

POPCHANGE

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

Deprivation Change in Britain

Briefing 2

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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 deprivation in Britain between 1971 and 2011**.

Key points:

- Between 1971 and 2011 there were large increases in deprivation in urban areas including Glasgow, Newcastle, Manchester, Liverpool, Birmingham and London.
- There were few areas which suffered a higher absolute level of deprivation in 2011 than in 1971. However, there were increases in the outskirts of London. In London as a whole, absolute deprivation in 2011 was greater than in any other Census year.
- All of the top 10 most deprived areas in Britain over the whole of the period 1971-2011 (with the largest average deprivation score) were in Glasgow.
- The most deprived areas in England over the period 1971-2011 were in parts of Newcastle Upon Tyne, London, Middlesbrough, Liverpool, Birmingham and Manchester.
- The most deprived areas in Wales between 1971-2011 were in parts of Cardiff, Swansea, Merthyr Tydfil, Denbighshire, Newport and Neath Port Talbot.
- In 2011, the most deprived areas in Britain as a whole were in parts of Birmingham, Stockton-on-Tees, Redcar and Cleveland, Bradford, Birmingham and Glasgow.

Measuring deprivation

The PopChange resource (see Lloyd et al., 2017) 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.

Deprivation in small areas can be represented using a host of measures; the Index of Multiple Deprivation (IMD) is the official measure in each of the four nations of the UK, but it cannot be used to explore change over long time periods. The Townsend score (see Townsend et al., 1988) is an alternative and is used here as it can be constructed using the Census data for Britain which have been available since 1971. The Townsend score includes information on (i) the percentage of the population who were unemployed, the percentage of households which were: (ii) not owner-occupied (rented), (iii) have no access to a car or van, or (iv) overcrowded (percentage of households with more than one person per room).

The percentages of people or households in each category in each Census are shown in Table 1.

| Year | Unemployed | Non Owner Occupied | No car or van access | Overcrowding | Mean Townsend (>0.5) | Mean Townsend (>=25) |
|------|------------|--------------------|----------------------|--------------|----------------------|----------------------|
| 1971 | 4.08 | 51.67 | 49.02 | 7.21 | 1.56 | 1.68 |
| 1981 | 10.50 | 44.34 | 39.48 | 4.34 | 0.79 | 1.31 |
| 1991 | 9.29 | 33.94 | 33.35 | 2.22 | 0.42 | 1.06 |
| 2001 | 5.34 | 31.71 | 27.47 | 1.88 | -1.28 | -0.51 |
| 2011 | 6.67 | 35.88 | 26.08 | 1.99 | -1.32 | -0.32 |

Table 1. Townsend score variables: GB-level percentages of total population or households (derived from grids) and Townsend scores. Scores are given for cells with > 0.5, or >= 25 persons or households for all 4 variables for the specific Census year.

How is the Townsend score interpreted?

The four percentages are each standardised so that they show deprivation in each area compared to Britain as a whole. The four values for each area are added together to give a total deprivation score for each area. Positive values indicate that an area has a higher rate of deprivation than the average, while negative values indicate that deprivation is lower than the average. Here, two types of Townsend score are used: (1) relative: the score for each area refers to the average for a single Census year and (2) absolute: the score for each area refers to the average for all Census years. Examples

are given in Tables 2 and 3. Values are for the relative measure unless otherwise stated.

Where are the most deprived places?

Taking the average of the relative deprivation values across all Census years for each area (grid cell) in Britain, 17 of the top 20 most deprived cells were all in Glasgow, as were all in the top ten (Table 2). Taking 2011 alone, four of the top ten most deprived cells were in Birmingham, with three in Glasgow (Table 3) (see Norman 2016 for more on deprivation over time).

| Rank all years | Grid ID | 1971 score | 1981 score | 1991 score | 2001 score | 2011 score | Rank 1971 | Rank 1981 | Rank 1991 | Rank 2001 | Rank 2011 | Ward | Local Authority |
|----------------|---------|------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|-----------|-------------------------|-----------------|
| 1 | 442660 | 12.46 | 16.03 | 17.06 | 17.41 | 18.27 | 4 | 8 | 3 | 2 | 7 | Canal | Glasgow City |
| 2 | 444067 | 11.16 | 15.69 | 16.95 | 17.49 | 16.60 | 59 | 15 | 4 | 1 | 67 | Baillieston | Glasgow City |
| 3 | 443361 | 11.23 | 14.37 | 15.49 | 17.38 | 18.62 | 54 | 57 | 22 | 3 | 4 | Springburn | Glasgow City |
| 4 | 443369 | 11.88 | 16.20 | 15.82 | 17.20 | 15.92 | 17 | 3 | 18 | 4 | 121 | North East | Glasgow City |
| 5 | 439853 | 11.20 | 15.41 | 16.02 | 16.66 | 17.27 | 55 | 22 | 11 | 7 | 28 | Drumchapel / Anniesland | Glasgow City |
| 6 | 444762 | 11.26 | 15.34 | 15.41 | 16.99 | 17.40 | 51 | 24 | 24 | 6 | 22 | Calton | Glasgow City |
| 7 | 444068 | 11.12 | 15.57 | 16.55 | 17.19 | 15.67 | 63 | 16 | 6 | 5 | 142 | North East | Glasgow City |
| 8 | 444056 | 11.64 | 14.94 | 15.03 | 16.17 | 17.23 | 32 | 31 | 34 | 9 | 30 | Govan | Glasgow City |
| 9 | 444763 | 12.03 | 15.35 | 15.32 | 15.90 | 16.32 | 13 | 23 | 27 | 15 | 82 | Calton | Glasgow City |
| 10 | 445462 | 12.29 | 14.95 | 15.36 | 16.03 | 16.03 | 6 | 30 | 25 | 11 | 108 | Calton | Glasgow City |

Table 2. Cells with the largest deprivation score in Britain across all five Census years with the 2011 Census ward and local authority area into which the cell centres fall.

| Rank | Grid ID | No car or van (%) | Non owner occupied (%) | Overcrowded (%) | Unemployed (%) | Townsend score 2011 | Townsend score 2011 (absolute) | Ward | Local Authority |
|------|---------|-------------------|------------------------|-----------------|----------------|---------------------|--------------------------------|---------------------|-----------------|
| 1 | 708808 | 74.66 | 89.69 | 11.45 | 18.92 | 19.64 | 12.10 | Nechells | Birmingham |
| 2 | 607317 | 71.71 | 85.42 | 7.26 | 26.71 | 18.72 | 11.61 | City | Bradford |
| 3 | 708109 | 65.45 | 86.51 | 9.53 | 28.48 | 18.71 | 11.69 | Nechells | Birmingham |
| 4 | 443361 | 74.73 | 91.00 | 5.45 | 22.82 | 18.62 | 11.48 | Springburn | Glasgow City |
| 5 | 708809 | 69.18 | 85.29 | 8.26 | 24.06 | 18.47 | 11.43 | Nechells | Birmingham |
| 6 | 708108 | 64.77 | 82.14 | 10.32 | 28.21 | 18.47 | 11.52 | Aston | Birmingham |
| 7 | 442660 | 77.40 | 93.80 | 3.07 | 24.77 | 18.27 | 11.25 | Canal | Glasgow City |
| 8 | 446856 | 83.16 | 92.20 | 2.85 | 17.73 | 18.10 | 10.96 | Newlands / Auldburn | Glasgow City |
| 9 | 782430 | 76.98 | 82.69 | 9.95 | 9.84 | 17.98 | 10.71 | Regent's Park | Camden |
| 10 | 638137 | 59.91 | 77.58 | 13.25 | 24.47 | 17.83 | 11.07 | Darnall | Sheffield |

Table 3. Cells with the largest deprivation score in 2011 with the 2011 Census ward and local authority area into which the cell centres fall.



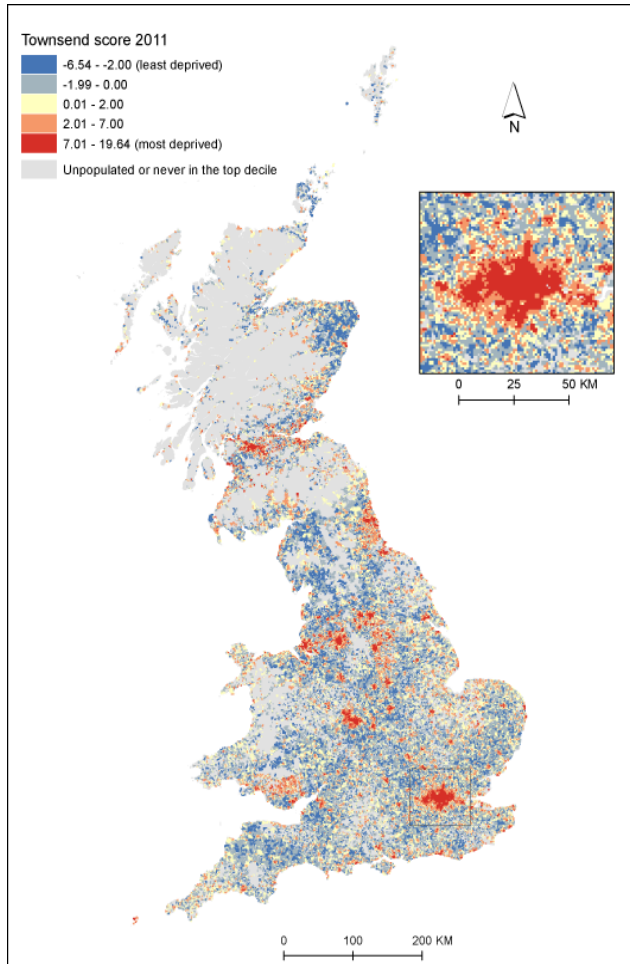


Figure 1. Townsend score in 2011.
Blue = less deprived, red = more deprived.

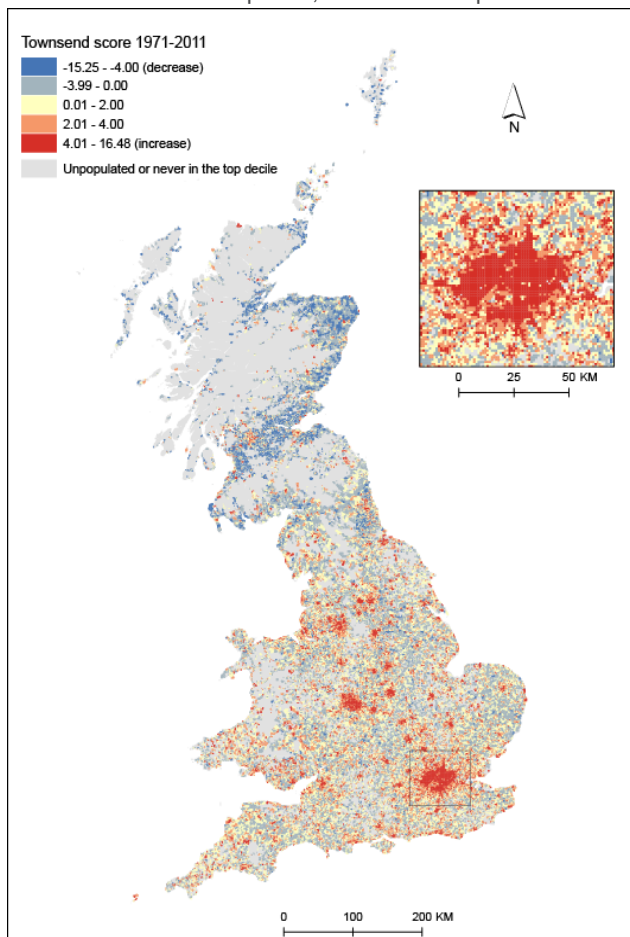


Figure 2. Townsend score in 2011 – Townsend score in 1971. Negative (blue) = decrease from 1971 to 2011, positive (red) = increase from 1971 to 2011.

The most deprived cells in England over the period 1971–2011 were in parts of Newcastle Upon Tyne, London, Middlesbrough, Liverpool, Birmingham and Manchester. Over the same period, the most deprived cells in Wales were in areas of Cardiff, Swansea, Merthyr Tydfil, Denbighshire, Newport and Neath Port Talbot.

Regional trends

The map in Figure 1 uses a 1km grid to show the relative Townsend score across Britain (with an inset for London). Scores are shown only for cells which are estimated to 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.

Using the same grid, the map in Figure 2 shows long-term deprivation change between 1971 and 2011. Figure 2 shows that deprivation in urban areas including London, Birmingham, Manchester, and Glasgow increased between 1971 and 2011. That is, urban areas were more deprived compared to less urban areas in 1971 than they were in 2011, and the urban-rural divide has increased. In other words, one or more of the four percentages used to construct the Townsend measure have increased in urban areas. Unemployment has increased in most urban areas and this is a major contributor to the changes in deprivation. The decreases shown in parts of rural Scotland are partly due to changing definitions of overcrowding (the size of the decreases in these areas is exaggerated).

The focus so far has been on relative deprivation where the comparisons are for each individual year. Another approach to exploring changes across Britain is to compare the absolute Townsend score (compared to all other years) in Scotland and Wales, and in the regions of England. Table 4 shows that absolute deprivation has declined in most of the regions of England, and in Wales and Scotland across most Census years. London provides the most notable exception and, while the levels of deprivation do not follow a consistent trend over time, deprivation was higher in 2011 than in any previous Census year.

| | 1971 | 1981 | 1991 | 2001 | 2011 |
|--------------------------|------|-------|-------|-------|-------|
| East Midlands | 0.90 | 0.36 | 0.08 | -1.47 | -1.33 |
| East of England | 0.67 | 0.28 | 0.15 | -1.59 | -1.25 |
| London | 2.39 | 2.15 | 3.32 | 2.41 | 3.39 |
| North East | 3.16 | 1.83 | 1.36 | -0.19 | -0.44 |
| North West | 0.73 | 0.18 | -0.07 | -1.45 | -1.41 |
| South East | 0.37 | -0.08 | 0.00 | -1.79 | -1.32 |
| South West | 0.38 | -0.05 | -0.05 | -1.74 | -1.59 |
| West Midlands | 0.63 | 0.33 | 0.18 | -1.50 | -1.22 |
| Yorkshire and The Humber | 1.23 | 0.61 | 0.25 | -1.14 | -1.05 |
| Scotland | 4.65 | 2.83 | 1.24 | -0.47 | -1.12 |
| Wales | 0.92 | 0.53 | 0.54 | -1.02 | -1.19 |

Table 4. Mean average absolute Townsend score from 1971 to 2011.

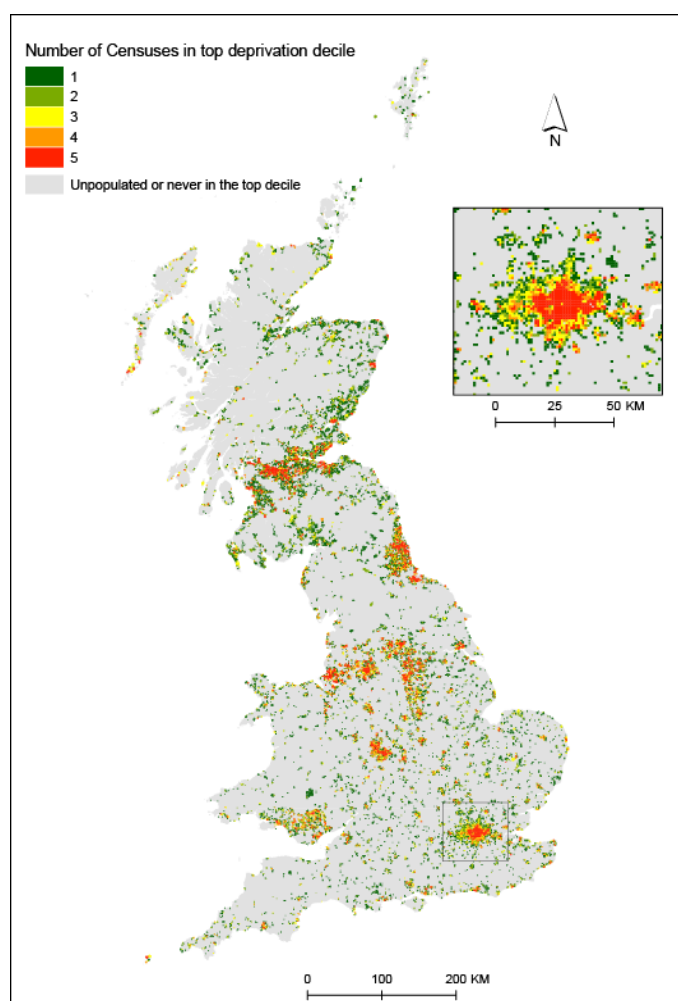


Figure 3. Number of years cells were in the top deprivation decile.

The urban spread of deprivation

The relative Townsend scores can be ranked and the top (the most deprived) 10% identified. Each cell can be categorised to show how many times over the five Census years it was in the top 10% of deprived cells. Figure 3 shows that the core of major urban areas were in the most deprived 10% in all five Census years. There are clear rings around urban areas, with cells which neighbour the core cells being in the top 10% for four years, and these are adjacent to cells which were in the top 10% for three years. This map, along with Figure 2, shows a spread of deprivation from urban areas to the fringes of these areas. In many of these places there was marked population growth between 1971 and 2011 (see PopChange Briefing 1), and thus deprivation follows population growth in at least some areas.

References

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



PopChange is based within the University of Liverpool's cross-disciplinary Centre for Spatial Demographics Research:
<https://www.liverpool.ac.uk/spatial-demographics/>
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