

Applying the Degree of Urbanisation

A NEW INTERNATIONAL MANUAL FOR DEFINING CITIES, TOWNS AND RURAL AREAS

2021 EDITION



COMPACT
GUIDES

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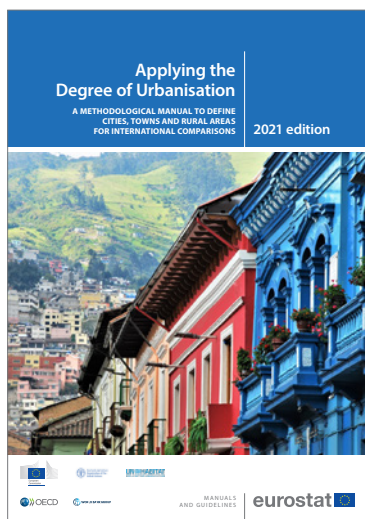
A new methodological manual for classifying the entire territory of a country along the urban-rural continuum

Different countries use different criteria to define urban and rural areas which reflect their various perspectives as to what constitute such areas.

It is clear that individual countries need to have their own national definitions that can be implemented in their statistical systems and used to disaggregate indicators by urban and rural areas for their own national policy purposes. Nevertheless, in order to have meaningful international comparisons of statistical indicators along this continuum, there is also an undisputed need for a definition that is nationally relevant and internationally comparable at the same time.

This is why six organisations — the European Commission, the Food and Agriculture Organization of the United Nations (FAO), the United Nations Human Settlements Programme (UN-Habitat), the International Labour Organization (ILO), the Organisation for Economic Co-operation and Development (OECD) and The World Bank — have been working closely together over the past four years to develop a harmonised, simple and cost-effective methodology: this methodology aims to facilitate international comparisons of data for the entire territory of a country along an urban-rural continuum.

This new methodology has resulted in the **degree of urbanisation classification**. This classification was endorsed by the 51st session of the UN Statistical Commission (UNSC) as ‘the methodology for delineation of cities and urban and rural areas for international and regional statistical comparison purposes, and the UNSC urged the release of a technical report on the implementation of the methodology for delineation of cities and urban and rural areas as early as possible’⁽¹⁾.



A methodological manual for developing internationally comparable statistics for cities, towns and rural areas

Statistical information that is internationally comparable is fundamental for solid evidence-based policymaking. A United Nations Resolution adopted in September 2015 *Transforming our world: the 2030 Agenda for Sustainable Development* includes several indicators for measuring progress towards the sustainable development goals (SDGs) in both urban and rural areas; no global methodology or international standards were proposed to delineate these areas. Indeed, the broad array of different criteria applied across national definitions poses serious challenges to cross-country comparisons and highlights the need for a harmonised methodology to facilitate international comparisons and to improve the quality of urban and rural statistics in support of national and international policymaking and investment decisions.

The proposed solution was to develop a global definition of urban and rural areas that could be used generally, such that the same delineation criteria are applied across all regions of the world. This should result in harmonised and universal mapping of cities, towns and semi-dense areas, and rural areas for international statistical comparisons. Such information is considered fundamental for measuring progress towards the sustainable development goals.

Applying the Degree of Urbanisation — A methodological manual to define cities, towns and rural areas for international comparisons is intended to complement and not replace the definitions used by national statistical offices (NSOs) and ministries. The manual has been designed principally as a practical guide for data producers, suppliers and statisticians so that they have the necessary information to implement the methodology and ensure coherency and consistency within their data collections and analyses. It may also be of interest to users of subnational statistics — such as policymakers, the private sector, research institutions, academia — so that they may better understand and interpret official subnational statistics.

⁽¹⁾ UN Statistical Commission (UNSC), *Report on the fifty-first session (3-6 March 2020)*, Economic and Social Council, Official Records, 2020, Supplement No. 4, E/2020/24-E/CN.3/2020/37, 51/112 paragraph (i-j).

Understanding the degree of urbanisation classification

The degree of urbanisation classification exhaustively covers the entire territory of a country. It combines population size and population density thresholds to capture the complete hierarchy of settlements. Within level 1 of the degree of urbanisation classification, settlements are classified to one of three classes: cities; towns and semi-dense areas; and rural areas.

Within national statistical systems, there is generally a high level of agreement concerning the two outermost classes: cities are typically classified as urban, while villages and sparsely-populated areas are typically classified as rural. By contrast, the classification of intermediate areas is less clear-cut: some countries prefer to classify them as urban,

others as rural, with a third group choosing to create an intermediate class between these two extremes. The degree of urbanisation classification tries to accommodate these intermediate areas and different points of view to emphasise that towns and semi-dense areas are partway between a city and a rural area. This is important because policymaking that is uniformly applied across the three classes may not be suitable and could benefit from being tailored to the specific requirements of cities, towns and semi-dense areas or rural areas.

Moving from a population grid to a classification of spatial units

A population grid of 1 km² cells is the starting point to determine the degree of urbanisation. Ideally, this grid is based on a geo-referenced

point dataset with a high spatial accuracy that guarantees a high quality grid and avoids any need for estimations or disaggregations. An example is a grid derived from a geo-coded census or population register.

A growing number of countries have or will conduct a digital census where the exact geographical location of each household is recorded. Countries with a geo-coded cadastre, a building register or an address register can use this information to generate a set of points with population data, which can then be aggregated to 1 km² grid cells.

In the absence of a point dataset, a population grid can be produced by disaggregating population data from census enumeration areas or administrative units (such as municipalities, districts or provinces) using auxiliary data with a higher spatial resolution, such as land cover or built-up area data, that are linked to the presence of people.

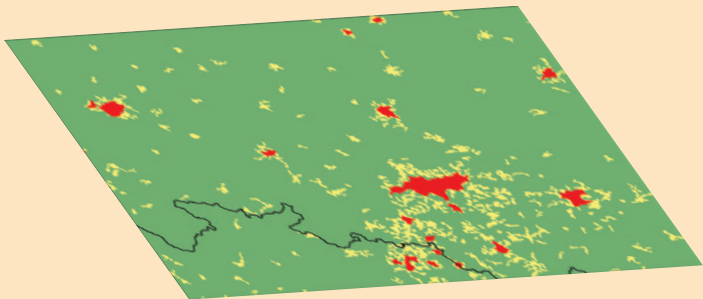
To move from a population grid to a classification of spatial units that identifies cities, towns and semi-dense areas, and rural areas, each 1 km² grid cell is classified according to its population density, population size and contiguity (neighbouring cells) to identify a set of urban centres, urban clusters and rural grid cells.

The degree of urbanisation is subsequently determined according to the share of the population living in each of these — for example, a city is composed of spatial units where at least 50 % of the population is living in urban centres, while rural areas are composed of spatial units where at least 50 % of the population is living in rural grid cells. Each spatial unit belongs exclusively to one of the three classes — cities, towns and semi-dense areas, rural areas.

Schematic overview of the degree of urbanisation classification

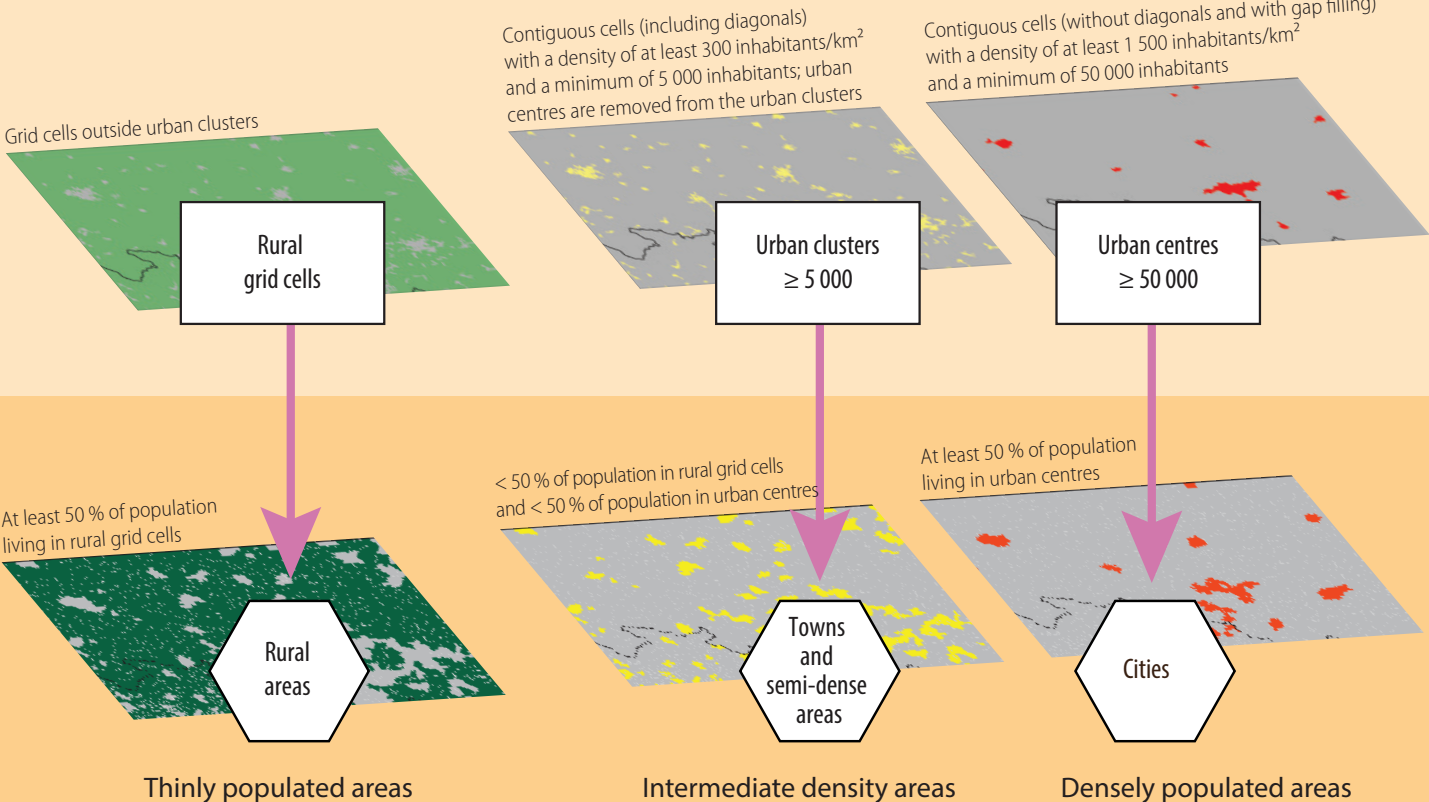
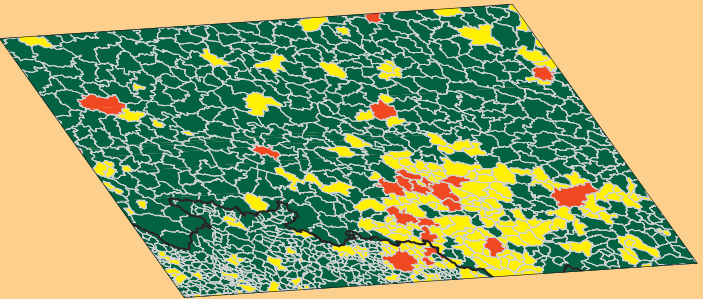
Grid cells

Raster cells of 1 km² are classified using criteria of population density and contiguity. The population per grid cell is ideally derived from a geo-coded census or population register. Alternatively, it can be estimated by downscaling population data from larger spatial units using covariates with a high spatial resolution.



Small spatial units

The degree of urbanisation is a classification of spatial units based on the share of population living in urban centres, urban clusters and rural grid cells.



Note: for more information, see http://ec.europa.eu/regional_policy/sources/docgener/work/2014_01_new_urban.pdf. Source: Directorate-General Regional and Urban Policy, based on data from Eurostat, JRC, national statistical authorities

Going beyond level 1 of the degree of urbanisation classification — a hierarchical classification of settlement types

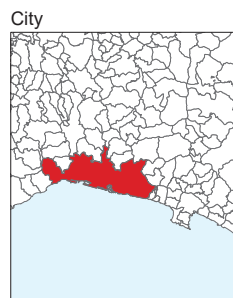
Level 2 of the degree of urbanisation classification is a hierarchical sub-classification of level 1. It has been created to identify specific types of medium and small settlements, such as towns and villages. It is implemented with the same two-stage approach as level 1: first, grid cells are classified based on population density, population size and contiguity; subsequently, small spatial units are classified according to the type of grid cells in which their population resides. The classification of small spatial units to levels 1 and 2 of the degree of urbanisation classification is summarised in the table below.

Short and technical terms for classifying small spatial units to levels 1 and 2 of the degree of urbanisation classification

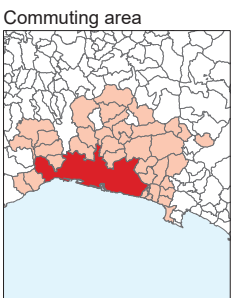
Level	Short term	Technical term
1	CITIES	DENSELY POPULATED AREAS
2	Cities	Large settlements
1	TOWNS AND SEMI-DENSE AREAS	INTERMEDIATE DENSITY AREAS
2	Dense towns	Dense, medium settlements
2	Semi-dense towns	Semi-dense, medium settlements
2	Suburban or peri-urban areas	Semi-dense areas
1	RURAL AREAS	THINLY POPULATED AREAS
2	Villages	Small settlements
2	Dispersed rural areas	Low density areas
2	Mostly uninhabited areas	Very low density areas

Going beyond level 1 of the degree of urbanisation classification — functional urban areas

The degree of urbanisation classification may be extended to consider functional urban areas (often referred to as metropolitan areas). Functional urban areas are composed of a city and its surrounding, less densely populated spatial units that make up the city's labour market — its commuting zone.

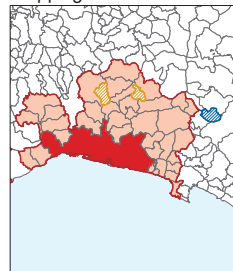


■ City
□ Small spatial unit



■ Small spatial unit with ≥ 15% of its employed population commuting to the city

Commuting area after including enclaves and dropping exclaves



■ Functional urban area
■ Added enclave
■ Removed exclave

Functional urban areas and the degree of urbanisation classification are linked because they use the identical concept of a city. These areas are often referred to as 'functional' because they capture the full economic function of a city.

A commuting zone generates a daily flow of people into a city and back (home to their dwelling). Commuting zones are identified using the following steps:

- if 15 % of employed persons living in one city work in another city, these cities are treated as a single city — this step is referred to as a 'polycentricity check';
- all small spatial units with at least 15 % of their employed residents working in a particular city are identified as part of the commuting zone for that city (as shown in the middle panel of the example);
- enclaves, in other words, small spatial units entirely surrounded by other small spatial units that belong to a commuting zone or a city are included and exclaves or non-contiguous small spatial units are excluded (as shown in the bottom panel of the example).

Due to a low intensity of commuting flows, it may be the case that there is no commuting zone for a specific city. In other words, there is a perfect correspondence between the functional urban area and the city.

A functional urban area classification is particularly useful to support policymaking in a number of domains, including urban planning, such as transport infrastructure and services, as well as economic development.

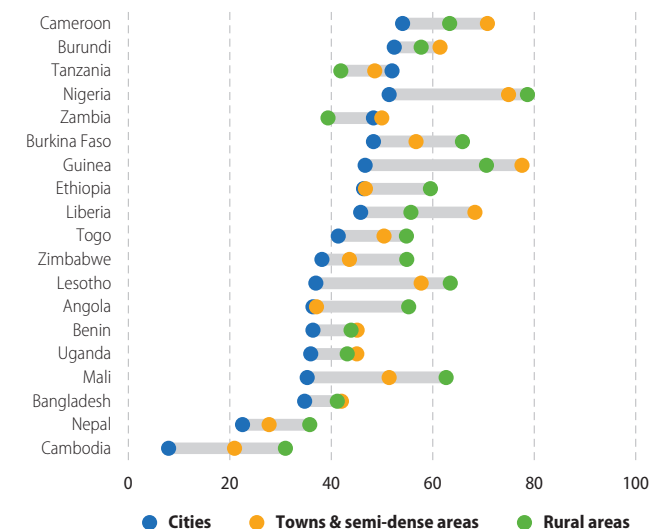
A practical application of the degree of urbanisation classification is provided by the UN's sustainable development goals (SDGs)

The UN's sustainable development goals include a broad range of indicators that should be compiled for individual cities or for urban and rural areas. Many of these indicators can already be calculated by degree of urbanisation using a variety of sources and they show the benefits of compiling data separately for cities, towns and semi-dense areas, and rural areas. In most countries, such indicators follow a clear urban gradient with an increasing or decreasing performance when moving from one end of the continuum, through towns and semi-dense areas, to the other end of the continuum.

An example for SDG 3 — ensure healthy lives and promote well-being for all at all ages

In most countries covered by the Demographic and Health Survey (USAID), infant mortality was higher across rural areas than it was in cities (see the example below). For six of the countries shown — Mali, Nigeria, Lesotho, Guinea, Cambodia and Angola — the infant mortality rate was at least 20 deaths per 1 000 live births higher in rural areas than it was in cities, underlining the importance of access to health services.

Infant mortality rate, by degree of urbanisation, selected countries, 2012-2016 (per 1 000 live births)



Note: the infant mortality rate is defined as the probability of a child dying before their first birthday and is expressed per 1 000 live births; the sample is limited to births that took place between one and five years prior to the interview.

Source: Demographic and Health Survey as calculated by Henderson et al. (2020)

Need further information?



A range of web resources and training tools are available in response to the strong demand for ready-to-use tools that facilitate the application of the degree of urbanisation classification as well as capacity building that assures the conscious implementation of the methodology on which it is based.

The Global Human Settlement Layer (GHSL) project is run by the European Commission's Joint Research

Centre (JRC). They have a web portal that provides key resources for implementing the degree of urbanisation classification and visualising associated data. It is available at: <https://ghsl.jrc.ec.europa.eu/degurba.php> and provides:

- a summary of the methodology;
- country factsheets;
- interactive maps;
- open data for global grids, including built-up area grids, population grids and settlement classification grids;
- a set of tools for implementing the methodology;
- a list of essential documents;
- a range of materials and initiatives for capacity building.

The tools and detailed manuals encourage autonomous use. However, training courses are also available to expedite the correct selection and application of the different options. During 2018 and 2019, UN-Habitat together with the European Commission, organised seven regional workshops that presented the methodology underlying the degree of urbanisation classification and discussed how this could be improved and applied to national data; a total of 85 countries participated.

To obtain a PDF copy of *Applying the Degree of Urbanisation — A methodological manual to define cities, towns and rural areas for international comparisons*, see: <https://ec.europa.eu/eurostat/product?code=KS-02-20-499>



The manual has been produced in close collaboration by six organisations — the European Commission, the Food and Agriculture Organization of the United Nations (FAO), the United Nations Human Settlements Programme (UN-Habitat), the International Labour Organization (ILO), the Organisation for Economic Co-operation and Development (OECD) and The World Bank.



For further information and key resources relating to the implementation and visualisation of the degree of urbanisation, see: <https://ghsl.jrc.ec.europa.eu/degurba.php>

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