

SPARSITY OF POPULATION IN HEREFORDSHIRE

This report considers Herefordshire's position, relative to the other 149 English top tier¹ local authorities, in terms of 'sparsity' measures used in the Local Government Finance Settlement for 2006/07. This is to help understanding of the differences in population distribution between Herefordshire and other areas, and the possible implications of this for service provision.

Population density is a commonly used measure of how dispersed an area's population is – particularly at a local authority level, and is also used in the calculation of the sparsity indicators discussed here. It is calculated by taking the resident population of an area and dividing it by the geographical area to give the number of persons per hectare. However, overall density doesn't take into account clustering of population within an authority: a low value could mean the population is evenly distributed across the area, but it could also mean that the majority of the population is concentrated in a relatively small part of the authority – so that large areas have hardly any residents.

Sparsity measures try and account for this by calculating the percentage of an authority's total population that lives in smaller areas (e.g. wards) with population densities below a certain threshold. A high value means an area is more sparsely populated.

This report first considers the details of the individual indicators of sparsity used in the Finance Settlement, then summarises Herefordshire's position in terms of these indicators alongside overall population density and actual geographical size.

INDICATORS USED FOR TOP TIER AUTHORITIES

WARD SPARSITY

Two measures make up the 'Ward Sparsity' indicator:

1. The population of wards with a density of 0.5 or less (persons per hectare), divided by the total population of the county (referred to herewith as "very sparse" wards);
2. The population of wards with a density of more than 0.5 but less than or equal to 4 persons per hectare, divided by the total population of the county (referred to herewith as "sparse" wards).

'Ward Sparsity' is given by is the 1st measure multiplied by 3.5, plus the 2nd measure, i.e. greater weight is given to the percentage of the population living in "very sparse" wards.

- In terms of overall ward sparsity, no top tier authority is ranked higher than Herefordshire. The Council of the Isles of Scilly is the second highest, followed by North Yorkshire County Council, Rutland UA and Shropshire County Council respectively.
- The same is true for "very sparse" wards, i.e. no top tier authority has a greater percentage of its resident population living in wards with a population density of 0.5 or fewer persons per hectare than Herefordshire. The value for Herefordshire is 28.6%, over 3 percentage points higher than the next highest: North Yorkshire (25.2%). Only five other authorities have values over 15%: Shropshire (21.2%), Rutland (20.7%), Cumbria (19.3%), Northumberland (17.4%) and Devon (17.3%).
- However, 18 top tier authorities have a higher percentage of their population living in wards with a population density of greater than 0.5 but less than 4 persons per hectare than Herefordshire.

¹ Top tier authorities are those authorities that are responsible for services that must be provided at the county council level, i.e. county councils (CCs), unitary authorities (UAs), metropolitan districts or city councils, and London boroughs.

OUTPUT AREA SPARSITY

OAs are statistical geographies of around 300 people and 125 households, which were automatically generated by the Office for National Statistics to group together postcodes of similar tenure. They nest within (current) wards and were used as 'building blocks' for lower layer super output areas (LSOAs).

Two measures make up the 'Output Area Sparsity' indicator (referred to as 'Population Sparsity' in the Financial Settlement literature):

1. The population of OAs with a density of 0.5 or fewer persons per hectare, divided by the total population of the county (referred to herewith as "very sparse" OAs);
2. The population of OAs with a density of more than 0.5 but less than or equal to 4 persons per hectare, divided by the total population of the county (referred to herewith as "sparse" OAs)

'Output Area Sparsity' is given by the 1st measure multiplied by 2, plus the 2nd measure, i.e. greater weight is given to the percentage of the population living in "very sparse" OAs.

- Only Rutland UA and the Council of the Isles of Scilly have higher values than Herefordshire in terms of the overall OA sparsity indicator.
- However, no top tier authority has a greater percentage of its population living in "very sparse" OAs than Herefordshire. A quarter of the county's population (25.4%) lives in OAs with a population density of 0.5 or fewer persons per hectare. Only Rutland UA and Shropshire County Council also have more than one fifth of their populations living in "very sparse" OAs (23.8% and 21.1% respectively), although four other authorities have values over 15%: North Yorkshire (19.2%), Cumbria (16.5%), Lincolnshire (16.2%) and Devon (16.0%). The Council of the Isles of Scilly has the 20th highest percentage: only 8.4%.
- Conversely, over half of the population of the Isles of Scilly (54.7%) live in "sparse" OAs – compared to 17.8% of Herefordshire's population. This means that the county has the 6th highest ranking in terms of percentage of population living in "sparse" OAs. The other four authorities with higher values are Rutland UA (27.3%), Cornwall County Council (18.9%), Somerset County Council (18.9%) and Norfolk County Council (18.3%).

SPARSITY FOR PEOPLE AGED 65 AND OVER

This indicator is based on the percentage of an authority's older population (defined as aged 65+) that live in Lower Super Output Areas (LSOAs) with low overall population densities (i.e. number of persons of all ages per hectare). LSOAs are statistical geographies that nest into wards and were designed (by the Office for National Statistics) to have populations of about 1,500 people.

Two measures make up the 'Sparsity for People Aged 65+' indicator:

1. The population aged 65+ of LSOAs with a density of 0.08 or less (persons per hectare), divided by the total population aged 65+ in the whole county (referred to herewith as "very sparse" LSOAs);
2. The population aged 65+ of LSOAs with a density of more than 0.08 but less than or equal to 0.64 persons per hectare, divided by the total population aged 65+ in the whole county (referred to herewith as "sparse" LSOAs)

'Sparsity for People Aged 65+' is based on the 1st measure multiplied by 2, plus the 2nd measure, i.e. greater weight is given to the percentage of the older population living in "very sparse" LSOAs.

- As with the 'output area sparsity' indicator, only the Council of the Isles of Scilly and Rutland UA have higher values than Herefordshire in terms of the overall 'sparsity for people aged 65+' indicator.
- However, neither of these authorities has a higher percentage of its population aged 65 and over living in "very sparse" LSOAs than Herefordshire; this is only the case for North Yorkshire County Council. 20.4% of Herefordshire's population aged 65+ lives in LSOAs with a population density of less than or equal to 0.08 persons (of all ages) per hectare, whilst the equivalent figure for North Yorkshire is 21.5%. Rutland has the 6th largest value (15.5%), but no people aged 65+ in the Isles of Scilly live in "very sparse" LSOAs.
- The Council of the Isles of Scilly and Rutland UA are the only authorities with more than half of their population aged 65+ living in "sparse" LSOAs: 100% and 51.1% respectively. Herefordshire has the 3rd highest value (34.5%), although Somerset County Council's proportion is almost the same (34.0%).

SUMMARY OF HEREFORDSHIRE'S RELATIVE POSITION IN TERMS OF MAIN SPARSITY INDICATORS

To summarise, for each of the three sparsity indicators used in the Local Government Finance Settlement for 2006/07 for top tier authorities:

- No top tier authority has a higher value in terms of overall ward sparsity than Herefordshire;
- Only Rutland UA and the Council of the Isles of Scilly, respectively, have higher rankings in terms of overall output area sparsity;
- Only the Council of the Isles of Scilly and Rutland UA, respectively, have higher rankings in terms of sparsity for people aged 65 and over.

Output area sparsity is more sensitive than ward sparsity as it is a smaller geography and therefore less likely to be classified as "sparse" than a ward - but they are more consistent than wards in terms of population size (as they were designed to be). OAs are statistical geographies whereas wards are administrative boundaries.

It is also worth noting that the same five authorities have the five highest ranks in terms of all sparsity indicators (although not necessarily in the same order): obviously the three discussed in the bullet points above, plus North Yorkshire County Council and Shropshire County Council. This is also almost the case for the ten highest ranking authorities, although Northumberland County Council and Cornwall County Council don't fall within the "top ten" for *all* indicators.

The table on page 5 lists the "top ten" authorities for each of the three sparsity indicators to illustrate the above points, and also includes other relevant figures. The following commentary is based on observations from this table.

In terms of overall population density, Herefordshire is the 4th least densely populated top-tier authority in England (0.80 persons per hectare). Northumberland CC, North Yorkshire CC and Cumbria CC have lower overall population densities (0.61, 0.71 and 0.72 persons per hectare respectively), but none of these areas has a higher ranking in terms of the sparsity indicators. Of these three authorities, only North Yorkshire is one of the "top 5" in terms of sparsity; Cumbria is ranked 7th and Northumberland is ranked 10th or lower for all sparsity indicators. They are highlighted light blue in the table.

Since the sparsity indicators are weighted functions of two different figures, the values of the indicators themselves are not meaningful. However, summing the values for "very sparse" areas and "sparse" areas (i.e. wards, lower layer super output areas (LSOAs) or output

areas (OAs)) gives the total percentage of each authority's population living in all areas that are determined to be sparse (in some way) by the funding formula. These percentages are also included in the table.

Also interesting are the percentages living in just the "very sparse" areas: Hfds has a higher proportion of its population living in "very sparse" wards and OAs² with than any other authority, and only North Yorkshire County Council has a higher percentage of its older population (i.e. those aged 65 and over) living in "very sparse" LSOAs³. The high proportion of Herefordshire's total population living in these "very sparse" areas supports the view that the county has a much more "scattered" population than other areas with low population densities.

Whilst Rutland & the Isles of Scilly are ranked higher than Herefordshire for two of the sparsity indicators, it is interesting to note that these areas both have significantly lower total populations and are much smaller geographically than Herefordshire (see table); in fact Rutland has the smallest population of all UAs.

CONTACT DETAILS

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² "Very sparse" wards and OAs are defined as those with 0.5 or fewer residents per hectare, according to the 2001 Census.

³ "Very sparse" LSOAs are defined as those with 0.08 or fewer residents per hectare, according to the 2001 Census.

Ten highest ranking⁴ authorities on each 'sparsity' indicator

Authority	Rank of indicator* ⁵			% of pop'n in wards classified as:		% of pop'n in OAs classified as:		% of pop'n aged 65+ in LSOAs classified as:		Overall authority pop'n density (mid-2001)	2001 Census Pop'n	Area (Ha)	comment
	Ward Sparsity	LSOA Sparsity for 65+	OA Sparsity	"very sparse" ⁶ (Rank in brackets)	"very sparse" or "sparse" ⁷ (Rank in brackets)	"very sparse" ⁶ (Rank in brackets)	"very sparse" or "sparse" ⁷ (Rank in brackets)	"very sparse" ⁸ (Rank in brackets)	"very sparse" or "sparse" ⁹ (Rank in brackets)				
Herefordshire, County of (UA)	1	3	3	29% (1)	60% (3)	25% (1)	43% (3)	20% (2)	55% (3)	0.80	174,871	217,973	'top 5' for all 'sparsity' measures
Isles of Scilly, Council of the	2	1	2	8% (16)	100% (1)	8% (20)	63% (1)	0% (=63)	100% (1)	1.32	2,153	1,637	'top 5' for all 'sparsity' measures
North Yorkshire (County Council)	3	4	5	25% (2)	57% (4)	19% (4)	35% (5)	22% (1)	46% (4)	0.71	569,660	803,757	'top 5' for all 'sparsity' measures; less dense than Hfds
Rutland (UA)	4	2	1	21% (4)	68% (2)	24% (2)	51% (2)	16% (6)	67% (2)	0.91	34,563	38,157	'top 5' for all 'sparsity' measures
Shropshire (County Council)	5	5	4	21% (3)	53% (8)	21% (3)	36% (4)	19% (3)	44% (5)	0.89	283,173	319,730	'top 5' for all 'sparsity' measures
Devon (County Council)	6	9	8	17% (7)	50% (12)	16% (7)	29% (12)	14% (8)	40% (11)	1.07	704,493	656,413	
Cumbria (County Council)	7	7	7	19% (5)	43% (15)	17% (5)	29% (11)	19% (4)	37% (13)	0.72	487,607	676,780	less dense than Hfds
Lincolnshire (County Council)	8	6	6	15% (8)	50% (10)	16% (6)	32% (6)	15% (7)	43% (6)	1.09	646,645	592,062	
Wiltshire (County Council)	9	8	10	13% (9)	48% (13)	13% (8)	31% (9)	12% (9)	43% (7)	1.33	432,973	325,534	
Northumberland (County Council)	10	10	(16)	17% (6)	37% (18)	13% (9)	23% (17)	16% (5)	35% (17)	0.61	307,190	501,307	less dense than Hfds
Cornwall (County Council)	(13)	(12)	9	11% (12)	50% (11)	13% (10)	32% (7)	7% (16)	40% (10)	1.41	499,114	354,628	

⁴ Any ranks shown in this table are the rank out of the 150 top tier authorities in England, with 1 representing the value that indicates the "most sparse" authority for that particular measure. Percentages are rounded to the nearest whole number, but ranks are based on the unrounded figures.

⁵ The 'indicator' is a weighted score based on the % of the population in "very sparse" areas and the % in "sparse" areas. This weighting may mean that the rankings aren't necessarily in the same order as the "% of the population..." values would suggest.

⁶ "Very sparse" wards and output areas are those with a density less than or equal to 0.5 persons per hectare, 2001 Census.

⁷ Wards and output areas defined as "sparse" or "very sparse" are those with a density less than or equal to 4 persons per hectare, 2001 Census.

⁸ Lower super output areas with a density less than or equal to 0.08 persons per hectare, 2001 Census.

⁹ Lower super output areas with a density less than or equal to 0.64 persons per hectare, 2001 Census.