European Road Safety Observatory

Facts and Figures – Regional distribution of fatalities - 2021

This document is part of a series of 18 *Facts and Figures* reports. The purpose of these *Facts and Figures* reports is to provide recent statistics related to a specific road safety topic, for example a specific age group or transport mode. The *Facts and Figures* reports replace the Basic Fact Sheets series that were available until 2018 (containing data up to 2016). The most recent figures in this *Facts and Figures* report of 2021 refer to 2019.

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Referencing	Reproduction of this document is allowed with due acknowledgement. Please refer to the document as follows: European Commission (2021) Facts and Figures Regional distribution of fatalities. European Road Safety Observatory. Brussels, European Commission, Directorate General for Transport.
Sources	Information in this document is based largely on data in the CARE database (Community database on Accidents on the Roads in Europe). Other data are taken from Eurostat. Date of extraction: 12 October 2021

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1 Key Facts

This Facts and Figures report looks at the regional distribution of fatalities. The NUTS classification lists 92 regions at NUTS 1, 242 regions at NUTS 2 and 1166 regions at NUTS 3 level. This report presents an analysis of fatalities at the NUTS 2 level. The population threshold for this NUTS level is 800,000 to 3,000,000 inhabitants. The NUTS regions are re-assessed every three years, when a new NUTS definition is published. For most of the Figures in this report, the sum of road fatalities in 2018 and road fatalities in 2019 was considered. Care should be taken in interpretation even though we have removed regions with fewer than 10 fatalities. The analysis of the trend in the number of fatalities takes into account the changes made to the NUTS definition over the years.

The mortality rate (the number of fatalities per million inhabitants) is highest in Eastern Europe. **Some of the NUTS-2 regions with the highest mortality rates can be found in Poland, Bulgaria and Romania**. Some regions in Belgium and Portugal had a mortality rate three times higher than the European average. **The regions with the largest decreases in fatalities were spread throughout the EU**.

The mortality rate for male fatalities (the number of male fatalities per million inhabitants) was high Eastern Europe, but the share of male fatalities in the total number of fatalities was comparatively lower in these regions. This share of male fatalities was highest in regions in Southern Europe. **It is noticeable that there was a higher share of male fatalities in the south of some countries, compared to the north of these countries**.

With regard to age, we can conclude that **the mortality rate for young people and the mortality rate for seniors was higher in Eastern Europe**. Some regions in Western Europe, such as Spain and Portugal, also had a higher mortality rate among seniors.

Looking at the mortality rates for different transport modes:

- In regions in Western Europe and Northern Europe, there was mainly a higher mortality rate for car occupants and a lower mortality rate for pedestrians.
- Central and Eastern Europe was characterised by a higher mortality rate for cyclists and pedestrians, while the mortality rate for car occupants was also higher in these regions.
- Motorcycles and moped are popular in the south of Europe, the mortality rate for powered two-wheelers was higher in these regions.

There was a higher share of fatalities (in the total number of fatalities) on motorways in Southern Europe and Western Europe, especially in Belgium and Spain. The proportion of fatalities in the total number of road fatalities on rural roads was higher in Western and Northern Europe, and the proportion of fatalities on urban roads was higher in Eastern Europe. **In regions in Eastern Europe, there was also a higher share of vulnerable road user fatalities on urban roads (in the total number of vulnerable road user fatalities)**.

Basic definitions

NUTS-2 region:

The NUTS 2 codes developed by Eurostat corresponding to the individual region where the accident occurred. The NUTS classification (Nomenclature of territorial units for statistics) is a hierarchical system for dividing up the economic territory of the EU for the purpose of collection, development and harmonisation of European regional statistics, socio-economic analyses of the regions and framing EU regional policies.

Fatality:

Total number of persons fatally injured; correction factors applied when needed. Death within 30 days of the road crash, confirmed suicide and natural death are not included.

More detailed data:

This Facts and Figures report is accompanied by an Excel file (available online) containing a large set of additional detailed data. Each sheet in the Excel file corresponds to a Figure/Table in the report.

2 Main trends

2.1 Mortality rate: number of road fatalities per million inhabitants

The mortality rate (the number of fatalities per million inhabitants) is highest in Eastern Europe. **Some of the NUTS-2 regions with the highest mortality rates can be found in Poland, Bulgaria and Romania**. The mortality rate in these countries is high in almost all NUTS 2 regions. There are also some regions in Western Europe with a high mortality rate, including regions in Portugal, Belgium, Greece and France. In contrast, other regions in these countries are performing well. In most countries there are regions with a low mortality rate as well with a high mortality rate.

NUTS-2 regions Alentejo, in the south of Portugal, and the province of Luxembourg, in the south of Belgium, have a mortality rate that is almost three times higher than the overall mortality rate for EU27.

Figure 1. Fatalities per million inhabitants per NUTS-2 region in the EU27 (2018-2019). Source: CARE, EUROSTAT

Note: regions with 10 fatalities or less are not included in the Figure

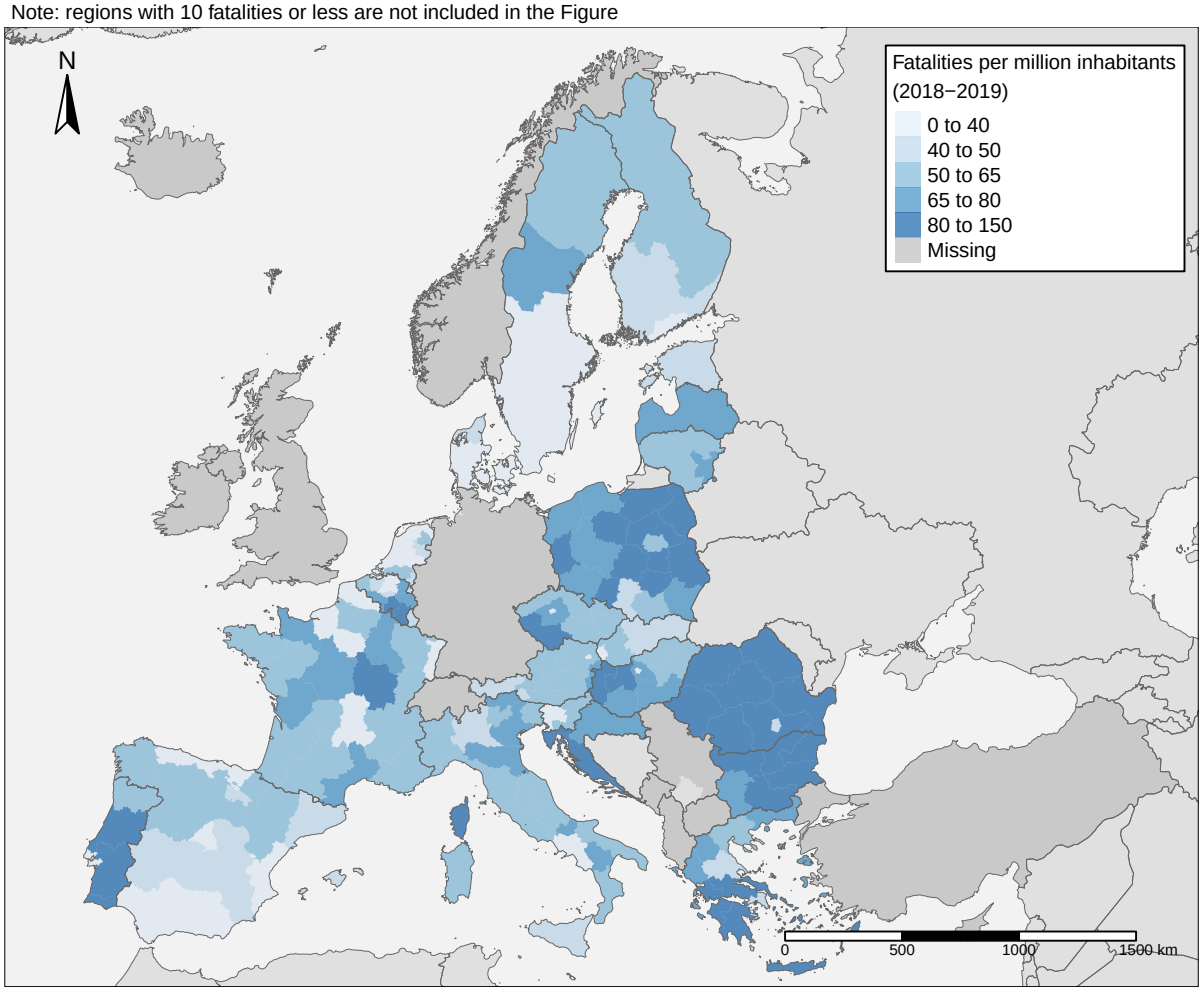
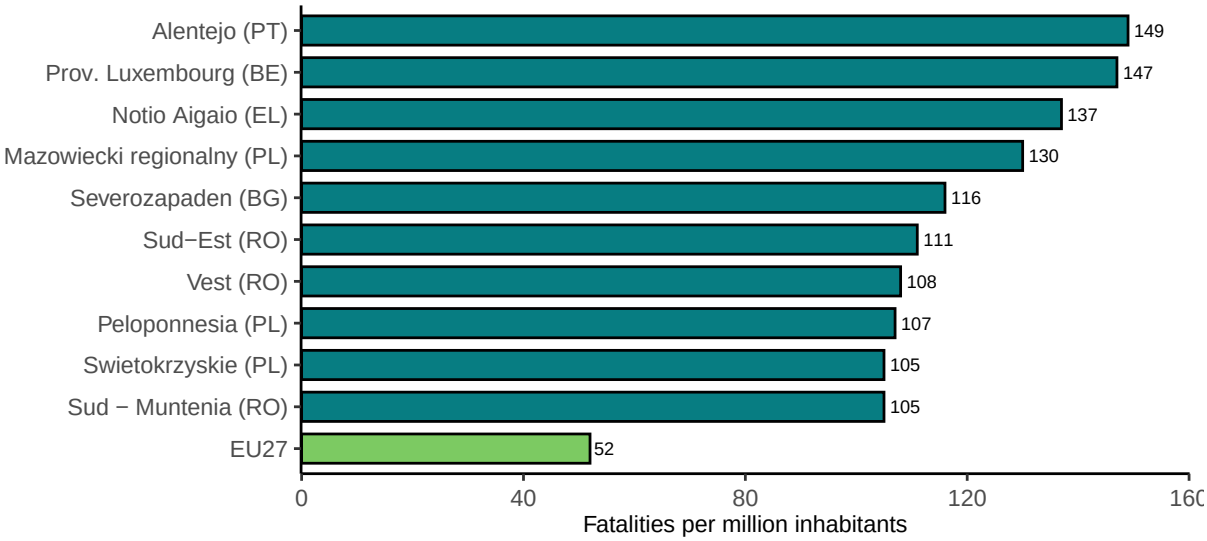


Figure 2. Fatalities per million inhabitants: NUTS-2 regions with the highest fatality rates in the EU27 (2018-2019). Source: CARE, EUROSTAT



2.2 Trend in the number of fatalities

The evolution in fatalities for individual NUTS-2 regions is calculated by comparing three-year averages, i.e. 2017-2019 versus 2012-2014. Data from the CARE database is supplemented with data from EUROSTAT.

The number of fatalities in the EU27 has decreased by 7% in this time period. **Some regions have a much larger decrease compared to the EU average. These are spread throughout the EU**, but are mainly located in Sweden, Germany, Belgium, Latvia, Poland and Estonia. In Belgium, Latvia and Estonia there is a decrease in the number of road fatalities in all regions, and thus also a strong decrease at the country level. In Germany, Sweden and Poland, there is a decrease in some regions but an increase in others. In these three countries, therefore, a smaller decrease can be observed at the country level.

On the other hand, there are also regions with large increases in fatalities: some regions in Sweden, the Netherlands, Spain, Bulgaria, Denmark and Italy have shown an increase of 15% to 28% in fatalities. In these countries, there is also a very mixed picture, with the number of deaths decreasing in some regions but increasing in others.

Figure 3. Percentage change in the number of fatalities per NUTS-2 region in the EU27 (2012-2014 and 2017-2019). Source: CARE, EUROSTAT

Note: NUTS2 regions that are not included in the figure are regions with missing data, regions for which the boundaries have changed and regions with 10 fatalities or less

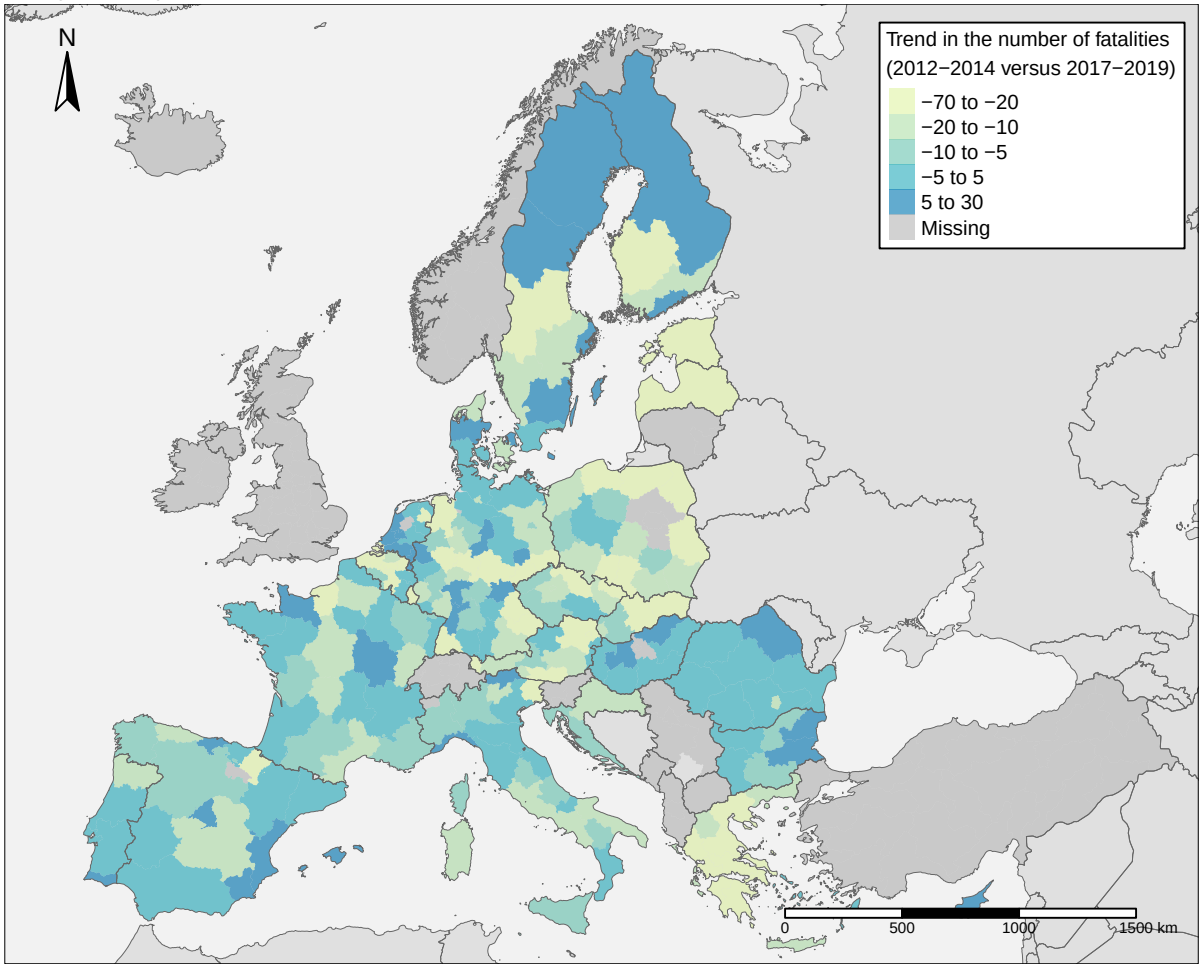
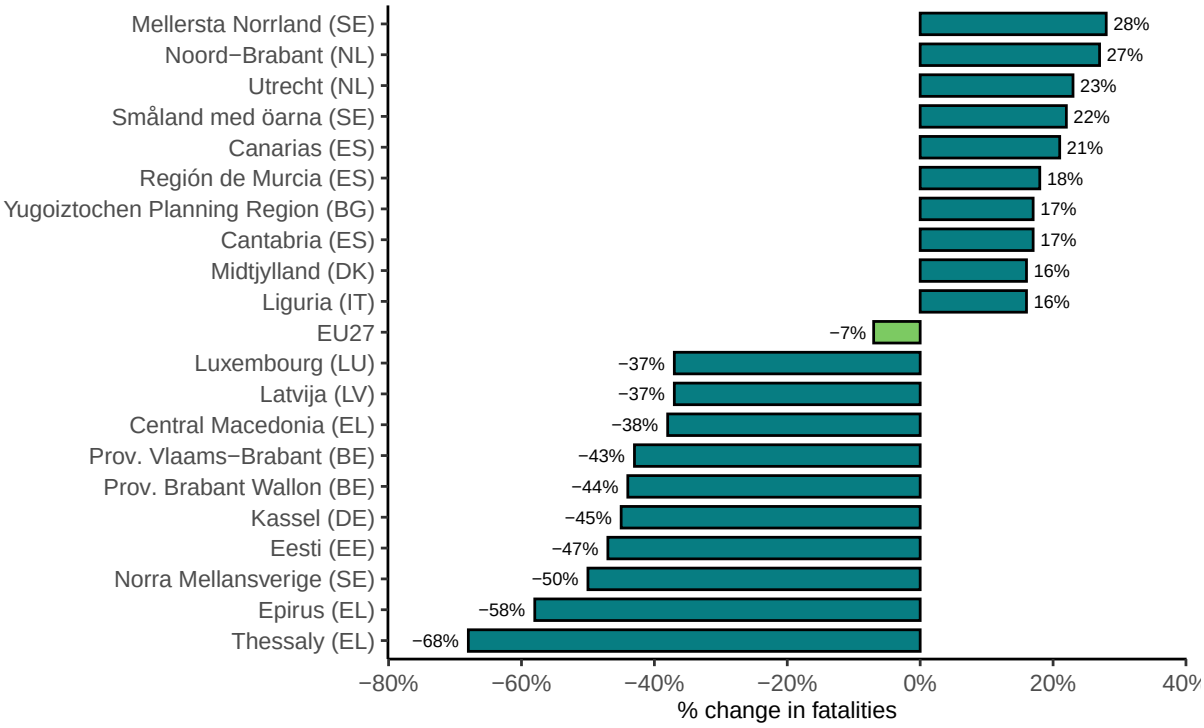


Figure 4. Percentage change in the number of fatalities, ten best and ten worst performing NUTS-2 regions in the EU27 (2012-2014 and 2017-2019). Source: CARE, EUROSTAT

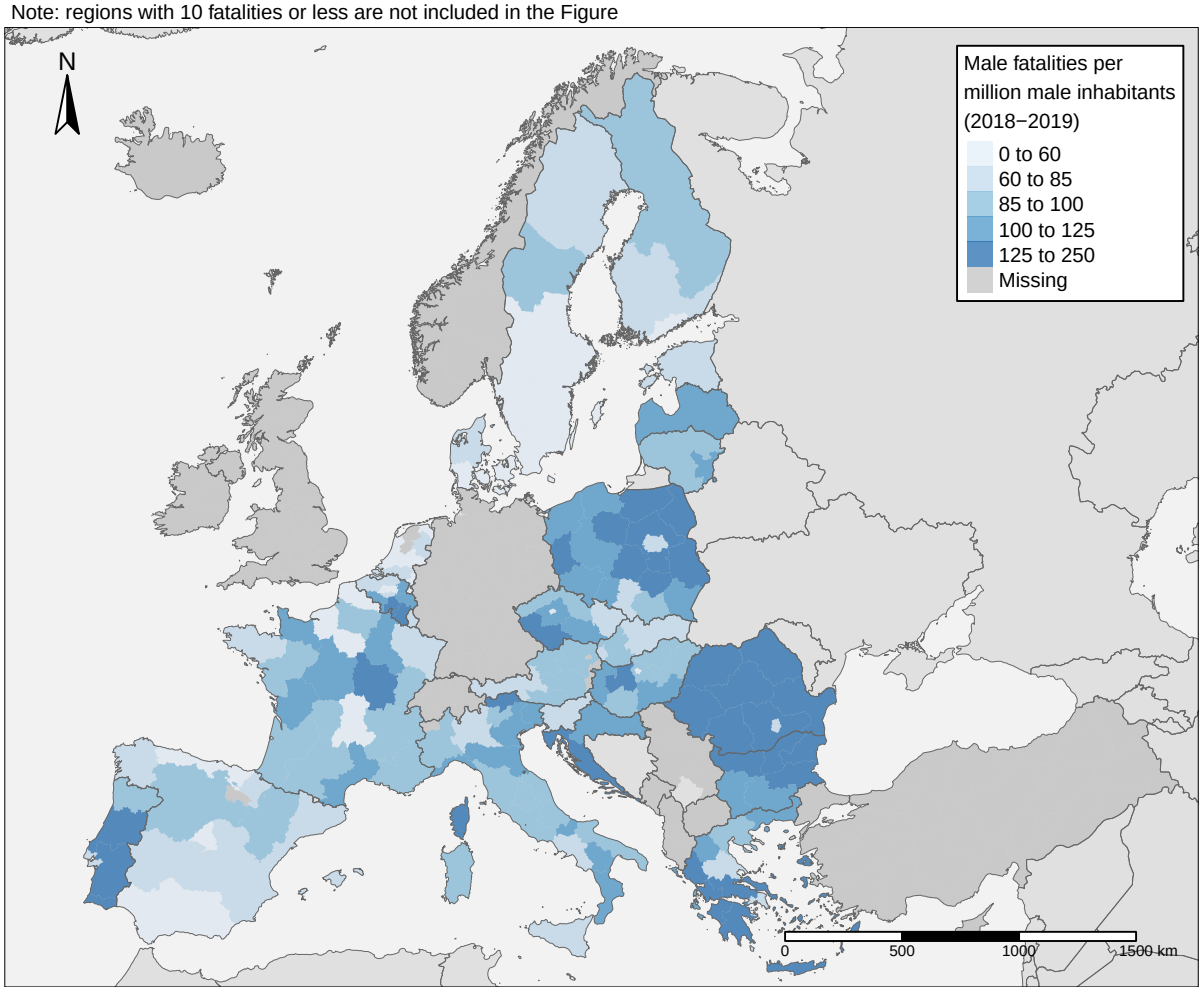


3 Gender

The mortality rate for males is high in Eastern Europe, mainly in certain regions in Romania (mortality rate between 67 and 174 per million inhabitants), Bulgaria (mortality rate between 103 and 183) and Poland (mortality rate between 67 and 202). **The highest mortality rate for males can be found in the south of Portugal (mortality rate of 244)**. The regions with higher overall mortality (see Figure 5) also have high mortality rates for male fatalities.

Figure 5. Male fatalities per million male inhabitants per NUTS-2 region in the EU27 (2018-2019). Source: CARE

Note: regions with 10 fatalities or less are not included in the Figure

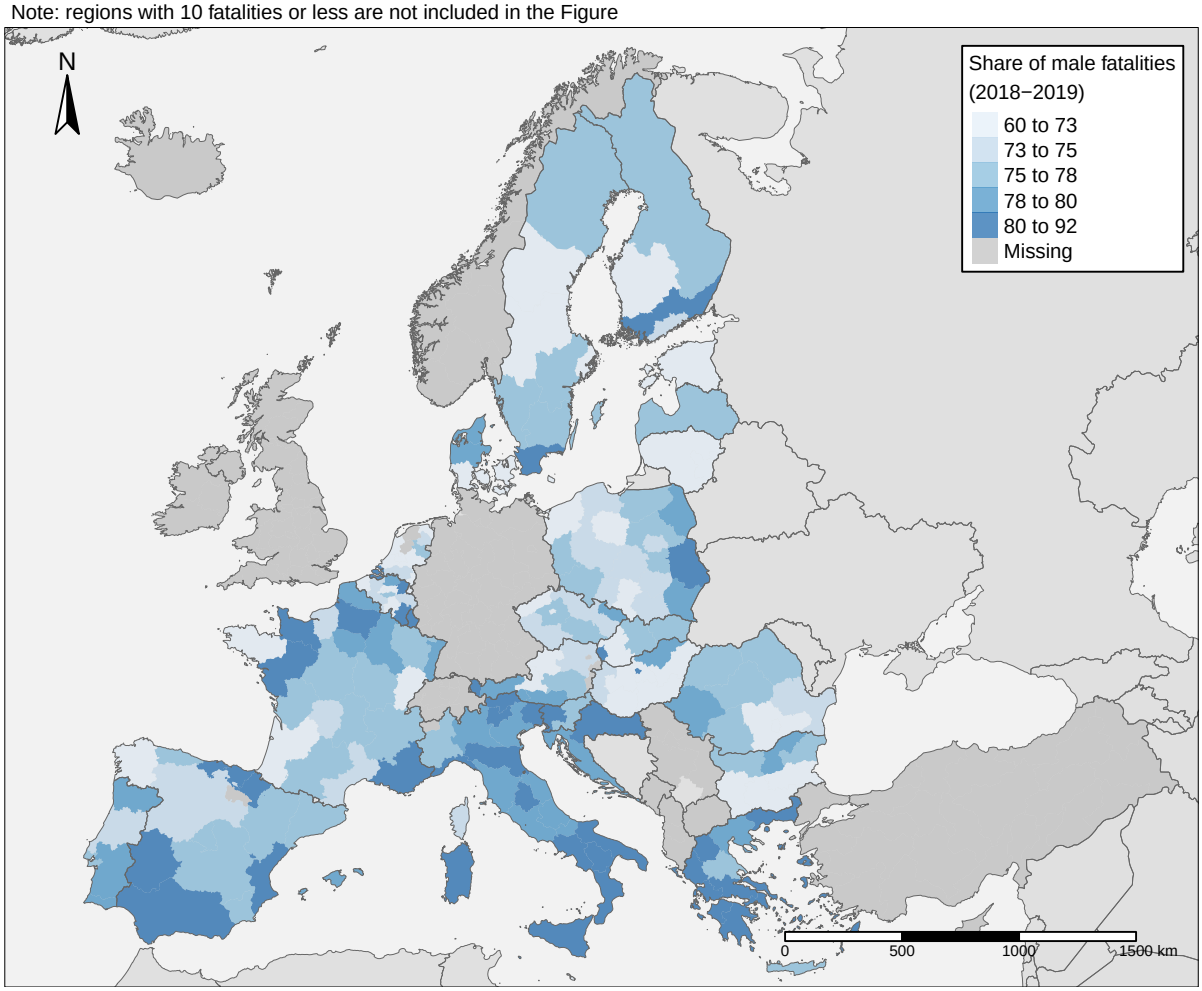


Mortality is an important indicator, but does not take into account differences in the general state of road safety across countries. Therefore, it is important to also look at the proportion or share of males killed in the total number of road fatalities.

The share of males in total fatalities is highest in Southern Europe. **It is also noticeable that in some countries, there is a higher proportion of males in total fatalities in regions in the south compared to regions in the north of that country (for example Italy, Spain, Finland and Sweden)**.

Figure 6. Share of male fatalities within the total number of fatalities per NUTS-2 region in the EU27 (2018-2019). Source: CARE

Note: regions with 10 fatalities or less are not included in the Figure



4 Age

4.1 Number of road fatalities among young people per million inhabitants of the same age group

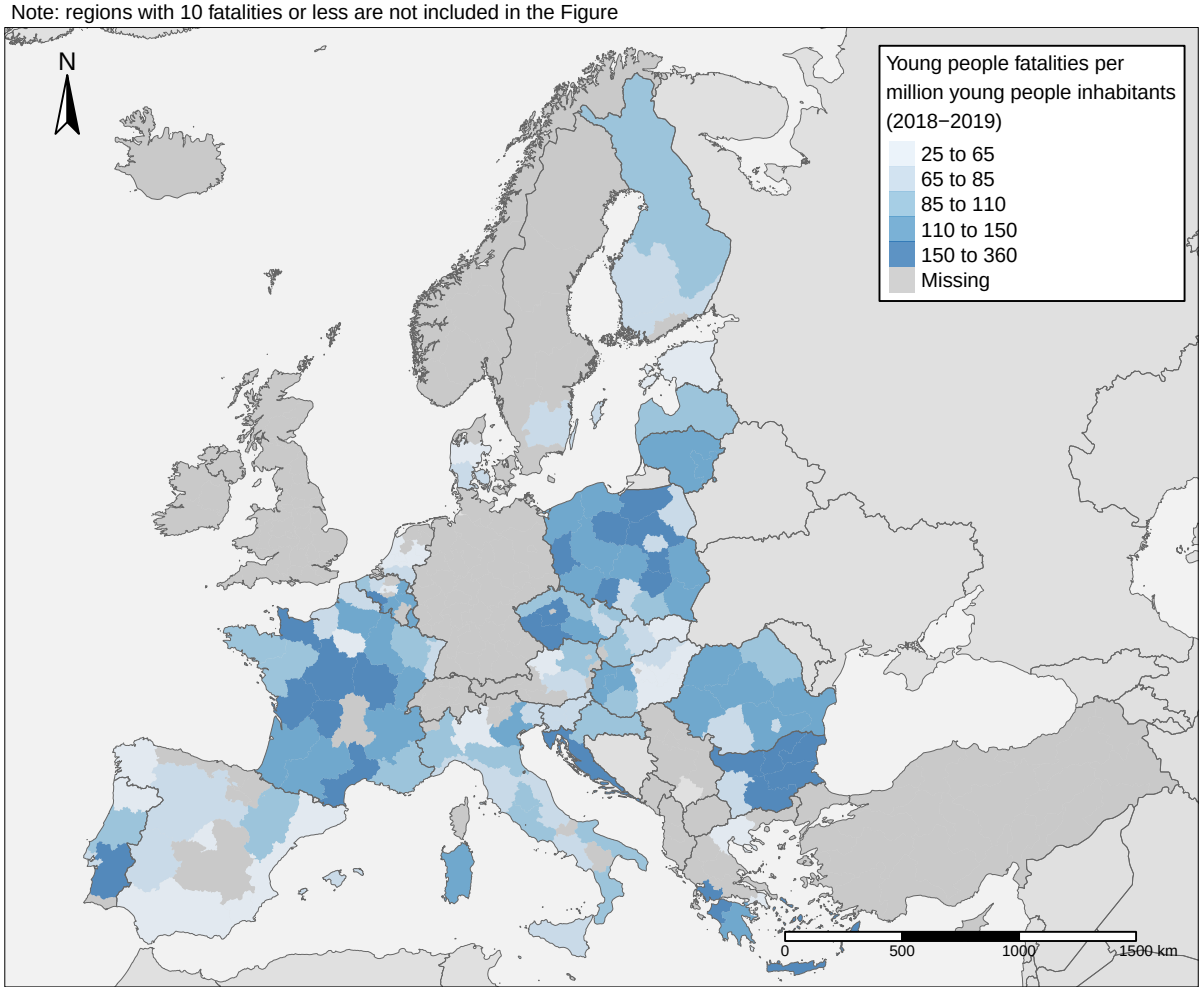
The mortality rate for young people aged 18-24 is highest in Eastern Europe. There are also regions in France and Portugal where the mortality rates for this age group are high.

There are some regions with a very high mortality rate (190 or more) in the south of Greece, the south of Portugal, throughout Bulgaria and throughout Poland.

Both Mazowiecki regionalny (Poland) and Alentejo (Portugal) have an overall high mortality rate and a high mortality among young people.

Figure 7. Fatalities among young people aged 18-24 per million inhabitants aged 18-24, per NUTS-2 region in the EU27 (2018-2019). Source: CARE, EUROSTAT

Note: regions with 10 fatalities or less are not included in the Figure



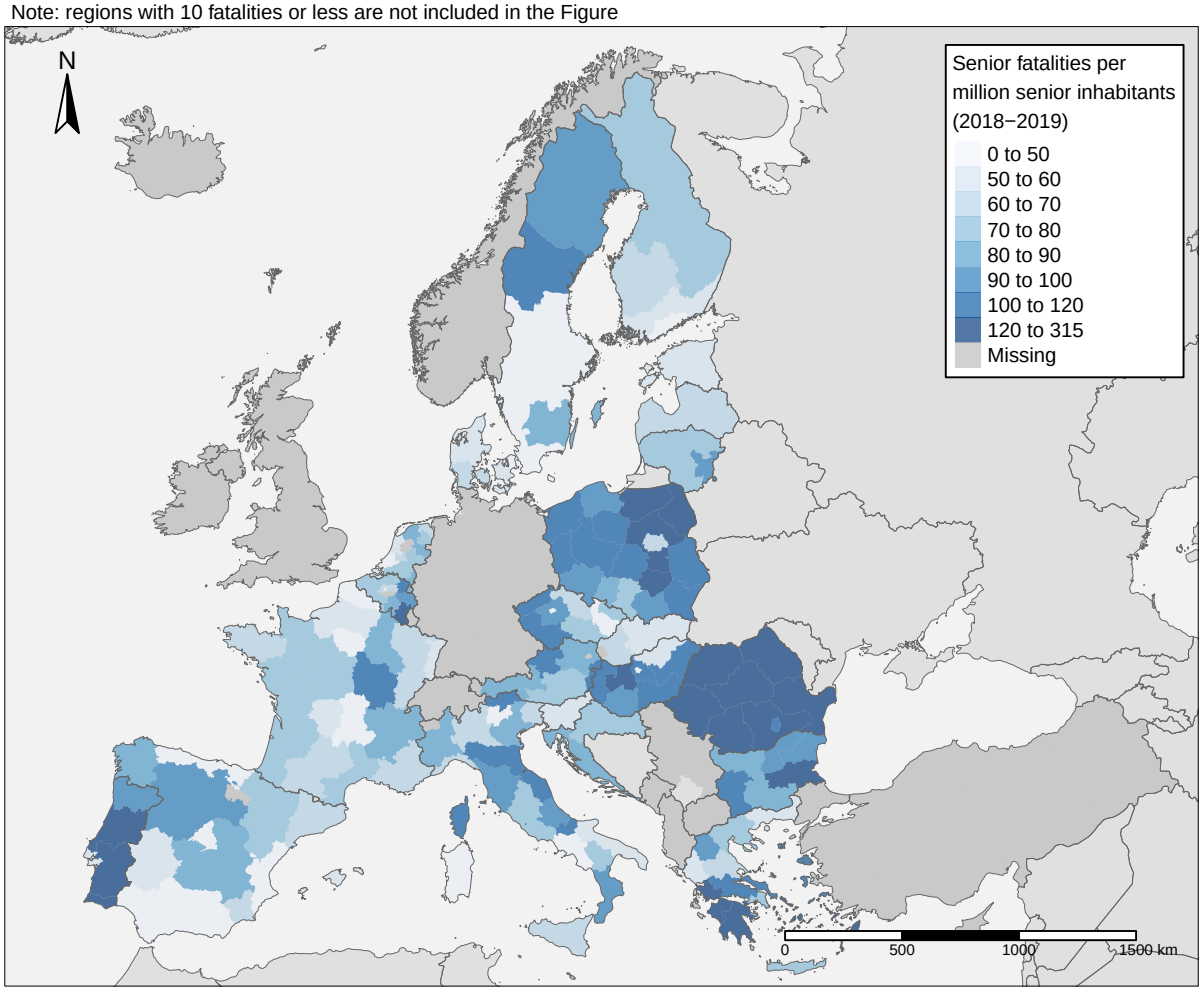
4.2 Number of road fatalities among seniors per million inhabitants of the same age group

The mortality rate for seniors (65+) is highest in regions in Eastern Europe, mainly in regions throughout Romania, and also in regions in Poland and Bulgaria. Some regions in Western Europe,

mainly in the south of Portugal, have a high mortality rate as well.

Figure 8. Senior fatalities per million senior inhabitants, per NUTS-2 region in the EU27 (2018-2019). Source: CARE, EUROSTAT

Note: regions with 10 fatalities or less are not included in the Figure



5 Transport mode

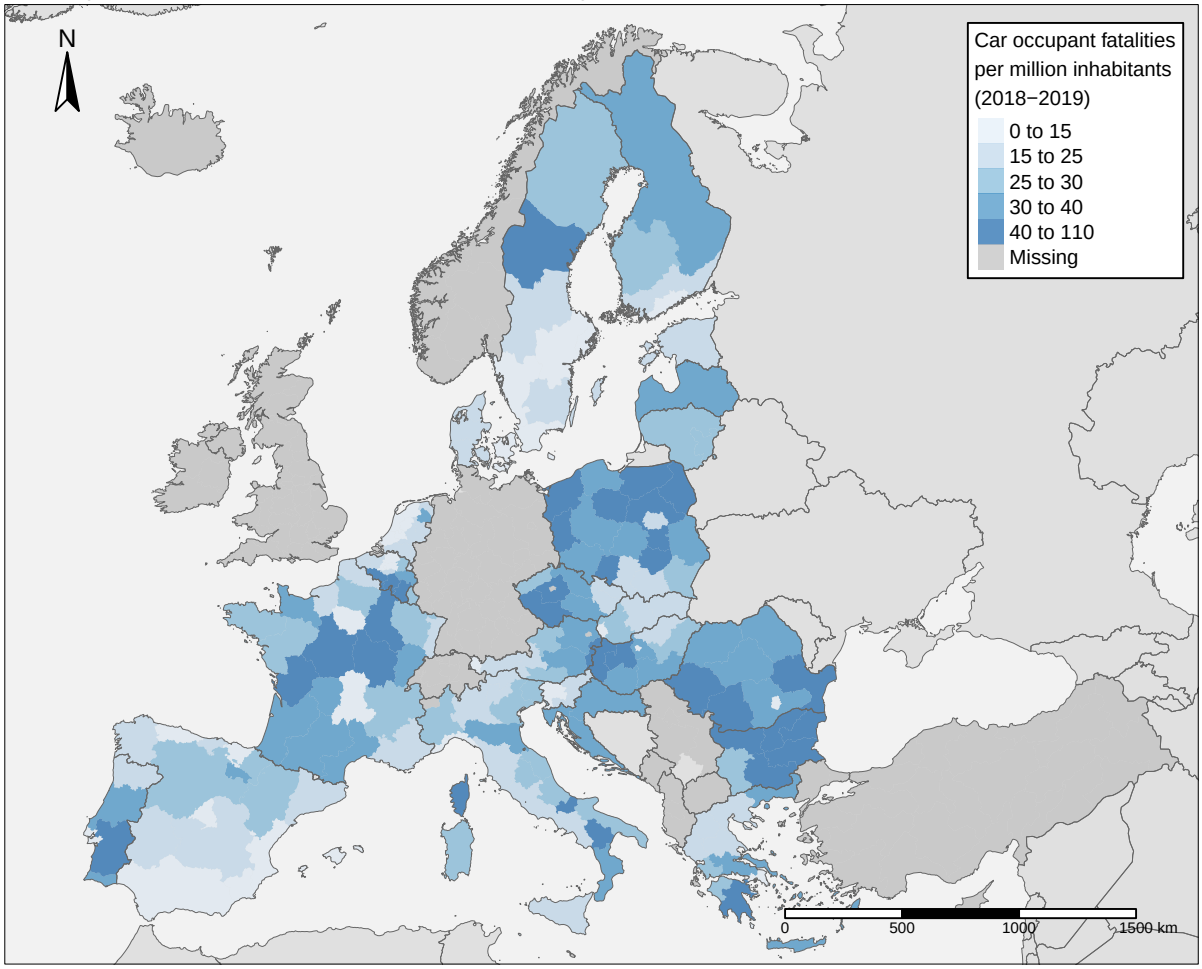
5.1 Mortality rate: number of road fatalities among *car occupants* per million inhabitants

The highest mortality rate for car occupant is found in Belgium, in the province of Luxembourg, whereas there is also a high mortality rate in the province of Namur. It is also high in some regions in Eastern Europe: in the north of Bulgaria (Severozapaden, Yugoiztochen and Severoiztochen), in some regions in Poland (Mazowiecki regionalny, Lubuskie and Kujawsko-Pomorskie), in Alentejo in the South of Portugal and in Jihozápad in Czechia.

The mileage (per inhabitant) for passenger cars differs among Member States. For example, the high mortality rate in Poland is more prominent given the relatively low mileage. Slovenia is doing well with a very low mortality rate despite the highest mileage among Member States.

Figure 9. Car occupant fatalities per million inhabitants, per NUTS-2 region in the EU27 (2018-2019). Source: CARE, EUROSTAT

Note: regions with 10 fatalities or less are not included in the Figure



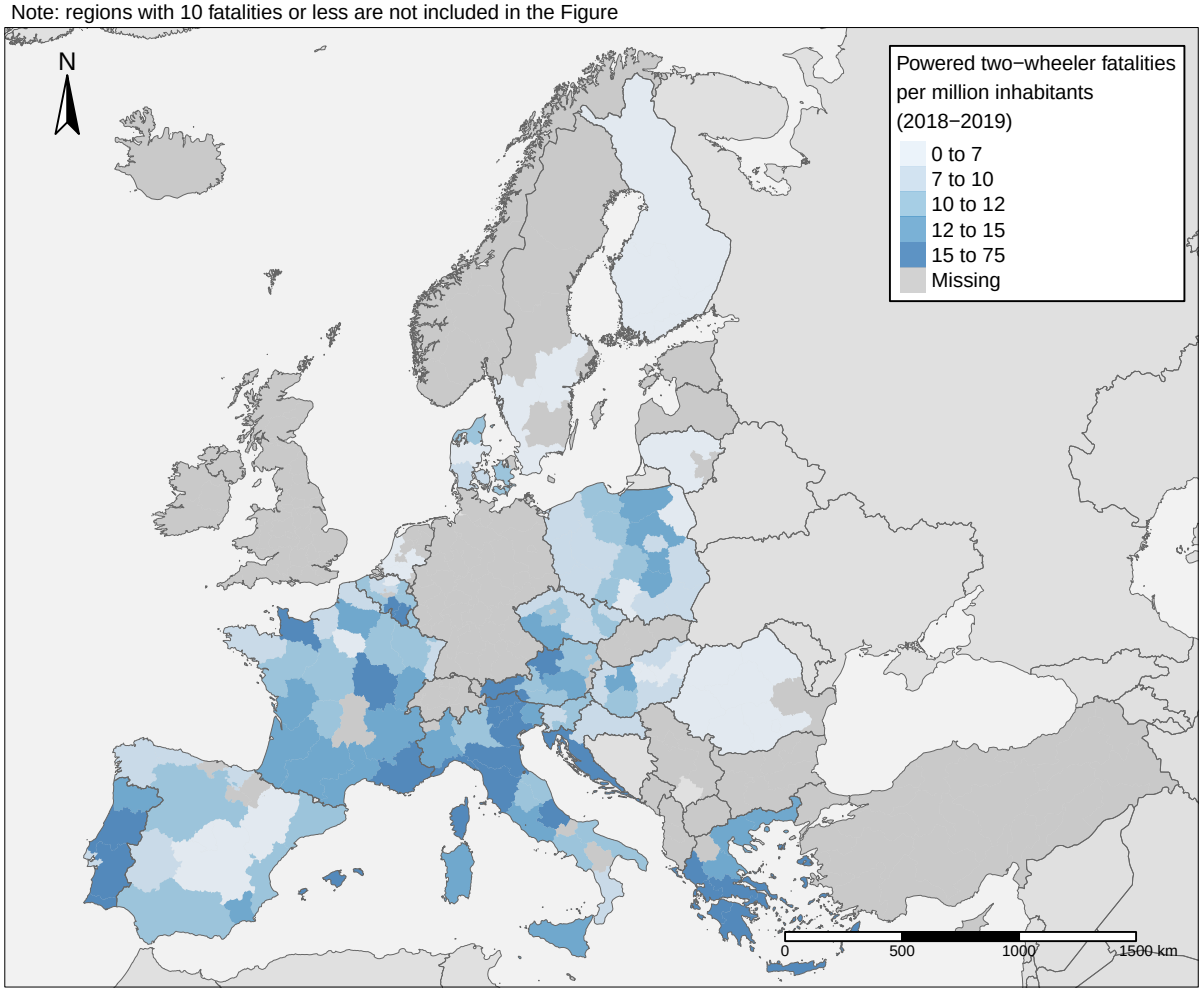
5.2 Mortality rate: number of road fatalities among *powered two-wheelers* per million inhabitants

The mortality rate for powered two-wheelers is high throughout regions in Greece, and also in regions in Portugal (Algarve and Região Autónoma dos Açores), Italy (Provincia Autonoma di Bolzano/Bozen and Provincia Autonoma di Trento) and in Croatia (Jadranska Hrvatska).

The higher popularity of powered two-wheelers (PTWs) in the south of the EU needs to be taken into account when interpreting this map. According to the ESRA survey (Yannis et al., 2020) , 21% and 23% of adult Italians and Greeks, respectively, made a trip by PTW in 2018. This percentage was 13% for all 20 EU countries participating in the survey.

Figure 10. Powered two-wheeler fatalities per million inhabitants, per NUTS-2 region in the EU27 (2018-2019). Source: CARE, EUROSTAT

Note: regions with 10 fatalities or less are not included in the Figure



5.3 Mortality rate: number of road fatalities among *cyclists* per million inhabitants

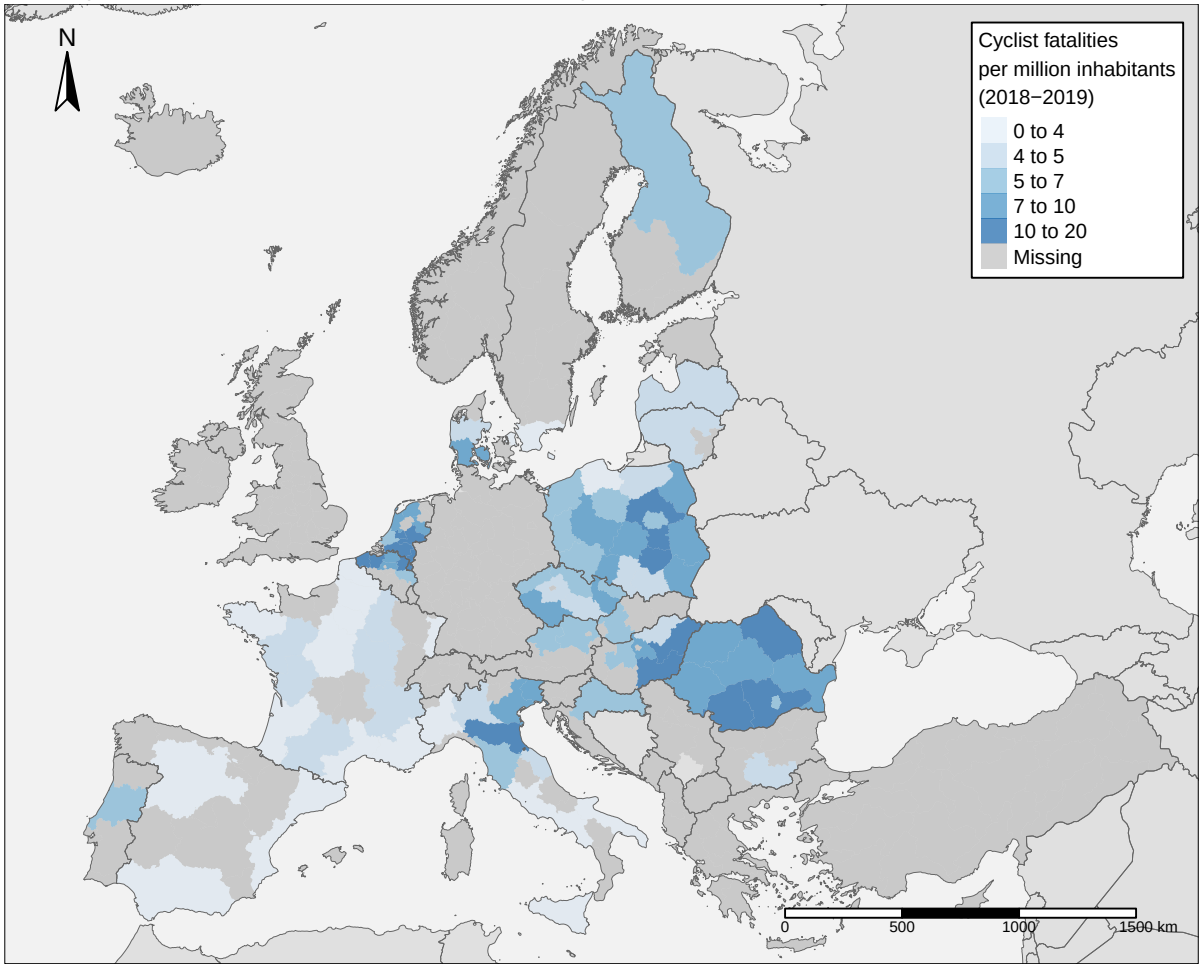
The mortality rate for cyclists is highest in the north of Belgium, in Province Limburg and Province West-Vlaanderen, whilst the mortality rate is also high in neigbouring country Netherlands, in Limburg, Noord-Brabant and Gelderland. Regions in Poland (Mazowiecki regionalny), Romania (Sud-Vest Oltenia, Sud - Muntenia and Nord-Est) and Hungary (Észak-Alföld and Dél-Alföld) are also found to have a high mortality rate. It is no coincidence that cycling in these countries is known for

its popularity, although the number of cycling fatalities in a given country is also influenced by other factors such as sufficient investment in safe cycling infrastructure.

The ESRA2 survey (Achermann, Berbatovci, & Buttler, 2020) contains information by country on the frequency of cycling by adults. In Poland and Hungary, at least 80% of the respondents used this mode of transport for at least a few days during the previous 12 months. In addition, in the Netherlands, 20% or more use a conventional bicycle at least 4 days a week.

Figure 11. Cyclist fatalities per million inhabitants, per NUTS-2 region in the EU27 (2018-2019). Source: CARE, EUROSTAT

Note: regions with 10 fatalities or less are not included in the Figure



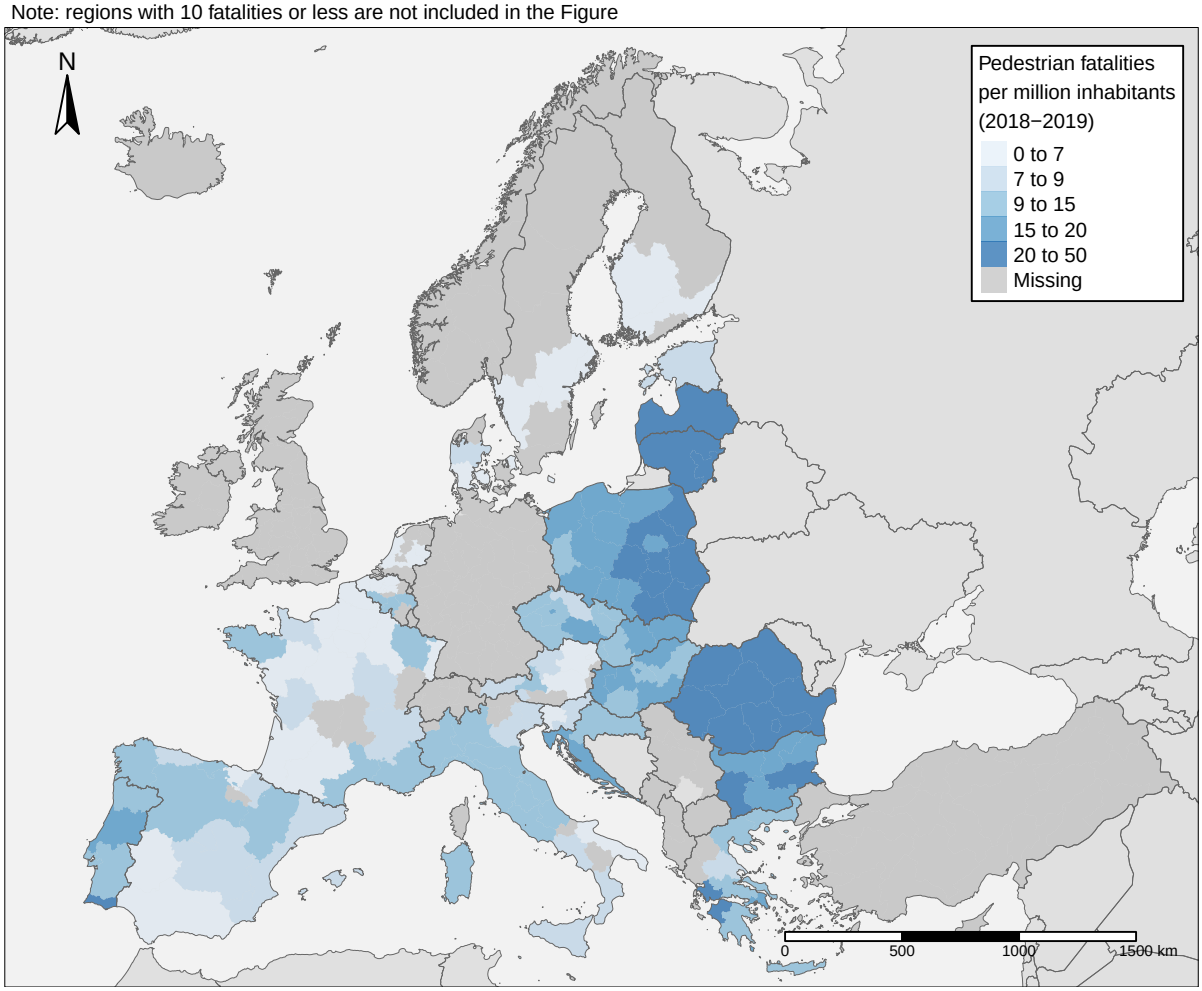
5.4 Mortality rate: number of road fatalities among *pedestrians* per million inhabitants

The mortality rate for pedestrians is highest in regions in Eastern Europe, mainly in regions throughout Romania and Poland, whilst there is also a high mortality rate in Lithuania and Latvia.

The high proportions in some countries may be related to the nature of pedestrian mobility in these countries. Unfortunately exposure data on pedestrians, such as the number of trips and the average distance traveled, are either missing or incomplete for most EU countries. The ESRA survey shows that 75% or more of respondents from Czechia, Hungary, Spain, Austria and Poland report that they walk 4 days or more per week. The European average is 66% (Buttler, 2020).

Figure 12. Pedestrian fatalities per million inhabitants, per NUTS-2 region in the EU27 (2018-2019). Source: CARE, EUROSTAT

Note: regions with 10 fatalities or less are not included in the Figure



6 Time

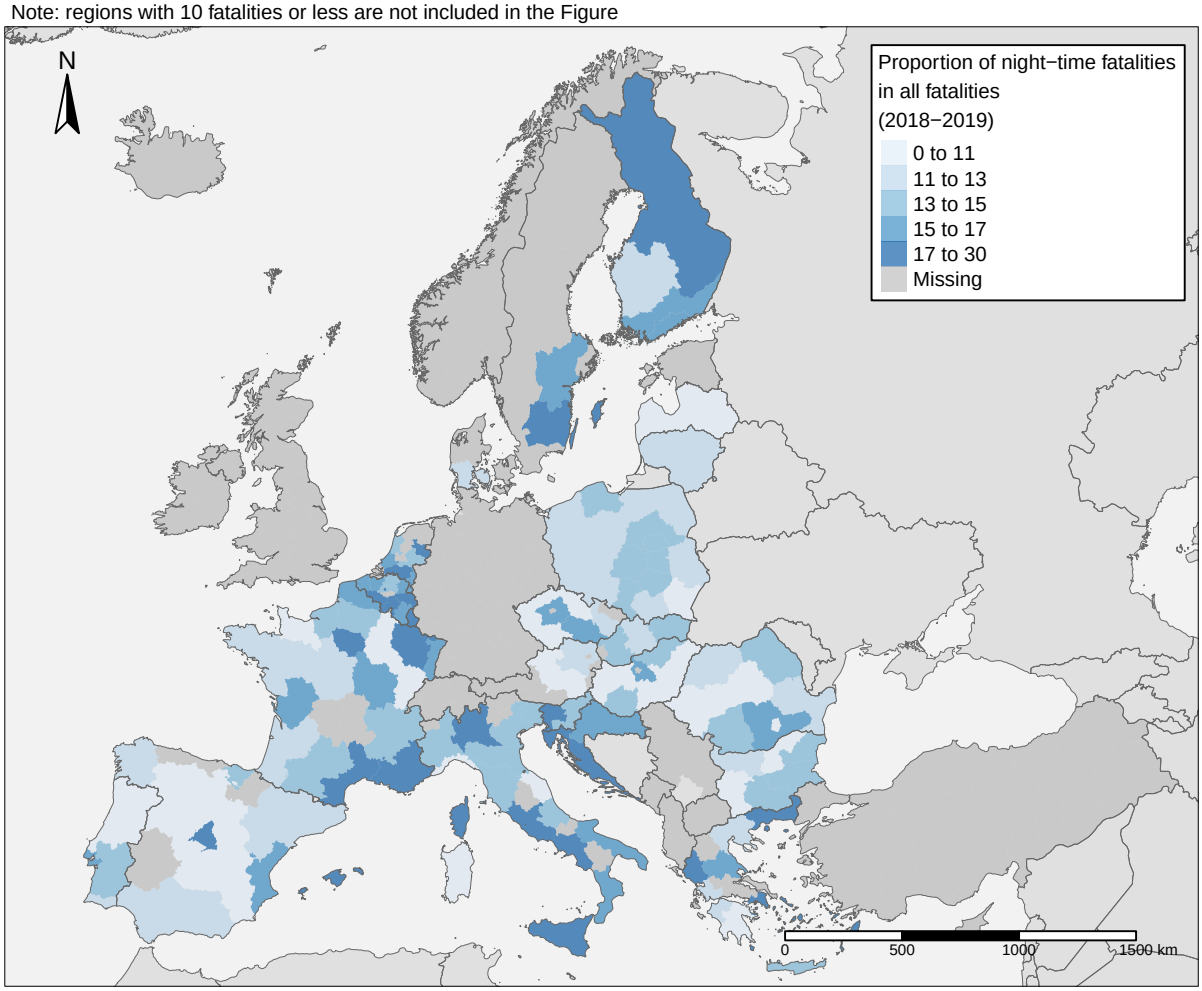
6.1 Proportion of night-time fatalities

Night-time fatalities are defined as fatalities between 10 p.m and 5.59 a.m..

The highest proportion of night-time fatalities can be found in Northern Europe, in certain regions in Finland. There is also a high share of night-time fatalities in some regions in Western and Southern Europe, such as regions in Belgium, Greece, Spain, Italy and France.

Figure 13. Share of night-time fatalities within the total number of fatalities per NUTS-2 region in the EU27 (2018-2019). Source: CARE

Note: regions with 10 fatalities or less are not included in the Figure



7 Location

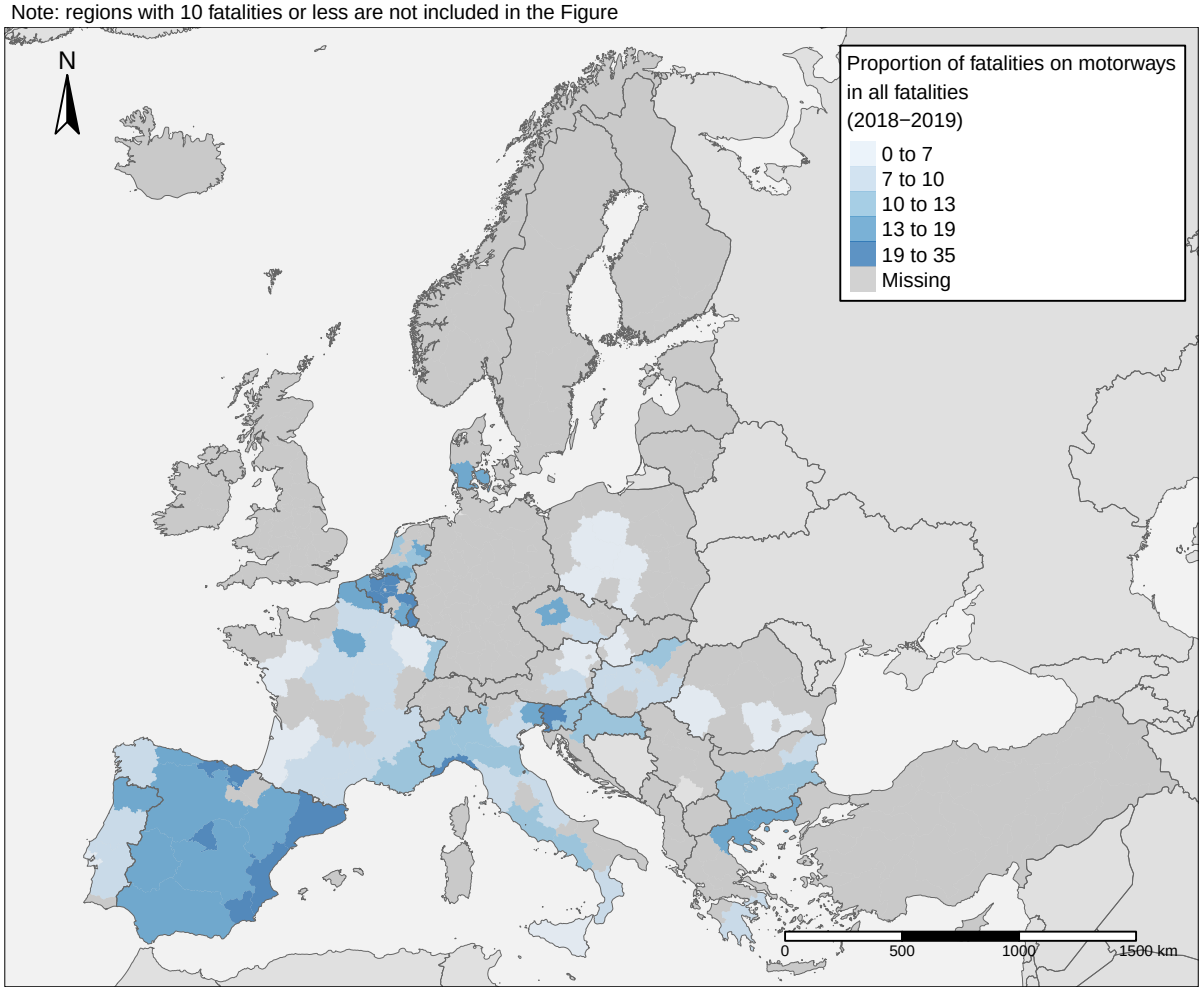
7.1 The share of fatalities on motorways in total fatalities

The share of fatalities on motorways is highest in Southern Europe, and also in regions of Western Europe. **Regions in Spain, Belgium, the Netherlands and Luxembourg stand out**. It is striking that almost all regions in Spain and Belgium have high shares of fatalities on motorways.

More information on road fatalities on motorways can be found in the *Facts & Figures Motorways*. Information on the density of motorway networks can be found on the website of Eurostat[1]. A comparison between the motorway density and the proportion of fatalities on motorways shows that the regions with the most dense netwerk also have the highest proportion of fatalities on motorways. This is especially the case for regions in Belgium and the Netherlands.

Figure 14. Share of fatalities on motorways within the total number of fatalities per NUTS-2 region in the EU27 (2018-2019). Source: CARE

Note: regions with 10 fatalities or less are not included in the Figure



[1] https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20200528-1

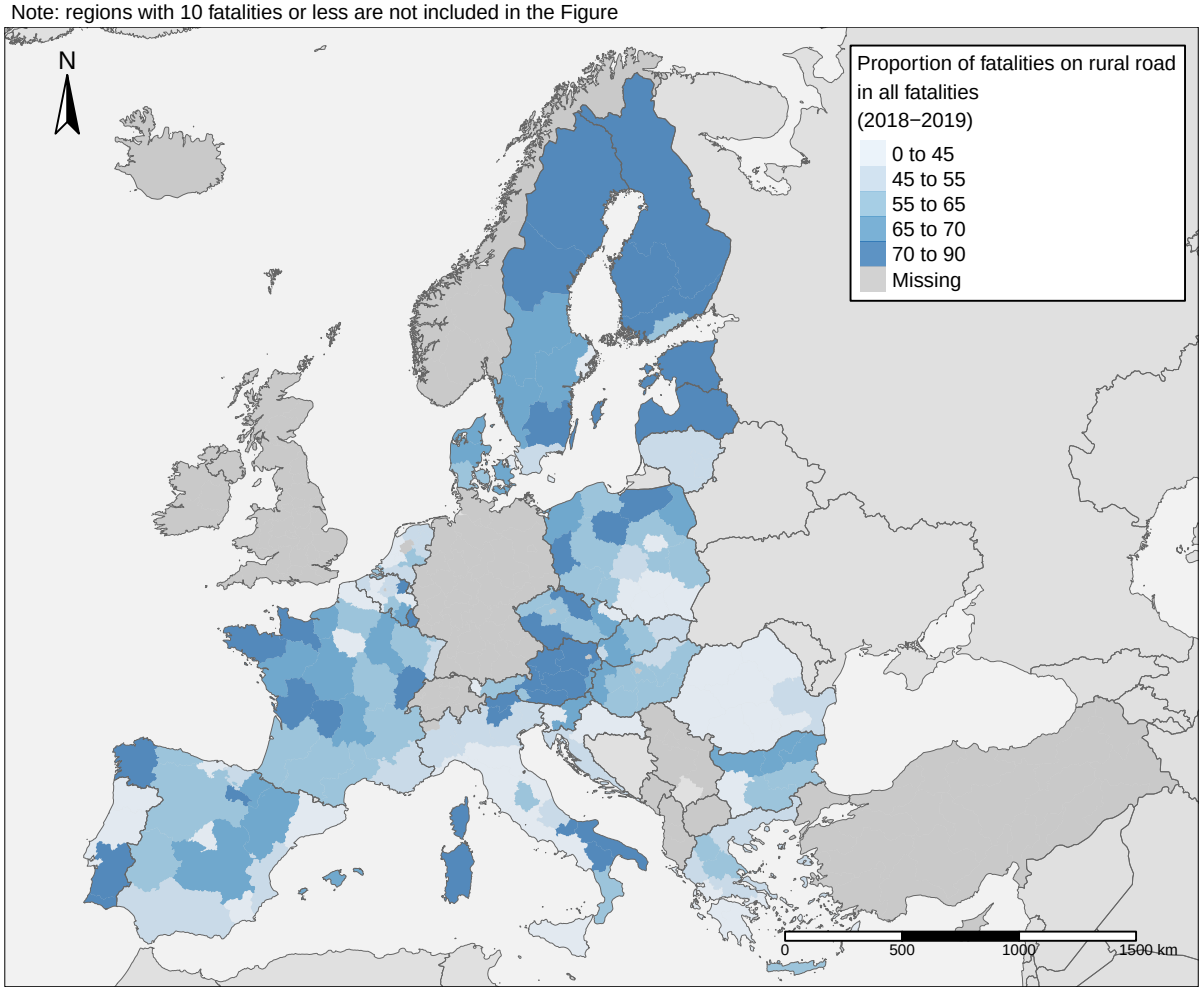
7.2 The share of fatalities on rural roads in total fatalities

The proportion of fatalities on rural roads is high in Western Europe - mainly in regions in the south of Italy, France, Austria and Portugal - and Northern Europe - mostly in regions in the north of Finland and Sweden.

Finland and Sweden are predominantly rural, so it may not be surprising that there are more fatalities on rural roads in these regions.

Figure 15. Share of fatalities on rural roads within the total number of fatalities per NUTS-2 region in the EU27 (2018-2019). Source: CARE

Note: regions with 10 fatalities or less are not included in the Figure

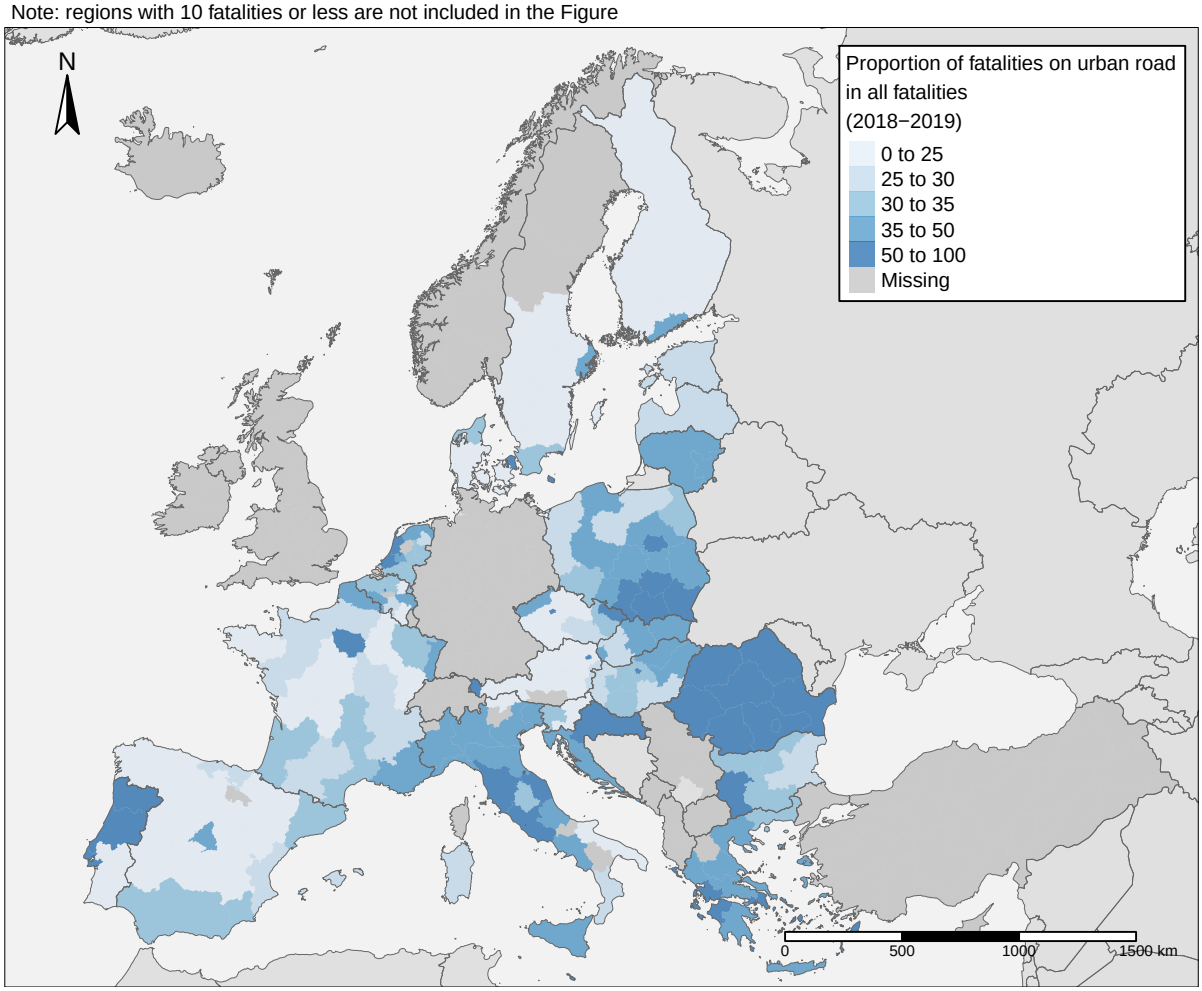


7.3 The share of fatalities on urban roads in total fatalities

The proportion of fatalities on urban roads is high in Eastern Europe - mainly in regions throughout Romania, but also in Czechia (Praha), Hungary (Budapest) - whilst this share is also high in parts of Southern Europe. There is a large share of road fatalities in total fatalities in regions in Portugal (Região Autónoma dos Açores, Região Autónoma da Madeira).

Figure 16. Share of fatalities on urban roads within the total number of fatalities per NUTS-2 region in the EU27 (2018-2019). Source: CARE

Note: regions with 10 fatalities or less are not included in the Figure

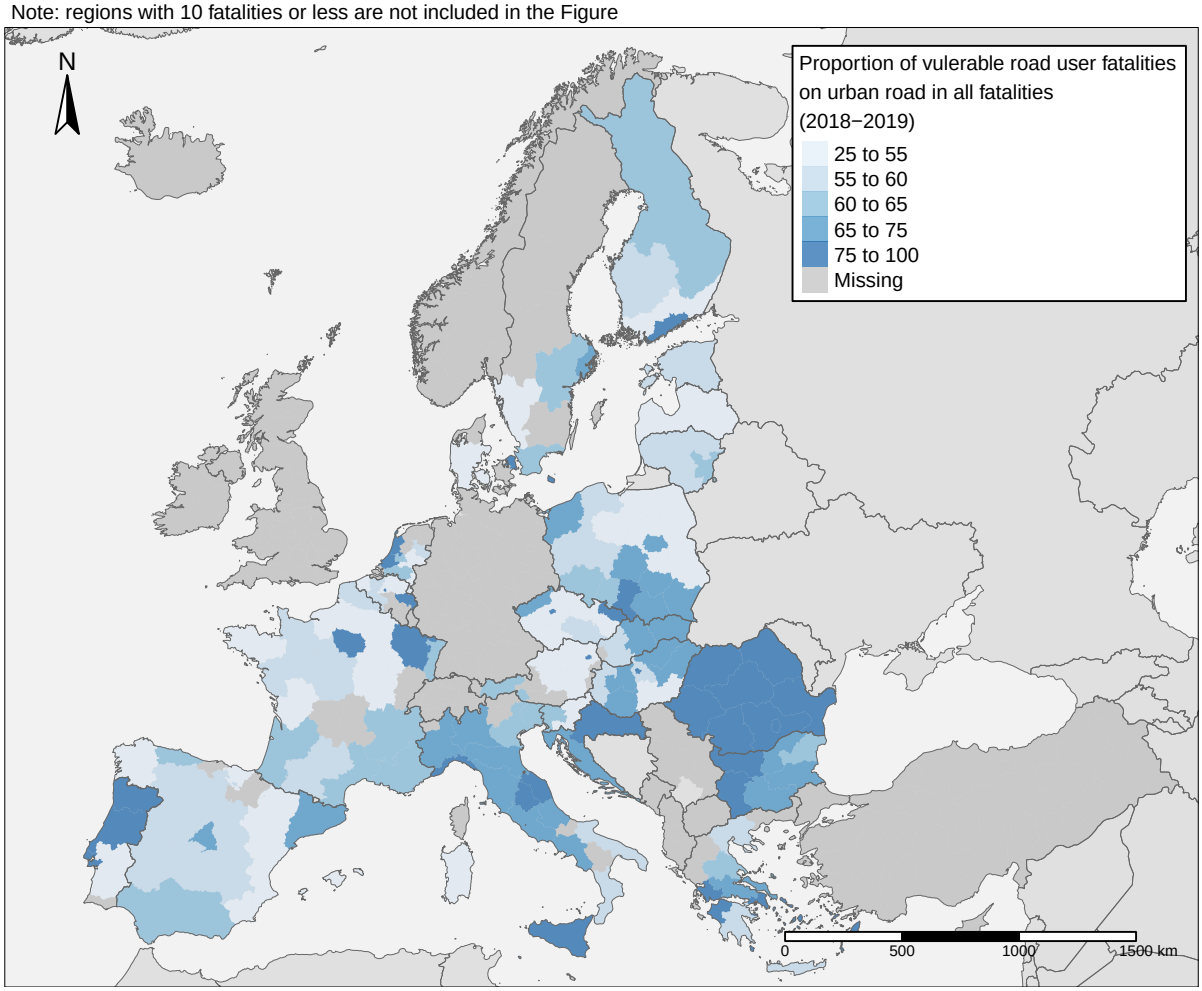


7.4 The share of vulnerable road user fatalities on urban roads in total vulnerable road user fatalities

In relation to the share of vulnerable road user fatalities (pedestrians, cyclist and moped riders) on urban roads in the total of vulnerable road user fatalities, it is noticeable that **this proportion is highest in regions in Eastern Europe**. This is not surprising, since the proportion of cyclist and pedestrian fatalities in this region was also high (see Figure 11 and Figure Figure 12).

Figure 17. Share of vulnerable road user fatalities on urban roads within the total number of fatalities per NUTS-2 region in the EU27 (2018-2019). Source: CARE

Note: regions with 10 fatalities or less are not included in the Figure



8 Notes

8.1 Definitions

The definitions below are taken from the CADAS Glossary and the UNECE Glossary.

CADAS Glossary: https://ec.europa.eu/transport/road_safety/system/files/2021-07/cadas_glossary_v_3_8.pdf

UNECE/ITF/Eurostat Glossary: https://www.unece.org/index.php?id=52120

Accident / crash
Definition: injury road accident, concerns an incident on a public road involving at least one moving vehicle and at least one casualty (person injured or killed). Note: the definition of "injury" varies considerably among EU countries thus affecting the reliability of cross country comparisons.

Fatalities
Definition: total number of persons fatally injured; correction factors applied when needed. Death within 30 days of the road crash, confirmed suicide and natural death are not included.

Victims
Total of fatalities, seriously injured and slightly injured and injured.

Motorway
Public road with dual carriageways and at least two lanes each way. Entrance and exit signposted. Road with grade separated interchanges. Road with a central barrier or central reservation. No crossing permitted. No stopping permitted unless in an emergency. Entry prohibited for pedestrians, animals, bicycles, mopeds, agricultural vehicles.

Working week – daytime
Monday to Friday 6.00 a.m. to 9.59 p.m.

Working week – night
Monday 10 p.m. to Tuesday 5.59 a.m.
Tuesday 10 p.m. to Wednesday 5.59 a.m.
Wednesday 10 p.m. to Thursday 5.59 a.m.
Thursday 10 p.m. to Friday 5.59 a.m.

Weekend – daytime
Saturday to Sunday 6.00 a.m. to 9.59 p.m.

Weekend – night
Friday 10 p.m. to Saturday 5.59 a.m.
Saturday 10 p.m. to Sunday 5.59 a.m.
Sunday 10 p.m. to Monday 5.59 a.m.

NUTS-2 region
The NUTS 2 codes developed by Eurostat corresponding to the individual region where the accident occurred. The NUTS classification (Nomenclature of territorial units for statistics) is a hierarchical system for dividing up the economic territory of the EU for the purpose of the collection, development and harmonisation of European regional statistics, socio-economic analyses of the regions, and framing EU regional policies.

8.2 Data source

The main data source for this report is CARE (Community database on Accidents on the Roads in Europe). The database contains data obtained from national data sources, not only EU members but also from the 4 EFTA countries (Switzerland, Norway, Iceland, and Liechtenstein). The data in the report were extracted on 12 October 2021. As the database is not complete for all countries and all years, additional data were provided by the European Commission in order to be able to calculate the general total for fatalities for the EU27.

8.3 References

Yannis, G., Laiou, A., Nikolaou, D., Usami, D.S., Sgarra, V., Azarko, A. (2020) Moped drivers and motorcyclists. ESRA2 Thematic report Nr. 12. ESRA project (E-Survey of Road users' Attitudes). Athens, Greece: National Technical University of Athens.

Achermann Stürmer, Y., & Berbatovci, H., Buttler, I. (2020). Cyclists. ESRA2 Thematic report Nr. 11. ESRA project (E-Survey of Road users' Attitudes). Bern, Switzerland: Swiss Council for Accident Prevention.

Buttler, I. (2020) Pedestrians. ESRA2 Thematic report Nr. 10. ESRA project (E-Survey of Road users' Attitudes). Warsaw, Instytut Transportu Samochodowego, Poland.

8.4 Small cells

Absolute numbers of fatalities can be very small for small regions, which can strongly influence trend indicators and other derived indicators such as mortality. Care should be taken when interpreting these numbers. When commenting on the Figures, regions with small numbers were omitted.

8.5 Missing data

Some countries did not provide data for all years and/or all variables to the CARE database. When data are missing for specific combinations of years and countries, imputation is used to fill in the empty cells. Imputation results for individual countries are never published in the Facts and Figures reports, but they are aggregated to generate an imputed number at EU27 level. The following imputation method for individual countries is used:

- Values missing at the end of a time series are given the last known value in the series.
- Values missing at the beginning of a time series are given the first known value in the series.
- If values are missing in the middle of a time series, linear extrapolation is used.

8.6 Regions included

The Figures in this report present the information for the countries that are members of the EU at the time of publication of the report. In April 2021, 27 countries were members of the European Union. Liechtenstein is excluded from this report because no recent accident data containing breakdowns according to transport mode and other variables data are available for this country.

Regions for which the boundaries have changed throug the years are: one region in France (FRA1 (Guadeloupe)); all regions in Ireland; all regions in Lithuania; some regions in Hungary (HU10 (Közép-Magyarország) , HU11 (Budapest), HU12 (Pest)); some regions in Poland (PL12 (Mazowieckie), PL91 (Warszawski stołeczny), PL92 (Mazowiecki regionalny)); and all regions in Malta.

Publications Office