European Road Safety Observatory

Facts and Figures - Cyclists - 2023

This document is part of a series of 16 *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 figuresin this *Facts and Figures* report of 2023 refer to 2020. These reports can be found on the ERSO website (https://road-safety.transport.ec.europa.eu/statistics-and-analysis/data-and-analysis/facts-and-figures_en)

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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: 13 January 2023

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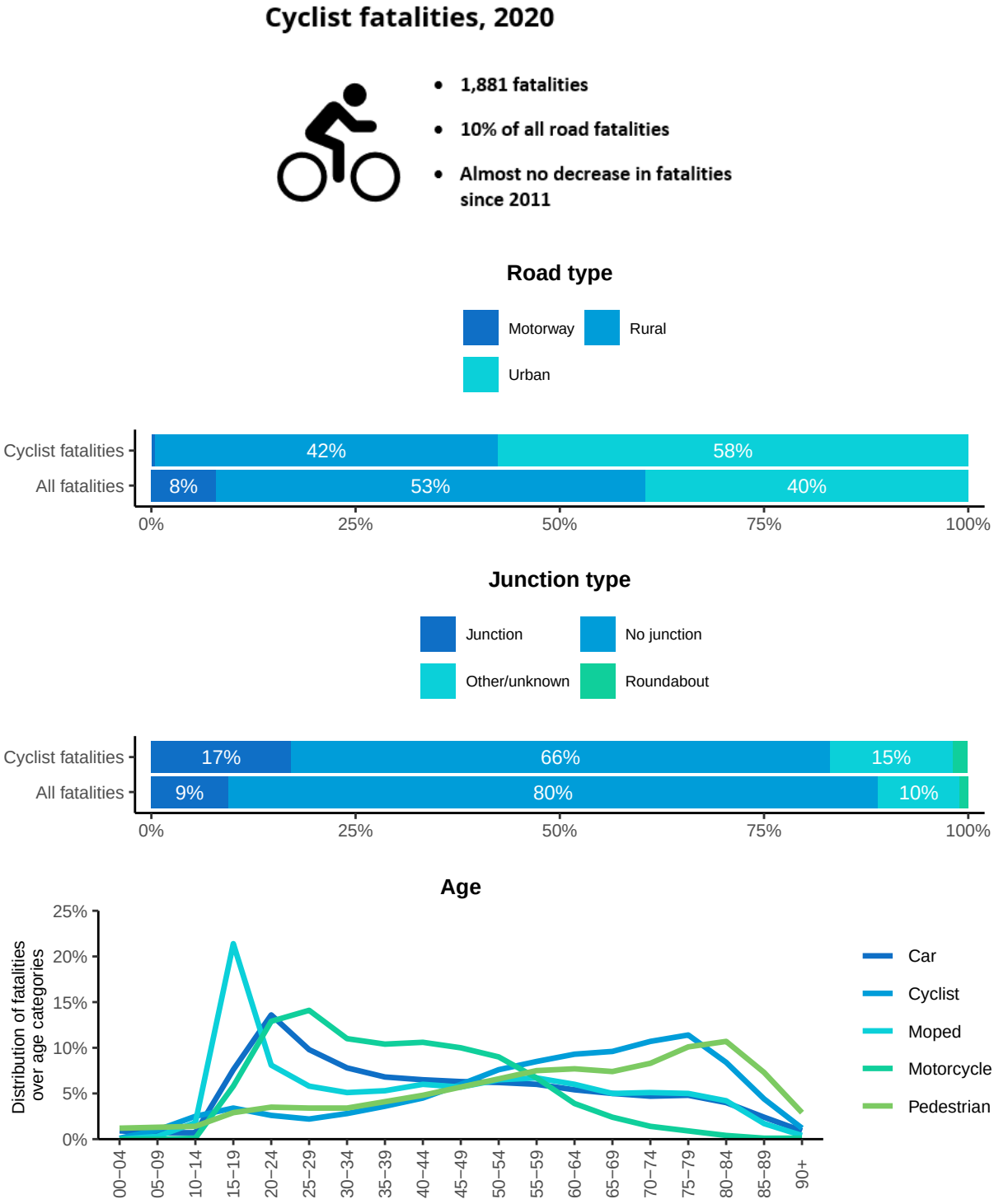
1 Key Facts

In this Facts and Figures report, cyclist fatalities are discussed. All differences reported were derived from the available data, the statistical significance of the differences between values has not been tested.



2 Summary

Of all the types of road user, cyclists are the only type where there has been no decline in fatalities since 2010. **The highest share of cyclist fatalities** (i.e. number of cyclist fatalities within the total number of road fatalities) was observed in the **Netherlands, Denmark, Belgium and Germany (ranked from high to less high)**. Typically, people cycle a lot in these four neighbouring countries. Also the cyclist mortality rate (i.e. the number of deaths per million inhabitants) was above EU average in these countries.

The number of cyclist fatalities has fluctuated between 1,800 and 2,100 since 2010. Although there are no data available at EU level on the trend in cycling kilometres travelled, it is widely recognized that cycling has increased in popularity over the past decade. This may partly explain the stagnation in levels of cyclist fatalities together with other factors such as insufficient investment in safe cycling infrastructure.

Because the total number of road fatalities has decreased in the past decade (by -34% since 2011), **the proportion of cyclists within the total number of road fatalities has grown from 7% in 2011 to 10% in 2020. Of all EU Member States**, Germany had the highest number of cyclist fatalities (426 in 2020).

Almost half (47%) of cyclist fatalities in 2020 were cyclists aged 65 or older, a proportion that was similar to the share of seniors in pedestrian fatalities (50%). 82% of cyclist fatalities were men.

Cyclists were most often involved in crashes with cars, other cyclists and pedestrians. It is generally known that cyclists are also often injured in unilateral injury crashes (i.e. a crash in which only one vehicle, for example a bicycle, and no pedestrians are involved), but due to the under-reporting of this type of crash, no complete statistics on this crash type can be provided through the CARE database.

Regarding the time of fatal cyclist crashes, **two-thirds (68%) of all cyclist fatalities occurred in the daytime during the working week** (compared with 58% of all road fatalities). There was a clear seasonal effect: we observed twice as many cyclist fatalities in the summer months compared to the winter months.

As to the location of fatal cyclist crashes, **a majority of cyclist fatalities occurred on urban roads** (57% for cyclists compared with 40% for all road fatalities). Compared with total road fatalities, **the proportion of cyclist fatalities was** lower on road stretches (67% versus 80%), and considerably **higher at junctions** (16% versus 9%).

The impact of the global COVID-19 pandemic on the CARE data for 2020 is clear. Traffic volumes dropped sharply during the pandemic, which was associated with a significant drop in road traffic crashes and fatalities.

Basic definitions

Bicycle:
Vehicle with at least 2 wheels, without engine. In some cases it can also use electric power.

Fatalities:
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.

Seriously injured:
Total number of seriously injured persons corrected by correction factors when needed. Injured (although not killed) in the road crash and, in principle, hospitalised for at least 24 hours within 30 days from the crash.

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.

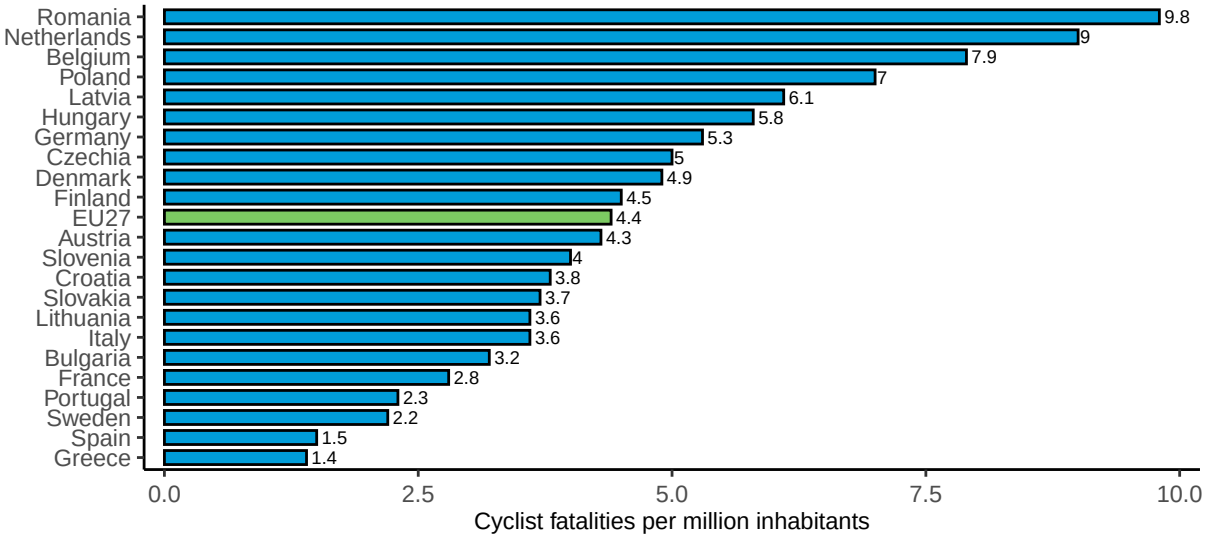
3 Main trends

3.1 Mortality rate: number of road fatalities per million inhabitants

In general, **the number of cyclist fatalities per million inhabitants is lower in the south and the north (i.e. Sweden, Finland) of the EU, and higher in the EU Member States in-between**. In the period 2018-2020, the mortality rate among cyclists was twice as high in Belgium, the Netherlands and Romania than the EU average. In Greece and Spain, it was three times lower than the EU average.

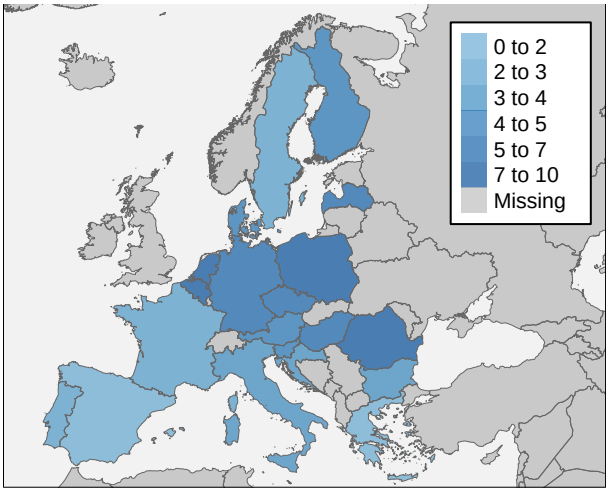
These observations are at least partly related to the number of bicycle trips and bicycle kilometers traveled in the respective countries, though safe infrastructure also plays a key role as do other factors such as user behaviour (both cyclists and other road users) and lack of enforcement. The ESRA2 survey (Achermann, Berbatovci, & Buttler, 2020)[1] contains information by country on the frequency of non-electric cycling by adults. In this list, the Netherlands is at the top (almost half of Dutch people cycle at least once a week), followed by Hungary, Denmark, Poland, Finland and Germany. The proportion of adults cycling at least weekly is at least 28% in all these countries. In Spain and Greece, it is less than 19% while in Belgium it is about 21%.

Figure 1. Cyclist fatalities per million inhabitants per country in the EU27 (2018-2020). Source: CARE, EUROSTAT



Notes:
− Cyprus, Estonia, Ireland, Lithuania, Luxembourg and Malta are not included due to a high number of missing values or small numbers
− For Sweden, data from the time period 2017−2019 is used

[1] 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



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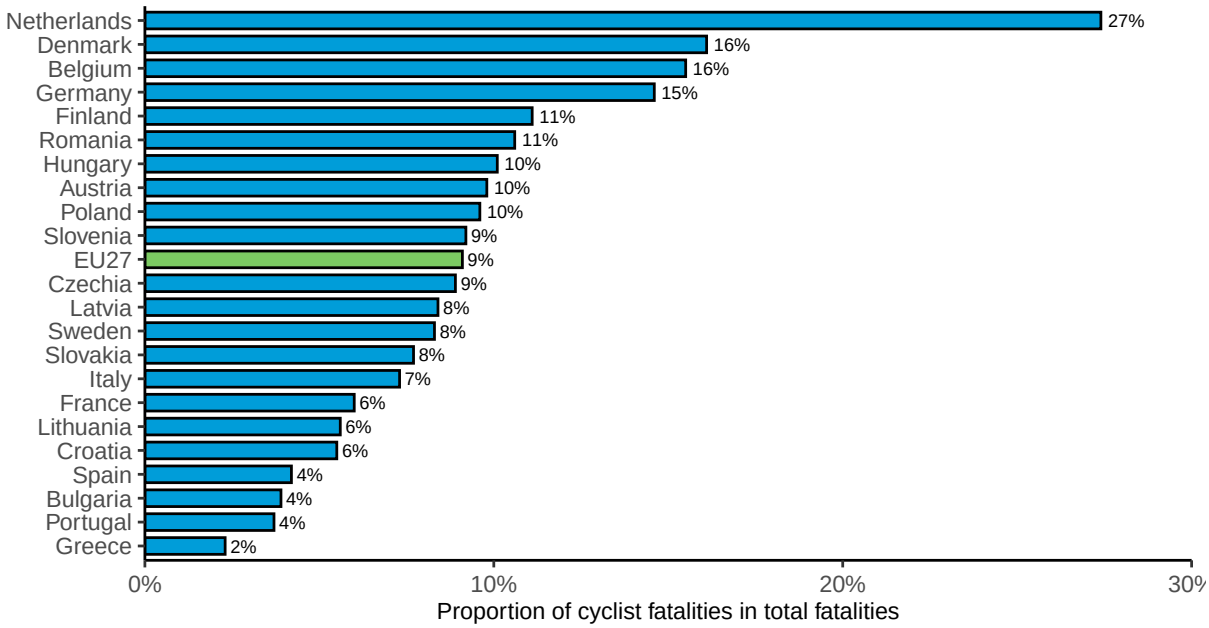
3.2 Number of cyclist fatalities as a proportion of total fatalities

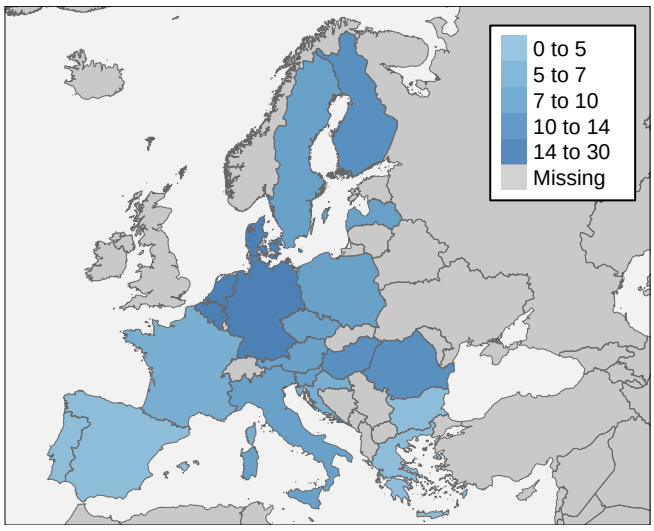
Mortality is an important indicator, but does not take into account differences in the general state of road safety in countries. In other words, it is possible that the mortality for cyclists is high because the total mortality for all road users is high. Accordingly, it is important to also look at the proportion of cyclist fatalities within the total number of road fatalities.

The Figure below on share of cyclist fatalities gives partly the same picture as the earlier Figure on mortality. **The Netherlands and Belgium are still in the "top 3", with a high share of cyclist fatalities** (in the total number of road fatalities). Romania has fallen in the ranking, showing that the high mortality for cyclists in Romania is in line with the overall high mortality in that country. In contrast to Romania, Denmark has risen in the ranking. Germany is the country with the fourth highest share of cyclist fatalities. It is no coincidence that cycling in these four neighbouring countries (the Netherlands, Belgium, Germany, Denmark) is known for its popularity (see above).

Figure 2. Share of cyclist fatalities in the total number of fatalities, per country in the EU27 (2018-2020). Source: CARE



Notes:
− Cyprus, Estonia, Ireland, Lithuania, Luxembourg and Malta are not included due to a high number of missing values or small numbers
− For Sweden, data from the time period 2017−2019 is used



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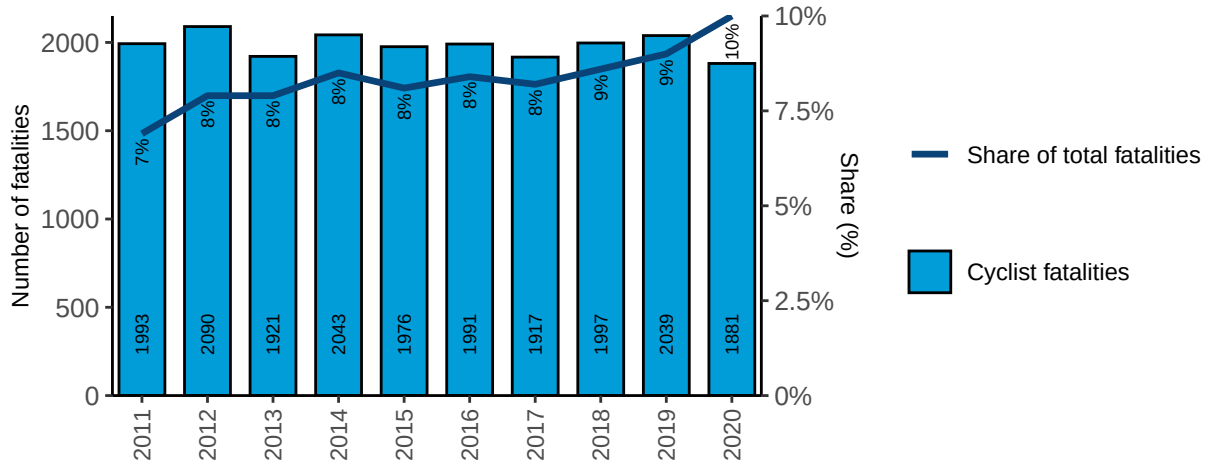
3.3 Trend in the number of fatalities

Cyclists are the only mode of transport that has shown almost no decline in fatalities over the past decade. The number of cyclist fatalities over the past decade fluctuated between 1,800 and 2,100. Given that the number of cyclist fatalities has remained stable, while the total number of road fatalities in the same period decreased by 34%, the proportion of cyclist fatalities within the total number of fatalities has increased, from 7% in 2011 to 10% in 2020. Hence, **one in ten registered of all road fatalities in the EU are now cyclists**.

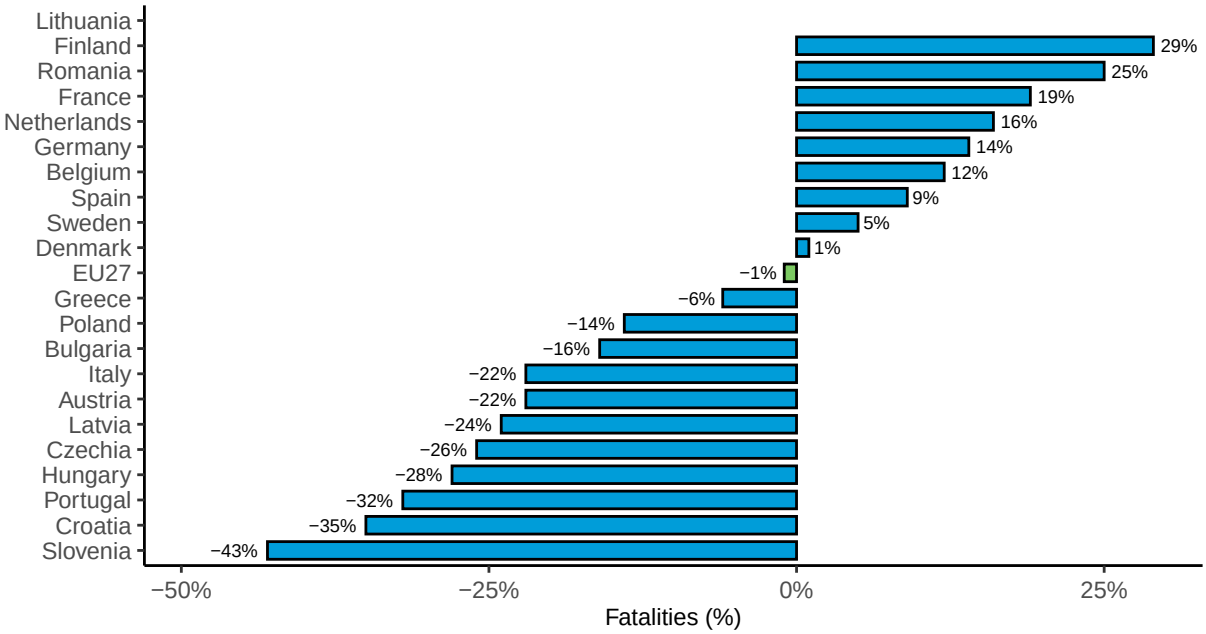
Figure 3. Annual number of cyclist fatalities, and their share in the total number of fatalities in the EU27 (2011-2020). Source: CARE



In about half of the EU Member States the number of cyclist fatalities has decreased, while in the other half the number has risen. The strongest increase is observed in Lithuania (+29%).

In absolute numbers, Germany has by far the highest number of cyclist fatalities (426 in 2020); this number has remained fairly constant in Germany over the past decade.

Figure 4. Percentage change in the number of cyclist fatalities per country in the EU27 (2018-2020 and 2011-2013). Source: CARE



Notes:
− Cyprus, Estonia, Ireland, Lithuania, Luxembourg and Malta are not included due to a high number of missing values or small numbers
− For Sweden, the trend is calculated by comparing the time period 2011−2013 with the time period 2017−2019

Table 1. Number and trend of cyclist fatalities per country in the EU27 and EFTA (2018-2020 versus 2011-2013). Source: CARE

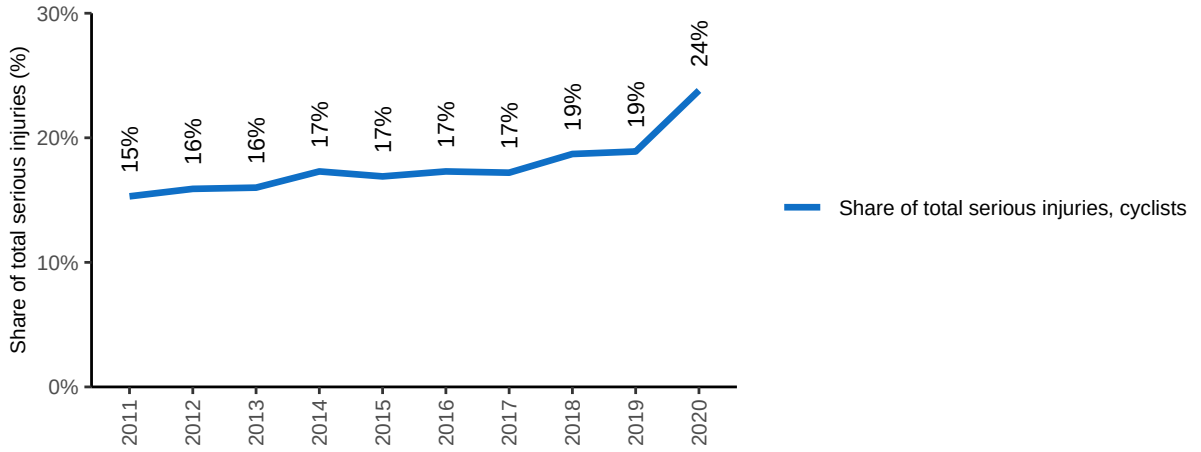
	2011	2018	2019	2020	Trend 2018 - 2020 vs 2011 - 2013	Miniplot: trend since 2010
Austria	42	41	33	40	-22%	
Belgium	74	89	95	87	12%	
Bulgaria	17	21	27	19	-16%	
Croatia	28	22	16	9	-35%	
Cyprus	2	1	1	1		
Czechia	63	56	53	51	-26%	
Denmark	30	28	31	27	1%	
Estonia	0	3	2	1		
EU27	**1,993**	**1,997**	**2,039**	**1,881**	**-1%**	
Finland	19	21	23	31	29%	
France	141	175	187	178	19%	
Germany	399	445	445	426	14%	
Greece	13	12	22	12	-6%	
Hungary	85	68	63	40	-28%	
Iceland	0	0	0	0		
Ireland	9	0	0	0		
Italy	282	219	253	175	-22%	
Latvia	15	9	9	17		
Lithuania	0	8	10	12		
Luxembourg	2	3	0	3		
Malta	0	1	0	0		
Netherlands	144	160	148	158	16%	
Norway	12	7	6	3		
Poland	314	285	258	249	-14%	
Portugal	45	26	27	19	-32%	
Romania	140	181	198	191	25%	
Slovakia	0	19	17	24		
Slovenia	16	8	9	8		
Spain	48	58	80	71	9%	
Sweden	21	23	17	0	-37%	
Switzerland	39	39	27	44	15%	

Note:
The trend is not shown if there are less than 10 fatalities in one year

3.4 Trend in the number of serious injuries

24% of all serious injuries in the EU27 in 2020 were cyclists. The relative proportion of serious injuries has increased from 15% in 2011 to 24% in 2020.

Figure 5. Share of serious injuries for cyclists in the total number of serious injuries in the EU27 (2011-2020). Source: CARE



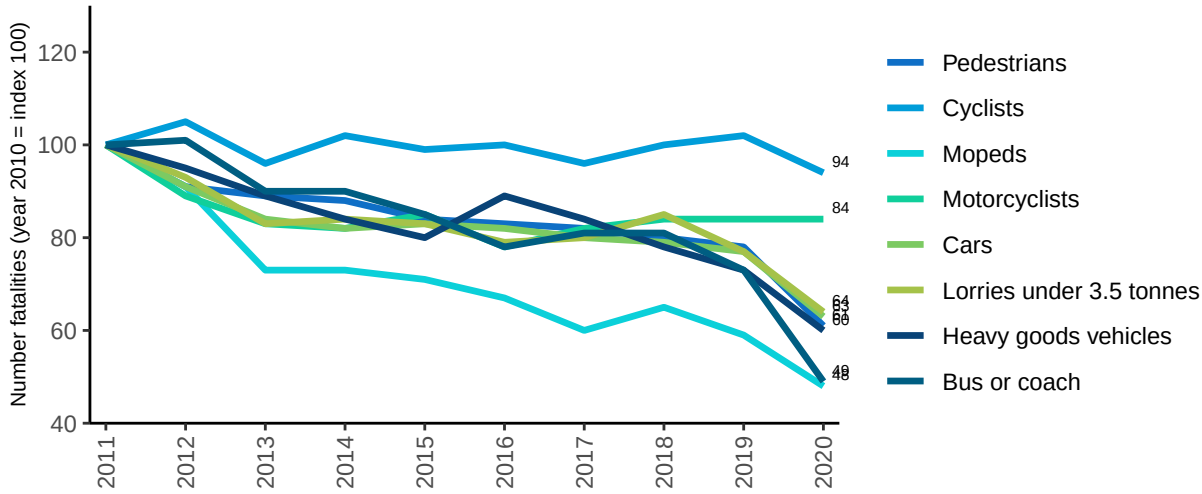
Notes:
− Countries that are not included in the Figure are France, the Netherlands, Ireland, Italy and Estonia due to problems of comparability, missing data or a break in the time series
− Germany accounts for a disproportionately high share of 40% of all serious injuries

3.5 Comparison of cyclists with other transport modes

The Figure below shows the total number of fatalities in road crashes involving particular modes of transport over the period 2010-2019. Not only are fatalities by transport mode counted, but also the other party killed in the crash by respective mode of transport (e.g. in car crashes, both the car occupants and the other parties killed are counted).

The Figure below confirms earlier findings, namely that **the number of fatalities in cyclist crashes remains constant, in contrast to the number of fatalities in crashes with other modes of transport**. Over the same period, the number of fatalities in pedestrian crashes and motorcycle crashes decreased with more than 30% over the last decade, while the number of fatalities in moped crashes even halved.

Figure 6. Trend of fatalities in crashes involving different transport modes in the EU27 (2011-2020). Source: CARE

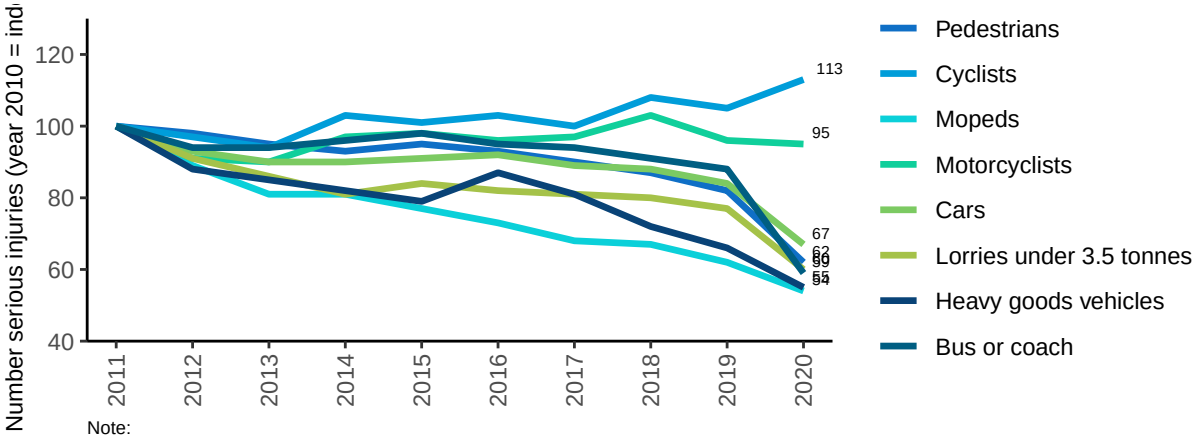


Note: imputation was used for missing values for specific combinations of years and countries. Countries that show an unreliable trend for a particular mode of transport are omitted for that mode of transport.

The analogous Figure for serious injuries is given below. This Figure shows the total number of serious injuries in road crashes involving particular modes of transport over the period 2010-2019. The same rule applies: both serious injuries by transport mode, and the other parties seriously injured in the crash are counted (e.g. in car crashes, both the car occupants and the other parties seriously injured are counted).

Serious injuries in crashes involving a cyclist show an increase in serious injuries (+13%), while serious injuries in crashes involving a pedestrian and in crashes involving a moped have decreased.

Figure 7. Trend of serious injuries in crashes involving buses/coaches, heavy goods vehicles and other transport modes in the EU27 (2011-2020). Source: CARE



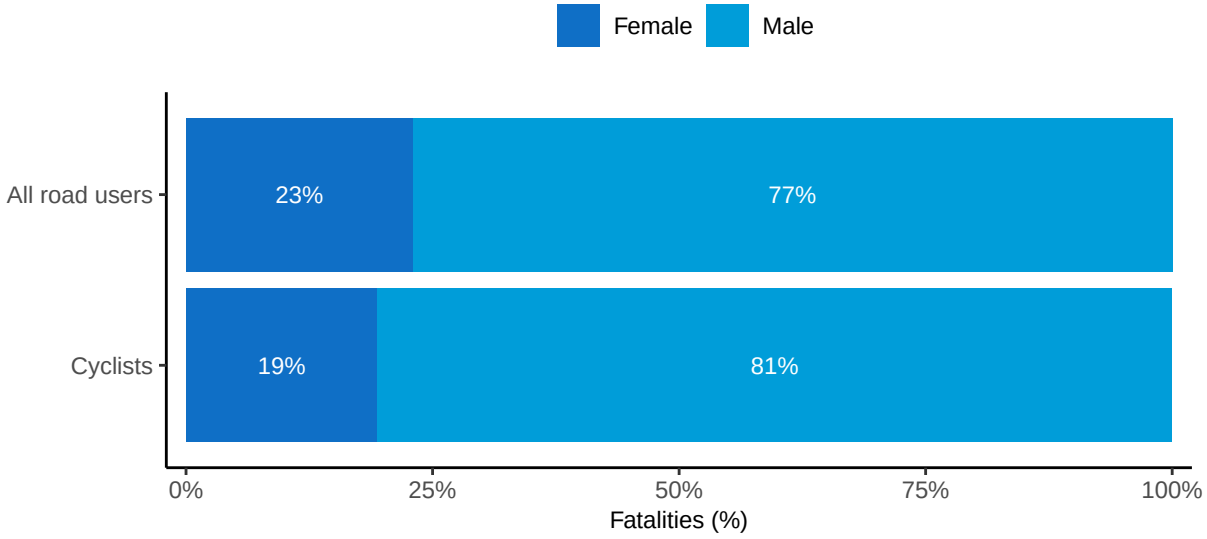
Note:
− Imputation was used for missing values for specific combinations of years and countries. Countries that show an unreliable trend for a particular mode of transport are omitted for that mode of transport
− Countries that are not included in the Figure are France, the Netherlands, Italy and Estonia because the data for these countries is not reliable
− Germany accounts for 40% of all serious injuries
− There is a break in the series for Ireland in 2014

4 Road user

4.1 Gender

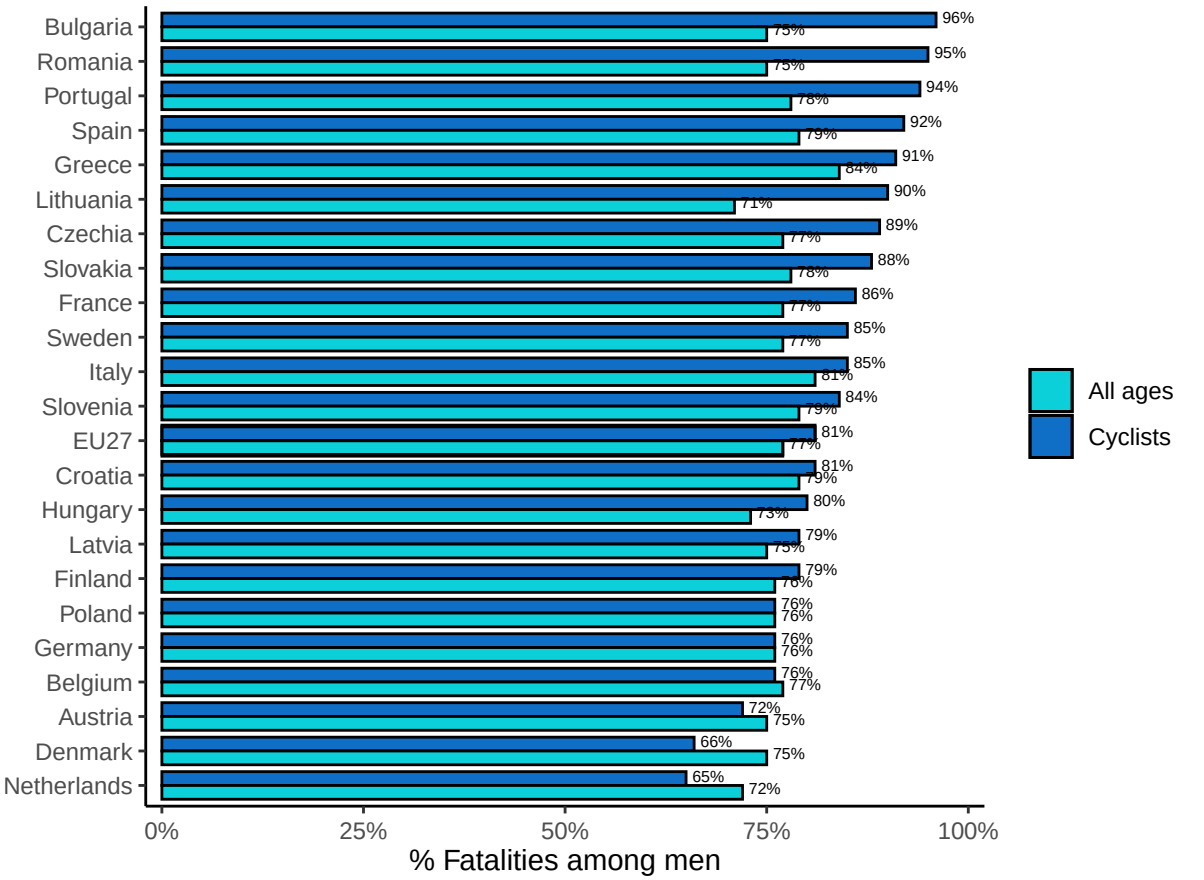
77% of all road fatalities in the EU in the time periode 2018-2020 are male. **At 81%, the proportion of men among cyclist fatalities is slightly higher**.

Figure 8. Distribution of cyclist fatalities and all fatalities by gender in the EU27 (2012-2020). Source: CARE



In countries where people cycle a lot, such as the Netherlands, Germany, Denmark and Belgium, the proportion of men among cyclist fatalities is lower than the EU average. In the countries in the south of the EU, the share of men among cyclist fatalities is higher than the EU average: in Spain, Greece and Portugal, more than 9 out of 10 cyclist fatalities are men.

Figure 9. Share of men among cyclist fatalities per country in the EU27 (2012-2020). Source: CARE



Note: countries that are not included in the Figure are Cyprus, Estonia, Ireland, Lithuania, Luxembourg and Malta because of missing data or small numbers

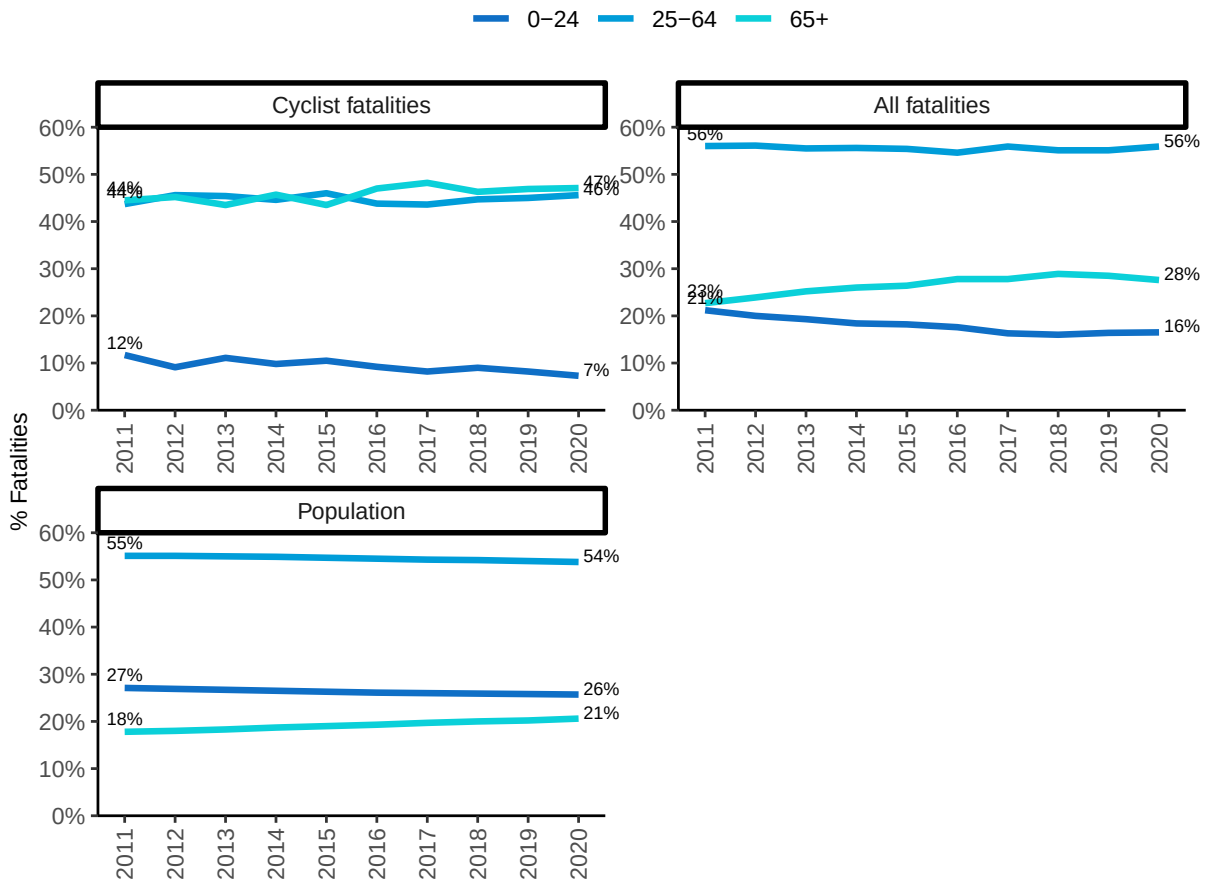
4.2 Age

The Figure below shows an increase in the number of over-65s in the group of cyclists killed in the past decade. **In 2020, 47% of cyclist fatalities were persons aged 65 years or older**. This is similar to the proportion of seniors in the group of pedestrian fatalities, which is 50%.

The proportion of seniors in the total of road fatalities also increased, but at 28% in 2020 it is not yet as high as the proportion of over-65s among cyclists and pedestrians. Young people under 25 years have a lower share in the number of cyclist fatalities (7% in 2020) than in the total number of road fatalities (16% in 2020).

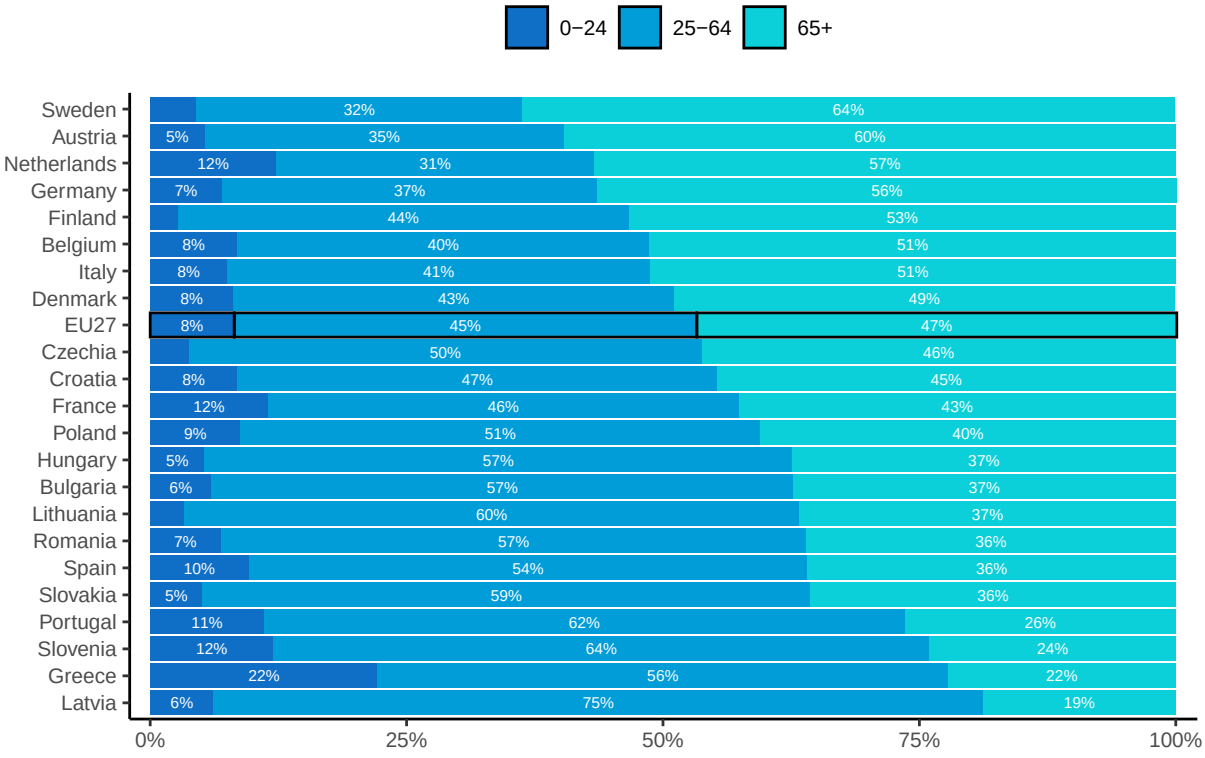
Taking into account their share of the population, seniors are considerably over-represented in cyclist fatalities while 0-24 year olds are strongly under-represented.

Figure 10. Distribution of cyclist fatalities and all fatalities by age group in the EU27 (2011-2020). Source: CARE & EUROSTAT



If we relate the number of cyclist fatalities per age group to the number of inhabitants per age group (i.e. mortality rate), the situation for seniors is even more pronounced. The mortality rate for senior cyclists is 3 times higher than for 25-64 year olds and up to 6 times higher than for the under-25 year olds. **In countries where people cycle a lot the share of seniors among cyclist fatalities is generally higher than the EU average**. In Sweden, Austria, the Netherlands, Germany, Finland, Belgium and Italy this proportion was higher than 50% in 2020.

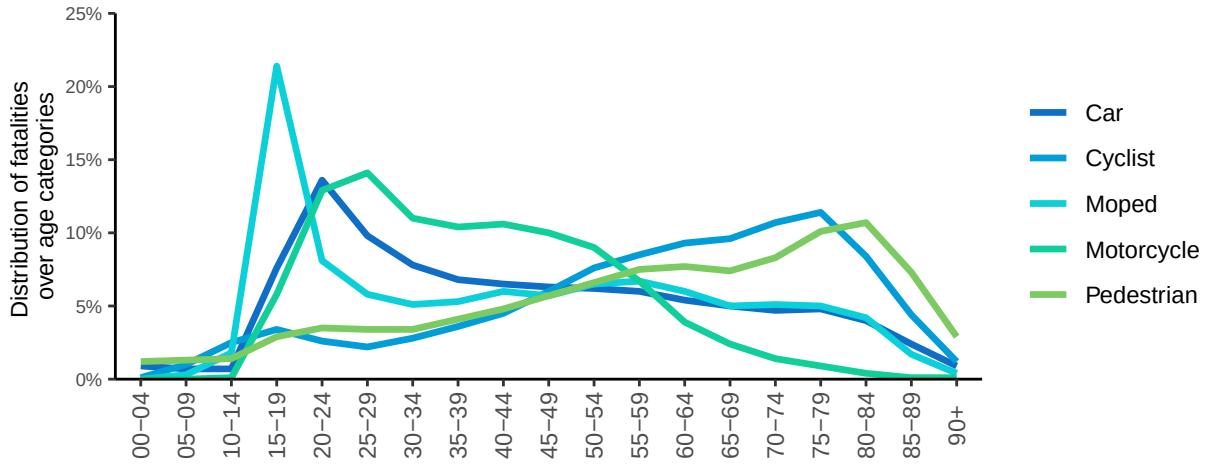
Figure 11. Distribution of cyclist fatalities by age groups per country in the EU27 (2012-2020). Source: CARE



Note: countries that are not included in the Figure are Cyprus, Estonia, Ireland, Lithuania, Luxembourg and Malta because of missing data or small numbers

The Figure below provides a more detailed picture of the distribution of cyclist fatalities by age. The number of cyclist fatalities rises between the age categories of 0-4 year olds and 15-19 year olds, then decreases somewhat in people in their twenties, and then **rises again continuously between the age categories 30-34 year olds and 75-79 year olds**. We see a very similar distribution for pedestrians, although pedestrians do not show a pronounced dip in the curve for people in their twenties. For motorized vehicles we see a very different spread with generally a peak at the youngest age category at which the vehicle concerned can be used.

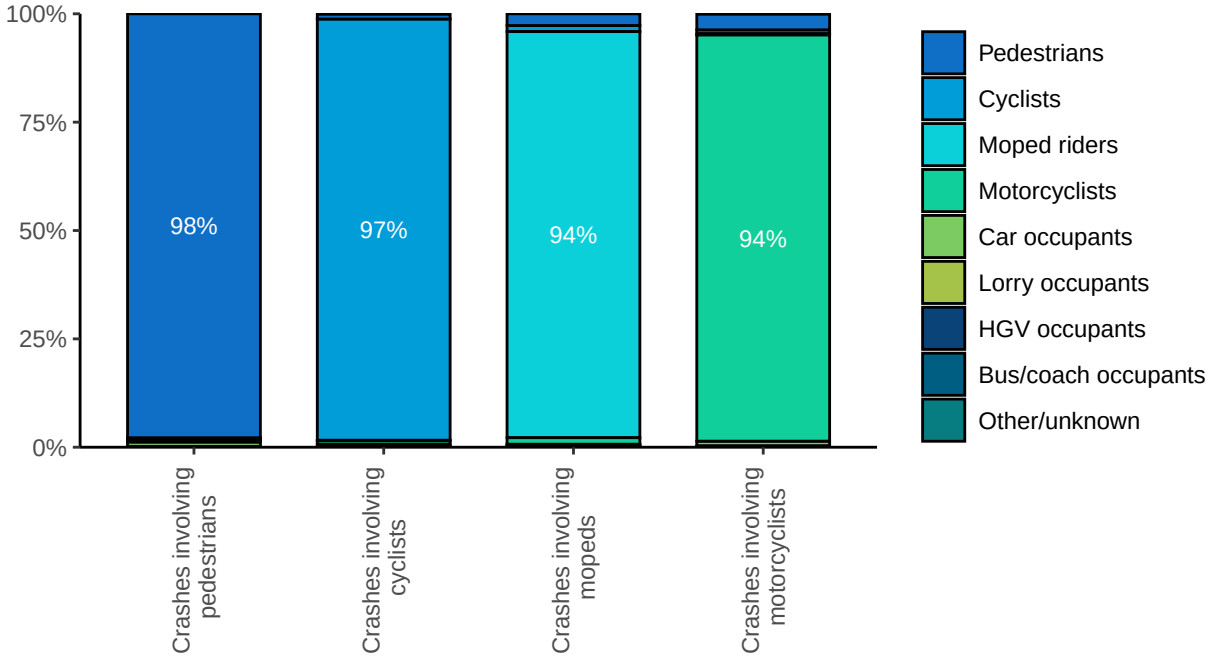
Figure 12. Distribution of fatalities over 5-year age categories, by transport mode, in the EU27 (2011-2020). Source: CARE



4.3 Other transport modes involved

The fatalities in crashes involving cyclists are virtually always the cyclists themselves (97%). Also in crashes involving other vulnerable road users than cyclists, 9 out of 10 fatalities are the vulnerable road users themselves.

Figure 13. Distribution of fatalities by transport mode in pedestrian crashes, cyclist crashes, moped crashes and motorcycle crashes in the EU27 (2012-2020). Source: CARE

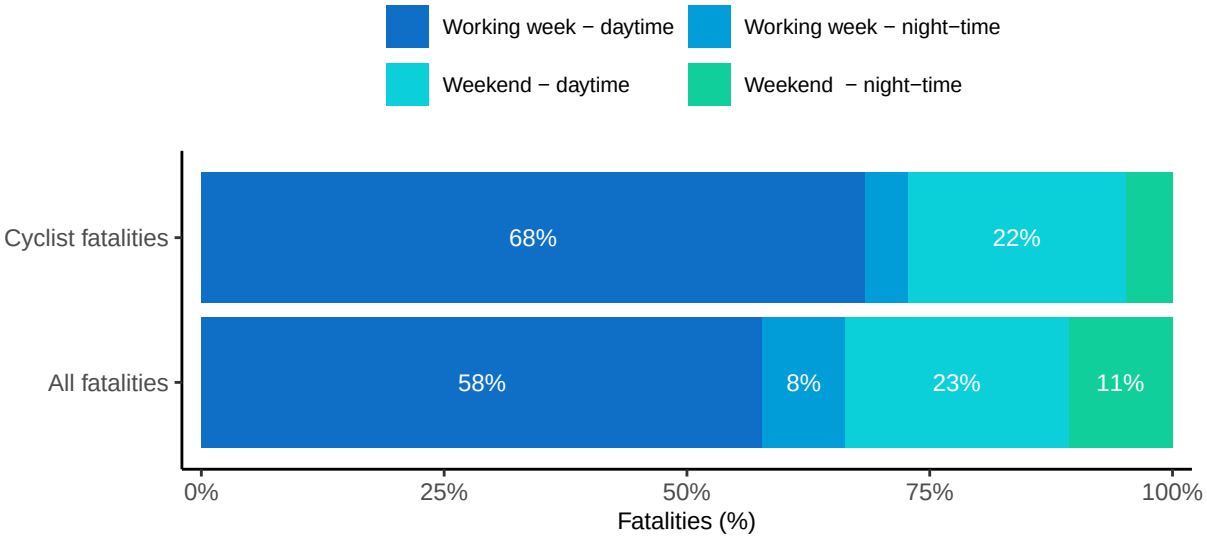


5 Time

5.1 Period of the week

Compared with all road fatalities combined, cyclist fatalities occur more often in daytime during the working week, equally often in daytime during weekends, but less often at night, during the working week, and at the weekend.

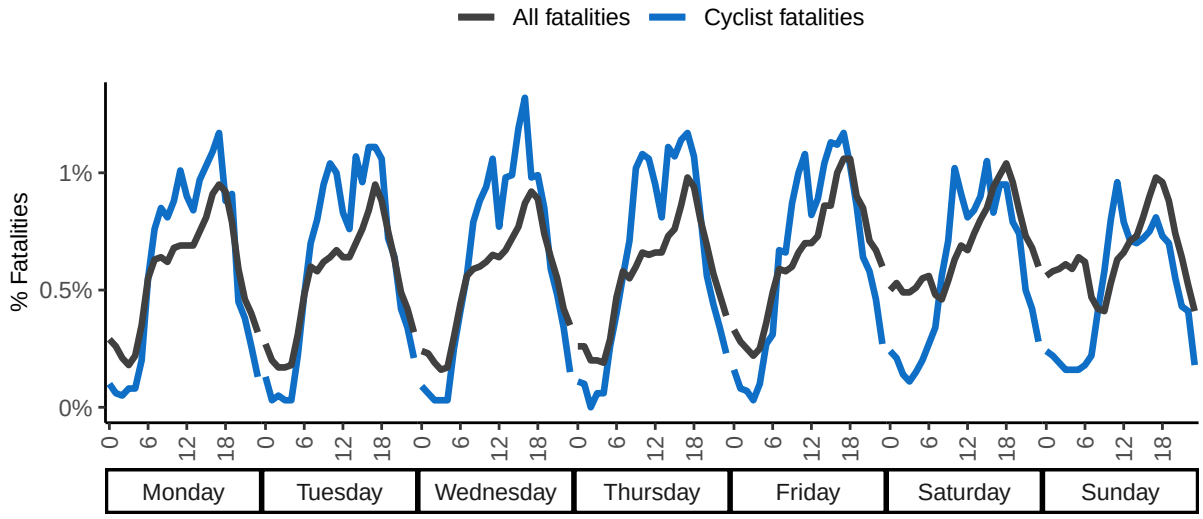
Figure 14. Distribution of cyclist fatalities and all fatalities according to period of the week in the EU27 (2012-2020). Source: CARE



5.2 Day of the week and hour

The Figure below also shows that, compared with all road fatalities, fatal cycle crashes happen less frequently at night-time. In addition, the Figure also reveals a generally higher morning peak of cyclist fatalities during the working week, and a peak around noon during the weekend.

Figure 15. Distribution of cyclist fatalities and all fatalities by day of the week and hour in the EU27 (2016-2020). Source: CARE



5.3 Month

The Figure below shows the distribution of fatalities by type of road over the months of the year. The peak period for fatalities on motorways is July/August, and the same is true for fatalities on rural roads. The peak for fatalities on urban roads is September/October.

Figure 16. Monthly distribution of fatalities by transport mode, in the EU27 (2017-2020). Source: CARE

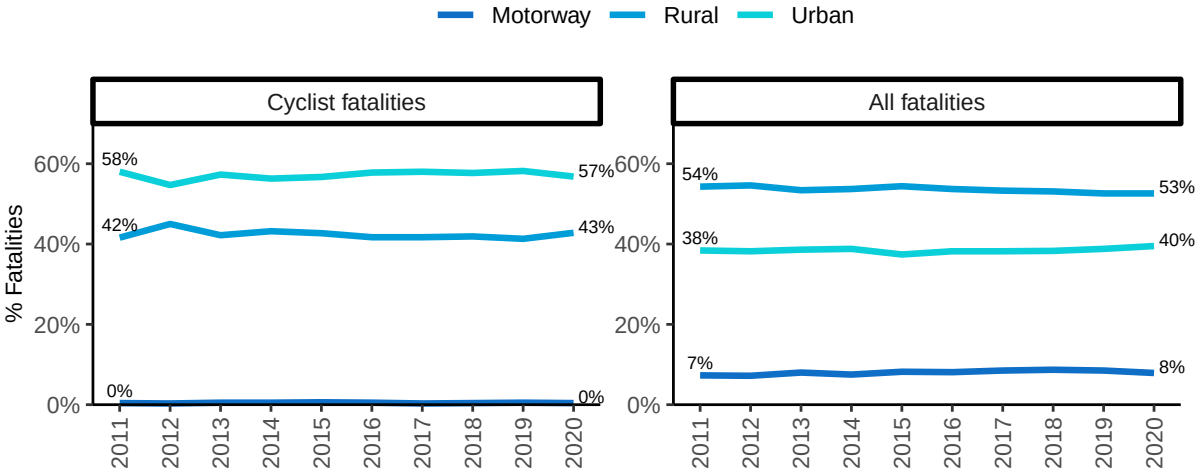
6 Location

6.1 Road type

Compared with all road fatalities combined, far more cyclist fatalities occur on urban roads (40% for all road fatalities against 57% for cyclists). By the same token, the proportion of cyclist fatalities on rural roads is lower (43%) compared to the proportion of all fatalities on rural roads (53%).

No geographical region in the EU really stands out in terms of the distribution of cyclist fatalities by road type.

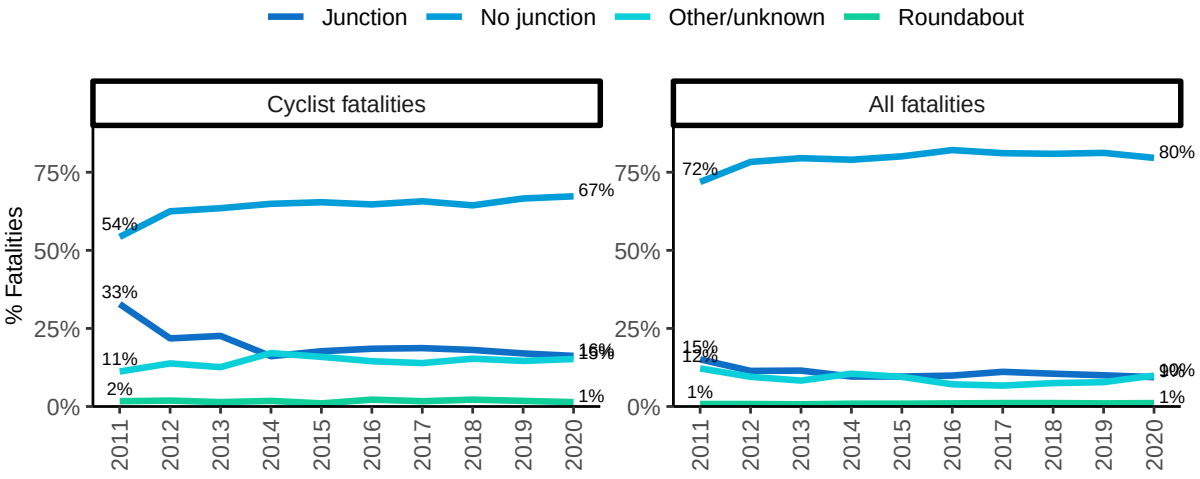
Figure 17. Distribution of cyclist fatalities and all fatalities by road type in the EU27 (2011-2020). Source: CARE



6.2 Junction type

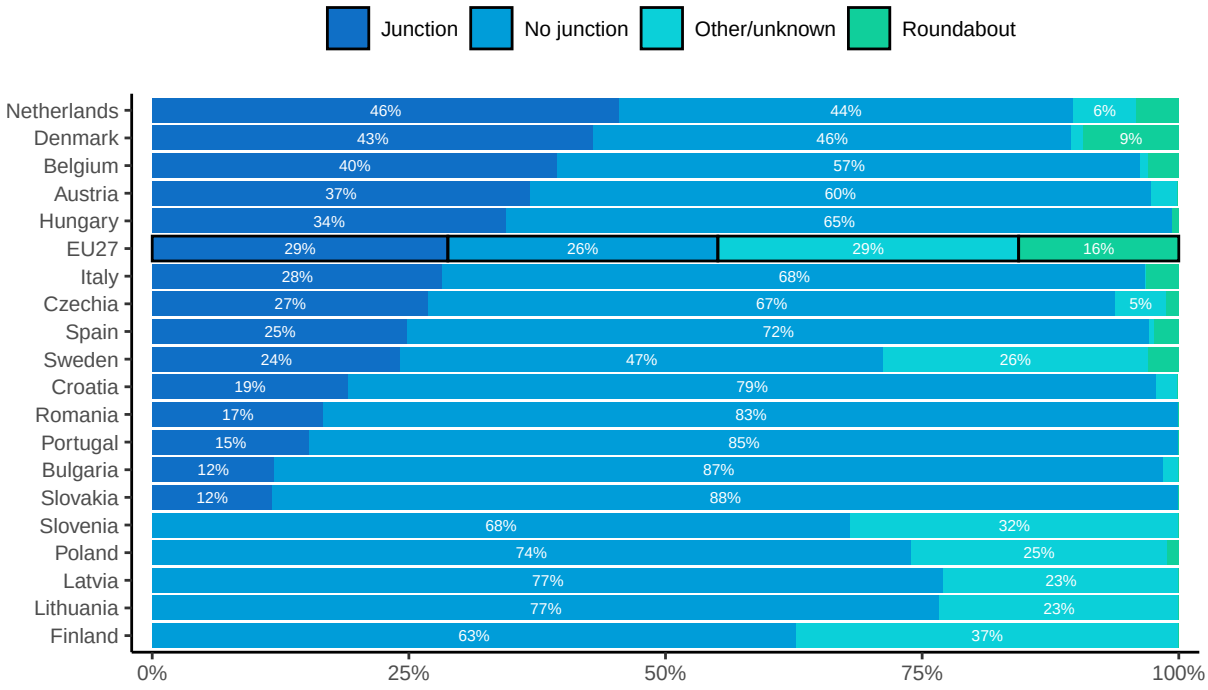
In 2020, 67% of cyclist fatalities occurred on road stretches, 16% at an intersection, and 1% at a roundabout. **Compared with all road fatalities, the proportion of cyclist fatalities is lower on road stretches, and considerably higher at intersections**. For 15% of cyclist fatalities, the type of "junction" is unknown.

Figure 18. Distribution of cyclist fatalities and all fatalities by junction type in the EU27 (2011-2020). Source: CARE



The two EU Member States with the highest share of cyclist fatalities (i.e. number of cyclist fatalities within total numbers of road fatalities) - **the Netherlands and Belgium - are countries with a high proportion of cyclist fatalities at intersections**. It is possible that in these countries, where cycling is a popular mode of transport, many measures have already been taken to improve cycling safety on road stretches, but that in these countries it is more difficult to take similarly effective safety measures at intersections.

Figure 19. Distribution of cyclist fatalities by junction type per country in the EU27 (2017-2020). Source: CARE



Notes:
− Countries that are not included in the Figure are Cyprus, Estonia, Ireland, Luxembourg and Malta because of missing data or small numbers
− Countries that are not included in the Figure are Germany, Finland and Greece because of incomplete information about junction type

6.3 Surface

Surface conditions were dry in the case of 86% of cyclist fatalities. For 12% of fatalities the surface was wet or damp; and in less than 1% of fatalities there was snow, frost, and ice reported. Cyclist fatalities may be occurring more often on dry road surfaces since cyclists can choose alternative modes of transport when the weather is bad.

Given great differences in climate, it is not surprising that in EU countries in the south a dry surface is more frequently reported (see excel file “F&F Cyclists”).

7 Notes

7.1 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.

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.

7.2 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 UK and 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.

7.3 Small cells

Absolute numbers of fatalities can be very small for small countries, 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, countries with small numbers were omitted.

7.4 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.

Figures that only contain information on the relative distribution of fatalities have not been obtained through imputation. These are mostly the Figures from section 3 onwards. The report always mentions in footnotes when imputation was used. If this is not mentioned in the footnotes, no imputation was used.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