

Welsh Index of Multiple Deprivation (WIMD) A guide to analysing indicator data, 2019 onwards¹

About the guidance

This article provides guidance on analysing the indicator data that underlies the Welsh Index of Multiple Deprivation. This includes information on the data that has been published and how to access it, “do’s and don’ts” for analysis, and examples of existing analysis. This guidance refers to indicator data published as part of the WIMD 2019 index and will be updated with each forthcoming indicator data update. The full index is updated every 3 to 5 years but a selection of the indicators will be updated in the interim period. For more detailed information about indicator data published before WIMD 2019, please refer to the [WIMD indicator guidance article \(2014 – 2017\)](#).

Contents

1 Introduction to WIMD	2
2 WIMD indicator data: What have we published?	3
3. Accessing WIMD indicator data	6
4 WIMD indicator data and comparability over time	10
5 Population data.....	22
6 Data for other UK countries	23
7 LSOA boundary changes.....	24
8 Dos and Don’ts	25
9 Example analyses	26
10 Case study	30
11 Future plans	32
Annex	34

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This document is also available in Welsh.

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

1 Introduction to WIMD

1.1 What is WIMD?

The Welsh Index of Multiple Deprivation (WIMD) is the Welsh Government's official measure of relative deprivation for small areas in Wales. It is a National Statistic and is produced by statisticians at the Welsh Government. WIMD identifies areas with the highest concentrations of several different types of deprivation. The prime purpose of the index is to provide the evidence needed about the most deprived areas of Wales to inform a variety of decisions, such as funding or targeting of programmes and services for local areas.

WIMD ranks all small areas in Wales from 1 (most deprived) to 1,909 (least deprived). The small areas are otherwise known as Lower Layer Super Output Areas (LSOAs). This geography is built from census data and represents small areas, each with a population of around 1,600 people.

1.2 What does WIMD measure?

WIMD is a measure of multiple deprivation that is both an area-based measure and a measure of relative deprivation. Further explanation of these terms can be found in our [WIMD 2019 Guidance](#).

WIMD is currently made up of eight separate domains (or types) of deprivation. Each domain is compiled from a range of different indicators. The domains included in WIMD 2019 are:

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

1.3 How is the WIMD index constructed?

The Index has three main components:

- The 47 underlying indicator datasets
- Ranks for the eight separate domains (or types) of deprivation, created by combining relevant indicators within each domain
- Overall WIMD ranks, created by combining the domain ranks

All of these components are calculated for each of the small areas in Wales. The indicator data, domain ranks, and overall ranks are published on [StatsWales](#). This article focuses on the indicator data.

Detailed technical information on the WIMD methodology can be found in the WIMD 2019 [Technical Report](#).

1.4 What is WIMD indicator data?

The WIMD domains are built up from sets of indicators; these are measurable quantities which capture the concept of deprivation for each domain. Indicator datasets provide a range of information to users which allows them to analyse deprivation in ways beyond a simple index or domain ranking.

1.5 Further information

You can find more information on WIMD, including guidance and results on the [WIMD webpages of the Welsh Government website](#). A full list of WIMD 2019 products with links can be found in our [WIMD 2019 List of Outputs](#).

2 WIMD indicator data: What have we published?

2.1 Indicator data updates

Although the full index and domains ranks are only updated every 3 to 5 years, some of the underlying indicators may be updated in the interim period. The indicator data updates aim to provide new information to those interested in analysing deprivation for areas and/or age groups, allowing some analysis over time and comparison between areas. Analysis of the indicator data has often been expressed as a priority for users since we began to publish the detailed data.

In index updates the indicator data to be included are reviewed, and for continuing indicators more up-to-date data are used where possible. In 2019 there were a range of changes to the indicator data across multiple domains compared to the previous index published in 2014. Indicator data changes in 2019 included the introduction of new indicators within the Health, Education, Access to Services, Physical Environment and Housing domains. Table 5 of the annex details indicator data changes between the 2014 and the 2019 indices. The most recent indicator data can be found on [StatsWales](#).

Indicator data have been released alongside the WIMD 2008, 2011, 2014 and 2019 indices. From 2011 to 2017 selected indicator data were updated annually and published on [StatsWales](#). As well as being published at the small area (LSOA) level, where possible, indicator data are also published for a range of geographies and broken down by age, as detailed in sections 2.2 and 2.3. Table 1 in the annex of this article outlines which 2019 indicators are comparable over time, and which are broken down by age.

There will be no updates to WIMD indicator data during 2021 (and we did not update any WIMD indicators in 2020), but we will continue to undertake development work on key indicators and review the potential for data updates in 2022. Further details on this are outlined in our [WIMD indicator data update published on gov.wales](#).

2.2 Geographies

All WIMD data are published at the [Lower Layer Super Output Area \(LSOA\)](#) geography and most at a Wales level, but many indicators are also available for additional geographies, including

- Local Authorities
- [Middle Layer Super Output Areas \(MSOAs\)](#)
- [Rural/Urban Classifications](#)

- [Built Up Areas](#) (BUA)²
- Local Health Boards
- Economic Regions
- Deprivation Tenths (Areas of deprivation according the main WIMD 2019 Index)

Indicator data by deprivation tenths are where small areas have been grouped into ten equally sized groups according to their overall deprivation rank, and average indicator values have been calculated for each of the ten groups.

- Assembly Constituency Areas

Reference ('lookup') files which enable users to link different geographies (e.g. postcode to LSOA and Local Authorities) can be found on [the WIMD Pages of StatsWales](#).

It is also possible to visualise geographies on a map using the [WIMD interactive](#) product.

Table 2 in the annex outlines the different geographies for which each 2019 indicator is available, including in years since 2008 for long-standing indicators.

2.3 Age breakdowns and early-years analysis of indicators

Some of the WIMD 2019 indicators have been broken down by age and published on [StatsWales](#). The age breakdown used for each indicator varies based on usefulness and disclosure considerations.

In 2019, the indicators covered relate to the income, employment, health and education domains. The income deprivation data broken down by age have been made available at the 8 aggregation levels listed in section 2.2. Employment deprivation and repeat absenteeism data broken down by age are available at the LSOA and Local Authority level. The three 2011 census indicators (adults with no qualifications, limiting long-term illness and overcrowded households) were broken down by age as part of the suite of [WIMD 2014 products](#). We are working to publish GP recorded chronic conditions and mental health conditions split by age and are currently reviewing the most appropriate breakdowns to include. Information on the 2019 indicators broken down by age can be seen in Table 1 of the Annex.

Analysis of WIMD indicator data to explore patterns of deprivation amongst young children aged 7 and under was published on our [gov.wales WIMD pages](#) in the summer of 2021. This article focuses on four indicators that provide specific information on young children in deprivation, covering the domains of income, health and education:

- Income deprivation (children aged 0 to 4 living in income-deprived households)
- Low birth weight
- Obesity in children aged 4 to 5
- Foundation phase average point score

² The definition of BUAs used to calculate the WIMD Indicator Data is the best-fit built-up area sub-divisions (BUASD) with a threshold of 2000 people.

Indicator data broken down by age prior to 2019 (between 2014 and 2017) are available in the WIMD [archive tab on StatsWales](#). Although detailed age splits were not available before WIMD 2014, some indicator data for children were published alongside the 2008 and 2011 WIMD Child Indices, also accessible through the archive tab on StatsWales.

2.4 Income and Employment deprivation counts by age

To help users have a more complete understanding of deprivation in areas across Wales, we have published WIMD 2019 income and employment deprivation counts on [StatsWales \(under files\)](#). This data was used as the numerators when calculating the income and employment domains in WIMD 2019, and shows the number of people in income and employment deprivation in mid-2016. In the index, these numbers are divided by the population of the area to give the rate of income and employment deprivation in that area (the proportion of people who are deprived).

Although indicator data is useful to identify areas where there are high concentrations of deprivation, it can be helpful to consider the numerator data alongside the deprivation rates (and WIMD rankings). The counts can support users in identifying areas which may not have high levels of relative deprivation but still contain a large number of people living in deprivation. This is particularly relevant when looking at specific age groups such as children and older adults, as age groups are not distributed evenly between areas.

Deprivation counts are rounded to the nearest 5 and provided for the whole population, as well as three broad age groups (children, working-age, and people aged 65 and above). This data is available at the LSOA, Middle Layer Super Output area (MSOA), Local Authority and Local Health Board level. LSOA level maps of the number of people in income deprivation by age (2016-17) are also available on [StatsWales](#).

In addition to the rounded counts, we have also published a file of [income deprivation count estimates for narrower age bands \(5-year age bands\)](#). The workbook contains small area, Local Authority and Wales estimates of the number of people in different age groups who were living in income deprivation in mid-2016. These estimates were calculated using published [indicator data](#) and the Office for National Statistics mid-2016 small area [population estimates](#). In comparison to the numerator data counts described above, these estimates are useful to compare areas based on a finer level of detail in terms of age. This is useful for targeting services and predicting levels of demand at a more granular level.

3. Accessing WIMD indicator data

3.1 Finding WIMD indicator data

All WIMD 2019 indicator data can be accessed on the [WIMD pages of StatsWales](#). Data published before 2019 can be seen in the [archive section](#) with metadata below each table view.

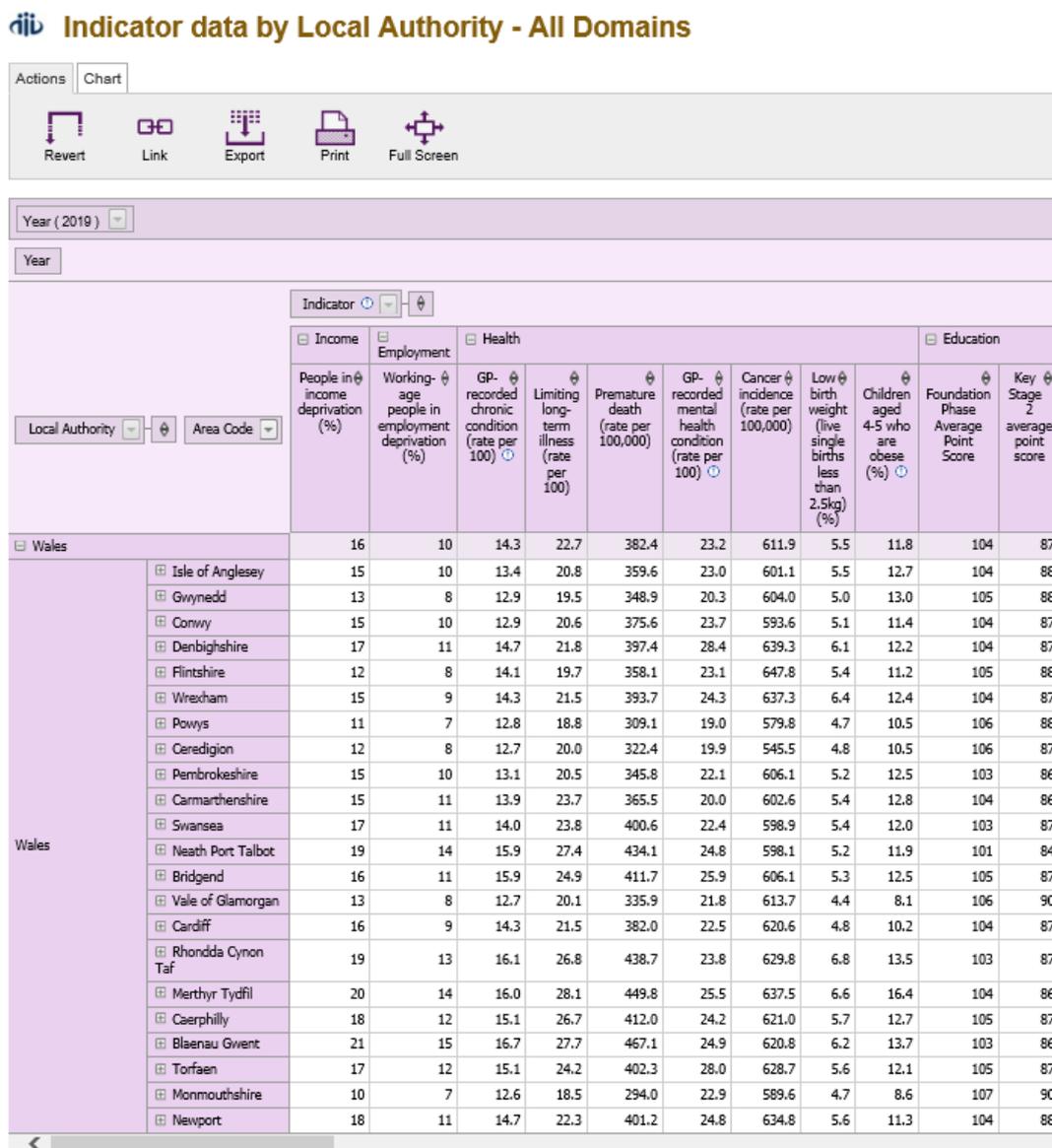
The data are organised into tables by the geography aggregation that they cover. Indicator data for all WIMD domains can be seen in each table. Indicator data by the LSOA level are also split into multiple views by domain so that these data can be loaded more quickly in the browser. More information on geographies can be found in section 2.2.

Indicator data by age are published on an individual indicator basis. This is because different indicators are broken down into different age groupings. The WIMD 2019 income deprivation data broken down by age have been made available at 8 aggregation levels, each published in a separate table. Other 2019 indicators that are broken down by age are available at the LSOA and Local Authority level. More information on indicator data broken down by age can be found in section 2.3.

3.2 Manipulating WIMD data

WIMD data are presented in what are known as StatsWales cubes. These cubes are a way of viewing data dynamically; allowing the user to rearrange the data to suit their needs. We will use the ['Indicator data by Local Authority-all domains'](#) cube, to demonstrate this (see Figure 1 below).

Figure 1. StatsWales cube showing indicator data by Local Authority across WIMD domains



When first opened the webpage presents the user with a simple table; the geography (in this case the Local Authorities) on the left, tabulated against the different indicators (or age-splits) along the top of the page. This view will likely be suitable for most users.

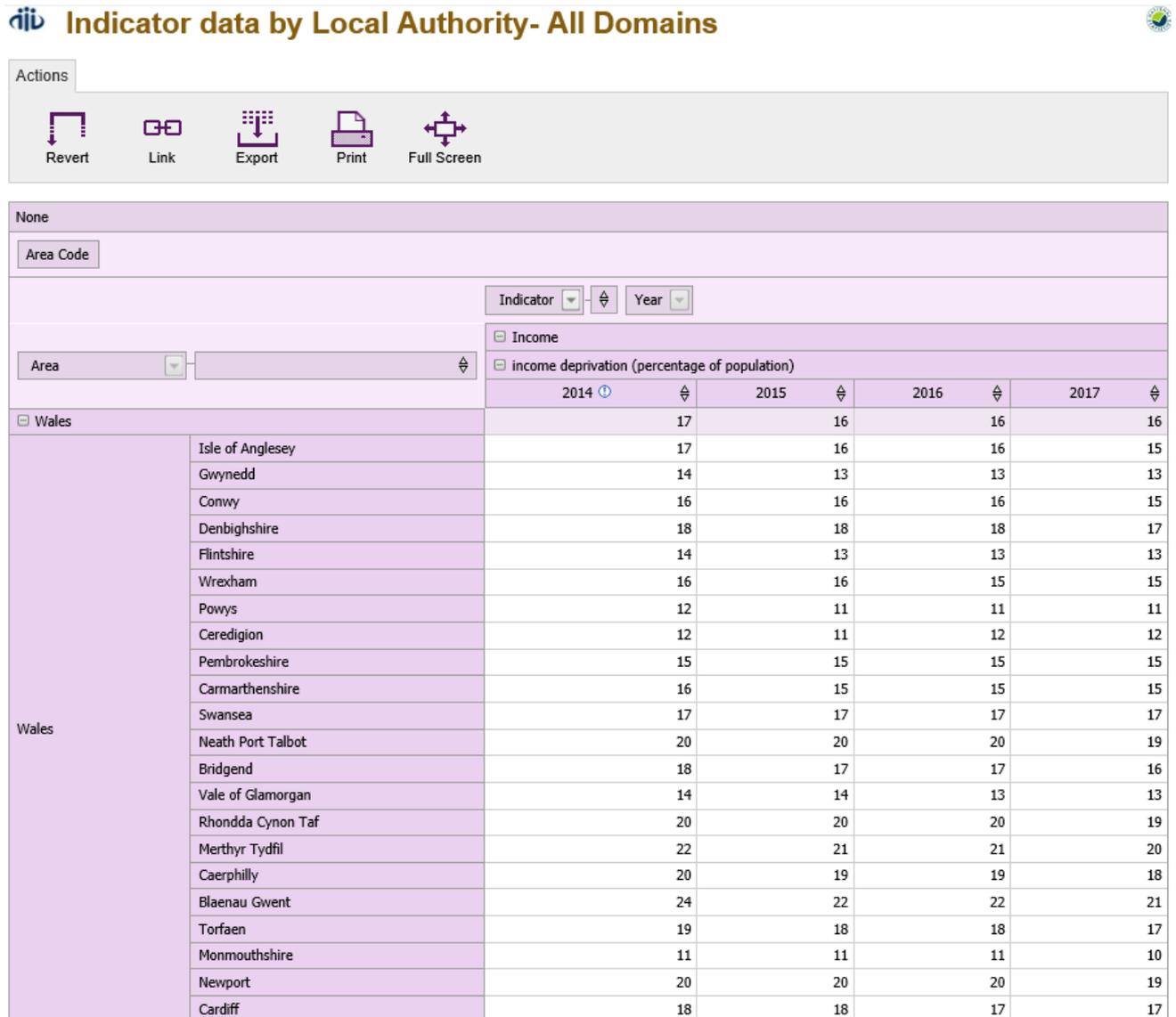
However, there are drop down boxes for each dimension which allow users to hide (untick) or show (tick) certain elements – for example the ‘Indicator’ drop down allows a user to view specific domains or indicators, or, the ‘Year’ drop down allows users to select a year where indicator data has been updated. The small buttons with plus and minus signs allow the user to expand (+) or collapse (-) certain categories.

As well as selecting data and areas by filtering, it’s also possible to rearrange the table by ‘dragging and dropping’ the dimensions. It’s possible to drag a dimension and drop it as a column or row. When dragging a dimension, ensure two vertical arrows (one facing up and one facing down) appear before dropping the dimension. See Figure 2, where ‘year’ has been dragged as a column next to the indicator dimension in one of our 2014 to 2017 indicator cubes. For this view, the cube (table) has also been filtered to only show the income deprivation indicator. An important thing to note is that when ‘dragging and dropping’ the view

will be collapsed and so data might not be showing. If this is the case, right click on the (-) sign on the dimension and select 'expand all'. Fields with a '.' rather than data, represents years where the corresponding indicators were not updated.

Further guidance on using StatsWales and cubes is available in the [help tab of StatsWales](#).

Figure 2. StatsWales cube showing income deprivation indicator data by Local Authority, 2014-2017



3.3 Downloading WIMD data

Once happy with the chosen layout, the user can download the data with the same arrangement of rows and columns. To do this, simply choose the 'Export' button above the table. The cube will offer the options of including the table title and metadata in the download, as well as a choice of 2 formats:

- Comma separated (.csv);
- Excel 2007-2010 (.xls);

The user can then carry out analysis of these data using their preferred software package.

3.4 Disclosure control

Indicator data on StatsWales has had disclosure control methods applied where necessary. All data have been rounded and suppression applied where data items are considered disclosive or not sufficiently robust for publication. Suppressed data has been replaced with an asterisk (*) in StatsWales tables. This should be considered when manipulating this data. Disclosure control is particularly important when providing small area statistics as there is an increased likelihood that individuals may be identified based on certain characteristics. Table 4 in the annex outlines suppression and rounding steps that have been taken as part of disclosure control for WIMD 2019 indicators.

3.5 Sharing WIMD data

Once happy with the chosen layout, the user can save or share a link to the data with the same arrangement of rows and columns. To do this, simply choose the 'Link' button above the table, copy the URL provided, and paste into an email or document.

3.6 Open data

Open Data, refers to the premise of data being made freely available in understandable format that can be used by anyone. Many of our StatsWales cubes are now available via an OData service which can be used to query the data to fit the users' needs. OData can be analysed using Microsoft Excel's Power Query add on, [Microsoft's Power BI](#), or other business intelligence products. Useful OData service queries can be found in StatsWales by scrolling down and using the 'Open Data' tab at the bottom of the dataset view (in the metadata section). The following symbol, if seen next to a listed StatsWales table, indicates the availability of that dataset via OData:



See [OData guidance videos on the help section of StatsWales](#).

3.7 Mapping data

It is possible to map WIMD 2019 data via the [Lle.gov.wales tool](#). This is a geoportal for Wales and serves as a hub for data and information covering a wide spectrum of topics. This tool provides shape files for users to complete their own mapping and layering of data.

LSOA maps of the number of people in income deprivation by age (2016-17) have also been made available on [StatsWales](#), which can be helpful to support area-based resource targeting. Details of the data used to derive these maps is available in section 2.4 of this article.

3.8 WIMD index data and resources

This document focusses on WIMD Indicator Data. WIMD relative deprivation ranks and analysis based on these ranks is also available on [StatsWales](#). This data can be explored via our [interactive mapping tool](#) and guidance on index and domain ranks is available on the [Welsh Government website](#).

4 WIMD indicator data and comparability over time

The following sub-sections provide a summary of the WIMD 2019 indicators, including an indication of whether indicators are comparable with data from previous indices or updates. Table 1 below details WIMD 2019 domains and indicators, with more detailed information found in the [WIMD 2019 Technical Report](#). Table 1 of the annex summarises this information, including comparability over time and Table 3 in the annex outlines the reference period of the underlying data for each indicator by year of publication. The previous edition of the [WIMD indicator guidance article \(2014-2017\)](#) includes further details on past indicators and comparability between older time-periods.

Table 1: WIMD 2019 Domains and Indicators

Indicator	Detail
Income	
1 Income related-benefits claimant count	Percentage of population in receipt of income-related benefits and tax credits 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) (d) People on Universal Credit (except those “working with no requirements”)
Employment	
1 Employment related-benefits claimant count	Percentage of working-age population in receipt of employment related benefits (job-seekers allowance, employment support allowance, incapacity benefit or Universal Credit and not in employment)
Health	
1 Chronic conditions	People with a GP-recorded diagnosis of a Chronic condition (indirectly age-sex standardised) [Coronary Heart Disease, Chronic Obstructive Pulmonary Disease, Stroke and Transient Ischaemic Attack, Peripheral Arterial Disease, Chronic Kidney Disease, Diabetes Mellitus(type 1 for all ages, type 2 and other types for people aged 17+, or Epilepsy)]
2 Long-term limiting illness	Limiting Long-Term Illness (indirectly age-sex standardised)
3 Premature deaths	Premature Death Rate (death of those under the age of 75)
4 Mental health conditions	People with a GP-recorded diagnosis of a Mental Health condition (indirectly age-sex standardised) [Depression, Low mood (patients with active repeat prescription for an anti-depressant), Anxiety disorder (including panic disorders), Dementia, Severe mental illnesses (schizophrenia, bipolar affective disorder and other psychoses)]
5 Cancer incidence	Cancer Incidence (indirectly age-sex standardised)
6 Low birth weight	Low Birth Weight, Single Births (live births less than 2.5 Kg)
7 Obese children	Children aged 4-5 who are Obese

Education		
1	Foundation Phase Average Point Score	
2	Key Stage 2 Average Point Score	
3	Key Stage 4 Average Point Score for Core Subjects	
4	Repeat Absenteeism	
5	Proportion of Key Stage 4 leavers entering Higher Education	
6	Number of adults aged 25-64 with No Qualifications	
Access to Services		
1	Physical access to services	Physical Access – average return travel times by public and private transport to key services: pharmacy, food shop, General Practitioner (GP) surgery, post office, primary school, public library, sports facility, secondary school, and, petrol station (private transport only)
2	Broadband access	Digital Access – % Unavailability of broadband at 30Mb/s
Housing		
1	Overcrowded households	Percentage of people living in overcrowded households (bedrooms measure)
2	Poor quality housing	Likelihood of poor quality housing (being in disrepair or containing serious hazards)
Community Safety		
1	Police Recorded Criminal Damage	
2	Police Recorded Violent Crime	
3	Police Recorded Anti-Social Behaviour	
4	Police Recorded Burglary	
5	Police Recorded Theft	
6	Fire Incidents	
Physical Environment		
1	Air quality (nitrogen dioxide)	Population weighted average concentration values of Nitrogen dioxide (NO ₂)
2	Air quality (particulates < 10 µm)	Population weighted average concentration values of Particulates < 10 µm (PM ₁₀)
3	Air quality (particulates < 2.5 µm)	Population weighted average concentration values of Particulates < 2.5 µm (PM _{2.5})
4	Flood risk	Flood Risk
5	Access to natural green space	Proximity to Accessible, Natural Green Space – measuring the proportion of households within 300 metres of an accessible, natural green space
6	Ambient green space score	Ambient Green Space Score – measuring the mean household Normalised Difference Vegetation Index (NDVI)

4.1 Income domain

The income domain is made up of one indicator (the percentage of population in income deprivation), containing four elements:

- Income-Related Benefit claimants
- Tax Credit recipients
- Supported Asylum Seekers
- People on Universal Credit (excluding those “working with no requirements”, that is, with individual or household earnings over the level at which [conditionality](#) applies)

Dependent children of the above are also included. This indicator is expressed as a percentage of the residential population for each LSOA, with the prison population subtracted from the LSOAs containing prisons in Wales.

Income deprivation has been measured as the percentage of population in receipt of social security benefits since WIMD was first developed and over-time there have been small changes to the welfare system that has impacted on eligibility thresholds and criteria for some benefits. Despite these changes including the phased roll-out of Universal credit, we have aimed to keep data as comparable over time as possible. As a result, data can be considered to be broadly comparable over time. The previous edition of the [WIMD indicator guidance article \(2014-2017\)](#) includes further details on the introduction of Universal Credit claimants for the 2016 and 2017 indicator updates.

For WIMD 2019 we used data from the 2016-17 financial year as this was the last point in time before the start of rollout of Universal Credit full service in Wales. The roll-out of the full Universal Credit service, began in Wales in April 2017. Given the geographical nature and lengthy timescale of service implementation, differences between Universal Credit and legacy benefits means we may not be comparing like with like during the full rollout. Using data from the 2016-17 financial year and only including early, straightforward cases of Universal Credit claimants (and their dependants), therefore ensured consistency of data across areas. Although data from the 2016-17 financial year was also used for the 2017 indicator update, due to the use of revised population estimates and the removal of the prison population in 2019, data from 2017 and 2019 will not necessarily match.

Whilst Universal Credit is still being rolled out we are unable to update our measure of benefit claimants as a proxy for low income. However, we will continue to work with the Department for Work and Pensions (DWP) and the Office for National Statistics on options for an appropriate measure of income deprivation for future indices.

4.2 Employment domain

The employment domain is made up of one indicator (the percentage of working-age population in receipt of employment related benefits), containing four elements:

- Jobseeker’s Allowance (JSA);
- Employment and Support Allowance (ESA);
- Incapacity Benefit (replaced Severe Disablement Allowance)

- Universal Credit (UC) and not in employment

This indicator is expressed as a percentage of the residential working-age population for each LSOA, with the prison population subtracted from the LSOAs containing prisons in Wales.

Changes to the welfare system, including the phased roll-out of Universal Credit, mean that eligibility thresholds and criteria for some benefits have changed over time. Despite these changes including the phased roll-out of Universal credit, we have aimed to keep data as comparable over time as possible. As a result, data can be considered to be broadly comparable over time. The previous edition of the [WIMD indicator guidance article \(2014-2017\)](#) includes further details on the introduction of Universal Credit claimants for the 2016 and 2017 indicator updates. For WIMD 2019, data from the 2016-17 financial year was used as this is the last point in time before the start of rollout of Universal Credit full service in Wales. Given the geographical nature and lengthy timescale of service implementation, differences between Universal Credit and legacy benefits means we may not be comparing like with like during the full rollout. Using data from the 2016-17 financial year only included early, straightforward cases of Universal Credit claimants and therefore ensured consistency of data across areas. Data from the 2016-17 financial year was also used for the 2017 indicator update. However, due to the use of revised population estimates and the removal of the prison population in 2019, data from 2017 and 2019 will not necessarily match.

Whilst Universal credit is still being rolled out we are unable to update our measure of employment deprivation. However, we will continue to work with the Department for Work and Pensions (DWP) on options for an appropriate measure of employment deprivation for future indices.

4.3 Health domain

The indicators (relating to the whole population) within the health domain of WIMD are indirectly age-sex standardised to adjust for the expected prevalence of disease within the underlying population. This allows the Index to identify areas where health deprivations exists beyond the effect of age and sex.

The health domain includes seven indicators:

- GP-recorded chronic conditions
- Limiting long-term illness
- Premature deaths
- GP-recorded mental health conditions
- Cancer Incidence
- Low birth weight
- Children aged 4-5 who are obese

GP-recorded diagnosis of a chronic condition (indirectly age-sex standardised)

This was a new indicator in 2019 and is based on counts of people with diagnoses for conditions from a defined list of disease registers and sub-indicators obtained from GP practices in Wales (as at 31 March 2019). It measures the number of people with a current diagnosis of one or more of the conditions listed below:

- Coronary Heart Disease
- Chronic Obstructive Pulmonary Disease
- Stroke and Transient Ischaemic Attack
- Peripheral Arterial Disease
- Chronic Kidney Disease
- Diabetes Mellitus (type 1 for all ages, type 2 and other types for people aged 17+)
- Epilepsy

These counts were de-duplicated so that patients with more than one condition were not counted twice. Patient level data were aggregated to small areas (LSOAs), according to patient addresses, so that prevalence is based on where people live rather than where they are registered with a GP. This indicator is presented as a rate per 100 people.

For the denominator, we have used the latest available Small Area Population Estimates (mid-2018), minus the prison population (2018).

There is further background on the indicator and information about data quality in the technical report (Annex E). This includes a description of how we have adjusted figures for areas where many residents are registered with primary care providers in England.

Limiting long-term illness (indirectly age-sex standardised)

This indicator covers any long-term illness, health problem or disability that limits daily activities or work, and includes all usual residents. This indicator is based on 2011 Census data and is expressed as a rate per 100 people. The same data was used for WIMD 2019 (as for WIMD 2014), since there was no Census update (or alternative source at small area level) in-between the two indices.

Premature death rate – for those under the age of 75 (indirectly age-sex standardised)

This was a new indicator for WIMD 2019 and is based on 10 years of death registrations data (2009-2018 average in 2019), from the Office for National Statistics. The premature death rate is presented as a rate per 100,000 people.

Poor health can manifest itself in lower life expectancy, which can be captured through age and sex standardised death rates.

GP-recorded diagnosis of a mental health condition (indirectly age-sex standardised)

This was a new indicator for WIMD 2019 and is based on counts of people with diagnoses from a defined list of disease registers and sub-indicators obtained from GP practices in Wales (as at 31 March 2019). It measures the number of people with a current diagnosis of one or more of the conditions listed below:

- Depression
- Low mood (patients with record of low mood and an active repeat prescription for an anti-depressant)
- Anxiety disorder (including panic disorders)

- Dementia
- Severe mental illnesses (schizophrenia, bipolar affective disorder and other psychoses)

These counts were de-duplicated so that patients with more than one condition were not counted twice. Patient level data were aggregated to small areas (LSOAs), according to patient addresses, so that prevalence is based on where people live rather than where they are registered with a GP.

For the denominator, we have used the latest available Small Area Population Estimates (mid-2018), minus the prison population (2018).

There is further background on the indicator and information about data quality in the technical report (Annex E). This includes a description of how we have adjusted figures for areas where many residents are registered with primary care providers in England.

Cancer incidence (indirectly age-sex standardised)

This indicator uses counts of all cases of cancer including all malignancies, excluding non-melanoma skin cancer (data from Public Health Wales) and population data from the Office for National Statistics. This indicator is based on ten years of data (2007-2016 in WIMD 2019) and has been published regularly since 2008. The data is expressed as a rate per 100,000 people. Indicator data are not strictly comparable over time because the technique of indirect standardisation involves using updated age-sex specific rates for Wales in calculating rates for small areas.

Low birth weight

This indicator is the percentage of live single births (singletons) for which birth weight is less than 2.5kg, and is calculated as a 10 year average, using data from the Office for National Statistics. This indicator is comparable over time. For WIMD 2019, the reference period for the data was 2009 to 2018.

Children aged 4-5 who are obese

This new indicator on children who are obese measures the proportion of reception aged children (those aged 4 and 5) who are obese. This data is based on the average over 6 years from 2012-13 to 2017-18.

This data are provided by Public Health Wales (PHW), and captured through the [Child Measurement Programme](#) (CMP) for Wales. Obesity is calculated using the age and sex-specific body mass index (BMI) centiles (which includes height information) calculated using the British 1990 growth reference (UK90) (from a method proposed by Cole et al (1995)). Children who fall in the 95th centile or above are considered to be obese.

The smallest level that PHW publish the CMP data at is Middle layer Super Output Area (MSOA) level, rather than LSOA. This is because of concerns around the possible misuse of data to identify specific areas where the highest percentage of obese children live and the possibility of identifying individuals when drilling down to small numbers. For these reasons, whilst LSOA level rates are used in the domain and Index calculations, we only publish indicator values for MSOAs and higher level geographies as part of WIMD indicator datasets.

Pupil's home addresses were used to identify the LSOA in which children live rather than the LSOA of their school.

4.4 Education domain

The education domain includes six indicators:

- Foundation Phase Average Point Score
- Key Stage 2 Average Points Score
- Key Stage 4 Average Point Score for Core Subjects
- Repeat Absenteeism
- Proportion of Key Stage 4 leavers entering Higher Education
- Number of Adults aged 25-64 with No Qualifications

There have been several methodological changes to the education domain between WIMD 2014 and WIMD 2019.

Three of the six indicators in the domain were present in WIMD 2014:

- Key Stage 2 Average Point Score
- Repeat Absenteeism
- Number of Adults aged 25-64 with No Qualifications

Key Stage 2 and repeat absenteeism data are comparable over time.

The two Key Stage 4 indicators included in WIMD 2014 have been replaced with a single indicator. This indicator has been constructed using a new methodology and is, therefore, not comparable with the previous indicators used in WIMD 2014.

A Foundation Phase indicator based upon the results of teacher assessments for pupils taught in National Curriculum Year Group 2 has been included in WIMD 2019. It is intended to complement the Key Stage 2 indicator to measure education deprivation at primary school level.

The four indicators referred to above are all based on three years of data from Academic Years 2015/16, 2016/17 and 2017/18. The data are sourced from Pupil Level Annual School Census (PLASC), the National Data Collection (NDC), and for the Key Stage 4 Average Point Score, the Welsh Examinations Database.

The denominators used to calculate the Foundation Phase, Key Stage 2 and Key Stage 4 average point scores, were the total number of pupils studying the National Curriculum in Year Groups 2, 6 and 11 respectively.

The repeat absenteeism indicator measures the percentage of primary and secondary school pupils missing more than 15% of school sessions. The denominator used to calculate Repeat Absenteeism was the total numbers of primary and secondary school pupils.

The Proportion of People aged 18-19 not entering Higher Education indicator has been replaced with an indicator measuring the Proportion of Key Stage 4 Leavers entering Higher Education. Whilst these indicators measure similar things, they are not directly comparable. Pupil-level data from PLASC has been matched to Higher Education Statistics Authority Record (HESA) and Lifelong Learning Wales Record

(LLWR) data to measure the proportion of KS4 pupils who, at some point in the subsequent three years after leaving Year 11, entered Higher Education. Higher Education provision is defined for the purposes of this indicator as any programme of learning above level 3 – i.e. it includes undergraduate degrees, higher apprenticeships. This indicator is based on the 4 year average for Academic Years 2011/12 to 2014/15. The denominator used is the total number of pupils in National Curriculum Year Group 11.

Data on the number of Adults with no qualifications is from the 2011 Census and so has not changed compared to the 2014 Index data. This indicator is expressed as a percentage and the denominator used is the total population that are aged 25-64.

4.5 Access to services domain

The access to services domain measures physical access through average return travel times (in minutes) to 8 services using public transport and 9 services using private transport. An access to digital services indicator has also been added for WIMD 2019, measuring access to superfast broadband. The indicators that contribute to this domain are outlined below.

- Average public and private travel time to Pharmacy
- Average public and private travel time to Food shop
- Average public and private travel time to General Practitioner (GP)
- Average public and private travel time to Post office
- Average public and private travel time to Primary school
- Average public and private travel time to Public library
- Average public and private travel time to Sports Facility
- Average public and private travel time to Secondary school
- Average private travel time to Petrol station
- % Unavailability of broadband at 30Mb/s

Physical Access

We have updated the WIMD 2014 suite of indicators measuring travel times to key services. Whilst the principles of the methodology for measuring travel times have not changed between WIMD 2014 and WIMD 2019 – the technical toolkits used have undergone rigorous change to seek to increase the accuracy, robustness and repeatability of the data. Full details of what has changed and the parameters used for WIMD 2019 calculations are provided in the Technical Report.

Because of the improvements made, care should be taken in interpreting changes in the travel time indicator values, which are not strictly comparable to older data.

For WIMD 2019, public transport travel times (walking and using a public bus, public train or national coach) to the nearest access point for a given service were calculated using propeR, an open-source, multimodal trip planner (more information in the [GitHub repository](#)).

Private transport travel times to the nearest access point for a given service were calculated using the pgRouting library within PostGIS. The vehicular network was captured in the form of Ordnance Survey MasterMap Highways Network, with the average vehicular speed based on Average Speed Data from Basemap.

Average speed data reflects the average vehicular speed across 2018. The road geometry, public transport timetables and all service origins were obtained in March 2019.

Digital Access

The digital access indicator is calculated as the proportion of homes and small businesses unable to receive fixed line broadband at a download sync speed of 30Mb/s or higher (superfast broadband). This includes properties with no broadband coverage. The source is Ofcom's [Connected Nations Report for Spring 2019](#).

4.6 Housing domain

The purpose of the housing domain is to identify inadequate housing, in terms of physical and living conditions and availability. Here, living condition means the suitability of the housing for its inhabitant(s), for example in terms of health and safety, and necessary adaptations.

The housing domain is made up of two indicators:

- An indicator on overcrowding measures the percentage of people living in overcrowded households (2011 Census-based bedroom measure).
- A new modelled indicator on poor quality housing. It measures the likelihood of housing being in disrepair or containing serious hazards (for example, risk of falls or cold housing), and was calculated from a mixture of survey and administrative data sources by the Building Research Establishment (BRE).

Overcrowding

Data on people living in overcrowded households is from the 2011 Census and so has not changed compared to the 2014 data. Data included in WIMD 2011 were based on census data from 2001 but are not comparable to more recent data due to a change to the bedroom based measure.

This indicator provides a measure of whether a household's accommodation is overcrowded (based on the number of bedrooms). The ages of the household members and their relationships to each other are used to derive the number of bedrooms they require, based on a standard formula. Please refer to the [WIMD 2019 technical report](#) for more details.

Poor Quality Housing

In WIMD 2019, the housing domain introduces a new modelled indicator on poor quality housing. This indicator helps to capture both physical and living conditions. This is the first instance of using modelled data in any domain of WIMD, and has improved the range of information on housing available at the local area. However one drawback of using modelled data on an ongoing basis is the possible limitation in reflecting the impact of recent interventions or other changes. If informing decisions, modelled data should be used alongside robust, up-to-date local data or intelligence wherever possible.

The new indicator is calculated using a model built from survey data, which makes probabilistic predictions about individual level dwellings in Wales, using a range of administrative datasets as inputs. Please refer to the [WIMD 2019 technical report](#) for more details.

This allows us to estimate the likelihood that dwellings in a given area:

- contain a Category 1 hazard for excess cold, falls or other hazards under the [Housing Health and Safety Rating System \(HHSRS\)](#)
- or are in a state of disrepair

A dwelling is determined to have a Category 1 hazard as a result of excess cold if there is a severe threat from sub-optimal indoor temperatures. A dwelling is assessed as having a Category 1 hazard in terms of falls if there is determined to be a serious risk of falling on stairs, between levels, level surfaces or falling associated with a bath, shower or similar facility.

A dwelling is said to be in disrepair if at least one of the key building components is old and needs replacing or major repair due to its condition; or more than one of the other building components are old and need replacing or major repair.

Note that there is a requirement for social housing to maintain the [Welsh Housing Quality Standard](#) (WHQS), and therefore in areas where there is a high proportion of social housing, the modelled data tends to show a lower likelihood of poor quality housing.

4.7 Community safety domain

The Community Safety Domain considers deprivation with relation to living in a safe community. There are six indicators which make up the community safety domain and these are outlined below. These are sourced from Welsh Police Forces (unless otherwise stated) and include:

- Police Recorded Criminal Damage
- Police Recorded Violent Crime
- Police Recorded Anti-Social Behaviour
- Police Recorded Burglary
- Police Recorded Theft
- Fire Incidents

All of the indicators are expressed as rates, with the numerator consisting of the number of Crimes / incidents / fires per LSOA (averaged over two years) and the denominator consisting of the number of people/properties in the LSOA.

Minor changes have been made to the methodology for constructing the crime and anti-social behaviour incident numerators for WIMD 2019. These changes include the adoption of the same geographical aggregation technique and constraining technique as used in the Crime Domain of the English Indices of Deprivation 2019. The two-stage quality assurance process with the police forces also mirrors that adopted in the Crime Domain of the English Indices of Deprivation 2019.

There have also been small changes to the detailed categories composing each of the recorded crime indicators and how some crimes are classified since the publication of WIMD 2014. However, data can still be considered as broadly comparable to data published before 2019 for this domain. For more information on methodological changes please refer to the WMD 2019 Technical report.

4.8 Physical environment domain

The purpose of this domain is to measure factors in the local area that may impact on the wellbeing or quality of life of those living in an area. The physical environment domain is made up of three sub-domains as follows:

- Air Quality (three indicators)
- Flood Risk (one indicator)
- Green Space (two indicators)

There have been several methodological changes to the physical environment domain between WIMD 2014 and WIMD 2019.

In WIMD 2014, the Air Quality sub-domain comprised two indicators – Air Concentrations and Air Emissions – that were calculated using a combination of concentration data for a range of pollutants and Air Quality Management Areas. The sub-domain has been simplified for WIMD 2019 and now comprises three indicators based on the population weighted average concentration values of the following key pollutants:

- Nitrogen dioxide (NO₂)
- Particulates < 10 µm (PM₁₀)
- Particulates < 2.5 µm (PM_{2.5})

A Green Space sub-domain has been included in WIMD 2019 instead of the Proximity to Waste Disposal and Industrial Sites sub-domain. This sub-domain is comprised of two indicators:

- Proximity to accessible, natural green space – measuring the proportion of households within 300 metres of an accessible, natural green space, and
- Ambient green space score – measuring the mean household Normalised Difference Vegetation Index (NDVI).

The Flood Risk sub-domain for WIMD 2019 has been sourced from the Flood Risk Assessment Wales (FRAW) dataset developed and provided by Natural Resources Wales (NRW). This data includes information on flood risk from rivers, the sea and surface water flooding. This is a change from WIMD 2014 where the Flood Risk sub-domain calculation did not include surface water flooding.

Air Quality indicators

The Air Quality sub-domain comprises three separate indicators measuring concentrations of key pollutants. They are created using measurements of pollutants that could have negative effects on human health and/or the environment, based on the best medical and scientific understanding, and are proposed as a proxy measure of the quality of the surrounding environment. Poor air quality suggests proximity to

certain activities such as traffic, domestic combustion and industrial sites – activities that could have a negative impact on quality of life, the local environment and health.

Green space indicators

The Green Space sub-domain comprises two indicators which measure the proximity to accessible, natural green space and the amount of ambient green space respectively. The higher the NDVI value, the more ambient green space in that geographical area.

5 Population data

Many of the WIMD indicators are presented as a rate, whether percentage, per hundred or per hundred thousand. To calculate these rates a range of population bases are used as denominators. The main ones are outlined below along with information on where to find data for them. Table 6 of the annex describes the denominators used to calculate the WIMD 2019 indicators, including the reference periods used for each.

5.1 2011 Census

The census is the most complete source of information about the population that is available. It is the only survey which provides a detailed picture of the entire population, and is unique because it covers everyone at the same time and asks the same core questions everywhere. This makes it easy to compare different parts of the country. However due to its' size the Census is only carried out every ten years.

The most recent census (as at January 2021) provides estimates of the characteristics of all people and households in the UK on census day, 27 March 2011. The census provides statistics from a national to a local level for these characteristics, including smaller geographies such as those used for WIMD.

Some data from the 2011 Census can be found on the [StatsWales website](#).

A wide range of information from the 2011 Census can be found on the [ONS website](#).

A more complete range of information for small areas can be obtained from the [NOMIS website](#) which enables the user to query the data for a variety of geographies and indicators.

5.2 Mid-year population estimates

The Office for National Statistics (ONS) produces estimates of the resident population of England and Wales which give a stock count of people living in England, Wales, the regions of England, local authorities and small areas by age and sex, as at 30 June each year. Small area population estimates (SAPE) for mid-2001 to mid-2018 have been produced, with LSOAs based on 2011 census boundaries.

SAPE for all LSOAs in Wales for years from mid-2001 onwards by age group can be found on the [StatsWales website](#).

More detailed estimates, by single year of age (up to age 89, then grouped for age 90+), are available on the [ONS website](#).

Table 6 of the annex describes the denominators used to calculate the WIMD 2019 indicators, including the reference periods for those where small area population estimates are used. Reference periods vary across indicator data with some only including a single year of data, with others summing across multiple years of data. Also note that for some indicators the relevant population group was defined by age (e.g. for employment domain the 'working age' age population was used).

As described in sections above, for some indicators including in the income, employment and health domains, where appropriate the prison population for the appropriate reference period has been removed from the population estimates in WIMD 2019.

5.3 Pupil Level Annual School Census (PLASC) data

The PLASC is the annual count of pupils in all schools across Wales, including those of non-statutory school age (i.e. 5-16). It covers nursery, primary, secondary and independent schools and is based on those enrolled on the school census day in January each year.

Many of the indicators for the education domain are calculated using PLASC data for the relevant age group. PLASC data broken down by age group, gender, school, attendance type (i.e. part time or full time), local authority and constituency can be obtained from the [StatsWales website](#).

6 Data for other UK countries

England, Scotland and Northern Ireland also produce indices of deprivation for their respective areas. The principle approach is similar to that for WIMD. However there are differences in the detailed methodology between each of the outputs. As with WIMD, data can be obtained for the indicators contained in each index. It is advisable though to read the notes, definitions and associated information for each dataset to verify comparability with data from WIMD. Broad differences in indices across the UK are outlined in an [article on the nationalarchives.gov.uk](#) website.

6.1 England

[The latest English indices of deprivation](#): including underlying indicators and population denominators.

Comparable income and employment deprivation data across England and Wales was published in December 2020.

The National Statistics "[Indices of Deprivation 2019: income and employment domains combined for England and Wales](#)" are published on gov.uk. These statistics may be of use to those interested specifically in pan-England and Wales measures of local area deprivation.

The outputs contain a spreadsheet of income and employment deprivation rates and ranks for small areas across England and Wales, as at 2015-16. These are directly measured indicators derived from counts of people receiving certain benefits, tax credits or other government support, and enable comparable analysis across small areas within the two countries for the first time.

The data are different and supplementary to the separate official measures of relative deprivation within England and Wales. For areas in Wales, the income or employment deprivation indicators are closely aligned but not exactly the same as the data used for the WIMD Income and Employment domains. More information on how this data compares to data included in WIMD is provided in the [guidance note for the combined data across England and Wales](#).

6.2 Scotland

[The latest Scottish Index of Multiple Deprivation](#): including underlying indicators and population denominators.

6.3 Northern Ireland

[The latest multiple deprivation measure for Northern Ireland](#): including underlying indicators and population denominators.

7 LSOA boundary changes

7.1 Geographic unit

The geographic areas used in the calculation of WIMD 2019 are the 1,909 Lower layer Super Output Areas (LSOAs). LSOAs have been used as the geographic unit in each WIMD index since 2005. LSOAs represent small areas, each with a population of around 1,600 people.

England and Northern Ireland also calculate their indices at the LSOA geographical unit, whilst in Scotland data zones of around 700 to 800 people are used.

7.2 Changes between 2001 Census and 2011 Census

The aim of the statistical geographies used for the census is that boundaries do not change significantly between censuses. Nevertheless some LSOA boundaries are revised following each Census, to take into account changes in population. The last census was in 2011. WIMD 2019 is based on the same LSOA boundaries that were used for WIMD 2014. WIMD 2011 was based on the previous boundaries, formed after the 2001 Census. Full details of the boundary change between WIMD 2011 and 2014 are provided in the [WIMD 2014 Technical report](#).

7.3 Postcode to LSOA allocation changes

Data for some indicators are produced from postcode data that are mapped to LSOAs using the grid reference of the population weighted centre of the postcode (known as best fit). So postcodes are allocated to the LSOA where most of the population from that postcode fall. This best fit method is needed as postcodes can sometimes be split between two or more LSOAs. In early 2016, some postcodes were allocated to different LSOAs following improvements to the allocation of grid references by Ordnance Survey. In most cases, these changes will not have resulted in noticeable changes to data, but in some cases changes are more prominent. For example, death rates may be affected more if there is a care home in a postcode which changes LSOA.

8 Dos and Don'ts

The following extract from the WIMD guidance infographic shows guidelines for analysing WIMD rank data:

The infographic is divided into two main sections: 'Do's' and 'Don'ts'. The 'Do's' section is on the left, marked with a large blue checkmark, and lists five ways WIMD can be used. The 'Don'ts' section is on the right, marked with a large blue 'X', and lists five ways WIMD cannot be used. At the bottom left of the infographic is the URL 'gov.wales/wimd' and at the bottom center is the copyright notice 'WG29304 © Crown Copyright 2019'.

Do's

WIMD can be used for:

- Identifying the most deprived small areas
- Comparing relative deprivation of small areas
- Exploring the 8 types of deprivation for small areas
- Comparing the proportion of small areas within a larger area that are very deprived
- Using indicator data (but not ranks) to compare absolute change over time

Don'ts

WIMD can't be used for:

- Quantifying how deprived a small area is, or how much more than another
- Using ranks to infer absolute change over time (as they are relative measures)
- Identifying deprived people – not everyone who is deprived lives in a deprived area
- Comparing with other UK countries – each country measures deprivation slightly differently
- Measuring affluence – lack of deprivation is not the same as being affluent

However, when it comes to indicator data the guidelines are different.

8.1 Geographical comparisons

- ✓ DO compare data between different geographies, e.g. between one Local Authority area or LSOA and another.
- ✗ DON'T forget about changes in geography – e.g. some LSOAs will not be comparable over time if their boundaries have changed.
- ✗ DON'T ignore the effect the presence of particular population groups can have on different areas, e.g. students.

8.2 Comparing over time

- ✓ DO compare indicator over time, BUT...
- ✗ DON'T ignore changes in indicator definitions.
- ✗ DON'T ignore changes in geography boundaries.
- ✗ DON'T forget to check for variations between years caused by small numbers in either the count for the indicator or the base population.

8.3 Comparing indicators

- ✓ DO consider different indicators – e.g. the performance of a range of indicators over time or within a certain area.
- ✗ DON'T forget to check which direction is considered positive – e.g. a higher KS2 average score is a positive thing, a higher repeat absenteeism score is negative.
- ✗ DON'T forget to make sure you know what each indicator actually measures.

8.4 Comparing against deprivation data

- ✓ DO compare data against overall WIMD deprivation data.
- ✓ DO use the [deprivation tenths data on StatsWales](#) to do this.
- ✗ DON'T forget that the indicators themselves actually feed into this overall deprivation measure (with varying weight per domain and indicator).

- ✗ DON'T forget the reference period for the deprivation indicator data.
- ✗ DON'T compare Index ranks over time.

8.5 Comparing between age groups

- ✓ DO compare indicator values between different age groups.
- ✗ DON'T forget that different indicators use different age splits.
- ✗ DON'T forget to check for variations between years caused by small numbers in either the count for the indicator or the base population (this may be especially relevant for narrow age bands).

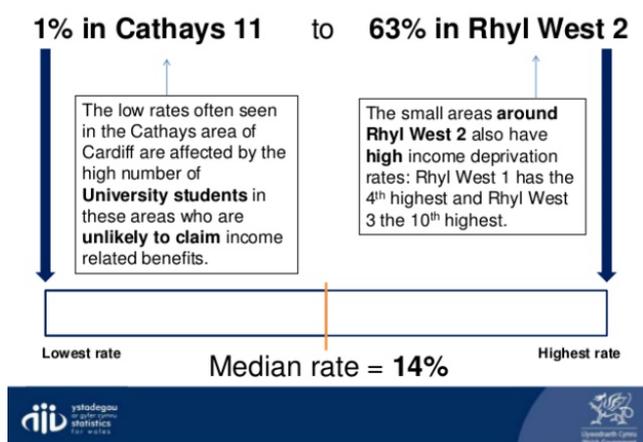
9 Example analyses

There are some existing sources of WIMD indicator data analysis which can act as examples. These are in addition to the Case Study presented in section 10 of this guidance.

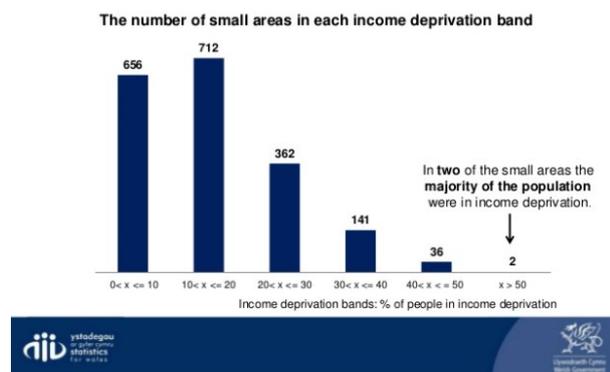
9.1 Slideshare taster analysis of indicator data (2017)

Following the 2017 indicator data update, a series of slideshares to provide taster analysis of the data was published. Analysis of income and employment deprivation and of attainment and absenteeism rates in small areas across Wales was conducted. The slideshares not only help users to interpret the data, but also provide examples of ways in which the data can be analysed. The slideshare taster analysis can be found under the reports section on the [WIMD indicator data update \(2017\) page of gov.wales/wimd](http://gov.wales/wimd).

The following extract shows two example slides from the income deprivation in Wales slideshare:



Over a third of the 1,909 small areas have income deprivation rates greater than 10% but less than 20%



The following extract shows two example slides from the Education indicators in Wales slideshare:

Considering the 10 small areas of Wales with **highest repeat absenteeism rates** between 2013/14 and 2015/16:

6 were in South East Wales, 3 were in North Wales and 1 was in West Wales.



The 10 small areas of Wales with the highest repeat absenteeism rates



Small Area Name (Lower-layer super output area)	Repeat absenteeism rate
Cwmysycwy, in Torfaen	22
Queensferry, in Flintshire	19
Rhyl West 3, in Denbighshire	17
Treforest 3, in Rhondda Cynon Taf	17
Penrhiwceiber 1, in Rhondda Cynon Taf	17
Tredegar Park 2, in Newport	16
Penydarren 1, in Merthyr Tydfil	16
Rhyl West 1, in Denbighshire	16
Liswerry 5, in Newport	16
Haverfordwest: Garth 2, in Pembrokeshire	15

Note: Repeat absenteeism rates are based on pupils missing 15% or more of half day school sessions



The following extract shows two example slides from the Employment deprivation in Wales slideshare:

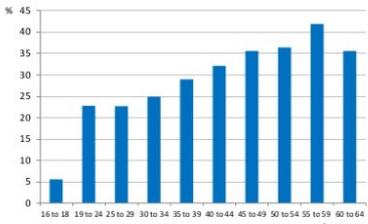
There are 1,909 small areas in Wales with a population of around 1,600.

In 35 of these areas, 25% or more of the working-age population are in employment deprivation.



Which age groups have the highest rates in these areas?

Average employment deprivation rates for each age group for the 35 small areas with an overall rate of employment deprivation of 25% or higher, 2016-17



Older age groups are more likely to be employment deprived in these areas

However, in **Rhyl West 2**, 74% of the 35 to 39 age group were employment deprived and in **Glyn (Conwy) 2**, 42% of the 19 to 24 age group were.



9.2 Area Analysis of Child Deprivation (WIMD Indicators 2014)

On 1 December 2015 a Statistical Article was published which showed how deprivation varies for children across Wales, using a range of WIMD 2014 indicator data for the relevant age groups. This analysis of child deprivation can be found under reports on the [WIMD 2014 \(full index update with ranks\) page on gov.wales/wimd](#). A new article on young children in deprivation and based on a range of WIMD 2019 indicator data will be published in the coming months, as described in section 2.3.

9.3 Analysis of the Access to Services Domain by type of settlement (WIMD Indicators 2014)

This output provides analysis of WIMD 2014 data to examine areas that may have issues with access to services. It looks at both the deprivation rankings for the Access to Services domain and the travel times used in the construction of the rankings. The [analysis of the access to services domain by settlement type can be found on gov.wales](#).

9.4 WIMD 2014: A guide to analysing deprivation in rural areas - Revised

This article was published alongside WIMD 2014, and looks at analysing deprivation in rural areas, taking into account settlement size. In particular, sections 8 and 9 of this report look at analysing Access to

Services and Income indicator data. The 2014 analysis of deprivation in rural areas can be found under reports on the [WIMD 2014 \(full index update with ranks\) page on gov.wales/wimd](https://gov.wales/wimd). This article will be updated with WIMD 2019 data in 2021.

9.5 How to analyse by deprivation group

In order to summarise and analyse data representing 1,909 LSOAs, statistical methods may be used to group the data. For example, this may be done using deciles, quintiles, or WIMD deprivation groups. Details are shown in the table below.

Table 2: WIMD Ranks belonging in different groups

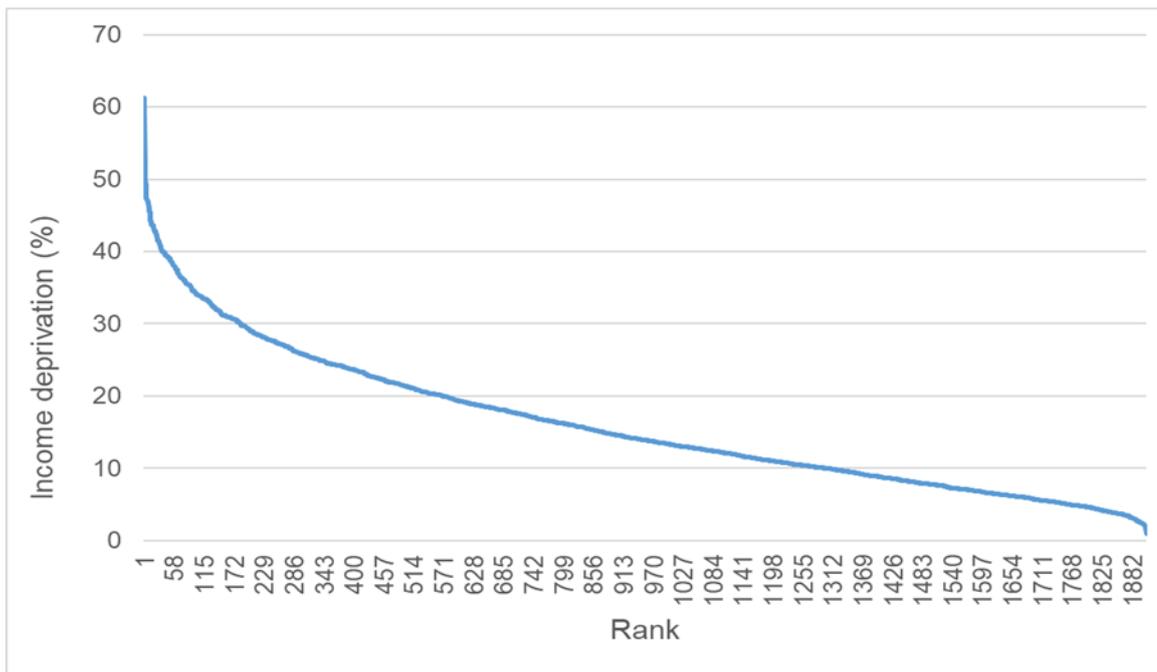
Rank	Decile Group	Quintile Group	Deprivation Group
1 - 191	1 (10% most deprived)	1 (20% most deprived)	1 (10% most deprived)
192 - 382	2 (10-20% most deprived)	1 (20% most deprived)	2 (10-20% most deprived)
383 - 573	3 (20-30% most deprived)	2 (20-40% most deprived)	3 (20-30% most deprived)
574 - 764	4 (30-40% most deprived)	2 (20-40% most deprived)	4 (30-50% most deprived)
765 - 955	5 (40-50% most deprived)	3 (40-60% most deprived)	4 (30-50% most deprived)
956 - 1146	6 (50-60% most deprived)	3 (40-60% most deprived)	5 (50% least deprived)
1147 - 1337	7 (60-70% most deprived)	4 (60-80% most deprived)	5 (50% least deprived)
1338 - 1528	8 (70-80% most deprived)	4 (60-80% most deprived)	5 (50% least deprived)
1529 - 1719	9 (80-90% most deprived)	5 (20% least deprived)	5 (50% least deprived)
1720 - 1909	10 (10% least deprived)	5 (20% least deprived)	5 (50% least deprived)

The decile (and quintile) groupings split the areas into 10 (and 5) roughly equal groups. As there are 1,909 LSOAs in Wales, these groups do not have exactly equal numbers of areas within them.

The Deprivation Groups are used within the main WIMD analyses, including maps. They are designed to have smaller groups at the more deprived end of the distribution, where the difference between areas is greater than at the less deprived end. To illustrate this feature of deprivation in indicators, the chart below shows how the percentage of income-deprived people is distributed by income domain rank. Note that:

- deprivation rates increase steeply at the most deprived end of the distribution (large changes in the indicator value may only result in small changes to ranks)
- at the less deprived end, the curve is flatter, and small changes to the indicator values could result in large movements in the ranks
- the 's-curve' shape of the distribution is seen to a greater or lesser extent in all the indicators of deprivation.

Figure 3: WIMD 2019 Income domain distribution



This grouping approach can be used for the overall index, domain or individual indicator under consideration. For example, it is possible to see whether an area is in the “worst” 10 per cent of areas for the indicator on the number of adults aged 25-64 with no qualifications, and then compare this to its position against another indicator such as employment deprivation.

Briefly, the typical approach is to:

- Rank LSOAs (1-1909) according to chosen indicator values, from most deprived to least deprived.
- Decide on categorisation to use and assign a category to each LSOA e.g. if using deciles the first category (top 10 percent most deprived) would normally include LSOAs ranked 1-191.
- Where ties exist (e.g. the LSOAs ranked 191 and ranked 192 have the same indicator value) then LSOAs are usually assigned to the more deprived category (so LSOA ranked 192 in our example would be included in our “top 10 percent”).

Some of the types of analysis then possible include:

- Thematic maps, using a different shade for each category.
- Cross-tabulations of LSOAs according to two different categorisations e.g. two different domains of deprivation, or an indicator at two different time periods.
- Boxplot of indicator values by category, for example plotting the spread of violent crime rates within categories of income domain deprivation.
- After matching LSOAs to local authorities (or other higher geographies), tabulating the proportion of LSOAs which are in each category.
- Present a boxplot of the spread of values for LSOAs within each local authority.

9.6 Analysing over time

Section 4 refers to comparability of indicators over time, with further information in the annex (table 1).

Often, change in indicator definitions across indices means data are not strictly comparable over time. However, although care should be taken in interpreting absolute changes in indicator values, it is still possible to analyse relative changes over time. For example, to compare relative deprivation between 2014 and 2019 users can group LSOAs into deciles according to the relevant indicator data, and look at those areas which have moved up or down deciles. So we can surmise that an area moving from the third decile (20-30 percent most deprived areas) in 2014 to the first decile (top 10 percent most deprived areas) in 2019 has worsened in terms of, say, its relative child income deprivation. However, it is important to remember not to compare individual ranks over time, as they are a relative measure.

Some indicator data are updated between indices. For example, income deprivation and repeat absenteeism data was published annually from 2014 to 2017, and these updates included data broken down by age. Changes to indicator data definitions and calculation methods are minimised between indices, which supports more reliable absolute comparisons overtime. However, as detailed in section 4.1 and 4.2, small changes in income and employment data, including changes to eligibility criteria for some benefits means change overtime should be interpreted with caution. Table 1 of the annex provides information on comparability of WIMD 2019 indicator data over time.

10 Case study

Here is a case study; an example of a problem that could be solved by analysing WIMD data. Let us take the following fictional enquiry:

“I am responsible for allocating funding to after-school clubs for primary school children in Bridgend, where we currently have 7 such clubs. I have an additional grant which can be awarded to 2 of these clubs. I would like to focus it on 2 clubs in areas where there is a low level of educational achievement amongst primary school children, as well as a high level of income deprivation. Will I be able to use the WIMD to achieve this?”

We will now talk through the steps to carry out this analysis. Assume that we have a list of the seven addresses of these clubs. We can use the WIMD interactive product to look up their locations, and find out that they lie within the LSOAs listed below. Alternatively, we can input the postcodes of the clubs to our [Postcode to WIMD rank lookup](#), and identify the LSOAs that the after school clubs fall into. This method is advised when a user needs to find the LSOA of many postcodes at once.

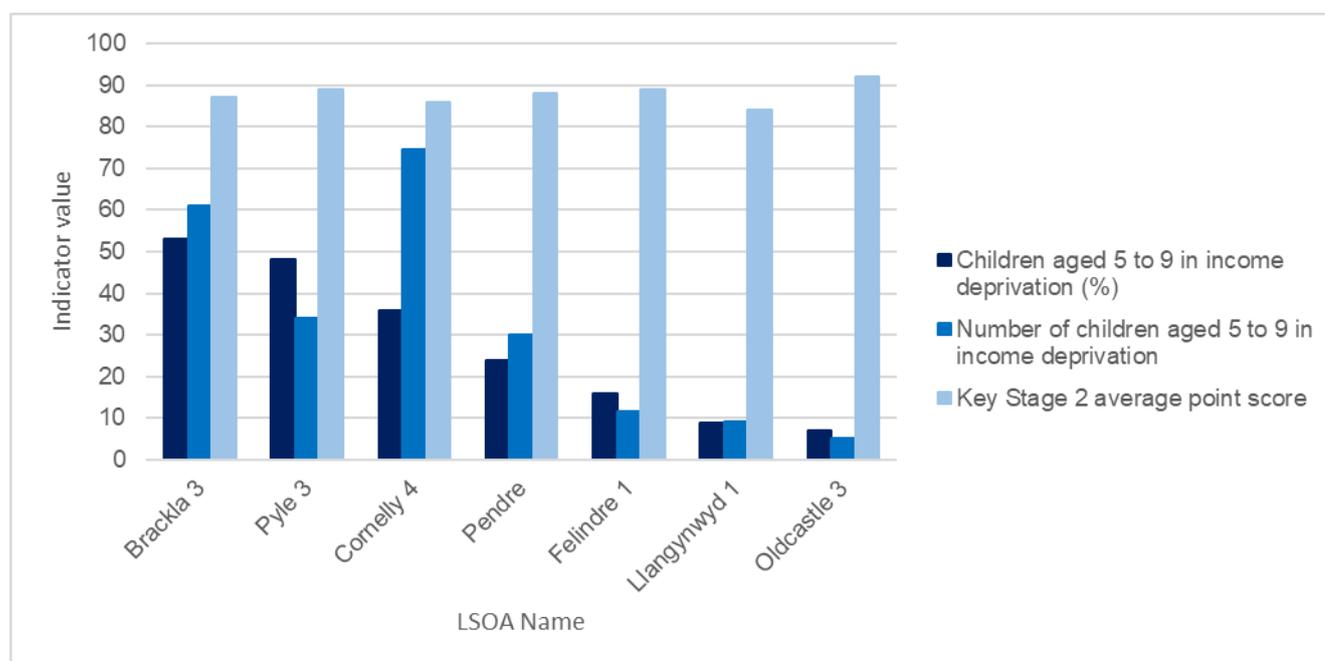
1. W01001012
2. W01001050
3. W01001004
4. W01001002
5. W01001038
6. W01001037

7. W01000981

After carefully considering which indicators may be relevant to this specific purpose, we can use StatsWales to download a dataset which we can manipulate into the following table:

LSOA Name	LSOA Code	Local Authority	Children aged 5 to 9 in income deprivation (%)	Number of children aged 5 to 9 in income deprivation	Key Stage 2 average point score
Brackla 3	W01000981	Bridgend	53	60.95	87
Cornelly 4	W01001002	Bridgend	36	74.52	86
Felindre 1	W01001004	Bridgend	16	11.68	89
Llangynwyd 1	W01001012	Bridgend	9	9.27	84
Oldcastle 3	W01001037	Bridgend	7	5.11	92
Pendre	W01001038	Bridgend	24	30	88
Pyle 3	W01001050	Bridgend	48	34.08	89

We can plot these results in a bar chart for easy analysis:



This analysis shows that Brackla 3 and Pyle 3 have the highest concentration of 0 to 5 year olds in income deprivation, whilst Cornelly 4 and Brackla 3 has the highest number of children aged 5 to 9 in income deprivation. Llangynwyd 1 has the lowest KS2 average point score (educational attainment level), followed by Cornelly 4 and Brackla 3.

This analysis helps to identify which clubs are in areas with higher levels of deprivation of relevance. In this fictional example, and on the basis that they are in the two most deprived areas for 2 out of 3 indicators, this may have led to allocating the additional grant to clubs in Brackla 3 and Cornelly 4.

In this example, it is also worth taking into consideration that the analysis uses the location of the club rather than the residential address of attendees. Therefore, in this scenario, WIMD can be used as a guide, but could be supplemented with local knowledge.

11 Future plans

11.1 Indicator data

The latest edition of WIMD was published on 27 November 2019. Some indicator data split by age was published in January 2020. In 2021 we will publish GP recorded chronic conditions and mental health conditions split by age.

We did not update any WIMD indicators in 2020 for the reasons outlined in our WIMD indicator data update (2020) published on gov.wales.

We have now reviewed the potential for updating indicator data during 2021. Taking into consideration the limited usefulness of possible updates, other uncertainties and resource implications (for data suppliers and for Welsh Government), we will not update any indicator data in 2021. We will continue publishing 2019-based outputs, offer WIMD awareness sessions, and undertake longer-term development work on key indicators ahead of the next index update (timing not yet determined).

11.2 Next edition of WIMD

The next index will follow the release of 2021 Census small area data, but the exact timing is yet to be determined.

We welcome feedback on all WIMD products, including the range of indicator datasets made available. You can contact us at stats.inclusion@gov.wales.

12 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
- 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

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Annex

Table 1: List of 2019 indicators - Comparability over time and age breakdowns

Domain	Indicator Name (2019)	2008	2011	2012	2013	2014	2015	2016	2017	2019	Age Breakdown (2014 onwards)	Comparability Over Time	
Income	Income Deprivation (Percentage Of Population)	Yes	0-4; 5-9; 10-15; 16-18; 19-24; 25-34; 35-44; 45-54; 55-64; 65-74; Over 75. Also 0-15, 0-18, 16-64, 65+.	Broadly comparable - affected by changes to welfare system. Same reference period used for 2017 and 2019 editions									
Employment	Employment Related Benefits (Percentage Of Working-Age Population)	Yes	16-18; 19-24; 25-29; 30-34; 35-39; 40-44; 45-49; 50-54; 55-59; 60-64	Broadly comparable - affected by changes to welfare system. Same reference period used for 2017 and 2019 editions									
Health	GP-recorded Chronic Condition (Indirectly Age-Sex Standardised) (Rate Per 100)	No	Yes		Not yet applicable								
	Limiting long-term Illness (Indirectly Age-Sex Standardised) (Rate per 100)	Yes	Yes	No	No	Yes	No	No	No	Yes	0-4, 5-9, 10-15, 16-18; 19-24 then 5 year age bands up to 85+. Also 0-15, 0-18, 16-64, 65+.	2019 data same as 2014	
	Premature Death Rate (Indirectly Age-Sex Standardised) (Rate per 100,000)	No	Yes		Not yet applicable								
	GP-recorded Mental Health Condition (Indirectly Age-Sex Standardised) (Rate Per 100)	No	Yes		Not yet applicable								
	Cancer Incidence (Indirectly Age-Sex Standardised) (Number Per 100,000)	Yes		Not strictly comparable									
	Low Weight Single Births (Live Births Less Than 2.5 Kg) (Percentage)	Yes		Comparable									
	Children aged 4-5 who are Obese (%)	No	Yes		Not yet applicable								
Education	Foundation Phase Average Point Score	No	Yes		Not yet applicable								
	Key Stage 2 Average Points Score (Points Score)	Yes		Comparable									
	Key Stage 4 Average Point Score	No	Yes		Not yet applicable								
	Repeat Absenteeism (%)	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Primary and Secondary	Comparable	
	Proportion of Key Stage 4 Leavers entering Higher Education (%)	No	Yes		Not yet applicable								
	Adults Aged 25-64 With No Qualifications (%)	Yes	Yes	No	No	Yes	No	No	No	No	Yes		2019 data same as 2014

Table 1: List of 2019 indicators - Comparability over time and age breakdowns (continued)

Domain	Indicator Name (2019)	2008	2011	2012	2013	2014	2015	2016	2017	2019	Age Breakdown (2014 onwards)	Comparability Over Time
Access to Services	Unavailability of Broadband at 30Mb/s (%)	No	Yes		Not yet applicable							
	Average return public & private travel time to pharmacy (minutes)	No	No	No	No	Yes	No	No	No	Yes		Not strictly comparable
	Average return public & private travel time to Food Shop (minutes)	No	No	No	No	Yes	No	No	No	Yes		Not strictly comparable
	Average return public & private travel time to GP Surgery (minutes)	No	No	No	No	Yes	No	No	No	Yes		Not strictly comparable
	Average return public & private travel time to Post Office (minutes)	No	No	No	No	Yes	No	No	No	Yes		Not strictly comparable
	Average return public & private travel time to Primary School (minutes)	No	No	No	No	Yes	No	No	No	Yes		Not strictly comparable
	Average return public & private travel time to Public Library (minutes)	No	No	No	No	Yes	No	No	No	Yes		Not strictly comparable
	Average return public & private travel time to Sports Facility (minutes)	No	No	No	No	Yes	No	No	No	Yes		Not strictly comparable
	Average return public & private travel time to Secondary School (minutes)	No	No	No	No	Yes	No	No	No	Yes		Not strictly comparable
Average return private travel time to petrol Station (private transport only) (minutes)	No	No	No	No	Yes	No	No	No	Yes		Not strictly comparable	
Housing	People Living In Overcrowded Households (Bedrooms Measure) (%)	Yes	Yes	No	No	Yes	No	No	No	Yes	0-4, 5-9, 10-15, 16-18; 19-24 then 5 year age bands up to 85+. Also 0-15, 0-18, 16-64, 65+.	2019 data same as 2014
	Likelihood of Poor Quality Housing (%)	No	Yes		Not yet applicable							
	Likelihood of housing containing serious hazards (%)	No	Yes		Not yet applicable							
	Likelihood of housing being in disrepair (%)	No	Yes		Not yet applicable							
Community Safety	Police recorded criminal damage (rate per 100)	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes		Broadly Comparable
	Police recorded violent crime (rate per 100)	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes		Broadly Comparable
	Anti-Social Behaviour (rate per 100)	No	No	No	No	Yes	No	Yes	No	Yes		Broadly Comparable
	Police recorded burglary (rate per 100)	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes		Broadly Comparable
	Police recorded theft (rate per 100)	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes		Broadly Comparable
	Fire incidences (rate per 100)	Yes		Broadly Comparable								
Physical Environment	Population Weighted Average Concentration Value for Nitrogen Dioxide	No	Yes		Not yet applicable							
	Population Weighted Average Concentration Value for Particulates < 10 µm	No	Yes		Not yet applicable							
	Population Weighted Average Concentration Value for Particulates < 2.5 µm	No	Yes		Not yet applicable							
	Households at risk of flooding score	Yes	Yes	No	No	Yes	No	No	No	Yes		Comparable
	Proximity to accessible natural green space score (% of households)	No	Yes		Not yet applicable							
	Ambient Green Space NDVI Score	No	Yes		Not yet applicable							

Table 2: List of WIMD 2019 indicators by aggregations

Table 2: List of WIMD 2019 indicators by aggregation	Aggregation Level									
	LSOA	MSOA	LA	ACA	EAP	LHB	RU	DECILE	BUA	WALES
Income										
People in income deprivation (%)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Employment										
Working-age people in employment deprivation (%)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Health										
GP-recorded chronic condition (rate per 100)										
Limiting long-term illness (rate per 100)										
Premature death (rate per 100,000)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GP-recorded mental health condition (rate per 100)										
Cancer incidence (rate per 100,000)										
Low birth weight (live single births less than 2.5kg) (%)										
Children aged 4-5 who are obese (%)		✓	✓	✓	✓	✓	✓	✓		✓
Education										
Foundation Phase Average Point Score										
Key Stage 2 average point score										
Key Stage 4 average point score	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Repeat Absenteeism (%)										
Key Stage 4 leavers entering Higher Education (%)										
Adults aged 25-64 with no qualifications (%)										
Access to Services										
Unavailability of Broadband at 30Mb/s	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Average return public & private travel time to Pharmacy (minutes)										
Average return public & private travel time to Food Shop (minutes)										
Average return public & private travel time to GP Surgery (minutes)										
Average return public & private travel time to Post Office (minutes)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Average return public & private travel time to Primary School (minutes)										
Average return public & private travel time to Public Library (minutes)										
Average return public travel time to Sports Facility (minutes)										
Average return public & private travel time to Secondary School (minutes)										
Average return private travel time to Petrol Station (private transport only)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 2: List of WIMD 2019 indicators by aggregations (continued)

Table 2: List of WIMD 2019 indicators by aggregation (continued)	Aggregation Level									
	LSOA	MSOA	LA	ACA	EAP	LHB	RU	DECILE	BUA	WALES
Housing										
People in overcrowded households (%)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Likelihood of poor quality housing (%)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Likelihood of housing containing serious hazards (%)										
Likelihood of housing being in disrepair (%)										
Community Safety										
Police Recorded Criminal Damage (Rate Per 100)										
Police Recorded Violent Crime (Rate Per 100)										
Anti-Social Behaviour (rate per 100)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Police Recorded Burglary (Rate Per 100)										
Police recorded theft (rate per 100)										
Fire incidences (rate per 100)										
Physical Environment										
Population Weighted Average Concentration Value for Nitrogen Dioxide										
Population Weighted Average Concentration Value for Particulates < 10 µm	✓									
Population Weighted Average Concentration Value for Particulates < 2.5 µm										
Households at risk of flooding score										
Proximity to accessible natural green space score (% of households)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ambient Green Space NDVI Score	✓									

Key: **LSOA** - Lower Super Output Area; **MSOA** - Middle Super Output Area; **LA** - Local Authority; **RU** - Rural/Urban Classification; **DECILE** - Deprivation Tenths; **BUA** - Built Up Area; **ACA** - Assembly Constituency Areas; **EAP** - Economic Action Plan Area; **LHB** - Local Health Board.

Table 3: Reference periods for WIMD indicator data

The table below gives an overview of the reference periods for each year of WIMD indicator data published. For further details see the technical reports for WIMD [2008](#), [2011](#), [2014](#), and [2019](#).

Domain	Indicator	2008	2011	2012	2013	2014	2015	2016	2017	2019
Income	Income-related benefit claimants and their dependents	2006/07	2009/10	2010/11	2011/12	2012/13	2013/14	2015-16	2016-17	2016-17
	Adults and children in families receiving Tax Credits	Aug 2005	Aug 2009	Aug 2010	Aug 2011	Aug 2012	Aug 2013	Aug 2014	Aug 2015	Aug 2015
	Supported Asylum Seekers	Jun 2007	Dec 2010	Dec 2011	Aug 2012	Sep 2014	Jun 2015	Jul 2016	Jun 2017	Jun 2017
	People on Universal Credit							2015-16	2016-17	2016-17
Employment	Claimants of Unemployment-related benefits / JSA	2006/07	2009/10	2010/11	2011/12	2012/13	2013/14	2015-16	2016-17	2016-17
	Incapacity Benefit/Severe Disablement Allowance	2006/07	2009/10	2010/11	2011/12	2012/13	2013/14	2015-16	2016-17	2016-17
	New Deal for Young People and Intensive Activity Period	2005	2009/10	2010/11	2011/12					
	New Deal for Lone Parents	2005	2009/10	2010/11	2011/12					
	Claimants of Employment and Support Allowance		2009/10	2010/11	2011/12	2012/13	2013/14	2015-16	2016-17	2016-17
	People on Universal Credit							2015-16	2016-17	2016-17
Health	GP-recorded chronic conditions									2019
	Limiting long-term illness	2001	2001			2011				2011
	Standardised all-cause death rate	1997 to 2006	2001 to 2009	2002 to 2011	2003 to 2012	2004 to 2013	2005 to 2014	2006 to 2015	2007 to 2016	
	Premature death rate (deaths of those under the age of 75)									2009 to 2018
	GP-recorded mental health conditions									2019
	Standardised cancer incidence rate	1996 to 2005	2000 to 2009	2001 to 2010	2002 to 2011	2003 to 2012	2004 to 2013	2005 to 2014	2006 to 2015	2007 to 2016
	Singleton low birth weights	1997 to 2006	2001 to 2009	2002 to 2011	2003 to 2012	2004 to 2013	2005 to 2014	2006 to 2015	2007 to 2016	2009 to 2018
Children aged 4-5 who are obese									2012/13 to 2017/18	
Education	Foundation Phase APS									2015/16 to 2017/18
	KS2 APS	2005, 2006, 2007	2008, 2009, 2010	2009, 2010, 2011	2010, 2011, 2012	2010/11 to 2012/13	2011/12 to 2013/14	2012/13 to 2014/15	2013/14 to 2015/16	2015/16 to 2017/18
	KS3 APS	2005, 2006, 2007	2008, 2009, 2010	2009, 2010, 2011	2010, 2011, 2012					
	KS4 APS	2005, 2006	2009, 2010	2009, 2010, 2011	2010, 2011, 2012					2015/16 to 2017/18
	KS4i2i					2010/11 to 2012/13	2011/12 to 2013/14	2012/13 to 2014/15	2013/14 to 2015/16	
	KS4 CPS					2010/11 to 2012/13	2011/12 to 2013/14	2012/13 to 2014/15	2013/14 to 2015/16	
	Primary school absence rates	2005/06 to 2006/07	2008/09 to 2009/10	2008/09 to 2010/11	2009/10 to 2011/12					
	Secondary school absence rates	2004/05 to 2006/07	2008/09 to 2009/10	2008/09 to 2010/11	2009/10 to 2011/12					
	Proportion of people not entering HE aged 18-19	1998 to 2005	1998 to 2005			2005/06 to 2010/11				
	Repeat Absenteeism Rate					2010/11 to 2012/13	2011/12 to 2013/14	2012/13 to 2014/15	2013/14 to 2015/16	2015/16 to 2017/18
	Proportion of KS4 leavers entering Higher Education									2011/12 to 2014/15
	Percentage of adults aged 25-64 with no qualifications	2001	2001			2011				2011

Where a - is used it denotes a financial year e.g. 2015-16 denotes the financial year from April 2015 to March 2016

Where a / is used it denotes an academic year e.g. 2015/16 denotes the academic year from September 2015 to July 2016

Some of the data that uses a / is from an approximation of an academic year. This occurs when the most recent data available was from the end of one year and the start of another.

Indicators that were not included in WIMD 2019 are shaded in grey

Table 3: Reference periods for WIMD indicator data (continued)

The table below gives an overview of the reference periods for each year of WIMD indicator data published. For further details see the technical reports for WIMD [2008](#), [2011](#), [2014](#), and [2019](#).

Domain	Indicator	2008	2011	2012	2013	2014	2015	2016	2017	2019
Access to Services	Pharmacy - public transport					2013/15				2018/19
	Food shop - public transport	2007/08	2007/08			2013/14				2018/19
	GP surgery - public transport	2007/08	2007/08			2013/14				2018/19
	Post office - public transport	2007/08	2007/08			2013/14				2018/19
	Primary school - public transport	2007/08	2007/08			2013/14				2018/19
	Public library - public transport	2007/08	2007/08			2013/14				2018/19
	Leisure centre - public transport	2007/08	2007/08			2013/14				
	Sports Facility - public transport									2018/19
	NHS dentist - public transport	2007/08	2007/08							
	Secondary school - public transport	2007/08	2007/08			2013/14				2018/19
	Transport nodes - public transport	2007/08	2007/08							
	Pharmacy - private transport					2013/15				2018/19
	Food shop - private transport					2013/14				2018/19
	GP surgery - private transport					2013/14				2018/19
	Post office - private transport					2013/14				2018/19
	Primary school - private transport					2013/14				2018/19
	Public library - private transport					2013/14				2018/19
	Leisure centre - private transport					2013/14				
	Sports Facility - private transport									2018/19
	Secondary school - private transport					2013/14				2018/19
Petrol station - private transport					2013/14				2018/19	
% Unavailability of Broadband at 30Mb/s										2019
Housing	Lack of central heating	2001	2001			2011				
	Overcrowding (excluding student households)	2001	2001			2011				2011
	Likelihood of poor quality housing									2017/18
Community Safety	Percentage of Adult Offenders	2005-06 to 2006-07	2008-09 to 2009-10	2009 to 2011						
	Police recorded criminal damage		2008-09 to 2009-10	2009 to 2011		2012-13 to 2013-14		2014-15 to 2015-16		2017-18 to 2018-19
	Police recorded violent crime		2009-10	2009 to 2011		2012-13 to 2013-14		2014-15 to 2015-16		2017-18 to 2018-19
	Anti Social Behaviour					Jul12 to Jun14		2014-15 to 2015-16		2017-18 to 2018-19
	Police recorded burglary		2008-09 to 2009-10	2009 to 2011	2010 to 2012	2012-13 to 2013-14		2014-15 to 2015-16		2017-18 to 2018-19
	Police recorded theft		2008-09 to 2009-10	2009 to 2011		2012-13 to 2013-14		2014-15 to 2015-16		2017-18 to 2018-19
	Fire Incidence	2005 to 2006	2009-10 to 2010-11	2010-11 to 2011-12	2011-12 to 2012-13	2012-13 to 2013-14	2013-14 to 2014-15	2014-15 to 2015-16	2015-16 to 2016-17	2017-18 to 2018-19
	Percentage of youth offenders	2005-06 to 2006-07	2008-09 to 2009-10							
Police Force Recorded Crime	2005-06 to 2006-07									
Physical Environment	Air quality - concentrations	2006	2008	2009	2010	2012				
	Air emissions	2005	2008	2009	2010	2012				
	Population Weighted Average Concentration Value – NO ₂									2017
	Population Weighted Average Concentration Value – PM ₁₀									2017
	Population Weighted Average Concentration Value – PM _{2.5}									2017
	Flood risk	2007	2009			2014				2017
	Proximity to waste disposal and industrial sites	2007	2010			2014				
Proximity to accessible natural green space									2019	
Ambient green space score									2019	

Where a - is used it denotes a financial year e.g. 2015-16 denotes the financial year from April 2015 to March 2016

Where a / is used it denotes an academic year e.g. 2015/16 denotes the academic year from September 2015 to July 2016

Some of the data that uses a / is from an approximation of an academic year. This occurs when the most recent data available was from the end of one year and the start of another.

Indicators that were not included in WIMD 2019 are shaded in grey

Table 4: Disclosure control applied to data for WIMD 2019

Domain	Indicator	WIMD 2019	
		Applied	Method
Income	People in income deprivation (%)	At Source (Department for Work and Pensions; DWP)	Suppression; rounding applied by Welsh Government (WG) - nearest whole number
Employment	Working-age people in employment deprivation (%)	At Source (DWP)	Suppression; rounding applied by WG - nearest whole number
Health	GP-recorded chronic condition (rate per 100)	By WG	Rounded to 1 decimal place
	Limiting long-term illness (rate per 100)	At Source (Office for National Statistics; ONS)	Rounding applied by WG - 1 decimal place
	Premature death (rate per 100,000)	By WG	Rounded to 1 decimal place
	GP-recorded mental health condition (rate per 100)	By WG	Rounded to 1 decimal place
	Cancer incidence (rate per 100,000)	By WG	Suppressed if total number of cancer incidences less than 5; rounded to 1 decimal place
	Low birth weight (live single births less than 2.5kg) (%)	By WG	Rounded to 1 decimal place
	Children aged 4-5 who are obese (%)	At Source (PHW)	Suppressed at LSOA and BUA level where some numerators were less than 5 children; rounded to 1 decimal place
Education	Foundation Phase Average Point Score	By WG	Suppressed if denominator less than 5 pupils; rounded to whole number
	Key Stage 2 average point score	By WG	Suppressed if denominator less than 5 pupils; rounded to whole number
	Key Stage 4 average point score	By WG	Suppressed if denominator less than 5 pupils; rounded to whole number
	Repeat Absenteeism (%)	By WG	Suppressed if denominator less than 5 pupils; rounded to 1 decimal place
	Key Stage 4 leavers entering Higher Education (%)	By WG	Suppressed if denominator less than 5, rounded to 1 decimal place
	Adults aged 25-64 with no qualifications (%)	At Source (ONS)	Rounding applied by WG - 1 decimal place
Access to services	% Unavailability of broadband at 30Mb/s	By WG	Rounded to 1 decimal place
	Average return travel time to a pharmacy (public and private transport, minutes)	By WG	Rounded to nearest minute
	Average return travel time to a food shop (public and private transport, minutes)	By WG	Rounded to nearest minute
	Average return travel time to a GP surgery (public and private transport, minutes)	By WG	Rounded to nearest minute
	Average return travel time to a post office (public and private transport, minutes)	By WG	Rounded to nearest minute
	Average return travel time to a primary school (public and private transport, minutes)	By WG	Rounded to nearest minute
	Average return travel time to a public library (public and private transport, minutes)	By WG	Rounded to nearest minute
	Average return travel time to a sports facility (public and private transport, minutes)	By WG	Rounded to nearest minute
	Average return travel time to a secondary school (public and private transport, minutes)	By WG	Rounded to nearest minute
	Average private return travel time to a petrol station (minutes)	By WG	Rounded to nearest minute

Table 4: Disclosure control applied to data for WIMD 2019 (continued)

Domain	Indicator	WIMD 2019	
		Applied	Method
Housing	People in overcrowded households (%)	At Source (ONS)	Rounding applied by WG - 2 decimal places
	Likelihood of poor quality housing (%)	By WG	Rounded to 1 decimal place
	Likelihood of housing containing serious hazards (%)	By WG	Rounded to 1 decimal place
	Likelihood of housing being in disrepair (%)	By WG	Rounded to 1 decimal place
Community Safety	Police recorded criminal damage (rate per 100)	By WG	Suppressed if less than 5 incidents; rounded to 2 decimal places
	Police recorded violent crime (rate per 100)	By WG	Suppressed if less than 5 incidents; rounded to 2 decimal places
	Anti-Social Behaviour (rate per 100)	By WG	Suppressed if less than 5 incidents; rounded to 2 decimal places
	Police recorded burglary (rate per 100)	By WG	Suppressed if less than 5 incidents; rounded to 2 decimal places
	Police recorded theft (rate per 100)	By WG	Suppressed if less than 5 incidents; rounded to 2 decimal places
	Fire incidences (rate per 100)	By WG	Suppressed if less than 5 incidents; rounded to 2 decimal places
Physical Environment	Population Weighted Average Concentration Value for Nitrogen Dioxide	By WG	Rounded to 1 decimal place
	Population Weighted Average Concentration Value for Particulates < 10 µm	By WG	Rounded to 1 decimal place
	Population Weighted Average Concentration Value for Particulates < 2.5 µm	By WG	Rounded to 1 decimal place
	Households at risk of flooding score	By WG	Rounded to 1 decimal place
	Proximity to accessible natural green space score (% of households)	By WG	Rounded to 1 decimal place
	Ambient Green Space NDVI Score	By WG	Rounded to 3 decimal places

Table 5. Summary of indicator data changes between WIMD 2014 and WIMD 2019

Domain / Indicator	WIMD 2014	WIMD 2019
Income		
People in income deprivation (%)	Yes	Yes
Employment		
Working-age people in employment deprivation (%)	Yes	Yes
Health		
GP-recorded chronic condition (rate per 100)	No	Yes
Limiting long-term illness (rate per 100)	Yes	Yes
Premature death (rate per 100,000)	No	Yes
GP-recorded mental health condition (rate per 100)	No	Yes
Cancer incidence (rate per 100,000)	Yes	Yes
Low birth weight (live single births less than 2.5kg) (%)	Yes	Yes
Children aged 4-5 who are obese (%)	No	Yes
All-cause death rate	Yes	No
Education		
Foundation Phase Average Point Score	No	Yes
Key Stage 2 average point score	Yes	Yes
Key Stage 4 average point score	No	Yes
Key Stage 4 Level 2 inclusive	Yes	No
Key Stage 4 capped point score	Yes	No
Repeat Absenteeism (%)	Yes	Yes
Key Stage 4 leavers entering Higher Education (%)	No	Yes
Proportion of people not entering Higher Education aged 18-19	Yes	No
Number of Adults aged 25-64 with No Qualifications	Yes	Yes

Table 5. Summary of indicator data changes between WIMD 2014 and WIMD 2019 (continued)

Domain / Indicator	WIMD 2014	WIMD 2019
Access To services		
% Unavailability of broadband at 30Mb/s	No	Yes
Average return travel time to a pharmacy (public and private transport, minutes)	Yes	Yes
Average return travel time to a food shop (public and private transport, minutes)	Yes	Yes
Average return travel time to a GP surgery (public and private transport, minutes)	Yes	Yes
Average return travel time to a post office (public and private transport, minutes)	Yes	Yes
Average return travel time to a primary school (public and private transport, minutes)	Yes	Yes
Average return travel time to a public library (public and private transport, minutes)	Yes	Yes
Average return travel time to a sports facility (public and private transport, minutes)	Yes	Yes
Average return travel time to a secondary school (public and private transport, minutes)	Yes	Yes
Average private return travel time to a petrol station (minutes)	Yes	Yes
Housing		
People in overcrowded households (%)	Yes	Yes
Likelihood of poor quality housing as measured through hazards and those in a state of disrepair	No	Yes
Lack of central heating (2011 Census)	Yes	No
Physical Environment		
Population Weighted Average Concentration Value for Nitrogen Dioxide	No	Yes
Population Weighted Average Concentration Value for Particulates < 10 µm	No	Yes
Population Weighted Average Concentration Value for Particulates < 2.5 µm	No	Yes
Air Quality – Air Emissions	Yes	No
Air Quality – Air Concentrations	Yes	No
Households at risk of flooding score	Yes	Yes
Proximity to accessible natural green space score (% of households)	No	Yes
Ambient Green Space NDVI Score	No	Yes
Proximity to waste disposal and industrial sites	Yes	No
Community Safety		
Police recorded criminal damage (rate per 100)	Yes	Yes
Police recorded violent crime (rate per 100)	Yes	Yes
Anti-Social Behaviour (rate per 100)	Yes	Yes
Police recorded burglary (rate per 100)	Yes	Yes
Police recorded theft (rate per 100)	Yes	Yes
Fire incidences (rate per 100)	Yes	Yes

Table 6. WIMD 2019 Denominators

Domain	Indicators	Indicator Description	Denominator 1	Denominator 1 Link	Denominator 2
Income	1	Percentage of people in income deprivation (in receipt of income related-benefits and tax credits)	Mid-2016 Small Area Population Estimates (SAPE), Office for National Statistics (ONS)	Population estimates by output areas - Office for National Statistics (ons.gov.uk)	Minus prisoner population as at mid-2016 for the four LSOAs with prisons in Wales, Ministry of Justice via the Office for National Statistics (ONS).
Employment	1	Percentage of working-age population in employment deprivation (in receipt of Employment related benefits)	Working-age population estimates from mid-2016 Small Area Population Estimates (SAPE), Office for National Statistics (ONS)	Population estimates by output areas - Office for National Statistics (ons.gov.uk)	Minus prisoner population as at mid-2016 for the four LSOAs with prisons in Wales, Ministry of Justice via the Office for National Statistics (ONS).
Health	1	People with a GP-recorded diagnosis of a chronic condition	Mid-2018 Small Area Population Estimates (SAPE), Office for National Statistics (ONS)	Population estimates by output areas - Office for National Statistics (ons.gov.uk)	Minus prisoner population as at mid-2018, Ministry of Justice via the Office for National Statistics (ONS).
	2	Limiting LongTerm Illness	2011 Census population estimates, Office for National Statistics (ONS)	2011 Census - Office for National Statistics (ons.gov.uk)	N/A
	3	Premature Death Rate (deaths of those under the age of 75)	Mid 2008-2017 average of Small Area Population Estimates (SAPE), Office for National Statistics (ONS).	Estimates of the population - Office for National Statistics (ons.gov.uk)	N/A
	4	People with a GP-recorded diagnosis of a mental health condition	Mid-2018 Small Area Population Estimates (SAPE), Office for National Statistics (ONS)	Population estimates by output areas - Office for National Statistics (ons.gov.uk)	Minus prisoner population as at 2018, Ministry of Justice via the Office for National

					Statistics (ONS).
	5	Cancer Incidence	Mid 2007-2016 average of Small Area Population Estimates (SAPE), Office for National Statistics (ONS).	Estimates of the population - Office for National Statistics (ons.gov.uk)	N/A
	6	Low birth weight	Number of singleton live births, 2009-2018 average, Office for National Statistics (ONS).	Not published at small area level	N/A
	7	Children aged 4- 5 who are obese	Number of children aged 4-5, 2012-13 to 2017-18, Child Measurement Programme, Public Health Wales.	Not published at small area level	N/A
Education	1	Foundation Phase Average Point Score	Total number of pupils in National Curriculum Year Group 2. Academic Years 2015/16, 2016/17 and 2017/18, Welsh Government.	Not published at small area level	N/A
	2	Key Stage 2 Average Point Score	Total number of pupils in National Curriculum Year Group 6. Academic Years 2015/16, 2016/17 and 2017/18, Welsh Government.	Not published at small area level	N/A
	3	Key Stage 4 Average Point Score for Core Subjects	Total number of pupils in National Curriculum Year Group 11. Academic Years 2015/16, 2016/17 and 2017/18, Welsh Government.	Not published at small area level	N/A
	4	Repeat Absenteeism	Total numbers of primary and secondary school	Not published at small area level	N/A

			pupils. Academic Years 2015/16, 2016/17 and 2017/18, Welsh Government.		
	5	Proportion of Key Stage 4 leavers entering Higher Education	Total number of pupils in National Curriculum Year Group 11. Academic Years 2011/12 to 2014/15, Welsh Government.	Not published at small area level	N/A
	6	Number of adults aged 25-64 with No Qualifications	Total population aged 25-64, 2011 Census, Office for National Statistics (ONS).	2011 Census - Office for National Statistics (ons.gov.uk)	N/A
Access to Services	1	Physical access – travel times to key services	Number of residential dwellings, Ordnance Survey (OS) AddressBase® Plus dataset (Epoch 66).	Not published at small area level	N/A
	2	% Unavailability of broadband at 30Mb/s	Number of premises (homes and small businesses), Ordnance Survey (OS) AddressBase® Premium dataset (August 2018, Epoch 60).	Not published at small area level	N/A
Housing	1	Percentage of people living in overcrowded households (bedrooms measure)	Number of people living in households, 2011 Census, Office for National Statistics (ONS).	2011 Census - Office for National Statistics (ons.gov.uk)	N/A
	2	Likelihood of poor quality housing (being in disrepair or containing serious hazards)	Numbers of residential dwellings, Ordnance Survey (OS) AddressBase® Plus dataset.	Not published at small area level	N/A

Community Safety	1	Police Recorded Burglary	Number of residential and business dwellings (average of 2018 and 2019), Ordnance Survey (OS) AddressBase® dataset.	Not published at small area level	N/A
	2	Police Recorded Theft	Total resident population, Mid-2017 Small Area Population Estimates (SAPE), Office for National Statistics (ONS)	Population estimates by output areas- Office for National Statistics (ons.gov.uk)	Minus prisoner population as at 2017, Ministry of Justice via the Office for National Statistics (ONS).
	3	Police Recorded Criminal Damage	Total resident population, Mid-2017 Small Area Population Estimates (SAPE), Office for National Statistics (ONS)	Population estimates by output areas- Office for National Statistics (ons.gov.uk)	Minus prisoner population as at 2017, Ministry of Justice via the Office for National Statistics (ONS).
	4	Police Recorded Violent Crime	Total resident population, Mid-2017 Small Area Population Estimates (SAPE), Office for National Statistics (ONS)	Population estimates by output areas- Office for National Statistics (ons.gov.uk)	Minus prisoner population as at 2017, Ministry of Justice via the Office for National Statistics (ONS).
	5	Police Recorded Anti-Social Behaviour	Total resident population, Mid-2017 Small Area Population Estimates (SAPE), Office for National Statistics (ONS)	Population estimates by output areas- Office for National Statistics (ons.gov.uk)	Minus prisoner population as at 2017, Ministry of Justice via the Office for National Statistics (ONS).
	6	Fire Incidences	Total resident population, Mid-2017 Small Area Population Estimates (SAPE), Office	Population estimates by output areas- Office for National Statistics (ons.gov.uk)	Minus prisoner population as at 2017, Ministry of Justice via the Office for National

			for National Statistics (ONS)		Statistics (ONS).
Physical Environment	1	Population weighted average concentration values of Nitrogen dioxide (NO ₂)	N/A	N/A	N/A
	2	Population weighted average concentration values of Particulates < 10 µm (PM ₁₀)	N/A	N/A	N/A
	3	Gwerthoedd crynodiad cyfartalog wedi'i bwysoli yn ôl y boblogaeth ar gyfer Gronynnau < 2.5 µm (PM _{2.5})	N/A	N/A	N/A
	4	Perygl llifogydd	N/A	N/A	N/A
	5	Proximity to Accessible, Natural Green Space	Number of residential dwellings, Ordnance Survey (OS) AddressBase® Plus dataset.	Not published at small area level	N/A
	6	Ambient Green Space Score	N/A	N/A	N/A