

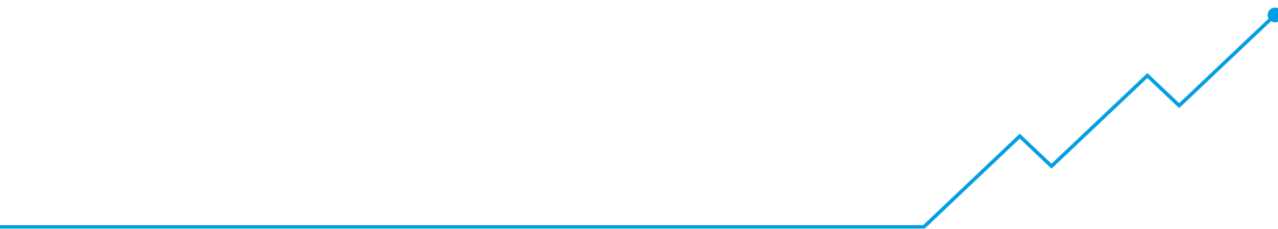


Department  
of Energy &  
Climate Change

# SUB-REGIONAL FUEL POVERTY, 2016

## ENGLAND

Statistical Release:  
Experimental Statistics



30 June 2016

England

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# Experimental statistics<sup>1</sup>: Sub-regional fuel poverty, 2016

A household is considered to be fuel poor if it has higher than typical energy costs and would be left with a disposable income below the poverty line if it spent the required money to meet those costs. It captures the fact that fuel poverty is distinct from general poverty: not all poor households are *fuel* poor, and some households would not normally be considered *poor* but could be pushed into fuel poverty if they have high energy costs. Fuel poverty is therefore an overlapping problem of households having a low income and facing high energy costs.

National statistics on the proportion of all households in England that are classed as fuel poor and the depth of their fuel poverty are published as National Statistics in the Annual Fuel Poverty Statistics Report. The National Statistics report looks at the key drivers of fuel poverty and the how fuel poverty in England varies by a number of dwelling and households characteristics.

This year's report, and a detailed methodology on how fuel poverty is calculated, can be found on the DECC website at the following link(s):

<https://www.gov.uk/government/collections/fuel-poverty-statistics>

These experimental sub-regional statistics aim to complement the National Statistics on fuel poverty, by estimating the number and proportion of fuel poor households at smaller geographical levels, for example Lower Super Output Area (LSOA).

Sub-regional breakdowns are available back to 2010 data at the following link:

<https://www.gov.uk/government/collections/fuel-poverty-sub-regional-statistics>

## 1.1 Sub-regional fuel poverty

In 2013, DECC undertook an internal review of the methodology used to produce sub-regional estimates of fuel poverty, in conjunction with ONS Methodology Advisory Service. This review found that estimates of fuel poverty were robust at local authority level, but not robust at lower levels of geography. In particular, estimates of fuel poverty at Lower Super Output Area (LSOA) should be treated with caution. The estimates should only be used to look at general trends and identify areas of particularly high or low fuel poverty. They

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<sup>1</sup> They are official statistics undergoing an evaluation process prior to being assessed as national statistics.

should not be used to identify trends over time within an LSOA, or to compare LSOA's with similar fuel poverty levels due to very small sample sizes and consequent instability in estimates at this level.

We are continuing to develop our modelling of sub-regional fuel poverty, including providing estimates of the precision of these statistics, and plan to publish more information on this in the future.

### 1.1.1 Data available

For each of the following geographical levels, estimates are available for the total number of households, the number of fuel poor households, and the proportion of households in fuel poverty:

- English Region (former Government Office Region)<sup>2</sup>
- County
- Local Authority
- Parliamentary Constituency
- Lower Super Output Area (LSOA)

## 1.2 Methodology

Fuel poverty statistics are based on data from the English Housing Survey (EHS). Given the sample size of the EHS (11,851 households in the combined 2013 and 2014 combined dataset<sup>3</sup>), it is not possible to robustly estimate fuel poverty rates in small geographical areas, such as local authority. However a logistic regression model is created, matching data from the EHS on whether a household is fuel poor or not (as the binary dependent variable) with data from other sources available for all Census Output Areas<sup>4</sup>, e.g. Census 2011 data (as the dependent variables). The model is used to estimate the levels of fuel poverty for all COAs across England; these are then aggregated to LSOA and higher level geographies. This modelling approach introduces the possibility that small atypical areas are not accurately picked up by the model. It is therefore essential to compare, where possible, the modelled LSOA level results to the overall local area results.

The application of the model requires specific local area data on a variety of demographic and socio-economic factors. The model, produced by the Building Research Establishment

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<sup>2</sup> These are National Statistics and are presented in the Annual Fuel Poverty Statistics Report.

<https://www.gov.uk/government/statistics/annual-fuel-poverty-statistics-report-2016>

<sup>3</sup> More information on the EHS combined dataset can be found in Section 1.2.1 of the Annual Fuel Poverty Statistics report: <https://www.gov.uk/government/statistics/annual-fuel-poverty-statistics-report-2016>

<sup>4</sup> More information on ONS census geography:

<http://www.ons.gov.uk/methodology/geography/ukgeographies/censusgeography>

(BRE) at the request of DECC, uses logistic regression and stepwise selection methodology to identify the variables with the most explanatory power. A few of the key predictor variables used in the logistic regression model include:

- **Dwelling age:** This is a categorical variable which provides an indication of the likely energy efficiency of a dwelling. For example, older dwellings are generally more likely to have solid walls or be listed buildings, which make fitting energy saving measures difficult. Such households are likely to have higher fuel bills in order to heat the dwelling to an adequate level of warmth.
- **English region:** This is a categorical variable which indicates the English Region (former Government Office Region) that a COA is located within. Section 3.1.10 in the main report illustrates the regional differences in levels of fuel poverty.
- **Presence of mains gas:** This is a binary variable which indicates whether a property is connected to the gas grid. On average, households which are not connected to the gas grid are more likely to be classed as fuel poor and their fuel poverty gap is likely to be higher, this can be seen in Section 3.1.7 in the main report.

The output from this model is the percentage of households in fuel poverty at Census Output Area level. To convert this to a number of households in fuel poverty, we apply this percentage to an estimate of household numbers at Census Output Area level. The number of households classed as fuel poor and overall household totals are benchmarked to reflect the 2014 national fuel poverty figures. These models are then aggregated to the Lower Super Output Area, Local Authority, Parliamentary Constituency, County and Regional level.

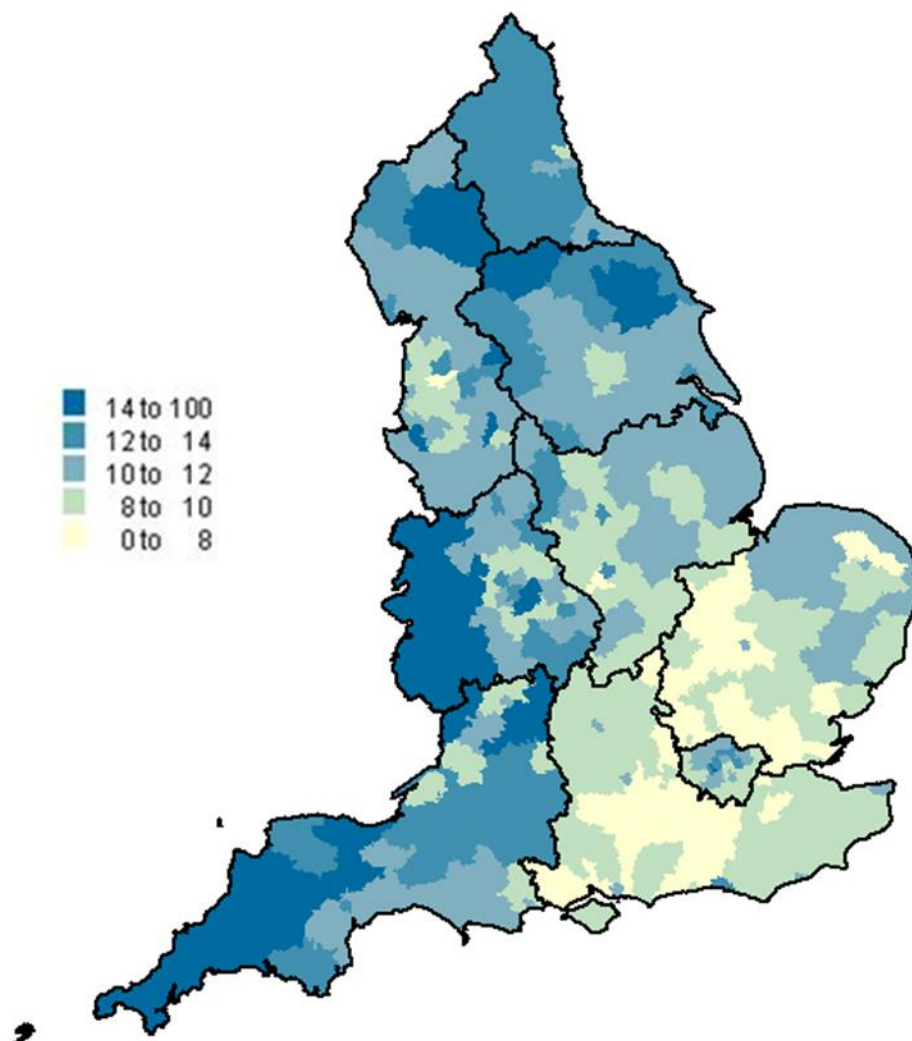
### 1.3 Mapping fuel poverty

Maps provide a useful way of comparing fuel poverty across different geographical areas. Figures 1.1 and 1.2 show the proportion of households in fuel poverty in England, at Local Authority and LSOA level respectively. At a glance, it is clear that many of the Local Authorities and LSOAs in the South East, and East of the Country generally have lower fuel poverty levels, whilst the West Midlands and North East have the highest rates of fuel poverty. This data is consistent with the regional data shown in Section 3.1.10 of the main report, which shows the South East to have the lowest fuel poverty rates (8.3 per cent) and the North East to have the highest fuel poverty rates (12.2 per cent). At the local authority level, the rate of fuel poverty was the lowest in Fareham, where 5.6 per cent of households were estimated to be fuel poor. Cornwall has the highest fuel poverty levels of any of the large local authorities with nearly 15 per cent estimated to be in fuel poverty (see Annex A for LSOA maps broken down by region).

Figure 1.1: Percentage of households in fuel poverty, by Local Authority District, 2014



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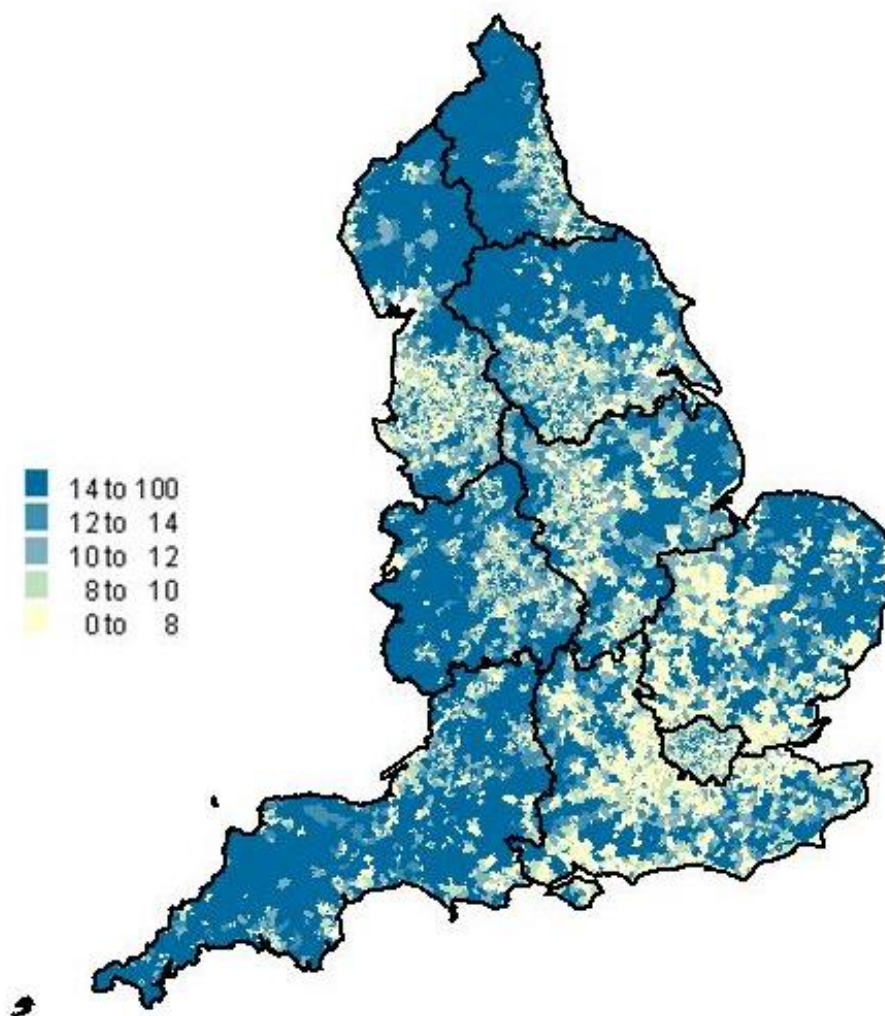


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Figure 1.2: Percentage of households in fuel poverty, by Lower Super Output Area, 2014



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### 1.4 Comparisons with 2013 Data

The West Midlands saw the largest decrease in the proportion of fuel poor households between 2013 and 2014. This decrease brings the proportion of households in fuel poverty in the West Midlands down to around 12 per cent, a decrease of 1.8 percentage points. The largest increase was in Yorkshire and the Humber, taking them up to around 12 per cent of households in fuel poverty, an increase of 1.2 percentage points. All other regions remained broadly the same.

In 2014, 24 per cent of local authorities ( $n=79$ ) saw a decrease<sup>5</sup> in the proportion of fuel poor households. Another 37 per cent ( $n=122$ ) saw an increase<sup>4</sup> in the proportion of fuel poor households compared to 2013. The proportion of fuel poor households remained the same<sup>4</sup> is 38 per cent ( $n=125$ ) of local authorities. The changes observed in local authorities in the rates of fuel poverty are in line with the observed Regional changes.

Caution should be exercised when looking at year on year changes for individual local authorities, as changes observed may be due to uncertainty in the data unless they are very large.

### 1.5 Summary

DECC have published experimental sub-regional statistics alongside the National Statistics on fuel poverty by estimating the number and proportion of fuel poor households at smaller geographies including LSOA. This is accompanied by fuel poverty maps across different geographical areas.

This datasets which underpin this report can be found at the following link on the DECC website:

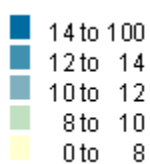
<https://www.gov.uk/government/statistics/2014-sub-regional-fuel-poverty-data-low-income-high-costs-indicator>

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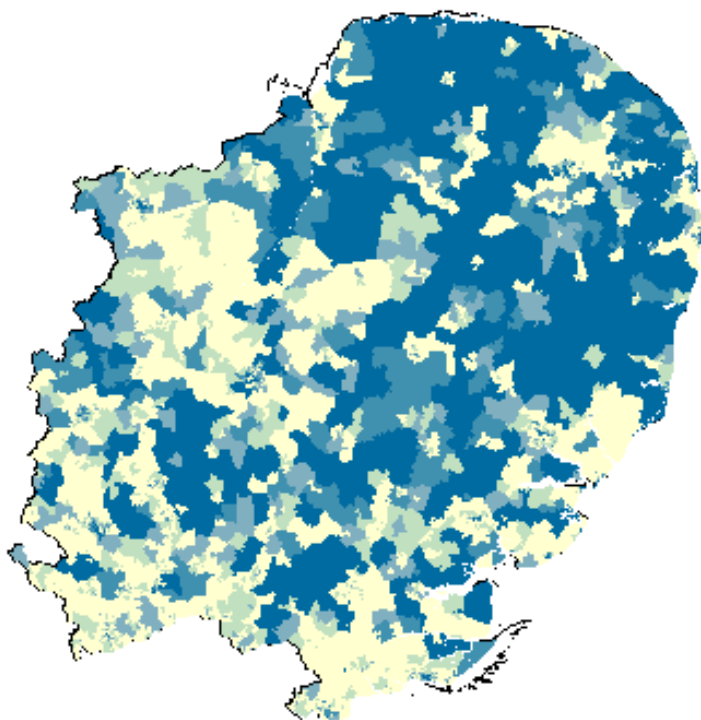
<sup>5</sup> The proportion of fuel poor households rounded to the nearest whole number

## Annex A: Sub-regional fuel poverty in 2014, regional maps

**Figure A.1: Percentage of households in fuel poverty by Lower Super Output Area, East of England, 2014**

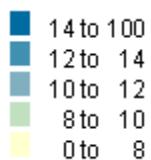


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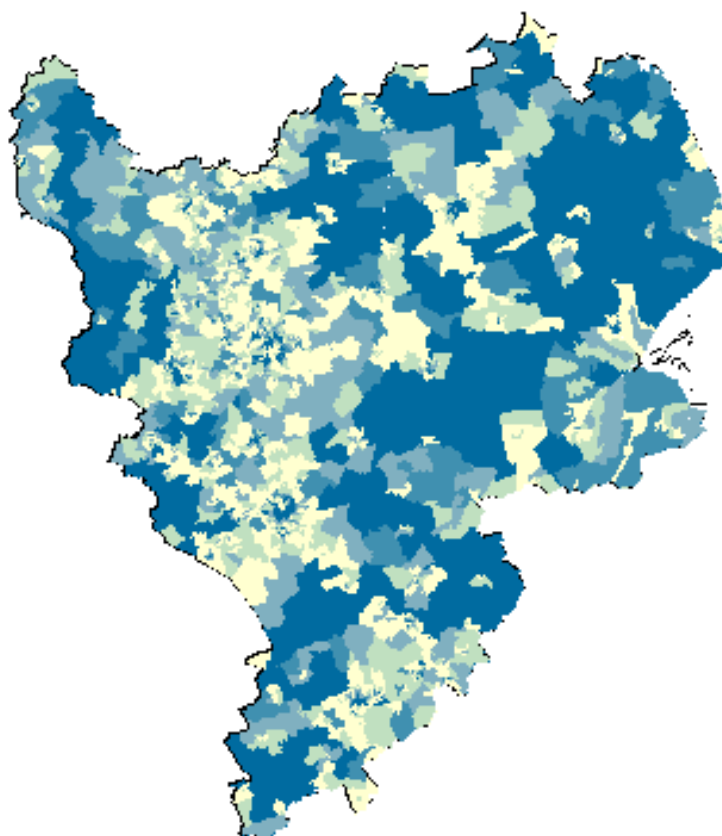


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Figure A.2: Percentage of households in fuel poverty by Lower Super Output Area, East Midlands, 2014

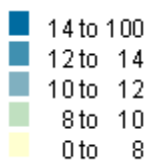


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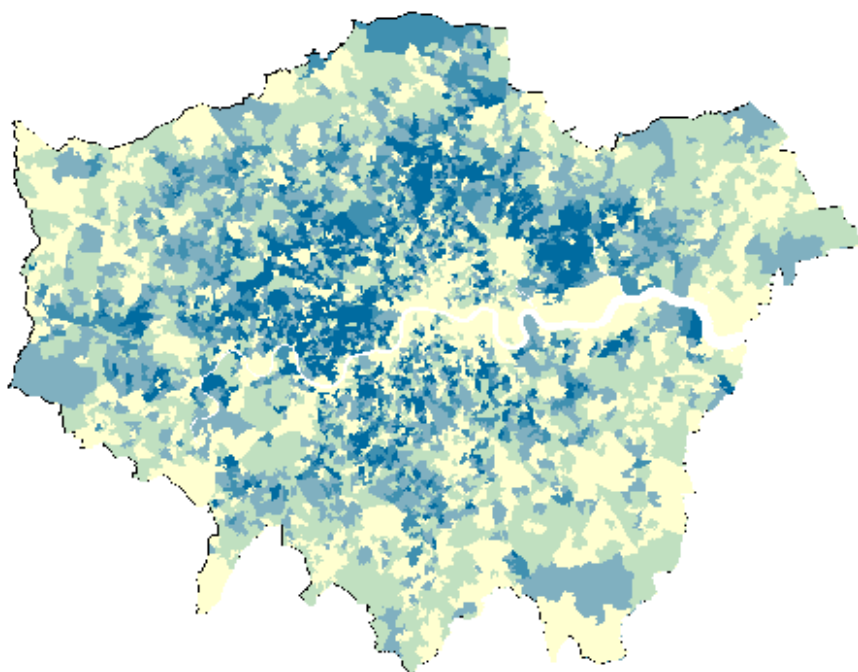


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Figure A.3: Percentage of households in fuel poverty by Lower Super Output Area, London, 2014

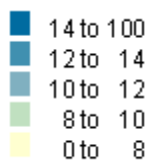


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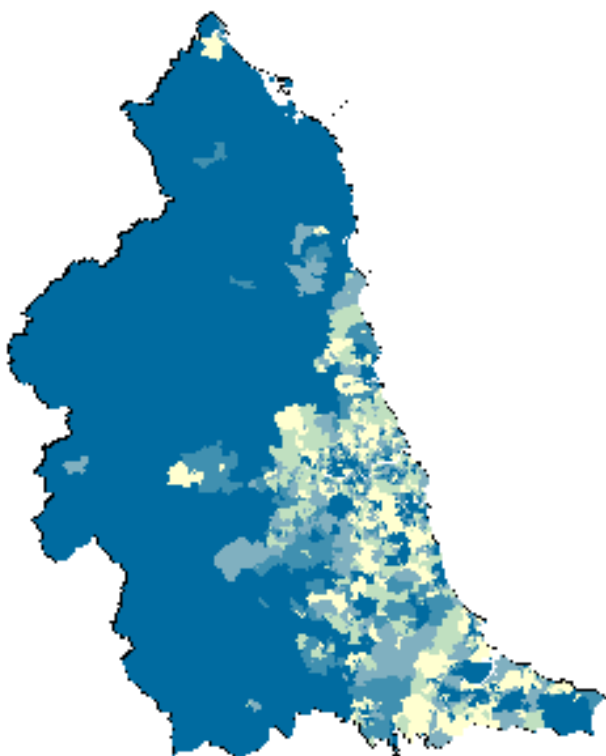


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**Figure A.4: Percentage of households in fuel poverty by Lower Super Output Area, North East, 2014**

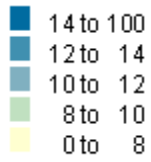


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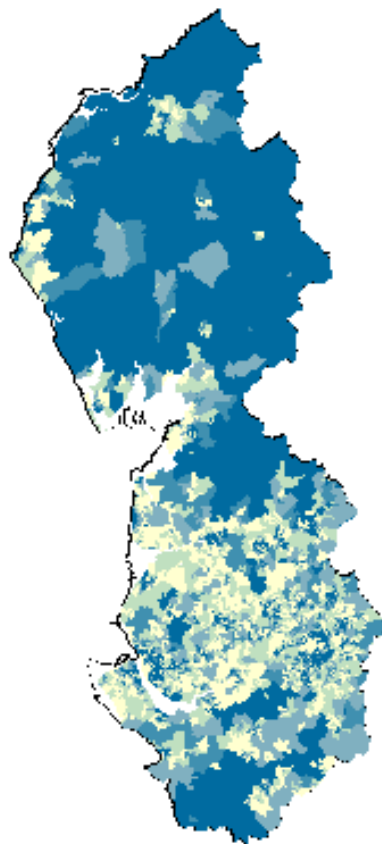


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**Figure A.5: Percentage of households in fuel poverty by Lower Super Output Area, North West, 2014**

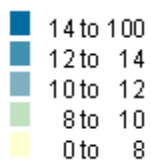


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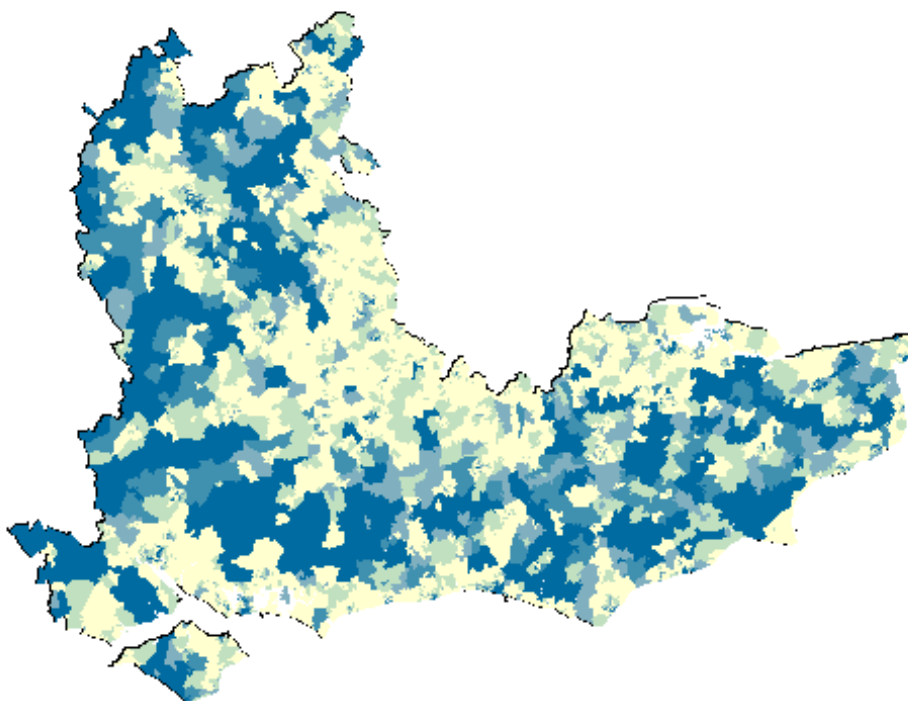


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**Figure A.6: Percentage of households in fuel poverty by Lower Super Output Area, South East, 2014**

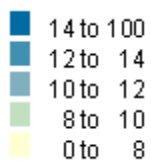


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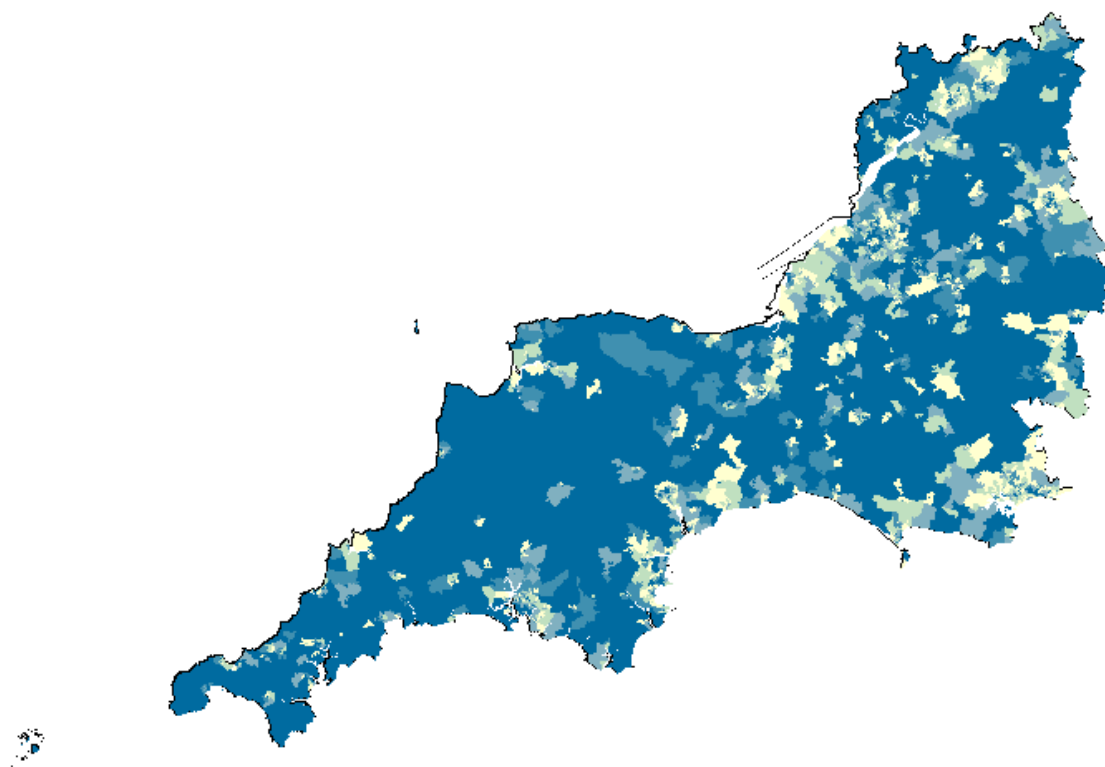


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Figure A.7: Percentage of households in fuel poverty by Lower Super Output Area, South West, 2014



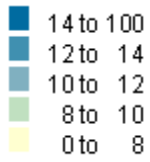
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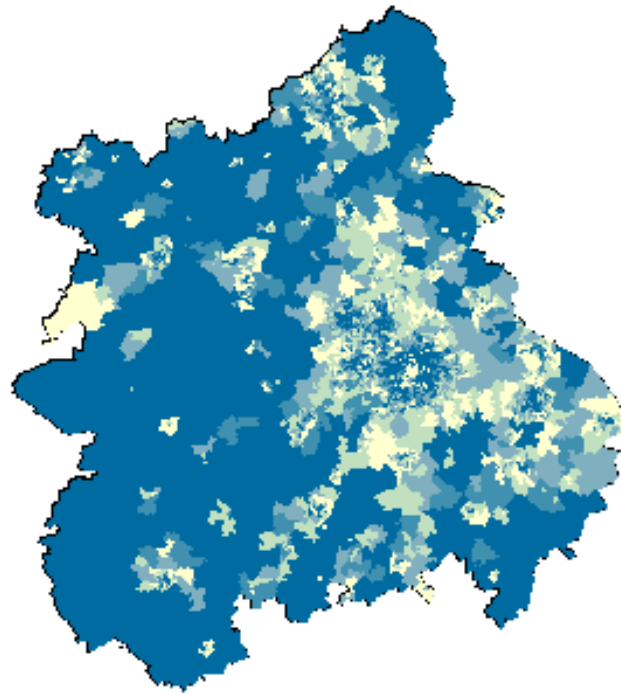
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**Figure A.8: Percentage of households in fuel poverty by Lower Super Output Area, West Midlands, 2014**

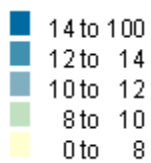


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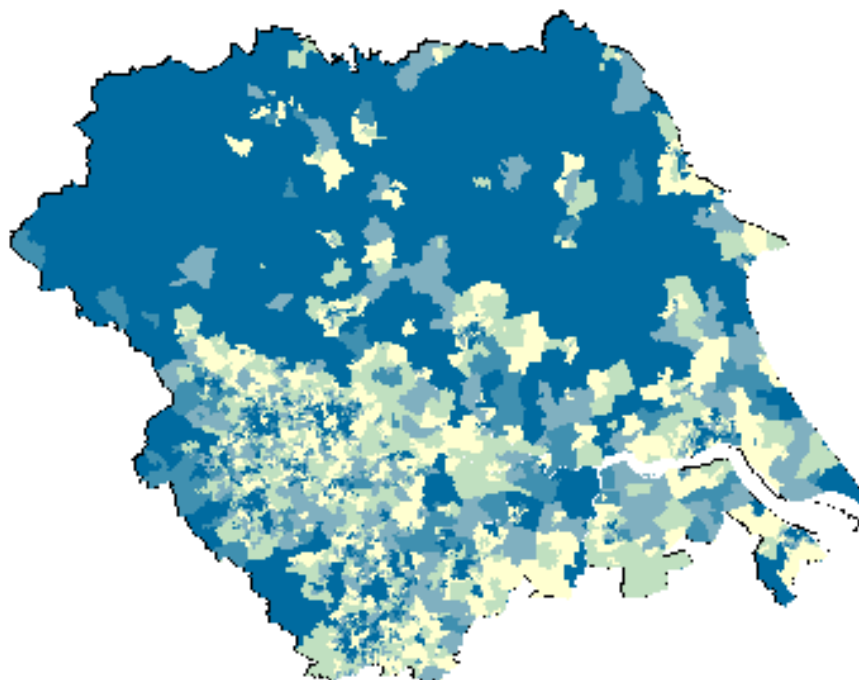


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Figure A.9: Percentage of households in fuel poverty by Lower Super Output Area, Yorkshire and the Humber, 2014



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