

Indicator specification:

PLDR collection of population health indicators

**Experimental Measures – Housing Retrofit Need Index
(HRNI_22_01)**

Version: 1.00

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Overview

Indicator title

Experimental Measures – Housing Retrofit Need Index (HRNI_22_01).

Indicator family name

Experimental Measures.

Summary

The Housing Retrofit Need Index (HRNI) is a composite measure of neighbourhood need for housing energy retrofits for each Lower-layer Super Output Area (LSOA) in England. It integrates housing energy inefficiency, income deprivation and a health vulnerability domain (long-term condition prevalence and emergency admissions relevant to poor housing conditions) into a single prioritisation score (2022 snapshot).

Technical description

Component indicators are harmonised to LSOA geography and, where required, missing values are imputed using within-local-authority means and extreme values winsorised. Health vulnerability is constructed as a weighted mean of selected health indicators (weights normalised from Rodgers et al., 2018). The overall HRNI is computed using a weighted-product (multiplicative) formulation: $EPC \leq D\% \times IMD \text{ income score/rate} \times \text{health vulnerability}$. Standardised (z-score), relative-index ($x/\text{mean}(x)$) and rank outputs are provided.

Unique Identifier

HRNI_22_01

Construction

This section provides numerator/denominator details and sources for the indicators used to construct the HRNI. The HRNI is produced as a cross-sectional LSOA-level dataset for England using 2022 health indicators, IMD 2019 income deprivation, and the latest available small-area EPC distribution from NOMIS.

Data sources

- Housing energy inefficiency ($EPC \leq D$)

Numerator: Count of dwellings with an Energy Performance Certificate (EPC) rating in bands D–G (NOMIS energy efficiency of housing dataset).

Denominator: Total dwellings with EPC band information in the NOMIS extract; reported as % and count at LSOA 2021 level.

- Income deprivation (IMD 2019 Income domain)

Numerator: Income domain score/rate from the English Indices of Deprivation 2019 (IMD 2019) at LSOA 2011 level.

Denominator: Not applicable (published index/rate).

- QOF prevalence – asthma, COPD and mental health (2022)

Numerator: Estimated number of registered patients with the condition (QOF prevalence estimates, aggregated to LSOA).

Denominator: Total registered patients; expressed as prevalence (%) for 2022.

- Emergency admissions – respiratory, cardiovascular disease, and burns/falls age ≥65 (2022)

Numerator: Count of emergency hospital admissions for each condition group (PLDR indicator extracts aggregated to LSOA). For burns/falls, admissions are restricted to age ≥65 years.

Denominator: Mid-year population estimates for England (ONS); rates expressed per 100 population (or per 100 aged ≥65 for burns/falls).

Presentation

Breakdowns

Time period

Cross-sectional snapshot: 2022 (health indicators); IMD 2019 (income deprivation)

Demographic

Person

Geographic

Lower Super Output Areas (LSOA) level in England (LSOA 2011 with LSOA 2021 codes/names also supplied)

Disclosure control

This indicator is produced from aggregate small-area statistics. It uses a combination of publicly available datasets and safeguarded emergency admissions extracts aggregated to LSOA level (disclosure-controlled).

Output: `housing_retrofit_need_index_lsoa_v3.csv`

Column name	Description
LSOA11CD	LSOA 2011 code
LSOA11NM	LSOA 2011 name
LSOA21CD	LSOA 2021 code
LSOA21NM	LSOA 2021 name
LAD20CD	Local authority district (LAD) 2020 code
LAD20NM	Local authority district (LAD) 2020 name

income_score_rate	IMD 2019 Income domain score/rate (higher = more deprived)
epc_iss_eql_d_prcnt	Percent of dwellings with EPC rating D or worse (D–G)
epc_iss_eql_d_no	Count of dwellings with EPC rating D or worse (D–G)
MentalHealth.p_rate	Mental health prevalence (%) from QOF-derived LSOA estimates (2022)
copd_asthma.p_rate	Trimmed mean prevalence (%) of COPD and asthma (2022)
respiratory.p_rate	Emergency admissions rate for respiratory conditions per 100 population (2022)
cvd.p_rate	Emergency admissions rate for cardiovascular disease per 100 population (2022)
burns_falls_65_ova.p_rate	Emergency admissions rate for burns/falls per 100 population aged ≥65 (2022)
hlth_vlnblty_dmain	Health vulnerability domain score (weighted mean of health indicators)
rtrft_need_idx	Housing Retrofit Need Index (full; EPC×income×health)
rtrft_need_idx_mini	Mini index excluding health vulnerability (EPC×income)
epc_iss_eql_d_prcnt_z	Energy inefficiency z-score
epc_iss_eql_d_prcnt_reltv_idx	Energy inefficiency relative index (x/mean(x))
income_score_rate_z	Income deprivation z-score
income_score_rate_reltv_idx	Income deprivation relative index (x/mean(x))
hlth_vlnblty_dmain_z	Health vulnerability z-score
hlth_vlnblty_dmain_reltv_idx	Health vulnerability relative index (x/mean(x))
rtrft_need_idx_z	Full HRNI z-score
rtrft_need_idx_reltv_idx	Full HRNI relative index (x/mean(x))
rtrft_need_idx_mini_z	Mini index z-score
rtrft_need_idx_mini_reltv_idx	Mini index relative index (x/mean(x))
rtrft_need_idx_rnk	Rank by full HRNI (1 = highest need)
rtrft_need_idx_mini_rnk	Rank by mini index (1 = highest need)

Revision history

Version	Date	Summary of changes
1.00	Mar 2026	First PLDR release (LSOA-level HRNI; 2022 snapshot).