



European Road Safety Observatory

Facts and Figures - Car occupants - 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 figures in 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)

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, January 2023
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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 Car occupants. 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: 13 January 2023

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1 Key Facts

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

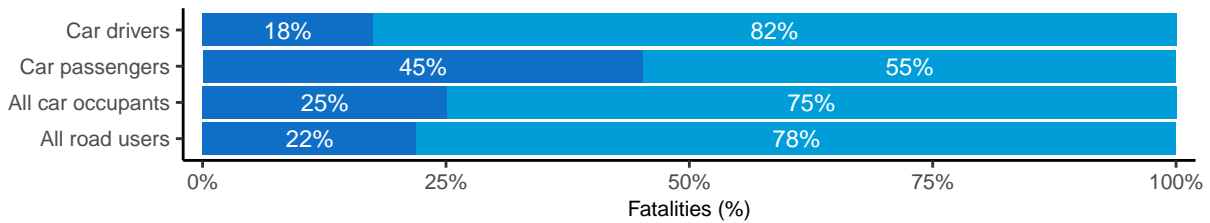
Car occupant Fatalities 2020



- 8,355 fatalities
- 44% of all road fatalities
- Slightly larger decrease (37%) since 2011 versus decrease (34%) for all road users

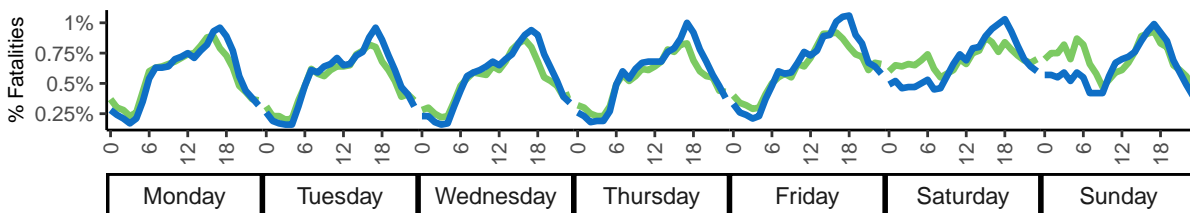
Gender

Female Male



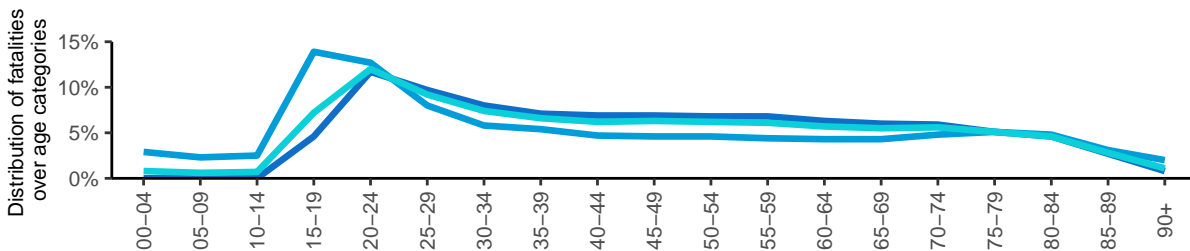
Day of the week and hour

All road users Car occupants



Age

Car driver Car passenger Car occupants



2 Summary

In 2020, the highest mortality rate (number of fatalities per million inhabitants) is observed in Bulgaria, Latvia, and Romania. Sweden and the Netherlands have the lowest mortality rate. We note that **the mortality rate for car occupants is higher in the east of the EU compared to other parts of the EU**. Mortality is an important indicator, but does not take into account differences in the general state of road safety across countries. It is important to also look at the proportion of car occupant fatalities within the total number of road fatalities. **The proportion of car occupant fatalities is highest in northern Europe**, and is also high in part of Eastern Europe. Finland has the highest proportion of car occupant fatalities.

44% of all road fatalities in 2020 were car occupants. The relative proportion of car occupant fatalities has decreased from 47% in 2011 to 44% in 2020. When looking at the proportion of car drivers and car passengers among car occupant fatalities, we note that **73% of fatalities among car occupants are drivers (in the EU as a whole)**. There are however large differences between the member states.

8 out of 10 car driver fatalities are male which is slightly higher compared to all road user fatalities. **Almost half of fatally injured car passengers are female. The proportion of fatally injured female car drivers is only 18%**. There are large differences between EU Member States.

The distribution across age groups for car driver fatalities is similar to that for all road user fatalities. However, **the proportion across the age groups is different for car passenger fatalities**. The proportion of 25-64 year olds is lower, and the proportion of 0-24 year olds is more than twice as high compared to car driver fatalities. This result is not surprising given that 0-17 year olds are not allowed to drive a car. **With car drivers, a high peak occurs in the age category of 20-24 years**, and from this age on the number of fatalities decreases sharply and then levels out. **With car passengers, a peak is reached earlier, at the age group 15-19 years. After that, the number of fatalities hits a plateau until the age of 24 and then decreases sharply**.

The distribution of car occupant fatalities according to period of the week differs from the distribution of all road user fatalities over the week. The share of car occupant fatalities is proportionally lower during daytime in the working week and higher during night-time at the weekend.

For car occupants, the distribution of fatalities according to road type differs from the general distribution. **The share of fatalities on rural roads and on motorways is higher compared to all road user fatalities, while the share of fatalities on urban roads is lower**. Looking at junction type, we note that the proportion of car occupant fatalities is slightly higher on road stretches and slightly lower at junctions compared to all road user fatalities. In fatal crashes involving car occupants, the surface conditions are less often dry and more often wet.

37% of all serious injuries in the EU27 in 2020 were car occupants.

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*Passenger car:*

Motor vehicle with 3 or 4 wheels, mainly used to transport people, seating for no more than 9 occupants (including the driver). Motor vehicles with these characteristics used as taxis and motor caravans are also included.

Driver:

Person driving or riding a passenger car.

Passenger:

Person on or in a passenger car, who is not the driver. Includes person in the act of boarding or alighting from a vehicle.

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:

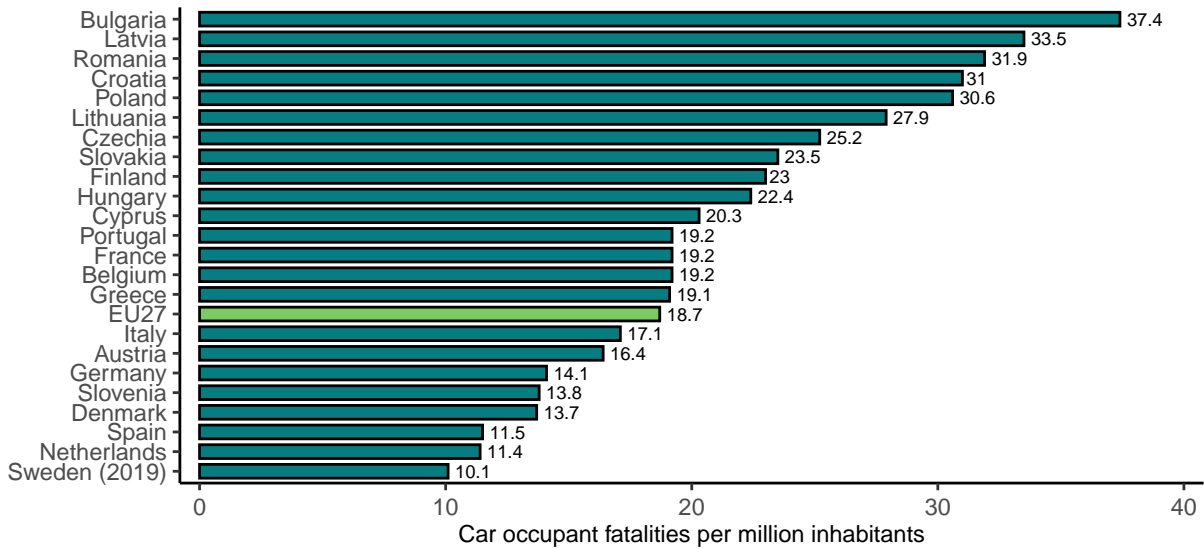
This Facts and Figures report is accompanied by an excel file (available online) containing a large set of additional detailed data. Each sheet in the excel file corresponds to a Figure/Table in the report.

3 Main trends

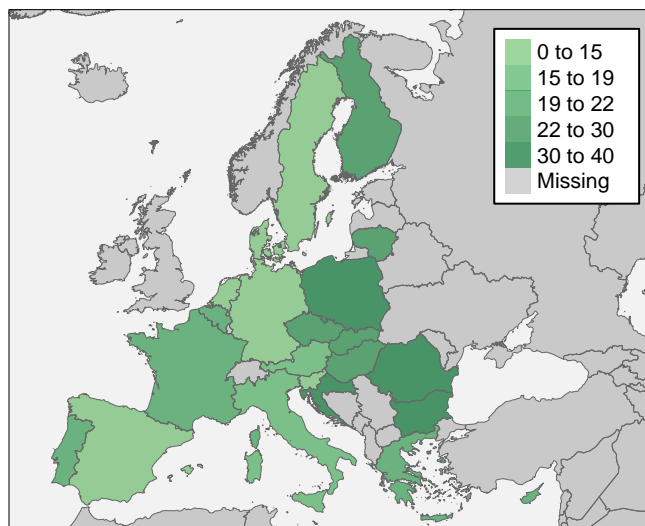
3.1 Mortality: number of fatalities among car occupants per million inhabitants

Bulgaria has the highest mortality rate (number of fatalities per million inhabitants) while Sweden has the lowest mortality rate. Of the countries with the highest number of car occupant fatalities, only Germany and Italy have a mortality rate below the European average. **The mortality rate for car occupants is higher in Eastern Europe compared to other parts of the EU.**

Figure 1. Car occupant fatalities per million inhabitants per country in the EU27 (2020). Source: CARE, EUROSTAT



Notes:
 - Countries that are not included in the Figures are Ireland and Malta because these countries have missing values in the last years
 - Estonia and Luxemburg are not included in the Figures because these countries have fewer than 10 fatalities in 2020



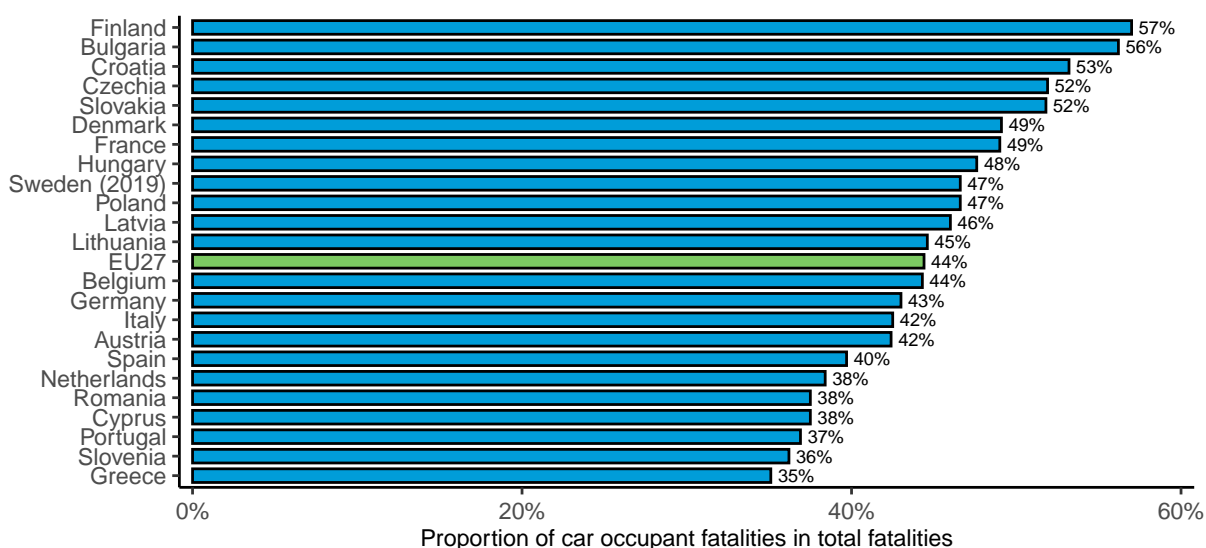
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3.2 Proportion of fatalities: number of fatalities among car occupants in the total number of road fatalities

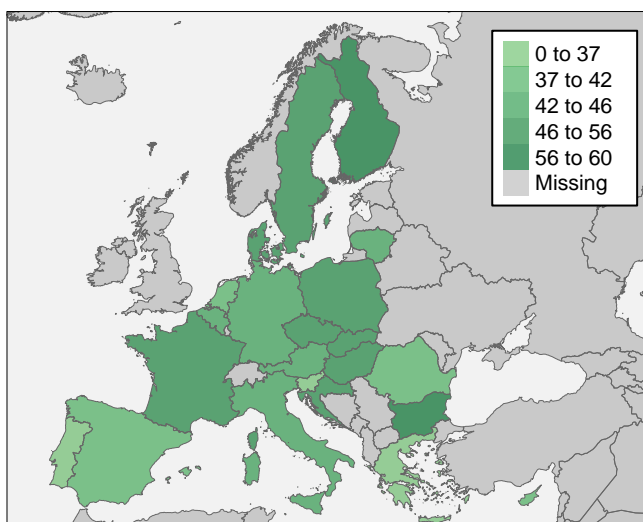
Mortality is an important indicator, but does not take into account differences in the general state of road safety across countries. In other words, it is possible that the mortality rate for car occupants in a specific country is high because the total mortality rate for all road users in that country is high. Therefore, it is important to also look at the proportion of car occupant fatalities within the total number of road fatalities. The proportion rate shows the relative incidence of fatalities among car occupants for a specific country.

The proportion of car occupants fatalities is highest in northern Europe, and is also high in parts of eastern Europe. Finland has the highest proportion of car occupant fatalities.

Figure 2. Proportion of car occupant fatalities in the total number of fatalities, per country in the EU27 (2020). Source: CARE



Notes:
 - Countries that are not included in the Figures are Ireland and Malta because these countries have missing values in the last years
 - Estonia and Luxembourg are not included because these countries have fewer than 10 fatalities in 2020

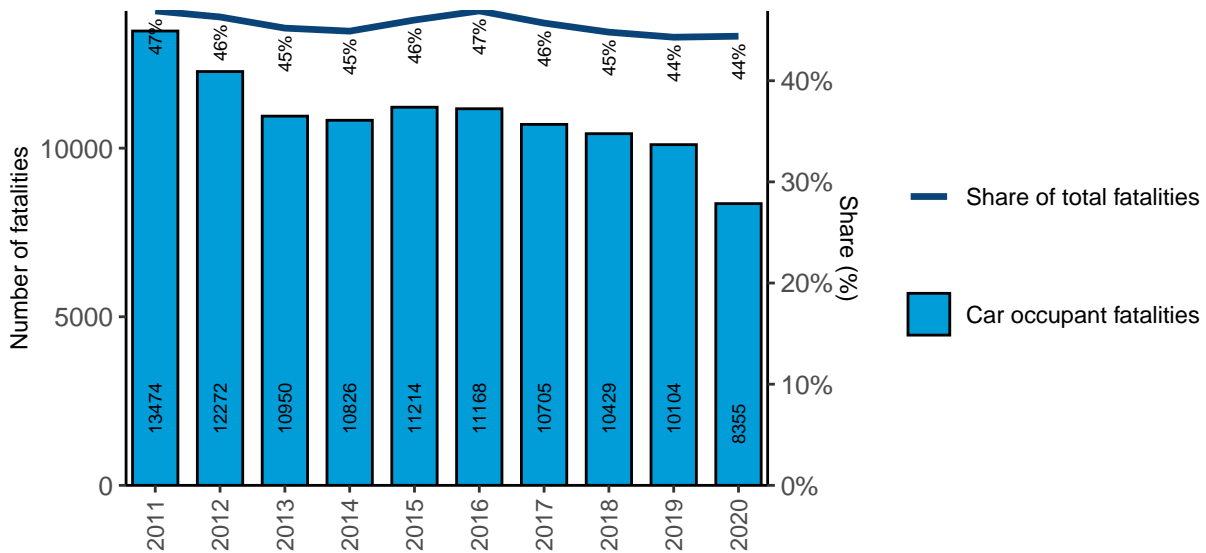


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3.3 Fatalities

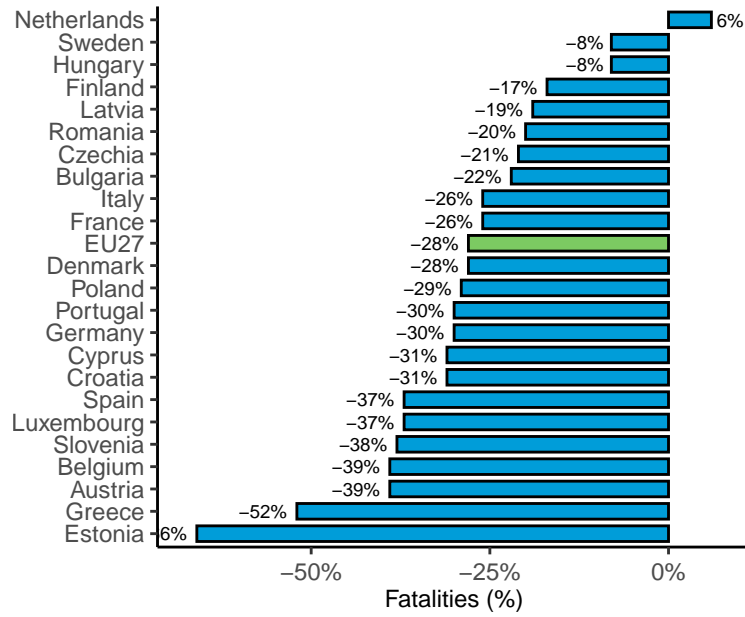
44% of all road fatalities in the EU27 in 2020 were car occupants. **The relative proportion of car occupant fatalities has decreased from 47% in 2011 to 44% in 2020.** The number of car fatalities decreased by 38% in the last decade, while the total number of fatalities decreased by 34% over the same time period.

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



The EU Member States with the highest number of car occupant fatalities are France, Italy, Germany, and Poland. Both France and Italy show a less pronounced decline than the EU average, while in Germany and Poland the trend is slightly better than average. The number of car occupant fatalities decreased by more than half in Greece and Estonia. There is an increase in the number of car occupant fatalities in the Netherlands in 2020.

Figure 4. Percentage change in the number of fatalities among car occupants per country in the EU27 (2018-2020 and 2010-2012). Source: CARE



Notes:
 - Countries that are not included in the Figure are Ireland, Lithuania, Malta and Slovakia because these countries have missing values in the time series 2011-2020
 - For Sweden, the trend is calculated by comparing the time period 2011-2013 with the time period 2017-2019

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

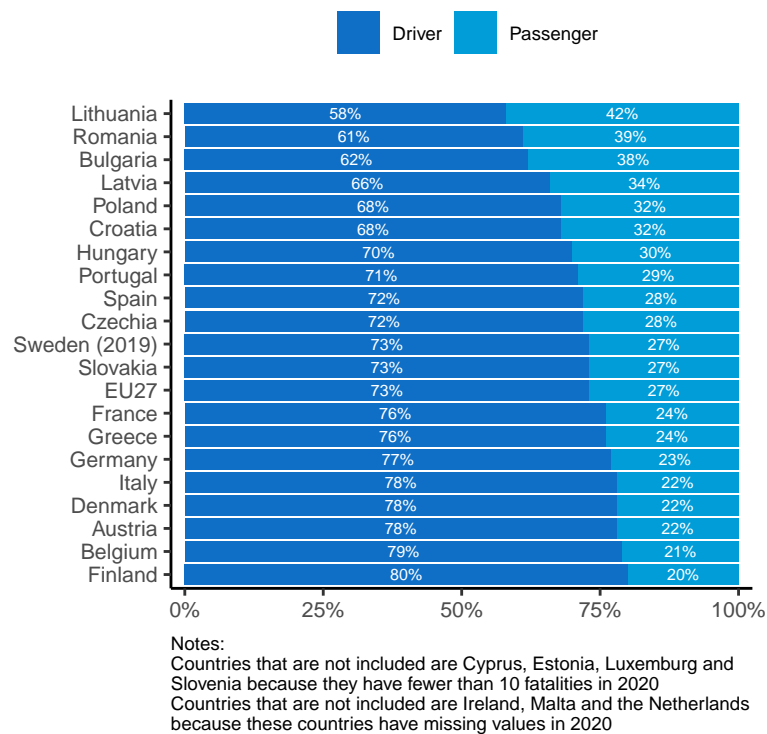
	2011	2018	2019	2020	Trend 2018 - 2020 vs 2010 - 2012	Miniplot: trend since 2010
Austria	289	181	200	146	-31%	
Belgium	466	275	306	221	-35%	
Bulgaria	398	341	348	260	-14%	
Croatia	215	154	141	126	-29%	
Cyprus	31	15	14	18	-28%	
Czechia	404	333	329	269	-14%	
Denmark	106	65	87	80	-13%	
Estonia	56	21	20	7		
European Union	13474	10429	10104	8355	-21%	
Finland	172	146	123	127	-16%	
France	2062	1637	1622	1243	-19%	
Germany	1986	1424	1364	1170	-26%	
Greece	474	267	202	205	-44%	
Hungary	268	291	273	219	1%	
Iceland	7	12	3	5		
Ireland	95	-	-	-		
Italy	1673	1423	1411	1018	-21%	
Latvia	78	70	62	64	-11%	
Lithuania	-	73	84	78		
Luxembourg	21	19	16	9	-40%	
Malta	-	5	7	-		
Netherlands	209	245	240	198	13%	
Norway	102	61	61	41	-42%	
Poland	1897	1291	1333	1162	-24%	
Portugal	331	238	235	198	-16%	
Romania	780	737	682	617	-11%	
Slovakia	-	120	124	128		
Slovenia	46	32	28	29	-36%	
Spain	977	732	641	544	-25%	
Sweden	159	181	103	-		
Switzerland	119	79	65	71	-34%	

Note:

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

The Figure below shows the proportion of car drivers and car passengers among car occupant fatalities. We note that **73% of fatalities among car occupants are drivers (in the EU as a whole)**, but there are large differences between the Member States. In Lithuania, for example, 85% of car occupants killed were themselves driving at the time of the crash while 42% of car occupants killed were car passengers. On the other hand, car drivers account for 80% of car occupant fatalities in Finland.

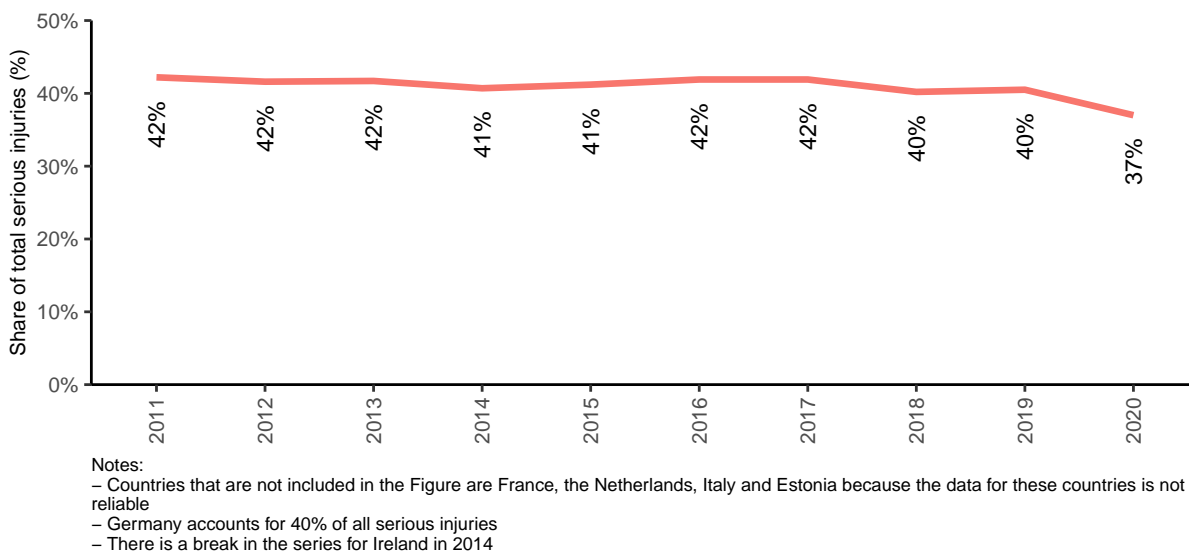
Figure 5. Distribution of car driver and car passenger fatalities per country in the EU27 (2020). Source: CARE



3.4 Serious injuries

37% of all serious injuries in the EU27 in 2020 were car occupants. The relative proportion of serious injuries has decreased from 42% in 2011 to 37% in 2020.

Figure 6. Share of serious injuries for car occupants in the total number of serious injuries in the EU27 (2011-2020). Source: CARE

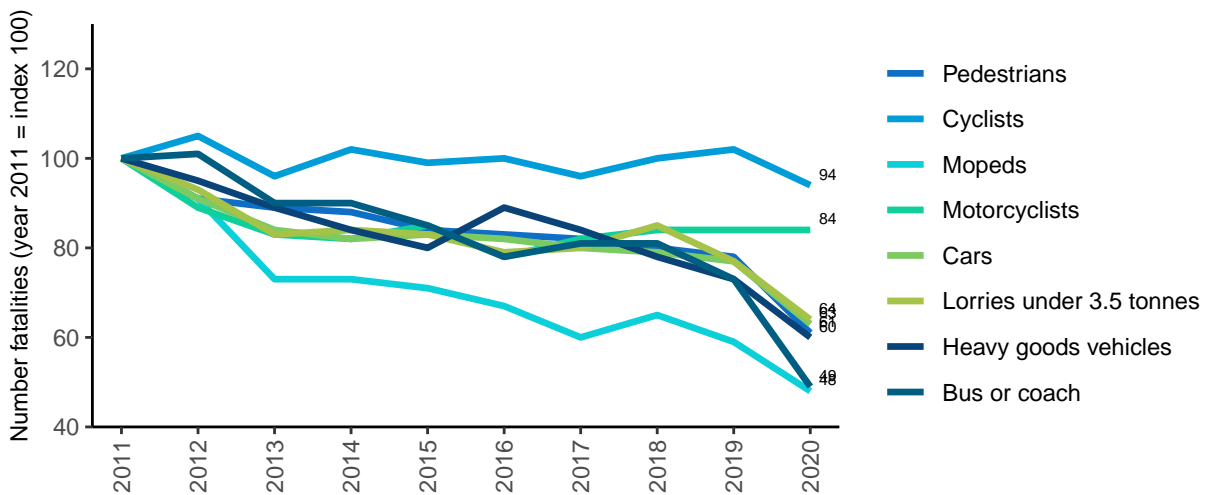


3.5 Comparison of car occupants with other transport modes

The Figure below shows the total number of fatalities in road crashes involving particular modes of transport over the period 2011-2020. The fatalities by transport mode also include 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 reduction in fatalities involving cars is average.

Figure 7. Trend of fatalities in crashes involving cars and other transport modes in the EU27 (2011-2020). Source: CARE

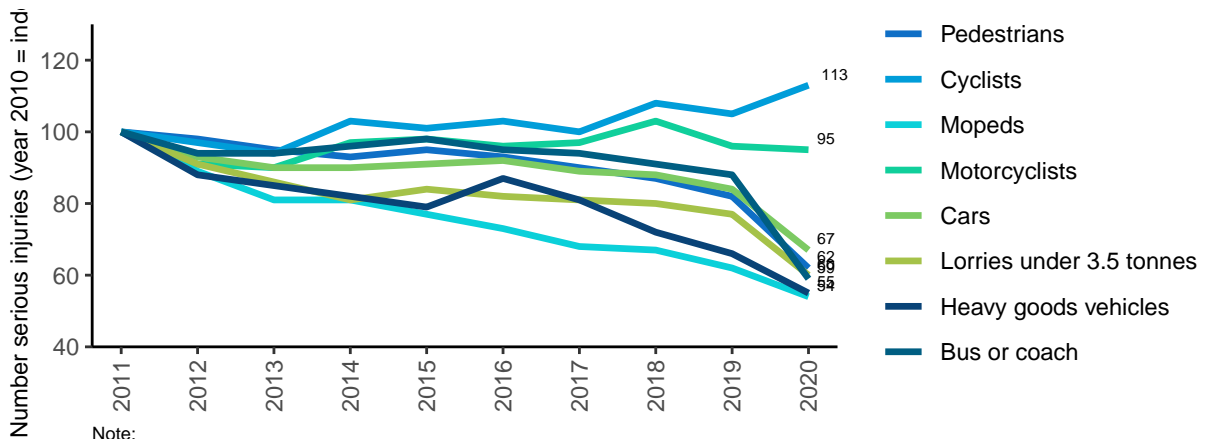


Note: imputation was used for missing values for specific combinations of years and countries. Countries that show an unreliable trend for a particular mode of transport are omitted for that mode of transport.

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 2011-2020. 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 serious injuries in crashes with cars is average.

Figure 8. Trend of serious injuries in crashes involving different transport modes in the EU27 (2011-2020). Source: CARE



Note:

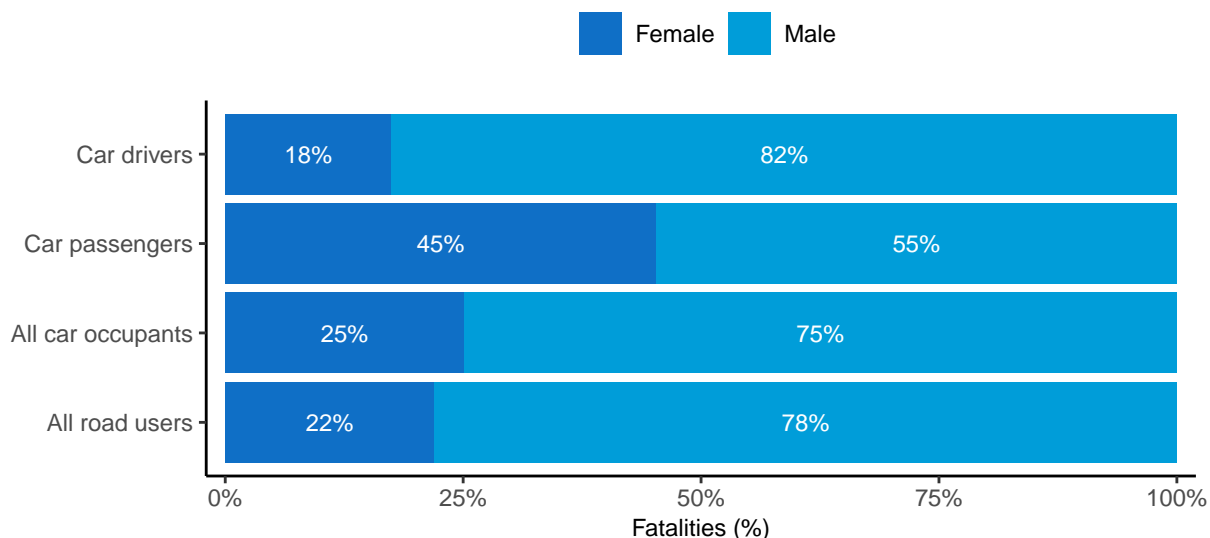
- Imputation was used for missing values for specific combinations of years and countries. Countries that show an unreliable trend for a particular mode of transport are omitted for that mode of transport
- Countries that are not included in the Figure are France, the Netherlands, Italy and Estonia because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

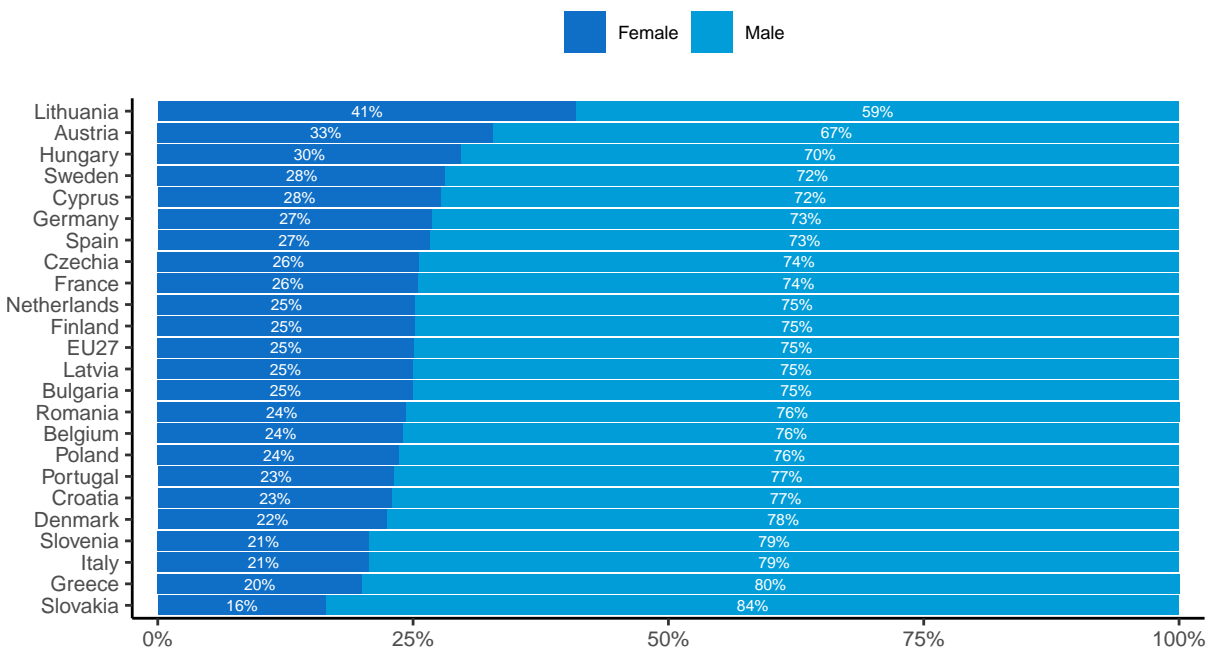
78% of all road user fatalities in 2020 are male. The proportion of male fatalities among car occupants is slightly lower: 75% of fatalities are male. This difference is largely due to the proportion of both genders among car passengers. **Almost half of fatally injured car passengers are female. The proportion of fatally injured female car drivers is much lower at 18%.**

Figure 9. Distribution of car driver, car passenger and all road user fatalities by gender in the EU27 (2020). Source: CARE



Large differences can be observed between EU Member States. The lowest proportion of fatally injured female car occupants can be found in Slovakia and Greece, where they account for 20% or less of all car occupant fatalities.

Figure 10. Distribution of car occupant fatalities by gender per country in the EU27 (2020). Source: CARE



Notes:

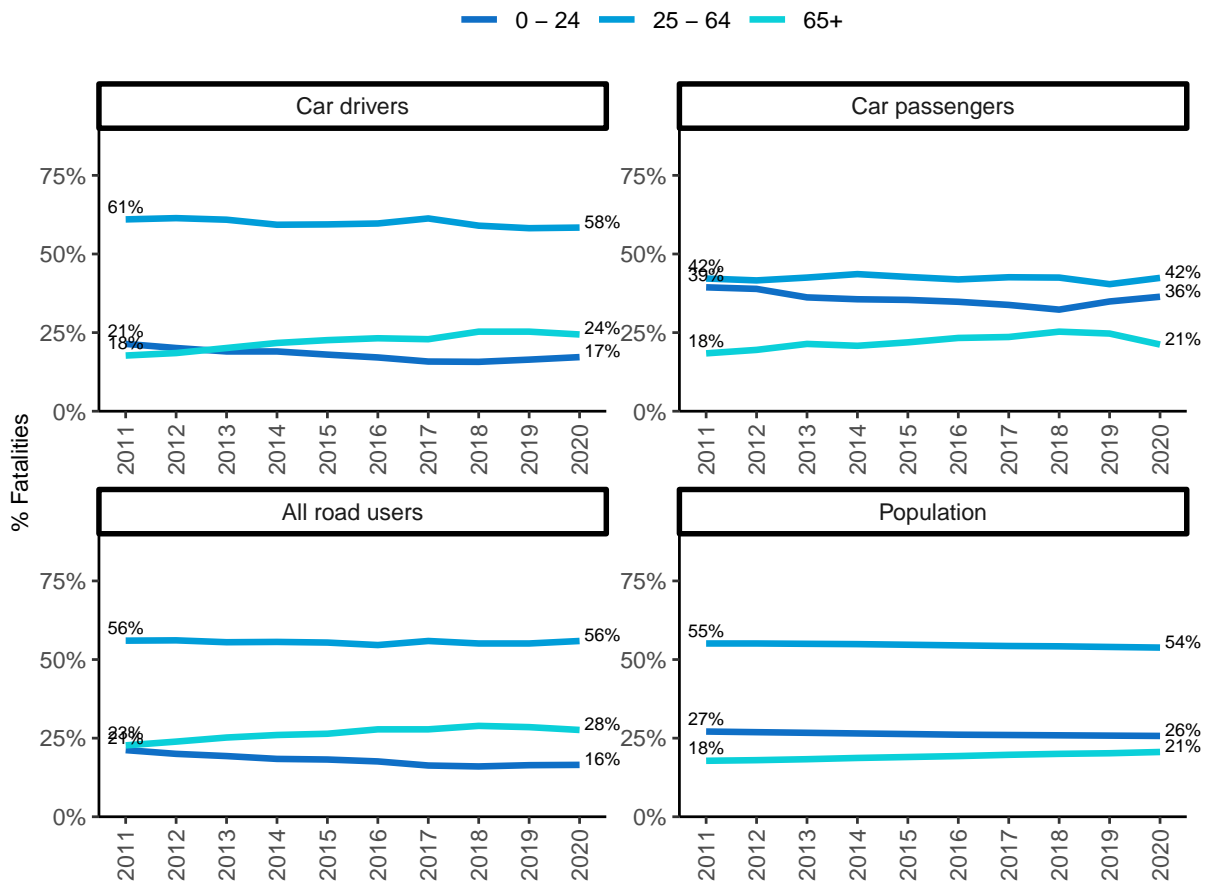
- Countries that are not included in the Figure are Ireland and Malta because these countries have missing values in the last years
- Estonia and Luxembourg are not included in the Figure because they have fewer than 10 fatalities in 2020

4.2 Age

The proportion of 65+ year olds among car driver fatalities has increased from 18% in 2011 to 24% in 2020, whereas the proportion of 0-24 year olds has decreased from 21% in 2011 to 17% in 2020. The proportion of fatally injured senior drivers has been higher than the proportion of young drivers since 2014. This evolution also applies in the case of all road users.

The proportion of the different age groups among fatalities in cars is different for car passengers as compared with car drivers. The proportion of 25-64 year olds is slightly lower, and the proportion of 0-24 year olds is more than twice as high, at 42% in 2019.

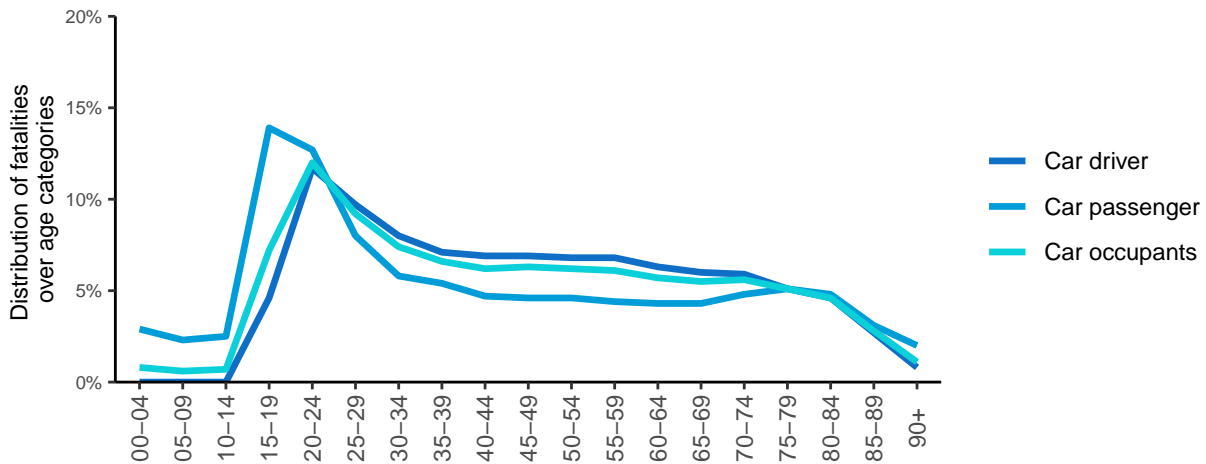
Figure 11. Distribution of car driver, car passenger and all fatalities by age group in the EU27 (2011-2020). Source: CARE & EUROSTAT



The Figures below provide a more detailed picture of the distribution of car driver and car passenger fatalities by age. **With car drivers, a high peak occurs in the age category of 20-24 years**, while from this age on the number of fatalities decreases sharply until the age category 35-39, after which the decrease in the numbers of fatalities slows down.

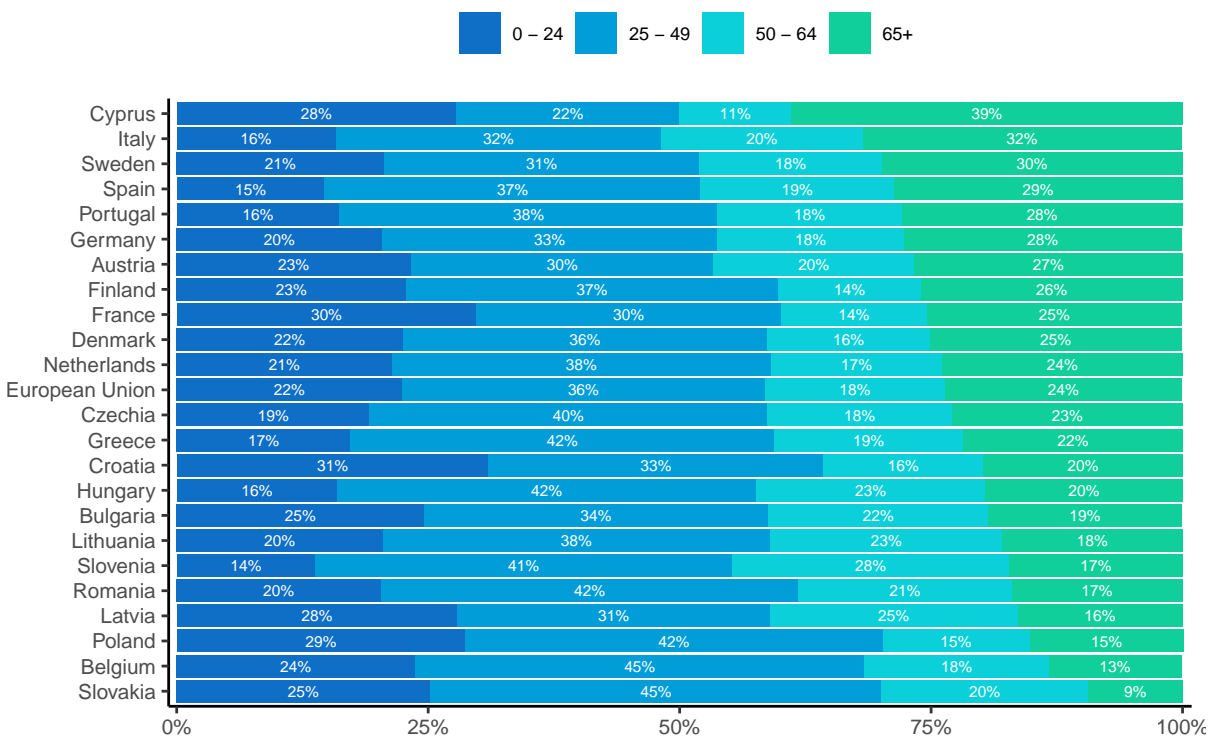
With car passengers, a peak is reached earlier, among the age group 15-19 years. After that, the number of fatalities hits a plateau up to the age of 24 and then decreases sharply. From the age group 30-34 onward, the decrease in the number of fatalities stabilizes.

Figure 12. Distribution of fatalities over 5-year age categories, for car drivers, car passengers and all car occupants, in the EU27 (2018-2020). Source: CARE



There are of course differences between the Member States. In some countries, such as Cyprus, the proportion of fatalities among car occupants of 65 years old or more is the highest of all age groups. In other countries, for example Belgium and Slovakia, almost half of all car occupant fatalities are between 25 and 49 years old.

Figure 13. Distribution of car occupant fatalities by age groups per country in the EU27 (2020). Source: CARE



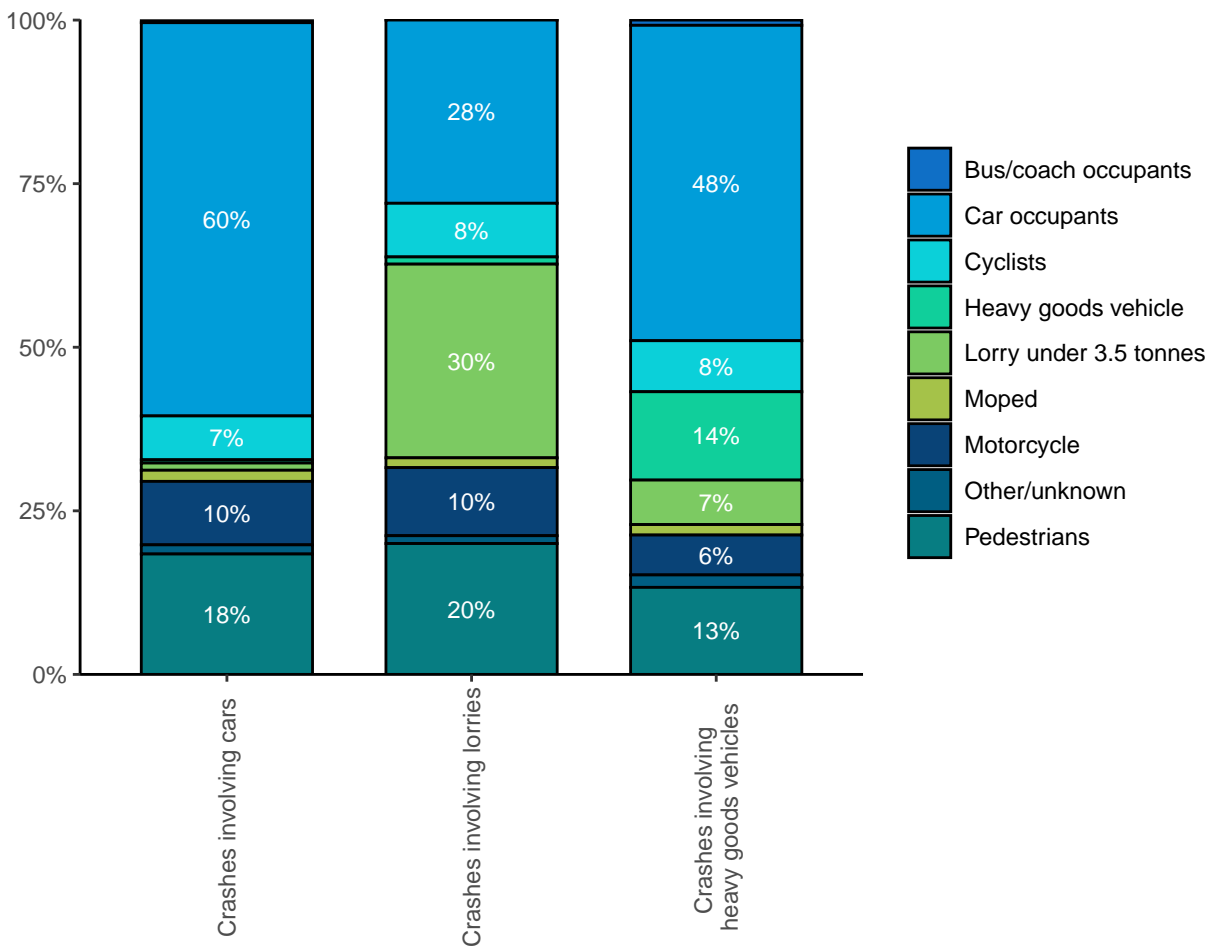
Notes:
Countries that are not included in the Figure are Ireland, Lithuania, Malta, Netherlands and Slovenia because these countries have missing values in the last years

4.3 Other transport modes involved

The Figure below shows the distribution of fatalities for different transport modes involved in crashes involving cars, crashes involving lorries under 3.5 tonnes, and crashes involving heavy goods vehicles.

Car occupants make up a large part of fatalities in crashes involving cars. Pedestrians, cyclists, moped riders and motorcyclists make up another 36%. The distribution is different among crashes involving lorries: only 30% of fatalities are occupants of the lorry. In crashes involving heavy goods vehicles, only 14% of fatalities are occupants in the case of this type of vehicle.

Figure 14. Distribution of fatalities by transport mode in crashes involving cars, lorries under 3.5 tonnes and heavy goods vehicles in the EU27 (2020). Source: CARE

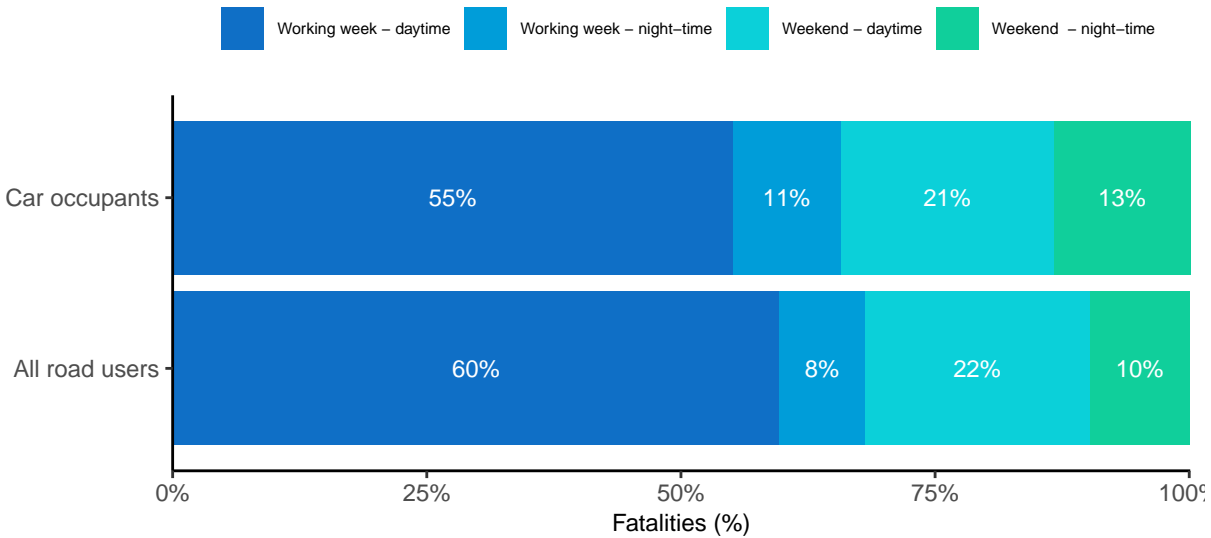


5 Time

5.1 Period of the week

The distribution of car occupant fatalities according to period of the week differs from the distribution of all road user fatalities over the week. **The share of car occupant fatalities is proportionally lower during daytime in the working week and higher during night-time.**

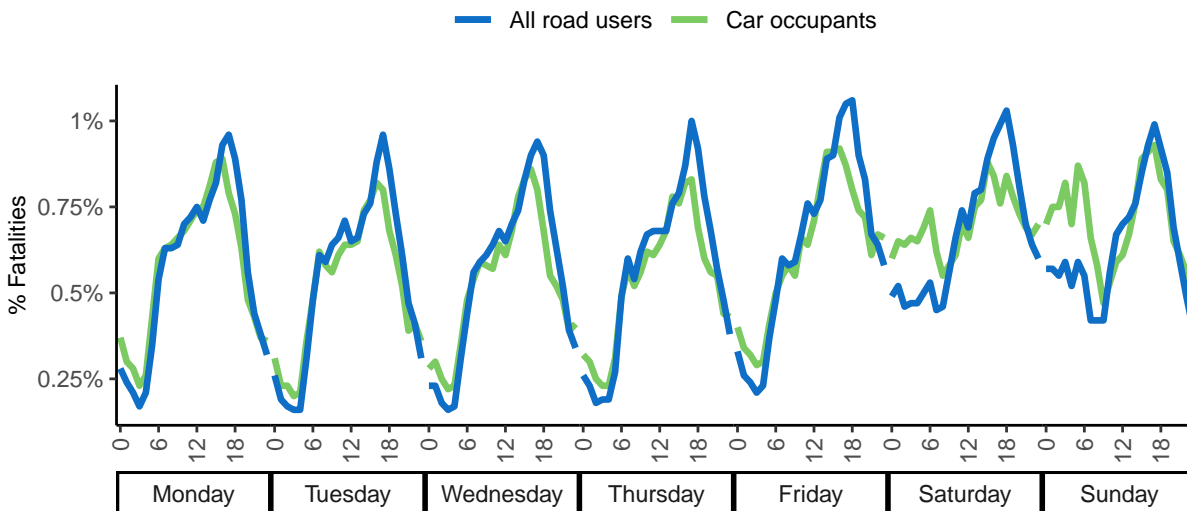
Figure 15. Distribution of fatalities among car occupants and all fatalities according to period of the week in the EU27 (2020). Source: CARE



5.2 Day of the week and hour

The Figure below on car occupant fatalities confirms the above finding that **proportionately many more cars are involved in a fatal crash at night-time during the weekend.** In the working week, the distribution of car occupant fatalities is very similar to the distribution of all road user fatalities.

Figure 16. Distribution of car fatalities and all fatalities by day of the week and hour in the EU27 (2020). Source: CARE

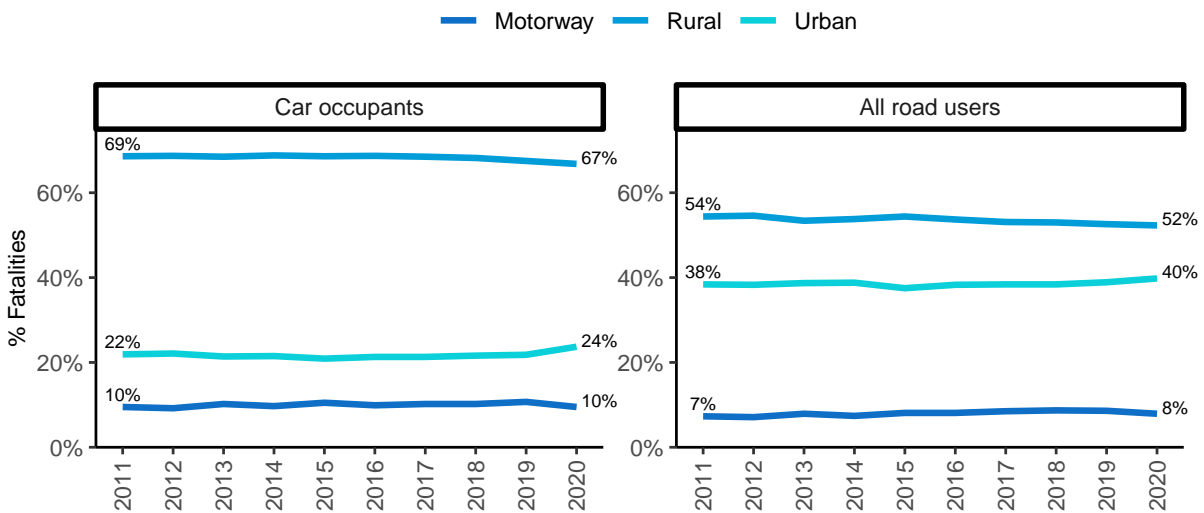


6 Location

6.1 Road type

Overall, rural roads accounted for the highest number of road fatalities in 2020 (52%), followed by urban roads (40%), and motorways (8%). For car occupants, the distribution of fatalities according to road type differs from the general distribution. **The proportion of car occupant fatalities is substantially higher (67%) on rural roads, slightly higher (10%) on motorways and thus lower on urban roads (24%).**

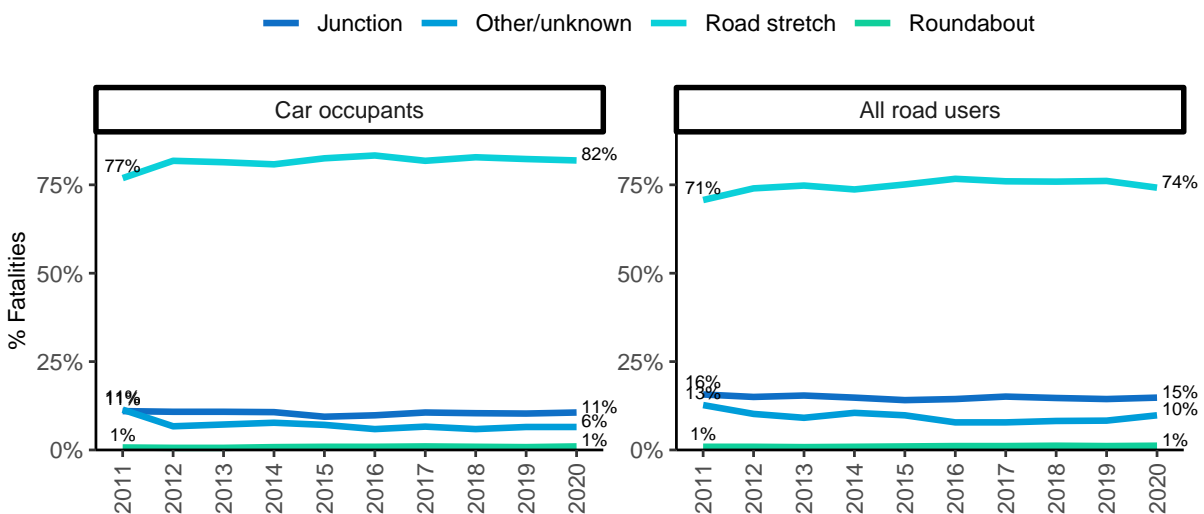
Figure 17. Distribution of car occupant fatalities and all fatalities by road type in the EU27 (2011-2020). Source: CARE



6.2 Junction type

In 2020, the majority of road fatalities occurred on road stretches (74%). There are far fewer fatalities at junctions (15%) or roundabouts (1%). The same finding applies to car occupant fatalities, although the proportion is slightly higher on road stretches and slightly lower at junctions.

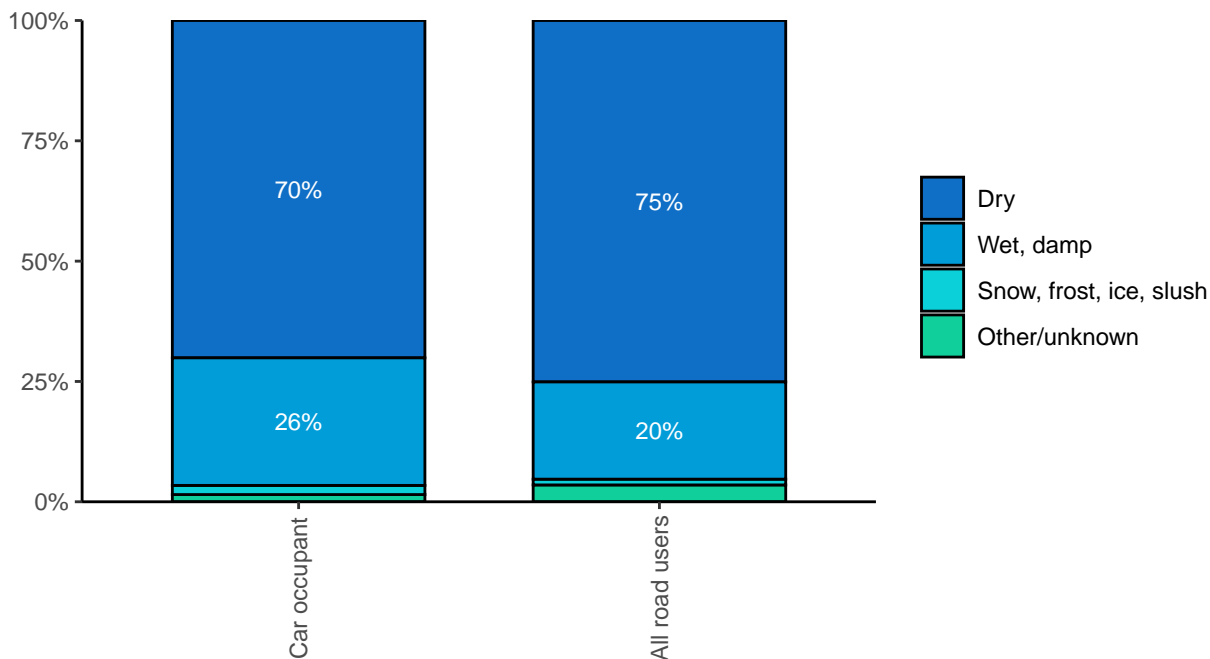
Figure 18. Distribution of car occupant fatalities and all fatalities by junction type in the EU27 (2011-2020). Source: CARE



6.3 Surface

Surface conditions were dry in the case of 78% of all road fatalities and wet for 20% of those fatalities. For only 3% of fatalities were the surface conditions snowy, frosty, or icy. **In fatal crashes involving car occupants, the surface conditions are less often dry and more often wet.**

Figure 19. Distribution of car occupant fatalities and all fatalities by surface conditions in the EU27 (2020). Source: CARE



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/sites/roadsafety/files/pdf/statistics/cadas_glossary.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.

Car or taxi

Definition: motor vehicle with 3 or 4 wheels, mainly used to transport people, seating for no more than 8 occupants. Motor vehicles with these characteristics used as taxis as well as motor caravans are also included.

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 (up to 2018) and the 4 EFTA countries (Switzerland, Norway, Iceland, and Liechtenstein). The data in the report were extracted on 12 April 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.

7.5 Countries 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. The EFTA countries and the UK are included in Table 1. 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.