

POPCHANGE

PopChange
Population Change and Geographic Inequalities in
Britain, 1971-2011

Population Change in Britain

Briefing 1

Corresponding author: Chris Lloyd
c.d.lloyd@liverpool.ac.uk

Introduction

PopChange (*Population Change and Geographic Inequalities in the UK, 1971-2011*) is a project which has developed geographically-consistent gridded sets of counts from the Censuses of Britain for 1971, 1981, 1991, 2001 and 2011, and is funded by the Economic and Social Research Council (ESRC).

Analysis of change in populations over small areas is not possible using official census geographies, which involve irregularly shaped spatial units that change between censuses. PopChange is a unique grid-based publically-available resource for studying population change.

This briefing focuses on **change in the total population of Britain between 1971 and 2011**.

Key Points:

- Between 1971 and 2011 there were large population decreases in many urban areas including Glasgow, Newcastle, Manchester, Liverpool, Birmingham and central London.
- Over the same period, there were increases in the outskirts of London and other areas, for example, across the coast of the south east of England.
- There is evidence for counter-urbanisation from areas with higher population densities from 1971 to 1981, with a gradual increase in urbanisation from 1981 to 2001 and a large increase from 2001 to 2011.
- The 'population centre' of Britain has moved further south and east between every Census year since 1971, reflecting the imbalance of growth in the south east.

Population Totals

The PopChange resource is based on data from the national Censuses in England and Wales and Scotland. The grids (1km by 1km cells) were created using small area data (enumeration districts or output areas) released for each Census. The total populations in each Census are shown in Table 1.

The definitions of populations used differ between Censuses: persons present (whoever was present on Census night) in 1971, and 'usually resident' populations in the later Censuses. These differences make only small differences to the results presented in this briefing.

Year	Total Census population
1971	53,845,575
1981	53,556,911*
1991	54,854,596
2001	57,103,927
2011	61,371,315

Table 1. Census populations. * In 1971 the Census counted visitors. From 1981 onwards it did not. Including visitors, the 1981 count would have been 54,285,422 (1.4% higher).

Counter-urbanisation and Return to Cities

One way of summarising population change is to measure the percentage of total persons who lived in 1km by 1km cells with above the specified threshold population. This provides information on how concentrated populations are within urban areas.

The figures in Table 2 provide evidence for movement out of urban areas (counter-urbanisation) from 1971 to 1981 and growth in rural areas. Subsequently, rural areas have continued to in-fill, whilst the share of the population living in high density areas had recovered by 2011, to exceed 1971 levels.

The share of the population in moderate density areas (between 1,000 and 2,500 persons per square km) increased year on year from 1971 to 2011.

Threshold (persons)	Percentage of total				
	1971	1981	1991	2001	2011
15,000	1.13	0.12	0.18	0.43	1.44
10,000	5.93	2.71	2.68	3.63	5.56
5,000	28.32	25.86	23.46	22.79	26.99
2,500	56.97	60.69	60.37	60.53	62.70
1,000	76.11	80.49	80.83	81.59	82.72
100	94.21	94.73	95.73	95.36	95.65

Table 2. Percentage of total persons who lived in 1km by 1km cells with more than the threshold population.

Where are the Most Densely Populated Places?

Unlike standard geographies, 1km grid cells are all of uniform size, making their population totals a direct measure of population density. As shown in Table 3, when ranked by their average density (population) over the period 1971 to 2011, the top 10 grid cells are all in

London. The highest ranked cell outside of London is in Spinney Hills in Leicester (ranked 22nd across all Censuses; but only 40th in 2011, with a population of 15,620).

Rank across years	Grid ID	1971 population	1981 population	1991 population	2001 population	2011 population	Rank 1971	Rank 1981	Rank 1991	Rank 2001	Rank 2011	Ward	Local Authority
1	785230	19341	16803	18191	21623	23676	6	2	2	1	1	Tachbrook	City of London, Westminster
2	785226	22098	15474	16725	19914	19319	1	4	3	2	4	Earl's Court	Kensington and Chelsea
3	783125	20100	14266	18677	17426	18828	3	8	1	4	6	Golborne	Kensington and Chelsea
4	785925	20258	15858	16376	17520	18785	2	3	4	3	7	Fulham Broadway	Hammersmith and Fulham
5	782425	17069	17011	16061	16741	21325	13	1	5	5	2	Queen's Park	City of London, Westminster
6	782426	17441	13606	15323	16541	20405	11	14	6	6	3	Maida Vale	City of London, Westminster
7	783128	19405	11861	13934	15690	18120	5	47	12	11	9	Bryanston and Dorset Square	City of London, Westminster
8	781042	13663	14036	14300	16226	19175	67	11	7	8	5	Green Street East	Newham
9	784524	16768	13384	13627	16178	16499	16	18	13	9	28	Addison	Hammersmith and Fulham
10	783126	14924	14346	13426	14748	18545	38	6	18	17	8	Bayswater	City of London, Westminster

Table 3. Cells with the largest populations across all five Census years, with the 2011 Census ward and local authority area into which the cell centres fall.

Mapping Population Change

The PopChange resource allows users to map population changes. An obvious example of population growth is the city of Milton Keynes in Buckinghamshire, which was designated as a new city in 1967. The maps

in Figure 1 show population change between 1971 and 2011, with large areas of growth indicated in dark green. Many urban areas saw declines from 1971 to 2011. Liverpool (bottom right) is shown as an example, with large declines shown in red.

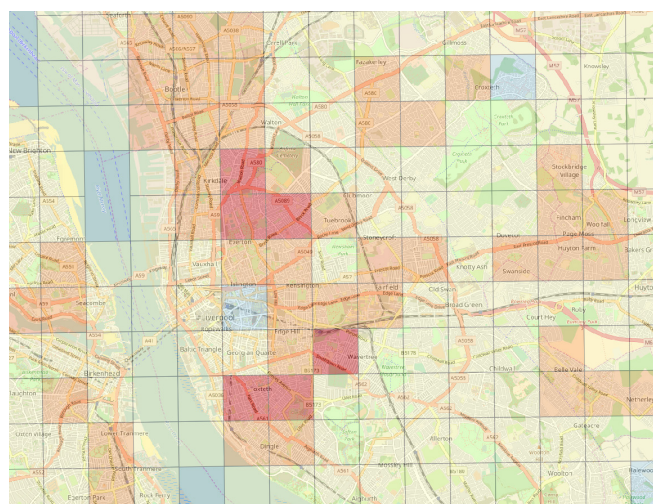
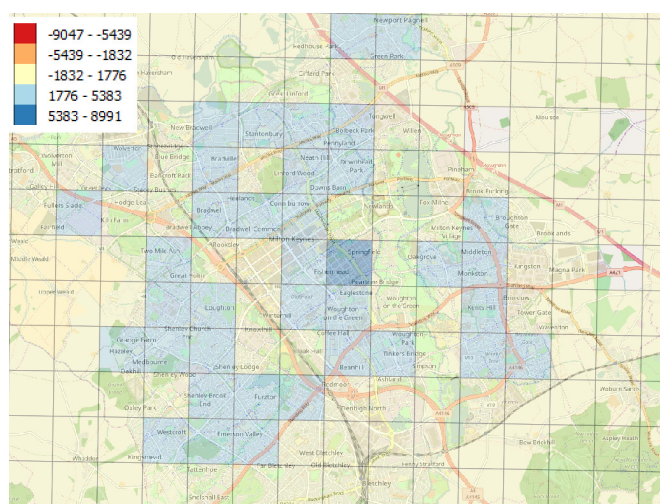


Figure 1. Population change in Milton Keynes and Liverpool.
Background map © OpenStreetMap contributors. www.openstreetmap.org/copyright

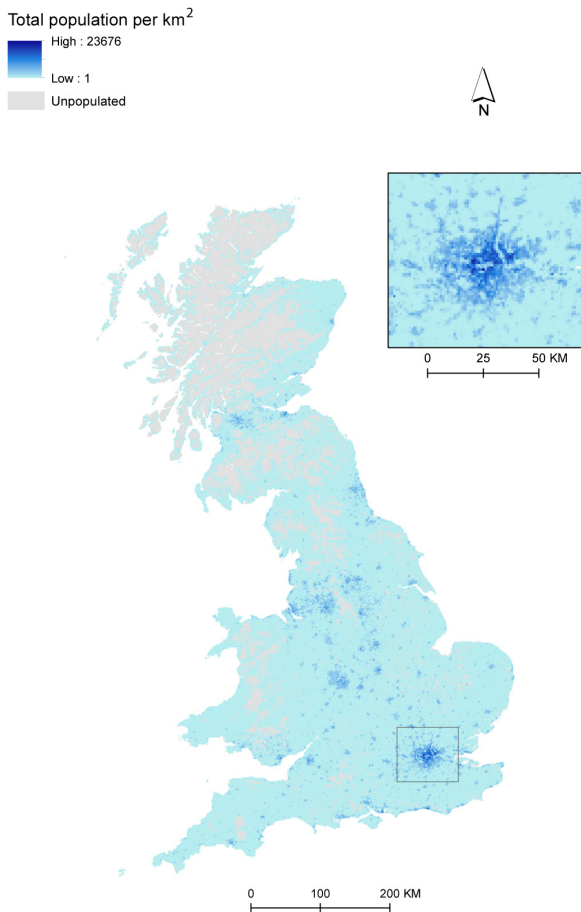


Figure 2. Total persons in 2011. Light blue = small populations, dark blue = large populations.

The map in Figure 2 uses a 1km grid to show the estimated distribution of the population across Britain (with an inset for London). Using the same grid, the maps in Figures 3 and 4 show long-term population change between 1971 and 2011, and more recent change between 2001 and 2011.

Estimates are shown only for cells which contain people (in practice, 0.5 persons or above, since fractions of people are possible in the PopChange grids as the values are estimates). Empty areas include, for example, large unpopulated areas in the Highlands of Scotland.

The map of differences between 1971 and 2011 (Figure 3) shows population decreases in many urban areas including Glasgow, Newcastle, Manchester, Liverpool, Birmingham and central London, and increases in areas including the outskirts of London and the south east of England.

The map of population change between 2001 and 2011 (Figure 4) shows large increases in the population of many urban areas; evidence of urban renewal reversing the long term declines seen in urban areas between 1971 and 2011.

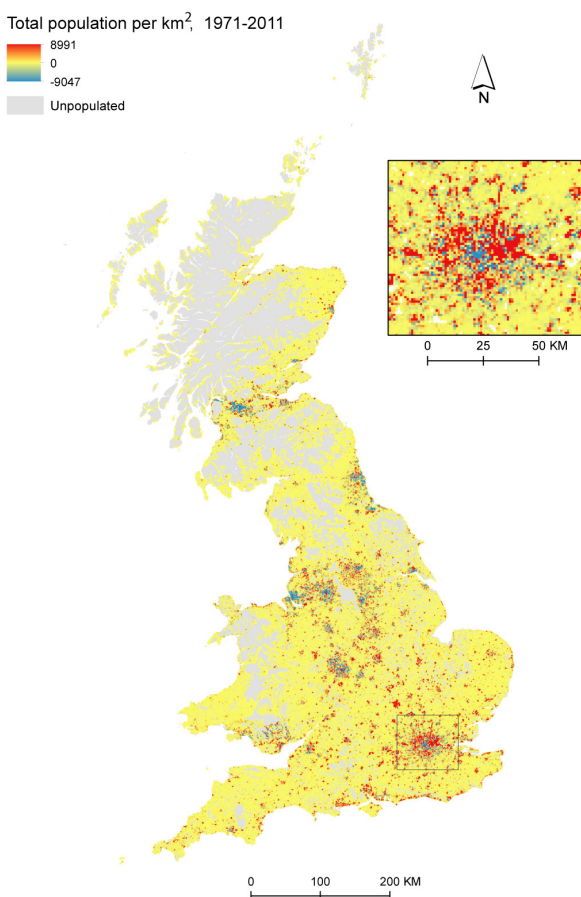


Figure 3. Total persons in 2011 minus total persons in 1971. Negative (blue) = decrease from 1971 to 2011, positive (red) = increase from 1971 to 2011.

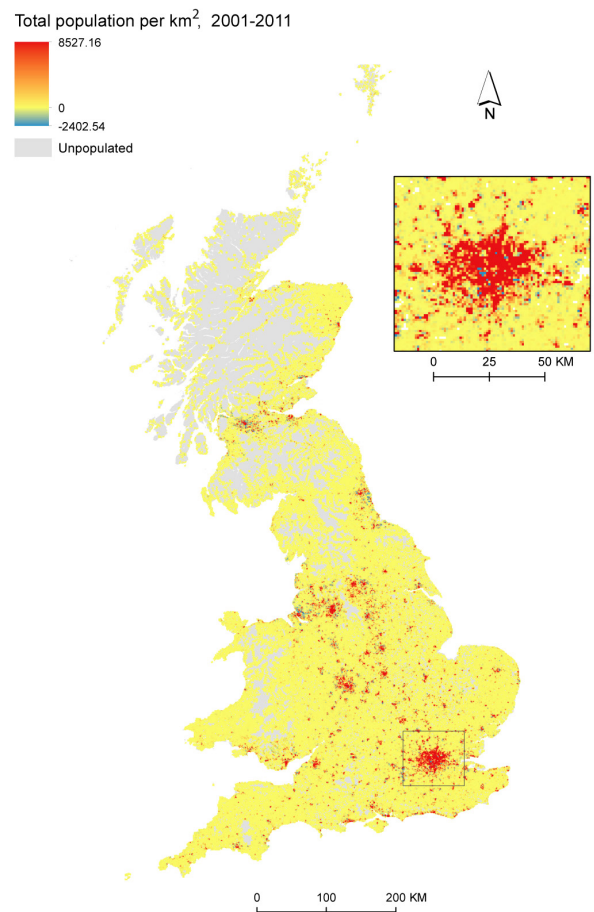


Figure 4. Total persons in 2011 minus total persons in 2001. Negative (blue) = decrease from 2001 to 2011, positive (red) = increase from 2001 to 2011.

The Population Centre of Britain: 1971 to 2011

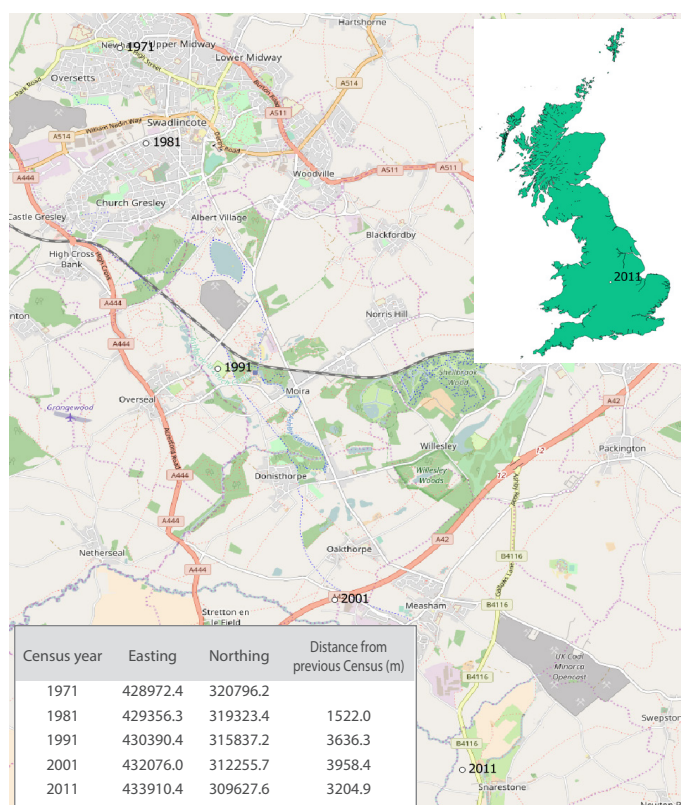


Figure 5. Population centre.

Background map. © OpenStreetMap contributors. www.openstreetmap.org/copyright

Note: The PopChange grid values are estimates (so, there may be large margins of error for some population counts).

The Population Centre of Britain: from Derbyshire to Leicestershire

The 'population centre' is a one number summary of the population distribution in an area. This is calculated by multiplying the x coordinates (Easting) and the y coordinates (Northings) of each cell by the cell's population. The results of the calculations for each of the Eastings and the Northings are then divided by the total population of Britain. This is a useful indicator of population distributions and geographical differences in growth rates.

The population centre for each Census year computed using this approach is shown in Figure 5.

The figure for 1971 places the population centre close to Newham in Derbyshire. The population centres for subsequent Census years show a steady south-eastwards drift. By 2011 the population centre had moved 12.3km, to Snarestone in Leicestershire.

This trend indicates that the population of the south east has grown relative to the rest of Britain – but the pace of change (indicated by the distances in the table) has been constant over the last 30 years.

Authors:

C. D. Lloyd, G. Catney, P. Williamson and N. Bearman
Centre for Spatial Demographics Research and
Department of Geography and Planning,
School of Environmental Sciences,
University of Liverpool, UK;
Email Chris Lloyd at C.D.Lloyd@Liverpool.ac.uk

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