



2001 CENSUS – A USER'S GUIDE

WELCOME

Northern Ireland Statistics and Research Agency
An Agency within the Department of Finance and Personnel

Northern Ireland Census 2001

count me in
Census2001

Uel McMath
Demography & Census



Evacuation Procedures



Fire Alarm

Follow all instructions
given by Hotel staff

Mobile Telephones



Please –

Switch off, or
Switch to Silent / Mute mode

Refreshments



Morning & Afternoon Coffee / Tea
- Location



Lunch
- Location

Demonstrations



NICA - CD
NICA - SuperTABLE
NINIS - Screenshot
NINIS - Interactive
Census - Downstream
Processing systems

Handouts

Included in Registration pack /
Available from Customer Services
stand at back of room



Copies of some presentations are
available – but ALL presentations will
be posted on the NISRA website –
www.nisra.gov.uk

Please complete the Post Event
Evaluation questionnaire before
you leave this afternoon

Census products available

CDs and Reports



Census Customer Services Stand – at back of room

2001 Census - A User's Guide

- Overview of Census processes
- Census outputs
- Electronic Dissemination
- Case study & looking forward

Northern Ireland
Census 2001

count me in
Census2001

Robert Beatty
Head of Demography & Census



Session 1 - Overview

- Essential background
- Data processing
- Under-enumeration
- Data confidentiality / disclosure control
- Headline results

Northern Ireland Statistics and Research Agency

- An Agency within the Department of Finance and Personnel
- Registrar General has responsibility for making arrangements to conduct a Census in Northern Ireland
- Census Office plans and implements the Census
- Close liaison with Office for National Statistics and the General Register Office for Scotland

Why do we need a Census?

- There is a continuing need for the type of information provided by the Census to support planning, policy decisions and resource allocation
- Everyone usually resident in the country on Census night is included
- Comparable statistics are generated for small geographical areas
- The Census is a unique source for studying social and economic change
- The Census is the baseline for the mid year estimates of population

Consultation and Testing

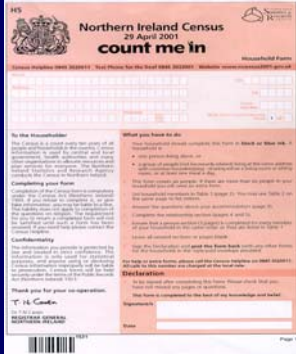
- Data Needs Exercise
- Census Advisory Group
- Statistics Advisory Group
- 1997 Census Test
- 1999 Census White Paper
- 1999 Census Dress Rehearsal
- Parliamentary Process
- EU Process

Census 2001

Strategic Aims – (White Paper: March 1999)

- Maintain high levels of coverage
- Ensure coverage among groups likely to be under- enumerated
- Questions must be relevant to the needs of users
- Deliver results to a reliable timetable
- Ensure public acceptance of the Census

Household form

A scan of a Northern Ireland Census 2001 household form. The form is titled 'Northern Ireland Census 2001 count me in' and includes a 'Household Form' label. It features a grid for listing household members, instructions on how to fill it out, and a section for 'What you have to do'. The form is dated 29 April 2001 and includes a barcode at the bottom.


New Questions introduced for 2001

- Ethnic Group
- General Health
- Provision of unpaid personal help
- Suitability of housing
 - lowest floor level of accommodation
 - rooms located on more than one floor
- Time since last employment / size of workforce
- Religion brought up in

Census Methodology

- Confidentiality – meet the legal obligations
- Postback of Census Forms
- Census Form Redesign
- Utilising new technology
 - Census maps
 - Data capture / Image recognition
 - Coding
 - Fieldwork monitoring

Field-staff Recruitment and Dates of Appointment

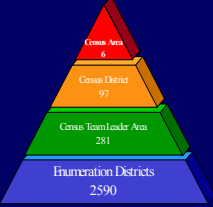


CAMS 1 September 2000

CDMs 30 October 2000

CTLs 19 February 2001

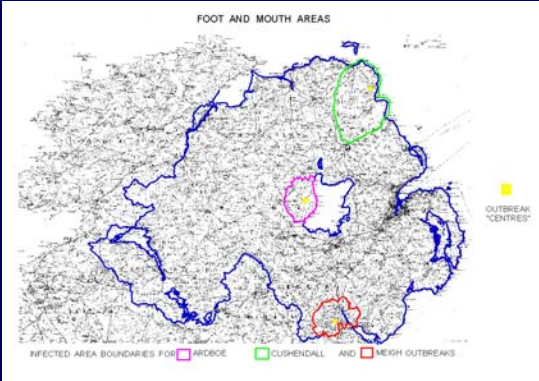
CEs 20 March 2001



Community Liaison Objectives

- Encourage local communities to support the Census
- To help those who need assistance to complete their Census form

FOOT AND MOUTH AREAS




INFECTED AREA BOUNDARIES FOR ARDBOE, CUSHENDALL AND MEKH OUTBREAKS

Foot and Mouth Outbreak

- Census Takers will not deliver a form:-
 - To any residential premises within a 3km exclusion zone
 - To farm businesses and any other livestock holding premises within a 3-10k surveillance zone or residential premises in the zone off a public road
 - To farm business addresses in all other areas of Northern Ireland identified by DARD – or other livestock holding premises.
 - To any other residential premises with no admittance sign relating to Foot and Mouth

Processing Census Forms

Because a large percentage of census forms can be scanned, the data will not have to be manually keyed. As a result, fewer data entry personnel will be required. The modern, automated system will enable more accurate results and faster processing of data when compared with prior systems used in Census counts.



Check In:
Each form is scanned by a scanner that is capable of reading the barcode on the form. The scanner also identifies the form's location on the scanner bed and the form's position on the scanner bed.

Scanning:
The data on the form is scanned into a digital format. The scanner also identifies the form's location on the scanner bed and the form's position on the scanner bed.

Recognition:
The scanned data is processed by a software program that recognizes the data on the form and identifies the form's location on the scanner bed and the form's position on the scanner bed.

Key Correction and Edit:
The scanned data is processed by a software program that recognizes the data on the form and identifies the form's location on the scanner bed and the form's position on the scanner bed.

Census Data and Status:
The scanned data is processed by a software program that recognizes the data on the form and identifies the form's location on the scanner bed and the form's position on the scanner bed.

Data entry

- Using scanning and imaging
- Character recognition
- On-line access to images

Data processing

- White Paper commitment to resolve errors and omissions before releasing output
- Edit and Impute strategy
- Aim of complete and coherent data set

Edit

- Limited set of 'hard' checks
- No married primary-school age children
- Minimum adjustment principle
- But, generally accepted what was given on the form

Item imputation

- Principle of complete records
- Missing items were imputed
- Donor imputation system
- Thus, no 'not stated' cases
- Exception - religion

Under-enumeration

- Principle of achieving full population coverage in the Census database
- Previously, census output related just to those enumerated

Previous Census Population

Year	Published Census figure (000)	MYE (000)
1991	1,578 (enumerated)	1,607

Methodology

- Acknowledge under-enumeration
- 1991 Census 1,578k MYE 1,607k
- Decision to adjust Census database
- 'One Number Census'
- Basic principle to use a large-scale Census Coverage Survey (CCS) to estimate under-enumeration
- Apply survey estimates elsewhere

Census Coverage Survey

- UK split into about 100 Estimation Areas
- 3 EAs in Northern Ireland
- About 200 postcodes / 3,000 households per Estimation Area
- 3 socio-economic strata within each EA
- Separate analysis in each strata within EA

Census Coverage Survey

- Fieldwork ~3 weeks after Census day
- Face to face interviews
- Trained interviewers
- Given map of postcode boundary
- Asked to re-enumerate the postcode
- Short questionnaire

Matching

- Forms scanned into system
- Special matching software developed
- Database retrieval system
- CCS returns carefully matched with Census returns – error rate estimated to be under 0.1%

Dual System Estimator (DSE)

- Use matched Census and CCS data
- DSE estimates adjustment for those missed in both Census and CCS

		Counted By CCS	
		Yes	No
Counted By Census	Yes	A	B
	No	C	D
Total = (A+B+C+D)			

Dual System Estimator (DSE)

		Counted Day 2		
		Yes	No	
Counted Day 1	Yes	855	95	950
	No	45	D	
		900		Total

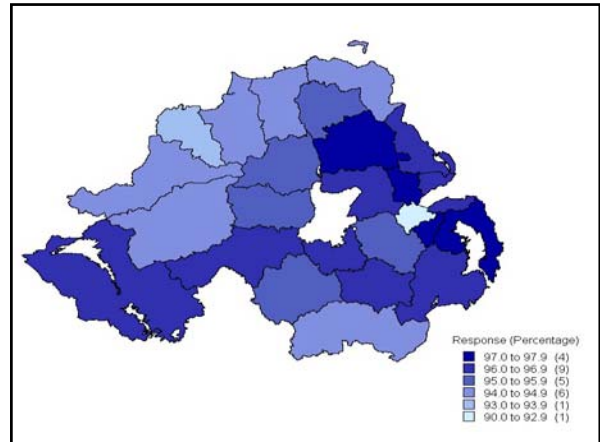
DSE estimate of the actual number of people:
 $\text{Total} = (950 \times 900) \div 855 = 1,000$
(D = 5)

Analysis

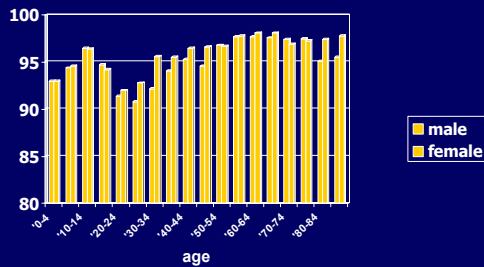
- Separately for each age-sex group, within each stratum, within each EA
- Apply DSE method to each sampling point (postcodes) within CCS area
- Estimate function $DSE = f(\text{observed count})$
- Apply to all other sampling points within stratum (within EA), and aggregate

One Number Census outcome

- Overall response rate of 95%
- 4.3% in wholly imputed households (mostly linked to dummy forms (3.0%))
- 0.4% additional people in already enumerated households
- Imputed 80,000 people



Estimated response rates by age



Full coverage in 2001

Year	Published Census figure	MYE
1991	1,578 (enumerated)	1,607
2001	1,685 (adjusted)	1,689

Comparisons with 1991

- 1991 – those who were enumerated
- 2001 – adjusted for non-enumeration
- Cannot compare 1991 and 2001 numbers simply
- Definitions – students
- Advice – compare percentages, not numbers

Data confidentiality

- Census commitment to protect the confidentiality of individual returns
- Data are held securely
- Steps taken to prevent the disclosure of personal information within statistical output

Disclosure procedures

- Thresholds
- Record swapping
- Small cell adjustment

Disclosure - thresholds

- Statistics released only if the revelant population consists of at least x people and y households

Disclosure – record swapping

- A small number of households selected at random
- For each, a matching household (age and sex) identified
- Each selected household ‘swapped’ with its matching partner

Disclosure – small cell adjustment

- Within all output tables, all small cells have been slightly ‘adjusted’
- Row and column totals generated by adding cells

Small cell adjustment - effects

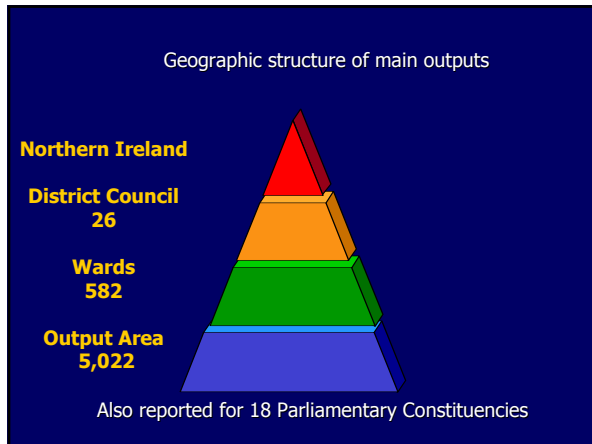
- No cells containing counts of 1 or 2
- Marginal distributions may differ between tables
- Populations may differ between tables

Results Timetable

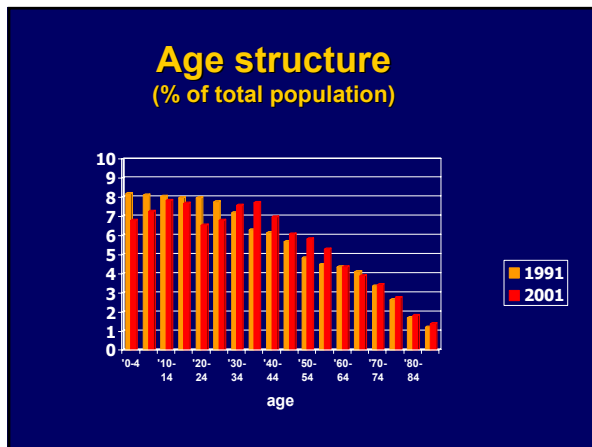
The screenshot shows the 'Introduction' section of the 'Census Output Prospectus' for July 2012. It contains text explaining that the prospectus lists the output tables for the 2011 Census, which will be available on the NISRA website. It also mentions that the prospectus is available in both print and electronic formats. The page includes a table of contents with the following items:

Contents	Page
Introduction	1
Output Prospectus	2
Output Prospectus	3
Output Prospectus	4
Output Prospectus	5
Output Prospectus	6
Output Prospectus	7
Output Prospectus	8
Output Prospectus	9
Output Prospectus	10
Output Prospectus	11
Output Prospectus	12
Output Prospectus	13
Output Prospectus	14
Output Prospectus	15
Output Prospectus	16
Output Prospectus	17
Output Prospectus	18
Output Prospectus	19
Output Prospectus	20

www.nisra.gov.uk



- ### Population report September 2002
- Census day population 1,685,267
 - Mid-year estimate 1,689,319
 - Population increase over decade : 5%
 - Fewer children, more elderly
 - Census count lower than old MYE series
 - Believed missed some out-migration



- ### Implications of the results
- Had a rolled-forward MYE series
 - (unpublished) 2001 MYE of 1,706k
 - Based on 1991 base augmented by births, deaths and migration
 - New 2001 MYE of 1,689k
 - Were 17k (1%) too high
 - Series for 1992-2001 revised

- ### Old and new MYE
- Base 1,607k
 - Natural change +87k
 - Migration +12k
 - Estimate of 2001 population is (based on 1991 Census) 1,706k
 - Base 1,607k
 - Natural change +87k
 - New 2001 MYE (based on 2001 Census) 1,689k
 - Implied migration -5k

- ### People, families and households
- Over half of adults are married or re-married (51%), 33% single, 8% divorced or separated and 8% widowed.
 - 43% of households contain married couples – 24 % with dependent children, 8% with all non-dependent children and 11% with no children.
 - 27 per cent of households contain single person – 13 per cent a single pensioner.

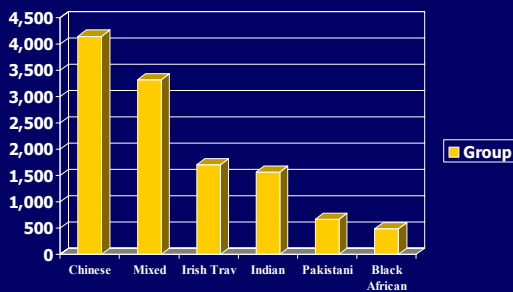
Health and care

- 41 per cent of households contain a person with a limiting long-term illness
- 20 per cent of the population have a limiting long-term illness
- 11 per cent of the population provide unpaid care; of those providing care, 25% do so for more than 50 hours per week
- 70% of the population consider that their general health has been good over the past year

Ethnic, religion and language

- Over 99% of the Northern Ireland population are white
- 91% of the population were born in Northern Ireland, 5% in GB, 2% in the Republic of Ireland and 2% elsewhere
- 10% of the population (aged 3+) have some knowledge of Irish

Ethnic minority populations



Religion

Religion	Percentage
Catholic	40.3
Presbyterian	20.7
Church of Ireland	15.3
Methodist	3.5
Other Christian	6.1
Other	0.3
None / Not Stated	13.9

Ethnic, religion and language

- Almost 14% of the population stated that they did not belong to a religion, or did not answer the question
- 'Religion brought up in' was asked of those that did not belong to a religion
- In combination with the religion question, information used to produce additional 'community background' data

Ethnic, religion and language

Community background	Percentage
Catholic	43.8
Protestant and other Christian	53.1
Other	0.4
None	2.7

Education and economic activity

- 42% of those aged 16-74 have no GCSE level educational qualifications while 16% have a degree or higher qualification
- For those aged 25-29, 17% have no GCSE level qualifications while 29% have a degree or higher qualification

To conclude

- A complete, coherent dataset with no missing values
- Dataset adjusted for underenumeration
- Data confidentiality taken very seriously
- A number of disclosure control steps

End