

# Census (2011) Geography



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# The UK Data Service

- An ESRC initiative integrating several previous resources
- A single, comprehensive and integrated point of access to a wide range of social science data
- Access beyond traditional academic audience where possible
- Support, training and guidance
- [ukdataservice.ac.uk](http://ukdataservice.ac.uk)



Census Support



# UK Data Service Census Support (CS)

- A specialist unit of the UK Data Service
- Access to, and support for use of data from the last five *UK* censuses (1971 – 2011)
- Add value by making census outputs easy to find, understand and use
- Extend audience beyond ‘experts’
- Long history of innovation
- [census.ukdataservice.ac.uk](https://census.ukdataservice.ac.uk)



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# Types of Census Data

**Aggregate statistics:** Area counts, usually of individuals or households with particular characteristics; e.g. males aged 20-24 living in Perth

**Boundary data:** Digital boundaries of census areas at different spatial scales: OAs, SOAs, wards, districts, ....

**Flow data:** Origin/Destination Statistics, the flows of migrants and workers between and within areas

**Micro data:** Individual level data; large samples of census records known as the Samples of Anonymised Records (SARs)

**Other products:** e.g. geographical look-up tables; commissioned tables; longitudinal data (data for individuals that are linked between successive censuses together with data for various events)





# Census Support

**Who we are**

We provide access to and user support for 1971, 1981, 1991, 2001 and 2011 UK census data

[Read more](#)

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Census Support data collection:

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Census Data  Website

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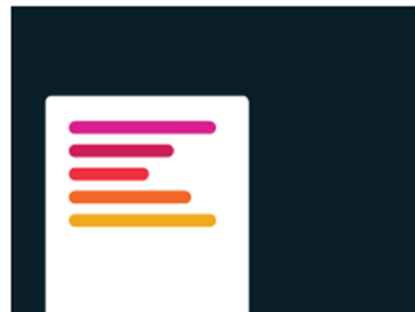
LATEST TWEETS

UKDataService Are you going to the GESIS Summer School in Survey Methodology? Cologne, 8-30 August <http://t.co/IV9rDiN1R>

UKDataService @CLOSER\_UK If you don't know, LSYPE is Long. Study of Young People in England. Data and documentation available here <http://t.co/vMUGMj42A>

UKDataService RT @CLOSER\_UK: @usociety has alcohol data from age 10

LATEST NEWS



Book now for an introduction to using UK census data geographically

Webinar week at UK Data Service: Five free online sessions

Updated 2011 Census Output Area

UK DATA SERVICE CENSUS SUPPORT



We are the UK Data Service Census Support. This site replaces the old ESRC Census Portal and provides access to a range of census-related resources.

We do not hold the census longitudinal data. However, these can be found at

QUICK ACCESS TO

- UK Data Service
- Aggregate data
- Flow data
- Microdata
- Boundary data



# Web-based census data services

Data are delivered to the user community through a set of tools that have been developed over a decade as part of the Census Programme:



**InFuse:** access 2001 Census aggregate data for England and Wales by selecting topics, series within topics, and geographic areas



**Casweb:** provides access to UK aggregate data for the 1971, 1981, 1991 and 2001 censuses



**Easy Download:** most regularly requested census boundaries available as ready-to-use national datasets in popular formats



**Boundary Data Selector:** lets the user select the boundaries you want, for the area you want, in the format you want



**Postcode Directory Download:** allows user to download complete versions of current and historical postcode directories (sometimes referred to as look-up tables)



**Geoconvert:** geography matching and conversion tool. Obtain and manipulate complex geographical and postcode



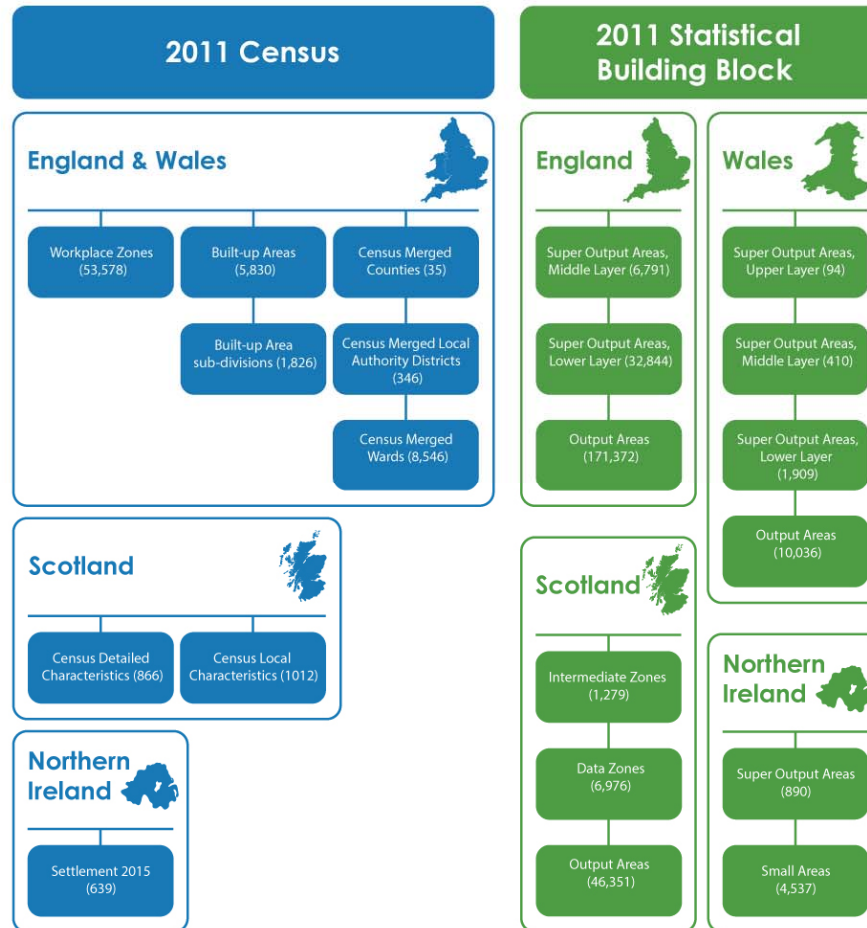
**WICID (Web-based Interface to Census Interaction Data):** allows users to select and download migration and journey-to-work flow data

# 2011 Census & Geography - UK

The primary geography outputs from the census are expressed as digitised boundary data files.

Digitised boundary datasets, sometimes referred to as 'DBDs' or 'boundary data', are a digitised representation of the underlying geography of the census.

They are often used within GIS or Computer Aided Designs (CAD) systems.



Adapted from the ONS Hierarchical Representation of UK Statistical Geographies (Oct 2015)



# Census Geography data - uses

- Mapping census datasets allows for an exploration of the characteristics of census datasets geographically and may provide additional demographic, socio-economic and cultural insights into the census data particularly when used in conjunction with other non-census data. A GIS allows for further spatial analyses of the census data and its combination with other non-census geographically referenced datasets, such as crime or health data, can lead to new insights and spawn new research questions. Illustratively, the digitised boundary datasets can be used for:
  - *map production for research articles;*
  - *data synthesis and development of residential neighbourhoods;*
  - *geostatistical analysis of demographic or employment change;*
  - *small area analysis and deprivation studies;*
  - *health care research – incidence mapping and analysis; and*
  - *historical demographic research*





# The UK Censuses

- The UK Census is undertaken every 10 years, with the most recent being on 27 March 2011. Its purpose is to collect population and other statistics essential to those who have to plan and allocate resources.
- Major customers include departments of national and local government, and providers of services such as health and education.
- The Census occurs simultaneously in all parts of the UK. In England and Wales, the Office for National Statistics (ONS) is the responsible body. In Scotland, it is National Records of Scotland (NRS), and in Northern Ireland, the Northern Ireland Statistics and Research Agency (NISRA).
- The main geographies directly associated with the Census are **Output Areas (OA)** and **Super Output Areas (SOA)**. OAs are the base unit for Census data releases.
- Census data can be produced for most geographies by best-fitting from OA to the required output geography current on 31 December 2011.



## Census Geography - Scotland

There are various different categories of census geography, but all are constructed using Output Areas as their building blocks.

### Administrative

Council Area

### Electoral

Electoral Ward

UK Parliamentary Constituency

Scottish Parliamentary Constituency

Scottish Parliamentary Region

### Health

Community Health Partnership

Health Board Area

### Other

SNS Datazone

Local Characteristic Postcode Sector

Detailed Characteristic Postcode Sector

Settlement

Locality

Civil Parish

Island Group

National Park

	Country	Geography type	Commentary
	Scotland	Output Areas (OA)	<p>OAs form the main building bricks for the Scottish census areas. Most OAs are created by aggregating a small number of neighbouring postcodes, although some postcodes are large enough to become a single-postcode OA. All higher geographies (e.g. Health Board areas) are built up from these OAs. Any area for which census output is produced is the aggregation of OAs. OAs aggregate exactly to Council Areas but not necessarily to any other higher geography. The aggregations of OAs for these other higher geographies are termed 'best-fit' as the boundaries of the aggregations approximate the true boundaries of the geography. This is because the boundaries of the individual postcodes do not follow existing administrative and political boundaries.</p> <p>There are 46,351 Census 2011 OAs in Scotland.</p>
Statistical Building Blocks		Data Zones (DZ)	<p>Broadly similar to LSOAs. DZs are aggregations of OAs and in 2011 had a population range of between 500 and 1,000 people.</p> <p>There are 6,976 DZs in 2011.</p>
		Intermediate Zones (IZ)	<p>Broadly similar to MSOAs. IZs are a statistical geography that sit between DZs and local authority districts, created for use with the Scottish Neighbourhood Statistics (SNS) programme and the wider Scottish public sector. IZs are used for the dissemination of statistics that are not suitable for release at the DZ level because of the sensitive nature of the statistic, or for reasons of reliability. IZs were designed to meet constraints on population thresholds (2,500-6,000 household residents), to nest within local authorities, and to be built up from aggregates of DZs. IZs also represent a relatively stable geography that can be used to analyse change over time, with changes only occurring after a Census.</p> <p>Following the update to IZs using 2011 Census data, there are now <a href="#">1,279 covering</a> the whole of Scotland.</p>
2011 Census	Scotland	Census Local Characteristic Postcode Sectors (CLCPS)	<p>CLCPSs represent a hierarchical level above the individual postcode level. There are 1,131 postcode sectors in <a href="#">Scotland</a> but no census data are actually produced for true postcode sectors. In order to reach the required threshold to publish census statistics, some postcode sectors are grouped together.</p> <p>This results in 1,012 CLCPSs in Scotland.</p>
		Census Detailed Characteristic Postcode Sectors (CDCPS)	<p>CDCPSs are the second type of a postcode sector geography used in census output. CDCPSs further group together Scotland's 1,131 true postcode sectors to reach the required thresholds for publishing more detailed census statistics.</p> <p>This results in 866 CDCPSs in Scotland.</p>

A single Output Area contains at least 50 people and 20 households, but can contain more.

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# Microdata Census Geography

- The lowest level of geography for the Individual Safeguarded Microdata (Grouped LA)\* product is Local Authority (district/unitary) with populations of at least 120,000 persons. This is based on the 2011 Local Authority boundaries.
- Local Authorities (E&W) with populations below the 120,000 threshold have been aggregated with neighbouring local authorities. Where the 2011 Local Authority was too large to provide useful geographic comparisons, smaller geographies were created based on grouping earlier 1991 Local Authority boundaries.
- In Scotland the 2001 council areas boundary file was used with areas merged according to an NRS grouped council areas list (again to ensure population thresholds were met).

\* *In Scotland these are known as Council Area Groupings*

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# Microdata 2011 Geography

- Digital boundary files have been created to accompany the GLA/GCA geography. The process used (E&W) was:
  - The 1991 LA geography does not match either the 2011 LA geography or the 2011 Output Area (OA) geography. This means that each observation in the microdata was assigned a 1991 LA district by the ONS using a lookup table in which the population weighted centroid of each 2011 OA was assigned to the 1991 LA district it is located in (note that the assigned 1991 LA district was only of use in the minority of areas which are based on the 1991 LA districts).
  - This ONS lookup table informs the creation of the boundary file, in which 2011 OAs are the building blocks of the GLA areas. Creating the boundary file involves three main stages:
    1. If the ONS define an OA as being in a 1991 district which is one of the 1991 districts used in the creation of the GLA geography, then the OA is assigned to the 1991-based district by name. A GLA number was given to each OA by cross-referencing the name of the 1991 district each was assigned with the names in the microdata user guide containing corresponding GLA numbers.



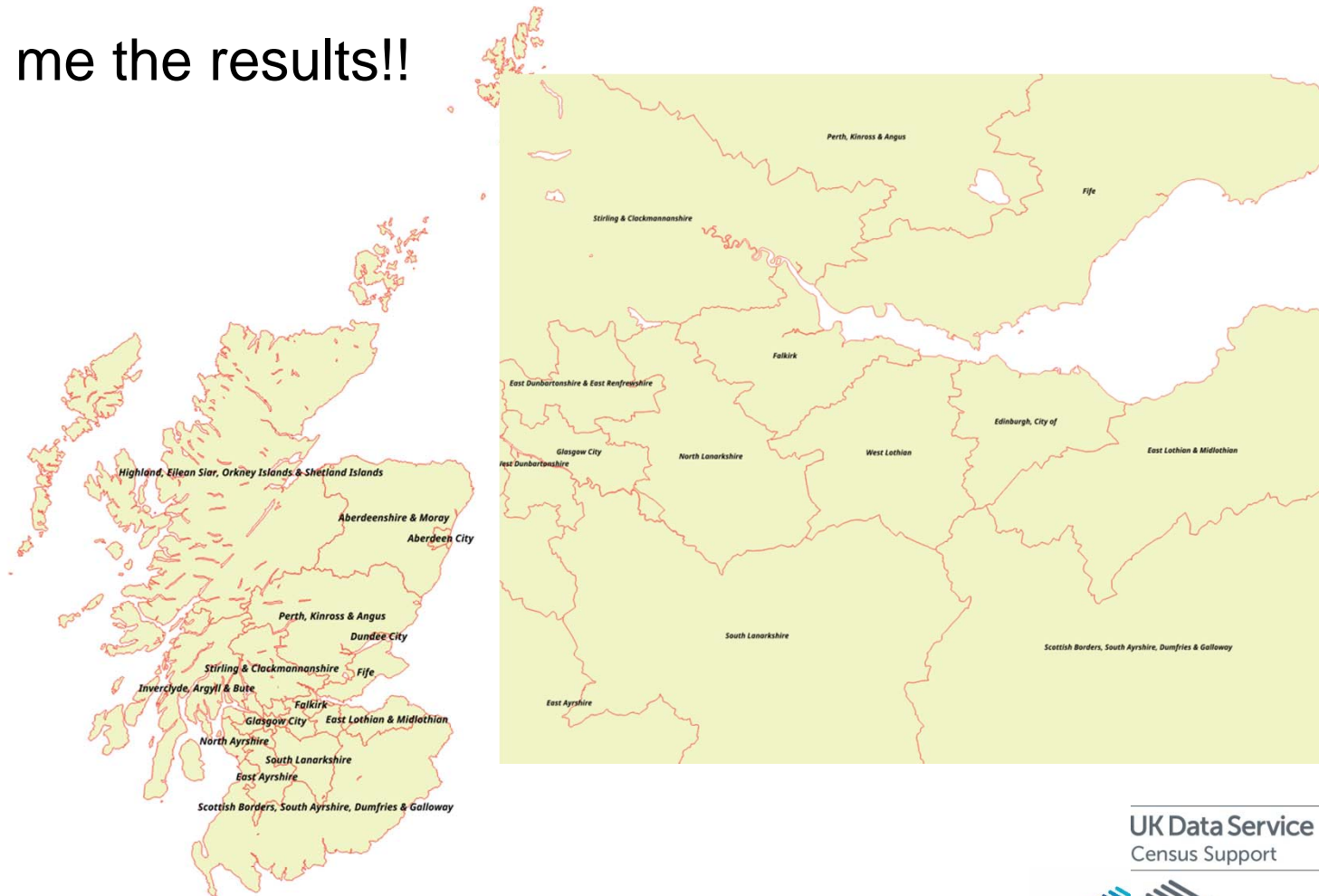
# Microdata 2011 Geography

2. The ONS OA population weighted centroid lookup file does not lookup to 2011 districts. The 2011 LA based GLA areas are therefore built from the OAs which were not assigned to 1991 LA districts. That is to say that despite the 2011 OAs being constrained to 2011 LA boundaries, the 2011-based GLA areas do not necessarily correspond to 2011 LA boundaries by which they are named in the microdata user guide. Only at the boundary between 1991 and 2011-based GLAs is this an issue. Despite this, as no definitive lookup existed for OAs to be assigned a GLA number, a lookup between the 2011 OAs and 2011 LAs was used as a starting point, matching the 2011 LA names in the microdata user guide to the GLA numbers provided.
3. Boundaries between OAs with the same GLA number were then dissolved to form GLA areas. Boundaries were then manually checked and corrected at the boundary between 1991 and 2011 based GLA areas. Corrections took the form of:
  - Removing OAs from 2011-based GLAs where they had been assigned to two competing GLAs (i.e. one 1991-based GLA and one 2011-based GLA).
  - Assigning OAs to the appropriate 2011-based GLAs where they had not been assigned to any GLA.



# (Phew!) - 2011 GCAs

- Show me the results!!



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# Grab the Data Yourself

[borders.ukdataservice.ac.uk](https://borders.ukdataservice.ac.uk)



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