



European Road Safety Observatory

Facts and Figures - Motorcyclists and moped
riders - 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.

Contract	This document has been prepared in the framework of the EC Service Contract MOVE/C2/SER/2019-100/SI2.822066 with Vias institute (BE) and SWOV Institute for Road Safety Research (NL).
Version	Version 1.0, October 2021
Author	Freya Sloomans (Vias institute)
Internal review	Frits Bijleveld (SWOV), Nina Nuyttens (Vias institute)
Referencing	Reproduction of this document is allowed with due acknowledgement. Please refer to the document as follows: European Commission (2021) Facts and Figures Motorcyclist and moped riders. 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

Disclaimer

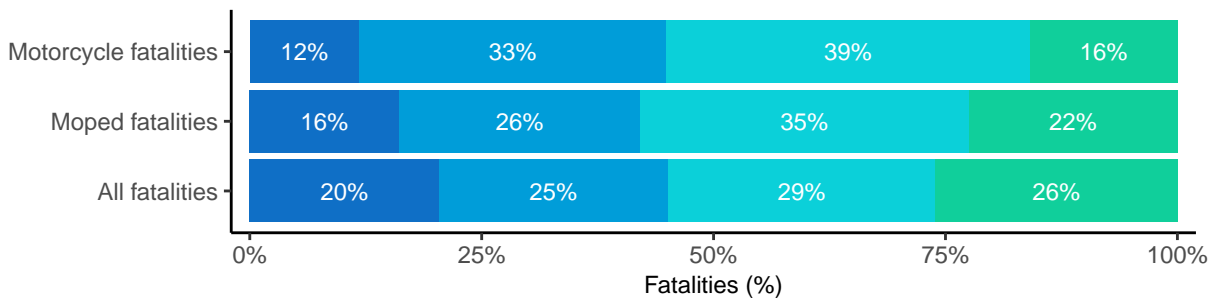
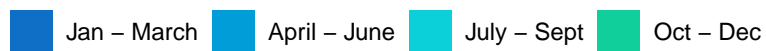
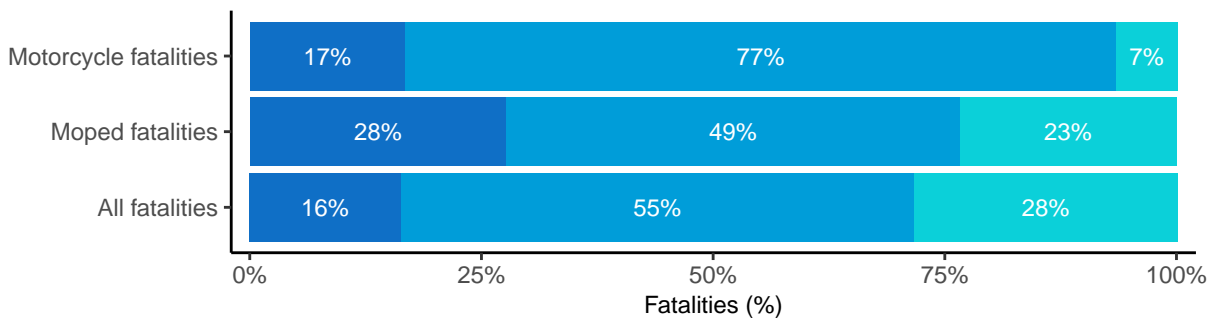
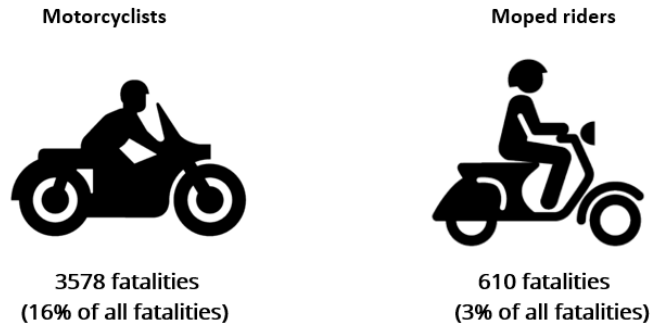
Whilst every effort has been made to ensure that the material presented in this document is relevant, accurate and up-to-date, the (sub)contractors cannot accept any liability for any error or omission, or reliance on part or all of the content in another context.

Any information and views set out in this document are those of the author(s) and do not necessarily reflect the official opinion of the European Commission. The Commission does not guarantee the accuracy of the data included in this study. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use that may be made of the information contained here

Contents	3
1 Key Facts	4
2 Main trends	7
2.1 Mortality rate: number of road fatalities per million inhabitants	7
2.2 Number of fatalities among powered two-wheeler riders as a proportion of total fatalities	9
2.3 Trend in the number of fatalities	11
2.4 Trend in the number of serious injuries	16
2.5 Comparison of powered two-wheeler riders with other transport modes	17
3 Road user	19
3.1 Gender	19
3.2 Age	21
3.3 Seating position	22
3.4 Other transport modes involved	22
4 Time	24
4.1 Period of the week	24
4.2 Day of the week and hour	24
4.3 Month	25
5 Location	27
5.1 Road type	27
5.2 Junction type	27
5.3 Surface	28
6 Notes	30
6.1 Definitions	30
6.2 Data source	30
6.3 Small cells	31
6.4 Missing data	31

1 Key Facts

Fatalities 2019



Together with pedestrians and cyclists, motorcyclists and moped riders form part of the group of “vulnerable road users”. **Motorcyclists and moped riders have similarities but also many differences**, such as cylinder capacity, mass, and speed of their vehicles, the road user’s clothing requirements, the age of the users, and the type of use (utilitarian / leisure). Because of these differences, it is important to analyse these two transport modes separately, as has been done in this report. All differences reported were derived from the available data and not statistically tested.

Although the number of motorcyclist and moped fatalities in **Italy and France** has decreased more than the EU average over the past decade, these two countries still had the **highest number of fatalities in 2019**. In these two countries, both the mortality rate and the proportion of motorcycle fatalities and moped fatalities within the total number of fatalities were higher than the EU average. **Overall, mortality rate and share of fatalities (within the total number of fatalities) for both types of PTW riders were higher in the south of the EU**. The popularity of these transport modes in these countries needs to be taken into account when interpreting levels. Greece had the highest mortality rate and share of fatalities for motorcyclists, and along with Portugal, also had one of the highest mortality rates and share of fatalities for moped riders.

Respectively 16% and 3% of all road fatalities in the EU in 2019 were motorcyclists and moped riders. Taken together therefore, almost one in five road fatalities were powered two-wheeler riders (“PTW riders”). The proportion of motorcyclists in the total number of fatalities has increased over the past decade, with the proportion of moped riders decreasing. Across all transport modes, moped crashes have seen the greatest decrease in fatalities.

More than 9 out of 10 fatalities in PTW riders were male (compared with 77% for all road fatalities). 77% of motorcyclists and 49% of moped riders were between 25 and 64 years old. **For both modes of transport, the proportion of over-65s is increasing, and the proportion of young people up to 24 is decreasing**. With moped riders, a high peak in the number of fatalities occurred among 15-19 year olds while with motorcyclists, a peak is reached with people in their twenties. Only a small minority of fatalities were passengers of motorcycles/mopeds.

94% of all fatalities in fatal crashes involving motorcyclists or moped riders were motorcyclists or moped riders themselves. **36% and 31% of motorcyclists and moped riders respectively died in a unilateral crash** (i.e. a crash in which only one vehicle and no pedestrians are involved).

Regarding time, **motorcyclists were relatively more likely to have a fatal crash during daytime at the weekend**, and less in the morning during the working week. The distribution of moped fatalities over the week hardly differed from the distribution of all fatalities. Both transport modes showed a pronounced seasonal variation, with **far fewer fatalities during the winter months and more during the spring and summer months**.

Regarding location, we saw for both motorcycles and mopeds since 2010 **an increase of fatalities on rural roads and a decrease on urban roads**. For motorcyclists, the proportion on rural roads was 56% in 2019 (compared with 38% on urban roads); for moped riders, 47% (compared with 51%). Of all road fatalities, 78% occurred on a road stretch, while for motorcyclists and moped riders the figures are 71% and 69% respectively. Surface conditions were dry in the cases of 92% and 82% of motorcyclist and moped fatalities respectively.

Basic definitions*Moped:*

Two or three wheeled motor vehicle equipped with engine size of maximum 50cc and maximum speed that does not exceed 45 km/h. A moped can also have an electric motor. Speed pedelecs, electric powered bicycles that offer pedal assistance till 45 km/h, also belong to this category of vehicles.

Motorcycle:

Two or three wheeled motor vehicle, with engine size up to 125 cc, or maximum speed exceeding 45km/h. A motorcycle can also have an electric motor.

Powered two-wheelers:

Sum of mopeds and motorcycles

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.

More detailed data:

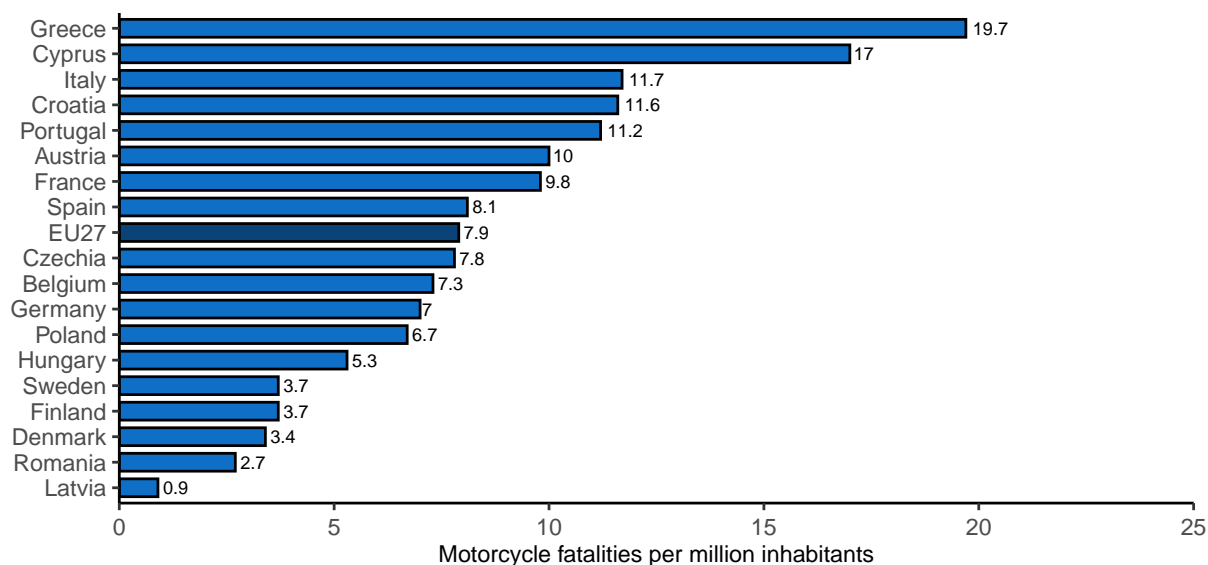
This Facts and Figures report is accompanied by an excel file (available online) containing a large set of additional detailed data. Each sheet in the excel file corresponds to a Figure/Table in the report.

2 Main trends

2.1 Mortality rate: number of road fatalities per million inhabitants

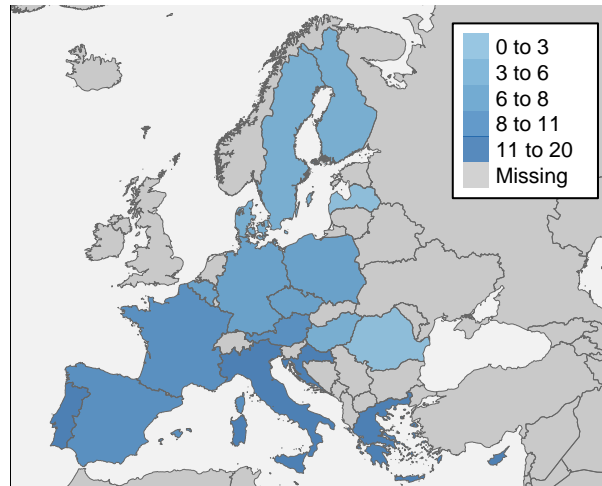
Three of the top five countries with the highest number of motorcycle fatalities have a motorcycle mortality rate (i.e. the number of motorcycle fatalities per million inhabitants) higher than the EU average, namely France, Italy and Greece. Greece has the highest motorcycle mortality rate. In general, motorcycle mortality rates are higher in the south of the EU than in other parts of the EU. The higher popularity of PTWs in the south of the EU needs to be taken into account when interpreting levels. According to the ESRA survey (Yannis et al., 2020¹), 21% and 23% of adult Italians and Greeks, respectively, made a trip with a PTW in 2018. This percentage was 13% for all 20 EU countries participating in the survey. **Compared with the mortality rate for mopeds, the mortality rate for motorcyclists is five times higher.**

Figure 1. Motorcycle fatalities per million inhabitants per country in the EU27 (2017-2019). Source: CARE, EUROSTAT



Notes:
 - Due to small numbers of fatalities, Estonia, Malta and Luxembourg are not included
 - Due to a high number of missing values, Bulgaria, Ireland, Lithuania, Netherlands, Slovenia and Slovakia are not included

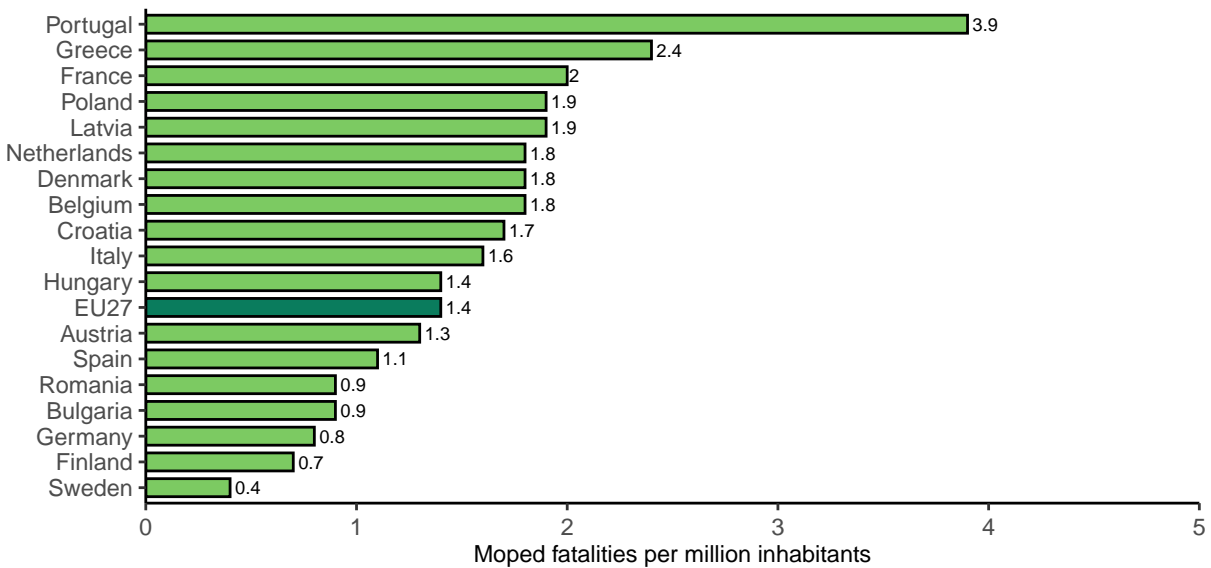
¹Yannis, G., Laiou, A., Nikolaou, D., Usami, D.S., Sgarra, V., Azarko, A. (2020) Moped drivers and motorcyclists. ESRA2 Thematic report Nr. 12. ESRA project (E-Survey of Road users' Attitudes). Athens, Greece: National Technical University of Athens.



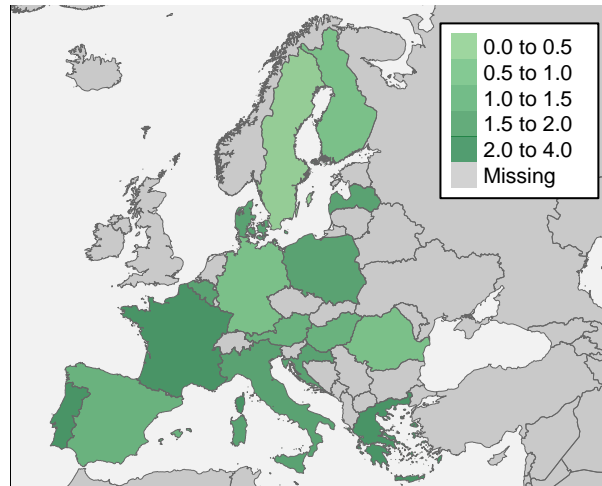
© EuroGeographics for the administrative boundaries

Three of the top five countries with the highest number of moped fatalities have a moped mortality rate higher than the EU average: Italy, France and Poland. However, **Portugal and Greece have higher mortality rates** than these three countries. As with motorcycle mortality rates, **moped mortality rates are generally higher in the south of the EU** than in other parts of the EU. However, the Netherlands also has a high moped mortality rate compared with the EU average.

Figure 2. Moped fatalities per million inhabitants per country in the EU27 (2017-2019). Source: CARE, EUROSTAT



Notes:
 - Due to small numbers of fatalities, Cyprus, Czechia, Lithuania and Slovenia are not included
 - Due to a high number of missing values, Estonia, Ireland, Luxembourg, Malta, and Slovakia are not included



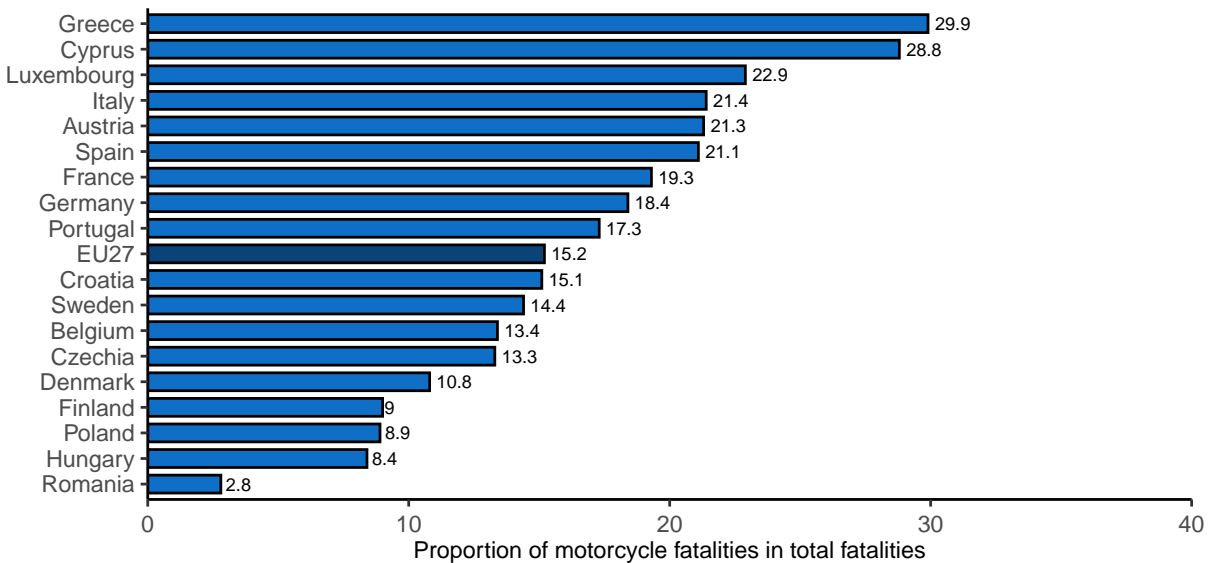
© EuroGeographics for the administrative boundaries

2.2 Number of fatalities among powered two-wheeler riders as a proportion of total fatalities

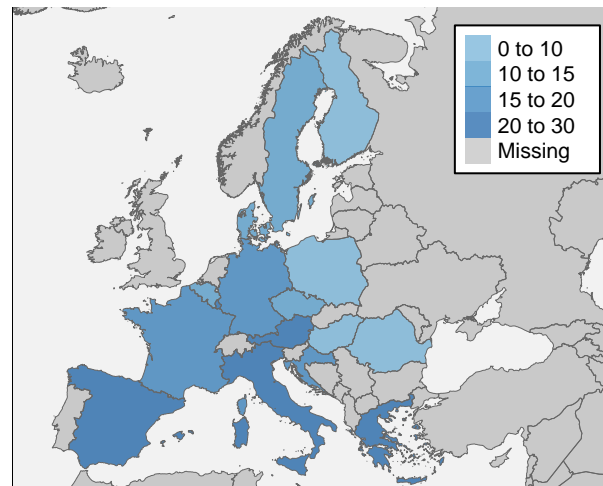
Mortality is an important indicator, but does not take into account differences in the general state of road safety in countries. In other words, it is possible that the mortality rate for powered two-wheeler riders in a specific country is high because the total mortality rate for all road users in that country is high. Therefore, it is important to also look at the proportion of motorcyclist/moped fatalities within the total number of road fatalities.

As in the case for motorcycle mortality rates, **the share of motorcycle fatalities (in the total number of fatalities) is generally higher in southern EU Member States.** In Italy, France and Spain both mortality rates and the share of fatalities for motorcyclists are above average. Greece has both the highest proportion of motorcycle fatalities and the highest motorcycle mortality rate.

Figure 3. Number of motorcycle fatalities in the total number of fatalities, per country in the EU27 (2019). Source: CARE



Notes:
 – Due to small numbers of fatalities, Estonia, Malta and Luxembourg are not included
 – Due to a high number of missing values, Bulgaria, Ireland, Lithuania, Slovenia and Slovakia are not included

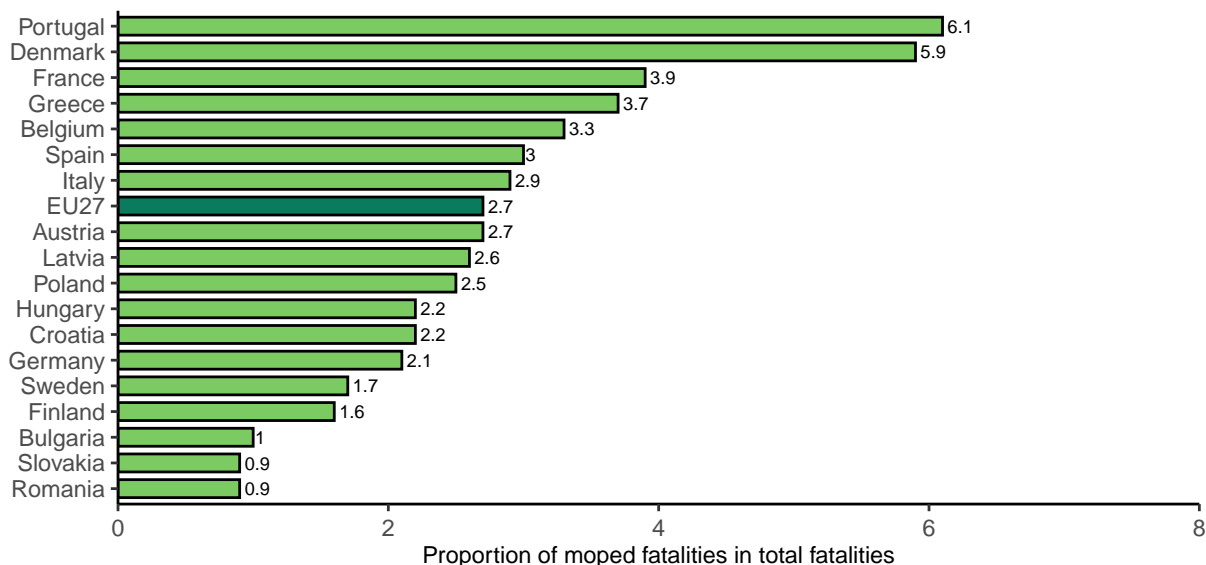


© EuroGeographics for the administrative boundaries

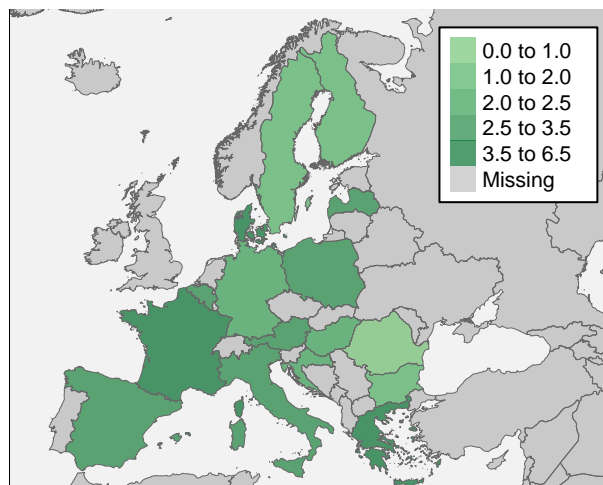
For this report, we also related the number of motorcycle fatalities to the number of motorcycle vehicles per country. Information about the motorcycle vehicle fleet per country is published by Eurostat but is not available for all EU countries and probably not complete in some countries. These results should therefore be interpreted with caution. The most remarkable finding on the basis of this indicator is that Greece, Italy and Spain - in contrast to their ranking according to the other indicators - appear to be among the better half of the EU Member States in terms of fatality rates by vehicle fleet volume.

As with the moped mortality rate, the share of moped fatalities generally appears to be higher in the southern EU Member States. In Italy and France both mortality rates and share of fatalities for mopeds are above average. The Netherlands also has a high proportion of moped fatalities.

Figure 4. Number of moped fatalities in the total number of fatalities, per country in the EU27 (2019). Source: CARE



Notes:
 - Due to small numbers of fatalities, Cyprus, Czechia, Lithuania and Slovenia are not included
 - Due to a high number of missing values, Estonia, Ireland, Luxembourg, Malta, Netherlands and Slovakia are not included

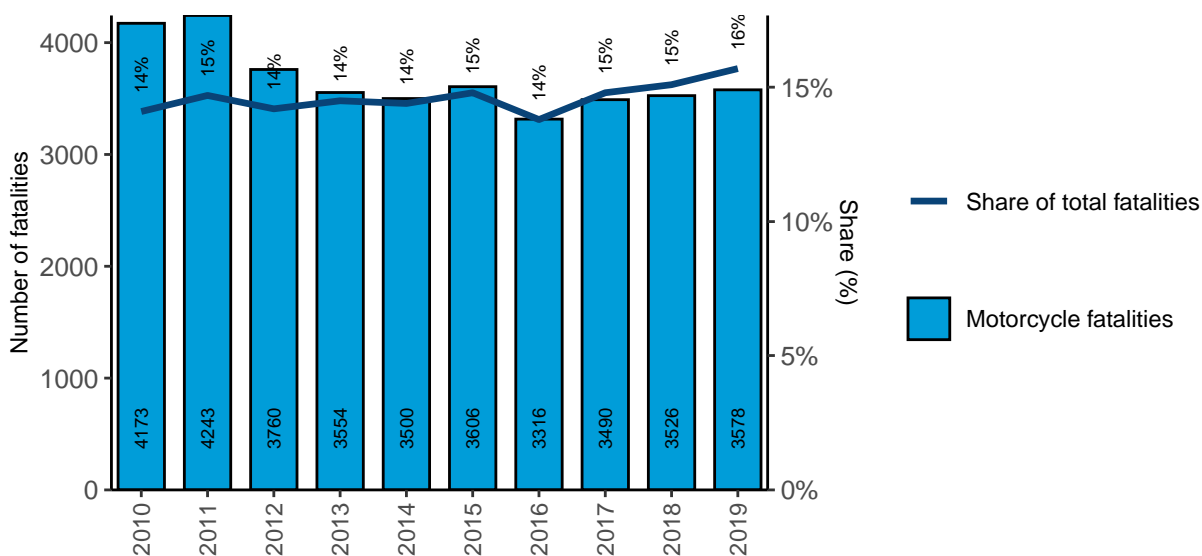


© EuroGeographics for the administrative boundaries

2.3 Trend in the number of fatalities

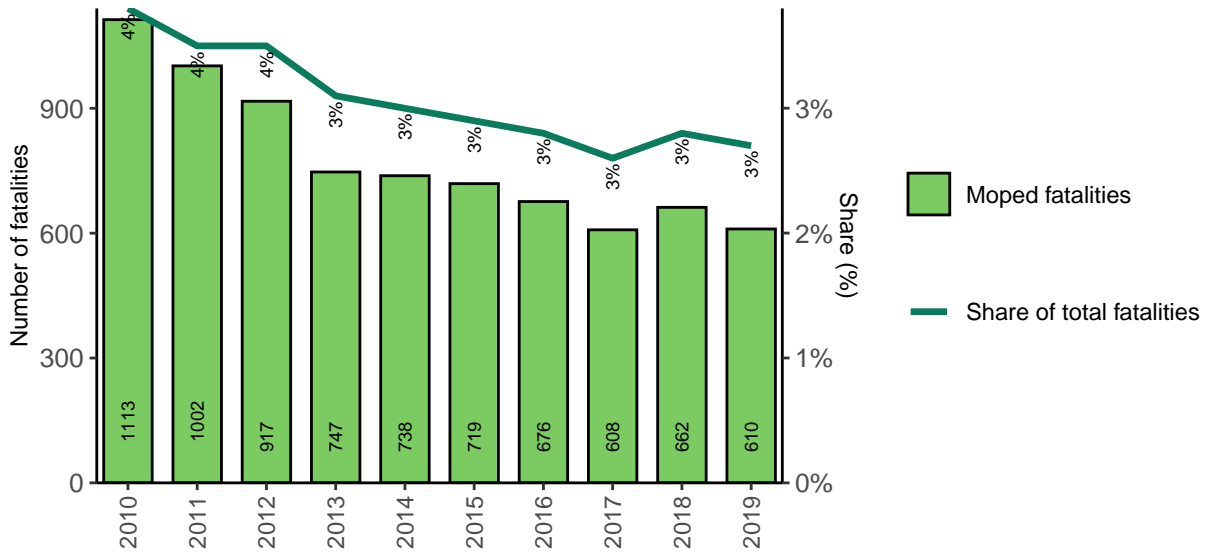
16% of all road fatalities in the EU27 in 2019 were motorcyclists. Although the number of motorcycle fatalities decreased by 14% between 2010 and 2019, the total number of road fatalities decreased even more (-23%). As a result, **the relative proportion of motorcycle fatalities within the total number of road fatalities increased slightly from 14% in 2010 to 16% in 2019.**

Figure 5. Annual number of motorcycle fatalities, and their share in the total number of fatalities in the EU27 (2010-2019). Source: CARE



The proportion of moped fatalities within the total number of road fatalities in 2019 was 3%. Hence in 2019 there were about five times more motorcycle fatalities than moped fatalities. In contrast to motorcycle fatalities, **the proportion of moped fatalities has decreased since 2010.**

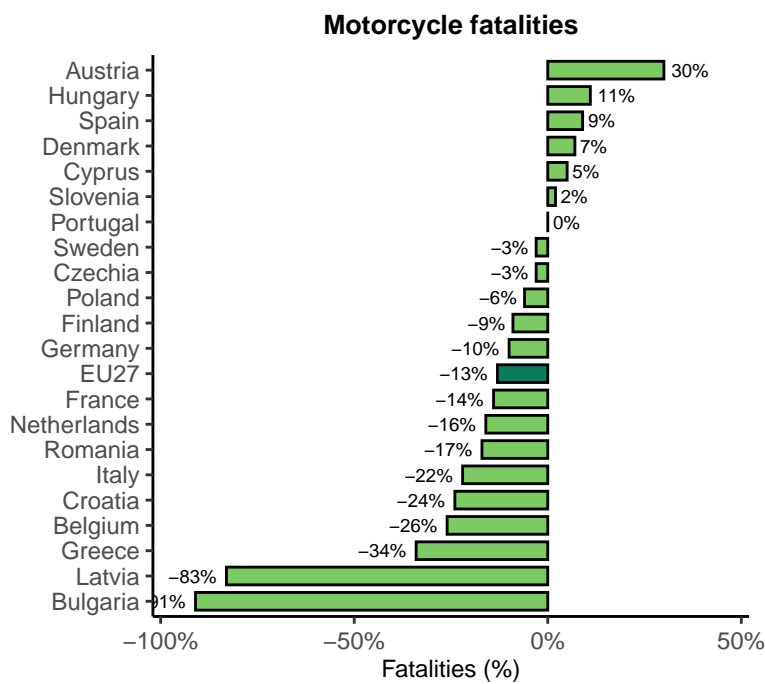
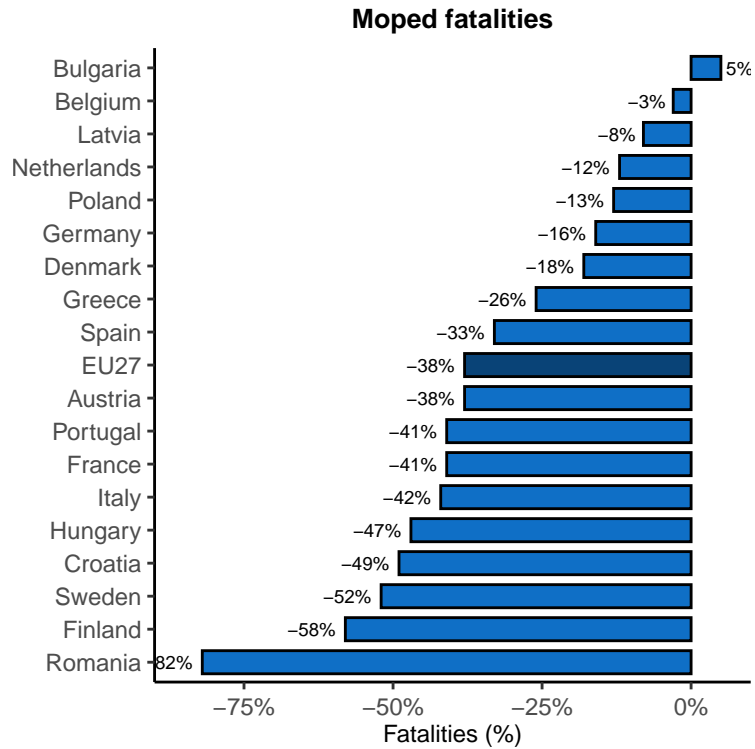
Figure 6. Annual number of moped fatalities, and their share in the total number of fatalities in the EU27 (2010-2019).
Source: CARE



The EU Member States with the highest number of motorcycle fatalities are (highest to lowest numbers) **Italy, France, Germany, Spain, and Poland**. These are also the countries with the highest numbers of moped fatalities; only the order of the countries is different. France has the highest number of moped fatalities followed by Italy, Poland, Germany and Spain. For the two transport modes combined, Italy has the highest number of powered two-wheeler riders killed.

The Figure below shows that in Italy and France both motorcycle and moped fatalities have seen a more pronounced decline than the EU average over the last decade. In Germany, Poland and Spain, the trend was worse than average.

Figure 7. Percentage change in the number of fatalities among powered two-wheeler riders per country in the EU27 (2010-2012 and 2017-2019). Source: CARE



Note: countries that are not included in the the Figure: countries with missing values or too many '0'-values, and countries with (extreme percentage changes due to) small absolute numbers

Table 1. Number of and trend in motorcycle fatalities per country in the EU27 and EFTA (2010-2012 versus 2017-2019).
Source: CARE

	2010	2017	2018	2019	Trend 2017 - 2019 vs 2012 - 2010	Miniplot: trend since 2010
Austria	68	83	102	79	30%	
Belgium	103	77	87	84	-26%	
Bulgaria	42	2	4	5		
Croatia	51	42	55	46	-24%	
Cyprus	18	14	14	16	5%	
Czechia	92	69	94	84	-3%	
Denmark	22	11	21	27	7%	
Estonia	-	0	-	3		
EU27	4173	3490	3526	3578	-13%	
Finland	18	13	24	25	-9%	
France	734	669	627	615	-14%	
Germany	635	583	619	542	-10%	
Greece	367	216	190	228	-34%	
Hungary	49	43	49	64	11%	
Iceland	1	2	0	1		
Ireland	17	-	-	-		
Italy	950	735	687	698	-22%	
Latvia	17	1	3	1		
Lithuania	-	10	13	19		
Luxembourg	1	7	9	3		
Malta	3	2	8	-		
Netherlands	60	-	-	-		
Norway	26	20	14	16	-11%	
Poland	259	231	238	295	-6%	
Portugal	126	106	112	127	0%	
Romania	59	52	55	51	-17%	
Slovakia	27	-	-	-		
Slovenia	-	-	-	-		
Spain	386	359	359	417	9%	
Sweden	37	38	44	29	-3%	
Switzerland	68	51	42	30	-41%	

Note:

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

Table 2. Number of and trend in moped fatalities per country in the EU27 and EFTA (2010-2012 versus 2017-2019). Source: CARE

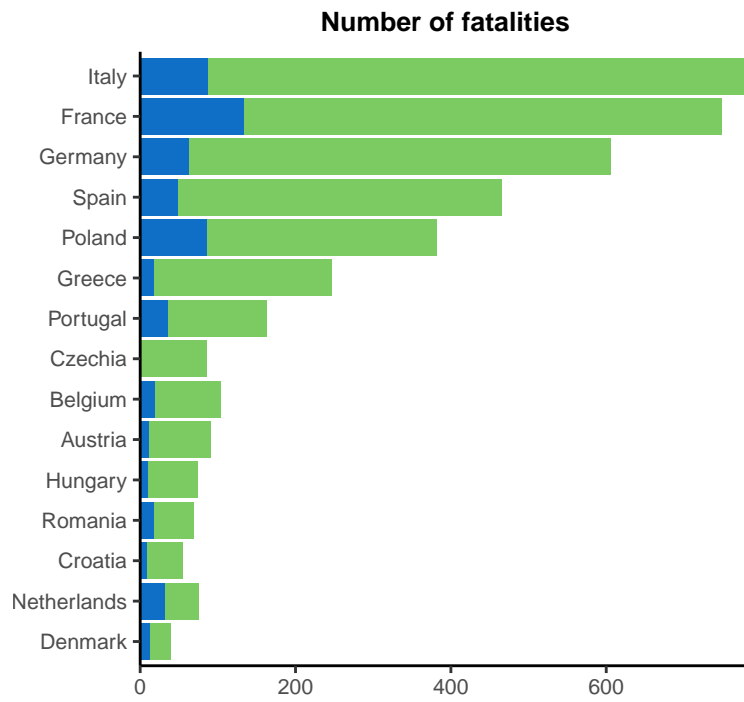
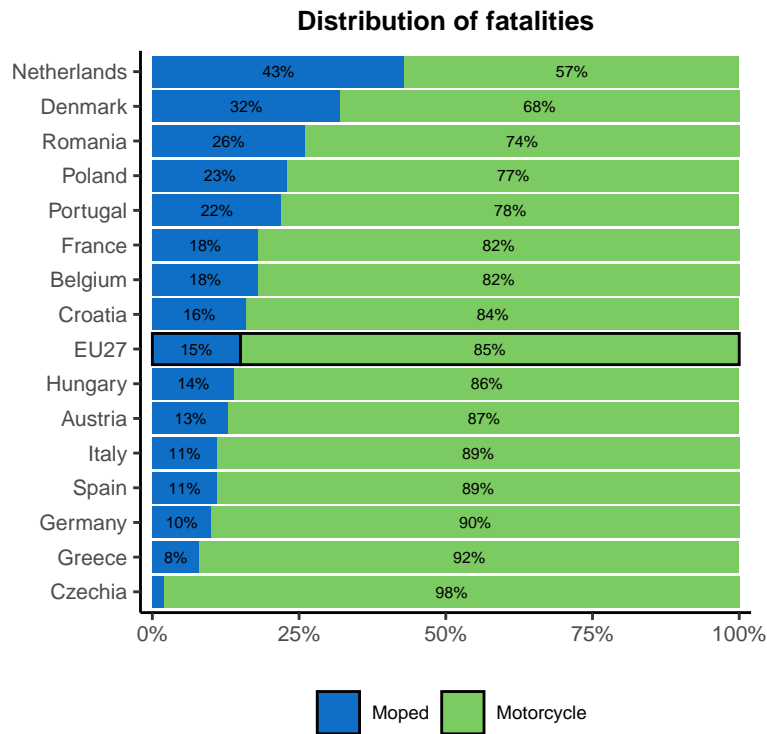
	2010	2017	2018	2019	Trend 2017 - 2019 vs 2012 - 2010	Miniplot: trend since 2010
Austria	18	14	8	12	-38%	
Belgium	23	24	18	19	-3%	
Bulgaria	5	11	7	2	5%	
Croatia	15	8	4	9	-49%	
Cyprus	3	2	2	0		
Czechia	7	2	5	2		
Denmark	11	9	10	13	-18%	
Estonia	-	1	-	1		
EU27	1113	608	662	610	-38%	
Finland	9	5	3	3	-58%	
France	248	117	133	134	-41%	
Germany	74	59	78	63	-16%	
Greece	36	32	27	19	-26%	
Hungary	19	17	13	10	-47%	
Iceland	0	0	-	0		
Italy	206	92	108	88	-42%	
Latvia	4	6	4	1		
Lithuania	-	4	1	0		
Luxembourg	0	-	0	-		
Malta	-	0	0	-		
Netherlands	32	-	-	-		
Norway	0	1	2	0		
Poland	83	55	76	87	-13%	
Portugal	77	43	42	36	-41%	
Romania	114	17	18	18	-82%	
Slovakia	-	2	3	2		
Slovenia	-	-	-	-		
Spain	100	49	62	49	-33%	
Sweden	8	1	7	5		
Switzerland	4	2	5	5		

Note:

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

About 15% of powered two-wheeler riders killed in the EU are moped riders, but in some countries the proportion of moped riders is higher. In the Netherlands, for example, 43% of all powered two-wheelers riders killed are moped riders. This may be related to legislation in this country as it is not compulsory to wear a helmet on mopeds up to 25 km/h, while it is in most other EU countries.

Figure 8. Relative number of motorcycle and moped fatalities per country in the EU27 (2019). Source: CARE



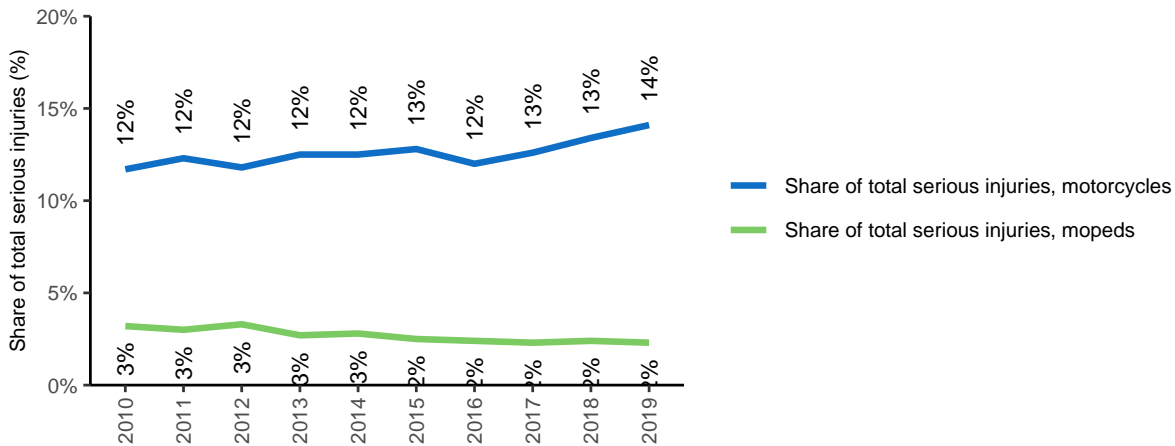
Note: Countries with incomplete data or with less than 35 PTW fatalities in 2019 are not included in the figure

2.4 Trend in the number of serious injuries

15% of all serious injuries in the EU27 in 2019 were motorcyclists, 5% were moped riders. The relative proportion of serious injuries has decreased slightly for moped riders and has increased slightly for

motorcyclists.

Figure 9. Share of serious injuries for motorcyclists and moped riders in the total number of serious injuries in the EU27 (2010-2019). Source: CARE



Notes:

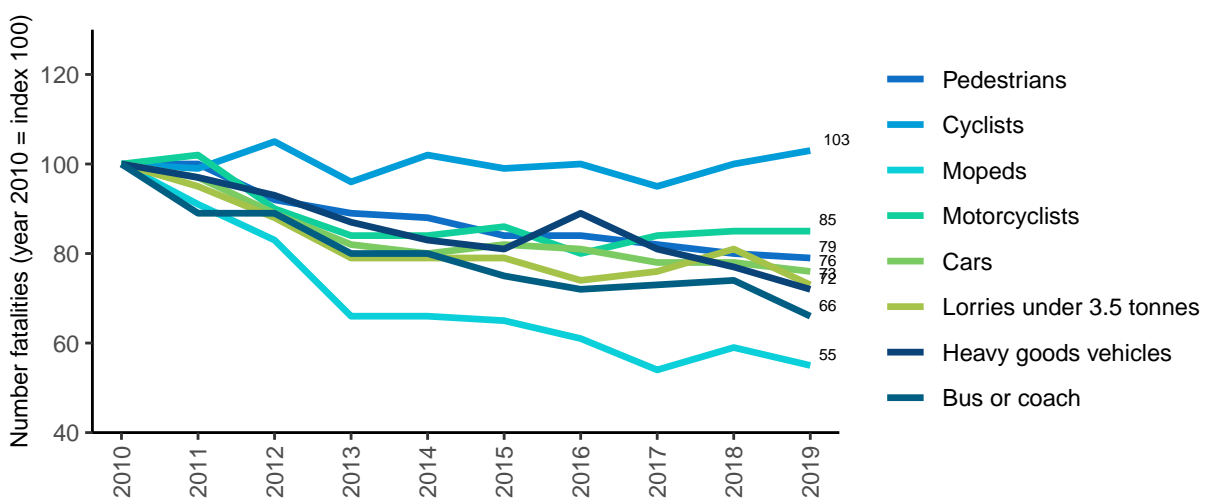
- Countries that are not included in the Figure are France, the Netherlands, Ireland, Italy and Estonia due to problems of missing data or a break in the time series
- Germany accounts for a disproportionately high share of 40% of all serious injuries

2.5 Comparison of powered two-wheeler riders 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).

No other mode of transport shows a greater reduction in fatalities than mopeds, while the reduction of fatalities in motorcycle crashes is less than average.

Figure 10. Trend of fatalities in crashes involving motorcyclists and moped riders and other transport modes in the EU27 (2010-2019). Source: CARE

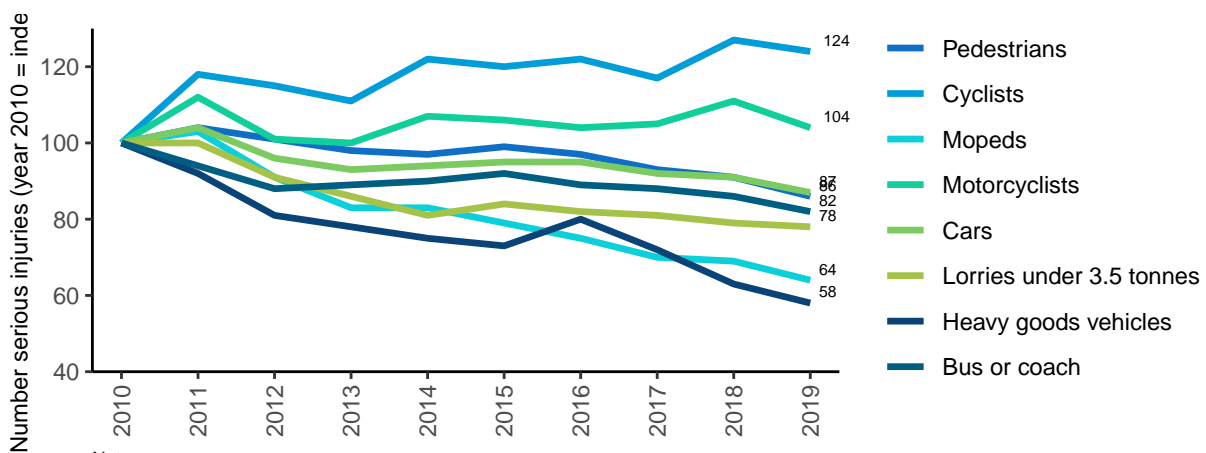


Note: imputation was used for missing values for specific combinations of years and countries. Countries that show an unreliable trend for a particular mode of transport are omitted for that mode of transport.

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 as well as the other party seriously injured in the crash are counted (e.g. in car crashes, both the car occupants and the other parties seriously injured are counted).

The reduction in the number of seriously injured moped riders is one of the largest (together with accidents involving a heavy goods vehicle). The reduction in the number of seriously injured motorcyclists, on the other hand, is one of the smallest.

Figure 11. Trend of serious injuries in crashes involving different transport modes in the EU27 (2010-2019). Source: CARE



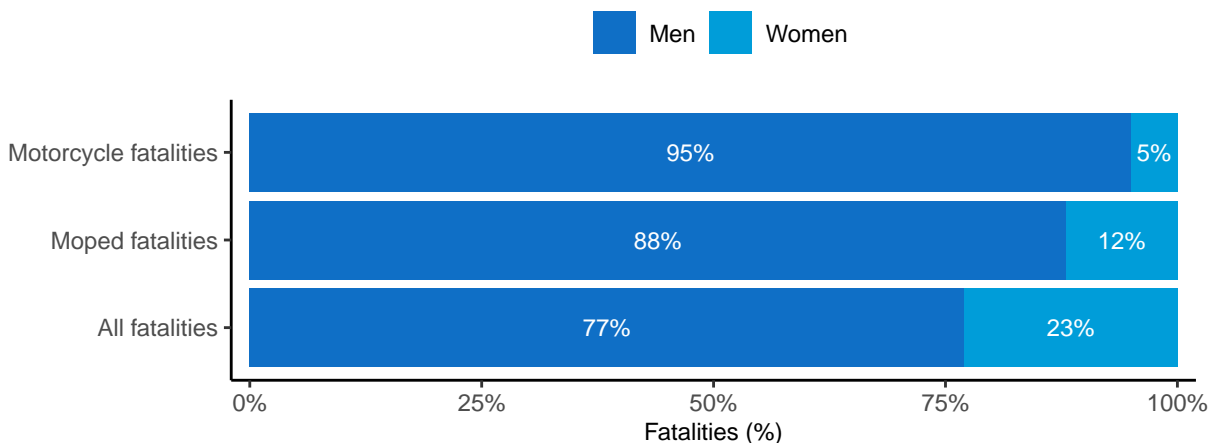
Note:
 - Imputation was used for missing values for specific combinations of years and countries. Countries that show an unreliable trend for a particular mode of transport are omitted for that mode of transport
 - Countries that are not included in the Figure are France, the Netherlands, Ireland, Italy 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 Road user

3.1 Gender

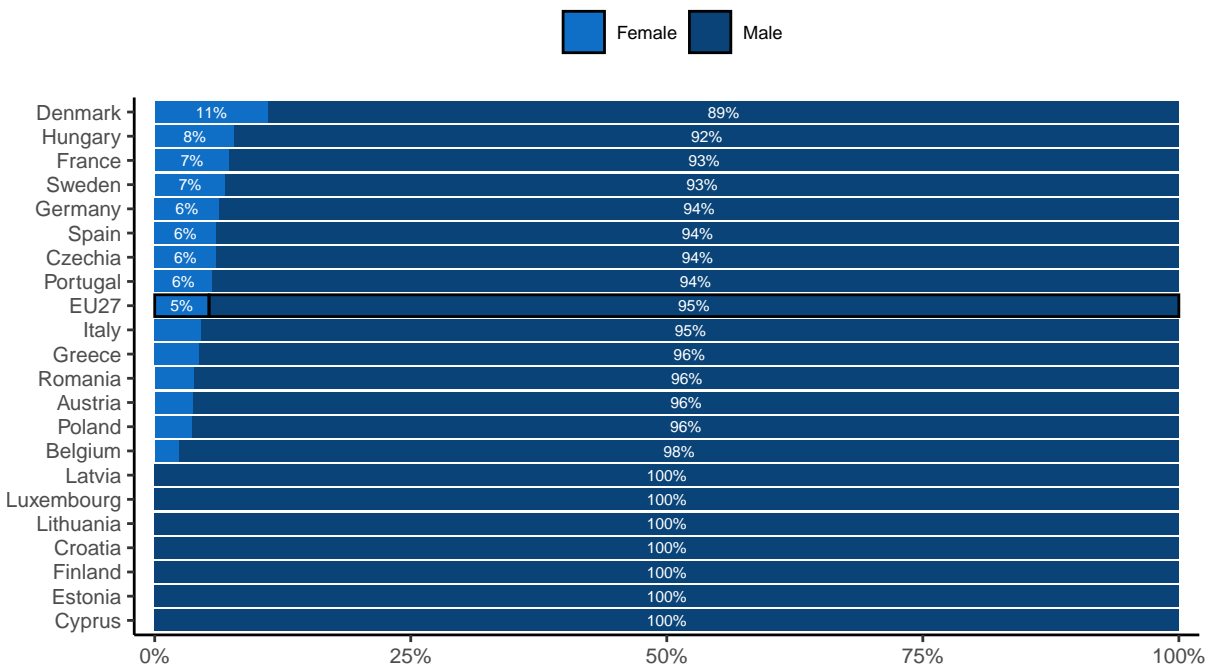
77% of all road fatalities in the EU in 2019 are male. **The proportion of men is even higher with PTW riders: 88% in the case of moped riders and 95% in the case of motorcyclists.**

Figure 12. Distribution of motorcyclist fatalities, moped fatalities and all fatalities by gender in the EU27 (2019). Source: CARE



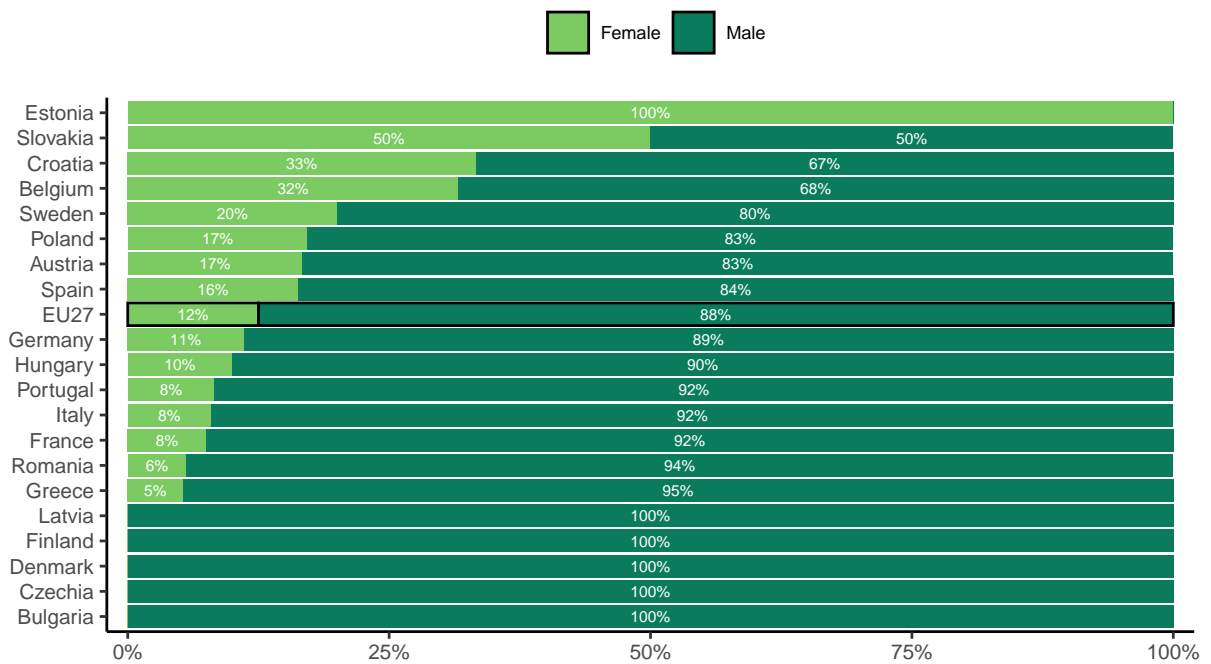
As far as the proportion of men in motorcycle fatalities is concerned, few differences can be observed between EU Member States. In none of the EU Member States is the share below 88%. With regard to moped fatalities also, few differences can be observed between countries. In Croatia, the proportion of men is - in relative terms - low at 67% in 2019.

Figure 13. Distribution of motorcycle fatalities by gender per country in the EU27 (2019). Source: CARE



Note: countries that are not included in the Figure are Bulgaria, Ireland, Malta, Netherlands, Slovenia and Slovakia because these countries have missing values in the last years

Figure 14. Distribution of moped fatalities by gender per country in the EU27 (2019). Source: CARE



Note: countries that are not included in the Figure are Cyprus, Ireland, Lithuania, Luxembourg, Malta, Netherlands and Slovenia because these countries have missing values in the last years

3.2 Age

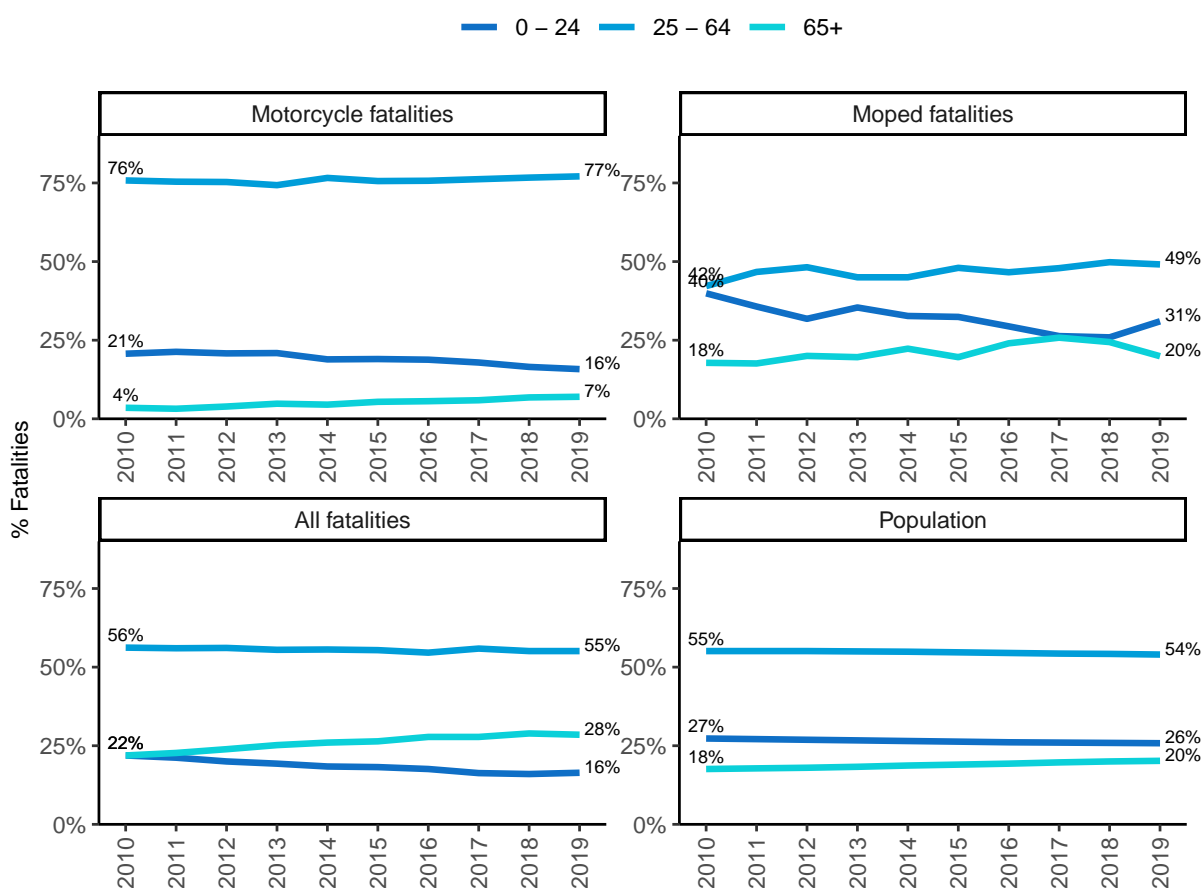
The 25-64 age group accounts for the largest proportion of fatalities among PTW riders: 77% among motorcyclists in 2019 and 49% among moped riders.

With regard to motorcyclists, the proportion of 25-64-year-olds has remained stable since 2010, but the proportion of over-65s has almost doubled (from 4% in 2010 to 7% in 2019) while the proportion of up to 24-year-olds has decreased (from 21% to 16% in the same period).

As with motorcycle fatalities, the proportion of over-65s and 25-64-year-olds among moped riders increased and the proportion of young people up to 24 years of age decreased. These trends may be linked to trends in the characteristics of users of these modes of transport.

As regards the distribution of motorcycle fatalities and moped fatalities across the three age groups, no major differences can be observed between EU Member States.

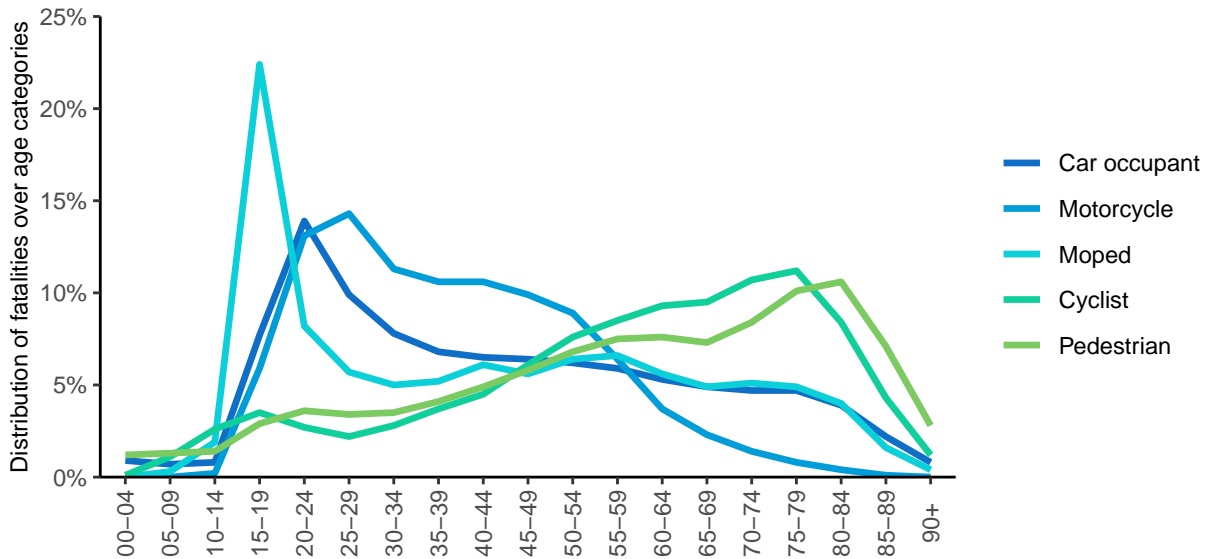
Figure 15. Distribution of motorcyclist and moped fatalities and all fatalities by age group in the EU27 (2010-2019). Source: CARE & EUROSTAT



The Figure below provides a more detailed picture of the distribution of motorcyclist and moped fatalities by age. **With moped riders a high peak occurs in the age category of 15-19 years;** this is the age category from which this means of transport may be used. The peak decreases sharply until the age of 25-29, after which the numbers of moped fatalities hit a plateau. **With motorcyclists, a peak is reached in people in their twenties.** After that, the number of fatalities also decreases, but in a much more gradual way than with moped riders.

The distribution of fatalities among powered two-wheeler riders is very different from the distribution among other vulnerable road users, namely pedestrians and cyclists, for whom the number increases in line with age.

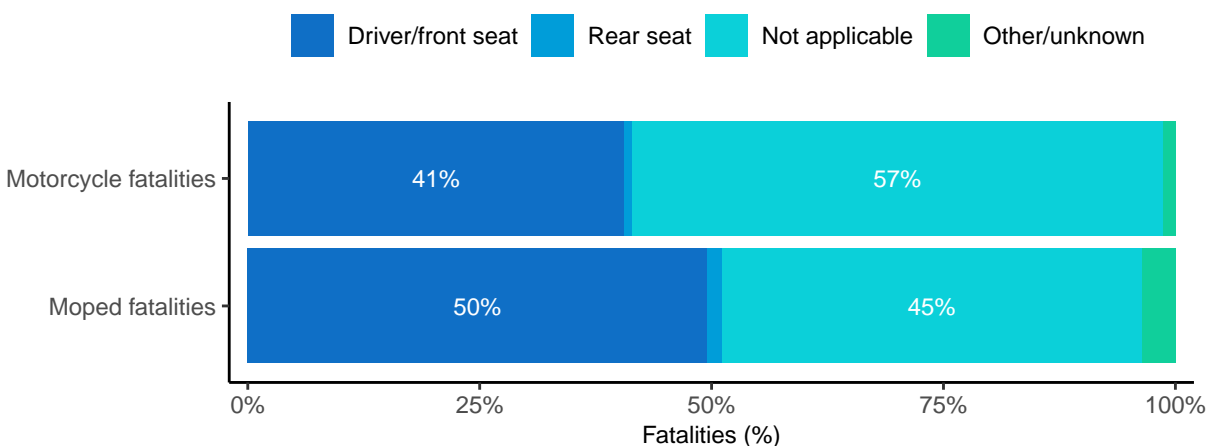
Figure 16. Distribution of fatalities over 5-year age categories, by transport mode, in the EU27 (2010-2019). Source: CARE



3.3 Seating position

In relation to the seating position of powered two-wheeler riders killed, the information in the CARE database is very incomplete. Nevertheless, the limited information in the Figure below seems to suggest that **passengers are a small minority of those killed.**

Figure 17. Distribution of fatalities among users of powered two-wheeler riders by seating position on vehicle in the EU27 (2019). Source: CARE

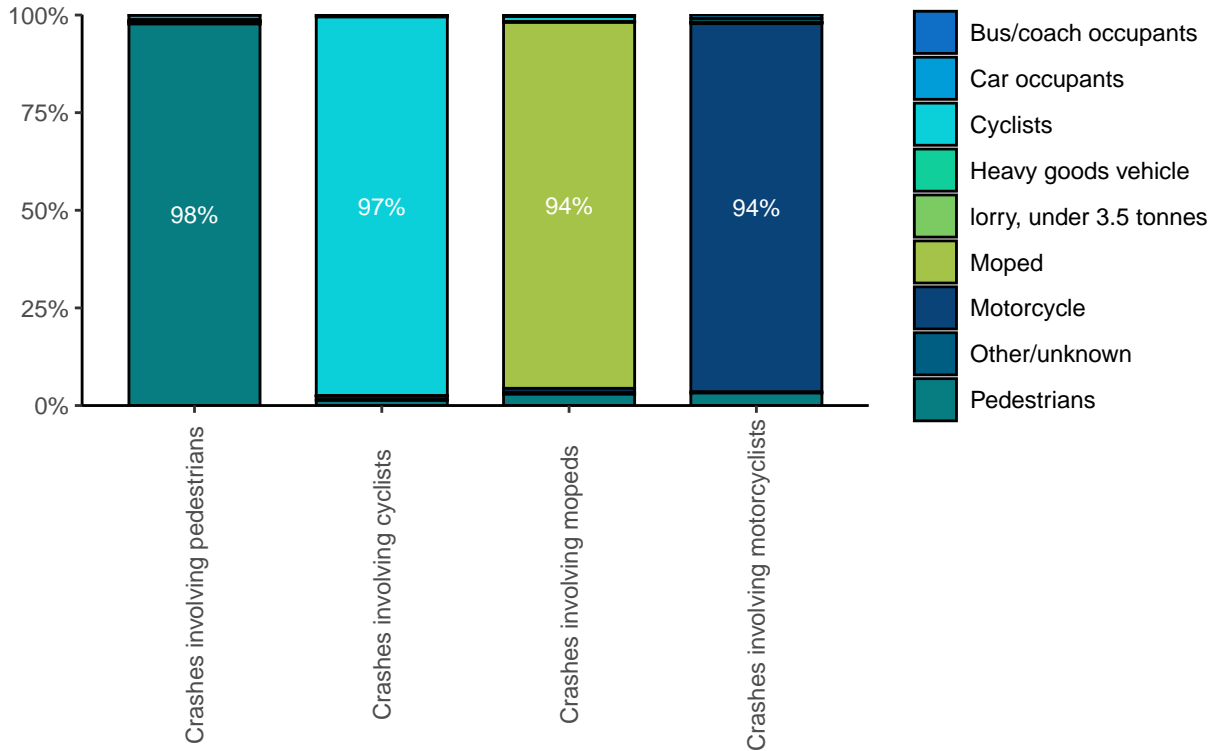


3.4 Other transport modes involved

In 2019, the **percentages of motorcyclists and moped riders killed in a unilateral crash** (a crash in which only one vehicle and no pedestrians are involved) **were 36% and 31% respectively.** In all

crashes involving motorcyclists or moped riders, **more than 9 out of 10 fatalities are the motorcyclists/moped riders themselves.**

Figure 18. Distribution of fatalities by transport mode in crashes involving pedestrians, cyclists, moped riders and motorcyclists in the EU27 (2019). Source: CARE

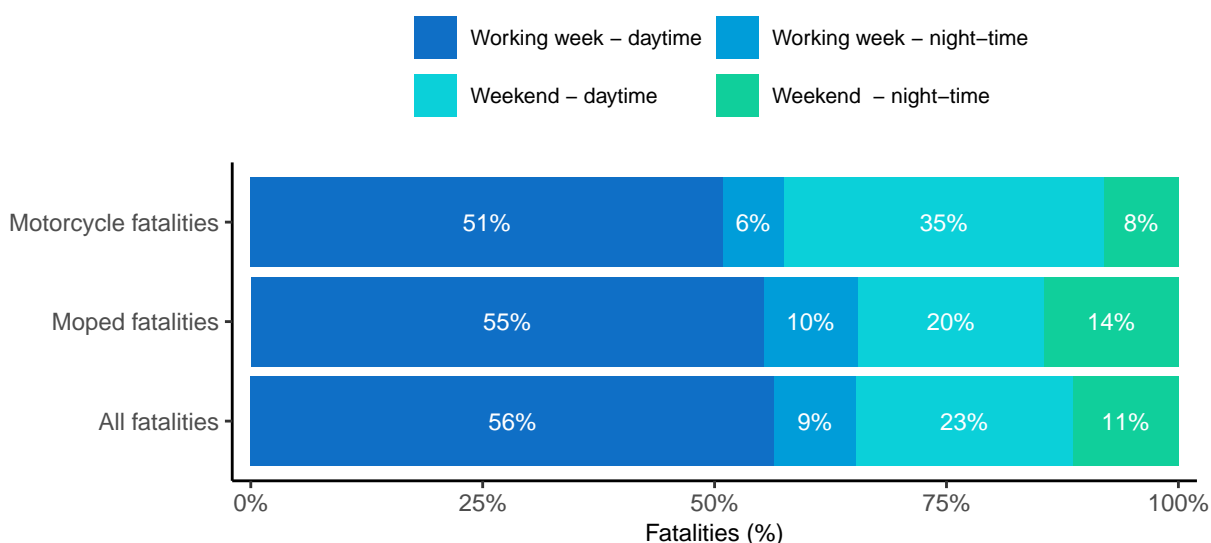


4 Time

4.1 Period of the week

The distribution of moped fatalities according to period of the week is very similar to the distribution of total fatalities over the week. This is not the case for motorcycle fatalities. **The share of motorcycle fatalities is proportionally higher during day-time in the weekend**, compared with moped and all fatalities. Differences in the time-spread of motorcycle fatalities and moped fatalities can probably be explained by differences in utilisation of these modes of transport, where mopeds are driven mainly for utilitarian reasons (e.g. commuter traffic) while motorcycle are driven for utilitarian reasons and leisure activities.

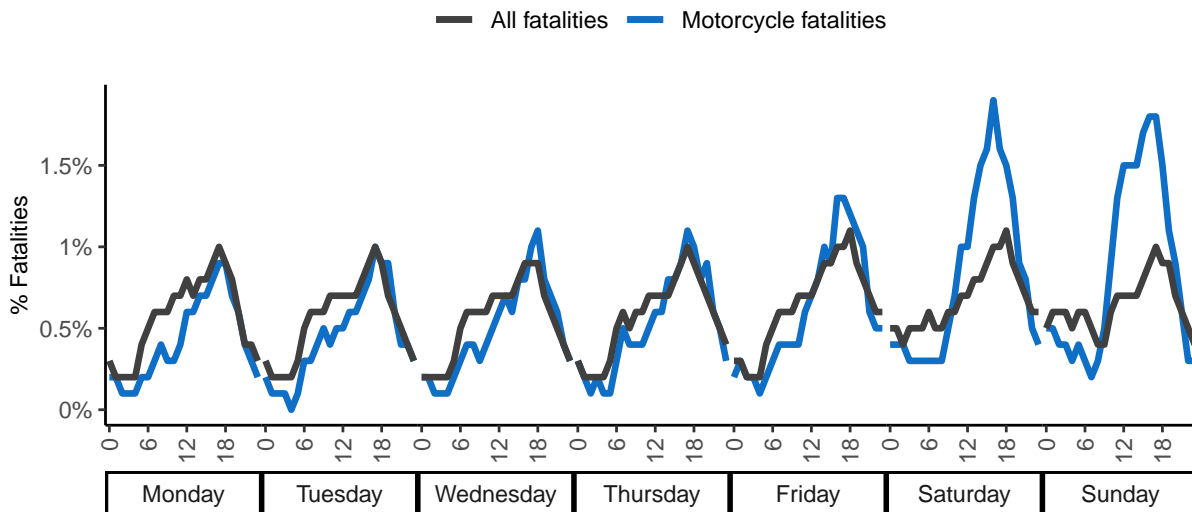
Figure 19. Distribution of fatalities among powered two-wheeler riders and all fatalities according to period of the week in the EU27 (2019). Source: CARE



4.2 Day of the week and hour

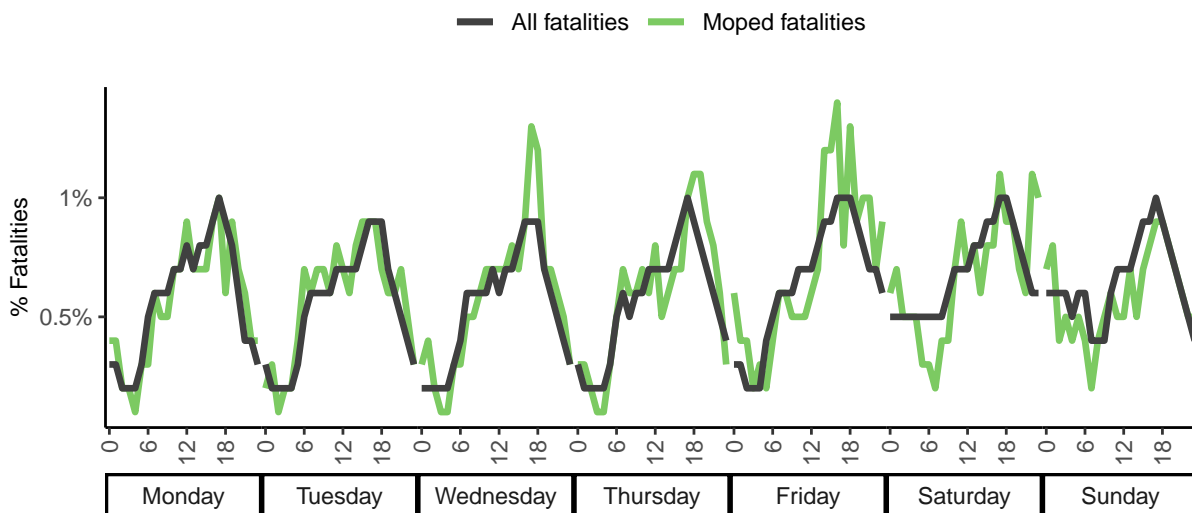
The Figure below on motorcycle fatalities confirms the above finding that **proportionately many more motorcyclists are involved in a fatal crash in daytime at the weekend**. In the working week, they are less likely to be involved in a fatal crash in the morning but just as likely in the afternoon as compared to road fatalities generally.

Figure 20. Distribution of motorcycle fatalities and all fatalities by day of the week and hour in the EU27 (2014-2019). Source: CARE



The distribution of moped fatalities and all fatalities over the hours of the week is very similar. One must be careful in interpreting the Figure below because due to small numbers, the line of moped fatalities shows some random outliers.

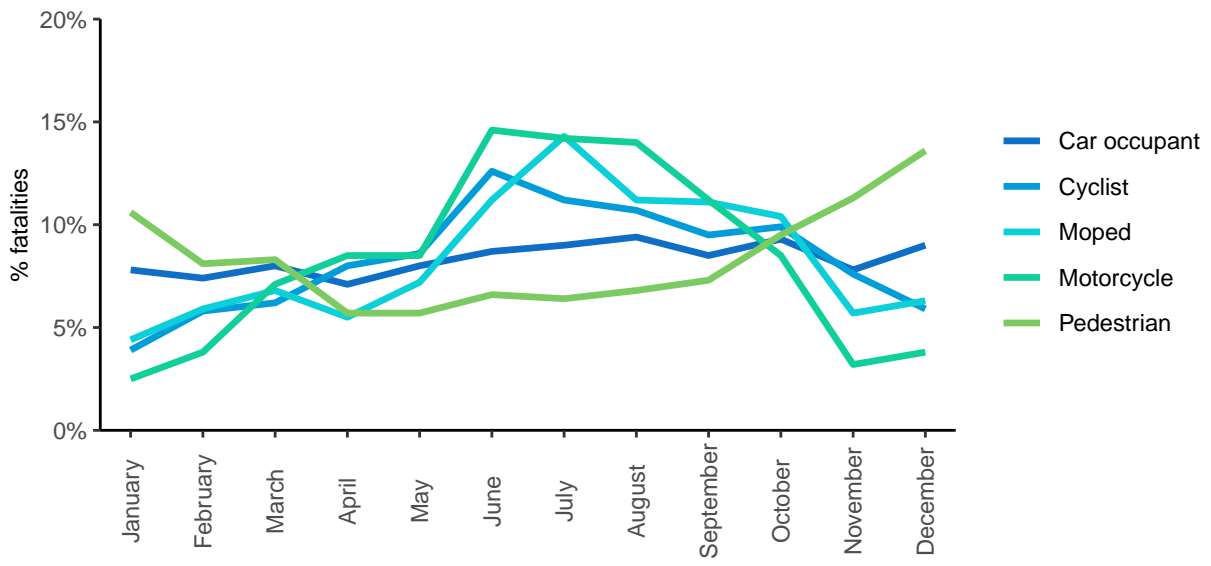
Figure 21. Distribution of moped fatalities and all fatalities by day of the week and hour in the EU27 (2014-2019). Source: CARE



4.3 Month

The Figure below shows the distribution of fatalities by mode of transport over the months of the year. **Of all transport modes, we see the most pronounced seasonal variation for motorcyclists**, showing a low proportion of fatalities during the winter months (November to March) and a high proportion from June to September. In each of these three months there are nearly 6 times more motorcycle fatalities than in January. The seasonal pattern for moped fatalities and cyclist fatalities is similar to that for motorcycle fatalities, but less pronounced. Again, this may be due to the nature of travel behaviour with these vehicles.

Figure 22. Monthly distribution of fatalities by transport mode, in the EU27 (2019). Source: CARE

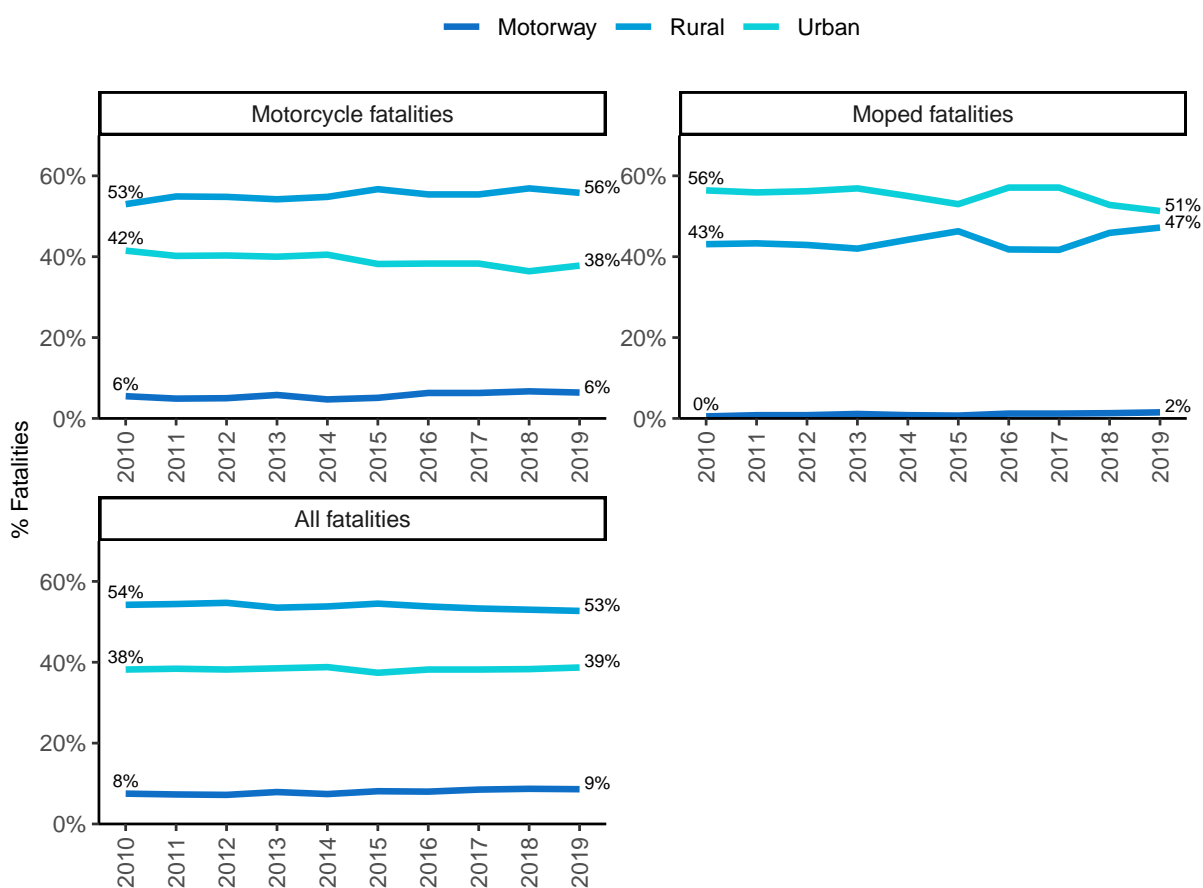


5 Location

5.1 Road type

Overall, rural roads accounted for the highest number of road fatalities in 2019 (53%), followed by urban roads (39%), and motorways (9%). For motorcyclists, the distribution of fatalities according to road type is quite similar to the general distribution. For moped riders, the share of fatalities is slightly lower on rural roads than on urban roads (51% on urban roads compared with 47% in 2019).

Figure 23. Distribution of motorcyclist and moped fatalities and all fatalities by road type in the EU27 (2010-2019). Source: CARE

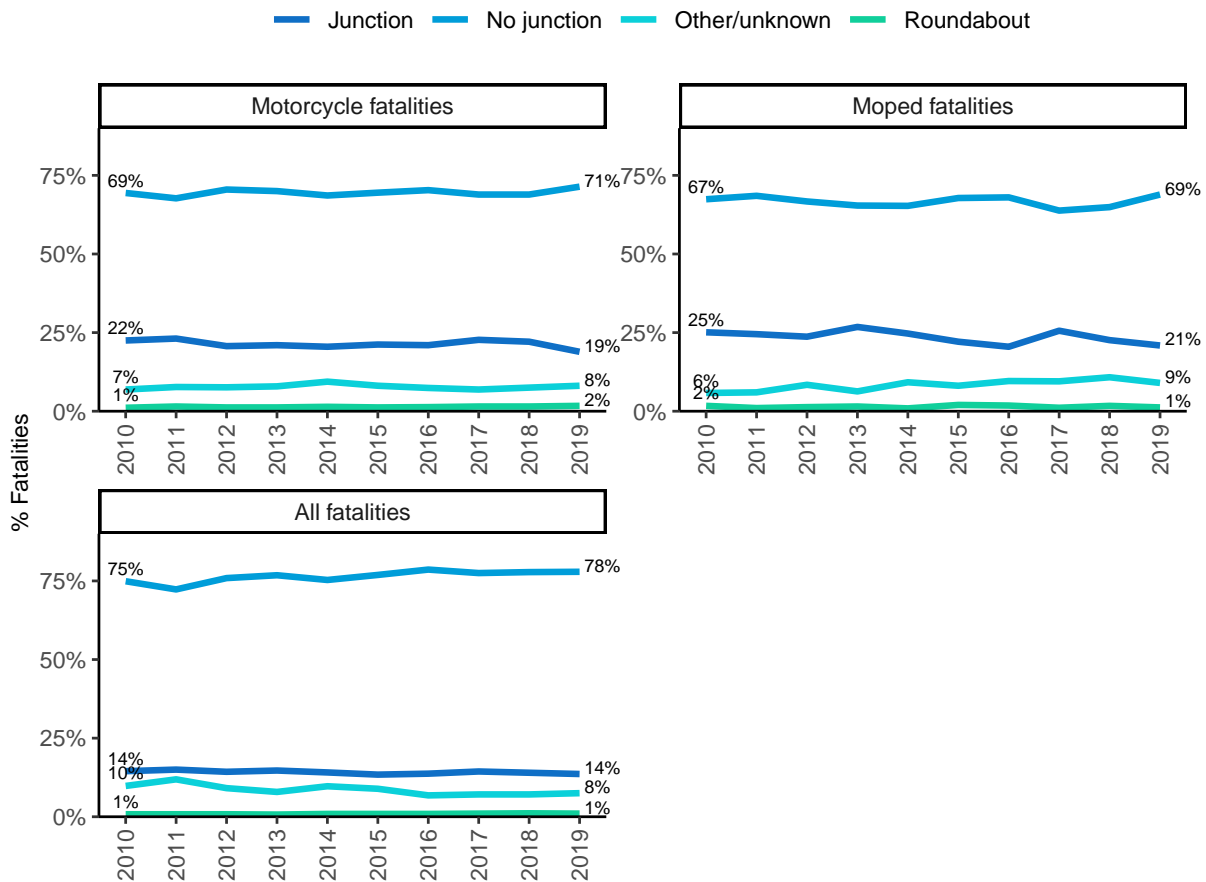


5.2 Junction type

The majority of road fatalities occur on road stretches (78%). There are far fewer fatalities at junctions (14%) or roundabouts (1%). The same finding applies to motorcycle fatalities and moped fatalities, although the proportion on road stretches is lower for these modes of transport and higher at junctions and roundabouts.

The proportion at junctions has decreased for powered two-wheeler riders since 2010.

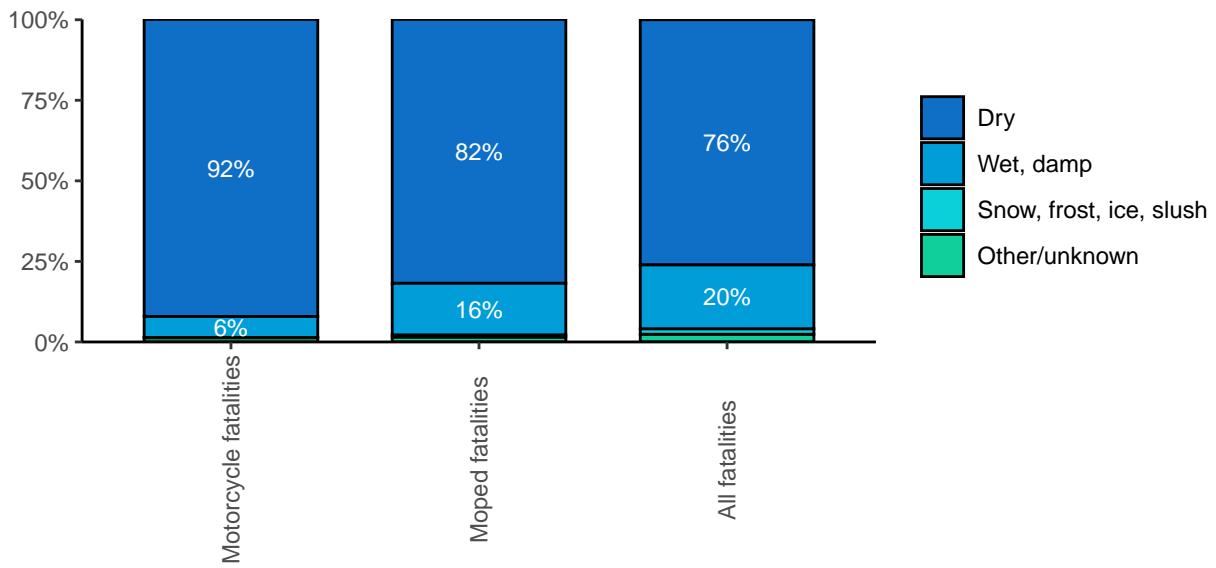
Figure 24. Distribution of motorcycle and moped fatalities and all fatalities by junction type in the EU27 (2010-2019).
Source: CARE



5.3 Surface

Surface conditions were dry in the case of 77% of all road fatalities and wet for 19% of them. For only 2% of them were the surface conditions snowy, frosty or icy. In **fatal crashes involving motorcyclists and moped riders, the surface conditions are even more often dry (respectively 92% and 86%)**. Again, this may be due to travel behaviour with these vehicles whereby less frequent trips are made when surface conditions are not as favourable (such as in winter).

Figure 25. Distribution of motorcycle and moped fatalities and all fatalities by surface conditions in the EU27 (2019).
Source: CARE



6 Notes

6.1 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.

6.2 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.

6.3 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.

6.4 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.

