What is census microdata?

An Introduction to the census microdata products for Scotland

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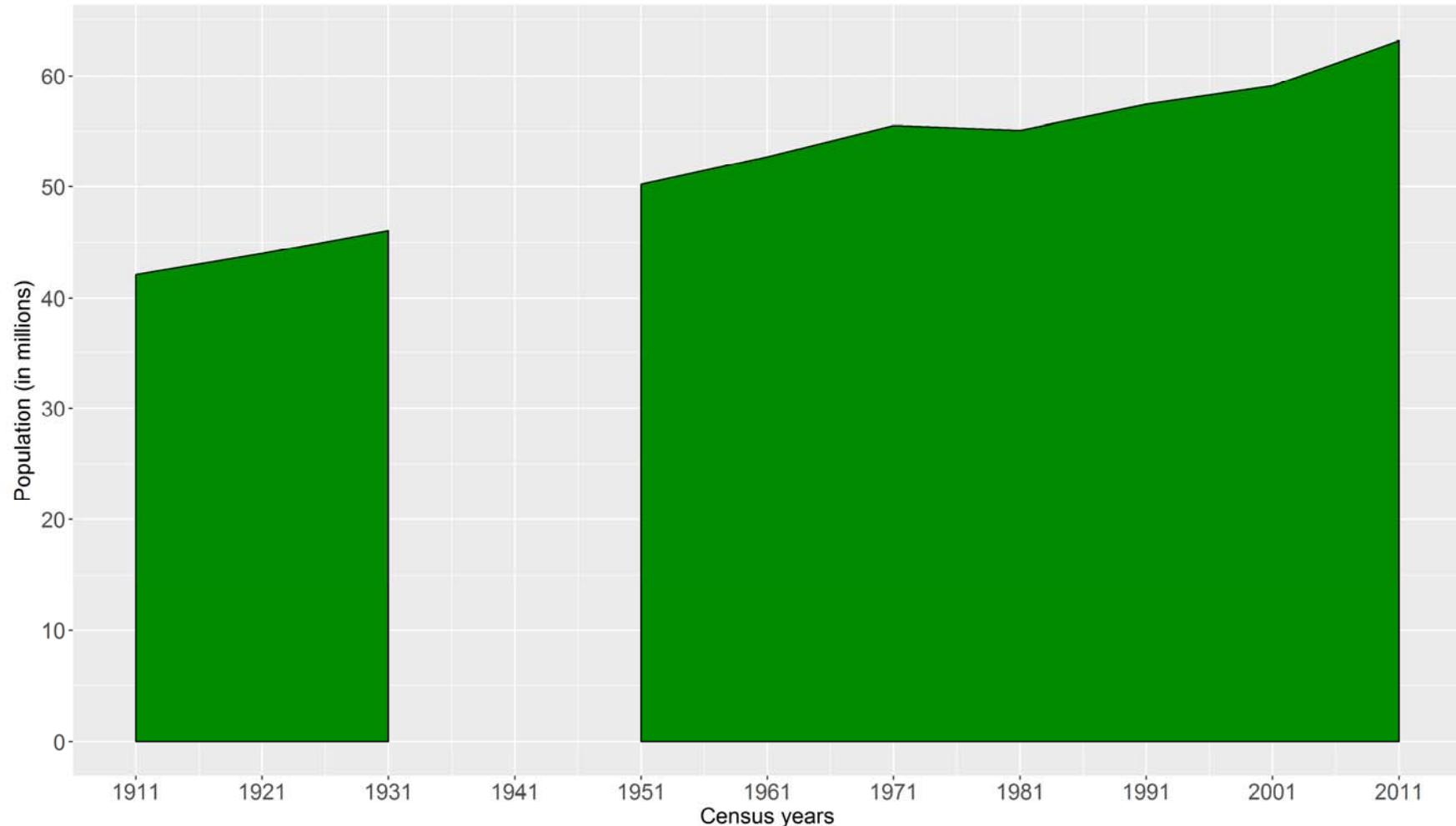UK Data Service

Edinburgh, 30 May 2019

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Census Data

- Census Act 1800. Enabled the first census on 1801

- Until 1831 the census is a head count of everyone in the country on a given day.

- Nowadays it is defined as the "count of all people and households", incorporating gradually more information of the population
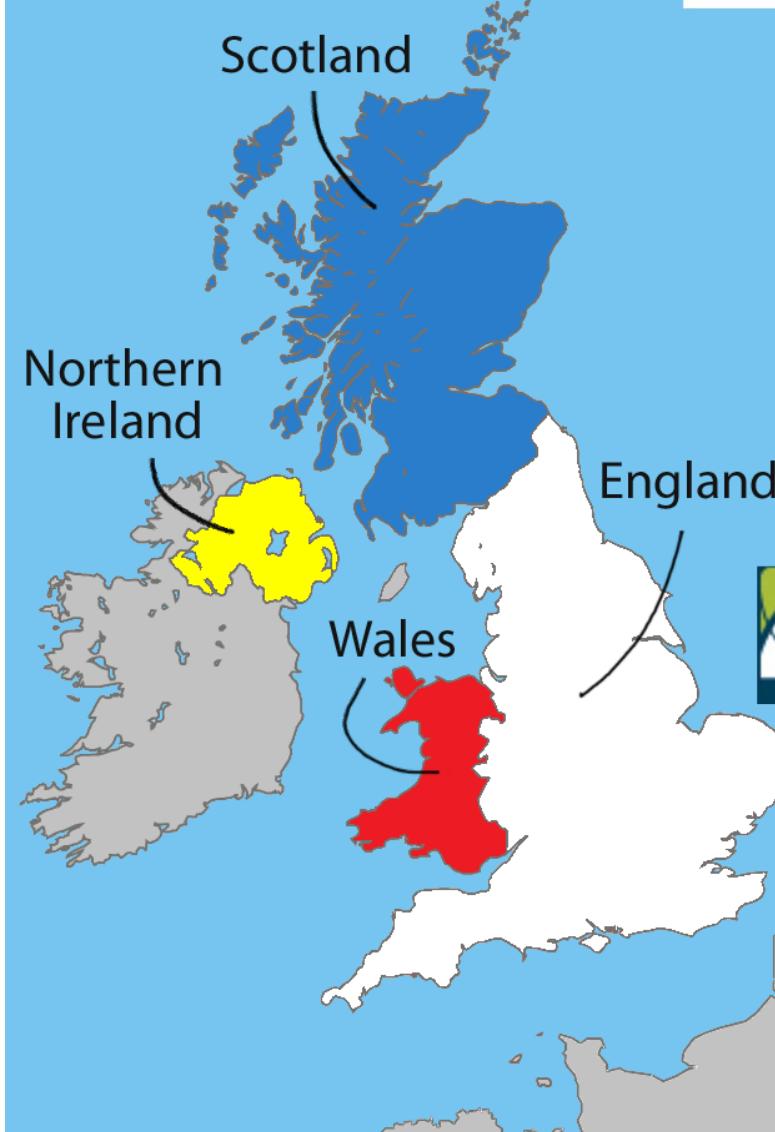
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UK Population change

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A brief description of census

- What is census?
  - Main function to count the population at one or more location
  - Obtain some characteristics about the population
  - Outputs at small geographies

- What is it for?
  - Informs public spending
  - Used as a basis for other statistical systems
  - Inform the public policy making process
  - Used by Central and Local Governments
  - Used by NGOs
  - Used for research purposes (to inform public policy too)

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What questions were asked?

Demographics	Household	Socio-economic
Age	Tenure	Health
Sex	Accommodation type	Unpaid care
Country of Birth	Cars	Qualifications
Short-term residence	Central heating	Economic activity
Ethnicity	No. of bedrooms	Occupation
Religion		Industry
Passports		Travel to work
Language		FT / PT
National identity		
Household relationships		
Marital status		
Second residence		
Migration		

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Census Outputs

Census Outputs (1)

1. **Supported by the UK Data Service**

   - **Microdata**
     - **Anonymised samples of census records**
     - **Detail limited to protect confidentiality**

   - Aggregated data
     - Counts of combinations of characteristics
     for areas

   - Flow data
     - Counts of migrants from origin to destination
     - Or, between first and second address
     - Or home and place of work

   - Boundary data
     - Geographical Information System (GIS) formats.
     - Shape files to enable these to be mapped

2. **Supported by CALLS**

   - Longitudinal microdata for each country

Census Outputs: Scotland

1. ## Supported by the National Records of Scotland

   - **Public release**
     - Standard tables, available through the [Census Data Explorer](#) or the [data warehouse](#)
     - Commissioned and Additional tables*,
     - Teaching microdata sample (1%), available

   - **Safeguarded release**
     - Safeguarded tables provided directly by NRS to a data user under Data Sharing Agreement*

   - **Secure release**
     - Custom census microdata (including data linkage projects)
       - available through eDRIS to access in a Safe Setting, by Approved Researchers under a Data Sharing Agreement with NRS.

*available to request from [NRS statistics customer services](#)

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Census Microdata samples

Inside census microdata (Individual safeguarded sample)

	ageh	agehrp	aggdtwpew11g	ahchuk11	carer	carsnoc	cenheat	clients01	clients02	clients03	clients04	clients05	clier
1	5-9	30-34	Not a...	Two a...	No	0	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
2	75-79	75-79	Not a...	1 non...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
3	25-29	25-29	2 to ...	One a...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
4	45-49	45-49	Not a...	One a...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
5	75-79	75-79	Not a...	One a...	No	0	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
6	10-15	45-49	Not a...	Two a...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
7	16-18	45-49	Less ...	Two a...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
8	19-24	25-29	5 to ...	Two n...	No	0	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
9	40-44	40-44	At home	One a...	No	0	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
10	70-74	70-74	Not a...	One a...	No	1	No ce...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
11	45-49	40-44	At home	Two n...	No	2	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
12	5-9	25-29	Not a...	One a...	No	0	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
13	5-9	25-29	Not a...	Two a...	No	0	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
14	16-18	45-49	Not a...	Three...	No	0	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
15	25-29	25-29	Less ...	Two a...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
16	10-15	35-39	Not a...	Two a...	No	2	2 or ...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
17	45-49	45-49	5 to ...	Three...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
18	16-18	50-54	Not a...	Three...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
19	19-24	50-54	Not a...	Three...	No	2	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
20	19-24	19-24	5 to ...	One a...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
21	75-79	45-49	Not a...	Three...	No	2	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
22	45-49	45-49	2 to ...	Three...	No	0	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
23	45-49	45-49	Less ...	Three...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
24	19-24	45-49	10 to...	Three...	No	3	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
25	40-44	40-44	Not a...	Two a...	Yes, ...	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
26	45-49	45-49	Less ...	Three...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
27	60-64	65-69	Not a...	1 non...	No	1	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not
28	55-59	35-39	Not a...	Three...	No	2	Gas c...	Not a...	Not a...	Not a...	Not a...	Not a...	Not

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Types of 2011 census microdata

- Being released by each census office separately

- Open files

  - Teaching files – available from census offices (1% regional taster file)

- Safeguarded

  - regional files(5%)

  - grouped local files (5%)

- Controlled access

  - Individual files (10%) England and Wales, Scotland and Norther Ireland

  - Household files (10%) England and Wales, Scotland and Norther Ireland

What is included in the safeguarded microdata files? (1991-2011)

- Demographic characteristics
- Migration
- Education
- Employment
- Health indicators
- Household condition and amenities
- Language
- Social class

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Safeguarded Census microdata topic guide (1991-2011)

Topic	1991				2001			2011								
Demographic	HHD GB	HHD NI	Ind GB	Ind NI	I-SAR	H-SAR (lic)	SAM	EW Safeg Reg	EW Safeg LA	Sc Safeg Reg	Sc Safeg LA	NI Safeg Reg	NI Safeg LA	EW Teach file	Sc Teach file	NI Teach file
Sex	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exact pension age	.	.	.	.	.	.	.	Yes	Yes	Yes	Yes	Yes	Yes	.	.	.
Person of pensionable age	.	.	.	.	.	.	.	Yes	Yes	Yes	Yes	Yes	Yes	.	.	.
Marital Status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Living arrangements	.	.	.	.	.	.	.	Yes	Yes	Yes	Yes	Yes	Yes	.	.	.
Cohabiting same-sex couple	.	.	.	.	.	.	.	Yes	.	.	.	Yes	.	.	.	.
Household head/reference person	Yes	Yes	Yes	.	.	Yes	Yes	.	.	.	.	.	.	.	.	.
Family head/reference person	Yes	Yes	Yes	.	.	Yes	.	.	.	.	.	.	.	.	.	.
Relationship to HH head/reference person	Yes	Yes	Yes	Yes	Yes	Yes	Yes	.	Yes	Yes	.	Yes	Yes	.	.	.
Residential status	Yes	Yes	Yes	Yes	.	.	.	.	.	Yes	.	.	.	Yes	Yes	.
Student residential status	.	.	.	.	Yes	.	.	.	.	.	.	.	.	.	.	.
Age of household head/reference person	Yes	Yes	.	.	.	.	.	Yes	Yes	Yes	Yes	Yes	Yes	.	.	.
Age of family head/reference person	Yes	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Sex of household head/reference person	Yes	Yes	.	Yes	.	.	.	.	.	.	.	.	.	.	.	.
Sex of family																

Sheet1 / Sheet2 / Sheet3

https://census.ukdataservice.ac.uk/use-data/guides/microdata

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What can be done? (1)

- Can create your own tables.

- Combination of characteristics (variables) not available on ready-made released tables.

- Can define subpopulation for underrepresented groups
  - Due to the large sample size

- Can create regional and local authorities aggregated variables
  - Enhancing area level estimates
  - Relatively large samples for small areas

- Can complement survey data
  - With area level characteristics added

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What can be done? (2)

- Allows to undertake several type of statistical analysis

- Allows to visualise and analyse change and trends over the years

  - Putting area level characteristics into maps

- **Trade-off**

  - Sample data, means that results are estimates

  - Geographical detail is limited in safeguarded data

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Case studies

What has been done?: Research examples

- Child development
- Education
- Housing
- Migration

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Multicultural nationalism? National identities among minority groups in Scotland's census. (Ross Bond, 2016)

Aim: To compare the national identities of those belonging to various minority groups in the UK.

Data: 5% microdata sample of census 2011 for Scotland and England and Wales.

Key variable: National Identity

Main findings:

- In each nation the proportion of White majority identify as Scottish, English or Welsh is higher than those who identify as British.

- The levels of sub-state identification are clearly higher in Scotland than in the other nations.

- Non-white minorities in Scotland are much more likely to identify with the sub-state nation (Scottish) than their counterparts in the other nations.

- To some extent, Scottish national identity is relatively inclusive of minorities.

- https://www.tandfonline.com/doi/full/10.1080/1369183X.2016.1232162

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Is informal caregiving independently associated with poor health? A population-based study. (Legg, L et al. 2013)

Aim: To analyse the relationship between informal caregiving and poor health.

Data: UK 2001 Census (Individual Licenced Sample of Anonymised Records I-SAR)

Key variable: self-reported health status and provision of informal care.

Main findings:

- People who report providing informal care have an increased risk of reporting poor health compared with those who do not provide informal care.

- Among those, health status was worse for those providing the highest number of hours unpaid care.

- Caregivers may be exposed to physical or psychosocial stressors that may contribute to physical and mental health problems.

https://jech.bmj.com/content/67/1/95

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Accessing Safeguarded census microdata

Accessing census data

Full information on the census microdata web page of the
UK Data Service census support and census offices (NRS,
ONS NISRA)

- Open data:

    - Available in spreadsheet format (csv files) from
    census offices: ONS, NRS and NISRA.

    - Also available as SPSS/Stata/Nesstar format from the UK
Data Service *without registration*

- Safeguarded microdata: From 1961 to 2011, available from the
  UK Data Service, *requires online registration*

- Controlled- Secure data *via census offices only: ONS, NRS
  and NISRA.*

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How to access

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Census Support

About Census Support   Get census data   Use census data   Census news and events

Census > Get data > Microdata

Census microdata

Aggregate data

Flow data

● Microdata

Boundary data

Related data

Explore online

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We provide access to cross-sectional census microdata, these are anonymised individual level records sampled from a single census. They are large individual level files which resemble the sort of data that might be collected directly from a questionnaire. Because individual records contain a wide range of individual and household characteristics, the data enable multivariate analyses for a wide range or purposes.

The UK Data Service holds contemporary data from the 1981 to 2011 Censuses and microdata samples from 1961 onwards are planned.

- Guide to census microdata

Microdata files are available at four levels, two of which can currently be accessed through the UK Data Service in the same manner as survey data.

ACCESS CENSUS MICRODATA VIA THE UK DATA SERVICE

End User Licence data are available to registered users who have agreed to the licence conditions. Overseas applications must be approved by the data depositors.

LOGIN / REGISTER

 DATA CATALOGUE

 GO

RELATED LINKS

Census and Administrative data
Longitudinal Studies Hub
Centre for Longitudinal Study
Information & User Support
Scottish Longitudinal Study
Development & Support Unit
Northern Ireland Longitudinal Study
Research Support Unit
The Integrated Census Microdata (I-CeM)

UK Data Service

2011 Census Microdata Individual Safeguarded Sample (Local Authority): Scotland

| Details | Documentation | Resources | Access data |

Details ⌄

Title:	2011 Census Microdata Individual Safeguarded Sample (Local Authority): Scotland
Study number (SN):	7835
Persistent identifier (DOI):	10.5255/UKDA-SN-7835-1
Principal investigator(s):	National Records of Scotland

Sponsors and contributors ⌄

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Online resources available from the UK Data Service

- [Guide to mapping 2011 Microdata using R.](#)

- [Making the most of census microdata](#) . Online tutorial to use and create custom tables and visualisations in R using the 5% microdata sample for England and Wales.

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