ystadegau ar gyfer cymru statistics for wales

Statistical Article
Erthygl Ystadegol

Llywodraeth Cymru
Welsh Government

Welsh Index of Multiple Deprivation 2014: A guide to analysing deprivation in rural areas[1]

The Welsh Index of Multiple Deprivation (WIMD) is the Welsh Government's official measure of relative deprivation for small areas in Wales. It is designed to identify those small areas where there are the highest concentrations of several different types of deprivation. WIMD 2014 was published on 26 November 2014, and revised 12 August 2015 at www.gov.wales/wimd

As part of the process of developing WIMD 2014, a public consultation was held on indicators for the Index. We have produced this statistical article as part of the wider WIMD dissemination package in order to address some of the issues raised in the consultation. The purpose of this article is to provide a starting point for discussions and work on analysing deprivation in rural areas. The article will:

- Discuss definitions for 'rural Wales' and 'deprivation in rural areas'
- Provide guidance on how WIMD and its indicators can, and can't be used to analyse deprivation in rural areas (including examples)
- Explain and reference WIMD indicator data that has been published by settlement type and context categories
- Assess the suitability of using data for very small areas (Output Area level) as an alternative method of identifying deprivation in rural areas.
- Reference useful reports and analysis.

This report is mainly focussed on the potential use of WIMD data, and references to other potential sources are limited.

Key Points

- WIMD is not the only measure of deprivation. It has been developed to identify multiple deprivation at small area level across all parts of Wales (including rural areas). But there are limitations that need to be considered e.g. WIMD does not identify individuals who are multiply deprived, rather, it identifies areas where there are concentrations of several different types of deprivation.
- The overall WIMD Index (and the ranks for each of the domains) can be used to identify areas of relatively high multiple deprivation across all parts of Wales (see section 7). The more rural areas tend to be less deprived. However, in rural areas, deprived people tend to be more geographically dispersed than in urban areas.

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1 Notes on the use of statistical articles can be found at the end of this document.

- The underlying indicator data (e.g. entitlement to income related benefits) can be used to analyse deprivation in rural areas (see examples in sections 8 and 9). Although there are only a few areas of high multiple deprivation in our definition of Rural Wales, analysis of the underlying WIMD indicators by settlement type shows there are still significant numbers of deprived people living in rural areas.
- The Access to Services domain (and indicators within it) provides a useful indication of the length of time taken by people living in these areas to reach services required for day to day living. Rural areas are more deprived in terms of Access to Services than more urban areas (see section 8 for analysis of overall domain and individual indicators).
- Exploratory work using 2011 Census unemployment data at Output Area level shows:
  - For analysing unemployment data by settlement type, it is not clear that OA level data is necessarily better than LSOA level data.
    - There are potential data quality issues for very small areas (Output Areas).
    - The numbers of unemployed people at OA level can be very small and potentially unreliable
  - Overall there is little systematic difference in the picture of unemployment by settlement size and context if the scale of analysis is changed from LSOA to OA.
  - The broad picture at both LSOA and OA is:
    - The more rural areas tend to have lower unemployment rates.
    - There are still significant numbers of unemployed people in rural areas

Content

Note

(r) Chapters 7 and 9 were revised on 12 August 2015 following provision of revised data by the Department for Work and Pensions (DWP). For more information on the effect of these revisions on WIMD 2014 please see the Information Note.

1. Deprivation in rural areas

Deprivation is the lack of access to opportunities and resources which we might expect in our society. Material deprivation is having insufficient physical resources – food, shelter, and clothing – necessary to sustain a certain standard of life. Social deprivation refers to the ability of an individual to participate in the normal social life of the community.

What is meant by 'rural deprivation'? This phrase is used in a number of different ways. In some instances, 'rural deprivation' is used to refer to deprivation that takes place in rural areas but is based on similar drivers as in other areas. 'Rural deprivation' is also sometimes used to refer to specific issues that affect rural areas but not others.

Rural deprivation or social inclusion in rural areas has been the subject of numerous reports over the last few decades (see Useful Links). Many features of disadvantage and deprivation are the same anywhere. People in rural communities can suffer from many of the same issues as people experiencing disadvantage or deprivation in other areas. However, some commentators argue that some issues can disproportionately affect people in rural areas, eg access to services and facilities and distance to work. It can also be argued that some deprivation issues can disproportionately affect people in urban areas e.g. congestion.

Whilst the research highlights some of the issues that are considered to have an additional impact on disadvantaged people in rural areas they do not agree on a methodology for measuring and reporting on 'rural deprivation'.

One criticism that is sometimes made of current measures of deprivation is that they conceal small pockets of deprivation in rural areas. The argument is that deprivation in urban areas tends to be geographically concentrated in certain neighbourhoods, whilst, in contrast, in rural areas deprivation often exists at the scale of streets rather than whole neighbourhoods. An accompanying Technical paper 'Exploration of unemployment in Wales by settlement type for small areas' considers the suitability of using data for very small areas as an alternative method of identifying deprivation in rural areas, using an example of one key variable of deprivation (unemployment) as a means of illustrating the advantages and disadvantages of such an approach.

2. National Statistics classification of settlement type and context

There is no single standard definition of 'rural Wales' that applies for all purposes. However, it is useful to have a definition that provides a reasonable starting point. The definition discussed in this report is based on the National Statistics classification of settlement type and context. The classification provides a tool for statistical analysis, and can be used with a range of National Statistics sources.

Instead of having a simplistic split between urban and rural, the classification attempts to demonstrate some of the richness of the settlement pattern. To do this it divides small areas in Wales (called Lower Layer Super Output Areas or LSOAs - see Annex B of the main WIMD 2014 publication for further information) by settlement type and context.

The three settlement types for LSOAs in Wales are:

- Large towns – settlements with over 10,000 persons.
- Small towns – below 10,000 persons, includes the fringes of large settlements.
- Others – smaller settlements with a lower housing density than small towns and the very smallest settlements and isolated dwellings.

Three contexts for England and Wales are defined;

- The sparsest context. These are areas with a very low number of people per square kilometre within a radius of 10km, 20km and 30km. An area needs to be in the sparsest 20 per cent of Wales and England *at all three scales* to be classified as in the sparsest context.
- Conurbations. The classification defines the very largest centres of population as conurbations. The calculation looks at the way that very high settlement density is maintained over a wide area. There are no conurbations in Wales. The conurbations include London, Manchester, Birmingham, Liverpool and Newcastle.
- All other areas are considered to be in the Less Sparse context.

More detailed information on the technical derivation of the classification can be found in Annex A.

The 3 settlement type and 2 context categories are combined to form six categories for Wales:

Less Sparse context:

- Large Towns: settlements in the more densely populated areas with a population of at least 10,000 people. Includes our largest cities (Cardiff, Newport and Swansea) the main settlements in South East Wales and along the North Wales coast, Deeside and Wrexham.
- Small Towns: These are towns in the more densely populated areas that have less than 10,000 people. This category includes traditional small towns – for example Usk, Denbigh, Beaumaris and Monmouth – and also areas of urban fringe around the major settlements.
- Others: Includes villages, hamlets and dispersed dwellings in the less sparse areas of Wales.

Sparsest context:

- Large Towns: settlements in the less densely populated areas with a population of at least 10,000 people. Includes only four large towns – Holyhead, Newtown, Aberystwyth and Carmarthen[2].
- Small Towns: These are towns in the less densely populated areas that have less than 10,000 people.
- Others: Includes villages, hamlets and dispersed dwellings in the sparsest areas of Wales.

3. What is meant by rural areas of Wales?

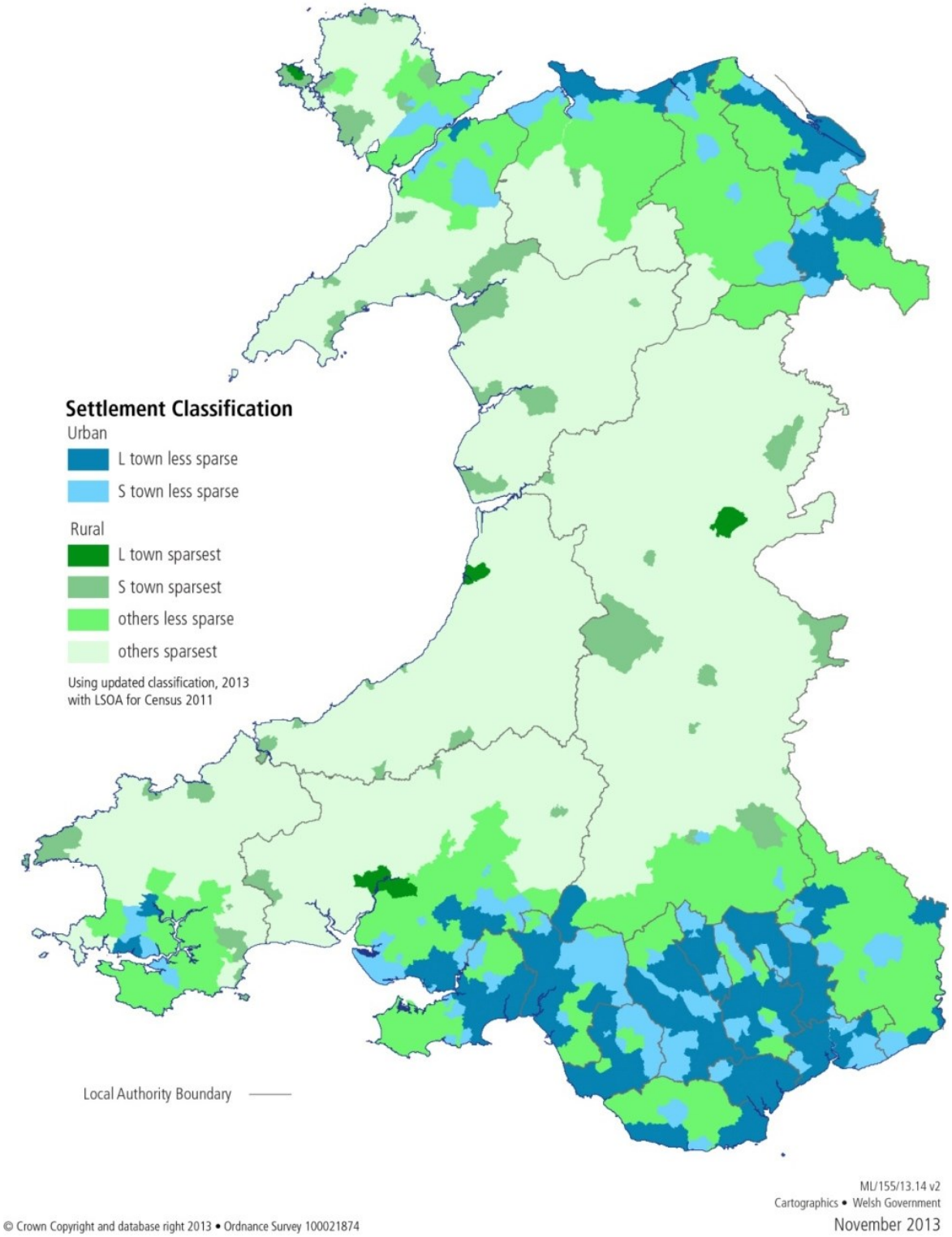
Definition used for this report

There is no standard definition of what is considered to be rural, however for Welsh analyses it is suggested that the usual starting point would be to have urban defined as the small and large towns in the less sparse context; the other categories being rural. i.e.

- Urban: Less Sparse Large and Less Sparse Small Towns
- Rural: All classifications excluding Less Sparse Large and Small Towns.
  Under this definition, towns such as Holyhead, Newtown, Aberystwyth and Carmarthen are considered rural. Usk, Denbigh, Beaumaris and Monmouth are considered urban.

[2] Care should be taken in analysing results for Large Towns in the Sparsest Context – there are a high number of students in some of these areas.

Map 1: LSOAs in Wales by National Statistics classification type (using the rural definition that is appropriate for Wales)



Alternative definition

The definition of Rural Wales used in this report differs from the National Statistics recognised definition (Map 2) where the large towns are referred to as "urban" and everything else is "rural".

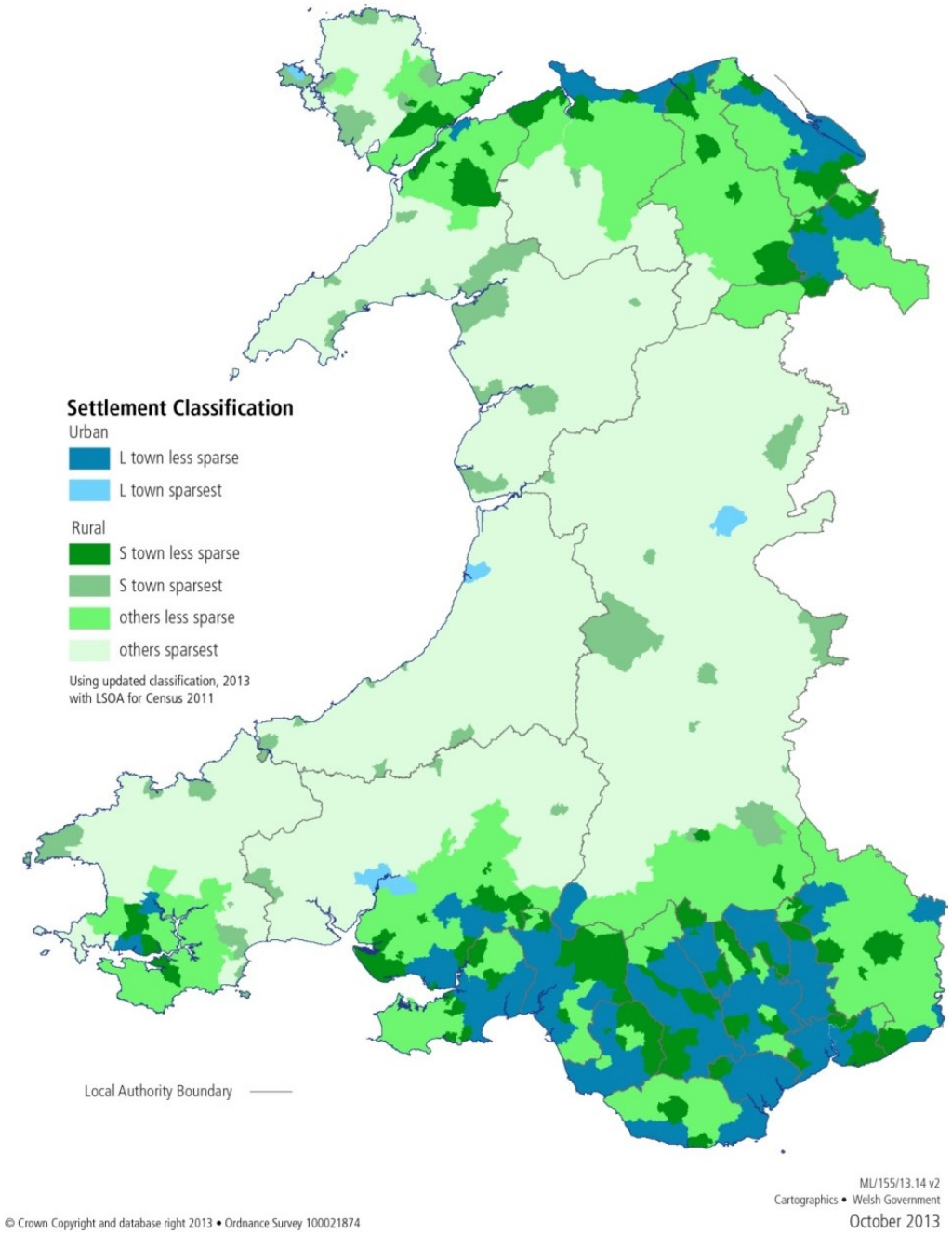
- Urban: Less Sparse Large Towns and Sparsest Large Towns
- Rural: All classifications excluding Less Sparse Large Towns and Sparsest Large Towns

Under this definition, Holyhead, Newtown, Aberystwyth and Carmarthen are considered urban for example. Usk, Denbigh, Beaumaris and Monmouth are considered rural.

The definition that is considered appropriate for Wales, and used for the rest of this article is slightly different from the National Statistic definition. This is due to the lower percentage of the population living in built up areas in Wales than in regions of England (i.e. Wales has more rural areas than each of the regions in England).

Note that for ease of comparison, urban areas are shaded blue and rural areas are shaded green on maps 1 and 2. However the colours for the individual classification types differ between both maps eg Small Towns in the less sparse context are light blue on Map 1 and dark green on Map 2.

Map 2: LSOAs in Wales by National Statistics classification type (using the ONS rural definition)



4. Context: Population by Settlement Type

Table 1 – Population by classification type

	Definition used for Wales	Count of Population(a)	Percentage of Population	Number of LSOAs
Less Sparse				
Large Town	Urban	2,026,260	66.1	1,268
Small Town	Urban	406,853	13.3	252
Others	Rural	209,399	6.8	129
Sparsest				
Large Town	Rural	58,319	1.9	35
Small Town	Rural	123,522	4.0	78
Others	Rural	239,103	7.8	147
Wales		3,063,456	100.0	1,909

Source: Census 2011 (QS102EW)

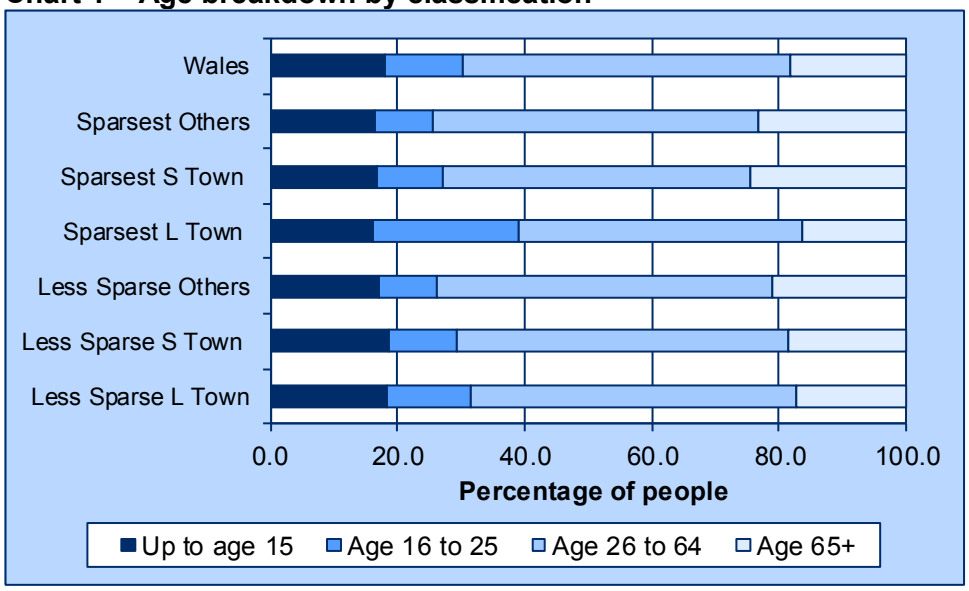
(a) Where population is a count of all usual residents

Around 20 per cent (or 630,343) of the population of Wales live in areas that are classified as broadly rural - (that is, outside Less Sparse Large or Small Towns). Of these around 29 per cent live in Sparsest Large or Small Towns.

About 68 per cent of the Welsh population live in settlements of at least 10,000 people (i.e. Large Towns in either the Less Sparse or Sparsest context). This compares to 80 per cent in England and just under 70 per cent in Scotland.

There are, however, some significant differences in age structure of the population in different types of areas (see Chart 1 below).

Chart 1 – Age breakdown by classification



Source: Census 2011 Age Structure (KS102EW)

The proportion of children is lower in rural areas of Wales and the proportion of older people is generally higher in rural areas. In small towns and villages in rural Wales about a quarter of the population is aged 65 and over, whereas in large town and cities of Wales about 18% (1 in 6) of the population are of this age group. The sparsest Large Town category contains some university towns and therefore has a relatively large proportion of 16 – 25 year olds.

5. Welsh Index of Multiple Deprivation (WIMD)

WIMD is the Welsh Government's official measure of relative deprivation for small areas in Wales. It is designed to identify those small areas where there are the highest concentrations of several different types of deprivation. WIMD is a measure of multiple deprivation that is both an area-based measure and a measure of relative deprivation. A more detailed explanation of the terminology is provided in Annex B.

WIMD is made up of eight separate domains (or types) of deprivation:

a) Income
b) Employment
c) Health
d) Education
e) Geographical Access to Services
f) Community Safety
g) Physical Environment
h) Housing

Each domain is compiled from a range of different indicators.

The Index has three main components:

- the Index itself, which is a set of ranks;
- the ranks of the eight types of deprivation, or domains, from which the overall Index is constructed; and
- the underlying indicators, which are directly measurable, and which are combined to create the domain ranks.

All of these components are calculated for each of the 1,909 LSOAs in Wales.

The development of WIMD 2014, including the selection of indicators has been subject to a rigorous process. Initially, statisticians at the Welsh Government worked with seven expert topic groups to review indicators used in WIMD 2011 and to consider potential new indicators. Each topic group included analytical experts from the Welsh Government, local authorities, other public bodies (e.g. Natural Resources Wales, Public Health Wales), Data Unit-Wales, along with policy representatives from the Welsh Government.

A consultation on proposed indicators for WIMD 2014 was held between November 2013 and February 2014. The purpose of this consultation was to expose proposals for the domains and indicators for WIMD 2014 to critical review. Wherever possible, the indicators conformed to a list of criteria (see section 4.2 of consultation document).

Some of the responses to the consultation suggested that some of the indicators did not adequately reflect deprivation in rural areas. For example, a couple of respondents suggested that benefit take-up rates are lower in rural areas, but robust evidence supporting these suggestions were not provided.

Detailed information and guidance on WIMD 2014 is available on our website: www.gov.wales/wimd

The overall 2014 WIMD ranks and the ranks of the eight domains of deprivation are published on the StatsWales website.

Where available, the underlying indicator data is published annually on StatsWales. The indicator data is published at various geographies, including for the 6 settlement type categories. WIMD 2014 indicator data will shortly be published on StatsWales.

6. Using WIMD to analyse deprivation in rural areas.

Information published within WIMD 2014 can be used to analyse deprivation across all parts of Wales (including rural areas), but there are also limitations that need to be considered.

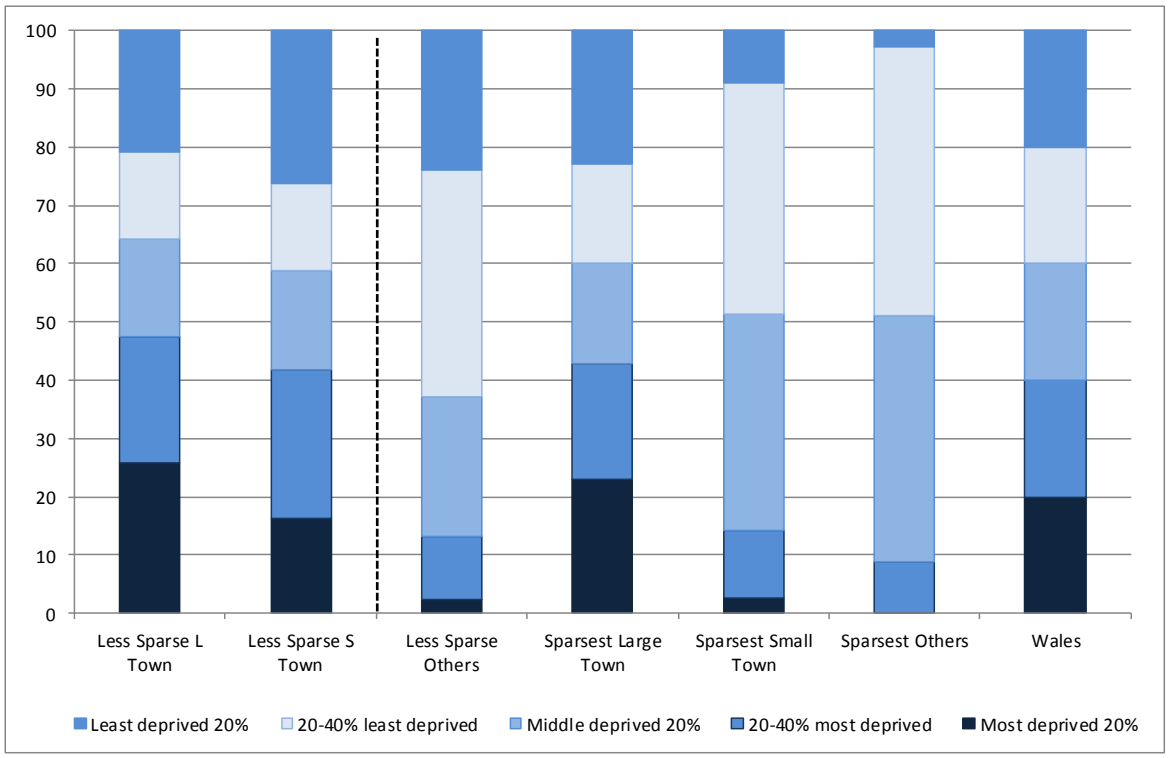
The overall Index (and the ranks for each of the domains) can be used to identify pockets of multiple deprivation across all parts of Wales. However, in rural areas, deprived people tend to be more geographically dispersed than in urban areas. Essentially, any pockets of deprivation in rural areas tend to be on a considerably smaller scale than even the small-scale geography at which WIMD is produced, and so their contribution to averages in these areas tends to be submerged by larger-scale, less-deprived populations.

Although there are few areas of high multiple deprivation in our definition of Rural Wales, analysis of the underlying WIMD indicators by settlement type shows there are still significant numbers of deprived people dispersed through the rural areas. Examples of analyses are presented in the next section.

7. WIMD – Overall Index by Settlement Classification (r)

For this analysis, the LSOAs are divided into quintiles (five groups containing an equal number of LSOAs) of concentration of deprivations – from the most deprived 20 per cent of areas, to the least deprived 20 per cent of areas.

Chart 2: Share of LSOAs by WIMD 2014 rank and classification (r)



(r) This table was revised 12 August 2015 following the provision of revised data from the Department for Work and Pensions (DWP).

In the above chart, those settlements to the left of the dotted line are classified as urban, while those to the right are classified as rural.

Table 2: Share and count of LSOA by WIMD 2014 rank and classification (r)

	Definition used for Wales	Most deprived 20%	20-40% most deprived	Middle deprived 20%	20-40% least deprived	Least deprived 20%	Total
Count of LSOA							
Less Sparse Large Town	Urban	328	275	211	189	265	1268
Less Sparse Small Town	Urban	41	64	43	38	66	252
Less Sparse Others	Rural	3	14	31	50	31	129
Sparsest Large Town	Rural	8	7	6	6	8	35
Sparsest Small Town	Rural	2	9	29	31	7	78
Sparsest Others	Rural	0	13	62	68	4	147
Wales		**382**	**382**	**382**	**382**	**381**	**1909**
Share of LSOA in category							
Less Sparse Large Town	Urban	25.9	21.7	16.6	14.9	20.9	100.0
Less Sparse Small Town	Urban	16.3	25.4	17.1	15.1	26.2	100.0
Less Sparse Others	Rural	2.3	10.9	24.0	38.8	24.0	100.0
Sparsest Large Town	Rural	22.9	20.0	17.1	17.1	22.9	100.0
Sparsest Small Town	Rural	2.6	11.5	37.2	39.7	9.0	100.0
Sparsest Others	Rural	0.0	8.8	42.2	46.3	2.7	100.0
Wales		**20.0**	**20.0**	**20.0**	**20.0**	**20.0**	**100.0**

(r) This table was revised 12 August 2015 following provision of revised data by the Department for Work and Pensions (DWP).

Looking at the number of LSOAs in the most deprived 20 per cent (as measured by WIMD 2014), the vast majority are in the Less Sparse Large and Small Towns (the urban areas). But 13 of the 389 rural LSOAs are also in the most deprived 20 per cent. These are in the Isle of Anglesey, Powys, Ceredigion, Carmarthenshire, Neath Port Talbot, Bridgend and Caerphilly.

Urban areas consist of a mixture of LSOAs from each of the deprivation quintiles. Generally, for the more rural areas, the quintile distribution differs considerably from the overall Wales picture, with few areas in the most deprived quintile. The exception to this is the Sparsest Large Town category which is closer in pattern to the urban areas.

For the Sparsest Other category, no LSOAs were in the most deprived 20 per cent of LSOAs, a handful in the least deprived 20 per cent of LSOAs, with the vast majority falling into the middle quintile categories.

Similar analysis can be undertaken for the individual domain ranks. An example is provided for the Access to Services domain in Section 8.

8. Access to Services Domain

The purpose of this domain is to capture deprivation as a result of a household's inability to access a range of services considered necessary for day-to-day living. This covers both material[3] deprivation (for example not being able to get food) and social[4] aspects of deprivation (for example not being able to attend afterschool activities).

The access to services domain measures travel times to a range of services as a proxy for wider access to services. This domain does not take into account whether individuals are able to access these services (e.g. availability of GP appointments), nor does it take into account an individual's personal choice in accessing certain services (e.g. if someone would prefer to be educated at a faith school). Poor access to services is a factor which can compound other types of deprivation that exist in an area.

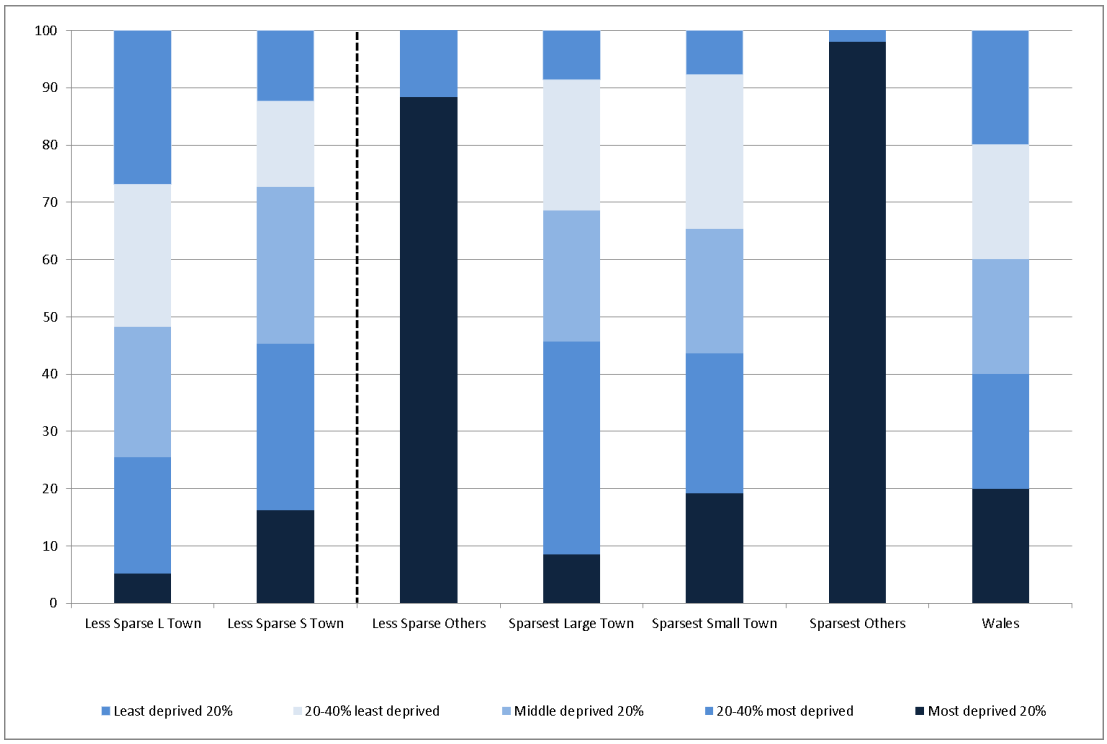
The domain is calculated from the following indicators:

- average travel time by public and private transport to a food shop;
- average travel time by public and private transport to a GP surgery;
- average travel time by public and private transport to a primary school;
- average travel time by public and private transport to a secondary school;
- average travel time by public and private transport to a post office;
- average travel time by public and private transport to a public library;
- average travel time by public and private transport to a leisure centre;
- average travel time by public and private transport to a pharmacy; and
- average travel time by private transport to a petrol station.

Note that average travel times are measured as the total time taken to travel to and return from a service point.

[3] Material deprivation is having insufficient physical resources - food, shelter, and clothing – necessary to sustain a certain standard of life.
[4] Social deprivation refers to the ability of an individual to participate in the normal social life of the community.

Chart 3: Share of LSOA by Access to Services rank and classification



The distribution of LSOAs according to the Access to Services domain quintiles is very different to that of the overall WIMD.

The vast majority (88.4 per cent) of those LSOAs classified as Less Sparse Others and 98.0 per cent of those classified as Sparsest Others, lie in the most deprived 20 per cent of areas in the access to services domain. This is a reflection of the fact that it takes longer for people living in these areas to reach services, than for those living in large towns. No LSOAs in the Less Sparse Others and Sparsest Others classifications lie in the least deprived 60 per cent for the Access to Services domain.

In contrast to the overall index the LSOAs classified as Less Sparse Large Town are the classification with the lowest percentage of LSOAs in the most deprived 20 per cent for Access to Services. This category has the highest percentage of LSOAs in the least deprived 20 per cent for the Access to Services domain. As well as there being more service points in towns and them being in closer reach for people living in towns, this result may also be a reflection of better public transport and road links.

As well as analysing data for the overall domain by settlement classification, we can also analyse data for individual indicators within the domain. An example is provided below for GP surgeries.

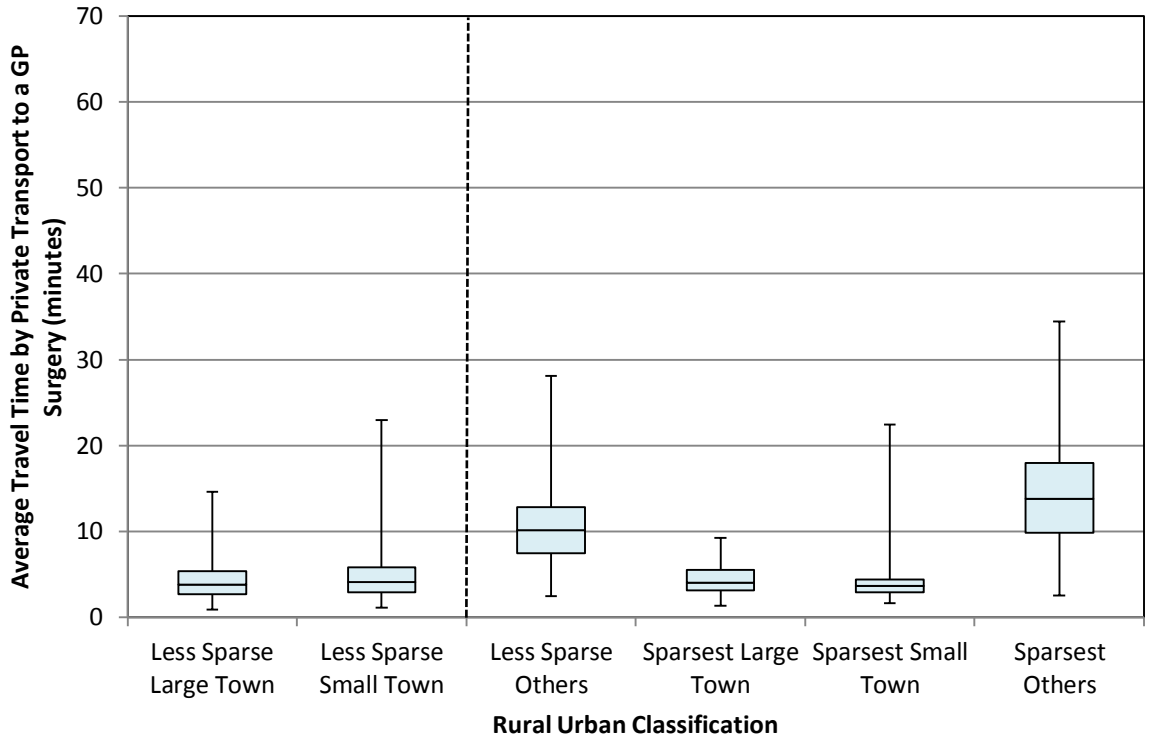
Each indicator is calculated as a weighted average of two travel time measurements; one by public transport and one by private transport. We can firstly look at the part of the indicator which measures average travel time to a GP surgery by private transport, i.e. by private car.

Table 3: Average travel time by Private Transport to a GP Surgery (minutes)

Settlement Type	Definition used for Wales	Average Travel Time
Less Sparse Large Town	Urban	4.3
Less Sparse Small Town	Urban	4.9
Less Sparse Others	Rural	10.6
Sparsest Large Town	Rural	4.4
Sparsest Small Town	Rural	4.1
Sparsest Others	Rural	14.4

Generally, the towns have similar average travel times (between 4 and 5 minutes), with the other categories having higher average travel times. The longest average travel time was 14.4 minutes for the Sparsest Other category.

Chart 4: Box plot of average travel time by private transport to a GP surgery



For each settlement category in the above box plot, the box includes the values for the proportion of people deprived in terms of access to services for half of the LSOAs within each category. The middle line represents the median (middle) for the category. The lines at either end of the box represent the full range of values. A narrow box and range suggests that the proportion of people deprived in terms of access to services is fairly similar for LSOAs within a classification category. A wider box and range means that the proportion of people deprived in terms of access to services at LSOA level varies considerably within the classification.

The chart shows that the variation is smaller for Large and Small Towns, and larger for Other areas such as villages, hamlets and dispersed dwellings. The median travel times are also considerably higher for the Other areas, particularly those that are in the sparsest context. This is in line with the results for the domain as a whole, with higher travel times for areas outside of towns.

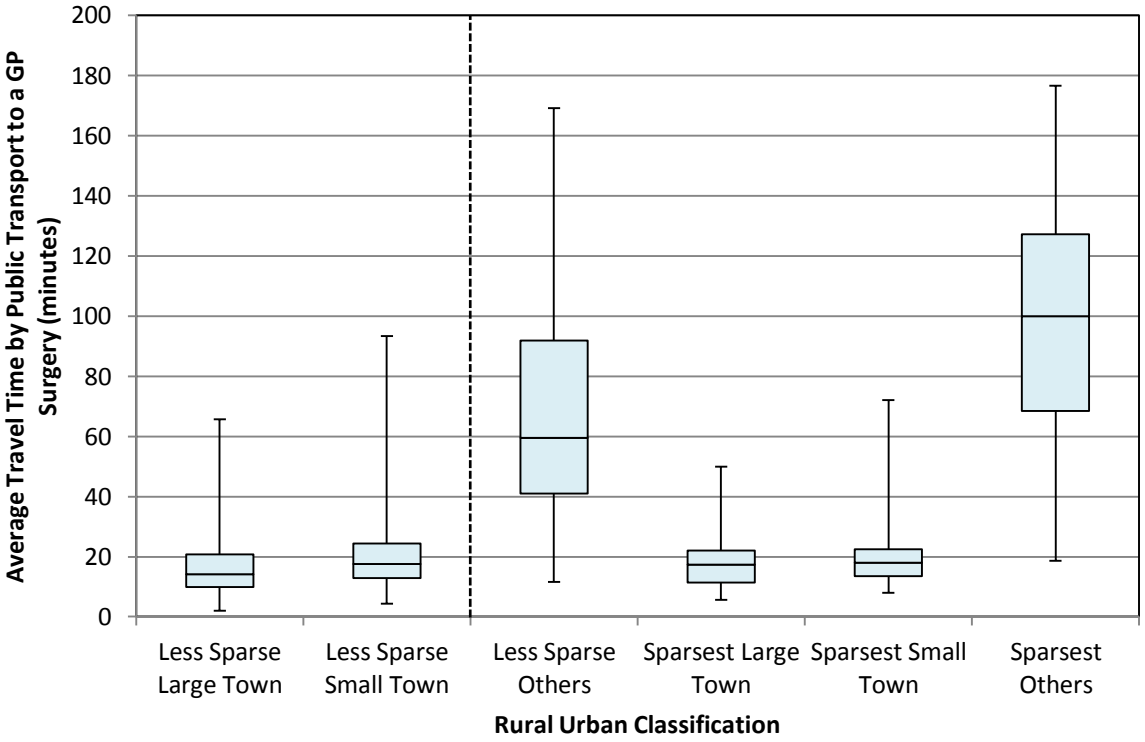
We can now repeat this analysis for the public transport part of the indicator.

Table 4: Average travel time by Public Transport to a GP Surgery (minutes)

Settlement Type	Definition used for Wales	Average Travel Time
Less Sparse Large Town	Urban	16.4
Less Sparse Small Town	Urban	21.6
Less Sparse Others	Rural	69.2
Sparsest Large Town	Rural	18.6
Sparsest Small Town	Rural	21.5
Sparsest Others	Rural	96.8

Again, the towns have broadly similar average travel times (between 16-22 minutes), while the Other areas have considerably higher average travel times. The longest average travel time was 96.8 minutes for the Sparsest Other category. Note that the figures for travel time by public transport are all considerably higher than those by private transport.

Chart 5: Box plot of average travel time by public transport to a GP surgery

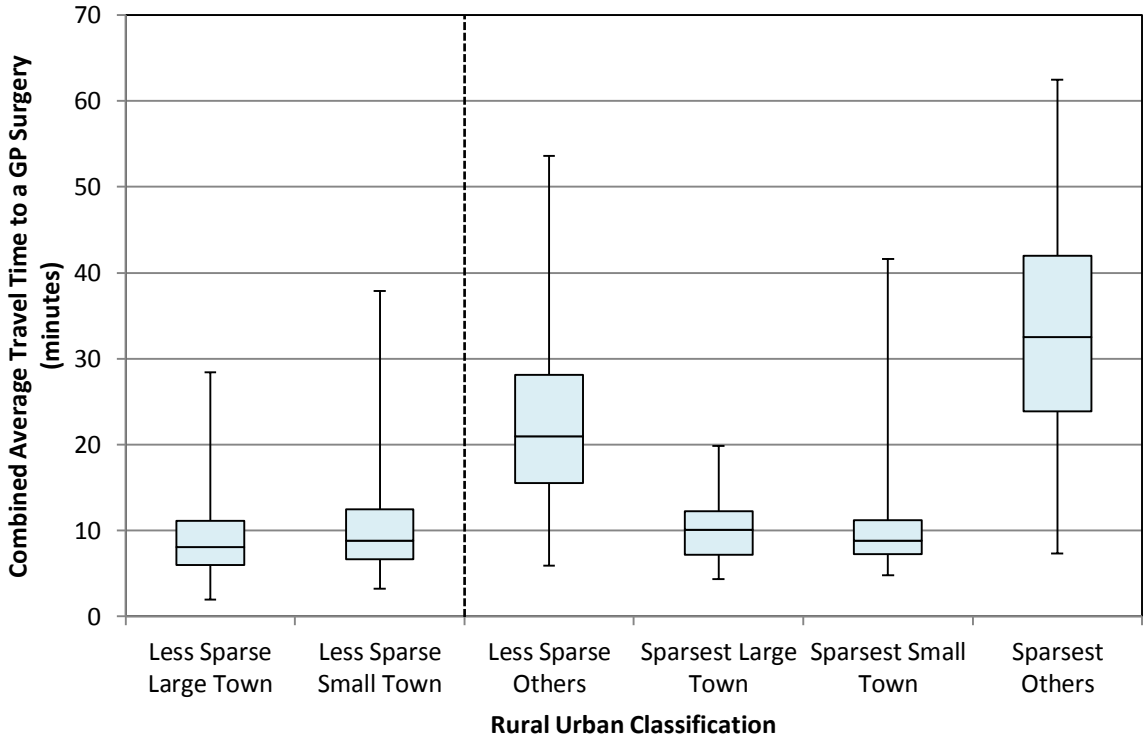


The box plot shows a similar pattern to the earlier one for private transport, with higher travel times and greater levels of variation for the Other categories. The difference between the Towns and the Other areas is more exaggerated for public transport than for private transport.

We can also look at the weights which were used in the calculation of the combined indicator. These take into account the level of car ownership in each LSOA, and based on these assign an appropriate weight to each of the public and private travel times. So for example, in an area with high levels of car ownership, the private transport times would have a greater influence on the combined indicator values.

In this analysis we have so far only looked at the individual public and private transport travel times. In rural areas in general, however, we tend to see a greater level of car ownership than in more urban areas. In the case of this indicator, we can see from the chart below that this greater level of car ownership leads to combined values which more closely reflect the private transport times than the public ones.

Chart 6: Box plot of average travel time to a GP surgery (combined indicator)



9. Income Domain (r)

Another example of analysing individual indicator data by settlement classification is given in this section. Similar analysis could also be repeated for most other WIMD indicators (the indicator data is published for the settlement types).

The Income domain focuses on the proportion of people with income below a certain level and consists of a single composite indicator, Income deprivation, calculated from the following three elements. It is defined as those who are either:

(a) an adult, or dependent child of an adult, in receipt of income related benefits

(b) an adult, or dependent child of an adult, in receipt of Working and Child Tax Credits, with income less than 60 per cent of the Wales median

(c) an Asylum Seeker (as defined by section 95)

The above are counts of unique individuals (i.e. those who claim multiple benefits are only counted once).

Table 5: Proportion of people in each classification in Income deprivation (r)

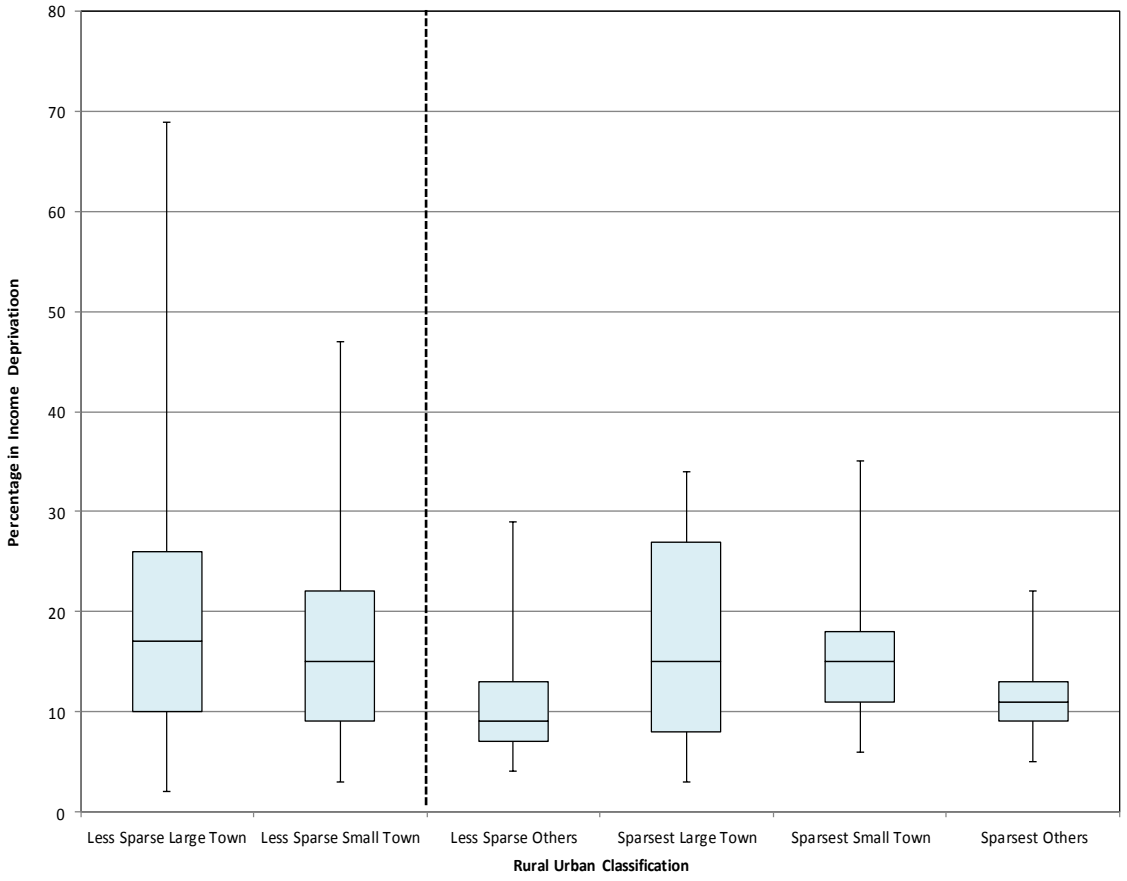
	Definition used for Wales	Income Deprivation (% of population)	Income Deprivation (Count)
Less Sparse Large Town	Urban	18.7	381,150
Less Sparse Small Town	Urban	16.6	67,915
Less Sparse Others	Rural	10.2	21,435
Sparsest Large Town	Rural	16.1	9,500
Sparsest Small Town	Rural	15.0	18,560
Sparsest Others	Rural	11.2	26,735
Wales		17.1	525,300

(r) This table has been revised following the provision of revised data by the Department for Work and Pensions (DWP).

Generally, the rural classification categories have a lower proportion of their population in income deprivation than the urban areas. The proportion was at its lowest for the Less Sparse Others category (10.2 per cent), which is more than 6 percentage points lower than the Wales average.

Whilst WIMD suggests that pockets of income-deprivation are more concentrated in urban than rural areas, analysis of the underlying indicators shows that around 10-16 per cent of people living in the rural classification categories are in income deprivation- but they tend to be more dispersed. Also, 14.5 per cent of those in income deprivation are within rural areas.

Chart 7: Box plot of percentage of population in Income deprivation by classification (r)



(r) This chart was revised 12 August 2015 following the provision of revised data from the Department for Work and Pensions (DWP).

For each settlement in the above box plot, the box includes the values for the proportion of people in income deprivation for half of the LSOAs within each classification. The middle line represents the median (middle) for the category. The lines at either end of the box represent the full range of values. A

narrow box and range suggests that the proportion of people in income deprivation is fairly similar for LSOAs within a classification. A wider box and range means that the proportion of people in income deprivation at LSOA level varies considerably within the classification.

The chart shows that the variation is smaller for the Sparsest Others, Sparsest Small Towns and Less Sparse Others classifications. The variation in LSOA values is considerably larger for the other classification types.

10. Output Area Work

One criticism that is sometimes made of current measures of deprivation is that they conceal small pockets of deprivation in rural areas. The argument is that deprivation in urban areas tends to be geographically concentrated in certain neighbourhoods, whilst, in contrast, in rural areas deprivation often exists at the scale of streets rather than whole neighbourhoods. This section considers the suitability of using data for very small areas as an alternative method of identifying deprivation in rural areas, using an example of one key variable of deprivation (unemployment from the 2011 Census) as a means of illustrating the advantages and disadvantages of such an approach. Full details are provided in an accompanying paper. Key findings are provided below.

Key Findings

- For analysing unemployment data by settlement type, it is not clear that OA level data is necessarily better than LSOA level data.
  - There are potential data quality issues for very small areas (Output Areas). In the case of unemployment analysis, these raise questions about whether the differences observed between OA and LSOA level data are real, random fluctuations or a product of those data quality issues.
  - The numbers of unemployed people at OA level can be very small and potentially unreliable e.g. more than half the OAs contained fewer than 10 unemployed people. A single household of two unemployed adults moving could have a significant impact on an OAs unemployment rate.

- Overall there is little systematic difference in the picture of unemployment by settlement size and context if the scale of analysis is changed from LSOA to OA.
  - There is a higher level of variation (i.e. more extremes) at OA level – though this must be considered alongside quality issues and the small numbers involved.
  - There are individual areas in the rural areas that have locally high unemployment rates. However, this is both relatively and absolutely less than for the more urban areas.
  - The change from LSOA to OA scale does not particularly change the pattern of unemployment in the more rural areas. There is as much, or even more, change in the more urban areas.

- The broad picture at both LSOA and OA is:
  - The more rural areas tend to have lower unemployment rates.
  - There are still significant numbers of unemployed people in rural areas.

11. Useful Links

Welsh Index of Multiple Deprivation 2014:
www.gov.wales/wimd

A statistical focus on Rural Wales 2008:
https://gov.wales/statistical-focus-rural-wales-2008

Rural Wales – Definitions and how to choose between them

https://gov.wales/rural-wales-definitions-and-how-choose-between-them-0

ONS 2011 Rural-Urban Classification for small area geographies:
http://www.ons.gov.uk/ons/guide-method/geography/products/area-classifications/2011-rural-urban/index.html

Getting the measure of rural deprivation
in Wales (OCSI on behalf of Local Government Data Unit – Wales)
http://www.wrexham.gov.uk/assets/pdfs/wrexham_statistics/getting_the_measure_of_rural_deprivation_in_wales.pdf

12. Annex A - National Statistics classification of settlement type and context

The National Statistics classification of settlement type and context for England and Wales was developed by a group of Government Departments including the Welsh Government. The work was led by Professor John Shepherd of Birkbeck College. The classification was first published in July 2004 and updated following the 2011 Census in September 2013: http://www.ons.gov.uk/ons/guide-method/geography/products/area-classifications/2011-rural-urban/index.html

For any particular area the classification is based on the majority of people in the area. There may be minorities in other categories. Instead of having a simplistic split between urban and rural, the classification attempts to demonstrate some of the richness of the settlement pattern. This means that while it is appropriate to use this classification for statistical purposes, it does not make definitive statements about a single local area. To do this it divides Wales and England by **settlement type** and **context.** This is based on where people live. *It does not look at the socio-economic characteristics of the people or land use.*

To build up the classification Wales and England were divided into a grid with cells with an area of 1 hectare. A hectare is equivalent to a square with each side 100 metres long. Wales has an area of approximately 2 million hectares. Each of these cells is classified according to the settlement type and context. Output Areas and Lower Super Output Areas are classified according to the majority of cells in the area.

The four **settlement types** for Wales are:

- Large towns – settlements with over 10,000 persons.
- Small towns – below 10,000 persons, includes the fringes of large settlements.
- Villages – smaller settlements with a lower housing density than small towns.
- Others – the very smallest settlements and isolated dwellings.

The cut off for large towns at 10,000 persons is essentially arbitrary. It has been maintained to allow continuity with previous classifications. In England the large town category is usually referred to as "urban". There is no such simple population threshold for the other categories. A small town has a higher density of settlement over a wider area than a village and a village has a higher and more extended density than an "other" area.

There is no such lower limit for the smaller settlements. The methodology for the remaining areas is similar to the methodology for the contexts (See below). The classification was constructed from an underlying settlement classification based on hectare squares (100m x 100m). For each hectare square a series of densities are calculated for addresses in a given hectare square and the surrounding squares. Every hectare square is then associated with particular settlement type: dispersed dwellings, hamlet, village, small town, urban fringe and urban. Secondly, each hectare square is given a sparsity score based on the number of people in surrounding hectare squares. For example, a square might lie within a village and be relatively sparse.

Three contexts for England and Wales are defined;

- The sparsest context. These are areas with a very low number of people per square kilometre within a radius of 10km, 20km and 30km. An area needs to be in the sparsest 20 per cent of Wales and England *at all three scales* to be classified as in the sparsest context.

- Conurbations. The classification defines the very largest centres of population as conurbations. The calculation looks at the way that very high settlement density is maintained over a wide area. There are no conurbations in Wales. The conurbations include London, Manchester, Birmingham, Liverpool and Newcastle.
- All other areas are considered to be in the Less Sparse context.

Note that for Lower Super Output Areas the "villages" and "other" are merged to give a general "other" category.

13. Annex B - WIMD Definition

Deprivation is the lack of access to opportunities and resources which we might expect in our society. The domains listed above relate to both material and social aspects of deprivation. Material deprivation is having insufficient physical resources - food, shelter, and clothing – necessary to sustain a certain standard of life. Social deprivation refers to the ability of an individual to participate in the normal social life of the community.

Multiple Deprivation refers to more than one type of deprivation. An area is multiply deprived if, for more than one of these domains, the area has a concentration of people experiencing that type of deprivation. Generally speaking, the greater the number of domains for which there are high concentrations of deprivation then the greater the overall deprivation in an area. This does not necessarily mean that the *same* people suffer multiple types of deprivation in the area, although we would expect there to be significant overlap.

Area-based measure*:* WIMD is calculated for all Lower layer Super Output Areas (LSOAs) in Wales. Following the 2011 Census, 1909 LSOAs were defined in Wales and they have an average population of 1600 people. Further information on LSOAs are provided in Annex B, including information on their revision following the 2011 Census. WIMD is based on indicators that consider the aggregate characteristics of the people living in the area as well as in some cases the characteristics of the area itself (for example the physical environment domain).

Relative measure**:** The Index provides a way of identifying areas in the order of least to most deprived. It does not provide a measure of the level of deprivation in an area but rather whether an area is more or less deprived relative to all other areas in Wales; so we can know which areas are more (or less) deprived than others, but not by how much. The reason for taking such an approach is that this allows the different domains to be combined together.

Index**:** An index is a group of separate measurements which are combined into a single number. They are designed to show changes in a complicated variable like industrial output, prices or in this case deprivation. An index then allows comparisons between different values – in the case of WIMD, the comparison is between LSOAs.

14. Annex C - Notes on the use of statistical articles

Statistical articles generally relate to one-off analyses for which there are no updates planned, at least in the short-term, and serve to make such analyses available to a wider audience than might otherwise be the case. They are mainly used to publish analyses that are exploratory in some way, for example:

- Introducing a new experimental series of data;
- A partial analysis of an issue which provides a useful starting point for further research but that nevertheless is a useful analysis in its own right;
- Drawing attention to research undertaken by other organisations, either commissioned by the Welsh Government or otherwise, where it is useful to highlight the conclusions, or to build further upon the research;
- An analysis where the results may not be of as high quality as those in our routine statistical releases and bulletins, but where meaningful conclusions can still be drawn from the results.

Where quality is an issue, this may arise in one or more of the following ways:

- being unable to accurately specify the timeframe used (as can be the case when using an administrative source);
- the quality of the data source or data used; or
- other specified reasons.

However, the level of quality will be such that it does not significantly impact upon the conclusions. For example, the exact timeframe may not be central to the conclusions that can be drawn, or it is the order of magnitude of the results, rather than the exact results, that are of interest to the audience.

The analysis presented does not constitute a National Statistic, but may be based on National Statistics outputs and will nevertheless have been subject to careful consideration and detailed checking before publication. An assessment of the strengths and weaknesses in the analysis will be included in the article, for example comparisons with other sources, along with guidance on how the analysis might be used, and a description of the methodology applied.

Articles are subject to the release practices as defined by the release practices protocol, and so, for example, are published on a pre-announced date in the same way as other statistical outputs. Missing value symbols used in the article follow the standards used in other statistical outputs, as outlined below.

.. The data item is not available

. The data item is not applicable

- The data item is not exactly zero, but estimated as zero or less than half the final digit shown

* The data item is disclosive or not sufficiently robust for publication