Package 'IMD'

August 10, 2021

Type Package

Title Index of Multiple Deprivation Data for the UK

Version 1.0.2

Description Index of Multiple Deprivation for UK nations at various
geographical levels. In England, deprivation data is for Lower Layer Super
Output Areas, Middle Layer Super Output Areas, Wards, and Local Authorities
based on data from <https:
//www.gov.uk/government/statistics/english-indices-of-deprivation-2019>.
In Wales, deprivation data is for Lower Layer Super Output Areas, Middle
Layer Super Output Areas, Wards, and Local Authorities based on data from
<https:
//gov.wales/welsh-index-multiple-deprivation-full-index-update-ranks-2019>.
In Scotland, deprivation data is for Data Zones, Intermediate Zones, and
Council Areas based on data from <https://simd.scot>. In Northern Ireland,
deprivation data is for Super Output Areas and Local Government Districts
based on data from <https://www.nisra.gov.uk/statistics/deprivation/
northern-ireland-multiple-deprivation-measure-2017-nimdm2017>.
The 'IMD' package also provides the composite UK index developed by
<https://github.com/mysociety/composite_uk_imd>.

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URL https://github.com/matthewgthomas/IMD

BugReports https://github.com/matthewgthomas/IMD/issues

Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

Imports devtools, rlang, dplyr, tidyr, readr, tibble, janitor, Hmisc,
httr, readxl, readODS

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

Depends R (>= 4.1.0)

NeedsCompilation no

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Repository CRAN

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R topics documented:

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aggregate_scores   *Aggregate deprivation scores*

Description

Aggregate deprivation scores into higher-level geographies, calculating: - proportion of highly deprived areas - extent (proportion of the local population that live in the most deprived areas) - population-weighted average score

Usage

```
aggregate_scores(
  data,
  score_col,
  rank_col,
  decile_col,
  higher_level_geography,
```

```
    population
)
```

Arguments

`data`	Data frame containing a variable to be aggregated, lower level geography population estimates, and a higher level geographical grouping variable
`score_col`	Variable containing deprivation scores
`rank_col`	Variable containing deprivation ranks
`decile_col`	Variable containing deprivation deciles
`higher_level_geography`	
	Name of the variable in the data frame containing the higher level geography names/codes
`population`	Name of the variable in the data frame containing the population estimates of the lower level geography

Value

A tibble containing population-weighted average scores, proportions of highly deprived areas, and the extent for the higher-level geography.

`calculate_extent`	*Extent*

Description

`extent` calculates 'extent' scores when aggregating up small areas.

Usage

```
calculate_extent(data, var, higher_level_geography, population)
```

Arguments

`data`	Data frame containing a variable to be aggregated, lower level geography population estimates, and a higher level geographical grouping variable
`var`	Name of the variable in the data frame containing the variable to be aggregated (e.g. rank) for the lower level geography
`higher_level_geography`	
	Name of the variable in the data frame containing the higher level geography names/codes
`population`	Name of the variable in the data frame containing the population estimates of the lower level geography

Details

"Extent" is the proportion of the local population that live in areas classified as among the most deprived in the higher geography. The calculation of extent is taken from the IMD technical report Appendix N:

"The population living in the most deprived 11 to 30 per cent of Lower-layer Super Output Areas receive a sliding weight, ranging from 0.95 for those in the most deprived eleventh percentile, to 0.05 for those in the most deprived thirtieth percentile. In practice this means that the weight starts from 0.95 in the most deprived eleventh percentile, and then decreases by (0.95-0.05)/19 for each of the subsequent nineteen percentiles until it reaches 0.05 for the most deprived thirtieth percentile, and zero for areas outside the most deprived 30 per cent"

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calculate_pop_weighted_score

Population-weighted scores

Description

Calculate population-weighted scores within small areas.

Usage

```
calculate_pop_weighted_score(data, var, higher_level_geography, population)
```

Arguments

data	Data frame containing a variable to be aggregated, lower level geography population estimates, and a higher level geographical grouping variable
var	Name of the variable in the data frame containing the variable to be aggregated (e.g. rank) for the lower level geography
higher_level_geography	
	Name of the variable in the data frame containing the higher level geography names/codes
population	Name of the variable in the data frame containing the population estimates of the lower level geography

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`calculate_proportion`   *Proportion*

Description

Calculate proportion of small areas in the higher-level geography that are within the 10

Usage

```
calculate_proportion(data, var, higher_level_geography, max_quantile = 1)
```

Arguments

`data`	Data frame containing a variable to be aggregated, lower level geography population estimates, and a higher level geographical grouping variable
`var`	Name of the variable in the data frame containing the variable to be aggregated (e.g. decile) for the lower level geography
`higher_level_geography`	
	Name of the variable in the data frame containing the higher level geography names/codes
`max_quantile`	Get proportion of small areas categorised as less than or equal to 'max_quantile' (default = 1)

`imd_england_lad`   *Index of Multiple Deprivation for Local Authorities in England*

Description

A data set containing aggregated scores and proportions for Local Authorities in England. Note that extents are not available.

Usage

```
imd_england_lad
```

Format

A data frame of class "tbl" with 317 rows and 18 variables:

lad_code LAD code

Score Population-weighted average score

Proportion Proportion of small areas in the nation's most deprived

Extent Extent for overall IMD

Income_Score Population-weighted average score for Income domain

Income_Proportion Proportion of most deprived areas for Income

Employment_Score Population-weighted average score for Employment domain

Employment_Proportion Proportion of most deprived areas for Employment

Education_Score Population-weighted average score for Education domain

Education_Proportion Proportion of most deprived areas for Education

Health_Score Population-weighted average score for Health domain

Health_Proportion Proportion of most deprived areas for Health

Crime_Score Population-weighted average score for Crime domain

Crime_Proportion Proportion of most deprived areas for Crime

Housing_and_Access_Score Population-weighted average score for Housing/Access domain

Housing_and_Access_Proportion Proportion of most deprived areas for Housing/Access domain

Environment_Score Population-weighted average score for Environment domain

Environment_Proportion Proportion of most deprived areas for Environment ...

Source

<https://www.gov.uk/>

| imd_england_lsoa | *Index of Multiple Deprivation for LSOAs in England* |

Description

A data set containing IMD ranks and deciles for Lower Layer Super Output Areas (LSOAs) in England.

Usage

```
imd_england_lsoa
```

Format

A data frame of class "tbl" with 32,844 rows and 17 variables:

lsoa_code LSOA code

IMD_decile IMD decile

Income_decile Income domain decile

Employment_decile Employment domain decile

Education_decile Education domain decile

Health_decile Health and Disability domain decile

Crime_decile Crime domain decile

Housing_and_Access_decile Housing and access to services domain decile

Environment_decile Environment domain decile

IMD_rank IMD rank

Income_rank Income domain rank

Employment_rank Employment domain rank

Education_rank Education domain rank

Health_rank Health domain rank

Crime_rank Crime domain rank

Housing_and_Access_rank Housing and access to services domain rank

Environment_rank Environment domain rank ...

Source

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imd_england_msoa	*Index of Multiple Deprivation for MSOAs in England*

Description

A data set containing population-weighted average scores, proportions and extents for Middle Layer Super Output Areas (LSOAs) in England.

Usage

```
imd_england_msoa
```

Format

A data frame of class "tbl" with 6,791 rows and 25 variables:

msoa_code MSOA code

Score Population-weighted average IMD score

Proportion Proportion of small areas in the nation's most deprived

Extent Extent for overall IMD

Income_Score Population-weighted average score for Income domain

Income_Proportion Proportion of most deprived areas for Income

Income_Extent Extent for Income

Employment_Score Population-weighted average score for Employment domain

Employment_Proportion Proportion of most deprived areas for Employment

Employment_Extent Extent for Employment

Education_Score Population-weighted average score for Education domain

Education_Proportion Proportion of most deprived areas for Education

Education_Extent Extent for Education

Health_Score Population-weighted average score for Health domain

Health_Proportion Proportion of most deprived areas for Health

Health_Extent Extent for Health

Crime_Score Population-weighted average score for Crime domain

Crime_Proportion Proportion of most deprived areas for Crime

Crime_Extent Extent for Crime

Housing_and_Access_Score Population-weighted average score for Housing/Access domain

Housing_and_Access_Proportion Proportion of most deprived areas for Housing/Access domain

Housing_and_Access_Extent Extent for Housing/Access

Environment_Score Population-weighted average score for Environment domain

Environment_Proportion Proportion of most deprived areas for Environment

Environment_Extent Extent for Environment ...

Source

https://www.gov.uk/

---

imd_england_ward   *Index of Multiple Deprivation for Wards in England*

Description

A data set containing population-weighted average scores, proportions and extents for wards in England.

Usage

```
imd_england_ward
```

Format

A data frame of class "tbl" with 7,180 rows and 25 variables:

ward_code Ward code

Score Population-weighted average IMD score

Proportion Proportion of small areas in the nation's most deprived

Extent Extent for overall IMD

Income_Score Population-weighted average score for Income domain

Income_Proportion Proportion of most deprived areas for Income

Income_Extent Extent for Income

Employment_Score Population-weighted average score for Employment domain

Employment_Proportion Proportion of most deprived areas for Employment

Employment_Extent Extent for Employment

Education_Score Population-weighted average score for Education domain

Education_Proportion Proportion of most deprived areas for Education

Education_Extent Extent for Education

Health_Score Population-weighted average score for Health domain

Health_Proportion Proportion of most deprived areas for Health

Health_Extent Extent for Health

Crime_Score Population-weighted average score for Crime domain

Crime_Proportion Proportion of most deprived areas for Crime

Crime_Extent Extent for Crime

Housing_and_Access_Score Population-weighted average score for Housing/Access domain

Housing_and_Access_Proportion Proportion of most deprived areas for Housing/Access domain

Housing_and_Access_Extent Extent for Housing/Access

Environment_Score Population-weighted average score for Environment domain

Environment_Proportion Proportion of most deprived areas for Environment

Environment_Extent Extent for Environment ...

Source

https://www.gov.uk/

---

imd_northern_ireland_lad

Index of Multiple Deprivation for Local Government Districts in Northern Ireland

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Description

A data set containing proportions and extents for Local Government Districts (Local Authorities) in Northern Ireland.

Usage

```
imd_northern_ireland_lad
```

Format

A data frame of class "tbl" with 11 rows and 25 variables:

lad_code LAD code

Proportion Proportion of small areas in the nation's most deprived

Extent Extent for overall IMD

Income_Proportion Proportion of most deprived areas for Income

Income_Extent Extent for Income

Employment_Proportion Proportion of most deprived areas for Employment

Employment_Extent Extent for Employment

Education_Proportion Proportion of most deprived areas for Education

Education_Extent Extent for Education

Health_Proportion Proportion of most deprived areas for Health

Health_Extent Extent for Health

Crime_Proportion Proportion of most deprived areas for Crime

Crime_Extent Extent for Crime

Access_Proportion Proportion of most deprived areas for Access domain

Access_Extent Extent for Access

Environment_Proportion Proportion of most deprived areas for Environment

Environment_Extent Extent for Environment ...

Source

https://www.nisra.gov.uk/

---

imd_northern_ireland_soa

Index of Multiple Deprivation for Super Output Areas in Northern Ireland

---

Description

A data set containing IMD ranks and deciles for SOAs in Northern Ireland.

Usage

imd_northern_ireland_soa

Format

A data frame of class "tbl" with 890 rows and 17 variables:

soa_code Super Output Area code

IMD_decile IMD decile

Income_decile Income domain decile

Employment_decile Employment domain decile

Health_decile Health and Disability domain decile

Education_decile Education domain decile

Access_decile Access to services domain decile

Environment_decile Environment domain decile

Crime_decile Crime domain decile

IMD_rank IMD rank

Income_rank Income domain rank

Employment_rank Employment domain rank

Health_rank Health domain rank

Education_rank Education domain rank

Access_rank Access to services domain rank

Environment_rank Environment domain rank

Crime_rank Crime domain rank ...

Source

https://www.nisra.gov.uk/

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imd_scotland_dz   *Index of Multiple Deprivation for Data Zones in Scotland*

Description

A data set containing IMD ranks and deciles for Data Zones in Scotland

Usage

```
imd_scotland_dz
```

Format

A data frame of class "tbl" with 6,976 rows and 17 variables:

dz_code Data Zone code

IMD_decile IMD decile

Income_decile Income domain decile

Employment_decile Employment domain decile

Education_decile Education domain decile

Health_decile Health and Disability domain decile

Crime_decile Crime domain decile

Housing_decile Housing domain decile

Access_decile Access to services domain decile

IMD_rank IMD rank

Income_rank Income domain rank

Employment_rank Employment domain rank

Education_rank Education domain rank

Health_rank Health domain rank

Crime_rank Crime domain rank

Housing_rank Housing domain rank

Access_rank Access to services domain rank ...

Source

<https://www.gov.scot/>

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imd_scotland_iz *Index of Multiple Deprivation for IZs in Scotland*

Description

A data set containing proportions and extents for Intermediate Zones (IZs) in Scotland. Note that IMD scores for Scotland are not available.

Usage

```
imd_scotland_iz
```

Format

A data frame of class "tbl" with 1,279 rows and 17 variables:

iz_code Intermediate Zone code

Proportion Proportion of small areas in the nation's most deprived

Extent Extent for overall IMD

Income_Proportion Proportion of most deprived areas for Income

Income_Extent Extent for Income

Employment_Proportion Proportion of most deprived areas for Employment

Employment_Extent Extent for Employment

Education_Proportion Proportion of most deprived areas for Education

Education_Extent Extent for Education

Health_Proportion Proportion of most deprived areas for Health

Health_Extent Extent for Health

Crime_Proportion Proportion of most deprived areas for Crime

Crime_Extent Extent for Crime

Housing_Proportion Proportion of most deprived areas for Housing domain

Housing_Extent Extent for Housing

Access_Proportion Proportion of most deprived areas for Access domain

Access_Extent Extent for Access ...

Source

https://www.gov.scot/

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imd_scotland_lad *Index of Multiple Deprivation for Council Areas in Scotland*

Description

A data set containing proportions and extents for Council Areas (Local Authorities) in Scotland. Note that IMD scores for Scotland are not available.

Usage

```
imd_scotland_lad
```

Format

A data frame of class "tbl" with 32 rows and 17 variables:

lad_code Local Authority code

Proportion Proportion of small areas in the nation's most deprived

Extent Extent for overall IMD

Income_Proportion Proportion of most deprived areas for Income

Income_Extent Extent for Income

Employment_Proportion Proportion of most deprived areas for Employment

Employment_Extent Extent for Employment

Education_Proportion Proportion of most deprived areas for Education

Education_Extent Extent for Education

Health_Proportion Proportion of most deprived areas for Health

Health_Extent Extent for Health

Crime_Proportion Proportion of most deprived areas for Crime

Crime_Extent Extent for Crime

Housing_Proportion Proportion of most deprived areas for Housing domain

Housing_Extent Extent for Housing

Access_Proportion Proportion of most deprived areas for Access domain

Access_Extent Extent for Access ...

Source

<https://www.gov.scot/>

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imd_wales_lad   *Index of Multiple Deprivation for Local Authorities in Wales*

Description

A data set containing proportions and extents for Local Authorities in Wales. Note that IMD scores for Wales are not available.

Usage

imd_wales_lad

Format

A data frame of class "tbl" with 22 rows and 19 variables:

lad_code LAD code

Proportion Proportion of small areas in the nation's most deprived

Extent Extent for overall IMD

Income_Proportion Proportion of most deprived areas for Income

Income_Extent Extent for Income

Employment_Proportion Proportion of most deprived areas for Employment

Employment_Extent Extent for Employment

Education_Proportion Proportion of most deprived areas for Education

Education_Extent Extent for Education

Health_Proportion Proportion of most deprived areas for Health

Health_Extent Extent for Health

Crime_Proportion Proportion of most deprived areas for Crime

Crime_Extent Extent for Crime

Housing_Proportion Proportion of most deprived areas for Housing domain

Housing_Extent Extent for Housing

Access_Proportion Proportion of most deprived areas for Access domain

Access_Extent Extent for Access

Environment_Proportion Proportion of most deprived areas for Environment

Environment_Extent Extent for Environment ...

Source

https://gov.wales/

---

imd_wales_lsoa *Index of Multiple Deprivation for LSOAs in Wales*

Description

A data set containing IMD ranks and deciles for Lower Layer Super Output Areas (LSOAs) in Wales.

Usage

imd_wales_lsoa

Format

A data frame of class "tbl" with 1,909 rows and 19 variables:

lsoa_code LSOA code

IMD_decile IMD decile

Income_decile Income domain decile

Employment_decile Employment domain decile

Education_decile Education domain decile

Health_decile Health and Disability domain decile

Crime_decile Crime domain decile

Housing_decile Housing domain decile

Access_decile Access to services domain decile

Environment_decile Environment domain decile

IMD_rank IMD rank

Income_rank Income domain rank

Employment_rank Employment domain rank

Education_rank Education domain rank

Health_rank Health domain rank

Crime_rank Crime domain rank

Housing_rank Housing domain rank

Access_rank Access to services domain rank

Environment_rank Environment domain rank ...

Source

<https://gov.wales/>

---

imd_wales_msoa   *Index of Multiple Deprivation for MSOAs in Wales*

Description

A data set containing proportions and extents for Middle Layer Super Output Areas (LSOAs) in Wales. Note that IMD scores for Wales are not available.

Usage

imd_wales_msoa

Format

A data frame of class "tbl" with 410 rows and 19 variables:

msoa_code MSOA code

Proportion Proportion of small areas in the nation's most deprived

Extent Extent for overall IMD

Income_Proportion Proportion of most deprived areas for Income

Income_Extent Extent for Income

Employment_Proportion Proportion of most deprived areas for Employment

Employment_Extent Extent for Employment

Education_Proportion Proportion of most deprived areas for Education

Education_Extent Extent for Education

Health_Proportion Proportion of most deprived areas for Health

Health_Extent Extent for Health

Crime_Proportion Proportion of most deprived areas for Crime

Crime_Extent Extent for Crime

Housing_Proportion Proportion of most deprived areas for Housing domain

Housing_Extent Extent for Housing

Access_Proportion Proportion of most deprived areas for Access domain

Access_Extent Extent for Access

Environment_Proportion Proportion of most deprived areas for Environment

Environment_Extent Extent for Environment ...

Source

<https://gov.wales/>

---

imd_wales_ward   *Index of Multiple Deprivation for Wards in Wales*

Description

A data set containing population-weighted average scores, proportions and extents for wards in Wales Note that IMD scores for Wales are not available.

Usage

```
imd_wales_ward
```

Format

A data frame of class "tbl" with 843 rows and 19 variables:

ward_code Ward code

Proportion Proportion of small areas in the nation's most deprived

Extent Extent for overall IMD

Income_Proportion Proportion of most deprived areas for Income

Income_Extent Extent for Income

Employment_Proportion Proportion of most deprived areas for Employment

Employment_Extent Extent for Employment

Education_Proportion Proportion of most deprived areas for Education

Education_Extent Extent for Education

Health_Proportion Proportion of most deprived areas for Health

Health_Extent Extent for Health

Crime_Proportion Proportion of most deprived areas for Crime

Crime_Extent Extent for Crime

Housing_Proportion Proportion of most deprived areas for Housing domain

Housing_Extent Extent for Housing

Access_Proportion Proportion of most deprived areas for Access domain

Access_Extent Extent for Access

Environment_Proportion Proportion of most deprived areas for Environment

Environment_Extent Extent for Environment ...

Source

https://gov.wales/

---

load_composite_imd *Load composite 2020 UK Index of Multiple Deprivation*

Description

Load data from mySociety's composite 2020 UK Index of Multiple Deprivation: https://github.com/mysociety/composite_uk

Usage

```
load_composite_imd(nation = "E")
```

Arguments

nation   The initial letter of the UK nation whose composite IMD you want to load.
                Should be one of: (E)ngland, (W)ales, (S)cotland (N)orthern Ireland. See the
                GitHub link about for more details about why there are separate composite IMDs
                for each nation.

Examples

```
## Not run:
imd_uk <- load_composite_imd("E")

## End(Not run)
```

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