Towns in Europe: A technical paper

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Executive Summary

This technical paper explains how we defined towns using the Degree of Urbanisation. It shows that 20% of the EU population lives in one of the 8 000 towns. It details how we named these towns and what a regional centre is. Finally it describes some key characteristics of towns in terms of access to education, health care, public transport and rail and road performance.

Contents

1 Introduction

Towns are an important part of the EU settlement network. There almost 8 000 towns in the EU, more than ten times the number of cities (685). One out of five EU residents lives in a town, compared to one out of three who lives in cities. While some Member States have only a handful of cities, all of them have many towns spread across the entire territory. This makes towns key for access to services. The biggest town in an area often functions as a regional centre providing a range of public and private services to its own residents and those living in the wider rural surroundings.

Towns have also become the focus of a growing political attention as shown by their inclusion in the Riga Declaration (2015)[1], the Territorial Agenda 2030: A future for all places (2020)[2], the Committee of the Regions document on towns and the just transition (CoR 2022)[3] and the JRC's Policy Atlas for Towns[4].

This technical paper first explains how we defined towns, how we named them and what a regional centre is. The second part describes what we know about these towns in terms of access to schools, health care and transport.

2 What is a town?

Without a clear pan-European definition of a town, it is impossible to assess their importance or role in regional development. Fortunately, the Degree of Urbanisation level 2, as endorsed by the UN Statistical Commission in 2020, includes a simple and clear definition of two types of towns: dense and semi-dense towns.

2.1 Defining towns using the Degree of Urbanisation

The Degree of Urbanisation relies on different types of 1 km² grid cell clusters[5]. By definition these clusters are independent from any existing administrative unit. This is an important asset as it avoids distortions due to historical, administrative and/or political factors. Furthermore the boundaries of these grid cells are stable over time.

Within the framework of the Degree of Urbanisation, two types of towns were defined:

1. D*ense towns*, with a density of more than 1500 inhabitants/km² and a population between 5 000 and 50 000;
2. *Semi-dense towns* within a population over 5 000[6] and a density of at least 300 inhabitants/km² provided they are located at more than 2 km from cities or from dense towns and are not contiguous with a city or dense town.

[1] The 'Declaration of Ministers towards the EU Urban Agenda' – the Riga Declaration, adopted at the Informal Council of Ministers responsible for territorial cohesion and urban development held in Riga on 10 June 2015.
[2] https://territorialagenda.eu/
[3] https://cor.europa.eu/en/events/Documents/COR-2022-00136-00-00-DT-TRA-EN%20(5).pdf
[4] https://publications.jrc.ec.europa.eu/repository/handle/JRC132926
[5] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Applying_the_degree_of_urbanisation_manual
[6] Because semi-dense towns do not have an upper population limit, a very small number may have a population over 50 000 inhabitants.

Two thirds of the towns in the EU are dense towns (5 345) and one third are semi-dense towns (2 628). In this paper, we have combined the two categories for the ease of communication. This definition was applied for EU and non-EU countries covered by the 2011 population grid[7]. The data for the non-EU countries can be found in the annexes published on the page where this paper is located.

The data shown here is based on the grid level definition of towns and cities, not on the classification of the local administrative units (LAUs). Given the variation in the area size of LAUs, this would have created some distortions when comparing population and population density figures.

2.2 Key characteristics of towns

2.2.1 How many towns are there in the EU?

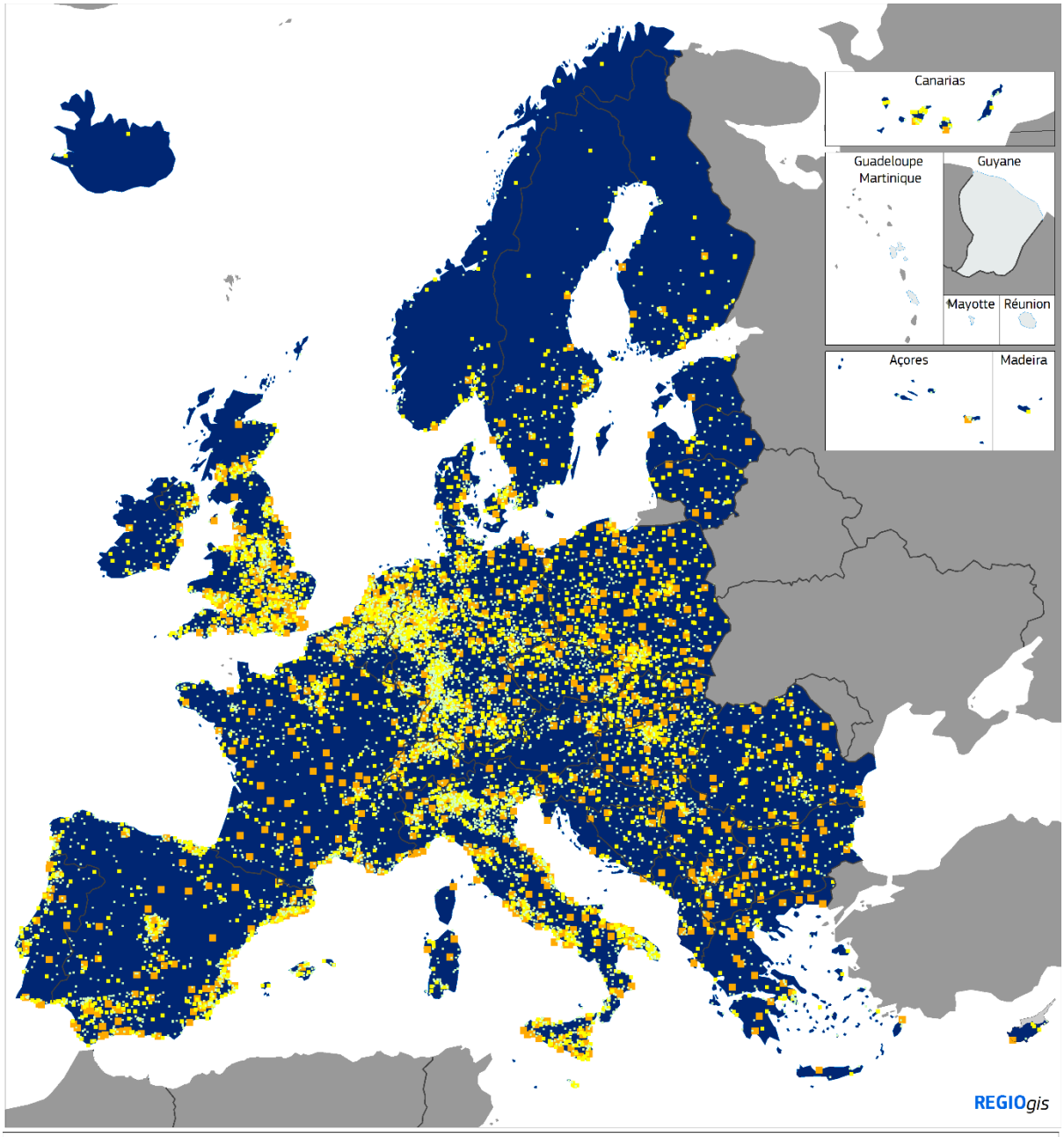
There are 7 973 towns in the EU. Small towns between 5 000 and 10 000 inhabitants are most numerous (4 872). The large number of towns makes them hard to represent on small maps. For that reason, this paper is accompanied by an interactive map on which each of the towns can be identified and which shows the values of the different indicators that are discussed throughout this paper. This map can be accessed here:

https://ec.europa.eu/regional_policy/assets/scripts/map/regio-gis-maps/urban/towns_indicators.html

Table 1 Number of towns by size class and cities

Type of Settlement	Population size class	Number of towns (cities) in the EU	Share of towns
Small towns	5 000 - 10 000	4 872	61%
Medium towns	10 000 - 25 000	2 372	30%
Large towns	> 25 000	729	9%
All towns	**5 000 – 50 000**	**7 973**	**100%**
Cities	> 50 000	685	

[7] GEOSTAT 2011 grid at 1 km² resolution: https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/population-distribution-demography/geostat



Towns in Europe

Towns have a population between 5000 and 50 000 inhabitants

Large (> 25 000)

Medium (10 000 - 25 000)

Small (< 10 000)

No data

Sources: Regio-GIS, Eurostat, JRC

0 500 km

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2.2.2 How many people live in towns?

In the EU, about 95 million people live in towns. This accounts for 21% of total EU population. This share is lowest in Cyprus (10%), France (15%) and Romania (16%) and highest in Slovakia (33%), Hungary (27%) and the Netherlands (26%). Overall, one out of five EU residents lives in a town compared to one out of three who lives in a city. As a result, city and town residents capture over half the EU population (55%).

Table 2 Population in towns by size class and cities, 2018

Type of Settlement	Population size class	Population	Share of EU population
Small towns	5 000 - 10 000	33 387 279	7.6%
Medium towns	10 000 - 25 000	35 698 585	8.1%
Large towns	> 25 000	25 112 116	5.7%
All towns	**5 000 – 50 000**	**94 197 980**	**21.4%**
Cities	> 50 000	147 903 799	33.6%

The population of towns is almost evenly split between the three size categories: just over a third lives in small towns and in medium towns, while slightly under a third lives in large towns.

2.2.3 How dense are towns?

The larger the population of a town, the higher its population density. Small towns have the lowest density (1 500 inhabitants per square km). Medium towns have a slightly higher density (2 500). The large towns come close to the density of cities (3 800 versus 5 000) (see table).

This pattern also holds at the Member State level, with few exceptions (see figure).

Table 3 Population density for towns by size class and cities, 2018

Type of Settlement	Population size class	Land area in km²	Population density
Small towns	5000 - 10 000	4.6	1 500
Medium towns	10 000 - 25 000	6.1	2 500
Large towns	> 25 000	9.1	3 800
All towns	**5 000 – 50 000**	**5.4**	**2 200**
Cities	>50 000	44	5 000

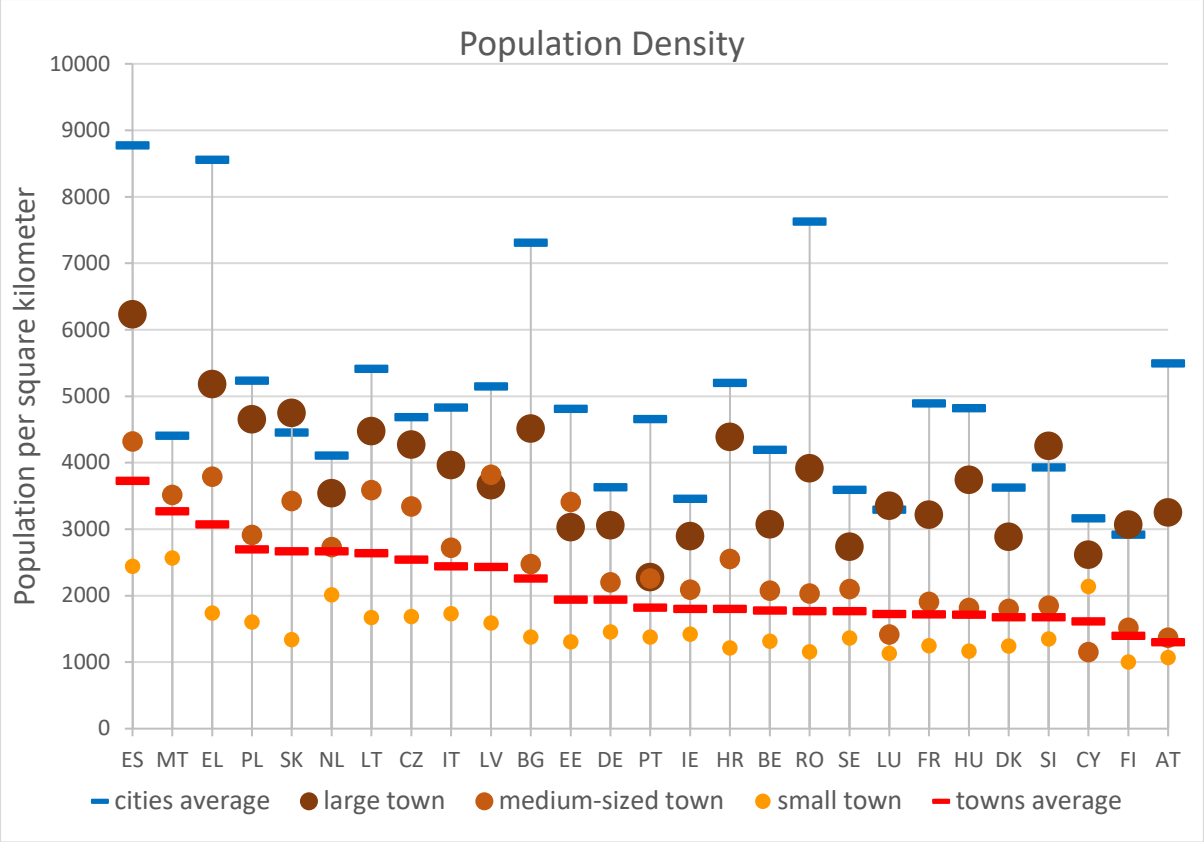


Figure 1: population density

2.3 How did we name the towns?

Providing names to all towns throughout Europe can be useful to facilitate referencing them. Hence, the challenge is to provide (unique) names. We applied some basic criteria:

- Each town should have a unique name. Homologues can occur only when located in different countries or regions.
- A name already used for a city cannot be used for a town.
- Towns should inherit the name of the local administrative unit (LAU) in which they are located whenever possible and appropriate.

Where the link between a town and a LAU is strong enough, the town adopts the name of the LAU. As a result, 51% of the towns were named. The remaining towns where named thanks to a geocoding process run on the centroids of all towns, relying on information from OpenStreetMap, and resulting in a table providing names for the point locations. The remaining towns without any name (500) have been examined by comparing the location of the towns with a general topographic base map (mostly OpenStreetMap, occasionally ESRI base maps). A name retrieved from these base maps has been manually allocated to the towns that did not have any name[8].

Still, without field checks, local or regional knowledge or comparison with possible other geocoding results it remains hard to assess the final quality of the names that have been allocated to the

[8] The precise criteria and steps are described in: Towards a name for each town, A challenge related to the grid-based degree of urbanisation, https://ec.europa.eu/regional_policy/information-sources/maps/urban-centres-towns_en.

towns. The result of the naming process has been enhanced by collecting voluntary feedback from national statistical institutes and regional experts.

3 What do we know about towns?

Getting data for close to 8 000 towns is a challenging task. One of the best sources of data for towns is geospatial data. Geospatial data includes indicators such as the location of services, the road network, the rail network, public transport services. Given the high level of spatial detail, it allows us to calculate the data for each town. In this section, we provide five examples of indicators based on geospatial data: schools, health care, public transport, rail and road transport.

3.1 Access to primary schools

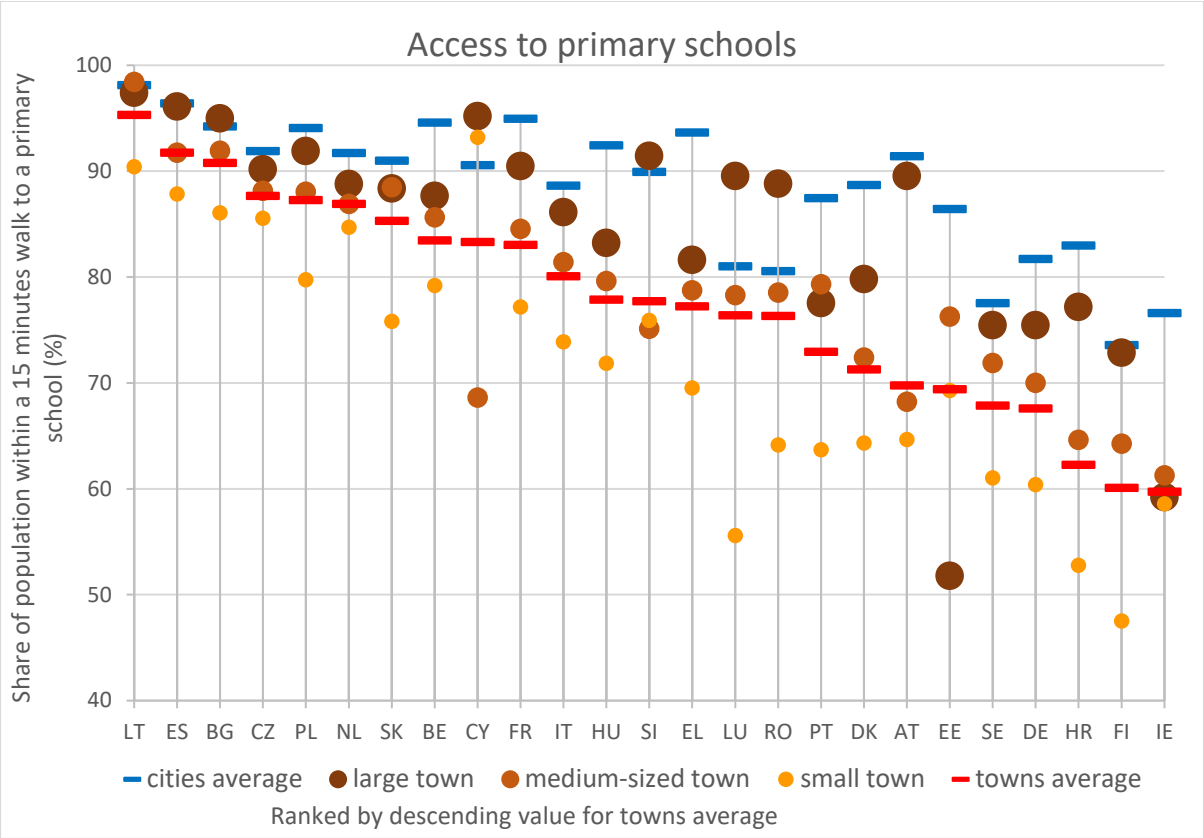


Figure 2: Average time to the nearest primary school

An adequate level of (public) services is an important asset for the quality of life and attractiveness of towns. Assessing proximity and accessibility of those services to population helps to evaluate the availability of those services.

Location data of (primary) schools have been collected for almost all Member States. Combined with street network data and with high-resolution estimates of the location of residential population

these location data allow the calculation of the share of a town's population that lives within walking distance (15 minutes walk, i.e. 1 km at 4 km/h) to the nearest primary school.

On average, the share of population living close to a primary school is higher in larger towns than in small towns. It is highest in Lithuania, Spain and Bulgaria and lowest in Sweden, Finland and Ireland.

3.2 Driving time to the nearest health care facilities

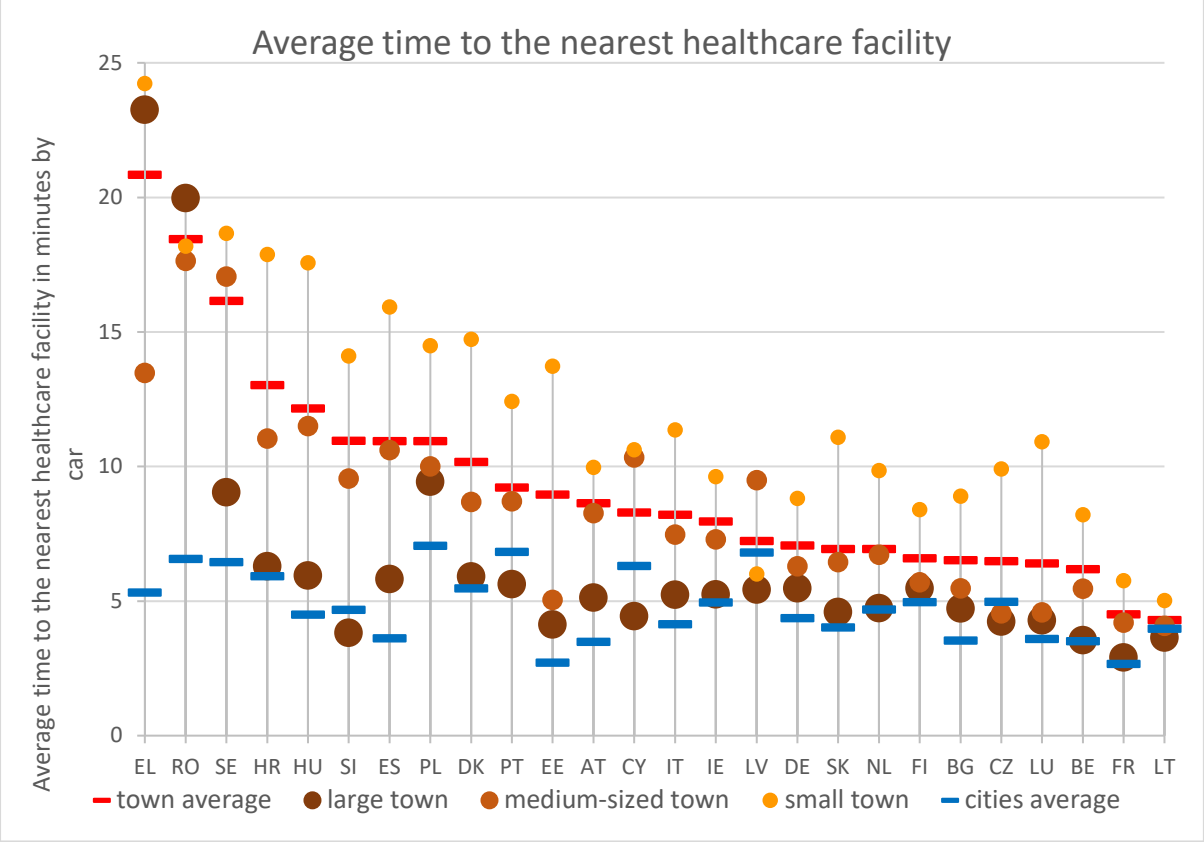


Figure 3: Average time to the nearest healthcare facility

In a similar way as for schools, authoritative data on the location of healthcare facilities have been collected[9]. The dataset contains information on main healthcare services considered to be 'hospitals' by Member States. The definition varies slightly from country to country, but roughly includes the following: "*Hospitals' comprises licensed establishments primarily engaged in providing medical, diagnostic, and treatment services that include physician, nursing, and other health services to in-patients and the specialised accommodation services required by inpatients. Hospitals may also provide out-patient services as a secondary activity. Hospitals provide in-patient health services, many of which can only be provided using the specialised facilities and equipment that form a significant and integral part of the production process. In some countries, health*

[9] Collected by Eurostat-GISCO : https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/healthcare-services

facilities need in addition a minimum size (such as number of beds) in order to be registered as a hospital."[10] In some cases, facilities without in-patient services may be included.

From this location dataset the driving time to the nearest healthcare facilities can be calculated. For each city and town, the population-weighted average minimum driving time is computed. The driving time to the nearest facility indicates to what extent a minimum level of service is available within a reasonable time. To assess to what extent a choice of healthcare services is available relatively nearby, the average driving time to the nearest three facilities is also computed. It should be noted that these results need to be interpreted with some caution, due to remaining uncertainties on the harmonisation of the concepts of the facilities. Nevertheless, the results allow for a meaningful comparison between towns and cities *within* each of the Member States.

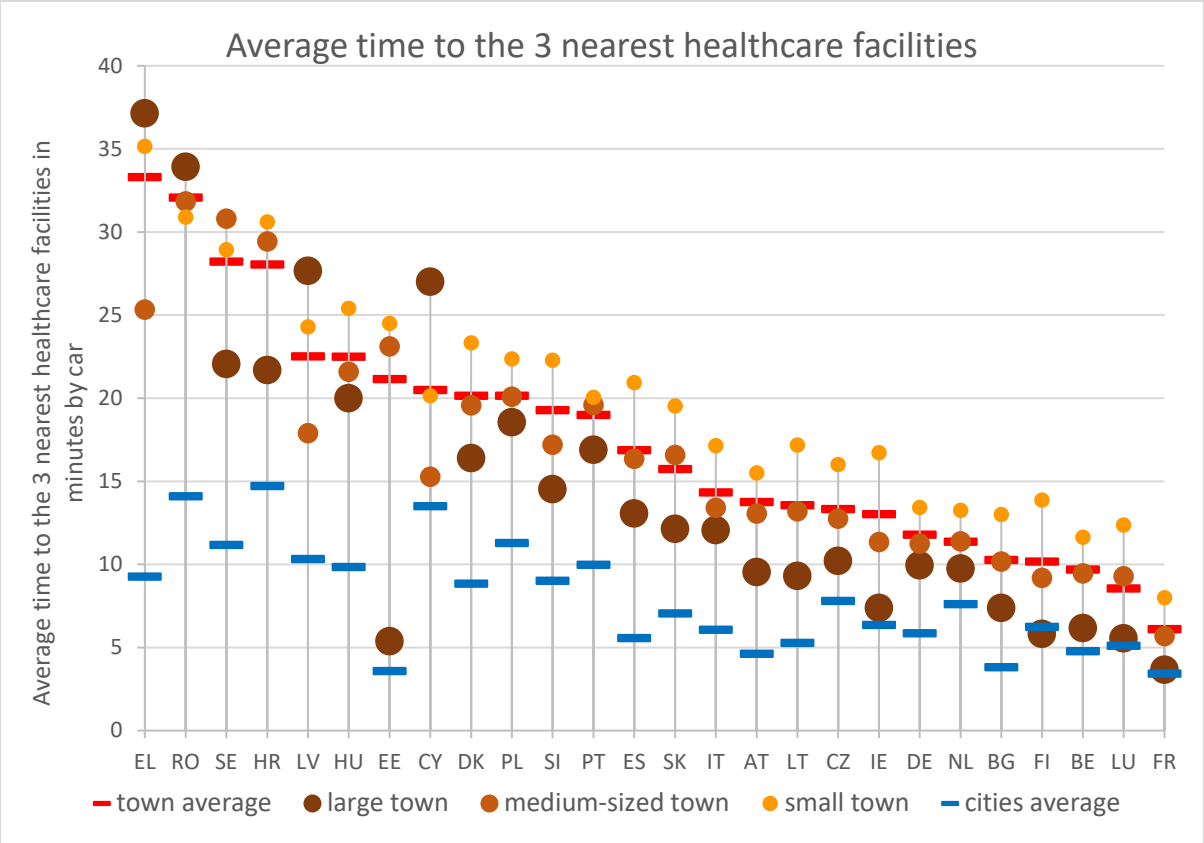


Figure 4: Average time to the three nearest healthcare facilities

[10] A System of Health Accounts 2011: Revised edition. OECD, Eurostat and World Health Organization, 2017. https://ec.europa.eu/eurostat/documents/3859598/7985806/KS-05-19-103-EN-N.pdf/60aa44b0-2738-4c4d-be4b-48b6590be1b0. Accessed 25 March 2020.

3.3 Access to public transport

The UN member states have adopted the 2030 Agenda for Sustainable Development, which includes 17 Sustainable Development Goals (SDGs). Under SDG 11 one of the targets is "to provide access to safe, affordable, accessible and sustainable transport systems for all, improve road safety, notably by expanding public transport, paying special attention to the needs of those in vulnerable situations, women, children, people with disabilities and older people". Progress towards this target is measured by indicator 11.2.1: the proportion of population that has convenient access to public transport, by sex, age and people with disabilities. UN-HABITAT, the UN agency responsible for indicator 11.2.1, has developed a methodology for producing the indicator. To contribute to UN efforts towards SDG indicator collection, we have applied the methodology developed by UN-HABITAT to European cities and towns.

The SDG indicator measures which part of the population has easy access to a public transport stop, regardless of the frequency of the services available at that stop. The assumption is that people are willing to walk 500 metres to reach a bus or tram stop, and 1 km to reach a metro or train station. The walking distances are measured along the street network, which means that the density of the street network and obstacles such as waterways, motorways or railways are taken into account.

This indicator relies upon comprehensive geolocated data of public transport stops. Although such data are available for the majority of cities and towns, full coverage is not yet guaranteed. This explains why certain countries and categories of settlements are absent from the analysis and are not represented in the figure.

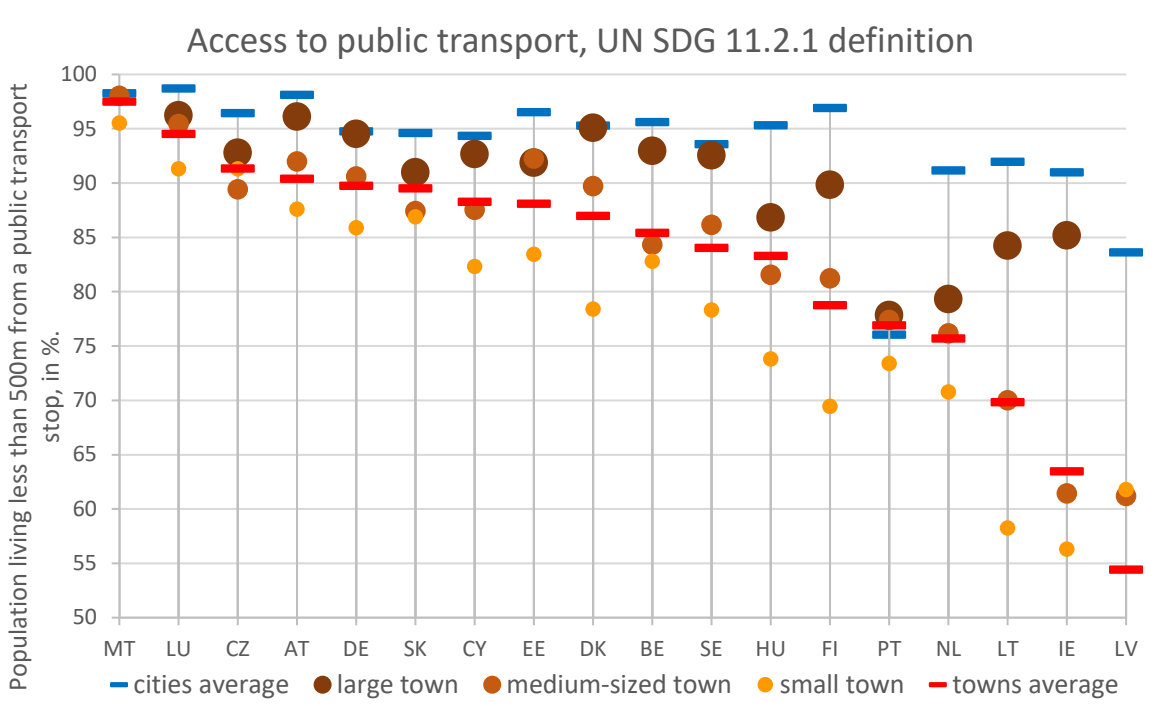


Figure 5: Access to public transport, UN SDG 11.2.1 definition

While core indicator 11.2.1 informs about a basic requirement of a regular public transport system, having a public transport stop nearby does not guarantee the availability of a sufficient level of service to make the public transport system an attractive mobility option. Where machine-readable timetable data are available, linked to the location of the stops, a basic filter of the stops can be applied by excluding stops where only occasional, infrequent services are available[11].

These timetables allow for a more sophisticated analysis of the proximity of population relative to the frequency of public transport services. A typology of frequencies of departures is established, ranging from low to very high frequencies, while keeping the distinction in proximity to bus and tram stops and to metro and train stations.

By using this typology, a population distribution by town or city is computed in accordance with the defined frequency classes. Consequently, a single additional indicator, defined as the share of population that has access to a medium, high or very high frequency of departures within walking distance, provides additional insight in the actual usefulness of the stops locations.

Figure 6 presents the results of this indicator for countries with a complete coverage of public transport timetables. In almost all the selected countries, the availability of frequent public transport services is lower in smaller towns. Luxembourg is an exception here, where all towns have a similar high level of frequent services provision. In most of the other countries for which complete data are available large towns score reasonably well, with the exception of the Netherlands and Ireland.

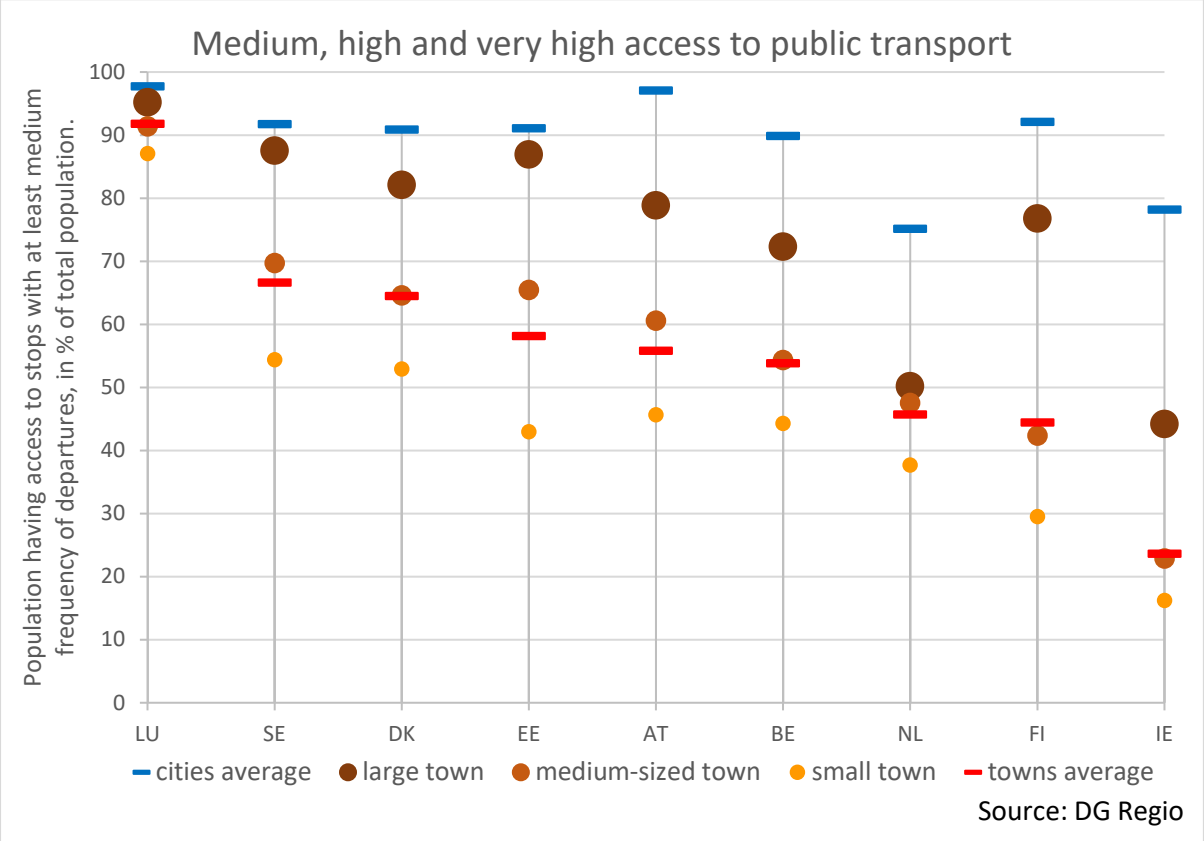


Figure 6: At least medium access to public transport

[11] Methodology and results by City can be found in *Measuring urban accessibility for low-carbon modes* (working paper), https://ec.europa.eu/regional_policy/information-sources/publications/working-papers/2020/low-carbon-urban-accessibility_en

3.4 Passenger rail performance

Using comprehensive data on passenger rail services scheduled timetables, station locations and the location of residential population, an indicator framework on rail accessibility, proximity and performance has been developed. In this framework, proximity is defined as the total number of people living within a defined radius around the place of departure. Accessibility is defined as the number of people living within that radius that can be reached by rail within a defined travel time. Rail performance is then defined as accessibility divided by proximity[12].

To assess rail performance in the context of towns we focus on rail trips of a length that is relevant for regular (daily) travel, for instance for commuting purposes. Hence, rail performance is calculated as the share of people living within a 60-km radius that are reachable by train travel within 45 minutes. Performance can also be measured for somewhat longer trips. The interactive map shows performance for trips up to 45 minutes within a 60-km radius, for trips up to 1.5 hour within 120 km and for longer trips up to 3 hours, within 240 km.

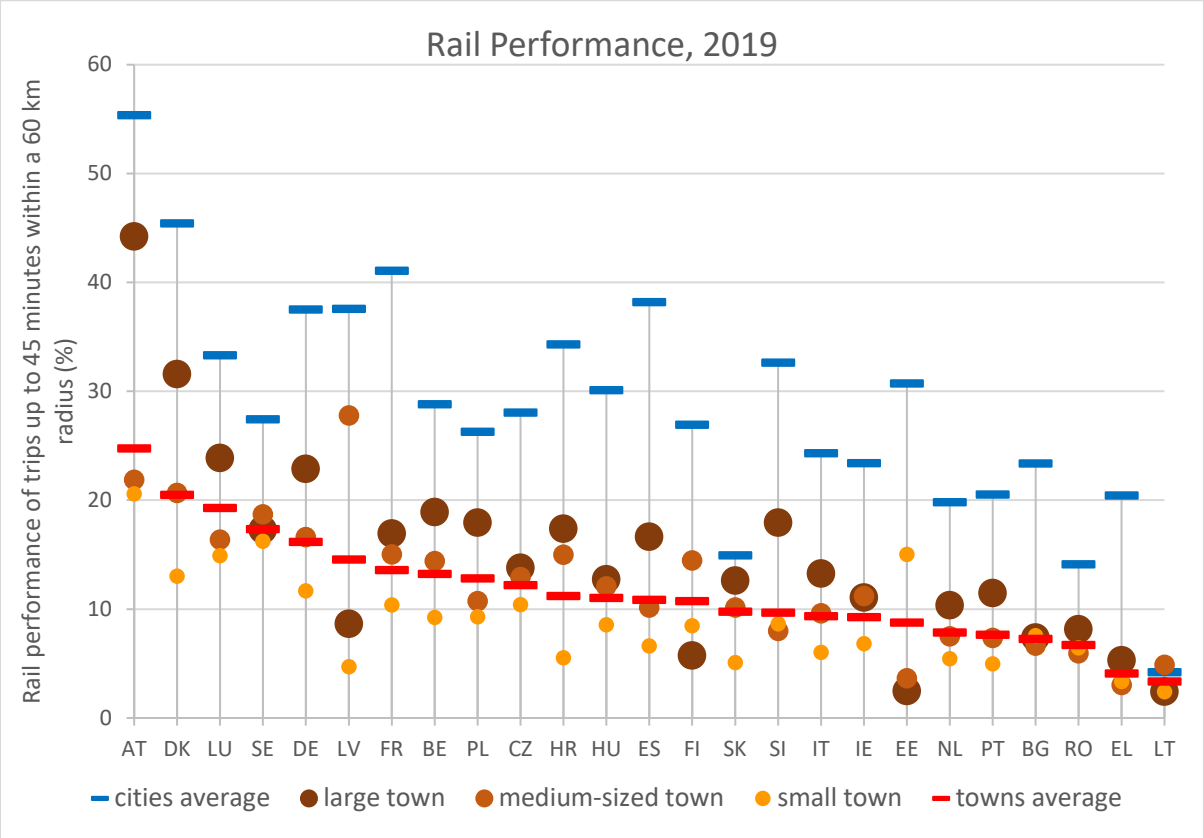


Figure 7: Rail performance

[12] For methodology and results at city and NUTS3 level, read *Passenger rail performance in Europe: Regional and territorial accessibility indicators for passenger rail* (working paper), https://ec.europa.eu/regional_policy/information-sources/publications/working-papers/2022/passenger-rail-performance-in-europe-regional-and-territorial-accessibility-indicators-for-passenger-rail_en

On average, performance for such trips amounts to 12.1% in EU towns, whereas the average for all EU cities is 30.7%. The size class of towns and their remoteness influences their rail performance: generally, remote towns and small towns have lower scores than larger towns that are relatively close to a city.

Part of the difference in performance between towns and cities relates to the difference in availability of rail stations nearby[13]. In towns 65.6% of population lives close to a rail station, whereas in cities this percentage is as high as 79.9%.

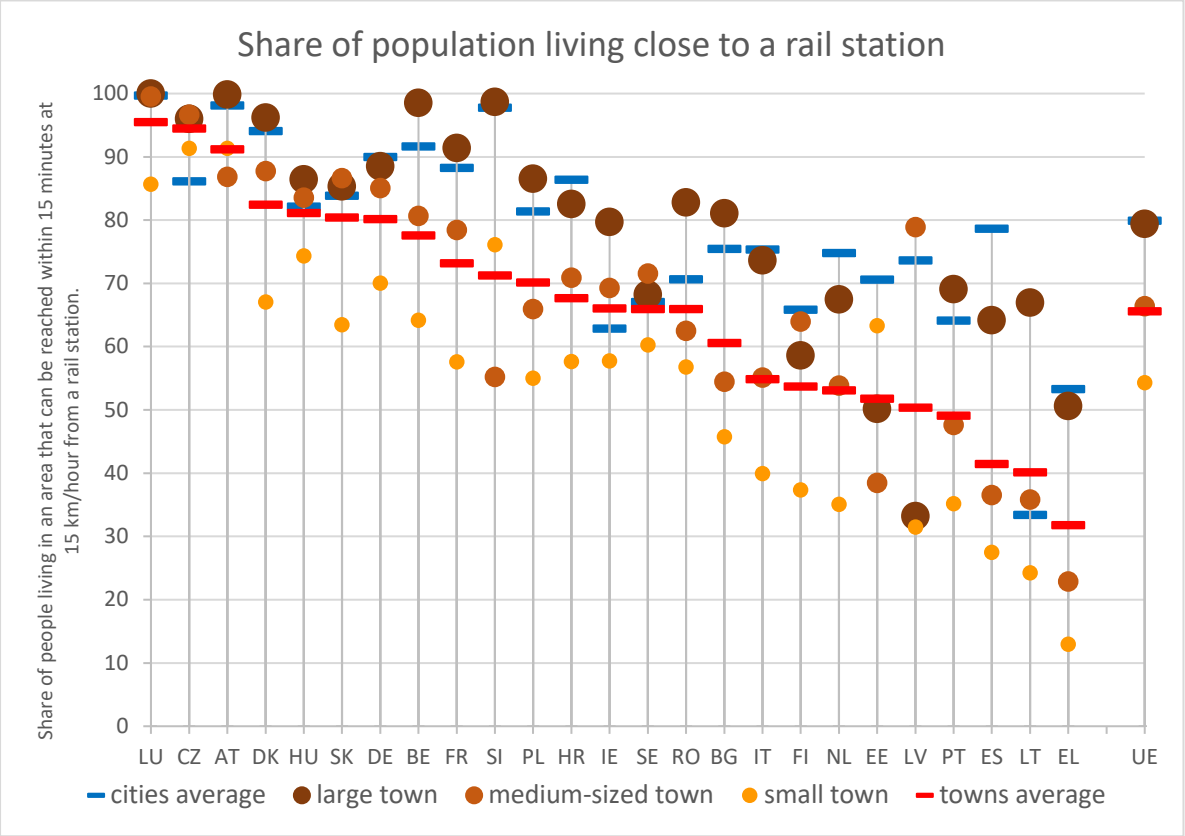


Figure 8: Population living close to a railway station

[13] In this context, "close to a station" means: living in an area that can be reached within 15 minutes at 15 km/hour from a rail station. These parameters are used as a proxy for an area from where the station can easily be reached by car (including possible congestion and or parking time), bike or by a short public transport trip. Full methodology can be read in: Redefining passenger rail performance and proximity to stations (technical paper), https://ec.europa.eu/regional_policy/sources/work/rail-2022/rail-2022-technical.pdf

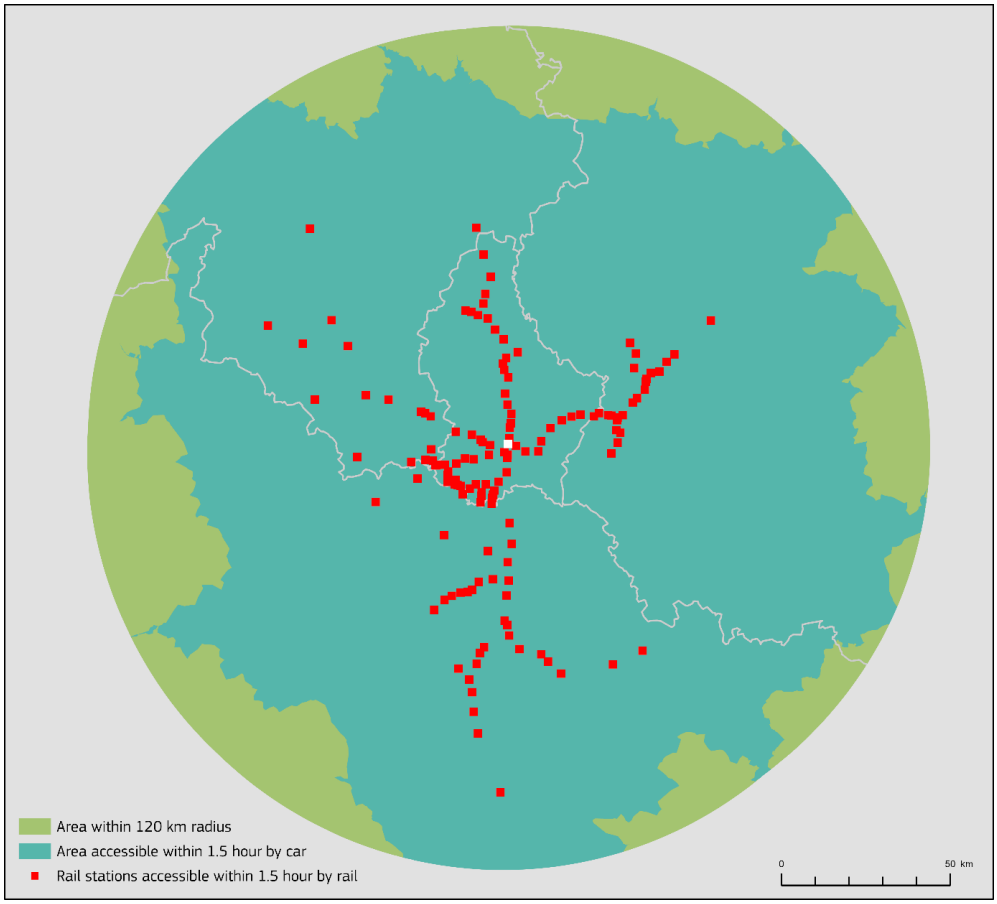


Figure 9: The concepts of proximity, accessibility and performance by rail and road

3.5 Road performance

Similar to the rail performance indicator, road performance measures accessibility by road benchmarked against the proximity of population. It is defined as the share of people living within a 120 km radius that can be reached within 1h30 min by car[14].

On average in the EU, road performance reaches 86.3% in cities, and 75.5% in towns. These indicators are highest (over 90%) in Cyprus, Belgium, Malta and the Netherlands.

In several countries, towns show similar levels of road performance compared to cities. In most Member States, the size of towns barely influences the value of road performance. Countries with lower values of road performance in cities often present a wider gap in road performance between cities and towns.

[14] Road Transport Performance in Europe: Introducing a new accessibility framework, https://ec.europa.eu/regional_policy/information-sources/publications/working-papers/2019/road-transport-performance-in-europe_en

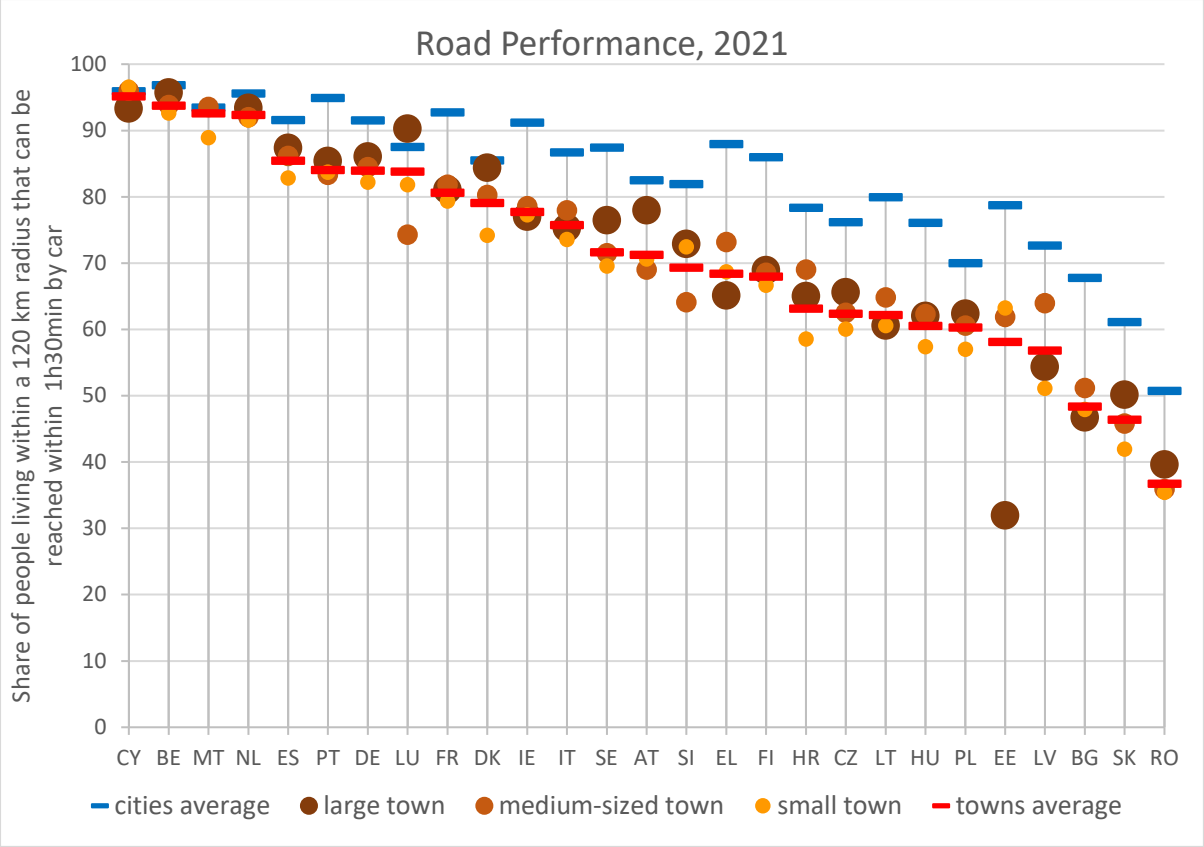


Figure 10: road performance

3.6 Towns as regional centres

A regional centre is a town or a city that is the biggest within a certain driving time. For this paper, we used a threshold of 45 minutes within the same country.

About half the EU cities are regional centres, but only about 4% of all towns are. Regional centres are more evenly distributed across the territory than the other cities and towns (see map), as all the settlements close to a bigger settlement are discarded. As a result, towns that are defined as regional centres are mostly located in remote areas.

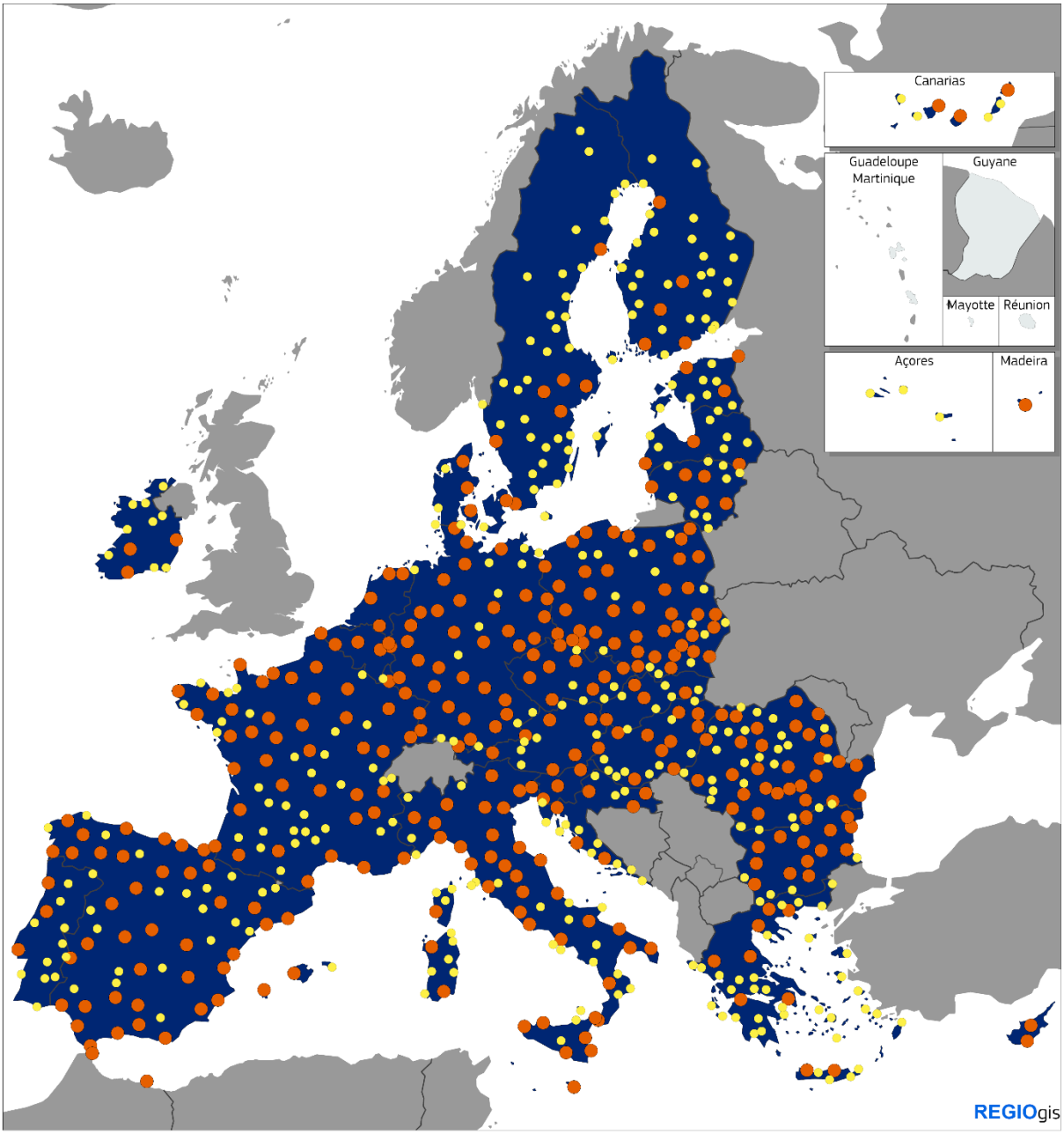
On average, regional centres tend to have a larger population, a higher density and cover a larger area (see table). In regional centres, a slightly larger share of their population lives close to a school or a public transport stop. Travel time to the nearest health care facility is also slightly lower in regional centres. All this highlights their wider service provision role.

Rail services follow a more complex logic. For towns, being a regional centre means that more people live close to a station, but rail performance is lower (9 versus 12%). For cities, the share of population living close to train station is similar, but rail performance is higher in regional centres (33 versus 23%).

Road performance is a lot lower in towns that are a regional centre (56%) as compared to other towns (77%). The difference in road performance for the two types of cities is small (86 versus 88%). Being close to a larger city will tend to increase road performance as road density will be higher and more highways will be present. This may explain the lower performance in regional centres.

Table 4 Comparing Regional centres and towns and cities closer to a larger settlement

	Towns		Cities	
	Regional centre	**Close to a larger town or city**	**Regional centre**	**Close to a larger city**
Number	339	7,634	335	350
Population	21 337	11 392	336 375	100623
Area, sq km	7.5	5.3	64	25
Population density inh./sq km	2 856	2 133	5 256	4 086
Share of population close to a school, %	81.8	78.8	90.1	88.2
Share of population close to a public transport stop (SDG 11.2.1), %	83.3	83.1	92.4	89.5
Average travel time by car to the nearest health care facility, in minutes	8.1	8.6	4.2	4.8
Share of population close to a train station	71	65	79	81
Rail performance (45 min/60 km)	9	12	33	23
Road performance (90 min/120 km)	56	77	86	88



Regional Centres, 2011

Towns
No Data
Cities

A settlement is defined as regional centre if it is the largest one (in terms of population) within a 45-minutes drive by car. This typology is assessed within each country separately.

0 500 Km

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4 Conclusions and next steps

This paper has shown that we can increasingly gather data for towns in the EU. They can help to understand what services they provide and how they are changing over time. This paper only showed a limited number of indicators, but more can be calculated, as shown by the JRC Policy Atlas[15].

To continue the analysis of towns, three next steps will be crucial.

1. Update the towns in the EU to reference year 2021.
   In 2024, the final version of the 2021 population grid will be published. Applying the Degree of Urbanisation to this grid will generate a new list of towns in the EU. Although we do not expect major changes in the number of towns in the EU, many of them will have experienced a change in population and/or area. In some cases, the population of a town will have shrunk to less than 5 000 inhabitants, turning it into a village. In other cases, the population of a village will have surpassed 5 000 inhabitants turning it into a town.
2. Exploit the new indicators released as part of the 2021 census.
   The population grid for 2021 will include more information than total population. It will also provide a breakdown of population by age and sex and by country of birth. This will provide us with new insights in the demographic characteristics of town residents. It is expected that many Member States will also provide grid data on the number of residents in employment. Furthermore, indicators published at the local administrative unit level (LAU) as part of Eurostat's census hub can also be used to analyse towns.
3. As part of the global implementation of the Degree of Urbanisation, some statistical offices asked whether the definition of semi-dense towns could be improved. As a result, tests are ongoing to see if small adjustment can help to address the issues identified. If a new definition of semi-dense towns is approved as part of the Degree of Urbanisation, this will have to be implemented in the EU as well.

5 References

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