

# Indicator specification:

## Groundswell collection of geographical and population health indicators

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Unique Property Reference Number (UPRN) indicator:  
Tree canopy coverage (UPRN\_3\_1)



Version: 2.00

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## Overview

### Indicator title

Unique Property Reference Number (UPRN) indicator: Tree canopy coverage (UPRN\_3\_1)

### Indicator family name

Unique Property Reference Number

### Descriptor Plain English description

This is an indicator with the tree canopy coverage for various distances from UPRNs in the ONS UPRN directory v2024.07 (epoch 111). This metric is based on *Bluesky's National Tree Map™*, which is the only tree dataset to include trees in Great Britain and the Republic of Ireland that are 3 metres and taller.

### Technical description

The indicator is computed by creating a buffer around each UPRN (15m, 25m, 150m, 300m and 500m), these buffers are used to 'crop' the NTM tiles and the area covered by trees is then calculated. Overlapping tree canopy areas are ignored, so the calculation is for canopy coverage from a top-down view. More details of the methodology can be found at the corresponding GitHub repository: <https://github.com/groundswelluk/ugbs-metrics>

### Unique Identifier

UPRN\_3\_1

## Construction

### Data sources

The main data source for this metric is *Bluesky's National Tree Map™* (<https://bluesky-world.com/ntm/>), which

*is the only tree dataset to include trees in Great Britain and Republic of Ireland that are 3 metres and taller. It captures height, location and canopy/crown extent of trees, whether in urban or rural areas, in small clusters, woodlands and forests, or single trees.*

A sample of the data can be downloaded from: <https://bluesky-world.com/wp-content/uploads/2024/07/ntm-6.zip> [last accessed on 25th September 2024]



Figure 1. Bluesky's National Tree Map™ demo data

The version of *Bluesky's National Tree Map™* dataset used was captured on 20/05/2023 (Cheshire and Merseyside region) and 03/04/2021 (Lothian region).

### **Open datasets**

The following open data sources were used as inputs in the creation of this metric:

- Unique Property Reference Numbers (UPRN) were accessed using the [Office for National Statistics's open UPRN directory](#). UPRNs are unique identifiers for all unique properties across Great Britain. The dataset was the latest available at the time of access and refers to all UPRNs as of July 2024 [Epoch 111]. The resource is based of Ordnance Survey's 'AddressBase' data product and includes a list of all UPRNs and their geographical location (Geographic Reference System: OSGB 1936, 27700).
- Counties and Unitary Authorities boundaries at full resolution - clipped to the coastline (mean high water mark) were used as another layer to identify regions of interest, using smaller geographies. The shapefile used was downloaded from the Office for National Statistics Open Geography Portal: <https://geoportal.statistics.gov.uk/datasets/ons::counties-and-unitary-authorities-may-2023-boundaries-uk-bfc/about>.
- Ordnance Survey's British National Grids (OS BNG) were used to aid with speeding up the computation of the individual metrics (i.e., only load tiles covering a particular

study region). The reference grids can be downloaded from <https://github.com/OrdnanceSurvey/OS-British-National-Grids> at various resolutions.

- [England and Wales] Lower layer Super Output Areas (LSOAs) were used to break down the calculations by region (LSOAs are a geographic hierarchy designed to improve the reporting of small-area statistics) and to compute a lower resolution version of this metric, for general visualisation. The LSOAs were sourced from the Office for National Statistics Open Geography Portal: <https://geoportal.statistics.gov.uk/datasets/ons::lower-layer-super-output-areas-december-2021-boundaries-ew-bfc-v10-2/about> (previously v8). This resulted in a subset of 1601 LSOAs.
- [Scotland only] Data Zone (DZs) boundaries were used to filter UPRNs for the *Lothian region* (namely East Lothian, Edinburgh, Midlothian and West Lothian). This data was downloaded from <https://spatialdata.gov.scot/geonetwork/srv/eng/catalog.search#/metadata/7d3e8709-98fa-4d71-867c-d5c8293823f2 v2011>.

We further use a lookup table with 2011 Data Zones (<https://statistics.gov.scot/data/data-zone-lookup>) for Scotland, to filter data zones based on local authorities for the *Lothian region*. This resulted in a subset of 1083 data zones (out of 6976).

The above were used to create an indicator for the NHS Cheshire and Merseyside Integrated Care Board (ICB) region (defined here as the Chester and Cheshire East, Cheshire West, Halton, Knowsley, Liverpool, Sefton, St. Helens, Warrington and Wirral), the data and methods can easily be adapted for any other region or nation (subject to the coverage of the *Bluesky's National Tree Map™*).

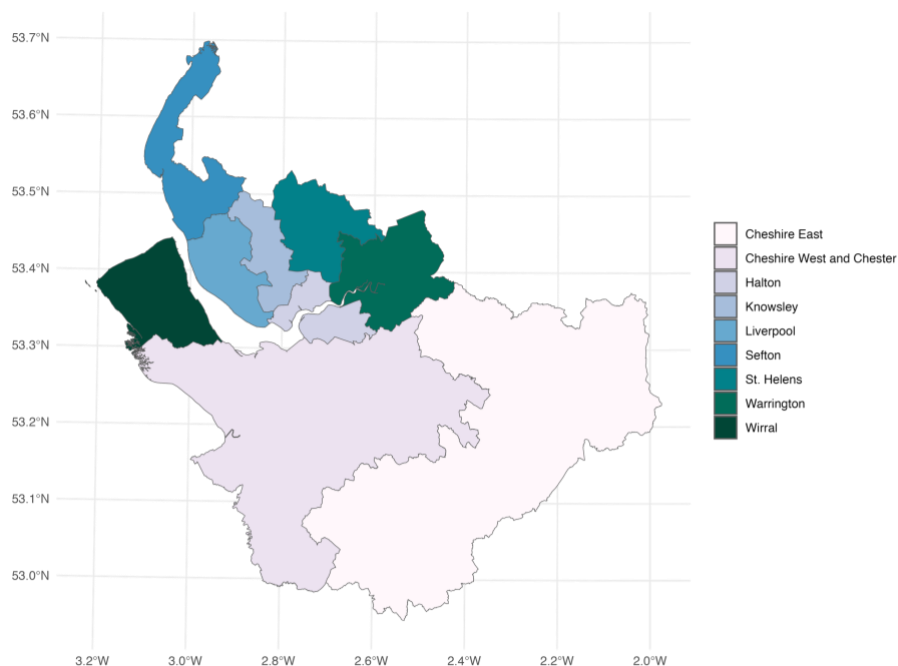


Figure 2. NHS Cheshire and Merseyside ICB region

**Edinburgh and Lothian region**

In Scotland, the equivalent to LSOAs are called ‘Data Zones’, which were downloaded from <https://spatialdata.gov.scot/geonetwork/srv/eng/catalog.search#/metadata/7d3e8709-98fa-4d71-867c-d5c8293823f2>

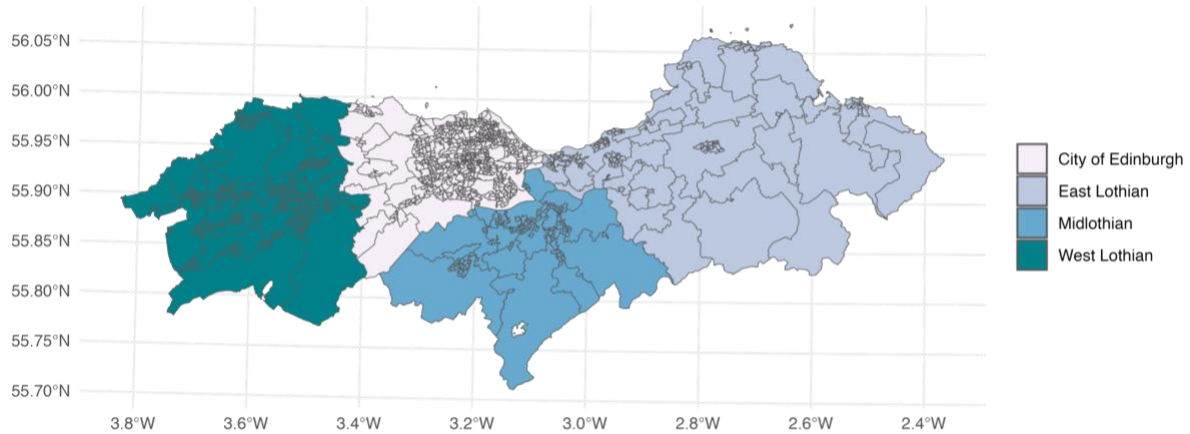


Figure 3. Lothian region

**Presentation**

**Breakdowns**

**Time period**

Cross sectional based on the ONS UPRN Directory v2024.07 (Epoch 111).

**Demographic**

Not applicable

**Geographic**

Unique Property Reference Number (UPRN) level

**Disclosure control**

Not applicable. Whilst UPRNs can be used to identify unique properties, on their own they cannot be used to identify a particular individual.

**Outputs:**

**UPRN\_3\_1\_tree\_canopy\_coverage\_cm.csv [Cheshire and Merseyside region]**

Column name	Description
UPRN	Unique Property Reference Number as per the Office for National Statistics UPRN Directory (ONSUD) v2024.07 (Epoch 111).

n_trees_15m	Number of trees (above 3m) within 15m from the UPRN.
tree_canopy_cover_15m	Percentage of area covered by tree canopy within 15m from the UPRN. From a maximum area of approximately 707m <sup>2</sup> .
n_trees_25m	Number of trees (above 3m) within 25m from the UPRN.
tree_canopy_cover_25m	Percentage of area covered by tree canopy within 25m from the UPRN. From a maximum area of approximately 1963m <sup>2</sup> .
n_trees_150m	Number of trees (above 3m) within 150m from the UPRN.
tree_canopy_cover_150m	Percentage of area covered by tree canopy within 150m from the UPRN. From a maximum area of approximately 70686m <sup>2</sup> .
n_trees_300m	Number of trees (above 3m) within 300m from the UPRN.
tree_canopy_cover_300m	Percentage of area covered by tree canopy within 300m from the UPRN. From a maximum area of approximately 282743m <sup>2</sup> .
n_trees_500m	Number of trees (above 3m) within 500m from the UPRN.
tree_canopy_cover_500m	Percentage of area covered by tree canopy within 500m from the UPRN. From a maximum area of approximately 785398m <sup>2</sup> .

**UPRN\_3\_1\_tree\_canopy\_coverage\_cm\_with\_coords.csv [Cheshire and Merseyside region]**

Column name	Description
UPRN	Unique Property Reference Number as per the Office for National Statistics UPRN Directory (ONSUD) v2024.07 (Epoch 111).
n_trees_15m	Number of trees (above 3m) within 15m from the UPRN.
tree_canopy_cover_15m	Percentage of area covered by tree canopy within 15m from the UPRN. From a maximum area of approximately 707m <sup>2</sup> .

n_trees_25m	Number of trees (above 3m) within 25m from the UPRN.
tree_canopy_cover_25m	Percentage of area covered by tree canopy within 25m from the UPRN. From a maximum area of approximately 1963m <sup>2</sup> .
n_trees_150m	Number of trees (above 3m) within 150m from the UPRN.
tree_canopy_cover_150m	Percentage of area covered by tree canopy within 150m from the UPRN. From a maximum area of approximately 70686m <sup>2</sup> .
n_trees_300m	Number of trees (above 3m) within 300m from the UPRN.
tree_canopy_cover_300m	Percentage of area covered by tree canopy within 300m from the UPRN. From a maximum area of approximately 282743m <sup>2</sup> .
n_trees_500m	Number of trees (above 3m) within 500m from the UPRN.
tree_canopy_cover_500m	Percentage of area covered by tree canopy within 500m from the UPRN. From a maximum area of approximately 785398m <sup>2</sup> .
latitude	Latitude of the UPRN, given in decimal degrees, where N is positive and S is negative.
longitude	Longitude of the UPRN, given in decimal degrees, where E is positive and W is negative.

### UPRN\_3\_1\_tree\_canopy\_coverage\_lothian.csv [Lothian region]

Column name	Description
UPRN	Unique Property Reference Number as per the Office for National Statistics UPRN Directory (ONSUD) v2024.07 (Epoch 111).
n_trees_15m	Number of trees (above 3m) within 15m from the UPRN.
tree_canopy_cover_15m	Percentage of area covered by tree canopy within 15m from the UPRN. From a maximum area of approximately 707m <sup>2</sup> .

n_trees_25m	Number of trees (above 3m) within 25m from the UPRN.
tree_canopy_cover_25m	Percentage of area covered by tree canopy within 25m from the UPRN. From a maximum area of approximately 1963m <sup>2</sup> .
n_trees_150m	Number of trees (above 3m) within 150m from the UPRN.
tree_canopy_cover_150m	Percentage of area covered by tree canopy within 150m from the UPRN. From a maximum area of approximately 70686m <sup>2</sup> .
n_trees_300m	Number of trees (above 3m) within 300m from the UPRN.
tree_canopy_cover_300m	Percentage of area covered by tree canopy within 300m from the UPRN. From a maximum area of approximately 282743m <sup>2</sup> .
n_trees_500m	Number of trees (above 3m) within 500m from the UPRN.
tree_canopy_cover_500m	Percentage of area covered by tree canopy within 500m from the UPRN. From a maximum area of approximately 785398m <sup>2</sup> .

**UPRN\_3\_1\_tree\_canopy\_coverage\_lothian\_with\_coords.csv [Lothian region]**

<b>Column name</b>	<b>Description</b>
UPRN	Unique Property Reference Number as per the Office for National Statistics UPRN Directory (ONSUD) v2024.07 (Epoch 111).
n_trees_15m	Number of trees (above 3m) within 15m from the UPRN.
tree_canopy_cover_15m	Percentage of area covered by tree canopy within 15m from the UPRN. From a maximum area of approximately 707m <sup>2</sup> .
n_trees_25m	Number of trees (above 3m) within 25m from the UPRN.
tree_canopy_cover_25m	Percentage of area covered by tree canopy within 25m from the UPRN. From a maximum area of approximately 1963m <sup>2</sup> .
n_trees_150m	Number of trees (above 3m) within 150m from the UPRN.

tree_canopy_cover_150m	Percentage of area covered by tree canopy within 150m from the UPRN. From a maximum area of approximately 70686m <sup>2</sup> .
n_trees_300m	Number of trees (above 3m) within 300m from the UPRN.
tree_canopy_cover_300m	Percentage of area covered by tree canopy within 300m from the UPRN. From a maximum area of approximately 282743m <sup>2</sup> .
n_trees_500m	Number of trees (above 3m) within 500m from the UPRN.
tree_canopy_cover_500m	Percentage of area covered by tree canopy within 500m from the UPRN. From a maximum area of approximately 785398m <sup>2</sup> .
latitude	Latitude of the UPRN, given in decimal degrees, where N is positive and S is negative.
longitude	Longitude of the UPRN, given in decimal degrees, where E is positive and W is negative.

## Revision history

Version	Date	Summary of changes
1.00	2024-09-30	First release.
1.10	2024-10-22	Include tree metrics for buffers of 25m and 500m.
2.00	2024-10-24	Add metrics for the 'Lothian' region, this includes the local authorities for East Lothian, City of Edinburgh, Midlothian and West Lothian (as shown in Figure 3).