e.g. ethnic group, religion and type of central heating.

Engagement and consultation played a key part in developing the design of the 2011 Census and a great deal of work was undertaken to ensure the widest participation and to ensure that the census was accessible to all. A community liaison programme was established and we worked with representative groups to develop the best set of questions and support. All of this was backed up by an effective Scotland-wide publicity campaign which presented information in eye-catching and memorable advertising.

Quality assurance was more extensive than ever before, giving users more confidence in the quality of results. We built on our positive experience of the system for disseminating previous census results to deliver the Scotland's Census website which provides a large range of outputs in easily accessible formats. We have spent considerable time and effort encouraging and supporting others to access and use the these outputs and are working with users to assess the benefits which are derived from using our data.

Ensuring confidentiality of all census information was – and will continue to be – fundamental during all parts of the census operation. The public can be reassured that the arrangements to protect their information were the most rigorous to data and that there were no significant security incidents in the course of the Census.

I am delighted that the coverage of Scotland's Census 2011 is comparable with that of other developed countries in the 2011 round of

censuses and overall it was a success. For this I have to thank the general public for completing 2.5 million returns; the 7,000 temporary staff employed by NRS to take the census; and the dedicated staff, past and present, in NRS who put so much time and effort into taking the census and producing the outputs in such a professional way working alongside colleagues in the Office for National Statistics and the Northern Ireland Statistics and Research Agency. We all owe a particular debt of gratitude to my predecessors as Registrar General, especially Duncan MacNiven.

This General Report reviews the entire census operation from the early planning and consultation through to the production and dissemination of outputs and evaluation. It provides a wealth of detail about how Scotland's Census 2011 was carried out and what we have learned to take forward in our planning for the next census. I hope that both the experienced and occasional user of census data, as well as the wider public, find it interesting.

Tim Ellis, Registrar General
October 2015

Executive summary

Executive Summary

Introduction (Chapter 1)

For over 200 years, Scotland has relied on the census to underpin national and local decision making. The key aims for the 2011 Census were:

- to provide complete, accurate and accessible population statistics, which meet user requirements, on a consistent and comparable basis nationally and for small areas and small population groups
- to build public confidence and encourage participation in the census, thereby maximising response rates nationally, locally and among sub-groups of the population
- to protect, and be seen to protect, confidential personal census information
- to provide value for money

To achieve this, planning for Scotland's Census 2011 built on experience and recommendations from previous censuses and in particular recognised the need to take account of an increasingly ageing population; a more mobile population; more complex living arrangements; increased number of migrants, particularly from Eastern Europe; and greater number of single person households.

Considering these recommendations and societal factors, as well as feedback from stakeholders and users over the years, the 2011 Census in Scotland was designed to:

- count everyone usually resident in Scotland on census night
- collect a small amount of information on visitors in households on census night
- provide personalised questionnaires to households based upon a purpose built address list
- deliver the bulk (95 per cent) of questionnaires by hand
- to enable completed questionnaires to be returned by post, via enumerator or for households to complete questionnaires online
- to provide help to those who have difficulty completing their questionnaires
- to employ stringent confidentiality and security principles to protect personal information

- to design outputs to meet users' needs and to disseminate these outputs to a pre-announced timetable

Stakeholder engagement and consultation (Chapter 2)

Scotland's Census is the largest population and household survey in Scotland and therefore has an exceptionally large number of stakeholders and users. It generates considerable public, political and media interest and the large investment delivering the most benefits where the data meets users' needs.

Engagement and consultation played a key part in developing the design of the 2011 Census. It established the demands of users such as national and local government and took into consideration the views of community groups and members of the public.

A great deal of work was undertaken to ensure the widest participation and to ensure that the Census was accessible to all. A community liaison programme was established and National Records of Scotland (NRS) worked with representative groups to develop the best set of questions and support. Local authorities also played an important role in ensuring the success of the census, providing local help and support which helped to deliver high response rates.

A number of consultations were carried out over the course of the programme to determine both topic and output requirements as well as the geographic base for presenting census outputs. As a result, new questions were added on national identity, year of entry into the UK, proficiency in English, Scots language and long term health condition. Changes were also made to the questions on marital status, ethnic group, language, religion and central heating to better reflect both users' views and societal changes.

Publicity (Chapter 2)

Taking a census is a unique exercise as it involves reaching every household and individual in the country, encouraging them to complete their information on the questionnaire to provide the most complete and accurate picture of the country. The aim of the publicity campaign was therefore to maximise public understanding of the importance of the census and to promote involvement.

The campaign and related public relations activity included liaison with representatives of the groups of people who were most at risk of being undercounted, and developing messages aimed at mainstream audiences as well as hard to reach groups. This was all based on audience research and testing. The campaign used a painting by numbers concept and the logo and messaging emphasised that this was Scotland's Census. The strapline 'Shaping our future' encouraged a sense of inclusion and purpose.

Overall the tone of media coverage throughout the census was mainly positive and factual. The Scotland wide publicity campaign was considered to be a success with key information presented in eye catching and memorable advertising.

Managing the Census (Chapter 3)

The Census is a major undertaking of great importance to both the people who provide their information and to the users who rely on the data it produces. Strong and effective management of all parts of the census process – especially the protection of the information collected – is key to ensuring that public confidence is maintained. It is also important that the census is run efficiently, providing value for money.

NRS outsourced a number of services to bring in expertise and experience which NRS did not have.

Activities that were outsourced were:

- Field staff supplies
- Translation and interpretation services
- Warehousing, distribution and collection
- Some public help facilities
- Printing
- Data capture and coding
- Development of the output dissemination system

The total cost of the 2011 Census for the 10 years from 2005-06 to 2014-15 was £63.5 million. This was £1.6 million less than the budget estimate published in the Government Statement in 2008.

Collecting the data (Chapter 4)

Building on the successful approach in 2001, NRS hand delivered the majority of census questionnaires to households and communal establishments in Scotland. The majority of nearly 7,000 temporary staff employed across the programme were involved in this operation and they were the main contact for the general public. As well as delivering the census questionnaires, they were also responsible for all of the follow up activities required to obtain a high response rate.

Special enumeration procedures were developed to deliver and collect information from communal establishments and special accommodation sites such as caravan parks and gypsy encampments, as well as special populations such as rough sleepers

NRS achieved an overall response rate of 94 per cent. Other than Glasgow (89 per cent) all local authorities had response rates of more than 90 per cent.

For the first time in Scotland, people were offered the opportunity to complete their census questionnaire online. Around 20 per cent of all returns were made this way.

The success of the online service provided a number of benefits to the data collection operations, including:

- it provided an environment in which the security of the census information could be securely protected
- it improved overall response by offering an alternative means of completion to people in households who might otherwise have been less inclined to complete a paper questionnaire
- it avoided the need to scan and capture a significant proportion of the returns and reduced costs
- it was easy to use and improved data quality.

Census Coverage Survey (Chapter 5)

Despite the efforts made to collect information from everyone in the country, no census is perfect and inevitably some individuals are missed. It is a widely accepted practice when conducting a traditional census that an assessment of coverage should be part of the statistical operation.

The Census Coverage Survey (CCS) was the key source of information on the extent and distribution of the census undercount. It was a sample survey independent to the census. Participation in it was voluntary and it took the form of a short interview to check the coverage of the households and the people within the households including some basic demographic information (such as age, marital status, ethnic group). The information from this survey was used in conjunction with the census data to produce a consistent set of estimates. Prior to the start of the CCS, NRS set an objective of achieving a 90 per cent interviewer completion rate and this aim was achieved.

Data processing (Chapter 6)

The Scotland's Census 2011 was processed in phases:

- Input processing, comprising of two main stages:

    1) the main data capture and coding stage

    2) the downstream processing stage

- Output processing; the creation of an outputs database, from which census output products were produced and subsequently disseminated.

Data processing began by scanning the questionnaires and automatically capturing their data. The data were validated to ensure that the values for each question were within the range specified in the relevant coding frame and that there were no duplicate responses. Coders assigned numerical values to written text and ticked boxes, applying coding rules and standardised national coding frames, such as SIC07 (Standard Industrial Classification 2007) and SOC2010 (Standard Occupational Classification 2010).

Respondents to any census sometimes make mistakes in their answers or omit certain questions. This results in missing data or invalid responses which are inconsistent with other values on the questionnaire. An edit and imputation method was used to correct inconsistencies and estimate missing data while preserving the relationships between census characteristics.

The coverage assessment and adjustment operation helped NRS to adjust for the number of people and households not counted in the 2011 Census. The extent of this under counting was identified using the post-

enumeration CCS. Standard statistical estimation techniques were then used to produce an adjusted database from which the final census results were produced.

These results also formed the new 2011 base for the mid-year population estimates produced by NRS. Quality assurance (QA) procedures were built into all stages of data processing and the 2011 Census estimates were subject to a rigorous QA process to ensure they were plausible and of the right overall magnitude.

Overall the methods and data sources used to capture, clean, validate and quality assure the census results were transparent and gave users confidence in the process and hence the census results.

Confidentiality and Security (Chapter 7)

The success of the census depends on the participation of the public. To ensure that everyone is included, it has always been compulsory. The information collected is treated in strict confidence (a key message in census publicity) and there are legal safeguards to prevent unauthorised disclosure. Individual census records are closed to public access for 100 years.

An independent information assurance review was carried out prior to and during the census operation, covering a wide range of planning, management and implementation activities. The review team noted that, from the outset, ensuring the protection of personal information provided by the public had been a core objective in planning the 2011 Census. They concluded:

"As a result of our review, we are very satisfied that the three Census Offices are managing Information Assurance (IA) pragmatically, appropriately and cost-effectively. We are, therefore, confident that they are capable of delivering their IA objectives and that information will be held in secure environments and that it will be handled in line with best practice and Government standards. The public can be assured that the information they provide to the 2011 Censuses will be well protected."

The census is not concerned with facts about individuals. Its purpose is to provide facts about communities and groups within communities. To preserve confidentiality a statistical disclosure control process was applied to prevent identification of individuals in published outputs. The method employed was record swapping, which always introduces some

uncertainty as to whether the value of any given small count is the true value.

Usage of census data must comply with the Census Act 1920 and the requirements of data protection, freedom of information and human rights legislation. There are legal penalties for the unlawful disclosure of personal information collected in the census.

Output production and dissemination (Chapter 8)

The Census provides a once in a decade opportunity to obtain an accurate, comprehensive and consistent picture about the population of Scotland in terms of its size and characteristics. However, the value of the data produced from the census can only be realised if the outputs are easy to access and meet users' needs. The key aims for the dissemination of Scotland's Census 2011 outputs were:

- to provide users with easy access to all census information (subject to disclosure control restrictions) for small geographies and subgroups of the population
- to enable users to exploit the latest advances in technology to access and analyse the data

NRS conducted extensive consultation to define the range of products and services that would be produced.

NRS also built on its positive experience of the system for disseminating Scotland's Census 2001 data, and feedback from formal and informal consultations, to deliver the Scotland's Census website which provided:

- a core set of standard census tables delivered via the Scotland's Census Data Explorer
- area profiles
- maps, tables and graphics
- utility to download bulk census data
- comprehensive metadata alongside the data
- 2001 data alongside 2011 with a population comparison tool
- wide range of supporting information

NRS has aimed to meet users' requirements for data at different levels of detail by producing data at 16 different levels of geography subject to protecting the confidentiality of individual's data. The geographies have all been created from the same basic building block, the Output Area.

The Scotland's Census 2011 Outputs Prospectus described what data was currently available and what was planned for the remaining releases with indicative release timings for each.

Uses and Benefits of the data and user feedback (Chapter 8)

There is an extensive number of uses and related benefits of Scotland's Census contributing to the following two key areas:

- To inform policy, planning and funding decisions
- To target resources effectively

NRS has undertaken a range of activity with users to identify uses and benefits and it is evident that there are many. Uses of census outputs include Scottish Government using them to understand ageing and the impact on pensions, local authorities using them for housing demand and needs assessment, and third sector organisations using them to highlight inequalities or social problems and use by the business and private sector for business planning and market research. The census dataset is also an excellent source for research and there are examples of several projects which directly draw on its data.

As part of the work to identify uses, NRS sought feedback directly from users and asked for views on census outputs, especially what could be improved. Overall response was positive although some respondents were dissatisfied with the length of time it took for outputs to be produced.

The work on identifying and measuring uses and benefits will continue over time. NRS will report on this work as it evolves and will use the emerging results to feed into the business case and design of the 2021 Census. NRS will continue to work with users to improve their experience of using census outputs and therefore to increase the impact of the census.

Data quality (Chapter 9)

The quality of a census is about producing results that are fit for purpose and meet user requirements, ensuring that the results are produced to the required level of accuracy. However the quality of the data varies across the range of outputs for a number of reasons including overall sampling error as well as variations in response rates across the country and to individual questions. Information about the quality of the data is

essential to users in order to aid their interpretation and understanding as well as ensuring that they understand any limitations of the data.

Various indicators of quality can be produced from the census. The most often used is the confidence interval around the overall response rate to the census:

- the 95 per cent confidence interval achieved on the population estimate for Scotland was +/-0.44 per cent (23,000 people)
- all local authorities had a 95 per cent confidence interval of better than +/- 3 per cent
- the overall response rate for Scotland was 94 per cent

Evaluating Scotland's Census 2011 (Chapter 10)

This General Report contains information about the planning, conduct and results of Scotland's Census 2011. It has noted that there were some key successes:

- NRS chose to plan and conduct all aspects of the entire Scotland's Census operation, including data processing, for the first time
- positive engagement with users and other stakeholders which engendered higher levels of support and confidence in the census
- the inclusion of several new topics in the census including some unique to Scotland e.g. nature of long term health condition
- a high level of overall response
- introduction of an online response option
- more flexible means of dissemination and analysis of an increased range of census data and background information via the Scotland's Census website
- delivering the programme for around £1.6 million under budget

However there were some key learning points:

- given that this was the first time NRS had conducted all aspects of the census, there was inevitably a steep learning curve with areas that could be improved upon for future censuses
- it took longer to produce outputs than was originally intended. A variety of issues contributed to this but it undoubtedly had an impact on our users and the utility of the data

It also reports that there were a number of challenges and lessons to be learned for any census operation in the future. The main findings are summarised in themes:

- programme management
- legislation and the parliamentary process
- stakeholder management
- the census coverage survey
- data collection and field operation
- data processing and statistical methodology
- output content production and dissemination

Overall however, Scotland’s Census 2011 was conducted successfully, in line with international best practice, and provides a sound basis for understanding the nature and diversity of Scotland’s population.

Chapter 1

Introduction

1 Introduction

Historical background

1.1 The earliest native census in Britain was the "Senchus fer nAlban" (History of the men of Scotland) and dates from the 7th century. It listed the population of Dál Riata, the Kingdom of the Gaels, on the west coast of Scotland. Various attempts were also made to get an accurate picture of the whole of Scotland from the 1620s but the results were incomplete.

1.2 Regular census taking began in Scotland and other parts of Britain at the start of the 19th century. A Census Bill (to enable the taking of a census) was introduced to Parliament in 1800 at a time when there was widespread concern about the effects of growing population and a need to know about the number of men of fighting age. A census was subsequently taken on Tuesday 10 March 1801.

1.3 Since then there has been a census every 10 years other than in 1941 as a result of the outbreak of war in 1939. They have been managed independently in Scotland since 1861.

Purpose of conducting Scotland's Census 2011

1.4 For over 200 years, Scotland has relied on the census to underpin national and local decision making. Some 200 countries worldwide now carry out a regular census under the auspices of the United Nations (UN) Census Programme.

1.5 Government, local authorities, health services, the education and academic communities, the third sector, commercial businesses, and others need reliable information on the number and characteristics of people and households if they are to conduct many of their activities effectively. This need is currently best met by conducting a census every 10 years, covering the whole of the population, and by updating the population estimates each year with the preceding census as the benchmark.

1.6 Census information is especially important where there is no other reliable source of the information, where the ability to cross-reference different characteristics of people or households is crucial, or where it is the only source of information about small areas and sub-groups of the population.

1.7 A range of uses resulting from Scotland's Census 2011 are covered in Chapter 8.

Legal framework, requirements & UK context

1.8 The Census Act 1920 provides the legal framework for conducting the Census in Scotland (Chapter 2 provides further detail). The Act makes the Registrar General for Scotland, under the direction of Scottish Ministers, responsible for arrangements for the Census in Scotland. The Registrar General for Scotland leads National Records of Scotland (NRS) which conducts the Census in Scotland.

1.9 In England and Wales, responsibility for the Census lies with the UK Statistics Authority and the Office for National Statistics (ONS). In Northern Ireland, the census is the responsibility of the Registrar General for Northern Ireland and the Northern Ireland Statistics and Research Agency (NISRA).

1.10 The three UK census offices work closely in planning and preparing for the Census. In February 2005, the National Statistician and the Registrars General made a formal agreement. to work together to ensure that the censuses were a success in delivering high quality housing and population statistics, to meet the needs of data users and reflect United National Economic Commission for Europe and Statistical Office of the European Communities (Eurostat) requirements.

EU statistical requirements

1.11 The European Commission needs sufficiently reliable and comparable data on population and housing in order to fulfil the tasks assigned to it, notably by Articles 2 and 3 of the Treaty establishing the EU. A Council and European Parliament Regulation that came into force in July 2008 requires Member States to provide Eurostat with census-type statistical information or equivalent data relating to the reference year 2011. Aggregated statistics are supplied by NRS to Eurostat via ONS for use by the European Commission in support of the European Parliament.

1.12 The UK is also complying, as far as possible, with any statistical requirements identified by the United Nations. A set of principles and recommendations for the current round of censuses

throughout the world was adopted, following a meeting of the UN Statistical Commission in February 2008. All countries have been asked to produce core outputs which will be incorporated into a UN demographic publication.

The Strategic Aims of Scotland's Census 2011

1.13 Four broad strategic aims were identified in respect of Scotland's Census 2011 and its design was based on these aims:

- to provide complete, accurate and accessible population statistics, which meet user requirements, on a consistent and comparable basis nationally and for small areas and small population groups
- to build public confidence and encourage participation in the census, thereby maximising response rates nationally, locally and among sub-groups of the population
- to protect, and be seen to protect, confidential personal census information
- to provide value for money

Recommendations following the 2001 Census

1.14 Scotland's Census 2011 built on Scotland's previous censuses. In particular, a review of the 2001 Census made a number of recommendations which were taken into account including:

- planning certain activities earlier than in 2001
- ensuring that sufficient temporary staff (mainly enumerators) were recruited for the task of encouraging households to complete a questionnaire
- improving the suitability of the census questionnaire, particularly for people with a visual impairment or who do not read English
- ensuring that enumerators have access to an accurate list of addresses of households in their area
- pre-printing addresses onto the census questionnaire

The design of Scotland's Census 2011

1.15 To achieve the key strategic aims and to respond to changes in society in the 10 years since the 2001 Census, the design of the

census in 2011 (that is all elements of the census from start to finish) required to differ from previous censuses.

1.16 Societal changes included: an increasingly ageing population; a more mobile population; more complex living arrangements; increased numbers of migrants, particularly from east European countries; and greater numbers of single-person households.

1.17 In summary, the key elements of the design were that:

- the 2011 Census would aim to count everyone usually resident in Scotland on census night (a small amount of information would also be collected from visitors in households that night)
- questionnaires would be addressed during the printing process using a purpose built address list
- the bulk (95 per cent) of questionnaires would be delivered by hand and the remainder (mostly in rural areas) by post
- the public would be able to return completed questionnaires by post or via their enumerator and households would also have the option of completing the questionnaire online
- help would be available to anyone who had difficulty in completing the questionnaire
- stringent confidentiality and security procedures would protect the information gathered in the census
- the data/ outputs from the census would be designed to meet user needs, and disseminated to a pre-announced timetable.

Chapter 2

Planning and Preparation

2 Planning and Preparation

Date of the Census

2.1 The date of the Census is key to planning and can affect the quality of the data collected. Whilst the Census does not have to take place on a specific day of the week, a Sunday has been chosen since 1841 as the most likely time that most people will be at home.

2.2 Consideration is given to various aspects to maximise the number of people who would be present at their normal address by, for example, avoiding holiday periods and maximising the number of students present at their term time address. Similar consideration is given to ensure minimum interruption to the delivery and collection of the questionnaires by, for example, allowing sufficient hours of daylight for field work.

2.3 The date agreed upon following discussion across the three UK census offices was Sunday 27 March 2011.

2.4 Further considerations in 2011 which had an impact on this decision included Easter Sunday, which was on 24 April, and the Scottish Parliament and local council elections, on Thursday 5 May.

Stakeholder engagement and consultation

2.5 A programme as long and complex as the Census requires engagement that is carefully planned, timely and responsive to deliver informed, meaningful and relevant input.

2.6 Scotland's Census is the largest population and household survey in Scotland. It generates considerable public, political and media interest and the investment delivers the most benefits if the data are accessible to users and meet their needs.

User needs

2.7 Understanding user needs requires wide consultation in accordance with the principles and practices set out in the United Kingdom Statistics Authority (UKSA) Code of Practice for Official Statistics which states:

"Effective user engagement is fundamental both to trust in statistics and securing maximum public value."

2.8 Engagement and consultation therefore played a key part in developing the design and content of Scotland's Census 2011. It established the demands and requirements of users of census statistics, such as local and national government, and took account of the advice, guidance and practice of international census agencies and organisations with experience of similar operations.

2.9 It also looked to understand the views of community groups and members of the public as the census questions must be widely acceptable to people who are expected to fill in the questionnaire.

2.10 A programme of consultation and discussions took place from 2004. The two broadest consultations, looking at the entire census process, were undertaken in November 2004 and March 2007. Views were invited in writing and the consultations were supported and supplemented by a series of events across Scotland.

2.11 The 2004 consultation was supplemented by four workshops (two in Edinburgh, one in Glasgow and one in Inverness). Similarly, the 2007 consultation was supported with events conducted across the country. Over 130 responses were received in response to these consultations from NHS Health Boards, Business and Commercial Organisations, Central and Local Government, Community and Special Interest Groups and Individuals.

2.12 In addition, a web-based consultation on questionnaire content ran from Autumn 2004 to January 2006, followed by a series of less formal discussions and consultation with particular interest groups. There were 86 responses to the web-based consultation from groups and individuals.

Developing the Census outputs

2.13 Formal consultations on census outputs were published in February 2010 and February 2011. Four events were held for the 2010 consultation, attended by around 160 people overall and in addition, around 60 formal responses were received.

Consulting with key user groups

2.14 An important role was played by the Population and Migration Statistics Committee (PAMS). They are one of a number of committees covering the whole range of Scotland's official statistics within the wider ScotStat network of users and providers of Scottish official statistics.

2.15 PAMS is interested in official statistics on the characteristics, structure and dynamics of the population and assesses how this information can be extended and improved. The committee acted as the Census Advisory Group for Scotland's Census 2011. There was also close liaison with the Scottish Government.

2.16 Local authority representatives played an important part in the formal consultation process to ensure their needs were considered throughout. The UK Demographic User Group also acted as a very useful focal point, particularly in relation to the views of commercial users of census information.

Parliamentary interests

2.17 Final decisions on questionnaire content and the conduct of the Census are made by the Scottish Parliament. Effective engagement with the Parliament was therefore essential. The Registrar General invited input from Ministers and Parliamentary Committees on preparations and briefed Ministers at key stages of the programme on progress. This included the provision of evidence to the Parliament's Equal Opportunities Committee on 3 October 2005 and 4 December 2007.

2.18 Further detail about the Scottish Parliament's role and the legislative process is provided later in this chapter.

Community liaison and specific interest groups

2.19 As well as understanding needs, a great deal of work was undertaken to help ensure questions were fit for purpose and accessible to the whole community thus ensuring the widest participation.

2.20 A community liaison programme was established and had four main elements:

- systematic identification of target groups
- a programme of contacts with groups to explain the purposes of the Census and how data from it can be used

- a system to identify 'champions' to promote the Census from the largest identifiable groups
- identification of resources to interact with all community planning partnerships across Scotland on census related issues

2.21 Public acceptance and cooperation was essential to ensure the success of the Census. However, recent censuses in the UK have highlighted that some groups in the population are less likely to participate in such surveys.

2.22 With this backdrop, the community liaison programme targeted three main groups of people:

- those thought to be most likely not to complete the census questionnaire
- those requiring assistance to complete a questionnaire
- those with concerns about the uses made of census data

2.23 From 2006 to 2010 contact was made with organisations such as the Royal National Institute for the Blind, Help the Aged, minority ethnic groups, representatives of gypsy travellers and YoungScot. Local Authorities played a key role and each appointed a liaison officer to act as a source of advice and help within their local authority area.

2.24 Consultation with a number of the specific interest groups, and cooperation on publicity and other ways to encourage participation, continued until Census day. All of this activity was also supported by a wide ranging publicity campaign which is discussed later in this chapter.

Harmonisation across the UK

2.25 In 2005, the Registrars General of each of the UK countries signed an agreement to work towards a harmonised set of questions, questionnaires and outputs, where appropriate. The agreement was reviewed and updated periodically.

2.26 Officials from the three census offices met monthly to discuss progress. The results of consultation, research and question testing was shared across the UK. A statement of compliance with the agreement between the National Statistician and the Registrars General is due to be published later in 2015.

Who the Census collected information about

2.27 As in 2001, it was decided that the Census in 2011 should collect information on people where they were 'usually resident' at an address but that some information would also be collected about visitors (including overseas visitors) at each address.

2.28 Each household was given a questionnaire to complete, containing questions about the household as a whole and about each person 'usually resident' in the household. Additionally, the questionnaire asked for the householder to record the number of visitors present on census night, and certain basic demographic characteristics about them.

2.29 Students and boarding school children were counted at their term-time address, irrespective of where they were on census day.

2.30 People who lived in communal establishments such as hotels, hospitals and care homes were given individual questionnaires for completion. Special arrangements were made for the enumeration of other types of communal establishments, such as prisons and armed forces bases. Information about the type of communal establishment was collected separately, from the manager or other person in charge of the establishment.

2.31 The same approach was taken across the rest of the UK.

The topics and questions covered in the Census

2.32 The topics and questions to be included in the Census is determined based on the demonstrated needs of users. During the various consultations, users proposed a much larger number of questions than could be included on a census questionnaire that households could reasonably be expected to complete.

2.33 In assessing which topics and questions should be included in the Census, several criteria were used to evaluate the strength of users' requirements for information. These included, that:

- there should be a clearly demonstrated and significant need
- the information required was of national importance and the data were required for small population groups and/or at detailed geographical levels

- users' requirements could not adequately be met by information from other sources
- there was a requirement to cross-analyse a variable against others
- there should be consideration of the ability for comparison with the 2001 Census, wherever possible

2.34 In addition, other factors were taken into consideration in assessing the priorities for topics and questions. These were:

- that the inclusion of particular questions should be shown, in tests and the rehearsal, to have had no significantly adverse effect on the Census as a whole, particularly the level of public response
- that practicable questions could be devised to collect data which are of sufficient quality to meet users' requirements
- the constraints of size and design imposed by a self-completion questionnaire in respect of respondent burden and accuracy of response
- legal constraints and/or demands imposed by domestic and European legislation

2.35 The topics proposed by National Records of Scotland (NRS) were those demonstrated to be most in demand by users of census data, notably central and local government, the NHS, the commercial and academic sectors.

2.36 Changes were made from 2001 to produce more relevant, reliable and accurate data. Society can change significantly in the 10 years between censuses and the questions have to be considered with this in mind. For example, Civil Partnerships were added as an option in the relationship status question for 2011.

2.37 Five new questions were introduced: national identity, month and year of entry into the UK, proficiency in English, proficiency in Scots, and long term health condition.

2.38 Five questions which had been asked in 2001 were removed: bath/ shower and toilet access, lowest floor level, rented accommodation - furnished or unfurnished, religion of upbringing and size of organisation worked for.

2.39 In addition, revisions were made to some questions including on ethnic group; on marital status, to include same sex civil partnership options; and to expand the question on central heating to collect information on type of heating.

2.40 Special attention was given to the topic of ethnicity, to identify the best question not only for the Census but also for use in other government surveys. This involved extensive consultation, both formal and informal, over a number of years led by the Scottish Government, with minority ethnic groups and community leaders as well as with the public and data users.

2.41 Questions considered but not included in the final Census were:

- second residence
- sexual orientation
- citizenship (passports held)
- intended length of stay in UK
- household income
- negative discrimination
- number of children given birth to
- feeling of safety going out in evening in local area
- state of repairs of building
- crofting
- access to a garden
- number of bedrooms
- energy efficiency

Testing

2.42 As a one-day snapshot, conducted only once every 10 years, each census must be 'right first time'. Proposals about the census take account of the results of our engagement, other research and, importantly, testing.

2.43 Proposals and in particular changes in the wording of the questionnaire, the operational procedures, and public acceptability, must be thoroughly tested.

2.44 NRS undertook two main types of testing and referred to them as census tests and a census rehearsal. Whilst the Census tests looked specifically at certain processes, the Census rehearsal

was intended to test how the wider range of processes worked together.

2.45 All of the activity was aimed at understanding people's perception of the Census and the effectiveness of question wording, questionnaire design and delivery methods. All testing involving the public was non-compulsory.

Census Tests

2.46 The first major test for Scotland's Census 2011 took place on Sunday 23 April 2006. Five geographic areas in Scotland, covering about 52,000 households, were chosen as likely to give the best test for new procedures. The areas chosen incorporated parts of Glasgow City, West Dunbartonshire, Highland, Stirling, Perth & Kinross and Argyll & Bute.

2.47 The test was designed to evaluate changes in the way the questionnaires were distributed and returned, and to test new or modified questions. In particular, half of the questionnaires were posted to the households and half were hand delivered and half included a question about household income and half did not.

2.48 The response rate for the test varied across the five areas from 32 per cent in Glasgow North to 62 per cent in Lochaber. The return rate of hand delivered questionnaires was 50 per cent compared with 43 per cent for questionnaires that were posted out. The return rate for households receiving questionnaires with the income question was 48 per cent, compared with 44 per cent for questionnaires where it was not asked.

2.49 Households were also asked to express an opinion on the questions asked and the income question proved to be the most unpopular question with 17 per cent stating that they were not happy with it.

2.50 When the test evaluation was completed, NRS made a variety of recommendations including:

- the bulk of census questionnaires should be hand delivered to households. Posting forms should only be considered in exceptional circumstances such as remote, scattered areas
- there should be improved communication between staff involved in IT and statistical work across the programme,

especially on the data delivery timetable, and data formats, output specifications and volume.

2.51 A similar census test was held in England, Wales and Northern Ireland in May and June 2007 and results were taken into account in further development work in Scotland.

2.52 In addition, an extensive programme of small scale tests of question wording and questionnaire design was carried out, to check people's understanding and comprehension of the questionnaire. Such question testing was undertaken in Scotland specifically to test questions on income, language, national identity and qualifications. Special effort was applied to the testing of revised questions on ethnicity.

Census Rehearsal

2.53 A census rehearsal was carried out on Sunday 29 March 2009. There were four key elements of the operation NRS wanted to rehearse to ensure they would be effective for a full census:

- the processes and procedures for delivery and collection of census questionnaires
- the systems for processing questionnaire data and producing census data outputs
- the acceptability of the census questionnaire to the householders filling it in
- the option to complete the questionnaire online

2.54 Two areas comprising about 53,000 households were chosen (West Edinburgh and Lewis and Harris) because they had distinctive features that helped provide representation as to the diversity of Scotland. The areas selected included urban and rural locations with a mixture of households and communal establishments (such as hospitals, student accommodation, a prison and care homes), areas with higher than average proportion of minority ethnic groups and Gaelic speakers.

2.55 This rehearsal was more than double the size of the rehearsal prior to the 2001 Census allowing for an improved test of procedures and systems.

2.56 The overall return rate of 42 per cent compared favourably to the return rates seen in England & Wales and Northern Ireland in

2009 of 41 per cent and 29 per cent, respectively. 11 per cent of the returns were received online and 2 per cent of returns were completed in Gaelic.

2.57 Evaluation reports for the 2009 Rehearsal in Scotland were published on the NRS website and the recommendations fed into the strategies and final procedures for 2011.

2.58 Rehearsals of the census operations in England, Wales and Northern Ireland were held in October 2009. The lessons from these rehearsals also helped inform the final decisions on the conduct of Scotland's Census.

Scottish Parliament involvement and the legislative process

Proposals – Scotland's Census Government Statement

2.59 Scotland's Census is conducted by the Registrar General for Scotland on behalf of Scottish Ministers. Scottish Ministers presented detailed proposals for Scotland's Census 2011 to the Scottish Parliament via a Government Statement in 2008. This was intended to give adequate time for public discussion and further planning.

2.60 The Government Statement announced the intended date of the Census; the proposals for questions to be asked; who should be included on questionnaires; and how NRS planned to collect, process and publish the outputs.

2.61 The statement also outlined the reasons for having a census, why it would be compulsory to complete, and what steps were proposed to ensure that the information given would be treated with the strictest confidence.

Primary Legislation - the Census Act

2.62 The primary legislation that allows a census to be taken in Scotland is the Census Act 1920 [as amended by the Census (Amendment) (Scotland) Act 2000].

2.63 The Census Act 1920 [as amended] authorises the following topics for inclusion in the census:

- name, sex, age
- occupation, profession, trade or employment

- nationality, birth place, race, language
- place of abode and character of dwelling
- condition as to marriage or civil partnership, relation to head of family, issue born in marriage
- religion (a voluntary question)
- any other matters where statistical information can help to establish the social or civil condition of the population

2.64 For each census, additional 'secondary legislation' has to be passed which takes the form of a 'Census Order' followed by 'Census Regulations'.

Secondary Legislation – the Census Order

2.65 Scottish Ministers must seek the approval of the Scottish Parliament to an Order to authorise the taking of the Census in Scotland. Under the terms of the Act, the Order outlines:

- the date on which the census is to be taken
- the persons by whom, and about whom, census returns are to be made
- the particulars to be recorded in the returns

2.66 The Census Order for the 2011 Census was originally laid before Parliament in draft on 26 November 2009. The Economy, Energy and Tourism Committee were designated as the lead committee by Parliament and considered the Order.

2.67 The Minister for Enterprise, Energy and Tourism agreed to consider various changes suggested by Committee members, including to the questions on long-term health conditions, national identity, ethnic group and central heating. In addition, they suggested that the question on household income should be removed from the proposals.

2.68 The Order was subsequently revised and considered by the Committee on 14 April 2010. The Committee welcomed the changes, particularly the withdrawal of the proposed question on household income. The Committee recommended that the draft Census (Scotland) Order be approved by Parliament.

2.69 The Scottish Parliament subsequently approved the Order without further debate and the Order was made into law in May 2010.

2.70 The Committee and the Minister also raised questions about the parliamentary processes for future censuses. The Committee suggested that there should be earlier identification of the lead committee for consideration of any draft Census Order. The Minister agreed that:

"the process could be improved. In particular, it would be better if a lead committee were identified well in advance and could take a continuing interest in the development of census proposals over several years."

Secondary Legislation – the Census Regulations

2.71 The detailed arrangements for conducting a census must be set out in Census Regulations and may only be made once the Census Order comes into force.

2.72 The Census (Scotland) Regulations 2010, and a subsequent set of amendment Regulations to correct minor drafting errors, came into force in June 2010 and covered:

- the division of the country into geographical areas for census enumeration
- the appointment of temporary field staff
- the giving of information and the methods of return to be made by persons required to make a return
- the arrangements for the delivery of the census questionnaire to households and communal establishments
- the duties of field staff and, specifically, the details of any particulars to be completed by them
- the arrangements for return of completed questionnaires - by post, telephone, doorstep collection or via the internet
- follow-up arrangements
- the management and safe custody of questionnaires and other census documentation
- the details of the forms of return

Publicity

2.73 The aim of the publicity strategy was to maximise public understanding of, and involvement in, Scotland's Census 2011. Publicity also highlighted and supported the opportunity for

people to complete their questionnaires via the internet and the recruitment of temporary field staff.

2.74 The publicity campaign had five key phases:

- Educate – to increase awareness of the census (May 2008 to Feb 2011)
- Enlist – to promote census job opportunities (Oct 2010 and Nov 2010)
- Engage – to publicise delivery, encourage completion and return of questionnaires (Feb 2011 to Apr 2011)
- Enforce – to highlight the legal requirement to take part (Apr 2011 and May 2011)
- Explain – to show how the results are used to support Scotland, local areas and key groups of people (May 2011 to Dec 2012)

2.75 The campaign and related public relations activity included: liaison with representatives of groups of people who were judged at risk of being hard-to-reach, advertising with Scotland-wide, regional/local and specialist audiences, market research and digital marketing.

2.76 Key messages for mainstream audiences and targeted messages for hard-to-reach groups were devised, based on audience research and testing. An e-survey of 600 respondents after the census reported that about 95 per cent recalled seeing advertising or other publicity on or about Census Day. The top three key messages remembered by respondents were:

- You risk a £1,000 fine if you don't take part;
- Census Day is Sunday 27th March 2011; and,
- Householders can fill in the census questionnaire online.

2.77 NRS worked with partners to produce a Census logo and strapline. The logo was chosen to emphasise that this was Scotland's Census and the strapline "Shaping our future" encouraged a sense of inclusion and purpose.

2.78 The publicity campaign was launched on 21 February 2011 at the Elsie Inglis Nursery in Edinburgh. There was widespread national, regional and local coverage of the event.

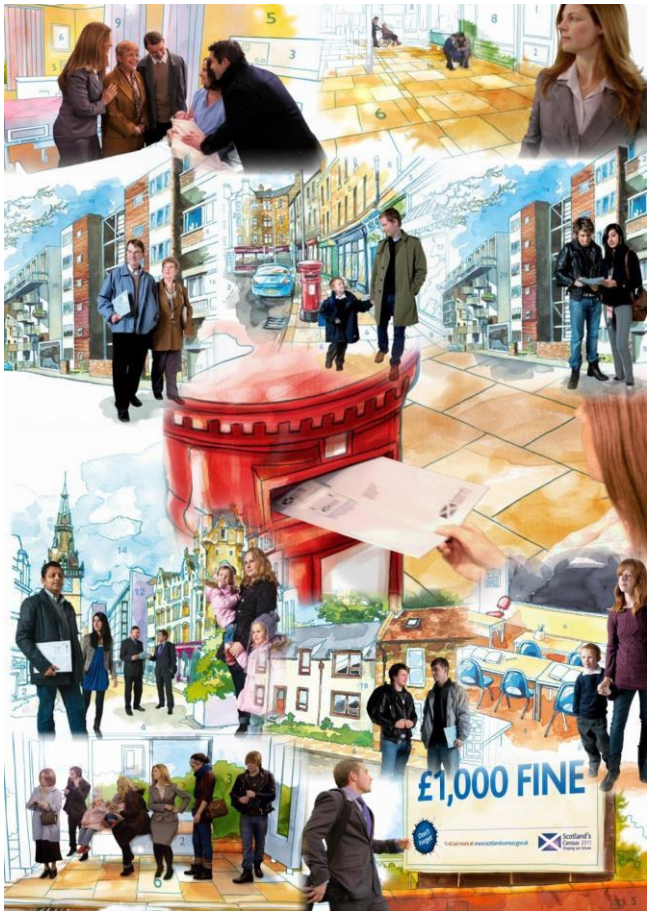
2.79 The campaign used a "Painting by Numbers" concept. It supported awareness raising and encouraged completion on or

around 27 March. The campaign gradually increased in the weeks up to Census Day. Audiences thought to be at risk of not taking part were mainly targeted by mass media but particular consideration was given to young people, students and minority ethnic groups.

2.80 Overall, the tone of coverage throughout the campaign was aimed at being positive and factual. National advertising ended on 10 April 2011. Figures 2.1 and 2.2 shows some of the images and campaign material.

Figure 2.1 - Campaign poster

Figure 2.2 - Images from the "Painting by Numbers" theme



2.81 The Scotland wide publicity campaign was subsequently judged as being effective with key information presented in eye catching and memorable advertising.

Chapter 3

Managing the census

3 Managing the census

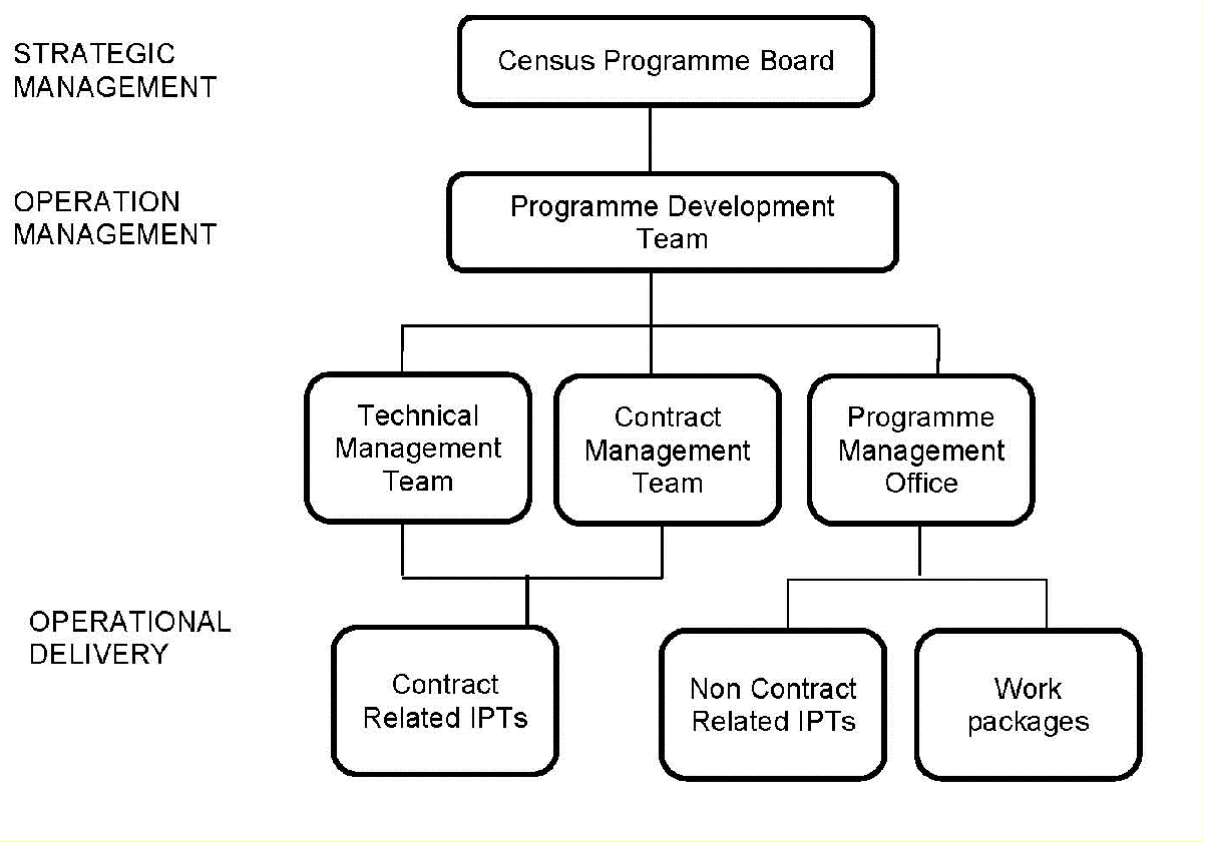
3.1 The census is a major undertaking, of great importance both to the people who provide their personal information and to the users who rely on it for statistical information. Protection of census information, and ensuring that census information is kept completely confidential, is key to ensuring that public confidence in the census is maintained. Further information is available in Chapter 7. It is also important that value for money is obtained from the key services that are provided by contractors.

Programme Management and Governance

3.2 Scotland's Census 2011 was a large scale programme which ran formally for 10 years (from 2005 through to 2015) and was comprised of a number of closely related projects. Whilst delivered by National Records of Scotland (NRS), it required involvement of a number of contractors. NRS adopted standard programme and project management principles in line with Scottish Government best practice.

3.3 For the majority of the programme, the governance and management structure had three tiers (see Figure 3.1). The "Strategic Management" tier consisted of the Scotland's Census Programme Board (SCPB), the Scottish Census Steering Committee and the UK Committees on which NRS had representation. The "Operational Management" tier contained the internal delivery and management teams. The "Operational Delivery" tier contained Integrated Project Teams to deliver areas of cross-cutting responsibility and workstreams to deliver other workpackages.

Figure 3.1 – Governance and Management Structure



3.4 NRS also worked closely with the other two UK Census Offices to ensure a coordinated approach was adopted where appropriate. Reporting structures were put in place to support the control and coordination of policy and operations across the three UK census offices to ensure the greatest possible degree of harmonisation between the three censuses.

Committees and Boards

Scotland's Census Programme Board (SCPB)

3.5 SCPB was the primary decision making body at a strategic level for matters relating to the planning and delivery of Scotland's Census 2011.

3.6 The main role of SCPB was to ensure that Scotland's Census:

- Provided high quality statistics relevant to the people of Scotland
- Was based on full consultation with user groups and other interested parties

- Protected personal census information and built public confidence to participate in the Census
- Provided value for money and was cost justified
- Promoted UK harmonisation to produce consistent and coherent outputs for the UK and for Scotland

3.7 The Board also had a key role in setting census policy for Scotland and playing an active role in related Scottish, UK and International initiatives.

3.8 The Board was chaired by the Registrar General and included representation from Scottish Government and ONS.

Registrar General's Scottish Census Steering Committee

3.9 The Registrar General set up, and chaired, a Census Steering Committee comprising representatives of Scotland's communities, senior representatives of the main users of census information and experts on data security and confidentiality.

3.10 The Committee met seven times from June 2009 to July 2011 and provided valuable assistance in the planning of the Census.

United Kingdom Census Committee (UKCC)

3.11 The long-standing UKCC coordinated policy at the UK level. It was chaired by the National Statistician, and comprised the Registrars General for Scotland and for Northern Ireland, the England and Wales Census Director and senior officials from each of the three census offices.

3.12 The role of UKCC included:

- agreeing the scope for common strategic activity across the three Census Offices designed to establish a common UK Census in 2011
- achieving coherent UK-wide outputs from 2011 Census with particular reference to consistent methodologies, geographic boundaries, definitions, classifications and questions
- meeting the need for such output by taking into account: the functions and independent authority of the devolved administrations; UNECE/ Eurostat recommendations on, and the need for statistics to be harmonised with, international censuses; and how the content of 2011 Census would form an element of an integrated population statistics system

- identifying areas where the offices could maximise efficiency
- resolving issues where there were conflicts of views or objectives across the three Census Offices
- agreeing the cross-office funding and resourcing for shared and specific activities

3.13 The committee was supported by the UK Census Harmonisation Committee (UKCHC). Its role was to identify and agree areas of research into those issues covered by the main 2011 Census Projects, where there was scope for, and benefit in, following a common approach across the three UK Census Offices, with the aim of achieving a high level UK Census.

Programme delivery team

3.14 The programme delivery team (PDT) ran from April 2007 to September 2012 and managed the delivery of the programme at an operational level, focussing on making best use of resources, ensuring a holistic view was maintained and managing issues, risk and change across the programme.

Independent assurance via "Gateway Reviews"

3.15 The programme was subject to the Scottish Government's Gateway Review process between March 2007 and December 2012 with focus on overall strategic assessment, the delivery strategy, proposed investment decision and readiness for service.

Importance of on-going stakeholder involvement

3.16 In addition to the formal management structures, NRS worked hard to hear the voice of the programme's wider set of stakeholders and users. A key element of managing the Scotland's Census programme was maintaining the relationship between the programme and its data users and also wider stakeholders.

3.17 This relationship and activity was especially important as the timing of initial outputs moved to later in 2012 than originally envisaged.

3.18 This brought an increased focus on stakeholder relationships and managing expectations was even more important. As NRS energies and resource was prioritised to secure progress with

outputs, communications with users and stakeholders was more limited.

3.19 Following a request from PAMS as the Scotland's Census 2011 Census Advisory Group, an event was arranged in September 2012 to provide an update to users. This was well attended and feedback immediately after and in the months beyond thereafter was positive.

3.20 Thereafter, NRS devoted increased resource to work more closely with stakeholders and ensure and maintain more regular dialogue. There were varied ways this was done, including:

- more regular representation at PAMS committees
- a more regular Scotland's Census newsletter and updates to the Outputs Prospectus
- bespoke Scotland's Census stakeholder events (General update session in Sept 2012, Update and consultative session in Sept 2013
- establishment of a small group of users from whom NRS could seek additional input regarding table layouts at very short notice (necessary due to the Statistical Disclosure Control and the overall table design process)
- seeking user feedback and responding to suggestions (e.g. users of bulk data and the format of bulk outputs)
- attendance at stakeholder events to maintain dialogue and awareness (PAMS Conferences, Local Authority Research and Intelligence Association – Scotland, third sector events, Scottish Government/ Equality and Human Rights Commission Equality sessions)

3.21 Whilst this was key in managing the programme and delivering the outputs, a range of activity was also undertaken to support stakeholders in making best use of the data. This is covered in more detail in Chapter 8.

3.22 These relationships with stakeholders and a more flexible approach throughout was key to ensuring that some outputs could be shaped, even late in the process, to best suit the needs of key users. The approach also ensured that expectations were set more accurately and maintained.

3.23 Specific changes made to plans as a result of this approach included the reprioritisation of the outputs by topic and

amendments to individual output table designs and the bulk version of our outputs.

Staffing

3.24 The census requires a wide range of expertise across many varying disciplines such as statistics, , information technology, , project management, stakeholder engagement and communication, operational delivery and administrative support staff. The team was based in Ladywell House, Edinburgh. There was a core of about 45 staff for the duration of the programme. This rose to about 60 staff after the 2006 Census Test and then to a peak of nearly 80 staff from 2010 to 2012.

3.25 In addition, NRS employed nearly 7,000 temporary staff to carry out certain tasks at the time of the Census, the Census Coverage Survey (CCS) and the Census Quality Survey (CQS) field operations in 2011. More information on staffing is provided in Chapter 4.

Outsourcing and Contract Management

3.26 Four key aspects of the census operation had been outsourced for the first time in 2001 by the UK Census Offices. The successes and lessons learned from these activities (questionnaire printing and data capture, logistics, field staff pay and the Census helpline) led to a review of the scope of outsourcing work.

3.27 The UK Census Offices initially sought to achieve harmonised arrangements for the procurement of systems and services in 2011. However, NRS also recognised that a joint approach would only be appropriate if there was:

- synergy of questionnaire layout and content
- a common development, implementation and production timetable
- commonality of requirements
- autonomous decision making
- compatibility of internal policy and technology
- desire and ability to innovate
- ability to make decisions quickly

3.28 Differences in enumeration methodology, timetable, costs, solution complexity and scale between the Census Offices resulted in NRS awarding separate contracts for some operational activities that had been jointly outsourced in 2001 and bringing some activities back in-house that were jointly contracted out in 2001.

3.29 NRS also awarded independent contracts for other activities, including some which were new in 2011. The sourcing approach for the key census activities are shown in figure 3.2.

Figure 3.2 – Sourcing approach

Activity	In-house or outsourced
Questionnaire Design and Consultation	Mainly in-house.
Geography	In-house.
Community Liaison	In-house.
Recruitment of Field Staff	In-house.
Training of Field Staff	Mainly in-house.
Field Staff supplies	Mobile communications and other field supplies outsourced.
Payroll for Field Staff	In-house.
Translation and Interpretation Services	Translation to other languages, including Gaelic, interpretation services for Census helpline outsourced.
Warehousing, Distribution and Collection	Logistics and postal services outsourced.
Picking and Packing	In-house.
Public Help Facilities	Internet Public Assistance outsourced. Census helpline in-house.
Publicity	Managed in-house with some support services outsourced.
Printing	Outsourced.
Field Operations	In-house.
Data Capture and Coding	Outsourced.
Downstream Processing	Mainly in-house.
Output Production	In-house.
Output Dissemination	Mainly outsourced with some development work in-house.
Information Security and	Mainly in-house.

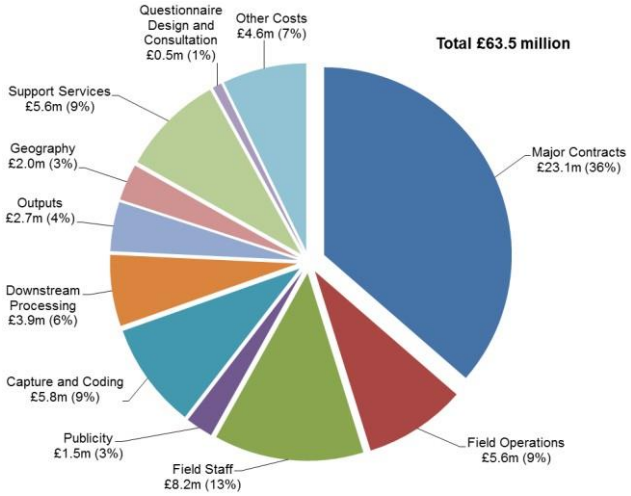
Information Assurance	
Procurement and Contract Management	In-house.

3.30 Governance structures and management procedures were set up for each of the major contracts and these bespoke arrangements were defined at a high level in the contracts and finalised in Contract Initiation Documents. Most of the other contracts were managed by the NRS Census Contract Management Team, in each case by a single point of contact.

The costs of Scotland's Census 2011

3.31 The cost of Scotland's Census 2011 for the 10 years from 2005–06 to 2014–15 was £63.5 million. This was £1.6 million less than the budget estimate published in the Government Statement in 2008. A breakdown of the total by activity is shown below in figure 3.3.

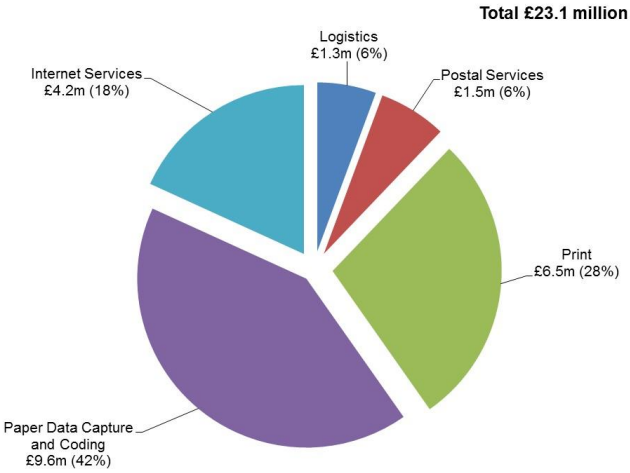
Figure 3.3 – Scotland's Census 2011 – Total Cost by activity



3.32 Costs were closely controlled and monitored throughout the whole of the census operation. Leaving aside the Major Contracts element shown in figure 3.3 above, the largest element of costs for Scotland's Census 2011 related to Field Staff and Field Operations, accounting for over 20 per cent of total costs.

3.33 A breakdown of the Major Contracts element is shown below in figure 3.4 and shows that Paper Data Capture & Coding and Printing accounted for 70 per cent of the Major Contracts (around 25 per cent of total costs).

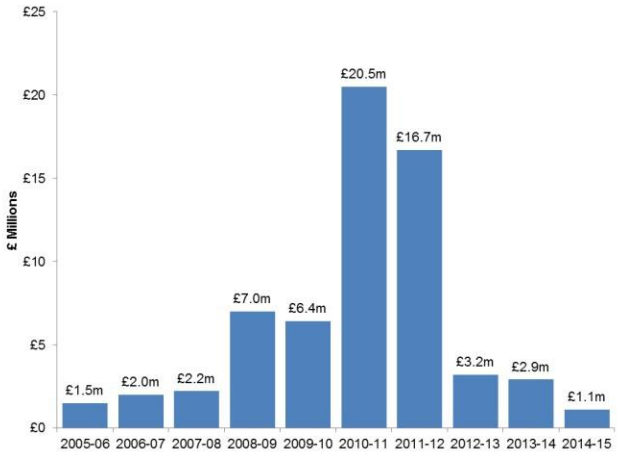
Figure 3.41 – Scotland's Census 2011 - Major Contract Costs



3.34 As with most programmes of this size, the costs of Scotland Census 2011 were not spread evenly over the period of the operation. Typically, costs are at their highest in the year in which the census takes place and this was no different for Scotland's Census 2011.

3.35 Census Day, 27 March 2011, was at the end of the financial year 2010–11 and as shown in figure 3.5, nearly a third of the total costs (£20.5m) were incurred in that year alone. Indeed, around 60 per cent of spending was incurred in the two years 2010/11 and 2011/12.

Figure 3.5 – Scotland's Census 2011 - Costs by year



Chapter 4

Collecting the data

4 Collecting the Data

4.1 Collecting the data requires a wide range of activities in addition to delivering the questionnaires and receiving them following completion. These include field staff recruitment, legal matters, financial and technological issues, and the establishment of contractual arrangements for the provision of supplies.

4.2 As in 2001, a great deal of focus was given to the data collection activities to ensure information was obtained on each house, household, communal establishment, person, at the same well defined point in time (Census Day), and the characteristics of those persons.

4.3 Extensive efforts were made to collect information from everyone in the country. It is recognised that changes in society means it is becoming increasingly difficult to make contact with people and households, especially in cities. These changes include: an increasingly ageing population; a more mobile population with more complex living arrangements; increased numbers of migrants, particularly from east European countries, changing work patterns; and greater numbers of single-person households.

4.4 All these factors make it more difficult to identify and gather information about the population in the right place. Ensuring that every household got a census questionnaire and was motivated to complete it was, therefore, very important in the design and planning of the operations. With this in mind, an effective publicity strategy was vital to the data collection operation and ultimately the success of Scotland's Census. Publicity arrangements are covered in Chapter 2.

4.5 The enumeration operation was designed to achieve the most complete coverage with efficient use of resources whilst maintaining the public's acceptance and confidence in the importance and security of the process. Although many aspects of Scotland's Census followed well established and proven methodologies, changes were introduced to improve the efficiency of the census operation and provide better help to the public.

4.6 For example, most questionnaires included pre-printed address details; the postal service was used to distribute census questionnaires in remote rural areas; an option was provided to

allow people to complete the return via the Internet; and a network of temporary field offices were set up to improve local management of the field operations.

4.7 As in previous censuses, follow-up surveys on coverage and quality were undertaken which looked to collect information from a relatively small sample of people and households. The Census Coverage Survey (CCS) is used to estimate undercount and the Census Quality Survey (CQS) to provide information around quality. These two surveys are discussed in later chapters.

Approaches to 'enumeration'

4.8 There are two broad approaches for conducting this aspect of the operation. The main approach is the 'householder method' where the person or persons within households enter their information in a questionnaire. The other is the 'enumerator method' which relies on census officials (enumerators) collecting information and entering it on a questionnaire on the ground/ door-to-door. The distribution, return and checking of questionnaires is managed by the field operation.

4.9 For Scotland's Census 2011 the householder method was used for the main Census Operation and the enumerator method was used for the Census Coverage and Quality Surveys. The approach taken in relation to Communal Establishments is covered later in this Chapter.

4.10 These operations were the public face of the census and comprised:

- Delivery and return of census questionnaires and also census coverage survey questionnaires
- Interviewing for the census coverage survey and the census quality survey
- Recruitment, training and payment of temporary field staff
- Central, regional and local management of the field operations
- Publicity, community liaison and public help facilities
- Logistical support

Management and Organisation

Census geographies

4.11 Planning the census geographies – e.g. how to divide up the country into Census Regions (CRs), Census Districts(CDs) and Enumeration Districts (EDs) - is a key part of the programme because they support the whole operation. National Records of Scotland (NRS) pioneered the use of postcodes for census geography data management in the UK and has used them as a building block for collection, processing and presentation of statistics for more than 35 years.

4.12 Processes were undertaken as late as possible before Census Day to finalise the set of small user postcodes and their associated digital boundaries. This allowed time for completion of enumeration area planning. These postcodes and boundaries were also used to determine all census output geographies.

Enumeration area planning and structure of field force

4.13 The management and organisation of the census data collection operation was based on the same model as 2001.

4.14 Scotland was divided into 22 CRs, each one headed by a Census Regional Manager (CRM). Most CRs contained one or more complete local authority areas; although Edinburgh and Glasgow were split into two and three CRs respectively. Within each CR there were usually between six and twelve CDs, each one managed by a Census District Manager (CDM). CDs were divided into approximately 35 EDs, each one the responsibility of an Enumerator. Census Team Leaders (CTLs) took charge of between 10 to 14 Enumerators and reported to a CDM. Table 4.1 below notes the number of people in each role.

Table 4.1 – Census field roles and numbers

Role	No.
Census Regional Manager (CRM)	22
Census District Manager (CDM)	169
Census Team Leader (CTL)	507
Enumerator	5,732
Total	**6,430**

4.15 Specifications for the creation of EDs and CDs, and for production of maps and address lists for Enumeration Areas, were agreed in 2009. NRS decided that Enumerator workloads across Scotland should be similar which required careful planning. This task was carried out by the NRS Geography Team using an Enumeration Area Planning system.

4.16 It was determined that there should be four types of EDs in Scotland in 2011, each with differing numbers of addresses, but judged to require a similar workload in total:

- **Post-out Areas** were remote with more dispersed populations and households would receive a questionnaire via the postal system. These areas (about 5.5 per cent of all planned households) were expected to return the overwhelming majority of completed questionnaires without any follow-up. These had around 800 addresses.
- **Rural Areas** where households would have a questionnaire delivered by an enumerator. These areas had to balance the number of addresses to be visited with the distances to be travelled. These had around 200 addresses.
- **Difficult Urban Areas** where it was considered that they may be more difficult to enumerate because of multiple deprivation or other social factors. These had around 300 addresses.
- **Standard Urban Areas** which had around 400 households.

4.17 A decision was also taken to use the postal system to deliver questionnaires to any addresses added to the address register after October 2010.

4.18 Each Census Region, except Orkney and Shetland, had a field office from which the local enumeration was managed and delivered. They were used by managers as an office to work from but were also a venue for the recruitment and training of field staff, a warehouse for the secure storage and distribution of questionnaires and other materials and a place for meeting community representatives and groups. All field offices were acquired and commissioned by August 2010.

4.19 CRMs were the senior managers within each CR and had overall responsibility for all aspects of the operation in their area. Their key role was to promote the census and to foster a climate which would maximise participation. They recruited and trained CDMs in their Region and supervised the recruitment and training of

other field staff. CRMs monitored and reported progress to census headquarters (HQ), and provided feedback to assist with evaluation.

4.20 CDMs managed the operation within their designated CD. They recruited, trained, managed and supported their CTLs and Enumerators. Other duties included checking their area to understand its make-up and be aware of any issues which might cause difficulties such as holiday homes and gated communities; management of all supplies; dealing with enquiries from the public; and reporting on progress.

4.21 CTLs managed, guided and supported their team of enumerators and checked their work at the end of the Field Operation. They were also responsible for the enumeration of Communal Establishments (CEs) in their area. This involved contact with CE managers to make them aware of the census and then delivering and collecting completed questionnaires from them.

4.22 Enumerators were the main contact with the general public. They were responsible for delivering census questionnaires to every residential address in their ED, except in post-out areas; for receiving and checking completed questionnaires; and for revisiting to collect questionnaires from households which had not returned a completed questionnaire. On request enumerators were also expected to help the householder complete their census questionnaire, or to arrange for assistance to be provided.

Recruitment of Field Staff

4.23 Temporary field staff were recruited for the Census Field Operation from August 2010 to May 2011. The strategy was similar to the 2001 Census with the overall lead taken by census HQ. The HQ Team developed the recruitment scheme, recruitment documentation and recruited CRMs. Recruitment of other field staff was carried out by field managers using a cascade approach. CRMs recruited CDMs with support from HQ; CDMs recruited CTLs with support from CRMs; and CDMs recruited Enumerators with assistance from CTLs.

4.24 Posts were advertised in national and local newspapers, Jobcentres, the NRS website and on radio. The number of applications for manager posts provided a large pool of candidates.

4.25 Enumerator recruitment was more problematic and a first round of advertising from mid-November to early December 2010 did not generate enough applications. Some feedback suggested this was perhaps a result of undertaking the first round a little too early. A second campaign from 20 December 2010 to 21 January 2011, focussing on radio advertising, was much more successful. This allowed Enumerator posts to be filled in most areas.

4.26 In a small number of areas, enumerators were offered double workloads and those content were subsequently appointed to undertake duties in two EDs.

Training of Field Staff

4.27 Field staff training was delivered using a cascade approach. The delivery approach was intended to maximise interaction between trainers and trainees and build knowledge and skills gradually. Training events were linked closely in time to recruitment activities and the enumeration timetable to ensure it was fresh in the minds of staff as they embarked on their tasks.

4.28 All training and events were intended to complement and reinforce detailed sets of instructions that were provided to staff and provide the opportunity to discuss specific issues or potential problems. Training events also gave the trainer the opportunity to add local flavour, raise local issues or emphasise instructions or training material relevant to the area.

4.29 The training also highlighted the importance of adhering to the Census policies on security. The training material was developed by Census HQ staff and supported by a DVD to put across key messages

Payment of Field Staff

4.30 Following difficulties with the pay scheme adopted in 2001 (which had been outsourced) NRS opted to bring payroll in-house for 2011. This was intended to allow NRS to deal quickly with any payroll issues and also have the flexibility to make changes, if required.

4.31 Payment at all grades was based on a standard fee for a standard time to do the job. Rates of pay had to be competitive to attract the right candidates but also take account of the working

conditions, employment rates in Scotland and the timing of the operations.

4.32 Staff were also given payments for certain expenses and for other related activities such as training.

4.33 A system of equal monthly instalments was used for payroll in 2011 and the process was successful and received positive feedback. However, some tasks were labour intensive for the HQ payroll management team and this should be considered in advance of the next census. Table 4.2 below provides details of recruitment and pay for each role.

Table 4.2 – Field staff recruitment and pay summary

Role	No. of Staff	No. of Applications	Time Employed	Total Gross Fee	Hours of work
CRM	22	378	42 weeks	£11,600	725
CDM	169	658	30 weeks	£4,900	350
CTL	507	2,499	18 weeks	£2,220	185
Enumerator	5,732	13,780	8 weeks	£750	75

Delivery of questionnaires to households

4.34 As noted above, most areas of Scotland saw enumerators hand-deliver questionnaires to addresses. In these areas, each enumerator had to familiarise themselves with their area, plan their delivery route and assemble the materials needed on the delivery round.

4.35 To support them, enumerators were given a detailed map of their area, an Enumerator Record Book (ERB) containing, an address list, questionnaires, documents and other field materials.

4.36 They were responsible for seeking out all households in their area and had a pre-printed questionnaire for each household listed in their ERB. They also carried a supply of unaddressed questionnaires for any new addresses found during the delivery round.

4.37 In the more remote parts of the country, the Post-out Areas, questionnaires were delivered by Royal Mail.

4.38 In total, around 2.49 million questionnaires were delivered by enumerators and the remaining 145,000 by Royal Mail.

Contacting households

4.39 In hand delivery areas, enumerators tried to make contact with a householder, or other responsible adult and record the outcome in their ERB. If contact was made they would establish the number of households living at the address and deliver a questionnaire pack for each household.

4.40 The enumerator would also establish whether the householder required assistance to complete the questionnaire. If no contact was made on delivery, the enumerator was asked to post a census questionnaire through the letterbox.

4.41 The majority of deliveries were fairly straightforward but other outcomes from the delivery round included:

- Householder required language assistance to complete the questionnaire
- Householder lived in a large household and required additional questionnaires
- Individuals in household asked to make a return not seen by others in the household
- Householder refused to accept and complete a questionnaire;
- Enumerator found a derelict or demolished property
- Enumerator found a dwelling with no resident household such as holiday accommodation or second residence

4.42 In each case, the Enumerator would take appropriate action based on the instructions in their handbook.

4.43 In post-out areas, a return to sender label was attached to questionnaires that could not be delivered, giving the reasons for non-delivery. These packages were returned to census HQ who informed enumerators and asked them to update their ERB.

Public help facilities

4.44 Information about the census and guidance on questionnaire completion was available to the public from a number of sources. Instructions were printed on the questionnaire; the Scotland's Census website, Telephone Helpline and Textphone Services

were provided with contact information about the services printed on page 1 of the questionnaire; and assistance was also available via field staff.

4.45 The website played a much more prominent role than the previous census, handling the majority of public enquiries, and offered a much wider range of help facilities. These included:

- Answers to key questions the public may have about the census
- Help in how to fill in the questionnaire
- Publicity material on the census
- Information as to how to request a new questionnaire or extra questionnaires
- Contact information for the telephone helpline

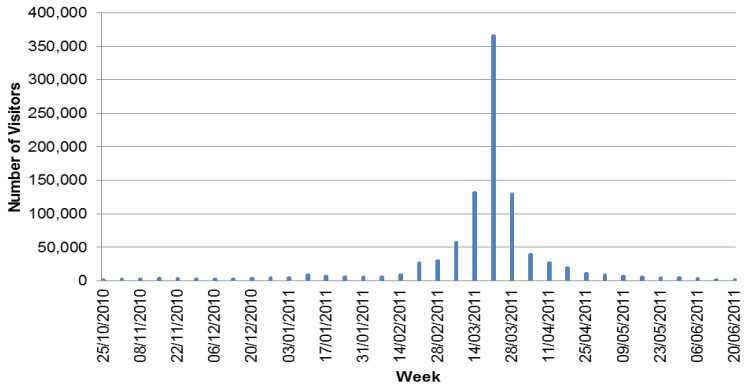
Scotland's Census 2011 website

4.46 As part of the Scotland's Census website, an Internet Public Assistance (IPA) service was provided offering general information about the census, and information about census questions. This was also where answers to key questions that the public might have about the census were provided. This included help with answering questions such as who to include on the questionnaire, how to obtain replacement or additional questionnaires or other material such as large print versions of the questionnaires and translation leaflets.

4.47 The website was also used by the telephone helpline staff when responding to queries from the public, thereby maintaining the consistency in the detail of the information provided.

4.48 The IPA service went live on 25 October 2010 and closed on 20 June 2011. During that time, the site received over 940,000 visitors, with 365,000 accessing it during the week ending with Census Day. Figure 4.1 shows the number of visitors by week from October 2010 to June 2011.

Figure 4.1 – Visitors to website by week



4.49 About 38 per cent of requests for new questionnaires and 9 per cent of requests for visits were made online, reducing the potential volume of calls to the telephone helpline.

4.50 The top 10 pages, excluding the homepage, are listed in Table 4.3.

Table 4.3 – Top 10 pages on website

Page	Visitors
Question Help	79,860
How To	68,720
Contact Us	52,755
FAQs	43,817
Top FAQs	43,048
Your Census	41,844
Fill in	40,356
Jobs / Latest	37,664
Jobs	36,135
How To / Online	28,060

Telephone helpline and textphone service

4.51 NRS established an in-house telephone helpline in 2011. This solution was chosen instead of an outsourced solution because it offered flexibility, could provide a secure environment for capturing data over the phone and was considered to be more cost effective. NRS also had adequate accommodation and telephony equipment to host the service. The helpline offered similar help facilities to the website and provided language support via a 3-way interpretation service.

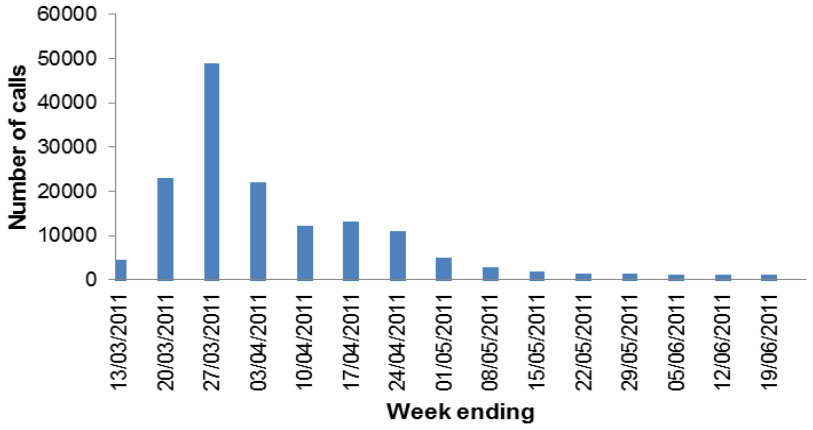
4.52 Help for deaf, hard of hearing and speech impaired callers was provided via textphone. The solution was outsourced to BT Text Relay. A caller would use a textphone to make a call to the textphone service number. A relay operator joined the call to explain their function and then relayed the caller's message to a main helpline advisor. The advisor responded to the operator who in turn typed the response and sent it to a caller's textphone.

4.53 The helpline included a back office Fulfilment Centre to handle requests for questionnaires and other items made via the Helpline or the Website. Items requested were posted directly to the householder via Royal Mail.

4.54 The helpline was available from Monday 7 March to Tuesday 21 June 2011. The hours of operation were Monday to Friday from 8 am to 8 pm; Saturday and Sunday from 9 am to 4 pm; and census weekend Saturday 26 March and Sunday 27 March from 8 am to 8 pm. The Helpline had two managers, three team leaders and at its peak, twenty advisors. A rota system for advisors and managers was put in place to help manage peak activity. Over the census weekend, advisors handled over 300 calls per hour.

4.55 As can be seen in figure 4.2 below, the peak of calls was in the week ending on Census Day.

Figure 4.2 – Phonecalls to helpline by week



4.56 The public help facilities provided by NRS were a significant improvement on the services in 2001. They ran smoothly throughout the period of operation although at peak periods, a percentage of calls went unanswered. Positive feedback was received from users and field staff.

4.57 A summary of the access made to all the public help facilities is shown below at Table 4.4.

Table 4.4 – Public help facility, facts and figures

Website/ internet public assistance (25 October 2010 to 20 June 2011)	Metric
- Total Page Views	4,454,351
- Total Visitors	944,860
- Requests for questionnaires	11,905
Telephone helpline (7 March 2011 to 21 June 2011)	
- Total Enquiries	136,632
- Proportion of calls handled by Interactive Voice Recognition (IVR)	36 per cent
- Proportion of calls handled by an advisor	56 per cent
- Telephone Data Capture requests completed	135
- Requests for questionnaires	32,070
Language Support Line	
- Total Enquiries	212
- Languages	26
- Most common language enquiry	Polish (54 per cent)

Returning Census Questionnaires

4.58 Each census questionnaire pack contained a pre-paid envelope for the return of the completed questionnaire by post. Most questionnaires were returned by mail to field offices or other designated locations. The pre-paid envelopes were distinctive to improve the ease with which Royal Mail could identify and sort them.

4.59 Where a questionnaire was completed online, a notification was provided to the relevant enumerator. This information was then recorded in their ERB to avoid needless follow-up.

4.60 Questionnaires returned by post or collected from the households were checked by enumerators to ensure that key demographic information had been included (the 'completion check'). If certain information was missing, enumerators were expected to return to the household and seek the missing information.

4.61 Metrics on internet and postal returns were tallied from the online systems and by Royal Mail to monitor progress on the rate of return. Around 20 per cent of returns were submitted online.

Follow-up

4.62 The follow-up stage of the Census Field Operation ran from Wednesday 6 April 2011 (10 days after Census Day) to Monday 25 April 2011 and targeted households that had not returned a questionnaire or had returned a questionnaire that hadn't passed the completion check.

4.63 In areas where the questionnaires had been delivered by enumerators they had to visit households and remind them to complete the questionnaire. If there was no sign of occupation or no contact was made after two attempts this information was recorded in the ERB. Where contact was made during a follow-up visit the enumerator would collect a completed questionnaire if it was available.

4.64 Some householders needed assistance and this was available in a number of different ways, including large print questionnaires, a home visit by appointment, internet or telephone help. If a householder did not want to take part in the census the enumerator reminded them that it was a legal duty to fill in and return the questionnaire. If they could not be persuaded, this was recorded in the ERB and non-compliance action started.

4.65 Follow-up action in Post-out Areas was different. If a household had not returned a questionnaire by 6 April 2011, the enumerator posted a reminder card to them. A second reminder was sent if a completed questionnaire was not returned within seven days. If the reminder cards failed to prompt a response from the householder, or if they have returned a questionnaire which did not pass the completion check, a decision was then made as to whether the Enumerator should visit the household in person. Information on follow-up attempts was recorded in the ERB.

4.66 During the field operation it was important to account for every address where a census return might have been expected. If a paper questionnaire was not returned, the Enumerator had to create a 'Placeholder form' listing the reason for non-response. Basic information on accommodation type and estimated number

of residents was also collected from most non-responding households.

4.67 The combined postal and internet return rate before the start of follow-up was 74 per cent, slightly higher than expected. When returns were collated and duplicates removed after follow-up, a further 20 per cent of returns had been received. The final 1 per cent of questionnaires returned were received in the following weeks. As would be expected, the need for and effectiveness of follow-up varied from region to region.

Communal establishments (CEs) enumeration

4.68 CEs, including health and care establishments, access restricted establishments such as prisons, educational establishments, and other managed locations such as hotels and holiday camps, had different enumeration arrangements to households.

4.69 This role was allocated to Census Team Leaders (CTLs) instead of enumerators to reflect the difficulty of the task and allow enumerators to concentrate their efforts on household enumeration.

4.70 Before the start of the field operation each CTL was given a Communal Establishment Record Book (CERB) listing all establishments to be enumerated. It performed a similar function to the ERB used by Enumerators, recording progress on enumeration activities and recording final outcome.

4.71 Initial contact with establishment managers or another responsible person was made between 26 January 2011 and the end of February 2011 to explain arrangements. Delivery of questionnaire packs then took place between 1 March 2011 and 26 March 2011. Each pack contained a CE questionnaire, a guidance note for the establishment manager, an individual questionnaire pack and information leaflet for each resident, returns envelope or boxes and listing forms.

4.72 Completed CE and individual questionnaires were collected by CTLs on an agreed date. The establishment questionnaire was checked for completeness in the presence of the manager or other contact.

4.73 After reconciliation of the CERB was completed the questionnaires were passed to the appropriate enumerator to

merge with the other questionnaires for their enumeration district. A copy of the CERB was also provided so that information could be transferred to the ERB.

4.74 Enumeration of CEs was complex and at times labour intensive but there were some good examples of effective cooperation with organisations and CE managers which helped make the process effective.

4.75 There were some issues around the accuracy of the address lists and the identification of some types of CE (such as guest houses and caravan parks). There was also variation in CTL workloads, the quality of CE enumeration and the reconciliation arrangements. These issues need to be given further consideration for Scotland's Census 2021.

Reconciliation

4.76 When follow-up was completed, enumerators had to account for all questionnaire returns and placeholder forms in their ED. This task was carried out on 26 and 27 April 2011. The information recorded in the ERB was checked against the questionnaires and Placeholder forms in the questionnaire storage box(es). Reconciliation pages were then completed at the back of the ERB and sub totals transferred to a summary sheet in the ERB. Finally, the total count of each type of questionnaire was calculated and summarised. The ERB and questionnaire storage box(es) were then passed to the Enumerator's CTL for checking on 28 and 29 April 2011.

4.77 After the CTL checking, ERBs and questionnaire storage boxes were handed over to the CDM, securely assembled, prepared for shipment, and finally transported onwards to the data processing site by Royal Mail - Parcelforce.

Non-compliance – enforcing the legal requirements

4.78 The census is compulsory and most questionnaires are completed without further assistance. A small minority of the public refuse to complete and return the census questionnaire and are liable to prosecution and a fine (currently a maximum of £1,000). In order to emphasise the importance of obtaining a response from all households in the 2011 Census, a clear policy to encourage participation was necessary. The aim was to get a completed questionnaire. Only as a last resort would NRS

prosecute people who refused to return a completed questionnaire.

4.79 Refusal or failure to complete and return a census questionnaire is an offence under the 1920 Census Act. In order to emphasise the importance of obtaining a response for all households, NRS had a non-compliance policy to encourage participation and prosecute people who persistently refused to fulfil their statutory obligation.

4.80 Non-compliance action started after follow-up under the direction of census HQ and continued until 14 June 2011. Two different approaches were used.

4.81 In areas that had previously had the poorest return rates 10 Non-Compliance Officers (NCOs) and 10 assistants were employed to take action against households who refused to complete a census questionnaire.

4.82 These officials worked in pairs to investigate refusals by visiting addresses and engaging with householders to encourage participation and take further action if this was unsuccessful.

4.83 Non-compliance action for all other households who had refused to complete a census questionnaire was handled by a team based at Census HQ. The team issued letters from the Registrar General to households who had refused to complete a questionnaire advising them of the legal requirement to complete and return it.

4.84 About 1,800 cases were put forward for non-compliance action which resulted in 900 completed questionnaires being returned. Following Crown Office advice, five cases were subsequently reported to the Procurator Fiscal and two cases resulted in prosecution. Non-compliance arrangements should be reviewed in advance of another census.

Online completion of questionnaires

4.85 For the first time in Scotland, people were offered the opportunity to complete their census questionnaire online, as an alternative to completing the traditional paper questionnaire. Around 20 per cent of all returns were made online.

4.86 The online service was regarded as a success. It did not fail at any time during the process and there were no security breaches. It provided a number of benefits to the data collection operation, including:

- it avoided the need to scan and capture a significant proportion of the returns thereby speeding up, and reducing the cost of the data processing operation
- it was easy to use, improved data quality by prompting for missing responses, and limited the scope for incorrect responses.
- it provided an environment in which the security of the census information could be robustly protected
- it offered an alternative to people in households who may have been less inclined to complete a paper questionnaire

4.87 Security was the highest priority requirement in developing the online system. Robust systems were necessary to protect personal information from unauthorised access, maintain service integrity and availability and provide reassurance to the public. Explaining the measures taken was an essential part of the communications and publicity.

Usability

4.88 In designing the online questionnaire, ensuring the system was easy to use was a very important requirement. It impacts on a person's willingness to take part and give accurate answers. The online questionnaire was therefore designed to maximise usability, but of course the question content had to be the same as the paper questionnaire. To avoid responses being biased by the chosen completion method, a decision was taken to "mirror" the paper questionnaire wherever possible. This included being consistent in the order which the response options were presented to the respondent.

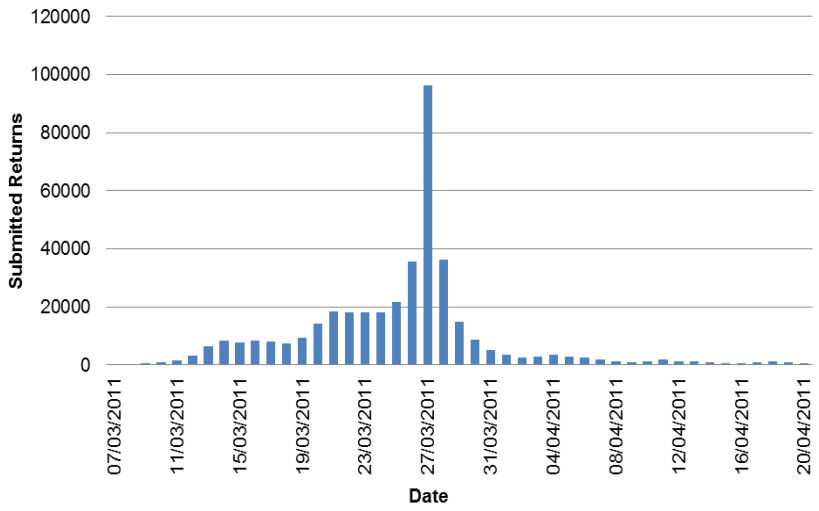
4.89 Steps were also taken to ensure the online questionnaire conformed to usability and accessibility standards and utilised a number of features to optimise the user experience and potentially improve the quality of data.

Operation

4.90 Questionnaires could be completed online, via the Internet Data Capture (IDC) service, between 7 March 2011 and 20 April 2011. They could be completed in English or Gaelic. Over 400,000 household returns were received with a peak, as expected, on census day of just under 100,000. Figure 4.3 shows the number of returns received by day.

4.91 The time taken to complete the questionnaire was influenced mainly by the number of individuals in a household and the average time taken was 26 minutes.

Figure 4.3 – IDC Returns by Day



4.92 Over half of returns were submitted before Census Day; around a quarter were submitted on Census Day; and the remaining quarter were submitted after Census Day. A little under 5 per cent of returns were submitted after non-response follow-up started.

How did the service operate?

4.93 The Internet Services were available, functional and secure throughout the key operational periods. This ensured that demand for the services was met and the internet questionnaire return rate was maximised.

4.94 There were a very small number of operational incidents. One incident affecting 44 users resulted in them being 'locked out' of their questionnaires as a precautionary measure.

4.95 A small number of changes were made during operational running to prevent failures in the keying of postcodes. This made it easier for users to log into the questionnaire and the percentage of failed attempts dropped.

4.96 The experience in 2011 should be considered and built upon in plans for a predominantly online census in 2021. In particular, it is recognised that NRS should develop and implement a public assistance strategy which aims to make best use of technology and digital services. The key aim would be to encourage digital participation and reduce the need for contact by other means.

Printing and Logistics Services

4.97 One of the most complicated tasks carried out during the 2011 Census was the supply and distribution of materials to field staff and members of the public. This included:

- design, print and collation of questionnaires, administrative forms, maps and leaflets
- printing of instruction manuals, training notes and Enumerator Record Books (ERBs)
- sourcing of other field materials
- picking, packing and distribution of all supplies
- return of questionnaires and other surplus field supplies
- retention or appropriate disposal of surplus field supplies

4.98 The volumes of material printed and supplied to the field operations are shown in table 4.5.

Table 4.5 – Material printed and supplied to the Field Operations

Category	No. of different types of material	Volumes of material
Census Questionnaires	11	6,102,000
Census Envelopes	9	6,236,000
Census Enumeration Materials	42	5,290,000
CCS Questionnaires	4	58,000
CCS Envelopes	2	10,000
CCS Enumeration Materials	14	92,000
CQS Enumeration Materials	1	1,500

4.99 Other notable items supplied were 6,400 waterproof carrying bags with shoulder straps, 7,500 high visibility vests, 7,000 navy blue lanyards and 7,500 personal attack alarms with torches.

Questionnaire production

4.100 One of the largest and most complex tasks was the production of over 6 million questionnaires, including 2.6 million household questionnaires. Whilst the quantity ensures that this was always going to be a large task, its complexity is influenced by a variety of other aspects, including: the question and questionnaire approval process, the variety of questionnaires, the planning of enumeration areas, the inclusion of addresses on the questionnaires and the need to use precise scanning technology to process completed questionnaires.

4.101 As a result of various requirements and timetabling issues, a five stage printing and booklet assembly process was required for the 2.6 million, 28 page Household questionnaires.

4.102 A summary of the 5 stage process is noted below:

- **Stage 1** – From June to October 2010, pages 3 to 26 of the questionnaires were printed.
- **Stage 2** – The main address file was supplied by NRS in mid-October 2010 and pages 1, 2, 27 and 28 of questionnaires were printed.
- **Stage 3** – Cover pages produced at Stage 2 were merged with print stock produced at Stage 1 to create questionnaire booklets.
- **Stage 4** – A second address file containing new addresses was supplied in January 2011 and pages 1, 2, 27 and 28 of these questionnaires were printed.
- **Stage 5** – Cover pages produced at Stage 4 were merged with print stock produced at Stage 1 to create remaining questionnaire booklets.

4.103 The images below as figure 4.4 offer a sight of some of this process.

Figure 4.4 – Images throughout questionnaire printing process

Rolls of questionnaire paper before and after printing:

Questionnaire printing:

Booklet collation and merger of materials:

Chapter 5

Census Coverage Survey

5 Census Coverage Survey

5.1 Despite the efforts made to collect information from everyone in the country, no census is perfect and inevitably some individuals are missed. This under-counting does not usually occur uniformly across all geographical areas or across sub-groups (for example, by age and sex) of the population. One of the main reasons for carrying out a census is the measurement of small populations or particular groups (recent migrants, young males in inner cities) and yet these are often the groups that can get missed.

5.2 It is a widely accepted practice that when conducting a census that an assessment of coverage should be part of the statistical operation. The 2001 Census represented the first attempt in the UK to fully integrate the Census and the Coverage Assessment resulting in the development of the One Number Census methodology. The aim was to produce one set of numbers to which all census outputs would add and which would be the basis of the mid- year estimates for 2001.

5.3 The Census Coverage Survey (CCS) was the key source of information on the size and distribution of the census undercount. It was a sample survey independent to the census. Participation in it was voluntary and it took the form of a short interview to check the coverage of the households and the people within the households including some basic demographic information (such as age, marital status, ethnic group). The information from this survey was used in conjunction with the census data to produce a consistent set of estimates which were used going forward.

5.4 Improvements to the accuracy of the estimates obtained in 2001 led to the planning of a similar coverage adjustment process for the 2011 Census which built upon this experience.

Census Coverage Survey Design

5.5 The CCS started six weeks after Census Day and took place over a five week period. It differed from the census in a number of respects, the main ones being:

- it surveyed a sample of small areas, covering approximately 1.5 per cent of the households in Scotland
- it was conducted by trained interviewers rather than as a self-completion exercise

- only a subset of census questions were asked

5.6 The primary purpose of the CCS was to provide an alternative list of households and people that could be matched against the census in order to estimate the number of households and people who were missed in the census. It is important that there is statistical independence between the census and the CCS. To achieve this the CCS used a different design and methodology from the census and census field staff were not permitted to work on the CCS. The CCS only began after the end of the census collection period, to ensure householders would not be influenced by CCS interviews and then complete a census form if they had not already done so. The CCS used a paper questionnaire for a short doorstep interview and there was a post back questionnaire for households who could not be contacted for interview.

5.7 The CCS had an overall sample size of 40,000 households and used a clustered design with the primary sampling unit being data zones and the secondary sampling unit postcodes. The target cluster size was around 50 households.

5.8 The sample was stratified by local authority (LA) and Hard to Count (HtC) index. The HtC is calculated at data zone level and each data zone is assigned to one of five levels depending on the predicted difficulty of obtaining a response in the census. The factors which are taken in account when predicting response include the proportion of students in a data zone, the proportion of private rented dwellings and the data zone's ranking in the Scottish Index of Multiple Deprivation (SIMD).

5.9 The sampling fraction was higher in those LAs expected to have a poorer census response and additional sample was put into those LAs which had showed larger response variation in 2001. Within each LA, more of the sample was put in the harder to count areas. A minimum of five postcodes were selected in each LA.

5.10 A series of maps were produced for each area showing streets and houses within each sampled postcode. Interviewers had to 'walk' the area before interviews started in order to establish the list of properties/ addresses. More detail on the CCS including the sample size and the Processing Units for Local Authorities can be found in "Release 1C - How the 2011 Census population estimates were obtained"

Census Coverage Survey Fieldwork

5.11 As previously noted, a key requirement of the CCS was that its process of data collection should be independent from the census itself. Consequently the CCS Field Operation employed about 500 temporary staff with a hierarchical management structure. The recruitment, training and payroll arrangements were very similar, but separate, to the Census Field Operation and were largely successful. A field staff structure summary is shown below in Table 5.1.

Table 5.1 – CCS Field Staff Structure

Role	No of staff	Period of Employment
Area Manager	5	28 weeks
Team Manager	31	19 weeks
Interviewer	476	10.5 weeks

5.12 The fieldwork was carried out in two phases. Phase 1, mainly the property listing, ran from 21 April 2011 to 1 May 2011. Phase 2, mainly interviewing, started on 7 May and was completed on 12 June 2011. There was a short follow-up period after this in which a CCS post-back questionnaire was hand delivered to households that hadn't responded, interviewer questionnaires were reconciled and shipped to the Data Processing Site and de-brief and evaluation activities completed.

5.13 The CCS Field Operation achieved an overall interview return rate of 90 per cent. Feedback on the conduct of the survey was received from 75 per cent of the field staff and also from staff working at Census Headquarters (HQ). The debrief confirms that the successful outcome was achieved as a result of a number of factors including:

- a successful and timely recruitment exercise
- appropriate training and instructions for field staff
- relatively smooth field operation
- effective team working and HQ support

5.14 However there were some challenges that would need to be addressed if a post-enumeration survey was carried out in the future including:

- varied and at times excessive workloads especially for field managers
- effectiveness of IT systems in improving efficiency of field management tasks
- suitability of questionnaire for a doorstep interview, especially in poor lighting

Survey response rates and sample size

5.15 Prior to the start of the CCS, NRS set an objective of achieving a 90 per cent interview completion rate and this aim was achieved.

5.16 Household response rates in the CCS are defined as the number of valid responses divided by the number of occupied households found either by the census or the CCS. The overall household response rate for the CCS in Scotland in 2011 was 87.1 per cent. This includes households that were missed in the CCS but found in the census. This is different to the interviewer return rate, which as noted above was 90 per cent, as this included interviews that were not included in the estimation process (for example communal establishments). The data used to calculate response rates are from the coverage matching process.

5.17 The response rate varied from 78.1 per cent in West Dunbartonshire to 94.1 per cent in East Lothian. Details of the response rates and postcode sample size by local authority are shown in Table 5.2.

Table 5.2 Census Coverage Survey, household response rate and sample size by Local Authority, 2011

Local Authority	CCS household response rate	CCS postcode sample size
Scotland	87.1	2103
Aberdeen City	87.8	57
Aberdeenshire	91.2	80
Angus	93.4	35
Argyll & Bute	86.4	62
Scottish Borders	90.0	50

Clackmannanshire	91.0	12
West Dunbartonshire	78.1	36
Dumfries & Galloway	88.9	117
Dundee City	85.4	80
East Ayrshire	80.0	61
East Dunbartonshire	87.8	42
East Lothian	94.1	27
East Renfrewshire	91.3	34
Edinburgh City	82.8	159
Eilean Siar	90.8	9
Falkirk	90.4	60
Fife	89.1	184
Glasgow City	79.2	207
Highland	90.8	86
Inverclyde	88.0	28
Midlothian	92.0	38
Moray	90.8	34
North Ayrshire	92.3	64
North Lanarkshire	89.7	85
Orkney Islands	87.1	2
Perth + Kinross	90.7	70
Renfrewshire	84.8	61
Shetland Islands	83.1	7
South Ayrshire	88.8	57
South Lanarkshire	90.9	111
Stirling	91.0	60
West Lothian	91.3	88

Chapter 6

Data processing and Quality Assurance

6 Data Processing and Quality Assurance

6.1 Before outputs from the census could be produced, responses on the 2011 Census and Census Coverage Survey (CCS) questionnaires had to be captured. Most responses were converted into coded data and then validated and cleaned so that the outputs were of high quality.

6.2 The 2011 Census was processed in phases:

- Input processing – itself comprising two main stages:

  1) the main data capture and coding stage, and

  2) the downstream processing stage - the subsequent processes to clean, adjust, validate and protect the data (including edit and imputation, coverage assessment and adjustment process, and statistical disclosure control)

- Output processing - comprising the creation of an outputs database, from which census output products were produced and subsequently disseminated.

6.3 Quality Assurance was an integral part of the processing and carried out at each stage.

6.4 One of the main achievements of the 2001 Census was to obtain better value for money by contracting-out data capture and coding work. The 2001 Census NRS evaluation report on data capture and coding fully recognised the benefits obtained by outsourcing this work and therefore the approach adopted in 2011 was similar to that in 2001.

6.5 National Records of Scotland (NRS) worked jointly with Office for National Statistics (ONS) and Northern Ireland Statistics and Research Agency (NISRA) to define data capture and coding arrangements for 2011 and consider whether or not to procure the service in partnership. Following consideration, NRS opted to procure for capture and coding on a Scotland only basis. Further information about procurement arrangements is covered in Chapter 3.

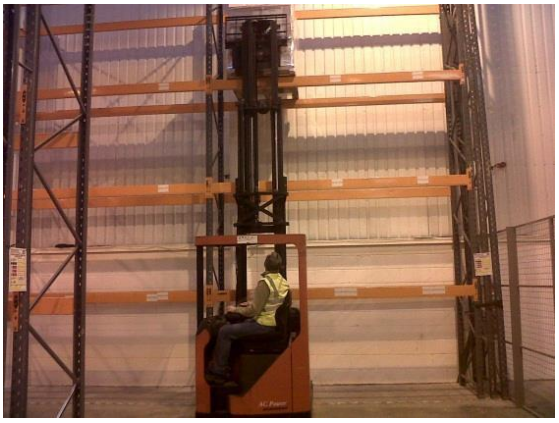
6.6 In 2008, the contract to deliver data capture and coding services as well as internet and printing services was awarded to CACI (UK) Ltd. CACI identified a secure processing site in February

2010 and made it ready for operational use in October 2010. The site was a 52,000 sq. ft. industrial warehouse with offices and parking in Kirkton Campus, Livingston. Images of the site are shown below at Figure 6.1.

Figure 6.1 – The 2011 Census Processing Site

Before commissioning:

Preparing the warehouse:



The processing area:

6.7 The main scanning operation processed 2.84 million paper questionnaires, took 98 days and was completed on 23 September 2011. From June 2011 to November 2011, 150.4 million tick boxes and 641.7 million characters were captured.

6.8 The paper census questionnaires were securely stored at the processing site until electronic and microfilm copies were made. The questionnaires will, after 100 years, be made available as a historical record. The paper questionnaires were then destroyed (shredded) in a secure, controlled manner witnessed and verified by NRS staff.

Data capture and coding

6.9 In order to produce outputs from the census questionnaires, it was necessary to transform the information returned on paper into digital images and then into coded data. There were four main stages in this process:

- **Scanning** – to obtain images of the questionnaire
- **Image checking** – to check the quality of the scanned images to ensure that they were useable
- **Recognition** – automatically capturing the data from the scanned images using both Optical Mark Recognition (OMR) for tick boxes and Optical Character Recognition (OCR) text boxes and numeric responses
- **Keying** – responses which could not be captured accurately automatically were keyed straight from the image

6.10 In general capture quality was high however:

- the quality of automatic capture of alphanumeric characters was lower than other types, initially lower than targets and varied throughout the country
- manual capture was slightly below targets

6.11 Thereafter, data which was already captured via the internet was brought together with the data from the paper questionnaires.

6.12 The text responses provided on paper and online were converted into coded data. In some cases this was straightforward whereas in other cases it could involve complex coding using rules and standardised national coding frames, such as SIC 2007 (Standard Industrial Classification 2007) and SOC 2010 (Standard Occupational Classification 2010).

6.13 The coding systems used various automatic technologies to code these text responses. Those that could not be coded automatically were coded by operators using computer assisted tools. There were 200 operations staff who worked on the capture and coding of the data. In addition a small team of core NRS staff were on site to oversee the operation and to resolve queries.

6.14 Table 5.1 shows that the standards for coding accuracy were achieved (with the exception of enumeration address) and were broadly similar, or better, than the accuracy achieved in 2001.

Table 5.1 – Coding accuracy, 2011 and 2001

Data Category	Standard	2011 Census - Accuracy	2001 Census - Accuracy
Country of Birth	96.00	99.70	99.88
Ethnic Group	96.00	97.36	98.95
Language	96.00	98.64	-
National Identity	96.00	99.66	-
Religion	96.00	97.05	-
Enumeration Address	100.00	99.98	99.20
Address 1 Year Ago (UK)	96.50	98.74	92.99
Address 1 Year Ago (Abroad)	96.00	99.73	-
Workplace \ Place of Study Address	94.50	98.22	92.52

Visitor Address (UK)	96.50	98.70	-
Visitor Address (Abroad)	96.00	99.90	-
Industry	88.00	93.50	88.46
Occupation	88.00	96.34	91.42

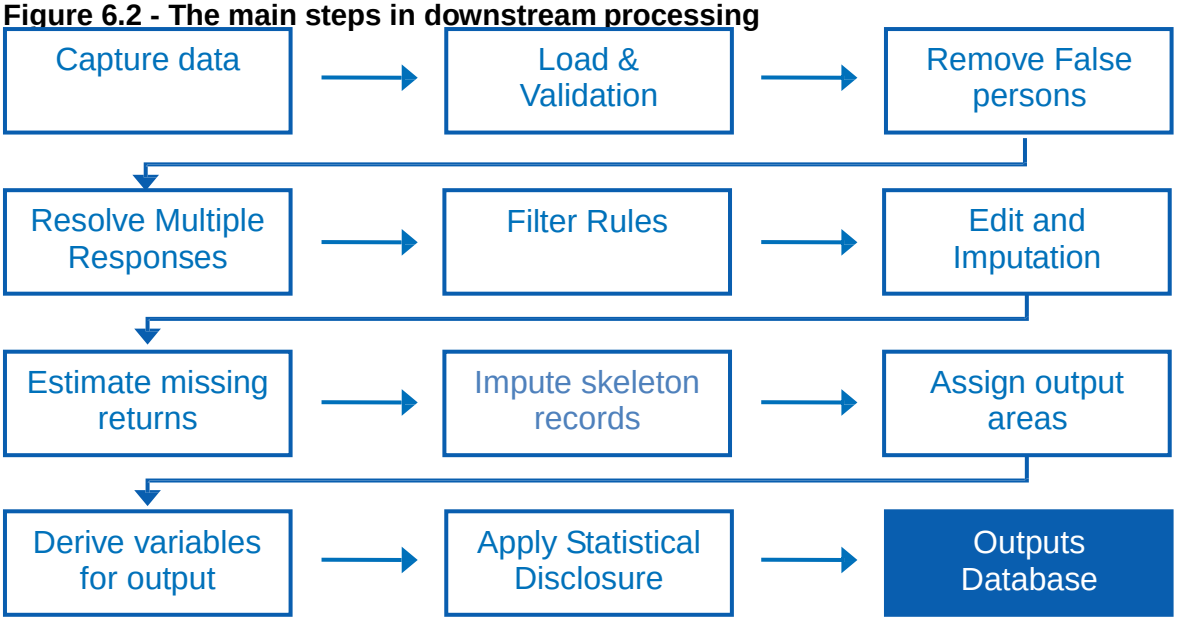
Notes: 1. Language, National Identity and Visitor Address questions were not asked in 2001
2. Text responses for the Religion questions were not coded by Contractors in 2001
3. Address 1 Year Ago (Abroad) was not available as an option in 2001
4. The sampling methodologies were similar in 2001 and 2011 but there were some differences in the measurement processes because the coding solutions were not the same.

6.15 After completing these processes the captured and coded data was then securely transferred for loading on to NRS systems for further processing and validation (downstream processing). The data was sent in encrypted form for increased security and in geographic batches of local authorities known as Processing Units (PUs) to facilitate processing.

Downstream processing

6.16 The downstream processing (DSP) project provided a set of IT systems which allowed the subsequent processing of the 2011 Census and CCS data. The process started with loading of the data and ended with disclosure control prior to the production of outputs. Figure 6.2 shows the main steps.

Figure 6.2 - The main steps in downstream processing



Load and validation

6.17 Once the captured data was received, it went through load and validation. This process focussed on ensuring that the data received was of the correct type and was within a previously specified range of values. During the data capture process, there were cases where person records were not correctly linked to a household record, where information provided on continuation forms was not captured 'adequately, or where individual returns for people within households were identified.

Remove false persons

6.18 As part of the data capture and coding process, a person record was created each time at least one mark was detected in any of the person questions. But such records could be created in error if, for example: there was dust on the scanners that was incorrectly interpreted as a mark; or where respondents crossed through whole pages of the questionnaire as not being relevant and this had been identified as a response; or where respondents may have accidentally skipped pages, completing their response over two different person records.

6.19 A process was developed to identify genuine person records, after analysing data from the 2001 Census to establish which combinations of key variables were most often present on genuine responses.

6.20 The 'remove false persons' process removed person records that did not meet the criteria to 'pass' as a genuine record. The rule required that the following information needed to be present on the record:

- name of the individual or date of birth
- and at least one of:
  - sex
  - marital status
  - relationship to other(s) in household

6.21 If a person record did not meet these requirements then it was considered to be a 'false person'.

6.22 Table 6.2 shows the number of records from both communal establishments and households that were removed during the

remove false person stage. In total 52,500 records were removed which was equivalent to just over 1 per cent of the records which were present at load and validation stage.

Table 6.2 – Records removed at false person stage

Local Authority	Communal	Household	Total No. at capture stage	Per cent
Aberdeen City	51	2,241	213,480	1.07
Aberdeenshire	12	1,908	247,101	0.78
Angus	8	1,001	112,195	0.90
Argyll and Bute	5	790	85,622	0.93
Clackmannanshire	36	405	50,201	0.88
Dumfries and Galloway	57	1,341	148,170	0.94
Dundee City	20	1,494	137,842	1.10
East Ayrshire	1	1,150	118,744	0.97
East Dunbartonshire	22	852	101,621	0.86
East Lothian	1	1,027	98,369	1.05
East Renfrewshire	7	602	86,994	0.70
Edinburgh City	120	4,758	445,697	1.09
Eilean Siar	0	252	26,911	0.94
Falkirk	30	1,524	151,062	1.03
Fife	27	3,295	355,298	0.93
Glasgow City	116	8,005	540,622	1.50
Highland	16	2,033	224,317	0.91
Inverclyde	2	816	77,361	1.06
Midlothian	0	758	81,448	0.93
Moray	3	681	89,766	0.76
North Ayrshire	7	1,345	133,139	1.02
North Lanarkshire	68	3,373	321,934	1.07
Orkney Islands	0	147	20,640	0.71
Perth and Kinross	37	1,166	142,119	0.85
Renfrewshire	0	1,773	166,892	1.06
Scottish Borders	10	1,183	113,025	1.06
Shetland Islands	0	173	22,778	0.76
South Ayrshire	6	1,115	110,193	1.02
South Lanarkshire	60	3,255	306,301	1.08
Stirling	12	758	87,136	0.88
West Dunbartonshire	3	1,070	86,819	1.24
West Lothian	4	1,414	167,721	0.85
Overall	**742**	**51,705**	**5,071,518**	**1.03**

Resolve multiple response

6.23 There was an increased likelihood of multiple responses from the same household occurring in the 2011 Census compared with previous censuses. This was because the option of online completion was introduced alongside the post back of paper questionnaires.

6.24 Multiple responses at the same address could be created in a number of ways: for example, both a paper and an online response being returned for the same address effectively created a multiple household response; or a person being included on the same questionnaire more than once could create a multiple individual response.

6.25 In addition there were also duplications due to visitors or households being duplicated but with different postcodes. A process was therefore developed to resolve both household and individual multiple responses at the same address referred to as Resolve Multiple Response (RMR).

6.26 Nationally, just under half a per cent of households in the Census were affected by the RMR process ranging from 0.18 per cent in East Lothian and Dumfries and Galloway to 0.45 per cent in South Ayrshire.

Filter rules

6.27 A further process to clean the records prior to imputation was applied. The filter rules checks eliminated obvious inconsistencies which has happened when questionnaire filters were ignored. For example: tenure was listed as 'owned' but landlord had been completed as 'other' rather than having been left blank as instructed.

6.28 In total, there were 15 filter rules which were run on the data prior to edit and imputation.

Edit and Imputation

6.29 As with any self-completion questionnaire, people filling in the census sometimes did not complete some of the questions they were supposed to or made mistakes. The first of these problems is known as 'item non-response' and occurs when a respondent does not know the answer to a question or refuses to provide the

information. The second type of problem can produce 'inconsistent' data, for example where a person is listed as one year old but their marital status is recorded as 'married'.

6.30 Item non-response and inconsistent responses can have a detrimental impact on the utility of the census data in three basic ways.

- Missing and/or inconsistent data can lead to a reduction in the precision of population estimates.
- If the characteristics of the non-respondents differ from the respondents, population estimates may also be biased. This is referred to as a non-response bias.
- Users of census data may try to account for item non-response and inconsistencies in the data in different ways, leading to disparity in population estimates derived by different analysts.

6.31 The three UK Census Offices agreed to develop a joint edit and imputation process that would produce a dataset which was internally consistent and did not contain any missing values.

6.32 ONS had carried out very detailed methodological work in this area and had identified the Canadian Census Edit and Imputation System (CANCEIS) as the most appropriate system. The approach taken allowed joint imputation for all members of a household using a single donor household as well allowing for both the simultaneous imputation of both non response and inconsistent responses.

6.33 The following three key principles were adhered to during edit and imputation:

- All missing data, except the voluntary religion question would be imputed to provide a complete and consistent data set.
- The number of changes to inconsistent data would be minimised.
- The changes to observed data would not result in an overall loss of quality.

6.34 The development of the ONS Edit and Imputation Methodology, which was adapted for Scotland, is detailed on the ONS website.

Estimate missing returns and input 'skeleton records' (Coverage assessment and adjustment)

6.35 As detailed in Chapter 5, many census-taking countries carry out some form of coverage assessment and adjustment, often using a post-enumeration survey. Measured undercount levels have, on the whole, been increasing over the past few decades. More importantly, the differential nature of the undercount has worsened with, for example, young males in inner city areas becoming increasingly difficult to enumerate. This has led to increasing priority and focus on the methods for measuring this differential undercount.

6.36 The coverage assessment and adjustment process was designed to identify and adjust for the number of people and households that were not counted. The extent of this under-enumeration was estimated using a coverage survey of around 40,000 households. Chapter 5 provides details of how the Census Coverage Survey (CCS) was conducted. Standard statistical techniques which were used to estimate the numbers of missed households and people and construct an adjusted database from which the final census results were produced.

6.37 The main stages in the process are summarised below

- A CCS was undertaken, independently of the 2011 Census. The survey was designed to estimate the under-enumeration (undercount) in the census. A sample of postcodes was drawn from each local authority, stratified by a hard to count (HtC) index. The HtC index gave an indication of expected non-response in the census. The CCS in Scotland included around 40,000 households.
- The CCS records were matched with those from the census using mainly automated and a small amount of clerical matching.
- All census individuals were matched to see if they (the individuals) were duplicated within Scotland, and the CCS data were used to help estimate the levels of over-count in the census by broad age and sex groups.
- The undercount was estimated within Processing Units (PUs). The matched census and CCS data were used within a dual system estimator (DSE) to estimate the population in the areas sampled in the CCS. The DSEs were then used within a simple ratio estimator to derive population estimates for the whole of the PU. As the data were processed, modifications were made

to the DSE and ratio estimation processes to ensure that the estimates were robust.

- The DSEs were assessed for any bias at household level using an alternative household estimate from the census field process.
- The sample was assessed for balance, which would affect the ratio estimator, using the placeholder data from the census field process. No extreme samples were detected.
- The population within communal establishments (CEs) was assessed for under-coverage using both the CCS (for small CEs) and administrative data and local information (for large CEs). Adjustments were made to the CE population where these checks highlighted significant undercount.
- A synthetic estimator (a robust statistical methodology for estimating small areas) was used to estimate the local authority population, using the patterns observed at PU level.
- To provide a measure of variability in the estimates, 95 per cent confidence intervals were calculated for the PU and LA population estimates by age-sex group using a bootstrapping technique.
- Households and individuals estimated to have been missed from the census were imputed on to the census database, after reducing the measured undercount by the estimated level of over-count. This process involved creating 'skeleton records' into which characteristics were imputed from real households and individuals to create the households and individuals estimated to have been missed. The households and persons were imputed into geographical locations across the whole PU and then local authority.

6.38 After the coverage assessment process, all the population estimates were quality assured using demographic analysis, survey data, qualitative information, administrative data and local information to ensure the estimates were plausible.

Table 6.3 Components of the census estimate of usual residents

Component	Number	Per cent
Census enumerated count	4,959,000	93.7
Change due to:		
Estimation and sample bias	314,400	5.9
Over-count adjustment	-26,300	-0.5
Bias adjustment	42,300	0.8

Communal establishment adjustment	5,700	0.0
Total published census estimate	5,295,400	100

Note: Rounded to nearest 100.
Does not add up to 100 per cent due to rounding

Remaining processing steps

6.39 After quality assurance, the data went through a series of further processing steps to prepare the final outputs database from which all output tables were produced. These were:

- Assigning output geographies where each household and person had a number of output geographies assigned to it depending on the location of the household. All of our standard geographies are built up from output areas.
- Creating derived variables. Some output variables are derived from one or more census question; for example age is derived only one census question (date of birth) whereas activity last week is derived from eight other variables (one of which is in itself derived). There were around 300 derived variables.
- Applying statistical disclosure control routines to protect the confidentiality of individuals and households.

6.40 It took 21 months from Census Day to the release of the first set of data and a little under 4 years for all standard releases to the produced. It is recognised that this is much longer than users would have liked. There are a number of reasons for this. In part it reflects the vast quantity of data which had to be processed (circa 2.5 million households and 5.3 million people) involving some very difficult and complex processes as well as the various stages involved in the production of over 400 standard tables at up to 16 levels of geography. The 2011 Census was also the first time that NRS had carried out all stages of the census programme separately from the rest of the UK.

6.41 For previous censuses, NRS had carried out the field work stage of the census but data processing had been carried out on a UK wide basis. In 2011, NRS opted to carry out all stages and this proved to be a very steep learning curve. It was both a more resource intensive operation and more complex than envisaged. For some DSP processes, NRS relied heavily on colleagues from ONS for technical and methodological support and used many of

the same systems and processes as ONS, although adapted to work with Scottish data and systems. Although it was expected that these would require amendments, the amount of re-working that was required was greater than estimated. Some of this re-working required further help and support from ONS colleagues who were still working very hard on the production of their own outputs.

6.42 In particular, one of the main difficulties experienced in downstream processing was that, prior to live processing, the systems were not completely tested with data from census type scenarios. The effect of this was that there were:

- a large number of changes that needed to be implemented to ensure that the processing would work in an automated, robust manner
- delays within individual processes that had knock-on effects on later processes

6.43 Despite the many challenges encountered over the course of the data processing, it was a very positive decision for NRS to run the entire end to end operation. The level of knowledge and skill in NRS increased substantially over the course of the programme and puts NRS in a much stronger position to plan for the successful delivery of the 2021 Census.

Quality Assurance

6.44 The rigorous Quality Assurance (QA) processes carried out by NRS ensured that the outputs released from the Scotland's Census 2011 were of high quality and fit for purpose.

6.45 Quality management and control were central to all stages of the census operation. However, given the element of estimation which goes into the final census results, it was important to have a robust process to ensure that all of the processes have worked and to ensure that where census estimates differ from other published sources, that the difference is understood and can be explained to users.

6.46 The QA of the estimates was overseen by a series of working groups and panels who reviewed the evidence and made recommendations on further adjustment work. An Executive Level Panel looked at summaries of the evidence which had been

compiled from the whole QA process and on the basis of these, and further examination of the data, they agreed on the estimates that have been published.

6.47 The QA of the summary tables published in Release 1A (December 2012) followed the initial phase of the QA process and included looking at the following aspects:

- age by sex profile by council area compared with published mid-year population estimates and a range of comparator sources including NHS Central Register, Child Benefit, Customer Information Service data on older people
- household numbers – compared to published household number estimates
- fertility rates – using birth registration data from NRS
- the inferred sex ratio distribution by age (i.e. the number of males per 100 females)
- the pattern of response by age and gender

6.48 Prior to Release 1B (March 2013), additional QA was carried out including the following aspects:

- household size - compared to published household size estimates
- student numbers - compared to data on students from School Census, Higher Education Statistics Agency and Scottish Funding Council
- armed forces numbers – compared to a range of other armed forces data ethnicity and
- international migration.

6.49 These checks resulted in minor changes to the census population estimates, and there were no differences to the rounded figures published in Release 1A .

6.50 Prior to Release 1C (July 2013), additional QA was carried out examining the single year of age data for people over 80 years old in order to decide whether to publish data up to 90 years or up to 100 years. The data was compared with published data derived from mid-year estimates.

6.51 Overall the QA process has been highly successful and, most importantly, transparent to users. In addition to publishing the overall strategy and approach, NRS has published QA packs

detailing results and comparator sources for each local authority in Scotland on the Quality Assurance section of the Scotland's Census website.

Chapter 7

Confidentiality, security and privacy

7 Confidentiality, security and privacy

Introduction

7.1 Over the past 150 years National Records of Scotland (NRS) has progressively taken important initiatives and actions to maintain the security of census information and increase public trust. These steps have included:

- Legal penalties for unauthorised disclosure of personal census information in contravention of the Census Acts
- Keeping census records confidential for 100 years
- An undertaking by the Registrar General on permitted uses of census information
- Strict adherence to all relevant legislation and UK Government standards concerning personal information, Information Security and Information Assurance
- A signed undertaking by all persons working on the census on confidentiality and the legal obligation not to divulge personal census information
- Independent scrutiny of the census arrangements to protect information provided by the public, and publication of its findings
- Addressing legitimate privacy concerns by conducting a Privacy Impact Assessment (PIA), and publishing the outcome
- Minimising the risk of inadvertent disclosure of information about individuals in statistical outputs

7.2 The initiatives and actions undertaken covered all parts of the 2011 Census programme. They affected the census operational stages from the security of completed questionnaires during and after the field operations to the protection of information contained in outputs made available to the public.

7.3 The success of the census depends on the participation of the public. To ensure that everyone is included, it has always been compulsory. The information collected is treated in strict confidence and there are legal safeguards to prevent unauthorised disclosure. Census records are closed to public access for 100 years.

7.4 The information gathered by the census is held in a number of different ways, including paper, computer-readable media and

microfilm. Special security measures are taken to protect it and the arrangements are independently checked by an accredited UK security consultancy.

7.5 The census is not concerned with facts about individuals. Its purpose is to provide facts about communities and groups within communities. To preserve statistical confidentiality precautions are taken to prevent identification of individuals in published outputs. Usage of the data must comply with the Census 1920 Act and the requirements of data protection, freedom of information and human rights legislation. There are legal penalties for the unlawful disclosure of personal information collected in the census.

Confidentiality principles

7.6 NRS has ensured that government wide standards relating to risk management and data security have been met. The following 8 principles governed the treatment of information given in the census returns:

- Only persons under the management and/or control of the Registrar General for Scotland including those agents acting, or providing services, on his behalf for the purpose of the census had access to personal census information.
- In most cases one questionnaire covered all members of the household and information was returned by post; people could choose to give personal information on a separate questionnaire or via the secure census online, in a way that would not reveal it to others in their household or establishment, or to the collector.
- All members of the census organisation and outside agents providing services were given strict instructions, and were required to sign undertakings in the form of declarations, to ensure their awareness of their statutory confidentiality obligations. They were (and continue to be) liable to prosecution for any breaches of the law.
- The physical security of personal census information held by Census Office HQ staff, by field staff or by authorised agents, was strictly enforced.
- All relevant UK government security requirements applicable to a restricted rated project/system were (and are) adhered to in all areas to ensure the overall security of IT systems, processes

and procedures. Such measures conform to the mandatory requirements in the procedures for the handling of personal data within government.

- The computer systems handling census data have strict safeguards to prevent unauthorised access.
- There were (and are) systemic modifications of the data in the preparation of the results of the census in order to preserve statistical confidentiality.
- The security and confidentiality arrangements covering the collection and processing of census questionnaires were subject to an independent review.

Relevant legislation

7.7 The confidentiality of personal census information is protected by several pieces of legislation: the 1920 Census Act, the Census (Confidentiality) Act 1991, the Census Regulations, the Data Protection Act 1998, the Freedom of Information (Scotland) Act 2002, the European Convention on Human Rights and the EU Statistical Legislation.

1920 Census Act and the Census (Confidentiality) Act 1991.

7.8 Access to census data that can identify households or individuals is strictly controlled. The 1920 Census Act made it a criminal offence to unlawfully disclose confidential census information and the Census (Confidentiality) Act 1991 extended this to people and businesses working as part of the census. Anyone who unlawfully discloses census information can be fined up to £1,000 or sent to prison for up to two years or both.

Census Regulations

7.9 The Census Regulations prescribed measures to ensure the security of the completed questionnaires and confidentiality of data in the field.

7.10 Section 18 of the regulations relate to the safe custody of questionnaires and documents:

"Any person having the custody, on their own behalf or on behalf of another person, of any form of return or other document (including electronic documents) containing personal census

information must keep said forms and documents in such manner as to prevent any unauthorised person having access to them."

7.11 Section 19 relate to the confidentiality of personal information given to the 2011 Census field staff:

"A person to whom information is given pursuant to the Census Order and these Regulations must not, other than for the purposes of the Act or these Regulations,—

(a) make use of that information; or .
(b) publish it or communicate it to any other person"

Data Protection Act

7.12 In addition to the protection afforded by the census-specific legislation referred to above, the Data Protection Act 1998 (DPA) specifies that, where personal data are processed on behalf of the 'data controller' (NRS in the case of the census), that data controller is responsible for ensuring that any contractor processes them in accordance with the data protection principles. Accordingly, NRS provided its contractor with instructions to ensure that this happened.

Freedom of Information Act

7.13 No-one can get personal census information through a Freedom of Information request. This is set out in sections 38 and 58 of the Freedom of Information (Scotland) Act 2002, which states that personal census information is exempt from disclosure for 100 years.

European Convention on Human Rights

7.14 Article 10 of the Convention for the Protection of Human Rights and Fundamental Freedoms concerns the rights of freedom of expression and the rights of citizens to:

"….hold opinions and to receive and impart information and ideas without interference by public authority and regardless of frontiers."

7.15 However, where confidentiality is concerned, Article 10 says that these freedoms, carry with them duties and responsibilities, and so may be subject to such:

"… formalities, conditions, restrictions or penalties as are prescribed by law and are necessary in a democratic society for preventing the disclosure of information received in confidence."

7.16 Article 8 concerning the 'right to respect for private and family life', affords further protection regarding confidentiality of information:

"Everyone has the right to respect for his private and family life, his home and his correspondence."

7.17 However, the UK and European courts have ruled that the census itself does not infringe this right, because the article goes on to state that:

"There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others."

Security measures

Census Operations: Personnel Security

7.18 Access to personal census information is strictly controlled during each census operation and is accessible only to the necessary minimum number of people. Everyone working on the census is subject to the strict confidentiality provisions of the Census Act and the Census Regulations.

7.19 During the 2011 Census induction process each person received a talk on the importance of safeguarding the confidentiality of personal census information. They had to read extracts from the legislation and then sign an undertaking to confirm that they understood these obligations and were aware of the penalties for unlawful disclosure or use of the information, or failure to keep it safe.

7.20 In 2006 the UK Cabinet Office introduced a Baseline Personnel Security Standard (BPSS) to address weaknesses in government recruitment practices. The Standard comprises verification of four main elements:

1) A valid (in last twelve months) Basic Disclosure Certificate;
2) A three year employment check;
3) Nationality and immigration status; and
4) An identity check.

7.21 Although completion of the BPSS is mandatory, the guidance issued by the Cabinet Office acknowledged that it might not be practicable to meet the BPSS fully for people taken on for very short periods of employment. NRS was concerned about the operational impact of the verification process on recruitment of over 5,700 enumerators for only eight weeks. The Registrar General decided that enumerators did not require the three year employment check. All other staff and contractors recruited for the 2011 Census were fully checked.

Census Operations: Physical Security

7.22 The physical security of all buildings holding personal census information and the transportation of material containing this information is strictly controlled. Reviews of arrangements were carried out at each contractor site, an example Field Office and the Census Helpline site. Each site had layered security to deter and prevent unauthorised access and protect assets. Audits were carried out of the main operational sites before, during and after each operation and action taken where it was appropriate. All vehicles used for transportation of personal census information had to meet stringent security requirements.

Census Operations: Procedural Security

7.23 NRS developed security procedures based on good practice, international and HMG standards for many years. For the 2011 Census NRS created Census Confidentiality Guidelines for all people authorised to access personal census information. They defined general principles and important guidance on measures to be used to safeguard personal census information. The Guidelines were supplemented by standardised processes developed or adapted from HMG standards.

Census Operations: Information Security

7.24 Most of the census operations are heavily dependent on technology and the security of information systems and services is therefore a top priority for NRS. Security requirements were included in each census business process and each system and

service was independently checked by security experts to provide evidence that requirements had been fully met. All equipment used in the census was security assessed prior to use. At the end of each census operation, all equipment holding personal census information was securely cleaned using the approved HMG standards.

Online security

7.25 The Internet Services had robust security controls to protect personal information from unauthorised access, maintain service integrity and availability and provide reassurance to the public. Security testing and related assurance activities were completed by the contractors' security experts during implementation, to ensure that standards were complied with and appropriate controls correctly deployed. NRS also commissioned security experts Logica to carry out an assessment of the site hosting the IDC service. The Logica assessment found a very good level of security integrated into the hosting contractor's working practices.

7.26 Households that received an addressed questionnaire were given the option of making their census return online. A unique 12 digit access code was printed on each addressed questionnaire and this code was used to access and complete an online return.

Statistical Disclosure Control

7.27 While most census outputs take the form of aggregate counts, there is a risk that information about an individual person could be deduced from census outputs. For example, if everybody in a particular geographic area was aged under 50 apart from one old-age pensioner living in a single person household, a cross-tabulation of age and general health would reveal the response of that pensioner to the census question on general health. The legal obligations described earlier require NRS to treat census information as confidential. In order to achieve this, NRS applied Statistical Disclosure Control (SDC) measures to protect individuals, households and organisations and their characteristics from identification in published results.

7.28 The key strength of the census is its completeness of coverage and its ability to generate statistics about very small areas and groups of people (which help public policy makers to take account of local communities' needs). Therefore, particular care must be

taken to balance the need to ensure complete statistical confidentiality against the need to avoid damaging the utility of the data. This has always been paramount.

7.29 In a census context, where thousands of cross-tabulations are generated from one database, the protection of the statistical confidentiality is best addressed by introducing uncertainty about the true value of small cells. In order to meet the agreed interpretation of the code of practice, all three UK Census Offices agreed that small counts could be included in publicly disseminated census data provided that:

- uncertainty as to whether or not the small cell is a true value has been systematically created
- creating that uncertainty does not significantly damage the data

7.30 There are a variety of statistical disclosure control methods available that can be applied to census data before the statistics are released such as:

- restricting the number of output categories into which a variable may be classified, such as aggregated age groups
- amalgamating any small area in which the number of people or households falls below a minimum threshold, with a neighbouring area such that the threshold for the combined area is exceeded, and
- modifying some of the data through one or more of a variety of means such as record swapping, over-imputation and some form of cell perturbation

7.31 Some 13 different SDC methods were initially compared in order to discount those methods that would not be able to satisfy the strict disclosure control requirements for 2011 Census outputs. The short-listed SDC methods were assessed using a risk-utility framework. Record swapping was recommended as the primary disclosure control method for 2011 Census. This recommendation was endorsed by the UK Census Committee in 2009.

7.32 In the method adopted, every individual and household was assessed for uniqueness or rarity on the basis of a small number of characteristics, and every household given a risk score. A sample of households was selected for swapping. The chance of being selected in the sample was based largely on the household

risk score, so that households with unique or rare characteristics were much more likely to be sampled. However every household had a chance of being swapped. Once selected it was swapped with another 'similar' household from another area.

7.33 Households in the 2011 Census were usually swapped only within local authorities; households with very unusual characteristics were swapped with matches in nearby authorities. So, for example, a household in Shetland would not be swapped with one in Dumfries and Galloway. As every household had a chance of being selected for swapping, there is a level of doubt as to whether a count of one in any cell is real. It may be that a person has been imputed or swapped so as to appear in that cell; or there may have been another person or persons swapped out of that cell, thus creating a count of one. So no one can ever be absolutely sure that a value of one that they see in a table is really the true value.

7.34 Before publication, each census output table is assessed to ensure there are no disclosure issues. At this stage any necessary disclosure can be further managed by restricting the design and complexity of the tables, by collapsing variable categories, or by raising geographical thresholds.

7.35 Further information on statistical disclosure control for 2011 Census can be found on the Scotland's Census website.

Privacy Impact Assessment

7.36 A Privacy Impact Assessment (PIA) is an assessment process which details the personal information flows within a project (in this case, Scotland's Census 2011) and analyses the possible impacts those flows, and the project as a whole, may have on an individual's privacy.

7.37 A PIA can help to identify and assess the privacy impacts a project may have, for example, where too few controls are in place, where information is collected unnecessarily, where there is a lack of accountability. A PIA looks at the privacy impact throughout a project's information collection, retention and dissemination lifecycle.

7.38 There are two types of PIA. A full scale PIA assesses privacy issues across an entire project and a small scale PIA covers

privacy issues only for those areas of a project where a change has occurred since the project's inception.

7.39 PIAs were introduced in the UK long after the 2011 Census programme started up in late 2004. The ICO normally recommends that a PIA should be conducted before a project is up and running. Because of the importance of privacy for the census, however, NRS wished to carry out a PIA and discussed with the ICO how best to do so. In consultation with the ICO, NRS concluded in December 2008 that a small scale PIA would be appropriate, involving an assessment of the privacy risks to the project in relation to the changes since the last census was taken in April 2001.

7.40 The PIA for the census was published in January 2011.

Independent reviews of security and confidentiality

7.41 The Information Security Policy Statement by the three UK Census Offices outlines the policy and commitments that all of the Offices made on Information Assurance (IA) for the 2011 Census.

7.42 An Independent Review Team scrutinised the census arrangements to protect the information provided by the public on behalf of all three UK Census Offices for more than two years and their findings were published in two reports. In their first report they reviewed the arrangements up to February 2011 and concluded that:

"the public can be reassured that the information that they provide to the 2011 Census will be well protected and securely managed"

7.43 The second report covered the period from March 2011 to the end of May 2012 and concluded that:

"the public can be assured that the information that they have provided to the 20911 Census has been well protected"

7.44 NRS also commissioned security experts Logica to carry out an Independent Security Review of the security arrangements in place for Scotland's Census 2011.

Chapter 8

Output production, dissemination and supporting uses

8 Output production, dissemination and supporting uses

8.1 The Census provides a once in a decade opportunity to obtain an accurate, comprehensive and consistent picture about the population of Scotland in terms of its size and characteristics. However, the value of the data produced from the census can only be realised if the results are easy to access and if the outputs meet users' needs.

8.2 The key aims for the dissemination of Scotland's Census 2011 outputs were:

- to provide users with easy access to all census information (subject to disclosure control restrictions) for small geographies and subgroups of the population
- to enable users to exploit the latest advances in technology to access and analyse the data

8.3 NRS built on its positive experience of the system for disseminating 2001 Scottish Census results, and feedback from formal and informal consultations, to deliver the Scotland's Census website which provided:

- A core set of standard census tables delivered via the Scotland's Census Data Explorer
- Area profiles
- Maps, tables and graphics
- Utility to download bulk census data
- Comprehensive metadata alongside the data
- 2001 data alongside 2011 with a population comparison tool
- Analytical reports
- Wide range of supporting information

8.4 In addition to the wide range of products and services available via the Scotland's Census website, NRS has also produced:

- data for the provision of UK and international products
- data for inclusion in the Scottish Longitudinal Study
- microdata products
- origin destination products

8.5 All NRS census data published is made available under open government licence and is available via the Scotland's Census website: www.scotlandscensus.gov.uk

Consultation

8.6 Prior to the release of the outputs from the 2011 Census, NRS conducted extensive consultation to define the range of products and services that would meet the needs of users. Throughout the consultations, NRS were aware of the very broad range of census users who use the outputs (either regularly or occasionally). A range of products and services were developed to meet the needs of all users.

8.7 As far as possible, a UK wide approach was taken and NRS worked in collaboration with the Office for National Statistics (ONS) and Northern Ireland Statistics and Research Agency (NISRA). In 2008 a 12 week UK census outputs consultation was carried out by the three UK Census Offices via an online survey. The aim was to find out what potential users of the 2011 Census wanted from the data collected, and to help prioritise output needs, with a focus on high level output issues. Topics covered included products, access, dissemination and metadata.

8.8 The survey was supplemented by a 2011 UK Census Outputs website, run in conjunction with the Hansard Society. This provided users with the opportunity to elaborate on issues raised in the survey through participation in a blog. Topics for discussion were raised regularly on the blog by the three UK Census Offices to provide opportunities for users to exchange and discuss ideas and views on Census output issues.

8.9 As part of its on-going consultation, NRS carried out an extensive consultation in Spring 2010 which included four events held across the country. A further formal consultation was held in Spring 2011. In addition to these formal activities, NRS engaged on an on-going basis with census users around outputs, including through:

- the Population and Migration Statistics (Scotland) Committee which acted, amongst other things, as the main Census Advisory group
- the Census Outputs Geography Working Group
- the 2011 Census Outputs working group

- meetings with analysts from Scottish Government (SG)
- the Outputs Prospectus, whenever updated, sought feedback and comment
- identification of and feedback from users of bulk data outputs

8.10 The relationship between NRS and users has been key to ensuring that outputs were shaped and refined, even at the last minute, to provide them in a way more suited to meet needs.

8.11 As evidence of NRS' responsiveness to user need and feedback, changes made to output plans as a result of this approach included:

- Reordering of the release schedule to prioritise high need topics
- Opting not to follow other the other UK Census Offices in reordering Release 3 and Release 4 following feedback from Scotland's Census users
- Opting to publish Local Characteristics and Detailed Characteristics tables simultaneously
- Rewriting/ coding of the bulk version of our outputs in response to feedback
- Production and publication of additional and unplanned tables to meet new demands
- Taking user views into account when having to amend tables for Statistical Disclosure Control (SDC) purposes, sometimes only days prior to publication
- Producing material and products to support discussion (e.g. UK Parliamentary Profiles)
- Publishing a wider range of material as part of the metadata in response to discussions with users e.g. comparison of data zone estimates based on different building blocks, impact of adjustments made to boundaries as part of disclosure control.

Output geography

Geography is a key element of census outputs.

8.12 A full list of all geographies for which 2011 Census outputs have been produced is shown in Table 8.1 together with the exact/best fit basis and the numbers of each.

Table 8.1 – Census geographies and basis of fit

Geographical area	Currency	exact-fit/ best-fit	Number
Output Area	2011	exact-fit	46,351
Data Zone	2011	exact-fit	6,976
Local Characteristic Postcode Sector	2011	exact-fit	1,012
Detailed Characteristic Postcode Sector	2011	exact-fit	866
Council Area	2011	exact-fit	32
Health Board Area	2014	exact-fit	14
Data Zone	2001	best-fit	6,500
Civil Parish	1930	best-fit	861
Locality	2010	best-fit	629
Settlement	2010	best-fit	502
Electoral Ward	2007	best-fit	353
Scottish Parliamentary Constituency	2011	best-fit	73
UK Parliamentary Constituency	2005	best-fit	59
Island Group	2011	best-fit	56
Community Health Partnership	2012	best-fit	34
Health Board Area	2006	best-fit	14
Scottish Parliamentary Region	2011	best-fit	8
National Park	2010	best-fit	2

Output areas

8.13 NRS has aimed to meet users' needs for statistical results at different levels of geography and at a variety of levels of detail subject to ensuring that confidentiality is protected. As in 2001, statistics for all of the census output has been produced using Output Areas as the basic building block.

8.14 Output Areas (OA) are designed as the smallest possible area for which census outputs (other than basic headcounts) can be produced without being disclosive. There are at least 50 persons and 20 households in each OA in Scotland in 2011

Output Areas

8.15 Any area for which census outputs are produced is the aggregation of Output Areas that approximate best to the area. OAs aggregate exactly to 2011 Council/ Local Authority Areas, 2014 Health Boards, 2011 Intermediate Zones and 2011 Data Zones. Other higher geography aggregations are best-fit. Using Output Areas as building blocks for best fitting to any higher geography reduces the risk of disclosure.

8.16 The main aim for 2011 was to give continuity with 2001 but there was a need to reflect the up to date population distribution which required to be balanced against the strong demand for a stable set of OAs to enable time series analysis. The majority of 2011 OAs are of similar size to those used in 2001; however, where a 2001 OA dropped below the 2011 minimum threshold, e.g. because of housing demolitions, it was merged with a neighbouring OA. In addition, 2001 OAs which increased in size, particularly ones which exceed the 2011 maximum threshold (approximately 78 households) were split into two or more OAs, where possible.

8.17 The postcode boundaries used to create the 2011 OAs have been maintained over time to take into account the relatively small number of Council/ Local Authority area boundary changes there have been since 2001. The 2011 OAs align with the council area boundaries which have been in force since 1st April 2011.

8.18 The changes in OAs between 2001 and 2011 can be summarised as follows:

- 39,606 (93 per cent) of 2001 OAs are directly comparable with 2011 OAs
- Of these 33,923 OAs are unchanged from 2001
- 2,362 OAs have been split since 2001 but are an exact fit to an 2011 OA
- 3,321 OAs from 2001 have been merged to form an 2011 OA

Best Fit and Exact Fit Geographies

8.19 There are two key building block geographies: postcodes and census Output Areas (which are built up from postcodes). The NRS Postcode Index assigns postcodes to higher geographies via the grid reference of the postcode whereas census outputs assigns statistics to higher geographies via the grid reference of the master postcode of the census Output Area. In each case the higher area assignment is carried out using 'Point in Polygon' method, the only difference is the building brick geography being used.

8.20 This means that higher areas created from the allocation of Output Areas may differ from the equivalent higher areas created from the allocation of postcodes from the NRS Postcode Index. This is because the whole Output Area including all its constituent

postcodes is assigned to a higher area based on the master postcode.

Digital geography products

8.21 As well as supporting all of the statistical outputs from the 2011 Census, NRS also made the following products available to enhance the use of the census and other statistical products:

- Digital spatial files were produced for users to carry out spatial analysis in a geographical information system. Data provided in Esri shapefile formats are:
    - Output Areas
    - Frozen Postcodes
    - Population Weighted Centroids for Output Areas
    - Local Characteristic Sectors
    - Detailed Characteristic Sectors
    - Island Groups
- Indexes and lookup files have been produced which provide a link between the Output Area and the 'higher' geography that the Output Area belongs to. Enabling users to aggregate some output on an Output Areas base to a 'higher' area. There are also lookups for statistical geographies that have come into existence since the 2011 Census. These products are available in Microsoft Access and Excel formats.

8.22 NRS have also produced documentation to support all of these products which is available on the 2011 Supporting Information section of the NRS website.

UK Harmonisation - outputs

8.23 As noted in chapter 2, there was an agreement between all three UK Census Offices in relation to how they would work together. Of particular concern was the production of harmonised outputs.

8.24 The National Statistician has the responsibility to fulfil the UK's obligations to provide results of the UK Censuses to the European Union and the United Nations Statistical Commission. There was, therefore, a vital need for co-ordination and consistency in the presentation of outputs from the Censuses in Scotland, England and Wales and Northern Ireland.

8.25 While there is no statutory requirement to present such reports for the UK, the National Statistician and the Registrars General for Scotland and Northern Ireland planned that results for the UK as a whole would be available, where the data collected permit, once the processing of the data had been completed.

8.26 As a result of this, an increased volume of UK harmonised tables are available for 2011 Census outputs. The UK Census Offices (NRS, ONS and NISRA) agreed a single point of access for UK harmonised outputs. In its capacity as the National Statistics office for the UK, ONS compiles and releases Census tables for the UK when the data from England and Wales, Scotland and Northern Ireland are complete.

Charging Policy

8.27 NRS does not charge users for any standard/ pre-planned tables. In addition to those pre-planned tables, NRS provide a commissioned table service for customer requirements that are not met by the data provided.

8.28 Commissioned tables will be issued to the requesting customer under Open Government Licence, and then made available free to all other users. The cost of commissioned tables in Scotland reflects the costs for the amount of time taken to develop the tables and to apply statistical disclosure checking and associated processes.

Scotland's Census 2011 – Outputs Prospectus

8.29 Information regarding the plans for the content and timing of standard output products was described in the Scotland's Census 2011 Outputs Prospectus.

8.30 The prospectus outlined plans for the release of Scotland's Census 2011 data. It described what data was available at any time and what was due within the remaining releases, setting out indicative timings for each.

8.31 The prospectus was divided into three main sections:

1) Release plans for Scotland's Census results
2) About Scotland's Census – methods and reference material
3) Censuses across the UK

8.32 It was updated regularly, with changes flagged to users in newsletters, to ensure users had as much notice as possible about the release schedule and changes to plans.

8.33 All dates for the release of census data were announced at least four weeks in advance, in compliance with the UK Statistics Authority Code of Practice for Official Statistics.

Statistical releases

8.34 Given the breadth and depth of census results, the data from Scotland's Census 2011 was released in stages and the main release phases are noted below. A full list of these standard releases is available as **Annex B**.

Release phase 1 – December 2012 to August 2013

8.35 The first estimates were published on 17 December 2012 and provided usually resident population estimates for Scotland and Council areas.

8.36 The figures published in December 2012 were rounded to the nearest 1,000, because they were extracted from an output database that had not yet had all stages of processing applied to it. This rounding was removed as the phase of releases continued into 2013.

8.37 Subsequent releases also provided estimates of number of households at various geographies, population estimates for council areas by five year age bands and sex and a range of geography products. In addition, supplementary quality assurance and methods material was published to support users.

8.38 A Statistical Bulletin was prepared for each release and laid before the Scottish Parliament.

8.39 The time taken to publish census outputs reflects the time to carry out the Census Coverage Survey (CCS), to process the large volumes of census questionnaires, to carry out complex statistical processes to produce population estimates adjusted for under and over-coverage, and to fully quality assure the estimates (The CCS is covered in Chapter 5 and the other processes are covered in Chapter 6.)

Release phase 2 – September 2013 to April 2014

8.40 This phase of release provided summary data relating to all questions on the census form, giving a comprehensive picture of the population of Scotland.

8.41 This covered each of the following census topics:

- ethnicity, identity, language and religion
- population and households
- health
- labour market
- education
- housing and accommodation
- transport

8.42 There were two main sets of tables published in this phase:

- Key Statistics – which were largely numbers/ percentages of selected key variables, designed to enable easy comparison across the geographies for which they were produced (for example council areas)
- Quick Statistics – which provided more detail on the breakdowns, or classifications, within a single census topic or variable, for all geographic areas down to OA (for example, a full breakdown of the ethnic group categories)

8.43 These are broadly comparable to the Key Statistics and Univariate Statistics released from the 2001 Census.

8.44 Each release was supplemented with a Statistical Bulletin and a Statistical News Release, whilst supporting information (e.g. metadata) and quality assurance material was also published throughout the phase.

Release phase 3 – February 2014 to January 2015

8.45 Between February 2014 and January 2015 a series of releases provided more detailed tables, mostly at very small geographies, in tables combining more than one variable and/ or topic e.g. Religion by Sex by Age, Country of Birth by National Identity etc. These were called DC and LC tables.

8.46 DC tables tend to provide the most complex and detailed cross-tabulations and are therefore not available at the smaller geographic areas to prevent disclosure of personal information. They are generally available down to the geography 'DC Postcode Sector'.

8.47 LC tables include less complex cross-tabulations and are therefore generally available down to Output Areas, the smallest geographies.

8.48 These are broadly comparable to the Standard and Census Area Statistics released from the 2001 Census.

8.49 These tables were published on a topic by topic basis and, given the number of tables involved, most topics were split into multiple releases. They were published throughout 2014 and early 2015, broadly in the following order:

- ethnicity, identity, language and religion
- population and households
- health
- labour market & education
- housing and accommodation
- transport

8.50 Each of these releases was supplemented with a Statistical News Release providing a list of key points.

Additional releases and products

8.51 To supplement the main set of outputs, a number of specialist products have been produced or are scheduled for release

Microdata

8.52 The census is a rich source of information on a range of aspects of life in Scotland. It provides a unique opportunity to learn about the people of Scotland. In order for census data to be used as fully and as widely as possible NRS also committed to producing a series of anonymised individual level microdata products, with various levels of detail and accessibility, for education and research purposes.

8.53 These microdata files (often referred to as Samples of Anonymised Records (SARs)) have been produced from each census across the UK since 1991. These datasets comprise files containing a sample of individual person and household records drawn from the census database that have been anonymised.

SARs Teaching File

8.54 The Teaching File is a 1 per cent sample of usual residents, at Scotland level, with output categories collapsed to high levels. It was published on the Scotland's Census website in June 2014 and is available to everyone.

8.55 This file is primarily intended for teaching purposes, aimed at:

- encouraging wider use of census data
- assisting with the teaching of statistics and geography in schools and education establishments
- providing an introduction to the kind of information that is available from the census.

8.56 A user guide has been published outlining what the product is, what information it contains and how it should be referenced.

8.57 Equivalent Teaching Files for England and Wales and Northern Ireland have been published by ONS and NISRA respectively.

Safeguarded and Secure microdata products

8.58 In addition, two other types of microdata products are due to be published in October 2015.

Safeguarded files

8.59 This will provide a 5 per cent sample of individuals and is only available via the UK Data Service to approved researchers via specific end user license arrangements.

8.60 The sample will be drawn from the 10 per cent secure individual sample (see below). However, there will be a reduced level of detail available in the safeguarded product, reflecting the associated access arrangements and the legal requirement to preserve the confidentiality of personal census information on individuals.

8.61 The files will contain a similar level of detail to the 2001 small area microdata and individual small area record files. They will be available to users who register with the UK Data Service.

Secure /Virtual Microdata Laboratory files

8.62 This will provide a 10 per cent sample of individuals and a 10 per cent sample of households. These samples will not overlap and will provide the most detail for the characteristics included. They will only be available in a secure setting equivalent to the Virtual Microdata Laboratory managed by ONS and only under Approved Researcher Licence. These files will be generally similar to the 2001 Controlled Access Microdata Sample (CAMS).

8.63 In order to gain access to the data an application would need to be submitted and approved by the data providers and signed contracts and licence agreements are required.

Origin destination statistics

8.64 Origin destination statistics are census data which deal with movement/ flow of people; either as migration (from their address one year prior to the census) or travel to work or study (from their usual address to their workplace or place of study).

8.65 These flows can be cross-tabulated by other variables of interest (for example, occupation or method of travel). Much of the origin destination data from the 2011 Census is published at the UK level by ONS, providing flows for usual residents of Scotland, England, Wales and Northern Ireland.

8.66 To supplement the ONS releases, NRS has produced a variety of additional tables looking only at Scotland's usually resident population alongside supporting key points.

8.67 For 2011, the SDC policy required that the disclosure protection of the most detailed origin destination tables should be controlled, in the main, through access only via an ONS secure environment.

8.68 This is a change from the 2001 Census, where the protection for similar outputs came from the post-tabular small cell adjustment that still allowed wide and easy access, but which also adversely affected the utility of the outputs.

Alternative population bases

8.69 The main output base for the 2011 Census data is usual residents. However, to meet other user demands, some basic demographic outputs using population bases other than usual residents are due to be published using Scotland's Census data.

8.70 This is possible using information from a combination of different census questions (such as workplace address) to focus on alternative population bases.

8.71 There are two main alternative population bases:

- **Workplace population**: estimates of people working in a given geography, taking account of the number of people who, for example, travel into a city to work (effectively a geographical redistribution of the usually resident population who are in work, allocated to their place of work).
- **Daytime population**: estimates of people working or studying in the area plus all people who are not working or studying but are usually resident in the area.

Supporting use of the data

8.72 NRS' key aims for the outputs were to provide users with easy access to all census information and enable them to exploit the latest advances in technology to access and analyse the data, NRS has taken a number of other steps throughout the life of the programme to ensure the data can be fully used by users. Some of this activity is detailed in the following sections.

Collaborative work

8.73 To best exploit the value of the data, NRS has taken steps to work more closely with a selection of users.

Scottish Government

8.74 NRS have worked with colleagues in Scottish Government. This has resulted in resource being provided to work alongside our Quality Assurance and Outputs teams to explore the data in more detail and has led to the production of a variety of additional tables. These have then used to prepare various Analytical Reports.

8.75 In the words of one colleague this approach gave him "a better understanding of the data" and delivered a "higher quality end product" than had he just requested data as commissioned outputs.

Convention of Scotland's Local Authorities – 'Migration Matters'

8.76 Working alongside the Convention of Scotland's Local Authorities (COSLA) and their Strategic Migration Partnership, NRS recently published an analytical report using census data to provide a better understanding of the characteristics of migrants to Scotland. This activity was commissioned as part of the Migration Matters project which was led by COSLA's Migration, Population and Diversity Team with funding from the European Integration Fund.

8.77 The Migration Matters project sought to develop various resources in order to assist councils and their community planning partners with respect to the integration of migrants in their communities. The project has now been completed and the resources that were developed are all now available on the team's website at www.migrationscotland.org.uk.

Gaelic research

8.78 In work that was partly funded by the Gaelic research network, Soillse, National Records of Scotland worked closely with Dr Fiona O'Hanlon and Professor Lindsay Paterson, University of Edinburgh. A report detailing the first part of this work was

published on 30 September 2015 presenting detail on the Gaelic language, at national, council area and civil parish level.

8.79 Further information and links to the report can be found on the Scotland's Census website.

Supporting specialist interest groups

Teachers & schools

8.80 As part of the Curriculum for Excellence in Scotland, all teachers have a responsibility for developing numeracy, both within the early stages of a broad general education and within the senior phase of school education. In addition, the Curriculum for Excellence emphasis on developing learners' capacities as 'responsible citizens' and 'effective contributors' lends itself well to accessing and interpreting statistics about society. Studying Scotland's people is already a feature of Education Scotland's support materials but there was a clear opportunity for NRS to more widely publicise the use of the census outputs in schools and communities.

8.81 NRS have supported a number of training programmes for prospective and practicing school teachers and helped them develop practical skills in accessing and interpreting the statistics. The training has been delivered to trainee teachers in mathematics and social subjects, through Continuous Professional Development, and at a range of conferences including the Scottish Mathematical Council, the Scottish Association of Geography Teachers, and the Royal Statistical Society.

8.82 There has been interest and demand from teachers for training in the use of Census 2011 and further steps are being token to publicise materials already used as well as looking for ways to further support practitioners' confidence in using census data to support curricular activity in schools.

8.83 The National Statistician has highlighted the work as an example of best practice, and NRS plan to develop the resources further to make them widely accessible through collaboration with NRS Education Service.

Transport users & flow data

8.84 NRS have also worked closely with a group of users who had an interest in 'flow data' products to provide bespoke additional products to supplement planned outputs.

8.85 As part of this, the changing needs of local authority and regional planning authorities were identified and processes were established to allow the range of users to access the data. This was necessary as security considerations had changed since 2001, when the detailed data was available publicly, and expectations had been that similar data would be freely available.

8.86 Following discussions with commercial users, NRS also published some additional flow data tables and encouraged the inclusion of some of this data onto DataShine (see below). Interested users have been kept up to date with these additional tables and progress in this area.

Making data more visual

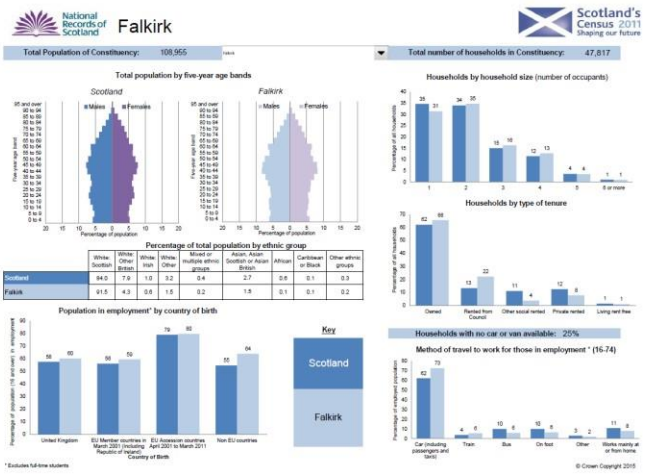
UK Parliamentary Profiles

8.87 In advance of the 2015 UK Parliamentary Elections, census profiles were prepared allowing the public and others in Scotland to learn more about their local UK Parliamentary Constituency using Scotland's Census data.

8.88 These were made available on the Scotland's Census website.

8.89 Each of the 59 census profiles contained a set of visualisations of the data and included a comparison with Scotland as a whole. Figure 8.1 shows an example for Falkirk Parliamentary Constituency.

Figure 8.1 – Census profile for Falkirk Parliamentary Constituency.



8.90 These quickly became one of the most downloaded products available via the Scotland's Census website, and NRS are now producing similar profiles for Scottish Parliament Constituencies in advance of next year's Scottish Parliament elections. These are available on the Scotland's Census website.

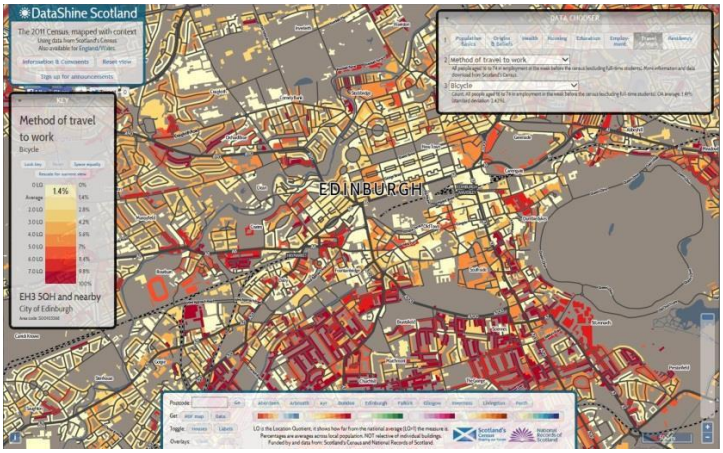
DataShine Scotland

8.91 Following positive feedback from users, NRS secured funding to support the inclusion of Scotland's Census data on 'DataShine', the highly regarded visualisation tool from University College London.

8.92 'DataShine Scotland' uses the DataShine framework to map the various Key and Quick Statistics from Scotland's Census 2011.

8.93 Figure 8.2 shows an example screenshot:

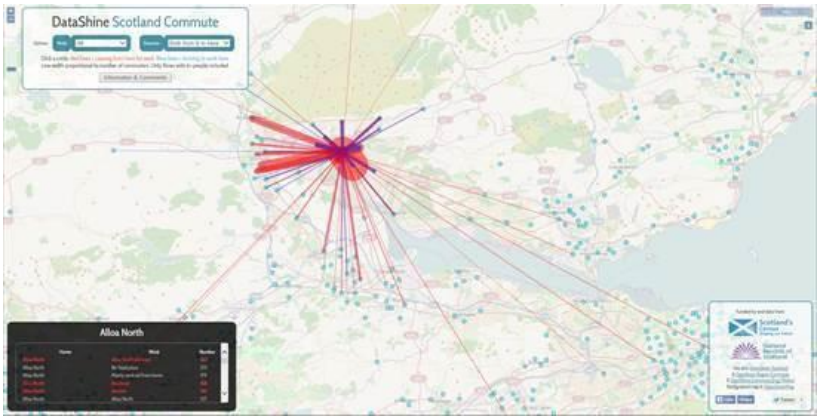
Figure 8.2 – Screenshot of DataShine Scotland



8.94 In addition, with 'DataShine Scotland Commute' users can also now access visuals showing travel-to-work-flows between each Council Area, split out by direction and mode of transport.

8.95 Figure 8.3 below shows and example screenshot

Figure 8.3 – Screenshot of DataShine Scotland Commute



Promoting third party use of the data

8.96 In seeking to learn about and promote uses, NRS has been keen to identify and share uses. To encourage this, a bespoke section was created on the Scotland's Census website ("Using Census Data"). Two examples currently included on the Scotland's Census website are covered below.

City of Edinburgh Council – 'surface mapping'

8.97 City of Edinburgh Council have used data from Scotland's Census 2011 to analyse population distribution and local variations in population density across Edinburgh. Their work looks at changes in population distribution since previous censuses, as far back as 1971.

8.98 Their approach is based on continuous geographical 'surface mapping' employs the most detailed population data from the census but is independent of defined boundaries for census output areas. The resulting maps show the number of people who live within an 800 metre radius of each and every point in the city.

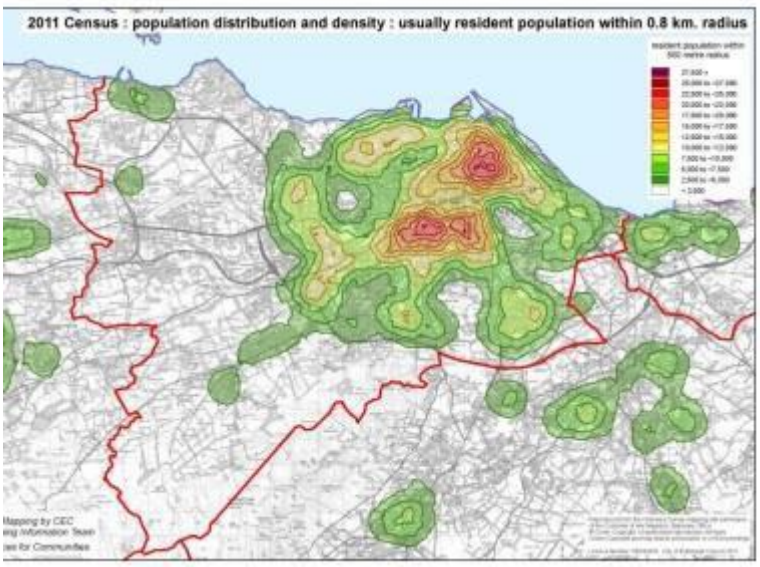
8.99 This approach effectively irons out differences in the shapes and sizes of census output areas, which in some cases may include large areas of open space or non-residential uses. It produces a picture of population density which whilst still generalised, helps show important local variations. It also makes it possible to identify changes over time even when boundaries have changed between censuses.

8.100 Investigation as a result of this work reveals that Edinburgh contains some of the highest population densities in the UK outside London, exceeded only by Brighton and Portsmouth, and slightly ahead of Leicester.

8.101 Local changes in the concentration of population have important implications for service planning in the public, private and voluntary sectors.

8.102 Figure 8.4 shows an example map from this activity.

Figure 8.4 - Resident population within 0.8km radius (approx ½ mile), Edinburgh, 2011



Church of Scotland

8.103 The Church of Scotland has congregations serving their communities the length and breadth of Scotland, and beyond. To help as many people as possible better understand their local communities, and with input from NRS, the Church of Scotland's 'Statistics for Mission' group produced profiles using Scotland's Census data. These are available as PDF downloads from the Church of Scotland website (add address).

8.104 The profiles present data from Scotland's Census 2011 in a way that is designed to make it accessible to all. They include maps of parish and presbytery areas before describing what Scotland's Census 2011 illustrates about the people living in the area.

8.105 They also produced companion material for groups using the profiles, "Who is my neighbour?" and made this available to download from their website.

8.106 Congregations have used the profiles to understand the whole of their area, rather than only the bits they are most aware of. They are used to consider whether the ways in which they serve the community are best suited.

8.107 The Church of Scotland commented:

"Parishes can cover small numbers of people, from a few tens to hundreds to a few thousand, and only Scotland's Census gives the resolution needed to best understand them."

"an aging population may point to a parish nurse rather than a youth worker; an area where many homes do not use English may indicate a need for classes in English. Grant applications can be evidence-based and lead to successful, sustainable projects that meet the real needs of people in the parish."

Uses and benefits of Scotland's Census data

8.108 As detailed in this chapter, there are an enormous number of uses and related benefits of Scotland's Census contributing to the following two broad areas:

- To help inform policy and funding decisions
- To target resources effectively

8.109 In addition, it was also recognised that NRS would gain some internal benefits. For example, questionnaire images would be captured for archive and will, after 100 years, be made available for genealogical research.

8.110 Throughout the programme, and particularly following publication of the data, NRS has undertaken a range of activity with users to identify uses and benefits and it is evident there are many.

8.111 The activity undertaken by NRS includes:

- Proactive engagement to elicit information and evidence from known census data users
- Reactive engagement with users such as following up on data requests and enquiries
- A Scotland's Census Conference in 2014 and stakeholder workshop
- Attending and contributing to national and regional events and workshops to develop new contacts, explore emerging data uses, and promote the availability of census data
- Monitoring of publications, media sources, and communications networks to gauge and capture broader uses
- Monitoring of metrics of the traffic flow and downloads
- Supporting Community Planning Partnerships uses of Census data (events and online presence)
- Awareness raising sessions (e.g. with Scottish Parliament staff, Scottish Government staff, Royal Statistical Society - Scotland, NHS, BBC Board of Governors, Scottish Association of Geography Teachers, Aberdeen University May Festival.)

8.112 The uses presented below are a subset and the evidence from stakeholders shows that use of Scotland's Census 2011 data has already contributed to various policies and decisions across Scotland and realising benefits across many different areas.

Scottish Government and NRS

8.113 The government needs data that is authoritative, accurate and comparable for all parts of Scotland; the type of data available from Scotland's Census. It is used to form policy, to plan services for specific groups of people and to distribute resources effectively to local authorities and NHS Boards, in a way which as closely as possible reflects need.

8.114 Basic information on the population size, age, sex and location is fundamental to the work of government, especially concerning:

- ageing and impact on pensions
- migration, both into and out of the country, and internally
- economic growth
- labour supply

8.115 Information on housing, household size and family make-up is fundamental to government policies on:

- local housing demand and planning
- inadequate accommodation and overcrowding

8.116 Other information collected by the census enables government to:

- understand pressures on transport systems and the planning of roads and public transport, using information collected on travel to and from work or study and on car ownership. (Census data underpins the business cases for many transport investment cases including schemes such as the Forth Replacement Crossing, Edinburgh Glasgow Improvement Programme and the Dualling of the A9.)
- improve identification of areas of deprivation so that effort can be targeted on improving their circumstances
- collate information on ethnicity, qualifications and labour market status, and help identify the causal links with deprivation and consider ways of tackling it
- show how many people work in different occupations and industries throughout the country, helping government and businesses to plan jobs and training policies and to make informed investment decisions

8.117 Data from Scotland's Census is also a fundamental building block for other statistics across Scotland (and beyond). A key example of this is the role census data plays in the production of accurate mid-year population estimates by NRS at various geographies.

8.118 In turn, NRS mid-year population estimates are used for a variety of activities, including: funding allocations, calculating rates and performance measures, informing local and national policy, research, tracking trends, modelling the Scottish economy, and health care planning.

8.119 Scotland's Census data are also used by NRS in the production of household estimates and projections whilst it also supports many other social and economic indicators such as:

- employment and unemployment rates;
- birth, death, mortality and fertility rates;
- equalities monitoring in particular, by providing information on age, sex, ethnicity, religion and disability in order to identify the

extent and nature of disadvantage and to measure the success of equal opportunities policies; and,

- grossing-up sample survey data (including socio-economic surveys carried out by government and the private sector), without which the surveys would be less reliable or would need to be larger and more costly.

Informing allocation of resources

8.120 Government needs an effective means of allocating funding. Provisional figures for 2014-15 show that net revenue expenditure on services by local authorities (LAs) in Scotland was £11.9 billion and similarly, £12 billion was allocated towards healthcare expenditure by Scottish Government (SG).

8.121 Between them, they account for more than two thirds of SG managed public expenditure. A reliable source of population data is essential if allocations of funds to LAs and NHS Boards are to reflect need.

8.122 Scotland's Census 2011 data was used to determine funding allocations to LAs through the Grant Aided Expenditure (GAE) calculations and as part of the National Resource Allocation Formula (NRAC) for Health Board funding allocations.

8.123 In looking at the NRAC, if no census had been carried out in 2011, and the population estimates used had been extrapolated only from the 2001 Census figures, it is estimated that there could have been misallocations between NHS Boards in 2014/15 of between £30 million and £40 million in that year alone, with some Boards receiving more, and others less, than their appropriate share. It is reasonable to assume that there would also be misallocations across LAs funding as well.

8.124 Census data are also used in indicators of need for specific funding allocations to local authorities through the GAE calculations. This includes:

- Census population data are the main component of primary indicators distributing around £3.2bn per year
- Census Output Area and settlement pattern data are used to produce population distribution indicators that are used as secondary indicators to re-allocate around £35.5m

8.125 In addition, average household size figures are calculated in part by use of census data and contribute to decisions made on recipients of the Vacant and Derelict Land Fund (£10m for 2011/12 and £8m for 2012/13).

Scotland's local authorities

8.126 Scotland's LAs are one of the most prolific users of data from the Census. Their uses are wide and varied including:

- Pupil roll projections for planning pre-primary and primary school provision and the planning of new schools
- Planning local transport infrastructure
- Housing need and demand assessments
- Strategic Development Planning Authority, plans and projections
- Workforce development planning
- Introduction of Parenting Strategies
- Community Planning Partnership Single Outcome Agreements
- Economic Development Action Plans
- community support services, including home help and home care
- Waste and refuse management
- Understanding service catchments and emerging growth areas
- Meeting future growth in health demands

Scotland's Health Boards and health services

8.127 There are a range of uses of Scotland's Census data within health services in Scotland:

- Scotland's Census 2011 data was used in an investigation of new indicators of 'need' for updating the Acute part of the Morbidity and Life Circumstances component of the Resource Allocation Formula
- Used to provide uptake rates of patients accessing various forms of treatment. This also provides information for responding to Alcohol Licence requests
- The Carstairs score uses census data and is used as a measure of deprivation across the sectors. Combined with referral and in-treatment information (and population) it gives a

measure for targeting inequality and whether a patient base is located more in areas of higher deprivation
- Scotland's Census data has been combined with Scottish Neighbourhood Statistics (SNS) data, Scottish Public Health Observatory (ScotPHO) information, and Information Services Division data to create community profiles as part of health needs assessments
- Scotland's Census is the only source of information on carers aged under 18 and important as the main source of information on informal caring, the census provides information on potential unmet needs
- Health services, for which census questions on life-limiting health conditions can contribute to predictions of demand.

Third Sector

8.128 The third sector in Scotland is made up of an estimated 45,000 organisations. With over 23,000 charities, Scotland has more charities per head of population than England and Wales.

8.129 They range from well-known national charities to very small local interest/support groups. Irrespective of their size many of these voluntary organisations are users (or potential users) of census data and can benefit from using the data.

8.130 Charities often use census data themselves and in collaboration with public services to ensure that appropriate support reaches the right people. They are also able to highlight inequalities or social problems in particular regions or communities that they feel government needs to address.

Media and Parliamentary use

8.131 Scotland's Census data is a crucial tool in providing evidence and information to support and provoke discussions in the public sphere, as well as providing measures for holding public bodies to account.

8.132 The media/ press have made various uses of the data at local and national level. These uses help inform debates and discussions with an engaged population about addressing the problems and challenges Scotland faces.

8.133 In addition, census data is used from time to time in a parliamentary context whether by Scottish Ministers in response to Parliamentary Questions or during debates. For example, when the Scottish Parliament last debated the 2011 Census (3 December 2013) the Cabinet Secretary for Culture and External Affairs concluded it by saying:

"Our Parliament can make informed decisions only if we properly understand who we are, how we work and how we live in Scotland today. The census results provide us with that understanding."

Commercial/ private sector

8.134 The uses and benefits of census data to the commercial/ private sector fall broadly into two categories:

- input to geo-demographic resellers and specialist consultants (such as specialists in LA housing/planning issues) who, in turn, generate added value from it
- informing the business decisions of a large and varied set of private sector users including market researchers, retailers, and financial service providers

8.135 Census data helps to inform decisions about the targeting of millions of pounds worth of investments and helps the shaping of products, services and location of new premises etc.

Research

8.136 Scotland's Census is an excellent source of data for research.

8.137 For example, the Scottish Longitudinal Study (SLS) is a large-scale linkage study created using data from administrative and statistical sources. It contains an anonymised representative 5 per cent sample of the Scottish population linking information from the 1991, 2001 and now 2011 censuses with vital events data (births, deaths, marriages); NHS Central Register data (gives information on migration into or out of Scotland); and education data (including Schools Census and Scottish Qualifications Authority data). The SLS can also be linked to NHS health data on a case by case basis.

8.138 The SLS provides an unrivalled source for the examination of how Scotland's population has changed over time. Research based on the SLS, and directly on the data from the census, increases our understanding of social conditions and can shed light on the impact of past policies.

Looking ahead

8.139 Measuring the benefits of a programme as wide, lengthy and long-standing as the census is complex. It is worth reflecting that many uses of the data require our stakeholders to combine the data with other evidence prior to making decisions or changing policies. Furthermore, many policy changes are unlikely to realise immediate returns and in a lot of cases, their real impact or outcome may only be realised many years down the line.

8.140 A range of National and Local Government uses of census data fall into this category. However, it may be that in time this evidence will be more readily available as policies and plans developed using 2011 data yield more measurable outcomes.

8.141 Activity will continue to capture and, as far as possible, measure the benefits that have been brought about by Scotland's Census, in order that a wide range of examples can feed into the planning for the next census in 2021 and its related business cases.

Scotland's Census - user satisfaction survey

8.142 NRS were keen to seek views from users about their use of Scotland's Census 2011 data and evaluate what went well and what could be improved upon. These views were needed to help NRS consider its activity both in relation to Scotland's Census 2011 and also inform planning for the next census in 2021.

8.143 Specifically, users were asked views on:

- use of census outputs and products
- how well they felt that the outputs were publicised
- the accessibility of the outputs and other information on Scotland's Census website
- overall satisfaction with the outputs
- suggestions users have for future outputs and their dissemination

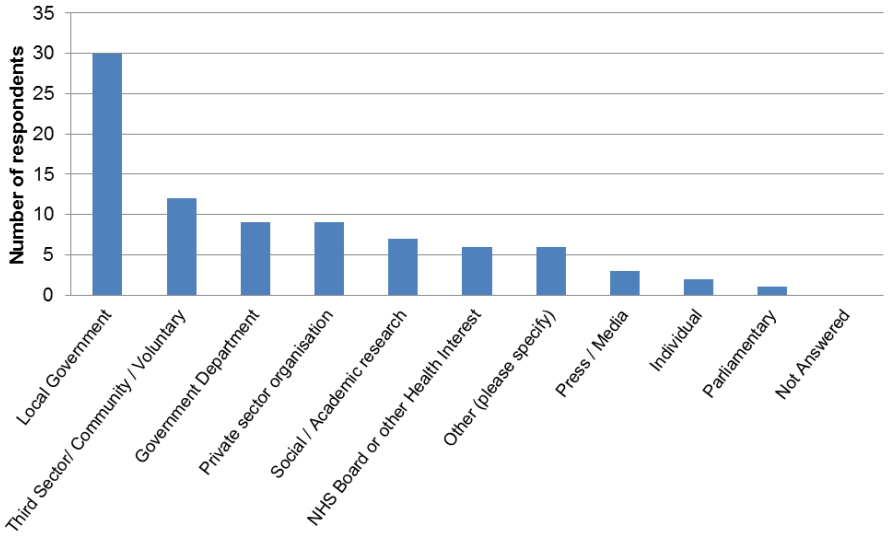
8.144 The survey was published on 'Citizen Space' from Tuesday 23 June 2015 and ran for 4 weeks until Tuesday 21 July 2015 and sought views on a range of areas from the ways in which NRS consulted in advance of the census to the structure and ease of use of the Scotland's Census website.

8.145 The survey was shared with known census data users including those on the Scotland's Census newsletter mailing list, people who have attended an event or workshop in the last 12 months or had previously contacted NRS with a Census enquiry or commissioned request.

8.146 A news item was placed on Scotland's Census website and the survey was also promoted within newsletters and featured in a ScotStat email. In addition, clear links to the survey were placed on the website homepage and Census Data Explorer whilst an alert was also placed on the Scotland's Census Knowledge Hub page.

8.147 In total, 85 responses were received, with representation from a range of user types. See Figure 8.5.

Figure 8.5 – Respondents by respondent type



8.148 Overall, responses to the survey were generally positive. Across all questions and responses, around two thirds (65 per cent) reflected satisfied or very satisfied markings and 21 per cent reflecting neither satisfied nor dissatisfied markings. The

remaining 14 per cent of responses reflected either dissatisfied or very dissatisfied markings. A full report on the survey will be published shortly.

8.149 In particular, nearly a quarter of all dissatisfied or very dissatisfied responses related to aspects of timing of the outputs. A further 10 per cent of all dissatisfied or very dissatisfied responses related to the range and quantity of outputs/ tables. The next most prevalent area of concern came from users who don't find it easy to locate the data they want.

8.150 NRS are exploring what can be done now to respond to concerns about current data. Other concerns, such as the timing of outputs, will be considered as part of the planning for Scotland's Census 2021.

8.151 As well as these challenges, there were many successes outlined in the responses provided. These included:

- 84 per cent of all respondents to the question on how NRS responded to census customer enquiries were either satisfied or very satisfied.
- Around three quarters of all respondents who offered views on Scotland's Census bulletins (78 per cent), the Scotland's Census newsletter (76 per cent) or NRS News Releases (75 per cent) were either satisfied or very satisfied.
- Similarly, 74 per cent of all respondents to the question on the range of data available were either satisfied or very satisfied.

8.152 A final question was asked on future outputs and planning for Scotland's Census 2021 and how NRS might improve delivery of census data. The responses to that question are already feeding into the early planning for the next census and they will continue to do so. For example, some respondees suggested that the next census should seek information on sexual orientation and household income. NRS are launching Scotland's Census 2021 Topic Consultation on 8 October 2015, seeking views and information about user needs.

Chapter 9

Data Quality

9 Data Quality

9.1 The quality of a census is about producing results that are fit for purpose and meet user requirements, ensuring that the results are produced to the required level of accuracy. However the quality of the data varies across the range of outputs for a number of reasons including overall sampling error as well as variations in response rates across the country and to individual questions. Information about the quality of the data is essential to users in order to aid their interpretation and understanding as well as ensuring that they understand any limitations of the data. This chapter summarises the main measures by which National Records of Scotland (NRS) have assessed the accuracy of the results.

9.2 The key measures of accuracy in a census are as follows:

Sampling error

- Where estimates of the population were based on a sample, they were subject to sampling error. NRS used confidence intervals to measure the sampling variability.

Non-sampling error

- Coverage error: is expressed as a response rate derived using information from the Census Coverage Survey (CCS) and the subsequent process of coverage assessment and adjustment to measure and adjust for under and over-count.
- Non-response error: occurred when respondents failed to answer all the questions or made errors in their responses, and is measured from the results of the edit and imputation process. NRS used item non-response and item-imputation rates for the main census questions to assess item non-response error.
- Measurement error: occurred when respondents failed to provide correct information. NRS used results from a census quality survey (CQS) to measure the accuracy of respondents' answers to the census questions.

9.3 This chapter details sampling errors and the main sources of non-sampling errors. Not all of the non-sampling errors relevant in a census are covered here. For example, non-sampling errors arising from error in online response and coding; frame errors

from the address register; and timing or recall errors (where not everyone is responding about the same day) are not detailed either because they are not major sources of error or because they cannot be measured.

Accuracy of the population estimates

Sampling error: confidence intervals around the census estimates

9.4 The 2011 Census built on the methods and processes used in 2001 to measure and adjust both for under-coverage (those people and households missed from the census count) and over-coverage (those people and households counted more than once). This measurement and adjustment process was called coverage assessment and adjustment.

9.5 The main success criteria for this process was centred on the degree of precision it could achieve in estimating the population from those who responded to the census when compared with a sample of respondents to the CCS – see chapter 5. Because the census estimates produced using the coverage assessment and adjustment process were based on the CCS sample, they were 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.

9.6 The spread of these estimates is known as the sampling variability, and 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. If an estimate has a large error level, the corresponding confidence interval will be very wide.

9.7 Table 9.1 shows the 95 per cent confidence interval achieved on the population estimate for Scotland was +/- 0.44 per cent (23,000 people). That is, the true population count is expected to be within 23,000 of the published population estimate.

Table 9. 1 Confidence intervals (95 per cent) for Scotland's Census 2011

Population	95 per cent	Lower	Upper

estimate	confidence interval (+/-)	confidence interval	confidence interval
5,295,000	0.44 per cent	5,272,000	5,318,000

Note: Rounded to nearest thousand

Confidence Intervals around Local Authority Estimates

9.8 A key output form the census was robust, fit for purpose estimates at the local authority (LA) level, and this drove the design of the census. Robust estimates for LAs are important because this geography has the greatest use in policy planning and delivery of services, for example the allocation of resources from central to local government. This was interpreted to mean that the quality of the LA level estimates should be high.

9.9 The sampling error associated with the 2011 Census estimates at the LA level depended on: the CCS sample size; the size of the population; the census response rate; the variability of the response rate within the LA; the CCS response rate; and the degree of similarity of the population that the error level related to.

9.10 Table 9.2 shows the relative confidence intervals for the 2011 Census by LA. Every LA in Scotland had a 95 per cent confidence interval of better than +/- 3 per cent. Further reporting on confidence intervals broken down by age and gender are available on the Scotland's Census website.

Table 9.2: Relative confidence intervals by Local Authority

Council area	Relative confidence interval width [1] (per cent)
Aberdeen City	2.61
Aberdeenshire	1.19
Angus	1.31
Argyll and Bute	1.36
Clackmannanshire	0.99
Dumfries and Galloway	0.79
Dundee City	2.15
East Ayrshire	0.93
East Dunbartonshire	1.44
East Lothian	1.09
East Renfrewshire	1.58

Edinburgh, City of	1.76
Eilean Siar	1.45
Falkirk	1.03
Fife	1.06
Glasgow City	1.83
Highland	1.49
Inverclyde	1.73
Midlothian	1.56
Moray	1.51
North Ayrshire	0.97
North Lanarkshire	1.36
Orkney Islands	2.34
Perth and Kinross	1.22
Renfrewshire	1.53
Scottish Borders	1.01
Shetland Islands	1.26
South Ayrshire	0.80
South Lanarkshire	1.16
Stirling	1.26
West Dunbartonshire	1.60
West Lothian	1.35
Scotland	**0.44**

Response rates

9.11 The overall response rate to the 2011 Census was 93.76 per cent. The 2011 CAA methodology was able to derive census population estimates that represented 100 per cent of the population, by using the CCS and other statistical techniques to estimate the numbers and characteristics of the people who were missed.

9.12 A response rate of 93.7 per cent indicates that an estimated 6 per cent of the total population of Scotland did not respond to the census. In all, of the 5.3 million estimated people, about 340,000 were thought to have been missed and subsequently adjusted for during data processing.

9.13 Table 9.3 shows the person response rates for each LA in 2011. For every LA in Scotland, except for Glasgow, the person response rate was over 90 per cent with the highest rate in the Scottish Borders at 96.4 per cent.

Table 9.3 - Person response rates by Local Authority, 2011

Council area	Percentage person response rate [1]
Aberdeen City	93.7
Aberdeenshire	95.5
Angus	94.7
Argyll & Bute	94.4
Clackmannanshire	95.5
Dumfries & Galloway	95.5
Dundee City	91.7
East Ayrshire	95.0
East Dunbartonshire	94.9
East Lothian	96.2
East Renfrewshire	94.3
Edinburgh, City of	91.1
Eilean Siar	94.2
Falkirk	95.1
Fife	95.2
Glasgow City	89.0
Highland	94.0
Inverclyde	93.0
Midlothian	96.1
Moray	94.1
North Ayrshire	94.5
North Lanarkshire	93.7
Orkney Islands	93.7
Perth & Kinross	94.4
Renfrewshire	93.6
Scottish Borders	96.4
Shetland Islands	95.5
South Ayrshire	95.4
South Lanarkshire	95.8
Stirling	94.1
West Dunbartonshire	93.8
West Lothian	94.1
Scotland	**93.7**

Note - Percentage of estimated population for whom individual details were provided on a returned and processed questionnaire.

Non sampling error

9.14 In addition to providing complete and accurate information on the size and of the population in Scotland, one of the primary functions of the census is to provide details of its structure and characteristics. Meeting this objective mainly depended on a combination of high levels of completeness of the census questionnaires, and accurate responses to the individual questions on which information was collected. These two aims were assessed as follows:

- levels of completeness measured through item non-response rates (for example the rate of non-completion for a particular question, such as sex, on a returned questionnaire) as derived from the start of the edit and imputation process
- measurement error as measured through the CQS, in which a sample of respondents to the census were re-asked the census questions in a face- to-face interview, and their answers compared with their responses in the census to derive measures of agreement

Assessing the completeness of census responses: item non-response rates

9.15 A key user requirement for the 2011 Census was that the census database should be as complete and consistent as possible. To meet this need, as in 2001, an edit and imputation system was developed to estimate missing or invalid responses and correct inconsistencies in the data, while at the same time preserving the relationships between variables.

9.16 Completeness is an indirect assessment of how well the self-completion census questionnaire was designed. High levels of completeness indicate that the methods and effort put into qualitative and quantitative testing of individual groups of questions and then the whole questionnaire were successful and had a positive impact on maximising completeness and the accuracy of responses.

9.17 Other key factors which contributed to completeness were: the online help available for both those that completed their questionnaire online and for respondents who used the paper form; the availability of the telephone helpline to answer questions by phone; and the support and guidance of enumerators on the

doorstep. Completeness was assessed by measuring how many responses to each census question were missing as a proportion of all of the people who should have responded to that question (but not including persons and whole households that were missed).

9.18 Item non-response includes all responses that were missing or not valid, including multi-ticks, out-of-range values and partially answered responses. Item imputation was applied to estimate for a missing value when there was item non-response or where there were inconsistency errors. The latter were where correctly recorded values were considered invalid because they were inconsistent either with other values on the questionnaire, or with auxiliary information or definitions. Inconsistency errors were detected by validating the data against a set of pre-defined edit rules.

9.19 Item non-response rates for the main census questions are shown in Table 9.4. Item non-response rates for the household questions ranged from 1.2 per cent for number of cars and vans to 3.5 per cent for relationship to person one. All household questions had item non-response rates lower than in 2001

9.20 For individual questions shown in Table 9.4, the item non-response rate showed wider variation ranging from only 0.7 per cent for age, to 16.9 per cent for the year last worked. Other notably high item non-response rates were 15.2 per cent for the new question on long term health conditions, and high rates for workplace/study address indicator (8.6 per cent) and industry (8.5 per cent).

9.21 As part of the quality reporting on Census 2011, further analysis of imputation rates will be published later in 2015. This analysis will be used to inform aspects of the design of the Census 2021 questionnaire, and will summarise the processes of identifying the response category for both missing and inconsistent variables.

9.22 Table 9.4 also presents the published data on non-response from Census 2001. It is worth noting that there are some differences in the way non-response rates were calculated between the two censuses. The 2001 results were measured after the application of some hard edits which means that for some questions they will underestimate the level of non-response. There were considerably fewer hard edits applied in 2011 than in 2001. In

most cases the non-response rates for 2011 are lower than the corresponding published figures for 2001 which suggests that the level of missing or invalid data was lower in 2011.

Table 9.4 – Item non-response rates

Question	Variable	2011 Item non-response rate (per cent)	2001 Item non-response rate (per cent)
H06	Accommodation type	*1.7*	*3.2*
H07	Self-Contained accommodation	*1.3*	*3.0*
H08	Number of rooms	*2.2*	*4.7*
H09	Central Heating (type of)	*1.6*	*2.4*
H10	Tenure	*1.5*	*3.7*
H11	Landlord	*1.8*	*7.6*
H12	Car or van availability (number of)	*1.2*	*3.2*
H13	Relationship to person one	*3.5*	*3.6*
2	Sex	*0.8*	*0.3*
3	Age	*0.7*	*0.6*
4	Marital and civil partner status	*2.3*	*3.2*
5	Schoolchild or full-time student indicator	*5.5*	*1.5*
6	Term-time address indicator	*2.2*	
7	Country of birth	*2.0*	*2.6*
8	Arrival in the UK (year or month)	*5.1*	
9	Provision of unpaid care	*2.9*	*6.5*
10	Address one year ago (indicator)	*3.5*	*4.6*
10	*Address one year ago (postcode)*	*3.5*	
11	Workplace/study address (indicator)	*8.6*	

11	Workplace/study address (postcode)	*8.5*	*14.6*
12	Method of travel to work/study	*2.2*	*12.6*
13	Religion	*7.0*	*5.4*
14	National identity – tick box	*1.6*	
15	Ethnic group – tick box	*2.1*	*4.5*
16	Language Skills	*1.9*	*4.8*
17	Proficiency in spoken English	*2.7*	
18	Language other than English used at home	*3.9*	
19	General health	*2.3*	*3.7*
20	Long-term health condition	*15.2*	
21	Long-term health problem or disability	*3.7*	*4.7*
23	Qualifications	*6.5*	*6.4*
24	Activity last week	*5.6*	*0.5*
29	Ever worked	*4.8*	
29	Last year worked	*16.8*	
31	Employee status	*4.1*	*6.5*
32	Occupation	*4.6*	*2.7*
34	Supervisor status	*3.9*	*6.9*
35	Hours worked	*4.9*	*10.1*
36	Industry	*8.5*	*8.3*

Assessing measurement error: Census Quality Survey (CQS)

9.23 Measurement errors in individual data can occur during the data collection stage of a census. Measurement error can be introduced by poorly designed questionnaires, field staff errors or respondent error. Although the 2011 census questionnaire was carefully designed and thoroughly tested there was still some error in terms of how it was completed.

The Census Quality Survey

9.24 A smaller, separate survey, the Census Quality Survey (CQS), was undertaken after the 2011 Census to measure the accuracy of responses to individual questions. It was part of a wider

census quality programme for managing and delivering quality in the 2011 Census. More details on the design, coverage and results of the quality will be published shortly.

9.25 For the 2001 Census, a CQS was voluntary and conducted after the 1999 Rehearsal. It concentrated on questions specific to Scotland and was based on a slightly different set of questions from those subsequently asked in 2001.

9.26 The model for the 2011 CQS was developed to be:

- a voluntary follow-up survey conducted after the 2011 Census
- specific to Scotland and covering almost all of the questions on the household questionnaire
- conducted using a simple computer assisted interviewing application

9.27 A clustered sample was selected in three census regions (Glasgow East, Fife and Scottish Borders); each area chosen to represent one of the main area types in Scotland. A sample of 520 households was selected in each area and representative of paper and internet response modes. Households included in the CCS were excluded and only households with five or fewer residents were selected.

CQS Fieldwork

9.28 Interviewers were recruited specifically for the CQS because NRS does not employ a permanent field force. All had been previously employed as enumerators in 2011 and were familiar with census questions and definitions. Each interviewer was accompanied by an assistant interviewer. This second person was required for health and safety reasons as the survey involved entering respondents' houses. The CQS employed 42 staff (3 Team Managers, 18 Interviewers and 21 Assistant Interviewers). Fieldwork started on 21 May 2011 and was completed on 3 July 2011.

9.29 Census responses for potential respondents in each interviewer workload were pre-loaded to an interviewer laptop. During the CQS interview responses were keyed into a bespoke application on the laptop. If the response differed from that given on the census questionnaire, the census response was displayed on the screen. The interviewer checked that the CQS response was

correct, amending it if necessary. If the responses differed, or if the response had been omitted on the census questionnaire, the respondent was asked to pick from a list of possible reasons for the discrepancy.

9.30 In the 2011 CQS 1,760 individuals were interviewed in 787 households; a household response rate of 50 per cent. This was lower than the target rate of 60 per cent for the survey and the rate achieved in the previous census. The sample rate achieved in Glasgow was lowest at 34 per cent.

Summary of gross agreement rates

9.31 Table 9.5 shows, for each question that was asked in the CQS, the gross agreement rate. The Gross agreement rate is calculated as number of records where census and CQS agree divided by number of records where this question is answered in both census and CQS. Records where the question was omitted from the census are excluded from this calculation.

Table 9.5 - Agreement rates between 2011 Census and the Census Quality Survey, household and individual questions.

Question	Agreement rate – per cent
Household	
Number of usual residents	98.2
Accommodation type	95.8
Self- Contained accommodation	99.7
Number of rooms	86.6
Central heating (type of)	94.8
Tenure	97.0
Landlord	95.1
Car of van availability (number of)	97.1
How are household members related	97.2
Individual	
Sex	99.9
Date of birth	98.1
Marital and Civil partnership status	98.5
Schoolchild or full-time student indicator	98.8
Term-time address indicator	99.6
Country of birth	99.8
Arrival in the UK (year or month)	84.2
Provision of unpaid care	96.8
Address one year ago	99.0
Workplace/study address	89.9

Method of travel to work/study	97.1
Religion	93.8
National identity	85.9
Ethnic group	96.8
Language skills	84.6
English	95.0
Scottish Gaelic	99.5
Scots	88.5
Proficiency in spoken English	96.8
Language other than English used at home	98.3
General health	92.4
Long-term health condition	78.7
Long -term health problem or disability	95.7
Qualifications	77.8
Activity last week	95.7
Ever worked	98.8
Last year worked	90.2
Employee status	97.6
Occupation	95.8
Supervisor status	94.0
Hours worked	84.0
Industry	93.9

Note: These agreements are not directly comparable with those produced by ONS and NISRA due to methodological differences in how the CQS was carried out

9.32 The CQS found that agreement rates ranged from 99.9 per cent for the question on 'sex' to 78.7 per cent for the question on 'long term health condition'. The extent of agreement depended on whether it was a tick box response or free text and whether it was a subjective question or not.

Conclusion

9.33 A variety of measures have been presented in this chapter that can be used to assess the quality of the data from the 2011 Census. In summary:

- the 95 per cent confidence interval achieved for the population estimate was +/-0.44 per cent or (23,000 people)
- In 2011 all local authorities had a 95 per cent confidence interval of better than +/- 3 per cent
- The overall response rate for Scotland was 93.7 per cent and all local authorities except for Glasgow has a response rate of greater than 90 per cent

Chapter 10

Evaluation

10 Evaluation

Introduction

10.1 This General Report summarises the planning, conduct and dissemination of outputs from Scotland's Census 2011. There were many aspects which worked well – some which were new in 2011 and some which built upon processes and approaches used in previous censuses. However, the report also highlights some challenges that NRS encountered and resolved. These provided valuable learning to be taken forward for the planning and conduct of the next census in 2021.

10.2 This chapter summarises the main conclusions of the evaluations which have been carried out on the 2011 Census programme. Those issues relating to the evaluation of the quality of the data have been reported on in Chapter 9.

10.3 The evaluations and conclusions referred to in this chapter are not intended to provide a comprehensive picture of the all of the different aspects of the census operation. Rather, they provide a high level outline of the main successes and learning points.

Highlights from Scotland's Census 2011

10.4 There are many highlights from the 2011 Census which, where relevant, will be built upon for the next census and for other work of NRS. But the value of any census is determined by the quality and utility of outputs. The first strategic aim for the census in 2011 was:

> To provide complete, accurate and accessible population statistics which meet user requirements, on a consistent and comparable basis nationally and for small areas and small population groups.

10.5 The census design and operation was focussed on achieving this by:

- Appropriate design of the field operation and accompanying processes such as publicity, public assistance and online completion

- Maintaining the confidentiality of the information collected to ensure public trust, and therefore maximise public response, both for this census and future censuses
- User and community engagement to advise and support the operation
- Capture and processing of census questionnaires and responses and the effective and efficient cleansing and validating of derived data

10.6 The key successes for the 2011 census were:

- NRS chose to plan and conduct all aspects of the entire Scotland's Census operation, including data processing, for the first time
- positive engagement with users and other stakeholders which engendered higher levels of support and confidence in the census
- the inclusion of several new topics in the census including some unique to Scotland e.g. nature of long term health condition
- a high level of overall response
- introduction of an online response option
- more flexible means of dissemination and analysis of an increased range of census data and background information via the Scotland's Census website
- delivering the programme for around £1.6 million (2.5 per cent) under budget

10.7 The key learning points for the 2011 census were:

- given that this was the first time NRS had conducted all aspects of the census, there was inevitably a steep learning curve with areas that could be improved upon for future censuses
- it took longer to produce outputs than was originally intended. A variety of issues contributed to this but it undoubtedly had an impact on our users and the utility of the data

Looking forward to 2021

10.8 In March 2014, NRS announced that it will focus on planning for a census in 2021 which will be primarily online, while offering alternative modes of completion where necessary. It also aims to make best use of technology and administrative data in its design, building on the online approach used successfully in the 2011 Census. The remainder of this chapter sets out the most important lessons and considerations for the census in 2021.

Programme Management

10.9 The NRS governance and management structure adopted for the 2011 Census (with UK issues handled via UK Census Committee and the Harmonisation Committee) worked well. NRS will look to build on that approach for 2021. However, initiating and managing a programme the size of the census was challenging and there have been lessons learnt for going forward:

- User needs: NRS needs to ensure that the correct balance is struck between meeting users' needs locally, at UK level and internationally.
- Planning: more time needs to be devoted at the early stages of the programme to detailed resource and activity planning for the entire length of the programme. Planning should be based on realistic assumptions in terms of the need to acquire skills and should build in time to make changes and adjustments in the light of testing outcomes. The scope of the plans should also include work which is required to meet UK and international obligations.
- Staffing and resourcing: at various stages in the programme there were shortages of staff with critical skills. Early assessment needs to be made of the range of skills required to deliver each stage of the programme in 2021 and whether there will be sufficient in-house capacity and expertise to accomplish the tasks required.
- Governance: governance needs to be clear to staff at all levels throughout the life of the programme.
- Aims and objectives of the programme: these need to be clearly set at the start and communicated to all staff working on the programme. The design of the census and the operations should be geared to meet these objectives.

- Testing: the testing programme needs to be realistic for the timetable within which NRS needs to work. There should be adequate time built in to make changes and adjustments as a result of testing results
- Quality: A Quality Strategy for a future census should be developed early in the programme and published. This will allow a holistic and consistent approach to be introduced that can deliver, and be seen to deliver, quality across the programme.

Legislation and the Parliamentary Process

10.10 The legislative and parliamentary process is likely to be broadly similar to that for the 2011 Census. That is, before any Census can be carried out, the primary legislation – the Census Act 1920 - requires two pieces of secondary legislation to be approved by the Scottish Parliament: a Census Order followed by Census Regulations.

10.11 In securing the necessary legislation for the 2021 Census NRS should consider:

- An early statement by the Government outlining the key aspects of the 2021 Census. *The Scotland Census 2011 – A Government Statement* covered the key aspects of the census operation, such as the topics for which information was to be collected, the arrangements for conducting the census in the field, the processing of the data and the dissemination of results and the way in which confidentiality would be ensured. This was a valuable document which set out plans for the census well in advance of the event and became a useful reference tool in the run up to the legislation process and the census itself. It is recommended that a similar one is produced for 2021.
- Earlier and on-going engagement with the lead Parliamentary Committee. The Committee who dealt with the Census in 2011 recommended that:

"it would be better if a lead committee were identified well in advance and could take a continuing interest in the development of census proposals over several years."

- Strong working relationships which were developed with colleagues in Scottish Government, especially with Scottish Government Legal Directorate, should be maintained and built upon.
- All MSPs should be kept up-to-date over time with the development of the programme. To facilitate this, it is essential to ensure that the programme has up to date briefing material which will ensure the necessary preparation of timely, consistent and clear briefings.

Stakeholder management

10.12 A census has an exceptionally large number of stakeholders with differing degrees of influence and interest in the various aspects of the operation. Managing these interactions with stakeholders is complex but is essential to achieving a high quality census and to realising full scale of the benefits that may be gained from such a large investment.

10.13 NRS recognised that the many stakeholder groups would require different methods and degrees of approach, so different modes of engagement were developed to reflect this. Overall, the engagement process can be considered a success and was a factor in assisting NRS in reaching its high response rate.

10.14 The local knowledge and intelligence provided by certain stakeholders helped NRS to target its communications more effectively. In looking ahead 10 years, a more diverse society can be expected, suggesting that building on the successful 2011 engagement programme will be crucial to delivering a successful census.

Community Liaison and Special Interest Groups

10.15 Following a review in 2005 of the approach to Community Liaison in the 2001 Census, there was an increase in the resources devoted to this work. Proactive engagement was recognised as an essential part of the 2011 programme and took the form of a systematic approach to identify target groups and ways to engage with them effectively. Key lessons to be taken forward include:

- Communities should be involved at the earliest possible stage to help shape how, when and with whom this engagement takes place.
- Local Authority involvement is essential to being able to identify and understand community groups. Therefore, NRS needs to work closely with Local Authorities to ensure that they are able to provide the necessary resource to achieve the widest possible community engagement.
- Although each group requires tailored methods to suit their specific needs, it also important to have a clearly defined overarching engagement strategy for this work. For 2021 this should cover the entire programme and have specific goals for each phase.

Census Coverage Survey

10.16 As described in Chapter 5, NRS carried out a Census Coverage Survey soon after the main census fieldwork was completed. This involved gathering information from a representative sample (around 40,000 households) and comparing their responses to census responses.

10.17 The CCS was a successful operation which was completed on time and was successful in meeting its overall objective of an interviewer return rate of 90 per cent. However there were some issues which should be considered for any future similar exercise including the varied workloads for staff, the IT systems which were used for support, and accommodation.

Data collection and field operations

10.18 The collection of responses from over 2.5 million households is the most challenging part of the census and is critical to delivering the high quality, accurate outputs that are required. This will continue to be the case in 2021, although with an online census the challenges will be different.

10.19 In 2011, the data collection work covered a number of different activities that are heavily inter-related to ensure: that the public were aware of the census; could easily respond to it; and could access the additional information or support that they needed to complete their questionnaire. This required the recruitment, training and management of a large field force, a complex

logistical operation to provide the field staff with the relevant materials and pay systems and an online completion facility.

10.20 The 2001 census questionnaire was delivered by hand to all households by specially employed enumerators. An alternative approach of postal delivery to all addresses was tested during a large scale test in 2006. The test concluded that delivery of census forms to households in 2011 should normally be by hand. One of the main advantages of hand delivery was felt to be the personal contact that could be made between NRS enumerators and households which would result in higher completion rates and higher data quality. Therefore the 2011 census used hand delivery of census questionnaires to the almost 2.5 million households with the remaining 145,000 - in rural areas - being delivered via Royal Mail.

10.21 Householders were given the choice of posting back their completed questionnaire to the regional field offices, returning it to the enumerator or completing their questionnaire online. For the first time in 2011, questionnaires had personalised addresses.

10.22 Following difficulties with outsourced arrangements in 2001, NRS opted to recruit, train and pay the 7,000 temporary field staff itself. The workforce was organised hierarchically within regions, with 22 Census Regional Managers who reported direct to headquarter staff. Each enumerator was responsible for ensuring a return from each household within their area. This required them to pay repeated visits to households from whom no valid return had been received.

10.23 The enumeration of communal establishments, special accommodation sites and special sites was the responsibility of the Census Team Leaders to reflect the difficulty of the task and to allow enumerators to concentrate their efforts on household enumeration.

10.24 The 2011 Census was very successful in gaining a high response rate. The follow up field operation played a part in this despite the adverse trends of a changing society and falling survey response rates generally.

10.25 Despite the success, there were some lessons, outlined below, learned during the data collection phase that NRS will consider in the design and operation of the next census. However, given that

NRS has already announced that the 2021 census will be predominately online, the relative importance of some of these lessons might be different.

Field staff recruitment and delivery methods

- The in-house pay roll services was a success and received positive feedback from employees. However it was very resource intensive for headquarter staff, and the cost benefit ratio should be considered for 2021.
- The recruitment and training of thousands of temporary staff was extremely resource intensive. In particular there were difficulties encountered recruiting large enough numbers of enumerators with a second recruitment campaign needing to be run. Whilst it is anticipated that there will be a smaller field force in 2021, there will still be a significant effort required to recruit and train temporary staff.
- There were substantial variations across the country in terms of field staff workloads, yet they were all paid the same amount. In future, the principle of attempting to equalise workloads should be re-examined with payment linked more clearly with achieved workload.
- The self-recording system used by field staff did not provide adequate information to assess metrics and to enable sensible planning decisions. In future, there needs to be better management information available in real time to allow for responsive action to be taken.
- Overall response rates in Scotland were broadly comparable with those in England and Wales and Northern Ireland, despite their both having used a post out delivery method. This suggests that the expected gains from using hand delivery did not materialise. Indeed, enumerators in Scotland were often unable to make personal contact with householders and therefore had to post census forms through letterboxes. There appears to have been very little gained from hand delivery, and given its cost, NRS will need to look careful at whether hand delivery of material for the 2021 Census is sensible.
- Enumeration of communal establishments was very complex and at times labour intensive. There were issues in relation to the identification of some types of communal establishments and there were large variations in the workloads and the quality of the enumeration. More work needs to be done in future

around the enumeration of communal establishments to ensure that the quality of data obtained meets the required standards.

General enumeration challenges

10.26 There were a number of challenges around enumeration in 2011 which look set to remain relevant for the next census, such as:

- second homes/holiday homes
- gated communities
- complex multi occupied housing, and
- particular hard to count communities

10.27 These types of accommodation posed particular challenges to the enumerator and often required repeated visits to try to deliver forms or to encourage the householder to complete the form. If there was no response the field staff had to complete a short placeholder form describing the non-responding address to the best of their knowledge (unoccupied, second home etc). The field work required to complete placeholder forms was quite labour intensive, and often involved enumerators making guesses as to what lay behind front doors. Greater use of administrative data and technology may provide alternative ways to record such instances in the next census, although any impact of this on statistical processing will need to be considered carefully.

Printing, Supplies and logistics

10.28 Printing questionnaires and all of the associated documentation, and getting it and the right supplies to the right people at the right time, is extremely difficult. This approach was a high risk to a field operation of this size and required considerable planning. If these types of operations are to play a role in 2021, there would need to be similar resource and time dedicated to planning and delivering this work;

10.29 In particular, the printing of personalised census forms for around 2.5 million households was very complicated. If such an approach is taken for even part of the 2021 operation, it needs to be carefully planned and costed and its benefit considered against alternatives forms of obtaining a census return such as telephone completion or assisted digital.

Data processing

10.30 In future censuses, the requirements and implementation of data processing may be very different because of an increased use of online completion, changes in output requirements and the methods of dissemination. Therefore, it is likely that a number of the more detailed lessons from the 2011 processing will not be directly applicable. However, some of the strategic lessons will undoubtedly be relevant for 2021.

Data capture and coding

10.31 Chapter 6 reported on the accuracy levels of the data capture and coding processes. It was clear that there were some issues in the capture of data, particularly alpha numeric fields. Similarly whilst the targets for the coding of data were exceeded in the main, some fields were more problematic and these issues should be addressed in the light of new and improved methods for coding data in 2021. The example of workplace coding illustrates this:

Workplace coding

10.32 An important use of census data is the analysis of workplace statistics and information on commuting patterns. In particular, commuting distances are calculated as the distance between the home postcode and the workplace postcode. Whilst in the main, the statistics were of high quality, there were some instances where the commuting distances did not seem plausible, especially given the mode of transport which was reported.

10.33 The coding of this information has always been problematic because respondents often do not know either their own workplace address and postcode or that of others in their household. This can be further complicated by people whose usual residence is their home but who may live somewhere for part of the week whilst at work. (For example, someone who stays during the week at a flat in London and walks to work but whose home address as recorded on the census form is in Scotland. They therefore appear to walk over 400 miles to work each day).

10.34 The situation is not likely to change but should be considered in the design of the online census questionnaire, the capture and coding of responses and data processing to improve the accuracy of the information found in 2021.

Downstream processing

10.35 2011 was the first time that NRS had carried out all of the data processing itself. This proved to be a very steep learning curve and was both a more resource intensive operation and a more complex one than had been envisaged. Throughout the process, NRS relied heavily on colleagues from ONS for technical and methodological support and used many of the same processes and systems as ONS – although adapted to work with Scottish data and systems. Despite the difficulties – and the impact on the output production timetable – there have been many valuable lessons learned as outlined below, that will be extremely helpful for future census design.

Timetable

10.36 Consultation with data users consistently identified that they would prefer census results to be 'right first time' even if it took longer to produce. The first results were produced on 17th December 2012, nearly 21 months after census day and considerably later than the rest of the UK. This date was later than the target date set for the census and was cause of frustration to both NRS and, importantly, the users of the data. NRS needs to produce results more quickly for 2021.

10.37 However, the speeding up of production of the initial outputs would rely on a number of factors, and in particular on an increase in online responses as this could significantly reduce the time required to capture, code and clean the data.

10.38 One of the main difficulties experienced in downstream processing was that, prior to live processing, the systems were not completely tested with data from census type scenarios. The effect of this was that there were:

- a large number of changes that needed to be implemented to ensure that the processing would work in an automated, robust manner, and
- delays within individual processes that had knock-on effects on later processes.

10.39 This created pressure on the staff who were working to process the data and reduced time for some other activities, such as quality checking. For the next census, the design and

development of all parts of downstream need to be ready earlier, so that they can be tested as part of the census rehearsal. This was an aim for both the 2001 and 2011 Censuses, but was not achieved in either.

Statistical methodology

Edit and Imputation

10.40 As in previous censuses, and as noted in chapter 6, the primary objective of the 2011 item editing and imputation strategy was to produce a complete and consistent database that was adjusted for non-response. This was done by estimating the values of missing variables and by replacing all inconsistent data with imputed values using a robust statistical method that estimates the distributional properties of the missing/inconsistent data as accurately as possible.

10.41 The 2011 Census item-level edit and imputation strategy was successful in meeting all of its main aims and objectives in that:

- After edit and imputation, the database of responding persons was complete
- Changes to observed data were minimised by imputing inconsistencies and non- response simultaneously by selecting from a list of nearest minimum change donors
- Priority was given to the key variables such as age and sex that defined the population estimates and bases

10.42 Processing was generally smooth and efficient however, there were some challenges in implementing the methods in an automated production environment:

- The implementation of the method was more iterative than originally planned. A future census would benefit from a more iterative design and testing approach with strong feedback loops and the ability to make changes to the method during live operations.
- NRS did not adequately consider the changes that would be required for Scottish data and questions. For any future census, if there is joint development with other census offices, more time needs to be devoted to considering the particular requirements of Scottish data.

- Edit and imputation is the first step that validates the consistency between different questions. It would be beneficial to allow time for analysis and modification to the underlying database when edit and imputation is run in the live environment.
- NRS was required to apply additional edits at various stages of the process, partly to address issues relating to Scottish data, but also to respond to issues which ONS had found in its own work. These edits were unexpected and very time consuming. Looking forward, it is likely that edits will be required to address systematic errors in the data or unexpected data issues. Flexibility for adding new edits during imputation would be an advantage and NRS should ensure that some time is planned to do this.

Coverage assessment and adjustment

10.43 The primary objective of the coverage assessment strategy was to identify and adjust for the number of people and households not counted in the 2011 Census. A secondary objective was to identify and adjust for the number of people and households counted more than once, or counted in the wrong place. The strategy was to build on the 2001 methods, using it as a platform to develop an improved methodology. The methods and results are detailed in Chapter 5.

Sample design

10.44 The sample design for the Census Coverage Survey (CCS) was successful in providing data for measuring coverage patterns across local authorities by age and sex. The Hard to Count (HtC) index was based on a variety of indicators including SIMD and tenure and the coverage rates which resulted were consistent with prior expectations.

10.45 However, looking forward to 2021, NRS will be exploring a number of improvements to the CCS design including increasing the sample size in the hardest to count areas and taking into account digital participation with the HtC Index.

Matching

10.46 The census to CCS matching is a vital element of the overall census process, ensuring that any decisions on estimation are as

fully informed as possible. Overall, the matching strategy worked extremely well. The importance (and scale) of this process was fully planned for in the year prior to the census, and this is reflected in the successful outcome of the project.

10.47 Maximum use was made of IT development, and a very user-friendly system resulted. Resources were used very efficiently and the use of internal staff ensured high levels of control and quality and the system was designed in such a way as to utilise relative levels of expertise in an efficient manner.

10.48 Due to the methodology and strategy employed in the project, matching was ultimately fully investigated at individual level, using a combination of automatic linkage software, image checking, attention to detail and use of all available evidence. The result was a reliable and comprehensive match which would inform the later stages of census processing.

10.49 The approach to matching – assuming that it is as important a part of the 2021 methodology as it was in 2011 - will build upon this successful approach.

Estimation

10.50 The estimation methodology worked well to provide a consistent analysis of census coverage. There were improvements to the methodology which were integrated into the processing procedures; these included the use of simpler ratio-based estimators, improved bias adjustments, and bootstrapping for variance estimation. The whole process was successful, and the adjustments made were plausible, based on the alternative household estimate.

10.51 There were some issues with elements of the estimation methodology. Most importantly, the method for measuring coverage within household bias, using social survey data, did not detect any bias despite expectations that this might be a concern. Some form of administrative data may be a helpful source for checking this in the future.

10.52 One area for improvement for 2021 would be the ability to apply a national adjustment to the estimates to account for any bias introduced as a result of the breakdown of independence assumptions between the census and the CCS. No national

adjustment was made to the Scottish estimates due to the lack of availability, at that stage, of a robust comparator source. As part of its on-going work, NRS will consider further whether there is any evidence that one should have been made, and if so, it would be taken forward as part of the mid-year estimate work. In addition, NRS will ensure that it fully considers and plans for the data required to make a national adjustment in 2021.

Adjustment

10.53 The basic adjustment methodology worked well to provide a database that was fully adjusted to take account of the measured coverage, adding wholly missed households, and persons within existing households.

10.54 However, the implementation of the methodology was challenging. The main issue was with the calibration process which derived the household weights for imputing wholly missed households (and the people within them). The method attempted to calibrate the household weights to both household estimates (tenure and household size) and person estimates (age-sex group, activity last week and ethnicity). Whilst this guaranteed the correct weighted total of households by tenure, it was not always close enough to the person estimates by age and sex.

10.55 NRS recognises that the adjustment process was the most complicated and least well understood of all of the processes and systems which were adapted from work done by ONS. The main lesson learned is that more time needs to be spent understanding how it all worked - or in some cases why it did not work so well – to be in a much stronger position for 2021. This is a highly technical area that requires skilled statisticians to work on it and NRS needs to both ensure that previous knowledge is fully passed on and to plan time for new staff who join to become fully familiar with the methodology.

Processing Conclusions

10.56 It was a huge achievement for NRS to adapt, implement and apply all of the downstream processing methodology for 2011 to produce the high quality census estimates. However it was a tall order which took longer than originally planned and, as with the whole census programme, required a huge amount of hard work and dedication from team members to achieve.

10.57 The processing was difficult process for NRS but much has been learned as a result of it. NRS is now in a much stronger position to plan the necessary work for 2021 with a realistic understanding of what the processing of data will entail.

Outputs - content, production and dissemination

10.58 A primary objective of the census is to produce easily accessible and reusable outputs and data that meet user needs. The value of the census is not realised until the outputs are produced and used to inform decisions on the delivery of services and public debate on important social and economic issues.

10.59 Whilst noting that Scotland's Census specialist outputs are still being published, user feedback and experience from developing, producing and disseminating the outputs highlights some lessons as noted below.

10.60 Producing outputs from the census is complex. User needs must be balanced against protecting confidentiality of individuals and the resource required to disseminate the results in a way that will maximise their utility

10.61 Chapter 8 summarises the outputs that were produced from the census along with examples of uses of the information. However, the production and dissemination of these outputs was not without its challenges.

10.62 One of these - and a challenge faced by most censuses - was that output production is the end of the operational processes. Therefore, consideration and development of these processes was also done last as the programme naturally focuses on earlier priorities. However, some of the main interdependent decisions around dissemination approach, disclosure control methodology and user requirements were taken too late in the process.

10.63 This left insufficient time for system development and testing ahead of the main output production phase. This in turn resulted in a production system that was resource intensive. Output content did not in some instances, meet the expectations users had based on previous consultations. Managing this process was challenging and, at times, communication with users suffered, leaving them with some uncertainty about the output timetable.

10.64 Evolving dissemination techniques, supported by new methods for protecting the confidentiality of information, will be available and will be important considerations for the next census. How these advances are incorporated into an overall outputs strategy for the next census will significantly affect how NRS delivers and maximises the utility of the outputs.

10.65 The outputs strategy and the approach to dissemination for the next census should be decided early and should set the direction and tone for significant developments, primarily the disclosure control methodology and geographical detail.

10.66 The outputs strategy and plan should steer and guide discussion with users on topics and questions. The strategy should consider and focus on a variety of important issues covered in the following sections.

Approach to dissemination

10.67 There are effectively two potential approaches to disseminating census results:

- produce large numbers of small datasets
- produce small numbers of large datasets

10.68 The first is the approach taken in 2011 and for previous censuses, where more than 600 different datasets were produced, each available for one or more geographies.

10.69 This approach sat more easily with a disclosure control methodology that enabled complete additivity and consistency within and among datasets (including small numbers in cells, such as 1s and 2s) but it did have drawbacks. It made the definition, production and checking for disclosure of the datasets lengthy and resource intensive. The dissemination of the results was inefficient and less accessible to users, particularly the multivariate datasets.

10.70 The second approach should be given serious consideration for a future census design. It can provide users with much easier access to the information and more flexibility for them to create bespoke datasets that meet their needs. It also makes it easier for the data to be reused in an open format and combined with other open datasets, which increases the benefits of the census. However, protecting the confidentiality of data in this approach is

likely to involve some form of post-tabular perturbation, which could be complex to implement and may lead to inconsistencies between queries or to the loss of some small cell data.

10.71 Both approaches have their trade-offs, so it is important that the approach chosen for 2021 be decided early, giving enough time for the necessary system and methodological developments to be successfully implemented and tested. An early decision on the approach to dissemination is critical because this will provide clear requirements for developing the appropriate methodology, ie a post-tabular or pre-tabular method. An early decision will also assist consultations with users about the content of outputs, because clarity on the level of detail available from the new outputs will help them specify their requirements.

Disclosure control

10.72 Decisions on outputs and dissemination should be taken in conjunction with decisions on disclosure control and geography. Ensuring that the method of disclosure control protects the content of future census outputs is essential but it is also important to understand the impact that the chosen method could have on the range and timing of outputs. This requires early thought and development.

Timing of outputs

10.73 The outputs from Scotland's Census 2011 were delivered more slowly than NRS had intended and this was a frustration to both NRS and, more importantly, the users of the data. The development of an output strategy, in conjunction with a data processing strategy, should aim to deliver results much more quickly, and in line with other UK census offices.

Identifying uses and benefits

10.74 A variety of activity was undertaken by NRS to promote the use of 2011 Census data and realise their benefits. This activity was successful both in broadening the use of the results and in highlighting uses of data that NRS was previously unaware of. Developing and promoting wider understanding of the use of census data is an important activity to take forward into 2021.

Checking the quality of the outputs

10.75 Some of the successes of the quality assurance process and main lessons were covered earlier. In addition the plausibility of the results needs to be considered as early as possible. There were no significant issues with the publication of the 2011 data, following the extensive quality assurance process.

Communicating with users of the outputs

10.76 During the production and release of census outputs, NRS had to take decisions on priorities considering trade-offs between meeting user needs and ensuring timely publication. Users were involved in informing some but not all of these decisions. With more user engagement during the production phase, some of the output content could have better met user needs.

10.77 On-going dialogue with users is important for understanding their changing needs and priorities, and for operational decision making. With this in mind, future censuses should consider how best to involve users during output production to understand their experiences and requirements.

Conclusion

10.78 Overall the Scotland's Census 2011 was conducted successfully, in line with international best practice, and provides a sound basis for understanding the nature and diversity of Scotland's population.

10.79 This chapter has noted both the success and the learning points which will be taken forward as part of the planning for the next census.

Annexes

ANNEX A Key Milestones

2006		
	Census Test	**23 April**
	Business Case submitted to Scottish Ministers	**24 November**
2008		
	Systems and services contract awarded	**11 June**
	Proposals for 2011 Census published	**11 December**
2009		
	Census Rehearsal Day	**29 March**
2010		
	Census (Scotland) Order made	**11 May**
	Questionnaire printing starts	**8 June**
	Census Regional Managers appointed	**2 August**
	Internet Public Assistance goes live	**25 October**
	Paper Data Capture and Coding site made ready	**28 October**
2011		
	Helpline opens	**7 March**
	Publicity campaign starts	**21 February**
	Internet Data Capture goes live	**7 March**
	Enumeration starts	**8 March**
	Census Day	**27 March**
	Internet Data Capture closes	**20 April**
	Enumeration ends	**25 April**
	Coverage Survey interviews start	**7 May**
	Paper questionnaire receipting starts	**9 May**
	Quality Survey fieldwork starts	**21 May**
	Coverage Survey fieldwork ends	**12 June**
	Internet Public Assistance closes	**20 June**
	Helpline closes	**21 June**
	Paper Data Capture and Coding starts	**23 June**
	Quality Survey fieldwork ends	**3 July**
	Paper Data Capture and Coding ends	**30 November**
2012		
	Paper Data Capture and Coding site closes	**28 April**
	First Scotland's Census 2011 results published	**17 December**
2015		
	Final Standard results published	**29 January**

ANNEX B – Scotland's Census 2011 main releases

Release & date	Main topic/s covered
1A - 17 Dec 2012	Usually resident population of Scotland, broken down by age and sex and council area
1B - 21 Mar 2013	Usually resident population by age, sex and council area and number of households.
1C - 15 Aug 2013	Unrounded population and household estimates and a range of geography products.
2A - 26 Sep 2013	Population, Ethnicity, Identity, Language, Religion, Health, Housing and Accommodation.
2B - 14 Nov 2013	Education and Labour Market.
2C - 18 Dec 2013	Living Arrangements
2D - 9 April 2014	Long-term Health Condition, Central Heating and Deprivation
3A - 27 Feb 2014	Ethnicity, Identity, Language and Religion
3B - 19 March 2014	Ethnicity, Identity, Language and Religion
3C - 9 April 2014	Ethnicity, Identity, Language and Religion
3D - 15 May 2014	Population and Household
3E - 4 June 2014	Health
3F - 25 June 2014	Health
3G - 23 July 2014	Labour Market and Education
3H - 13 August 2014	Labour Market and Education
3I - 24 September 2014	Labour Market and Education
3J - 16 October 2014	Housing and Accommodation
3K - 6 November 2014	Housing and Accommodation.
3L - 27 November 2014	Housing and Accommodation
3M - 18 December 2014	Transport
3N - 29 January 2015	Various

Glossary

A Glossary of terms and acronyms used in Scotland's Census.

Baseline Personnel Security Standard (BPSS)	Personnel pre-employment security controls applied to people, who in the course of their work, have access to government assets. This includes civil servants, members of the armed forces, temporary staff and government contractors.
Census Coverage Survey (CCS)	The Census Coverage Survey was carried out after the census to account for households and people who may not have been counted by the census, or counted more than once or in the wrong place.
Census Day	Census Day was Sunday 27 March 2011.
Census District (CD)	An area comprising about 35 Enumeration Districts which was managed by a Census District Manager.
Census District Manager (CDM)	The second tier of the field staff infrastructure who were responsible for the management of enumeration within their Census District. They recruited, trained and managed Census Team Leaders and assisted Census Team Leaders in the recruitment and training of Enumerators.
Census Order	Taking a Census in Scotland requires approval by the Scottish Parliament of a Census Order and Census Regulations. The Order sets the date on which the Census is taken, the questions asked and who needs to be included on returns.
Census Quality Survey (CQS)	The Census Quality Survey was

	carried out after the census to measure the accuracy of the responses that people gave to the census questions.
Census Region (CR)	An area comprising about 6 to 12 Census Districts (usually one or more Council Areas) which was managed by a Census Regional Manager.
Census Regional Manager (CRM)	The top tier of the field staff infrastructure who were responsible for the management of enumeration within their Census Region. They recruited, trained and managed Census District Managers and supervised the recruitment and training of other field staff.
Census Regulations	Taking a Census in Scotland requires approval by the Scottish Parliament of a Census Order and Census Regulations. The Regulations contain the detailed arrangements for conducting the Census.
Census Team Leader (CTL)	Census Team Leaders managed a team of Enumerators. Their main purpose was to ensure that their Enumerators were conducting the enumeration in the proper manner and following the written instructions.
Communal Establishment (CE)	In the 2011 Census a Communal Establishment provided managed residential accommodation (i.e. full-time or part-time supervision of the accommodation). Types of Communal Establishment included student halls of residence, prisons and care homes.

Contract Initiation Document (CID)	In the 2011 Census a Contract Initiation Document was a deliverable produced by a contractor, and agreed with NRS, explaining the governance structure and procedures for managing a contract.
Data Capture and Coding	In the Census, Data Capture is the process which electronically collects census information from a paper questionnaire (e.g. via optical recognition or keying) or using an electronic questionnaire. Coding is the process which converts captured information into machine readable codes.
Data Processing Site	The premises in which the Paper Data Capture and Coding Service was delivered.
Downstream Processing (DSP)	The statistical processes that followed Data Capture and Coding, including anonymising the census data and making adjustments for any errors or gaps in it.
Enumeration District (ED)	A small area assigned to a Census Enumerator for handling the delivery and collection of Census Questionnaires.
Enumerator	A member of the census field staff, who was responsible for delivering and collecting census questionnaires.
Enumerator Record Book (ERB)	A booklet containing a list of known addresses of Households and Communal Establishments within an Enumeration District. The ERB was used by an Enumerator to record information on the status/progress of enumeration and to add new Household and

	Communal Establishment entries.
Frequently Asked Questions (FAQs)	A list of answers to common questions related to the Census.
Field Office	Premises used by NRS to facilitate the management of field staff in a geographical location.
Field Operations	The Field Operations was a collective term for the Census Field Operation, the CCS Field Operation and the CQS Field Operation.
Government Statement	The "Government Statement" was a document published by the Registrar General for Scotland in 2008 which set out the proposals for the Census.
Household	In the 2011 Census a Household was: • one person living alone; or, • a group of people (not necessarily related) living at the same address who shared cooking facilities and shared a living room or sitting room or dining area. This included: • sheltered accommodation units in an establishment where 50 per cent or more had their own kitchens (irrespective of whether there were other communal facilities); and, • all people living in caravans on any type of site that was their usual residence. This included anyone who had no other usual residence elsewhere in the UK.

	A Household contained at least one person whose place of usual residence was at the address. A group of short-term residents living together was not classified as a household, and neither was a group of people at an address where only visitors were staying.
Integrated Project Team (IPT)	A team made up of NRS staff from different disciplines (and optionally contractor personnel) who had the specific skills to deliver the objectives of a particular business activity.
National Records of Scotland (NRS)	National Records of Scotland is part of the devolved Scottish Administration. It was established on 1 April 2011, following the merger of the General Register Office for Scotland and the National Archives of Scotland. NRS responsibilities include civil registration; the Census and production of population and Household statistics; and managing the national archives of Scotland. Further details on the work of NRS are available on its website.
Northern Ireland Statistics and Research Agency (NISRA)	An Agency of the Northern Ireland Department of Finance and Personnel. It is responsible for producing official statistics and social research on Northern Ireland, including the census.
Office for National Statistics (ONS)	The Office for National Statistics is the National Statistical Institute of the UK. It is responsible for producing statistics on the economy, population and society at national, regional and local levels.

	It conducts the census in England and Wales.
Privacy Impact Assessment (PIA)	A process which helps an organisation to identify and reduce the privacy risks of a project.
Processing Unit (PU)	Paper Data Capture and Coding and Downstream Processing were processed by geographical areas called Processing Units. A Processing Unit had about 500,000 persons, comprising between one and five Council Areas. The Council Areas chosen for each Processing Unit were normally contiguous and expected to have homogeneity of response.
Registrar General for Scotland	The Registrar General for Scotland is the government official responsible for the census and the registration of births, deaths and marriages in Scotland. The current Registrar General for Scotland is Tim Ellis. He heads the National Records of Scotland (NRS).
Resident	A resident or usual resident of the UK is anyone who, on 27 March 2011, was in the UK and had stayed or intended to stay in the UK for a period of 12 months or more, or had a permanent UK address and was outside the UK and intended to be outside the UK for less than 12 months
Risk Management and Accreditation Document Set (RMADS)	A set of documents used to record the outcome of a risk assessment for a system or service. An RMADS is used to provide accountability for risk management decisions within Government Departments.
Scots	The collective name for Scottish dialects known also as 'Doric',

	'Lallans' and 'Scotch' or by more local names for example 'Buchan', 'Dundonian', 'Glesca' or 'Shetland'.
Scottish Longitudinal Study (SLS)	The Scottish Longitudinal Study is a large-scale linkage study created using Scottish data from administrative and statistical sources.
Systematic Error	A non-random distribution of error across some relevant categorisation of results. This may skew or bias Census output.
UK Statistics Authority (UKSA)	The UK Statistics Authority is an independent body, accountable to Parliament, responsible for promoting and safeguarding the production and publication of official statistics. It has oversight over the ONS.
Visitor	A visitor is any person who was staying overnight on 27 March 2011 at an address where they were not usually resident. This includes people staying here because it is their second address (e.g. for work or a holiday home).

Scotland's Census 2011
Shaping our future

27 March 2011

Official Use | CD | ED | Line Number

If there is a **mistake** in the printed address, please write your correct address below

House name / number

Street / Town / City

Postcode

Why the census matters

The census is the official count of every person and household in Scotland. It is held every 10 years and helps to plan our future public services.

Please fill in this questionnaire on, or around, Sunday 27 March. Please include everyone at this address. It shouldn't take long and you can fill in online.

As a householder, you have a legal duty to fill in this questionnaire. If you don't, or if you supply false information, you may be fined up to £1,000.

Your personal information is protected by law and we will keep it confidential for 100 years.

Thank you for helping to shape Scotland's future.

Duncan Macniven
Registrar General for Scotland

How to fill in this questionnaire:

online at www.scotlandscensus.gov.uk

Enter the Internet Questionnaire Access Code:

You can fill in this questionnaire online in English or Gaelic.

Or

Fill in this paper version and post it back using the pre-paid envelope provided.

Need help?

www.scotlandscensus.gov.uk

Helpline 0300 123 1702

Textphone 18001 0300 123 1703

Declaration

I have filled in this questionnaire fully and accurately, as far as I know.

Signature(s)

Date

Important guidance - before you start

Who should fill in this questionnaire?

The householder or joint householder is responsible for filling in this questionnaire for their household.

The **householder or joint householder** is the person who lives, or is present, at this address who:

- owns or rents (or jointly owns or rents) the accommodation; and / or
- is responsible (or jointly responsible) for paying the household bills and expenses.

A **household** is:

- one person living alone; or
- a group of people (not necessarily related) living at the same address who share cooking facilities and share a living room or sitting room or dining area.

If there is more than one household at this address, please see the section below.

Will you need extra questionnaires?

- If there are more than 5 people in this household, either fill in the questionnaire online for the whole household or fill in this questionnaire and ask us for a **Continuation Questionnaire**.
- If any member of this household aged 16 or over does not want to reveal their information to others in the household, you can ask us for an **Individual Questionnaire** with an envelope. Remember to include these people in the answers to household questions H1 to H13 on this questionnaire, but leave the individual questions 1 to 38 blank for them.
- If there is more than one household at this address, you need to ask for one or more extra **Household Questionnaires**.

You can ask for extra questionnaires online at www.scotlandscensus.gov.uk or by calling 0300 123 1702.

How to fill in this questionnaire

This questionnaire will be scanned by a computer. To make sure we record your answers correctly, follow the instructions below.

Please:

- use black or blue ink
- tick your answers within the box like this: ☑
- print your answers, in English, within the boxes like this: SMITH — Use capital letters - one per box
- correct any mistakes like this: ■ or SM■ITH
- continue on to the next line (if possible) like this, if a word will not fit on to one line: 130 LADYWELL CRES / CENT

DO NOT draw a line through questions or pages. The computer may mistake this for an answer.

Extra guidance for household questions H1 to H5 (on page 4)

Children with parents who live apart

Children with parents who live apart must be included on the questionnaire at the address where they spend the most time, in household questions H1 to H3 and H13, and individual questions 1 to 38.

If they are staying at their other address on the night of 27 March 2011, they must also be included on the questionnaire at that other address in household questions H4 and H5, and the continuation of H5 on the back page.

If they spend their time equally between two addresses, they must only be included in household questions H1 to H3 and H13, and individual questions 1 to 38, at the address where they are staying on the night of 27 March 2011.

Students and schoolchildren who live away from home during term-time

All students and schoolchildren who live away from home during term-time must be included on a questionnaire at both their home and term-time addresses.

- At their home address they must be included in household questions H1 to H3 and H13, and individual questions 1 to 6.
- At their term-time address they must be included in household questions H1 to H3 and H13, and individual questions 1 to 38.

People from outside the UK

People from outside the UK whose total length of stay in the UK will be 6 months or more must be included on the questionnaire at the address where they usually stay in the UK. They must be included in household questions H1 to H3 and H13, and individual questions 1 to 38.

If their total length of stay is less than 6 months, they must be included on the questionnaire at the address where they usually stay in the UK in household questions H4 and H5, and the continuation of H5 on the back page.

Households away on 27 March 2011

If this address is unoccupied on the night of 27 March 2011 because the whole household is away, the questionnaire must be filled in as soon as possible when they return.

If nobody lives in the property, please complete household questions H6 to H9 only.

People with more than one UK address

People with more than one address in the UK need to be included on a questionnaire at their permanent or family home address.

- At their permanent or family home address they must be included on the questionnaire in household questions H1 to H3 and H13, and individual questions 1 to 38.
- If they are staying at their second address on the night of 27 March 2011 they must also be included on the questionnaire at that second address only in household questions H4 and H5, and the continuation of H5 on the back page.
- If they do not have a permanent or family home address they must be included on the questionnaire at the address where they spend most time, in household questions H1 to H3 and H13, and individual questions 1 to 38.

People temporarily away from home

If someone is temporarily away on the night of 27 March 2011 and this is their permanent or family home, include them in household questions H1 to H3 and H13 and individual questions 1 to 38. This includes people who are:

- staying, or expecting to stay, in a residential establishment such as a hospital, care home or hostel, for less than 6 months
- living away from home while working, on holiday or travelling (unless outside the UK for 12 months or more)
- members of the Armed Forces
- staying at their second address
- visiting friends or relatives; or
- in prison on remand (for any length of time), or sentenced to less than 6 months in prison

Do not include anyone who is:

- staying, or expecting to stay, in a residential establishment for 6 months or more; or
- in prison, convicted and sentenced to 6 months or more, or who is waiting to be sentenced

These people will be included at their establishment.

Household questions - people

H1 Who usually lives here?

If you need more advice about who to include, see the extra guidance on page 3 or contact us.

♦ Tick all that apply.

- ☐ Me, this is my permanent or family home
- ☐ Family members including partners, children and babies born on or before 27 March 2011
- ☐ Students and / or schoolchildren who live away from home during term-time
- ☐ Housemates / flatmates or lodgers
- ☐ People who work away from home within the UK, or are members of the Armed Forces, **if this is their permanent or family home**
- ☐ People staying temporarily who usually live in the UK but do not have another UK address
- ☐ People who usually live outside the UK who are staying in the UK for **6 months or more**
- ☐ People temporarily away from home on the night of 27 March 2011

H2 Counting everyone you included in question **H1**, how many people usually live here?

☐☐

H3 Starting with the householder(s), list the names of the people counted in question **H2**, including children and babies.

	First name	Last name
Person 1		
Person 2		
Person 3		
Person 4		
Person 5		

If there are more than 5 people in this household, either fill in the questionnaire online for the whole household or contact the Helpline on 0300 123 1057 to ask for a Continuation Questionnaire.

H4 Is there anyone staying at this address on the night of 27 March 2011 whose permanent or family home is elsewhere?

♦ Do not include anyone counted in question **H2**.

♦ Tick all that apply.

- ☐ People staying here because it is their second address, for example, for work or a holiday home. Their permanent or family home is elsewhere.
- ☐ People who usually live somewhere else in the UK, for example, boy / girlfriends, friends, relatives
- ☐ People who usually live outside the UK who are staying in the UK for less than 6 months
- ☐ People on holiday
- ☐ No-one is staying at this address on the night of 27 March 2011 → Go to **H6**

H5 Counting **only** the people you included in question **H4**, how many people are staying at this address on the night of 27 March 2011 whose permanent or family home is elsewhere?

☐☐ → Details for these people must be recorded on the back page.

If there are **only** people staying at this address on the night of 27 March 2011 whose permanent or family home is elsewhere, please make sure you answer questions **H6** to **H9** on page 5 and questions **V1** to **V4** on the back page.

Household questions - accommodation

H6 What type of accommodation is this?

A whole house or bungalow that is:

- ☐ detached
- ☐ semi-detached
- ☐ terraced (including end-terrace)

A flat, maisonette, or apartment that is:

- ☐ in a tenement or purpose-built block of flats (including '4-in-a-block')
- ☐ part of a converted or shared house (including bed-sits)
- ☐ in a commercial building (for example, in an office building, hotel or over a shop)

A mobile or temporary structure:

- ☐ a caravan or other mobile or temporary structure

H7 Is this household's accommodation self-contained?

♦ This means that all the rooms, including the kitchen, bathroom and toilet, are behind a door that only this household can use.

- ☐ Yes, all the rooms are behind a door that only this household can use
- ☐ No

H8 How many rooms are available for use only by this household?

♦ **Do NOT count:**

- bathrooms
- toilets
- halls or landings
- rooms that can only be used for storage such as cupboards.

♦ **Count** all other rooms, for example:

- kitchens
- utility rooms
- bedrooms
- studies
- conservatories.

❷ If two rooms have been converted into one, count them as one room.

☐☐ Number of rooms

H9 What type of central heating does this accommodation have?

♦ If the central heating is available, please tick the box whether or not you use it.
Central heating is a central system that generates

♦ heat for multiple rooms.

- ☐ No central heating
- ☐ Gas
- ☐ Electric (including storage heaters)
- ☐ Oil
- ☐ Solid fuel
- ☐ Other central heating, please write in

H10 Does the household own or rent this accommodation?

♦ Tick one box only.

- ☐ Owns outright → Go to H12
- ☐ Owns with a mortgage or loan → Go to H12
- ☐ Part owns and part rents (shared ownership)
- ☐ Rents (with or without housing benefit)
- ☐ Lives here rent free

H11 Who is your landlord?

- ☐ Council (Local Authority)
- ☐ Housing Association / Registered Social Landlord
- ☐ Private landlord or letting agency
- ☐ Employer of a household member
- ☐ Relative or friend of a household member
- ☐ Other

H12 In total, how many cars or vans are owned, or are available for use, by members of this household?

♦ Include any company car(s) or van(s) available for private use.

- ☐ None
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4 or more, please write in number ☐☐

Household questions - relationships

H13 How are the members of this household related to each other?

- Tick a box to show the relationship of each person listed in question **H3** (on page 4) to each of the other members of this household. Remember to include household members who are filling in an Individual Questionnaire.
- Use the same order you used in question **H3** - you may find it helpful to write the name(s) of the household member(s) in the space provided. Remember to include children and babies.
- If there are more than 5 people in this household, contact the Helpline on 0300 123 1702 to ask for a Continuation Questionnaire.

This example shows how to provide relationship information for Robert Smith, who is Person 1, his wife (Mary) and their three children (Alison, Steven and James).

EXAMPLE

Name of Person 1	Name of Person 2	Name of Person 3
ROBERT SMITH	MARY SMITH	ALISON SMITH

NAME OF PERSON 1

PLEASE USE THE SAME ORDER AS QUESTION **H3**

Relationship of Person 2 to Person:	1
Husband or wife	✓
Same-sex civil partner	
Partner	
Son or daughter	
Step-child	
Brother or sister	

Relationship of Person 3 to Person:	1	2
Husband or wife		
Same-sex civil partner		
Partner		
Son or daughter	✓	✓
Step-child		
Brother or sister		

SPECIMEN

EXAMPLE

EXAMPLE

Name of Person 1	Name of Person 2	~~Name of Person 3~~

NAME OF PERSON 1

PLEASE USE THE SAME ORDER AS QUESTION **H3**

Relationship of Person 2 to Person:	1
Husband or wife	
Same-sex civil partner	
Partner	
Son or daughter	
Step-child	
Brother or sister	
Step-brother or step-sister	
Mother or father	
Step-mother or step-father	
Grandchild	
Grandparent	
Other relation	
Unrelated (including foster child)	

Relationship of Person 3 to Persons:	1	2
Husband or wife		
Same-sex civil partner		
Partner		
Son or daughter		
Step-child		
Brother or sister		
Step-brother or step-sister		
Mother or father		
Step-mother or step-father		
Grandchild		
Grandparent		
Other relation		
Unrelated (including foster child)		

Name of Person 4

STEVEN SMITH

Relationship of Person 4 to Persons:

	1	2	3
Husband or wife			
Same-sex civil partner			
Partner			
Son or daughter	✓	✓	
Step-child			
Brother or sister			✓

Name of Person 5

JAMES SMITH

Relationship of Person 5 to Persons:

	1	2	3	4
Husband or wife				
Same-sex civil partner				
Partner				
Son or daughter	✓	✓		
Step-child				
Brother or sister			✓	✓

~~Name of Person 4~~

Relationship of Person 4 to Persons:

	1	2	3
Husband or wife			
Same-sex civil partner			
Partner			
Son or daughter			
Step-child			
Brother or sister			
Step-brother or step-sister			
Mother or father			
Step-mother or step-father			
Grandchild			
Grandparent			
Other relation			
Unrelated (including foster child)			

~~Name of Person 5~~

Relationship of Person 5 to Persons:

	1	2	3	4
Husband or wife				
Same-sex civil partner				
Partner				
Son or daughter				
Step-child				
Brother or sister				
Step-brother or step-sister				
Mother or father				
Step-mother or step-father				
Grandchild				
Grandparent				
Other relation				
Unrelated (including foster child)				

Person 1 - Individual questions

1 What is your name? (Person 1 at **H3** on page 4)

First name

Last name

2 What is your sex?

- ☐ Male
- ☐ Female

3 What is your date of birth?

Day Month Year

4 On the 27 March 2011, what is your legal marital or same-sex civil partnership status?

- ☐ Never married and never registered a same-sex civil partnership
- ☐ Married
- ☐ In a registered same-sex civil partnership
- ☐ Separated, but still legally married
- ☐ Separated, but still legally in a same-sex civil partnership
- ☐ Divorced
- ☐ Formerly in a same-sex civil partnership which is now legally dissolved
- ☐ Widowed
- ☐ Surviving partner from a same-sex civil partnership

5 Are you a schoolchild or student in full-time education?

- ☐ Yes
- ☐ No → Go to **7**

6 During term-time, do you live:

- ☐ at the address on the front of this questionnaire?
- ☐ at another address? → Go to **8**

7 What is your country of birth?

- ☐ Scotland → Go to **9**
- ☐ England → Go to **9**
- ☐ Wales → Go to **9**
- ☐ Northern Ireland → Go to **9**
- ☐ Republic of Ireland
- ☐ Elsewhere, please write in the current name of the country

8 If you were not born in the United Kingdom, when did you most recently arrive to live here?

♦ Do not count short visits away from the UK.

Month Year

9 Do you look after, or give any help or support to family members, friends, neighbours or others because of either:

- long-term physical / mental ill-health / disability; or
- problems related to old age?

❷ Do not count anything you do as part of your paid employment.

- ☐ No
- ☐ Yes, 1 - 19 hours a week
- ☐ Yes, 20 - 34 hours a week
- ☐ Yes, 35 - 49 hours a week
- ☐ Yes, 50 or more hours a week

10 One year ago, what was your usual address?

❷ If you had no usual address one year ago, state the address where you were staying.

- ☐ The same as Person 1
- ☐ The address on the front of this questionnaire
- ☐ A term-time / boarding school address in the UK, please write in below
- ☐ Another address in the UK, please write in

Postcode

- ☐ Outside the UK, please write in country

11 What address do you travel to for your main job or course of study (including school)?

♦ Answer for the place where you spend the most time.
♦ If you report to a depot, please write in the depot address.

- ☐ Not currently working or studying → Go to **13**
- ☐ Work or study mainly at, or from, home → Go to **13**
- ☐ No fixed place
- ☐ Work on an offshore installation - please use the address panel below to write in where you travel offshore from, for example "ABERDEEN HARBOUR"
- ☐ The address below, please write in

12 How do you usually travel to your main place of work or study (including school)?

- ♦ Tick one box only.
- ♦ Tick the box for the longest part, by distance, of your usual journey to work or study.

- ☐ Driving a car or van
- ☐ Passenger in a car or van
- ☐ On foot
- ☐ Bus, minibus or coach
- ☐ Train
- ☐ Underground, subway, metro, light rail or tram
- ☐ Taxi
- ☐ Bicycle
- ☐ Motorcycle, scooter or moped
- ☐ Other

13 What religion, religious denomination or body do you belong to?

- ♦ This question is voluntary.

- ☐ None
- ☐ Church of Scotland
- ☐ Roman Catholic
- ☐ Other Christian, please write in below
- ☐ Muslim
- ☐ Buddhist
- ☐ Sikh
- ☐ Jewish
- ☐ Hindu
- ☐ Another religion or body, please write in

14 What do you feel is your national identity?

- ♦ Tick **ALL** that apply

- ☐ Scottish
- ☐ English
- ☐ Welsh
- ☐ Northern Irish
- ☐ British
- ☐ Other, please write in

15 What is your ethnic group?

- ♦ Choose **ONE** section from A to F, then tick **ONE** box which **best describes** your ethnic group or background.

A White

- ☐ Scottish
- ☐ Other British
- ☐ Irish
- ☐ Gypsy / Traveller
- ☐ Polish
- ☐ Other white ethnic group, please write in

B Mixed or multiple ethnic groups

- ☐ Any mixed or multiple ethnic groups, please write in

C Asian, Asian Scottish or Asian British

- ☐ Pakistani, Pakistani Scottish or Pakistani British
- ☐ Indian, Indian Scottish or Indian British
- ☐ Bangladeshi, Bangladeshi Scottish or Bangladeshi British
- ☐ Chinese, Chinese Scottish or Chinese British
- ☐ Other, please write in

D African

- ☐ African, African Scottish or African British
- ☐ Other, please write in

E Caribbean or Black

- ☐ Caribbean, Caribbean Scottish or Caribbean British
- ☐ Black, Black Scottish or Black British
- ☐ Other, please write in

F Other ethnic group

- ☐ Arab, Arab Scottish or Arab British
- ☐ Other, please write in

16 Which of these can you do?

♦ Tick all that apply.

	English	Scottish Gaelic	Scots
Understand	☐	☐	☐
Speak	☐	☐	☐
Read	☐	☐	☐
Write	☐	☐	☐

or

☐ None of these

17 How well can you speak English?

Very well ☐ Well ☐ Not well ☐ Not at all ☐

18 Do you use a language other than English at home?

♦ Tick all that apply.

☐ No, English only

☐ Yes, British Sign Language

☐ Yes, other - please write in

19 How is your health in general?

Very good ☐ Good ☐ Fair ☐ Bad ☐ Very bad ☐

20 Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months?

♦ Tick all that apply.

☐ Deafness or partial hearing loss

☐ Blindness or partial sight loss

☐ Learning disability (for example, Down's Syndrome)

☐ Learning difficulty (for example, dyslexia)

☐ Developmental disorder (for example, Autistic Spectrum Disorder or Asperger's Syndrome)

☐ Physical disability

☐ Mental health condition

☐ Long-term illness, disease or condition

☐ Other condition, please write in

or

☐ No condition

21 Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months?

♦ Include problems related to old age.

☐ Yes, limited a lot

☐ Yes, limited a little

☐ No

22 If you are aged 16 or over →

If you are aged 15 or under → Go to **38**

23 Which of these qualifications do you have?

♦ Tick all that apply.

☐ O Grade, Standard Grade, Access 3 Cluster, Intermediate 1 or 2, CSE, Senior Certificate or equivalent

☐ SCE Higher Grade, Higher, Advanced Higher, CSYS, A Level, AS Level, Advanced Senior Certificate or equivalent

☐ GSVQ Foundation or Intermediate, SVQ level 1 or 2, SCOTVEC Module, City and Guilds Craft or equivalent

☐ GSVQ Advanced, SVQ level 3, ONC, OND, SCOTVEC National Diploma, City and Guilds Advanced Craft or equivalent

☐ HNC, HND, SVQ level 4 or equivalent

☐ Degree, Postgraduate qualifications, Masters, PhD, SVQ level 5 or equivalent

☐ Professional qualifications (for example, teaching, nursing, accountancy)

☐ Other school qualifications not already mentioned (including foreign qualifications)

☐ Other post-school but pre-Higher Education qualifications not already mentioned (including foreign qualifications)

☐ Other Higher Education qualifications not already mentioned (including foreign qualifications)

☐ No qualifications

24 Last week were you:

♦ Tick all that apply.

♦ Include any paid work, including casual or temporary work, even if only for one hour.

☐ working as an employee? → Go to **30**

☐ on a Government sponsored training scheme? → Go to **30**

☐ self-employed or freelance? → Go to **30**

☐ working paid or unpaid for your own or your family's business? → Go to **30**

☐ away from work ill, on maternity leave, on holiday or temporarily laid off? → Go to **30**

☐ doing any other kind of paid work? → Go to **30**

☐ none of the above

Person 1 - Individual questions continued

25 Were you actively looking for any kind of paid work during the last 4 weeks?

☐ Yes ☐ No

26 If a job had been available last week, could you have started it within 2 weeks?

☐ Yes ☐ No

27 Last week, were you waiting to start a job already obtained?

☐ Yes ☐ No

28 Last week were you:

♦ Tick all that apply.

☐ retired (whether receiving a pension or not)?

☐ a student?

☐ looking after home or family?

☐ long-term sick or disabled?

☐ other

29 Have you ever worked?

☐ Yes, please write in the year you last worked

☐☐☐☐ → Go to **30**

☐ No, have never worked → Go to **3**

30 Answer the remaining questions for your main job or, if not working, your last main job.

❷ Your main job is the job in wh usually work (worked) the most ho

31 In your main job, are (were) you:

☐ an employee?

☐ self-employe nce without employees?

☐ self-employed w ployees?

32 What is (was) your full and specific job title?

❷ For ple, PRIMARY SCHOOL TEACHER, CA IC, DISTRICT NURSE, STRUCTURAL ENGINE

♦ Do not state your grade or pay band.

33 Briefly describe what you do (did) in your main job.

34 Do (did) you supervise any em

❷ Supervision involves overseei work of other employees on a day-to-day basis.

☐ Yes ☐ No

35 How many hours (t nearest full hour) a week do (did) you usually w main job?

♦ Include paid and un ertime.

☐☐ Number of hours worked in a typical week

36 At your ce, what is (was) the main activity of your em business?

❷ e, ARMED FORCES, PRIMARY EDUCATION, RE G CARS, CONTRACT CATERING, COMPUTER SERV NG, DOCTOR'S SURGERY.

❷ If you are (were) a civil servant, please write GOVERNMENT.

If you are (were) a local government officer, please write LOCAL GOVERNMENT and give the name of your department within the local authority.

37 In your main job, what is (was) the name of the organisation you work (worked) for?

❷ If you are (were) self-employed in your own organisation, please write in the business name.

☐ No organisation, for example, self-employed, freelance, or work (worked) for a private individual.

38 There are no more questions for Person 1.

❷ If there are no more people in your household, please leave the following pages blank. Otherwise go to questions for Person 2.

❷ If you included anyone at question **H5**, remember to record their details on the back page.

♦ Remember to sign the declaration on page 1.

Person 2 - Individual questions

1 What is your name? (Person 2 at **H3** on page 4)

First name

Last name

2 What is your sex?

☐ Male ☐ Female

3 What is your date of birth?

Day Month Year

4 On the 27 March 2011, what is your legal marital or same-sex civil partnership status?

☐ Never married and never registered a same-sex civil partnership

☐ Married

☐ Separated, but still legally married

☐ Divorced

☐ Widowed

☐ In a registered same-sex civil partnership

☐ Separated, but still legally in a same-sex civil partnership

☐ Formerly in a same-sex civil partnership which is now legally dissolved

☐ Surviving partner from a same-sex civil partnership

5 Are you a schoolchild or student in full-time education?

☐ Yes

☐ No → Go to **7**

6 During term-time, do you live:

☐ at the address on the front [illegible] questionnaire?

☐ at another address? → Go [illegible]

7 What is your country of birth?

☐ Scotland → **9**

☐ England → **9**

☐ Wales → Go to **9**

☐ Northern Ireland → Go to **9**

☐ Re[illegible]reland

☐ Elsewh[illegible] please write in the current name of the country

8 If you were not born in the United Kingdom, when did you most recently arrive to live here?

♦ Do not count short visits away from the UK.

Month Year

9 Do you look after, or give any help or support to family members, friends, neighbours or others because of either:

- long-term physical / mental ill-health / disability; or
- problems related to old age?

❷ Do not count anything you do as part of your paid employment.

☐ No

☐ Yes, 1 - 19 hours a week

☐ Yes, 20 - 34 hours a week

☐ Yes, 35 - 49 hours a week

☐ Yes, 50 or more hours a week

10 One year ago, what was your usual address?

❷ If you had no usual address one year ago, state the address where you were staying.

☐ Same as Person 1

☐ The address on the front of this questionnaire

☐ A term-time / boarding school address in the UK, please write in below

☐ Another address in the UK, please write in

Postcode

☐ Outside the UK, please write in country

11 What address do you travel to for your main job or course of study (including school)?

♦ Answer for the place where you spend the most time.
♦ If you report to a depot, please write in the depot address.

☐ Not currently working or studying → Go to **13**

☐ Work or study mainly at, or from, home → Go to **13**

☐ No fixed place

☐ Work on an offshore installation - please use the address panel below to write in where you travel offshore from, for example "ABERDEEN HARBOUR"

☐ The address below, please write in

Person 2 - Individual questions continued

12 How do you usually travel to your main place of work or study (including school)?

- ♦ Tick one box only.
- ♦ Tick the box for the longest part, by distance, of your usual journey to work or study.

- ☐ Driving a car or van
- ☐ Passenger in a car or van
- ☐ On foot
- ☐ Bus, minibus or coach
- ☐ Train
- ☐ Underground, subway, metro, light rail or tram
- ☐ Taxi
- ☐ Bicycle
- ☐ Motorcycle, scooter or moped
- ☐ Other

13 What religion, religious denomination or body do you belong to?

- ♦ This question is voluntary.

- ☐ None
- ☐ Church of Scotland
- ☐ Roman Catholic
- ☐ Other Christian, please write in below
- ☐ Muslim
- ☐ Buddhist
- ☐ Sikh
- ☐ Jewish
- ☐ Hindu
- ☐ Another religion or body, please write in

14 What do you feel your national identity?

- ♦ Tick **ALL** that apply.

- ☐ Scottish
- ☐ English
- ☐ Welsh
- ☐ Northern Irish
- ☐ British
- ☐ Other, please write in

15 What is your ethnic group?

- ♦ Choose **ONE** section from A to F, then tick **ONE** box which **best describes** your ethnic group or background.

A White

- ☐ Scottish
- ☐ Other British
- ☐ Irish
- ☐ Gypsy / Traveller
- ☐ Polish
- ☐ Other white ethnic group, please write in

B Mixed or multiple ethnic groups

- ☐ Any other mixed or multiple ethnic groups, please write in

C Asian, Asian Scottish or Asian British

- ☐ Pakistani, Pakistani Scottish or Pakistani British
- ☐ Indian, Indian Scottish or Indian British
- ☐ Bangladeshi, Bangladeshi Scottish or Bangladeshi British
- ☐ Chinese, Chinese Scottish or Chinese British
- ☐ Other, please write in

D African

- ☐ African, African Scottish or African British
- ☐ Other, please write in

E Caribbean or Black

- ☐ Caribbean, Caribbean Scottish or Caribbean British
- ☐ Black, Black Scottish or Black British
- ☐ Other, please write in

F Other ethnic group

- ☐ Arab, Arab Scottish or Arab British
- ☐ Other, please write in

16 Which of these can you do?

♦ Tick all that apply.

	English	Scottish Gaelic	Scots
Understand	☐	☐	☐
Speak	☐	☐	☐
Read	☐	☐	☐
Write	☐	☐	☐

or

☐ None of these

17 How well can you speak English?

Very well ☐ Well ☐ Not well ☐ Not at all ☐

18 Do you use a language other than English at home?

♦ Tick all that apply.

☐ No, English only

☐ Yes, British Sign Language

☐ Yes, other - please write in

19 How is your health in general?

Very good ☐ Good ☐ Fair ☐ Bad ☐ V[illegible]d ☐

20 Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months?

♦ Tick all that apply.

☐ Deafness or partial hearing loss

☐ Blindness or partial sight loss

☐ Learning disabili[illegible]xample, Down's Syndrome)

☐ Learning difficu[illegible]ample, dyslexia)

☐ Developmental diso[illegible](for example, Autistic Spectrum Disorder or Asperger's Syndrome)

☐ Phy[illegible]disability

☐ Me[illegible]n condition

☐ Long-term illness, disease or condition

☐ Other condition, please write in

or

☐ No condition

21 Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months?

♦ Include problems related to old age.

☐ Yes, limited a lot

☐ Yes, limited a little

☐ No

22 If you are aged 16 or over → Go to **23**

If you are aged 15 or under → Go to **38**

23 Which of these qualifi[illegible]tions do you have?

♦ Tick all that apply.

☐ O Grade, Standar[illegible]Access 3 Cluster, Intermediate 1 or 2, [illegible], CSE, Senior Certificate or equivalent

☐ SCE H[illegible]her Grade, Higher, Advanced Higher, CSYS, A Le[illegible] Level, Advanced Senior Certificate or equi[illegible]

☐ [illegible]tion or Intermediate, SVQ level 1 [illegible]VEC Module, City and Guilds Craft or [illegible]nt

☐ GSVQ Advanced, SVQ level 3, ONC, OND, SCOTVEC National Diploma, City and Guilds Advanced Craft or equivalent

☐ HNC, HND, SVQ level 4 or equivalent

☐ Degree, Postgraduate qualifications, Masters, PhD, SVQ level 5 or equivalent

☐ Professional qualifications (for example, teaching, nursing, accountancy)

☐ Other school qualifications not already mentioned (including foreign qualifications)

☐ Other post-school but pre-Higher Education qualifications not already mentioned (including foreign qualifications)

☐ Other Higher Education qualifications not already mentioned (including foreign qualifications)

☐ No qualifications

24 Last week were you:

♦ Tick all that apply.

♦ Include any paid work, including casual or temporary work, even if only for one hour.

☐ working as an employee? → Go to **30**

☐ on a Government sponsored training scheme? → Go to **30**

☐ self-employed or freelance? → Go to **30**

☐ working paid or unpaid for your own or your family's business? → Go to **30**

☐ away from work ill, on maternity leave, on holiday or temporarily laid off? → Go to **30**

☐ doing any other kind of paid work? → Go to **30**

☐ none of the above

Person 2 - Individual questions continued

25 Were you actively looking for any kind of paid work during the last 4 weeks?

☐ Yes ☐ No

26 If a job had been available last week, could you have started it within 2 weeks?

☐ Yes ☐ No

27 Last week, were you waiting to start a job already obtained?

☐ Yes ☐ No

28 Last week were you:

♦ Tick all that apply.

☐ retired (whether receiving a pension or not)?

☐ a student?

☐ looking after home or family?

☐ long-term sick or disabled?

☐ other

29 Have you ever worked?

☐ Yes, please write in the year you last worked

☐☐☐☐ → Go to **30**

☐ No, have never worked → Go to **38**

30 Answer the remaining questions for your main job or, if not working, your last main job.

❷ Your main job is the job in which you usually work (worked) the most hours.

31 In your main job, are (were) you:

☐ an employee?

☐ self-employed without employees?

☐ self-employed with employees?

32 What is (was) your full and specific job title?

❷ For example, PRIMARY SCHOOL TEACHER, CARPENTER, DISTRICT NURSE, STRUCTURAL ENGINEER

♦ Do not state your grade or pay band.

33 Briefly describe what you do (did) in your main job.

34 Do (did) you supervise any employees?

❷ Supervision involves overseeing the work of other employees on a day-to-day basis.

☐ Yes ☐ No

35 How many hours (to the nearest full hour) a week do (did) you usually work in your main job?

♦ Include paid and unpaid overtime.

☐☐ Number of hours worked in a typical week

36 At your workplace, what is (was) the main activity of your business?

❷ For example, ARMED FORCES, PRIMARY EDUCATION, REPAIR OF CARS, CONTRACT CATERING, COMPUTER SERVICING, DOCTOR'S SURGERY.

❷ If you are (were) a civil servant, please write GOVERNMENT.

If you are (were) a local government officer, please write LOCAL GOVERNMENT and give the name of your department within the local authority.

37 In your main job, what is (was) the name of the organisation you work (worked) for?

❷ If you are (were) self-employed in your own organisation, please write in the business name.

☐ No organisation, for example, self-employed, freelance, or work (worked) for a private individual.

38 There are no more questions for Person 2.

❷ If there are no more people in your household, please leave the following pages blank. Otherwise go to questions for Person 3.

❷ If you included anyone at question **H5**, remember to record their details on the back page.

♦ Remember to sign the declaration on page 1.

Person 3 - Individual questions

1 What is your name? (Person 3 at **H3** on page 4)

First name

Last name

2 What is your sex?

☐ Male ☐ Female

3 What is your date of birth?

Day Month Year

4 On the 27 March 2011, what is your legal marital or same-sex civil partnership status?

☐ Never married and never registered a same-sex civil partnership

☐ Married

☐ Separated, but still legally married

☐ Divorced

☐ Widowed

☐ In a registered same-sex civil partnership

☐ Separated, but still legally in a same-sex civil partnership

☐ Formerly in a same-sex civil partnership which is now legally dissolved

☐ Surviving partner from a same-sex civil partnership

5 Are you a schoolchild or student in full-time education?

☐ Yes

☐ No → Go to **7**

6 During term-time, do you live:

☐ at the address on the front of [illegible] questionnaire?

☐ at another address? → Go to **8**

7 What is your country of birth?

☐ Scotland → Go to **9**

☐ England → Go to **9**

☐ Wales → Go to **9**

☐ Northern Ireland → Go to **9**

☐ Republic of Ireland

☐ Elsewhere, please write in the current name of the country

8 If you were not born in the United Kingdom, when did you most recently arrive to live here?

♦ Do not count short visits away from the UK.

Month Year

9 Do you look after, or give any help or support to family members, friends, neighbours or others because of either:

- long-term physical / mental ill-health / disability; or
- problems related to old age?

❷ Do not count anything you do as part of your paid employment.

☐ No

☐ Yes, 1 - 19 hours a week

☐ Yes, 20 - 34 hours a week

☐ Yes, 35 - 49 hours a week

☐ Yes, 50 or more hours a week

10 One year ago, what was your usual address?

❷ If you had no usual address one year ago, state the address where you were staying.

☐ Same as Person 1

☐ The address on the front of this questionnaire

☐ Term-time / boarding school address in [illegible] please write in below

☐ Another address in the UK, please write in

Postcode

☐ Outside the UK, please write in country

11 What address do you travel to for your main job or course of study (including school)?

♦ Answer for the place where you spend the most time.
♦ If you report to a depot, please write in the depot address.

☐ Not currently working or studying → Go to **13**

☐ Work or study mainly at, or from, home → Go to **13**

☐ No fixed place

☐ Work on an offshore installation - please use the address panel below to write in where you travel offshore from, for example "ABERDEEN HARBOUR"

☐ The address below, please write in

Person 3 - Individual questions continued

12 How do you usually travel to your main place of work or study (including school)?

- ♦ Tick one box only.
- ♦ Tick the box for the longest part, by distance, of your usual journey to work or study.

- ☐ Driving a car or van
- ☐ Passenger in a car or van
- ☐ On foot
- ☐ Bus, minibus or coach
- ☐ Train
- ☐ Underground, subway, metro, light rail or tram
- ☐ Taxi
- ☐ Bicycle
- ☐ Motorcycle, scooter or moped
- ☐ Other

13 What religion, religious denomination or body do you belong to?

- ♦ This question is voluntary.

- ☐ None
- ☐ Church of Scotland
- ☐ Roman Catholic
- ☐ Other Christian, please write in below
- ☐ Muslim
- ☐ Buddhist
- ☐ Sikh
- ☐ Jewish
- ☐ Hindu
- ☐ Another religion or body, please write in

14 What do you feel is your national identity?

- ♦ Tick all that apply.

- ☐ Scottish
- ☐ English
- ☐ Welsh
- ☐ Northern Irish
- ☐ British
- ☐ Other, please write in

15 What is your ethnic group?

- ♦ Choose **ONE** section from A to F, then tick **ONE** box which **best describes** your ethnic group or background.

A White

- ☐ Scottish
- ☐ Other British
- ☐ Irish
- ☐ Gypsy / Traveller
- ☐ Polish
- ☐ Other white ethnic group, please write in

B Mixed or multiple ethnic groups

- ☐ Any mixed or multiple ethnic groups, please write in

C Asian, Asian Scottish or Asian British

- ☐ Pakistani, Pakistani Scottish or Pakistani British
- ☐ Indian, Indian Scottish or Indian British
- ☐ Bangladeshi, Bangladeshi Scottish or Bangladeshi British
- ☐ Chinese, Chinese Scottish or Chinese British
- ☐ Other, please write in

D African

- ☐ African, African Scottish or African British
- ☐ Other, please write in

E Caribbean or Black

- ☐ Caribbean, Caribbean Scottish or Caribbean British
- ☐ Black, Black Scottish or Black British
- ☐ Other, please write in

F Other ethnic group

- ☐ Arab, Arab Scottish or Arab British
- ☐ Other, please write in

16 Which of these can you do?

♦ Tick all that apply.

	English	Scottish Gaelic	Scots
Understand	☐	☐	☐
Speak	☐	☐	☐
Read	☐	☐	☐
Write	☐	☐	☐

or

☐ None of these

17 How well can you speak English?

Very well ☐ Well ☐ Not well ☐ Not at all ☐

18 Do you use a language other than English at home?

♦ Tick all that apply.

☐ No, English only

☐ Yes, British Sign Language

☐ Yes, other - please write in

19 How is your health in general?

Very good ☐ Good ☐ Fair ☐ Bad ☐ Very bad ☐

20 Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months?

♦ Tick all that apply.

☐ Deafness or partial hearing loss

☐ Blindness or partial sight loss

☐ Learning disability (for example, Down's Syndrome)

☐ Learning difficulty (for example, dyslexia)

☐ Developmental disorder (for example, Autistic Spectrum Disorder or Asperger's Syndrome)

☐ Physical disability

☐ Mental health condition

☐ Long-term illness, disease or condition

☐ Other condition, please write in

or

☐ No condition

21 Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months?

♦ Include problems related to old age.

☐ Yes, limited a lot

☐ Yes, limited a little

☐ No

22 If you are aged 16 or over → 23

If you are aged 15 or under → Go to 38

23 Which of these qualifications do you have?

♦ Tick all that apply.

☐ O Grade, Standard Grade, Access 3 Cluster, Intermediate 1 or 2, GCSE, Senior Certificate or equivalent

☐ SCE Higher Grade, Higher, Advanced Higher, CSYS, A Level, AS Level, Advanced Senior Certificate or equivalent

☐ GSVQ Foundation or Intermediate, SVQ level 1 or 2, Key Skills Module, City and Guilds Craft or equivalent

☐ GSVQ Advanced, SVQ level 3, ONC, OND, SCOTVEC National Certificate or Diploma, City and Guilds Advanced Craft or equivalent

☐ HNC, HND, SVQ level 4 or equivalent

☐ Degree, Postgraduate qualifications, Masters, PhD, SVQ level 5 or equivalent

☐ Professional qualifications (for example, teaching, nursing, accountancy)

☐ Other school qualifications not already mentioned (including foreign qualifications)

☐ Other post-school but pre-Higher Education qualifications not already mentioned (including foreign qualifications)

☐ Other Higher Education qualifications not already mentioned (including foreign qualifications)

☐ No qualifications

24 Last week were you:

♦ Tick all that apply.

♦ Include any paid work, including casual or temporary work, even if only for one hour.

☐ working as an employee? → Go to 30

☐ on a Government sponsored training scheme? → Go to 30

☐ self-employed or freelance? → Go to 30

☐ working paid or unpaid for your own or your family's business? → Go to 30

☐ away from work ill, on maternity leave, on holiday or temporarily laid off? → Go to 30

☐ doing any other kind of paid work? → Go to 30

☐ none of the above

Person 3 - Individual questions continued

25 Were you actively looking for any kind of paid work during the last 4 weeks?

☐ Yes ☐ No

26 If a job had been available last week, could you have started it within 2 weeks?

☐ Yes ☐ No

27 Last week, were you waiting to start a job already obtained?

☐ Yes ☐ No

28 Last week were you:

♦ Tick all that apply.

☐ retired (whether receiving a pension or not)?

☐ a student?

☐ looking after home or family?

☐ long-term sick or disabled?

☐ other

29 Have you ever worked?

☐ Yes, please write in the year you last worked

☐☐☐☐ → Go to **30**

☐ No, have never worked → Go to **38**

30 Answer the remaining questions for your main job or, if not working, your last main job.

❷ Your main job is the job in which you usually work (worked) the most hours.

31 In your main job, are (were) you:

☐ an employee?

☐ self-employed without employees?

☐ self-employed with employees?

32 What is (was) your full and specific job title?

❷ For example, PRIMARY SCHOOL TEACHER, CAR MECHANIC, DISTRICT NURSE, STRUCTURAL ENGINEER.

♦ Do not state your grade or pay band.

33 Briefly describe what you do (did) in your main job.

34 Do (did) you supervise any employees?

❷ Supervision involves overseeing the work of other employees on a day-to-day basis.

☐ Yes ☐ No

35 How many hours (to the nearest full hour) a week do (did) you usually work in your main job?

♦ Include paid and unpaid overtime.

☐☐ Number of hours worked in a typical week

36 At your workplace, what is (was) the main activity of your employer or business?

❷ For example, ARMED FORCES, PRIMARY EDUCATION, REPAIRING CARS, CONTRACT CATERING, COMPUTER SERVICING, DOCTOR'S SURGERY.

❷ If you are (were) a civil servant, please write GOVERNMENT.

❷ If you are (were) a local government officer, please write LOCAL GOVERNMENT and give the name of your department within the local authority.

37 In your main job, what is (was) the name of the organisation you work (worked) for?

❷ If you are (were) self-employed in your own organisation, please write in the business name.

☐ No organisation, for example, self-employed, freelance, or work (worked) for a private individual.

38 There are no more questions for Person 3.

❷ If there are no more people in your household, please leave the following pages blank. Otherwise go to questions for Person 4.

❷ If you included anyone at question **H5**, remember to record their details on the back page.

♦ Remember to sign the declaration on page 1.

Person 4 - Individual questions

1 What is your name? (Person 4 at **H3** on page 4)

First name

Last name

2 What is your sex?

☐ Male ☐ Female

3 What is your date of birth?

Day Month Year

4 On the 27 March 2011, what is your legal marital or same-sex civil partnership status?

☐ Never married and never registered a same-sex civil partnership

☐ Married

☐ Separated, but still legally married

☐ Divorced

☐ Widowed

☐ In a registered same-sex civil partnership

☐ Separated, but still legally in a same-sex civil partnership

☐ Formerly in a same-sex civil partnership which is now legally dissolved

☐ Surviving partner from a same-sex civil partnership

5 Are you a schoolchild or student in full-time education?

☐ Yes

☐ No → Go to **7**

6 During term-time, do you live:

☐ at the address on the front of this questionnaire?

☐ at another address? → Go to

7 What is your country of birth?

☐ Scotland →

☐ England →

☐ Wales → Go to

☐ North Ireland → Go to **9**

☐ Republic of Ireland

☐ Elsewhere, please write in the current name of the country

8 If you were not born in the United Kingdom, when did you most recently arrive to live here?

♦ Do not count short visits away from the UK.

Month Year

9 Do you look after, or give any help or support to family members, friends, neighbours or others because of either:

- long-term physical / mental ill-health / disability; or
- problems related to old age?

❷ Do not count anything you do as part of your paid employment.

☐ No

☐ Yes, 1 - 19 hours a week

☐ Yes, 20 - 34 hours a week

☐ Yes, 35 - 49 hours a week

☐ Yes, 50 or more hours a week

10 One year ago, what was your usual address?

❷ If you had no usual address one year ago, state the address where you were staying.

☐ Same as person 1

☐ The address on the front of this questionnaire

☐ A term-time / boarding school address in the UK, please write in below

☐ Another address in the UK, please write in

Postcode

☐ Outside the UK, please write in country

11 What address do you travel to for your main job or course of study (including school)?

♦ Answer for the place where you spend the most time.
♦ If you report to a depot, please write in the depot address.

☐ Not currently working or studying → Go to **13**

☐ Work or study mainly at, or from, home → Go to **13**

☐ No fixed place

☐ Work on an offshore installation - please use the address panel below to write in where you travel offshore from, for example "ABERDEEN HARBOUR"

☐ The address below, please write in

12 How do you usually travel to your main place of work or study (including school)?

- ♦ Tick one box only.
- ♦ Tick the box for the longest part, by distance, of your usual journey to work or study.

- ☐ Driving a car or van
- ☐ Passenger in a car or van
- ☐ On foot
- ☐ Bus, minibus or coach
- ☐ Train
- ☐ Underground, subway, metro, light rail or tram
- ☐ Taxi
- ☐ Bicycle
- ☐ Motorcycle, scooter or moped
- ☐ Other

13 What religion, religious denomination or body do you belong to?

- ♦ This question is voluntary.

- ☐ None
- ☐ Church of Scotland
- ☐ Roman Catholic
- ☐ Other Christian, please write in below
- ☐ Muslim
- ☐ Buddhist
- ☐ Sikh
- ☐ Jewish
- ☐ Hindu
- ☐ Another religion or body, please write in

14 What do you feel is your national identity?

- ♦ Tick **ALL** that apply.

- ☐ Scottish
- ☐ English
- ☐ Welsh
- ☐ Northern Irish
- ☐ British
- ☐ Other, please write in

15 What is your ethnic group?

- ♦ Choose **ONE** section from A to F, then tick **ONE** box which **best describes** your ethnic group or background.

A White

- ☐ Scottish
- ☐ Other British
- ☐ Irish
- ☐ Gypsy / Traveller
- ☐ Polish
- ☐ Other white ethnic, please write in

B Mixed or multiple ethnic groups

- ☐ Any multiple ethnic groups, please write in

C Asian, Asian Scottish or Asian British

- ☐ Pakistani, Pakistani Scottish or Pakistani British
- ☐ Indian, Indian Scottish or Indian British
- ☐ Bangladeshi, Bangladeshi Scottish or Bangladeshi British
- ☐ Chinese, Chinese Scottish or Chinese British
- ☐ Other, please write in

D African

- ☐ African, African Scottish or African British
- ☐ Other, please write in

E Caribbean or Black

- ☐ Caribbean, Caribbean Scottish or Caribbean British
- ☐ Black, Black Scottish or Black British
- ☐ Other, please write in

F Other ethnic group

- ☐ Arab, Arab Scottish or Arab British
- ☐ Other, please write in

16 Which of these can you do?

♦ Tick all that apply.

	English	Scottish Gaelic	Scots
Understand	☐	☐	☐
Speak	☐	☐	☐
Read	☐	☐	☐
Write	☐	☐	☐

or

☐ None of these

17 How well can you speak English?

Very well ☐ Well ☐ Not well ☐ Not at all ☐

18 Do you use a language other than English at home?

♦ Tick all that apply.

☐ No, English only

☐ Yes, British Sign Language

☐ Yes, other - please write in

19 How is your health in general?

Very good ☐ Good ☐ Fair ☐ Bad ☐ V…ad ☐

20 Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months?

♦ Tick all that apply.

☐ Deafness or partial hearing loss

☐ Blindness or partial sight loss

☐ Learning disabili… …xample, Down's Syndrome)

☐ Learning difficu… …ample, dyslexia)

☐ Developmental diso… (for example, Autistic Spectrum Disorder or Asperger's Syndrome)

☐ Phy… disability

☐ Men… …h condition

☐ Long-term illness, disease or condition

☐ Other condition, please write in

or

☐ No condition

21 Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months?

♦ Include problems related to old age.

☐ Yes, limited a lot

☐ Yes, limited a little

☐ No

22 If you are aged 16 or over → Go to **23**

If you are aged 15 or under → Go to **38**

23 Which of these qualifi…tions do you have?

♦ Tick all that apply.

☐ O Grade, Standar… …Access 3 Cluster, Intermediate 1 or 2, …E, CSE, Senior Certificate or equivalent

☐ SCE H…her Grade, Higher, Advanced Higher, CSYS, A Le… Level, Advanced Senior Certificate or equi…

☐ …tion or Intermediate, SVQ level 1 …VEC Module, City and Guilds Craft or …nt

☐ GSVQ Advanced, SVQ level 3, ONC, OND, SCOTVEC National Diploma, City and Guilds Advanced Craft or equivalent

☐ HNC, HND, SVQ level 4 or equivalent

☐ Degree, Postgraduate qualifications, Masters, PhD, SVQ level 5 or equivalent

☐ Professional qualifications (for example, teaching, nursing, accountancy)

☐ Other school qualifications not already mentioned (including foreign qualifications)

☐ Other post-school but pre-Higher Education qualifications not already mentioned (including foreign qualifications)

☐ Other Higher Education qualifications not already mentioned (including foreign qualifications)

☐ No qualifications

24 Last week were you:

♦ Tick all that apply.

♦ Include any paid work, including casual or temporary work, even if only for one hour.

☐ working as an employee? → Go to **30**

☐ on a Government sponsored training scheme? → Go to **30**

☐ self-employed or freelance? → Go to **30**

☐ working paid or unpaid for your own or your family's business? → Go to **30**

☐ away from work ill, on maternity leave, on holiday or temporarily laid off? → Go to **30**

☐ doing any other kind of paid work? → Go to **30**

☐ none of the above

Person 4 - Individual questions continued

25 Were you actively looking for any kind of paid work during the last 4 weeks?

☐ Yes ☐ No

26 If a job had been available last week, could you have started it within 2 weeks?

☐ Yes ☐ No

27 Last week, were you waiting to start a job already obtained?

☐ Yes ☐ No

28 Last week were you:

♦ Tick all that apply.

☐ retired (whether receiving a pension or not)?

☐ a student?

☐ looking after home or family?

☐ long-term sick or disabled?

☐ other

29 Have you ever worked?

☐ Yes, please write in the year you last worked

☐☐☐☐ → Go to **30**

☐ No, have never worked → Go to **38**

30 Answer the remaining questions for your main job or, if not working, your last main job.

❷ Your main job is the job in which you usually work (worked) the most hours.

31 In your main job, are (were) you:

☐ an employee?

☐ self-employed without employees?

☐ self-employed with employees?

32 What is (was) your full and specific job title?

❷ For example, PRIMARY SCHOOL TEACHER, CAR MECHANIC, DISTRICT NURSE, STRUCTURAL ENGINEER.

♦ Do not state your grade or pay band.

33 Briefly describe what you do (did) in your main job.

34 Do (did) you supervise any employees?

❷ Supervision involves overseeing the work of other employees on a day-to-day basis.

☐ Yes ☐ No

35 How many hours (to the nearest full hour) a week do (did) you usually work in your main job?

♦ Include paid and unpaid overtime.

☐☐ Number of hours worked in a typical week

36 At your workplace, what is (was) the main activity of your business?

❷ For example, ARMED FORCES, PRIMARY EDUCATION, REPAIR OF CARS, CONTRACT CATERING, COMPUTER SERVICING, DOCTOR'S SURGERY.

❷ If you are (were) a civil servant, please write GOVERNMENT.

If you are (were) a local government officer, please write LOCAL GOVERNMENT and give the name of your department within the local authority.

37 In your main job, what is (was) the name of the organisation you work (worked) for?

❷ If you are (were) self-employed in your own organisation, please write in the business name.

☐ No organisation, for example, self-employed, freelance, or work (worked) for a private individual.

38 There are no more questions for Person 4.

❷ If there are no more people in your household, please leave the following pages blank. Otherwise go to questions for Person 5.

❷ If you included anyone at question **H5**, remember to record their details on the back page.

♦ Remember to sign the declaration on page 1.

Person 5 - Individual questions

1 What is your name? (Person 5 at **H3** on page 4)

First name

Last name

2 What is your sex?

☐ Male ☐ Female

3 What is your date of birth?

Day Month Year

4 On the 27 March 2011, what is your legal marital or same-sex civil partnership status?

☐ Never married and never registered a same-sex civil partnership

☐ Married

☐ Separated, but still legally married

☐ Divorced

☐ Widowed

☐ In a registered same-sex civil partnership

☐ Separated, but still legally in a same-sex civil partnership

☐ Formerly in a same-sex civil partnership which is now legally dissolved

☐ Surviving partner from a same-sex civil partnership

5 Are you a schoolchild or student in full-time education?

☐ Yes

☐ No → Go to **7**

6 During term-time, do you live:

☐ at the address on the front of [illegible] questionnaire?

☐ at another address? → Go [illegible]

7 What is your country of birth?

☐ Scotland → G[illegible] **9**

☐ England → [illegible]

☐ Wales → Go to [illegible]

☐ Northern Ireland → Go to **9**

☐ Rep[illegible] of Ireland

☐ Elsewhe[illegible]ease write in the current name of the coun[illegible]

8 If you were not born in the United Kingdom, when did you most recently arrive to live here?

♦ Do not count short visits away from the UK.

Month Year

9 Do you look after, or give any help or support to family members, friends, neighbours or others because of either:

- long-term physical / mental ill-health / disability; or
- problems related to old age?

❷ Do not count anything you do as part of your paid employment.

☐ No

☐ Yes, 1 - 19 hours a week

☐ Yes, 20 - 34 hours a week

☐ Yes, 35 - 49 hours a week

☐ Yes, 50 or more h[illegible] week

10 One year ago, what [illegible] usual address?

❷ If you had no usual addr[illegible] one year ago, state the address where you were staying.

☐ Same [illegible]erson 1

☐ The a[illegible]he front of this questionnaire

☐ [illegible]m-time / boarding school address in t[illegible]lease write in below

☐ Anoth[illegible] address in the UK, please write in

Postcode

☐ Outside the UK, please write in country

11 What address do you travel to for your main job or course of study (including school)?

♦ Answer for the place where you spend the most time.
♦ If you report to a depot, please write in the depot address.

☐ Not currently working or studying → Go to **13**

☐ Work or study mainly at, or from, home → Go to **13**

☐ No fixed place

☐ Work on an offshore installation - please use the address panel below to write in where you travel offshore from, for example "ABERDEEN HARBOUR"

☐ The address below, please write in

Person 5 - Individual questions continued

12 How do you usually travel to your main place of work or study (including school)?

- ♦ Tick one box only.
- ♦ Tick the box for the longest part, by distance, of your usual journey to work or study.

- ☐ Driving a car or van
- ☐ Passenger in a car or van
- ☐ On foot
- ☐ Bus, minibus or coach
- ☐ Train
- ☐ Underground, subway, metro, light rail or tram
- ☐ Taxi
- ☐ Bicycle
- ☐ Motorcycle, scooter or moped
- ☐ Other

13 What religion, religious denomination or body do you belong to?

- ♦ This question is voluntary.

- ☐ None
- ☐ Church of Scotland
- ☐ Roman Catholic
- ☐ Other Christian, please write in below
- ☐ Muslim
- ☐ Buddhist
- ☐ Sikh
- ☐ Jewish
- ☐ Hindu
- ☐ Another religion, please write in

14 What do you feel is your national identity?

- ♦ Tick **ALL** that apply.

- ☐ Scottish
- ☐ English
- ☐ Welsh
- ☐ Northern Irish
- ☐ British
- ☐ Other, please write in

15 What is your ethnic group?

- ♦ Choose **ONE** section from A to F, then tick **ONE** box which **best describes** your ethnic group or background.

A White

- ☐ Scottish
- ☐ Other British
- ☐ Irish
- ☐ Gypsy / Traveller
- ☐ Polish
- ☐ Other white ethnic group, please write in

B Mixed or multiple ethnic groups

- ☐ Mixed or multiple ethnic groups, please write in

C Asian, Asian Scottish or Asian British

- ☐ Pakistani, Pakistani Scottish or Pakistani British
- ☐ Indian, Indian Scottish or Indian British
- ☐ Bangladeshi, Bangladeshi Scottish or Bangladeshi British
- ☐ Chinese, Chinese Scottish or Chinese British
- ☐ Other, please write in

D African

- ☐ African, African Scottish or African British
- ☐ Other, please write in

E Caribbean or Black

- ☐ Caribbean, Caribbean Scottish or Caribbean British
- ☐ Black, Black Scottish or Black British
- ☐ Other, please write in

F Other ethnic group

- ☐ Arab, Arab Scottish or Arab British
- ☐ Other, please write in

16 Which of these can you do?

♦ Tick all that apply.

	English	Scottish Gaelic	Scots
Understand	☐	☐	☐
Speak	☐	☐	☐
Read	☐	☐	☐
Write	☐	☐	☐

or

☐ None of these

17 How well can you speak English?

Very well ☐ Well ☐ Not well ☐ Not at all ☐

18 Do you use a language other than English at home?

♦ Tick all that apply.

☐ No, English only

☐ Yes, British Sign Language

☐ Yes, other - please write in

19 How is your health in general?

Very good ☐ Good ☐ Fair ☐ Bad ☐ Very bad ☐

20 Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months?

♦ Tick all that apply.

☐ Deafness or partial hearing loss

☐ Blindness or partial sight loss

☐ Learning disability (for example, Down's Syndrome)

☐ Learning difficulty (for example, dyslexia)

☐ Developmental disorder (for example, Autistic Spectrum Disorder or Asperger's Syndrome)

☐ Physical disability

☐ Mental health condition

☐ Long-term illness, disease or condition

☐ Other condition, please write in

or

☐ No condition

21 Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months?

♦ Include problems related to old age.

☐ Yes, limited a lot

☐ Yes, limited a little

☐ No

22 If you are aged 16 or over → Go to

If you are aged 15 or under → Go to **38**

23 Which of these qualifications do you have?

♦ Tick all that apply.

☐ O Grade, Standard Grade, Access 3 Cluster, Intermediate 1 or 2, GCSE, CSE, Senior Certificate or equivalent

☐ SCE Higher Grade, Higher, Advanced Higher, CSYS, A Level, AS Level, Advanced Senior Certificate or equivalent

☐ [illegible]ation or Intermediate, SVQ level 1 or [illegible]TVEC Module, City and Guilds Craft or equivalent

☐ GSVQ Advanced, SVQ level 3, ONC, OND, SCOTVEC National Diploma, City and Guilds Advanced Craft or equivalent

☐ HNC, HND, SVQ level 4 or equivalent

☐ Degree, Postgraduate qualifications, Masters, PhD, SVQ level 5 or equivalent

☐ Professional qualifications (for example, teaching, nursing, accountancy)

☐ Other school qualifications not already mentioned (including foreign qualifications)

☐ Other post-school but pre-Higher Education qualifications not already mentioned (including foreign qualifications)

☐ Other Higher Education qualifications not already mentioned (including foreign qualifications)

☐ No qualifications

24 Last week were you:

♦ Tick all that apply.

♦ Include any paid work, including casual or temporary work, even if only for one hour.

☐ working as an employee? → Go to **30**

☐ on a Government sponsored training scheme? → Go to **30**

☐ self-employed or freelance? → Go to **30**

☐ working paid or unpaid for your own or your family's business? → Go to **30**

☐ away from work ill, on maternity leave, on holiday or temporarily laid off? → Go to **30**

☐ doing any other kind of paid work? → Go to **30**

☐ none of the above

Person 5 - Individual questions continued

25 Were you actively looking for any kind of paid work during the last 4 weeks?

☐ Yes ☐ No

26 If a job had been available last week, could you have started it within 2 weeks?

☐ Yes ☐ No

27 Last week, were you waiting to start a job already obtained?

☐ Yes ☐ No

28 Last week were you:

♦ Tick all that apply.

☐ retired (whether receiving a pension or not)?

☐ a student?

☐ looking after home or family?

☐ long-term sick or disabled?

☐ other

29 Have you ever worked?

☐ Yes, please write in the year you last worked

☐☐☐☐ → Go to **30**

☐ No, have never worked → Go to **38**

30 Answer the remaining questions for your main job or, if not working, your last main job.

❷ Your main job is the job in wh… usually work (worked) the most hou…

31 In your main job, are (were) you:

☐ an employee?

☐ self-employed …ce without employees?

☐ self-employed wit… loyees?

32 What is (was) your full and specific job title?

❷ For e… RIMARY SCHOOL TEACHER, CAR… C, DISTRICT NURSE, STRUCTURAL ENGINEE…

♦ Do not state your grade or pay band.

33 Briefly describe what you do (did) in your main job.

34 Do (did) you supervise any em…

❷ Supervision involves overseeing …rk of other employees on a day-to-day basis.

☐ Yes ☐ No

35 How many hours (to …arest full hour) a week do (did) you usually w… …ain job?

♦ Include paid and unpa… …ertime.

☐☐ Number of hours worked in a typical week

36 At your w…, what is (was) the main activity of your emp… business?

❷ F… …ble, ARMED FORCES, PRIMARY EDUCATION, REP… CARS, CONTRACT CATERING, COMPUTER SERVIC…G, DOCTOR'S SURGERY.

❷ If you are (were) a civil servant, please write GOVERNMENT.

If you are (were) a local government officer, please write LOCAL GOVERNMENT and give the name of your department within the local authority.

37 In your main job, what is (was) the name of the organisation you work (worked) for?

❷ If you are (were) self-employed in your own organisation, please write in the business name.

☐ No organisation, for example, self-employed, freelance, or work (worked) for a private individual.

38 There are no more questions for Person 5.

❷ If there are more people in your household, contact the Helpline on 0300 123 1702 to ask for a Continuation Questionnaire.

❷ If you included anyone at question **H5**, remember to record their details on the back page.

♦ Remember to sign the declaration on page 1.

Question H5 continued

DO NOT record details of household members here. Record details **only** for anyone counted in question **H5** on page 4 (people whose permanent or family home is elsewhere).

- You only need to provide details for up to three people. Remember to include children and babies.
- Please make sure you have filled in the rest of the questionnaire and signed the declaration on page 1.

Person A

V1 What is this person's name?

First name

Last name

V2 What is this person's sex?

☐ Male ☐ Female

V3 What is this person's date of birth?

Day Month Year

V4 What is this person's usual UK address?

Postcode

☐ Outside the UK, please write in country

Person B

V1 What is this person's name?

First name

Last name

V2 What is this person's sex?

☐ Male ☐ Female

V3 What is this person's date of birth?

Day Month Year

V4 What is this person's usual UK address?

☐ Same address as Person A

Postcode

☐ Outside the UK, please write in country

Person C

V1 What is this person's name?

First name

Last name

V2 What is this person's sex?

☐ Male ☐ Female

V3 What is this person's date of birth?

Day Month Year

V4 What is this person's usual UK address?

☐ Same address as Person A

Postcode

☐ Outside the UK, please write in country