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Urban, Rural, or In-Between? An adapted Territorial Typology for NUTS 2 regions

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Abstract. We describe the adapted urban-rural typology at the NUTS 2 regional level, an extension of the official regional urban-rural typology provided by the European Union at the NUTS 3 regional level. We used the Census Grid 2021 data and urban agglomerations data to construct an adapted typology. A typology at the NUTS 2 level enables more opportunities for regional analyses and policymaking, as European regional statistics are primarily provided at this level. The EU's regional policies, such as its Cohesion Policy, are implemented at the NUTS 2 level, and for many countries NUTS 2 levels represent administrative regions with substantial administrative, legislative, and fiscal powers. In this resource description article, we describe our adapted urban-rural typology at the NUTS 2 level and how we produced the dataset using the Census Grid 2021, Joint Research Centre's Urban Agglomerations data, and the NUTS 2 regional polygons provided by Eurostat, the European Union statistical authority. We provide the adapted urban-rural typology layer at the NUTS 2 regional level and the typology production scripts openly to support regional analyses and policymaking in Europe.

1 Introduction

Urbanisation is a defining feature of modern Europe with a considerable majority of the continent's population residing in urban areas (United Nations 2019, p. 26). Understanding how the urban-rural divide varies across Europe is crucial for policymaking and regional development. A regional perspective provides insights that are not apparent at the national level and supports strategic planning and socio-economic analysis (Brandmueller et al. 2017, Newsham, Rowe 2023, Velthuis et al. 2025). While national-level urbanisation trends are documented well, a more granular, regional perspective offers valuable insights into the diverse urban and rural landscapes that characterise Europe. Such insights can be particularly important for regional policymaking and for informing the territorial cohesion policies of the European Union (Brandmueller et al. 2017, Van Eupen et al. 2012).

Regional typologies are a common method for delineating regions or countries with similar characteristics. They have been used for several decades to make sense of the geographical distribution of various socio-economic phenomena by grouping regions that share common characteristics (Lipshitz 1986, Blunden et al. 1998, Ballas et al. 2003, Martínez-Reyes et al. 2025). Typologies are frequently used to understand economic and labour market conditions at the national or international levels with the aim of

informing policy and facilitating more efficient allocation of public funding (Brandmueller et al. 2017, Brezzi et al. 2011, Cotella et al. 2021, Hedlund 2016, Velthuis et al. 2025). For instance, Royuela et al. (2026) assess the attractiveness of European regions from traditional economic perspectives as well as from the perspectives of the digital and green transitions using urban-rural typologies to identify and interpret differences between regions. Similarly, Malekzadeh et al. (2026) examine the regional dynamics of different forms of human mobility across Europe and use several regional typologies to understand drivers of different forms of mobilities better.

The degree of urbanisation is a common basis for the development of regional typologies (Dijkstra et al. 2021, Van Eupen et al. 2012, Stjernberg et al. 2024, Fiaschetti et al. 2021, Newsham, Rowe 2023). For instance, Eurostat (2025) provides a regional typology based on the degree of urbanisation at the NUTS 3 (Nomenclature of Territorial Units for Statistics) level. While detailed, a NUTS 3 level typology has several disadvantages. First, a substantial proportion of official Eurostat regional statistics is reported at the broader NUTS 2 level (see Table 1), reducing the usefulness of the NUTS 3 typology for regional analyses (de Beer 2014, Pinto-Correia et al. 2016, Herbst et al. 2025). Second, NUTS 2 is the primary regional level at which regional policies, such as Cohesion Policy, Smart Specialisation Strategies (S3), and Territorial Impact Assessments (TIAs) are implemented in the European Union (European Commission: Eurostat 2024, Eurostat 2024, de Beer 2014, Herbst et al. 2025). This is presumably also a reason for the greater availability of data at the NUTS 2 level (Pinto-Correia et al. 2016, Herbst et al. 2025), and for the fact that some countries have secured greater funding by separating capital cities from their surrounding rural areas into distinct NUTS 2 regions (Zdražil, Kraftová 2023). Finally, NUTS 2 regions often correspond to regions that match national administrative units with legislative, administrative and fiscal powers (such as the Comunidades Autónomas in Spain, Regioni in Italy, or Voivodeships in Poland). This further enhances the relevance of a NUTS 2 level typology.

These disparities create a practical challenge, limiting the utility of NUTS 3 based typologies for researchers and policymakers who rely on NUTS 2 data. Consequently, there is a need for an urban-rural typology at the NUTS 2 level, even though the larger geographical size of NUTS 2 regions can obscure internal urban-rural variation (as can also occur at the NUTS 3 level). The lack of directly usable typology at the NUTS 2 level can introduce ambiguity into regional analyses that inform policy development, as approaches to aggregating a typology to a higher geographical level may vary (Fertner 2012, Alexander Wandl et al. 2014). Although funding can be allocated variably within NUTS 2 regions (i.e., to NUTS 3), a NUTS 2 urban-rural typology can provide a more strategic-level instrument for tailoring regional resource allocation. For example, an intermediate NUTS 2 region containing a large city and an extensive rural hinterland likely require a different economic strategy than a predominantly rural NUTS 2 region. At the same time, a NUTS 2 typology can provide understanding on how rural and intermediate NUTS 2 regions are performing in absorbing regional funding, and how these differences are reflected in the labour market, demographic trends, and broader economic conditions of the regions.

To overcome this, we propose a regional urban-rural typology at the NUTS 2 level, providing a more directly applicable and ready-to-use data framework that can be integrated with existing statistical datasets and analysis pipelines. The adapted typology has been developed based on the official urban-rural typology manual of Eurostat (2025) and accounts for the population residing in cities and urban areas within each NUTS 2 region using information on urban agglomerations based on the 1-kilometre census grid and the DEGURBA framework (Eurostat 2025a, Schiavina et al. 2026, Dijkstra et al. 2021). Urban agglomerations are contiguous grid cells with a population density of at least 300 inhabitants per square kilometre and a total population of at least 5 000 inhabitants, and are intended to improve the traditional DEGURBA methodology by better associating surrounding suburban areas with cities and accounting for mono- and polycentricity in cities (Schiavina et al. 2026, Dijkstra et al. 2021). Similar to the official NUTS 3 typologies, this adapted typology uses the proportion of inhabitants living in rural areas as the basis for assigning a regional class within the urban-rural typology, while also

Table 1: Number of variables available on NUTS 3 and 2 levels from Eurostat's regional statistics database across statistical themes

Statistical topic	NUTS 3	NUTS 2
Agriculture	3	31
Demographics	18	36
Economic	4	10
Education	-	22
Science and technology	3	13
Structural business statistics	0	6
Business demography	8	8
Health	-	20
Tourism	4	10
Transport	4	16
Labour market	2	37
Digital economy and society	-	17
Environmental and energy	2	2
Poverty and social exclusion	-	9
Crime	1	1
Total	**49**	**238**

Note: The topic names correspond to those used by Eurostat in their database on regional statistics by NUTS classification.

considering the presence and size of larger cities within these regions which can change the typology class. The rationale for this approach is that a rural region dominated by a large enough city exhibits a different urban character and degree of urbanisation from a region with a multitude of smaller towns, even if their overall proportion of urban population might be similar. By integrating these measures, our aim is to provide a more functionally relevant typology to improve understanding of urbanisation across Europe's NUTS 2 regions, support policymaking, and facilitate regional research. This adapted typology is an improved version of a similar typology created in the Mobi-Twin Horizon Europe project, which used GHSL population estimates within GADM administrative boundaries to assign a regional class within the urban-rural typology (Väisänen et al. 2024), and was therefore less robust in its approach.

2 Data and methods

2.1 Data

To assess the proportion of the population living in urban and rural areas within NUTS 2 spatial units, we used the 1-kilometre census grid provided by Eurostat (2025a) and the Urban Agglomeration data from Joint Research Centre (Schiavina et al. 2026), which is an extension of the degree of urbanisation tool (Schiavina et al. 2023, Dijkstra et al. 2021).

The NUTS data are a nested, hierarchical dataset of administrative boundaries of the European Union (EU) and EU candidate countries, used extensively in European-wide regional and statistical analyses (Eurostat 2025b). It has three levels, from 1 (major socio-economic regions) to 3 (small regions), which are intended to balance the number of inhabitants in each region to maintain comparability. We used the 2021 version of NUTS 2 regions for the aggregation of degree-of-urbanisation information.

The census grid is a geographical tessellated rectangular grid dataset describing the geographical distribution of the human population in 1-kilometre rectangular grid cells in EU countries provided by the national statistical institutes in 2024 to Eurostat (Eurostat 2025a). The gridded data provide demographic information for 2021, including the total, male, and female population, age cohorts, employed persons, and other basic demographic information per grid square, and cover most countries in Europe except the UK, Iceland, Türkiye, and some of the Balkans. As a result, only 251 of the 334 NUTS 2 regions were covered by the grid data, and the missing NUTS 2 regions have been therefore left out.

The urban agglomerations are based on the gridded census data and provide "a more coherent representation of urban systems and their spatial structure" (Schiavina et al.

2026, p.17). Urban agglomerations treat contiguous urban areas as functional wholes in a more robust manner, as the areas are not divided between administrative borders, can be mono- or polycentric, and the approach recognises the importance of connecting sub-urban areas to their corresponding cities and towns, unlike the DEGURBA classification (Schiavina et al. 2026). Specifically, we used the urban agglomerations data available from DG Regional and Urban Policy (2026), which have been calculated using information on population density (at least 300 people per square kilometre), population size (at least 5,000 inhabitants), population-weighted distances of sub-centres, and spatial contiguity (Schiavina et al. 2026) aligning with urban clusters and urban centres from the DEGURBA framework (Dijkstra et al. 2021). In total, the data contain 8,722 separate urban agglomerations in the Census Grid 2021 area. Grid cells outside the urban agglomerations are assigned to rural areas.

We used regional statistics at the NUTS 2 level and the WorldPop Global2 population estimates (Bondarenko et al. 2025) and degree of urbanisation information (Bondarenko et al. 2025) to perform robustness checks of our results. The NUTS 2 characteristics we used to assess the sensibility of the adapted typology are regional information on the number of bovine animals, proportion of workers in agriculture, at-risk-of-poverty regions, GDP per capita, proportion of broadband access, proportion of higher education degrees, population density, proportion of population in research and development, and unemployment rates. The WorldPop Global2 datasets are similar to the census grid data, as they are provided in 1-kilometre grid cells, and the degree of urbanisation calculations are based on the same DEGURBA framework as is used by Eurostat (Bondarenko et al. 2025, Dijkstra et al. 2021), thus providing an independent state-of-the-art validation data. However, gridded population estimates have been shown to underrepresent rural populations (Láng-Ritter et al. 2025), although the WorldPop Global1 dataset performed well in the comparison by Láng-Ritter et al. (2025) and in other comparisons (Thomson et al. 2025, Zhang et al. 2025), the updated Global2 dataset was an improvement on the previous data and is considered the state-of-the-art dataset in its field (Chamberlain et al. 2026).

2.2 Methodology

To create the urban-rural typology based on the NUTS 2 regional level, we used a modified approach of the official Eurostat urban-rural typology manual (Eurostat 2025, European Commission: Eurostat 2024, 2021). The manual states that regions in which 50% or more of the population live in rural areas are considered to be "Predominantly Rural", regions in which the share of rural population is above 20% and less than 50% are considered "Intermediate", and regions with less than 20% rural population are considered to be "Predominantly Urban". We adopted this logic directly in the adapted typology. However, there are 'special cases' where the assigned typology is adjusted based on the number and proportion of people living in urban agglomerations in the region, and thus a "Predominantly Rural" region can change into an "Intermediate" region, or an "Intermediate" region can change into a "Predominantly Urban" region if they contain an urban agglomeration that is large enough. In the official typology at the NUTS 3 level, a rural region becomes intermediate if it has 200,000 inhabitants living in a single city, and the city's population exceeds 25% of the total population. Similarly, an intermediate region becomes an urban region if it has at least 500,000 inhabitants in a single city, and this population exceeds 25% of the total regional population.

The NUTS system attempts to enable more consistent regional comparisons by normalising the population ranges per region on each hierarchy level. The NUTS 3 level has regions in which populations range from 150,000 to 800,000, and the above-mentioned city sizes for the special cases fit nicely within this range. One could think that at the NUTS 2 level, in which populations range from 800,000 to 3,000,000, the sizes of the cities ought to be scaled accordingly to maintain internal mathematical consistency across hierarchy levels, but this would not account for geographical urban realities on the ground in the EU. Very few cities in the EU have populations between one and two million inhabitants in regions that would otherwise be considered either rural or intermediate (see Figure 4). Thus, using the original city population size thresholds with the urban agglomerations is

a sensible approach because it both continues using the established and globally verified thresholds (Dijkstra et al. 2021), and also reflects realities on the ground better. A city with 500,000 inhabitants exerts a large spatial and economic influence, regardless of it being within a NUTS 2 or NUTS 3 region.

In the typology adapted here, we used the urban agglomerations proposed by the Joint Research Centre as a way to identify contiguous and functional urban areas. The urban agglomerations adopt the grid-based approach used in the original NUTS 3 typology to identify rural and urban areas (as described in Section 2.1, and by Schiavina et al. 2026). This approach is able to identify a contiguous city better by including its suburban and peri-urban grid cells in the same agglomeration through gravity modelling, and thus captures the functional relationship of urban centres and suburban areas. Through using urban agglomerations, instead of the simpler approach presented in the Urban-Rural typology manual, the typology attempts to represent the urban character of the NUTS 2 regions in a more realistic manner. For urban agglomerations that extend beyond regional borders, we only used those Census Grid 2021 cells that are within the regional border to avoid inconsistencies and double counting.

To assess the sensibility of our typology, we performed several robustness checks. First, we cross-check our adapted typology against the original NUTS 3 urban-rural typology (Figure 3 and Table 2) to gain an understanding of how the coarser NUTS 2 regions capture the original typology. Second, we assessed population distributions in the urban agglomerations in relation to the special case thresholds to explore the sensibleness of the thresholds in this typology approach (Figure 4). Third, we explored how the NUTS 2 regional characteristics mentioned in Section 2.1 were distributed across the typology classes to gain an understanding of whether the typology captured the regional urban-rural structures in a sensible manner (Figure 5). Finally, we used the degree of urbanisation delineations created with WorldPop Global2 data to assess population distribution within the delineations and performed intersection-over-union (IoU) analyses to assess the degree of geographical overlap between the urban clusters in the WorldPop Global2 data and the urban agglomerations delineated by the Census Grid 2021 (Figures 6 and 7). This process could provide an understanding of how the typology approach we adapted aligns with a leading population estimate dataset.

3 Description of the dataset

3.1 Adapted typology

The typology map at the NUTS 2 level is visible in Figure 1. We provide the typology as a polygonal GeoPackage file in the ETRS89-LAEA (Lambert Azimuthal Equal Area) coordinate reference system, commonly used for spatial data in Europe, and a comma-separated value file to enable flexible use of the typology in spatial and non-spatial analyses. The adapted typology can be found in the field "Typology_adapted", which contains the textual names of the typology classes. The data are available from our Zenodo repository (Väisänen et al. 2026).

To gain an understanding of the level of agreement between this NUTS 2 typology with the official NUTS 3 typology, we compared the official NUTS 3 typology (Figure 2) with our typology. Geographically, we can see that the adapted typology largely matches the existing official typology at the NUTS 3 level. Due to the larger geographical sizes and use of urban agglomerations, the adapted typology can differ from the NUTS 3 regions in interesting ways. For instance, several rural NUTS 3 regions within Germany, Austria, and Italy convert to intermediate regions as the NUTS 2 regions are larger and do not contain individual city borders as they do in the NUTS 3 level. Similarly, the urban agglomerations by function are more comprehensive (Schiavina et al. 2026), and thus a region like Bolzano-Bozen flips from being a rural region according to NUTS 3 to an intermediate in the adapted typology, as it has population slightly over 50% living in urban areas as delineated by the urban agglomerations.

Finally, we explored how the official NUTS 3 typology categories are distributed within the NUTS 2 typology categories (Figure 3), and find that this typology captures the general structure of the official typology rather well. Although the intermediate

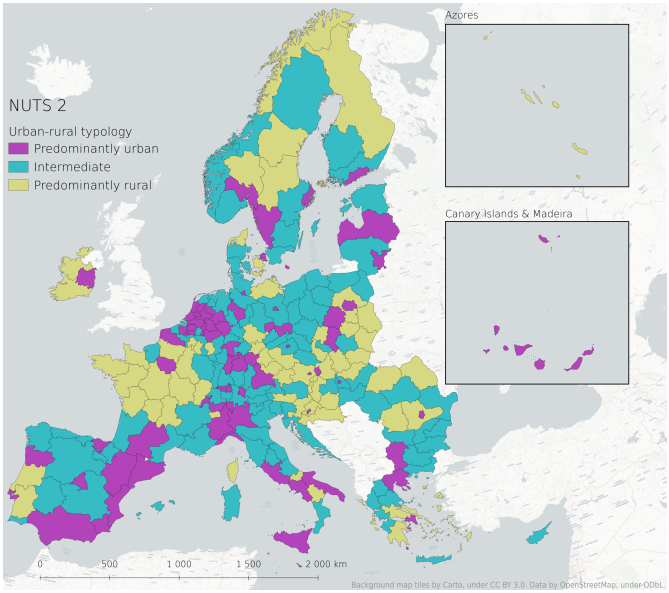
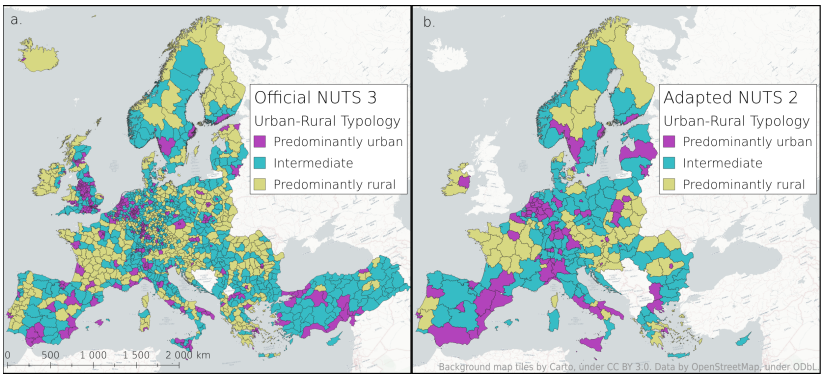


Figure 1: Map of the adapted urban-rural typology at the NUTS 2 scale.



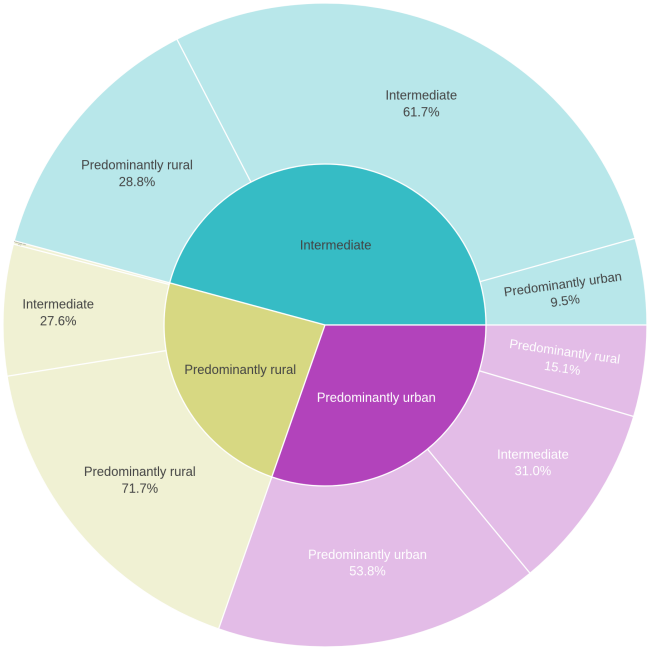
Note: The maps show the geographical alignment of typologies across the two NUTS levels. The adapted typology has fewer regions because the census grid data do not cover the same regions as the NUTS layers.

Figure 2: A comparison of (a) the official NUTS 3 typology and (b) the typology adapted at the NUTS 2 level

classification takes in a sizeable number of the regions but given the scale of NUTS 2 regions and population sizes within, this was expected. This is also the case in the official NUTS 3 typology (Table 2). The predominantly rural NUTS 2 regions contain mostly the predominantly rural NUTS 3 regions, fewer intermediate regions, and only two predominantly urban regions, indicating how these regions do not exert a major urban character. Conversely, predominantly urban NUTS 2 regions contain more rural NUTS 3 regions, which is a function of the larger NUTS 2 regions, whereby a larger city is more likely to fall within the region and thus sway the typology to urban, such as in the Midi-Pyrénées region in France.

3.2 Robustness checks

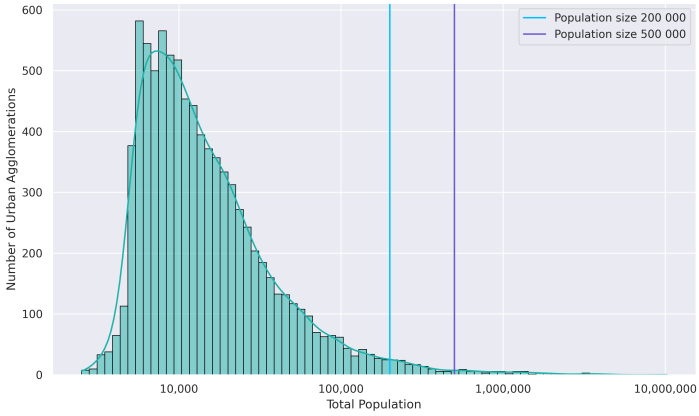
We explored the validity of our approach by performing several exploratory analyses using the typology and auxiliary data. First, we explored the population distribution across all urban agglomerations (Figure 4). As can be seen, the majority of European urban agglomerations have fewer than 100,000 inhabitants (approximately 95% of all urban agglomerations), and only few are larger. In total, we found 209 urban agglomerations with populations larger than 200,000, and 77 with populations larger than 500,000. Only



Note: The percentages on the outer ring represent the distribution of official NUTS 3 typology categories within their corresponding colour-coded NUTS 2 typology category.

Figure 3: Distribution of NUTS 2 regions across the adapted typology (inner ring) and how the official NUTS 3 typologies are distributed within our typology categories (outer ring)

18 regions matched a "special case" in the adapted typology, all changing the typological class from "Intermediate" to "Predominantly Urban". These include "Oslo & Viken", "Eastern and Midland", "Oberbayern" and "Central Macedonia" to name a few, each with a larger city and a sizeable rural population.



Note: Vertical lines indicate the special case thresholds where the typology class changes to more urban classes.

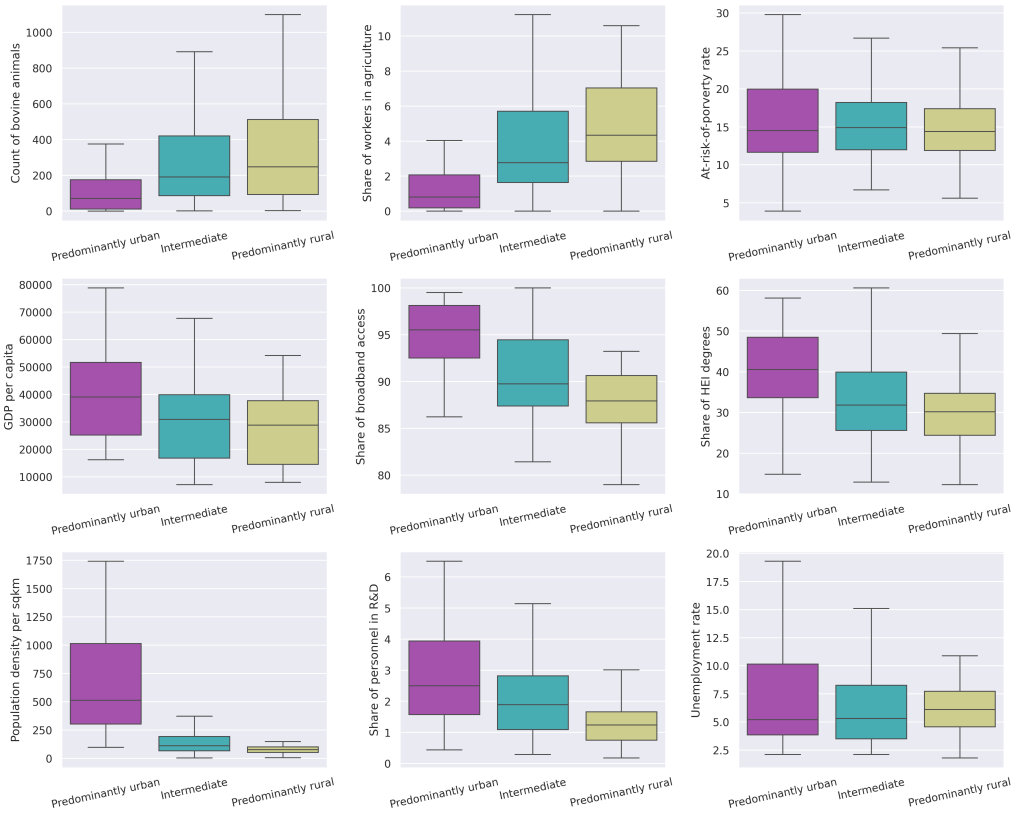
Figure 4: Distribution of the total population across all urban agglomerations in Europe

Second, we explored the distribution of the typology classes between our NUTS 2 typology and the official NUTS 3 typology in Table 2 and found that the distributions align rather nicely. With "intermediate" regions the relative distribution is close to the original, but "predominantly urban" regions are relatively more prevalent, and rural regions less prevalent. This is likely to have been caused by the increased sizes of NUTS 2 regions, whereby it is more likely to catch larger population proportions to live in contiguous grid cells in which the population density is at least 300 inhabitants per square kilometre and the total size of the contiguous grid cells is larger than 5,000 inhabitants.

Table 2: Distribution of the counts and relative proportions of NUTS 2 regions in the adapted typology and NUTS 3 regions in the official typology

Typology class	NUTS 2 Adapted typology	NUTS 3 Official typology
Predominantly Urban	77 (30.7%)	398 (26.3%)
Intermediate	109 (43.4%)	658 (43.5%)
Predominantly Rural	65 (25.9%)	458 (30.2%)
Total	251	1514

Third, we explored how regional statistics from Eurostat are distributed within the typology categories (see Figure 5). The regional statistics we used described the same year used in the Census Grid 2021 and cover data describing features of the regional demography, the economy, agriculture, and the extent of digitalisation. The distribution of the characteristics across the adapted typology classes shows expected patterns, such as higher levels of broadband access, education, personnel in research and development, and population density in predominantly urban regions. With some characteristics like the at-risk-of-poverty rate, GDP per capita, the unemployment rate, and proportion of workers in agriculture, the differences are smaller or even reversed. In terms of unemployment and at-risk-of-poverty rate, the regions are fairly similar, which indicates joblessness and socio-economic deprivation are affecting similar proportions of populations across the typologies.



Note: We removed outliers to improve visual legibility.

Figure 5: Box plots of regional characteristics across the adapted typology

Fourth, and to further validate our results in Figure 6, we compared how the census grids within urban agglomerations align with WorldPop Global2 population estimates (Bondarenko et al. 2025), and WorldPop Global2 degree of urbanisation classes (Bondarenko et al. 2025). The Pearson correlation coefficient between the population datasets is 0.70, indicating a moderately high agreement between the gridded census popula-

tion data and the population estimates within the urban agglomerations. Furthermore, WorldPop Global2's DEGURBA classes (Bondarenko et al. 2025) are also distributed sensibly within the urban agglomerations, indicating that our approach captured the intended populations.

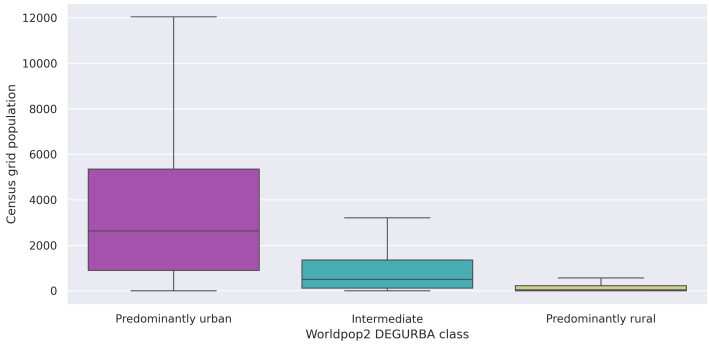
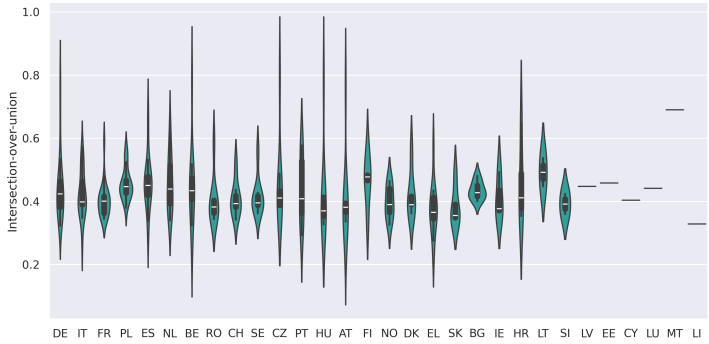


Figure 6: The distribution of census grid population within WorldPop Global2 DEGURBA classes within the urban agglomerations

Finally, we explored the geographical overlaps between the urban agglomerations and the urban clusters delineated from WorldPop Global2 population estimate dataset by calculating intersections-over-union (IoU) between the delineated areas (Figure 7). As the urban agglomerations are more comprehensive due to better representation of the functional urban areas and contain larger geographical areas than the WorldPop urban clusters (for reasons outlined in Section 2.1 and Schiavina et al. 2026), which are delineated using the traditional DEGURBA approach, lower scores are expected. Similarly, the WorldPop Global2 grid cells do not align with the Census Grid 2021 cells, but are slightly rotated compared to each other, which further lowers the IoU scores. Regardless of these systematic error sources, this analysis still shows rather good alignment between the data, as the overall IoU in Europe is 0.45, and in most countries the IoU is around 0.40 while being "top-heavy" indicating better results in many NUTS 2 regions.



Note: The total IoU score for the whole of Europe is 0.45. The small violin plots on the right-hand side of the figure represent smaller countries that have only one NUTS 2 region.

Figure 7: Intersection-over-union comparison between the urban agglomerations and the WorldPop Global2 urban clusters per country

4 Methodological considerations

The NUTS 2 urbanisation typology comes with a few considerations regarding its use. First, NUTS 2 regions vary considerably in their geographical area, which is evident when comparing regions in northern Europe with those in central Europe. Consequently, the characterisations of NUTS 2 regions with large geographical areas as urban has to be considered with the aim of typology we adapted in mind. This typology describes the

NUTS 2 regions from the perspective of the residential populations, and thus urban and intermediate regions can also cover comparatively vast rural and uninhabited areas.

Second, Eurostat cautions against using urban-rural typologies on NUTS 2 and higher hierarchical levels due to large swathes of terrain covered. Thus, we consider the adapted typology to provide a cautious estimation of the degree of urbanisation in the NUTS 2 regions, and it should be taken as such. Still, a typology at the NUTS 2 region is needed, as most of the regional statistics provided by Eurostat are at the NUTS 2 level, EU-level regional policies are implemented at the NUTS 2 level, and many NUTS 2 regions have substantial administrative, fiscal, and legal powers in their respective countries. Consequently, our typology enables a wider array of statistical and spatial analyses on the regional scale, but we call for careful consideration whenever using our adapted typology, as the NUTS 2 level does leave sizeable internal regional variation unaccounted for, also pointed out by Eurostat. To exemplify, larger NUTS 2 regions, like the region of Northern and Eastern Finland, can contain several areas that are more densely populated while others are largely sparsely populated areas with vast areas of wilderness. Our typology is thus more useful for larger-scale approaches to regional analysis. Similarly, compared to the official NUTS 3 typology, this typology renders the EU a bit more urban than rural, and thus rural regional policies ought to consider intermediate regions as well. For more granular examinations of (de)urbanisation processes, we advise readers to work directly on finer scale data such as the census grid, gridded population estimates (e.g., WorldPop Global2), or typologies made for the LAU or NUTS 3 levels.

Third, typologies always involve loss of nuance and can propagate 'averageness' through the aggregation of values and obscure meaningful but smaller-scale differences (Velthuis et al. 2025, Fiaschetti et al. 2021). This likely has more effect on "Intermediate" regions (see Figure 3) that have one or more bustling urban centres and also extensive rural areas, and thus policymaking for such areas might face challenges in addressing both the urban and the rural areas adequately. However, predominantly rural and urban regions are likely to be affected as well, and this has to be considered when using the typology. Furthermore, the NUTS 2 regions are based on administrative borders, and these borders are often a top-down imposed structure of governance, they have edge effects and are susceptible to the modifiable areal unit problem (Fiaschetti et al. 2021, Ballas et al. 2003, Hedlund 2016). However, the modifiable areal unit problem affects NUTS 3 regions as well. As a result, too rigid an interpretation of any typology (this proposed typology included) might lead to the misallocation of funding, one-size-fits-all policy solutions, and consequently could exacerbate regional disparities.

5 Conclusions

Understanding the regional degree of urban and rural population structure is key when assessing the functioning of the European Union's territorial cohesion policies, national policies, and for regional research in general. The proposed urban-rural typology data can support such endeavours at the broader NUTS 2 regional level, on which EU-wide regional policies, such as Cohesion Policy, are implemented, and on which more regional statistics are available than at the NUTS 3 regional level. This enables the flexible use of the typology we adapted in regional analyses and policymaking in diverse contexts. In the future, the typology could be recalculated with updated gridded census data to explore how the typologies have evolved over time, but the typology could also be expanded with the missing regions if more countries were to provide gridded population data. To support the use of the typology, we are providing it freely and openly from our Zenodo repository, and to support open science principles and transparency of this work, we have also provided the Python scripts we used to produce the data in the same repository, which enable users to assess our approach and modify it to fit their specific use case.

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