European Commission

Facts & Figures:

Single vehicle crashes

Mobility and Transport

This document is part of a series of 20 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 most recent figures in this Facts and Figures report of 2024 refer to 2022. 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: May 2024

Contents

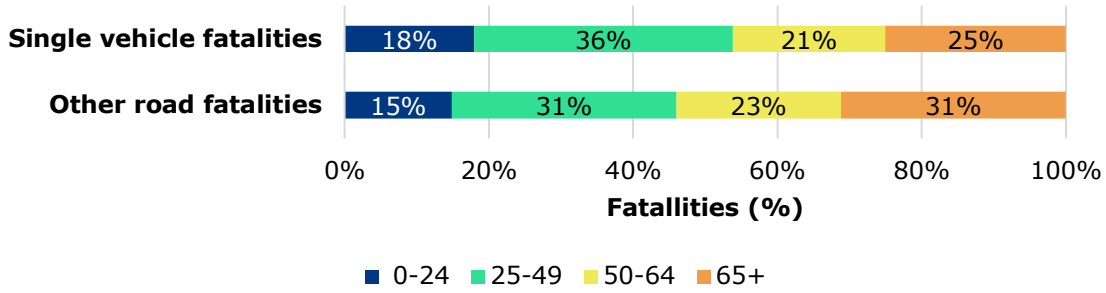
1. Key facts

This Facts and Figures report looks at single vehicle fatalities, which means fatalities in crashes including only one moving vehicle. This includes crashes with fixed and non-fixed obstacles and animals (pedestrians and parked vehicles are not included), and crashes without obstacles (rollover, leaving the carriageway, etc.). All differences reported were derived from the available data. The statistical significance of the differences between values has not been tested.

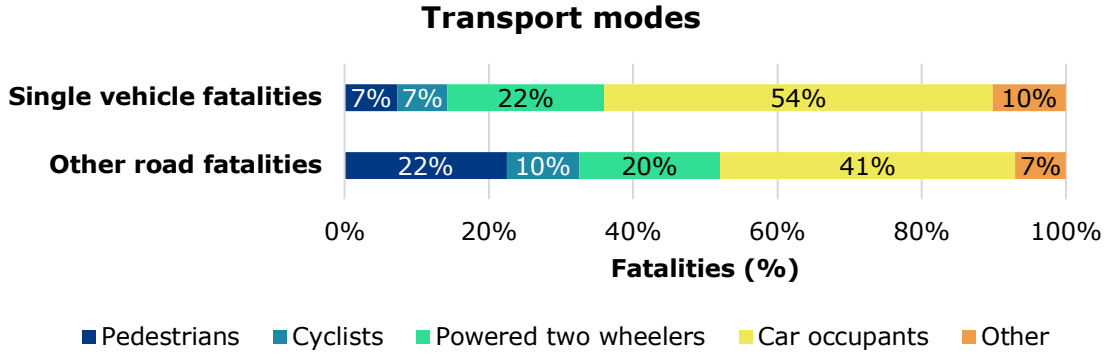
Single vehicle crash fatalities in the EU27, 2022

- 6,369 single vehicle crash fatalities
- 35% of all road fatalities

Age



Transport modes



2. Summary

In the EU in 2022, 6,369 people were killed in a single vehicle crash. The number has decreased by 11% in the last decade and amounts to 35% of all road fatalities. The mortality rate (the number of single vehicle road fatalities per million inhabitants) is high in parts of Eastern Europe and Southern Europe. The share of single vehicle fatalities within all road fatalities is highest in Southern and Western Europe.

84% of all single vehicle fatalities are men, compared to 74% for other road user fatalities. The age distribution of single vehicle fatalities differs from the age distribution of other road user fatalities. The share of young people (up to 24 years old) fatalities is higher in single vehicle crashes compared to other road user crashes. In 2022, 18% of single vehicle fatalities were 24-year-olds or younger, compared to 15% of other road user fatalities. Car occupants have the highest share of fatalities in single vehicle crashes (54%) followed by powered two-wheelers (22%). For cyclists, the share in single vehicle fatalities is lower compared to other fatalities though there is some under-reporting of such crashes in police statistics, e.g., in the Netherlands.

There are proportionally more single vehicle fatalities during weekends both during daytime (26%) and nights (16%) compared to other road user fatalities (21% during daytime and 9% at night). Single vehicle fatalities also occur slightly more often in darkness compared to other road user fatalities.

3. Main trends

3.1 Absolute number of road fatalities

Table 1 Single vehicle crash fatalities per country in the EU27 and EFTA (2012-2022). Source: CARE

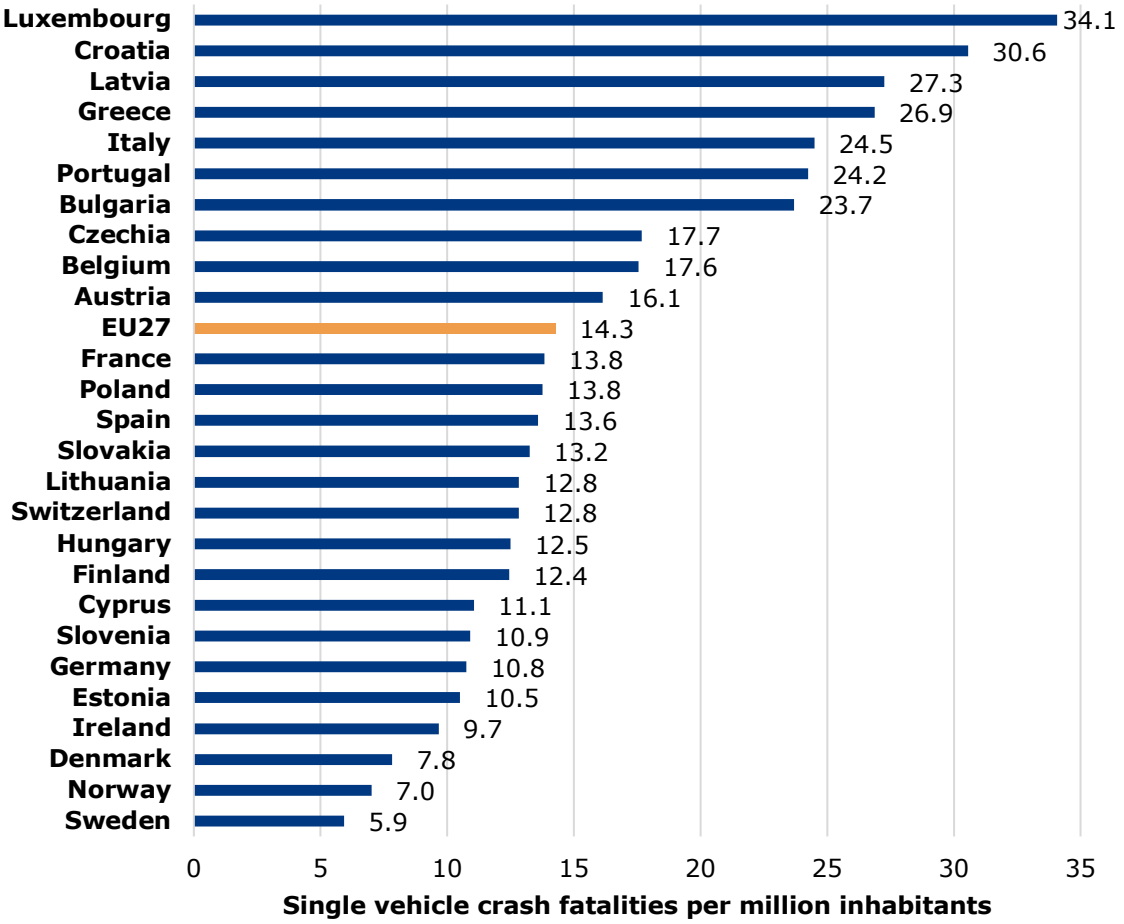
Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	LT*	ST*
Belgium	312	322	282	310	265	223	222	250	201	190	204	-35%	-18%
Bulgaria	199	221	214	217	234	193	176	173	139	209	162	-19%	-6%
Czechia	243	197	220	235	186	166	176	204	160	167	186	-24%	-9%
Denmark	-	-	46	48	54	49	39	58	53	34	46	-	-21%
Germany	1,102	987	995	958	895	927	960	899	874	789	895	-19%	0%
Estonia	-	-	25	-	23	11	21	17	22	19	14	-	-18%
Ireland	-	-	-	-	-	55	46	48	48	-	-	-	-
Greece	424	372	300	323	320	293	263	264	263	275	281	-34%	6%
Spain	672	522	606	589	622	624	613	595	506	544	645	-4%	8%
France	410	331	1,194	1,305	1,203	1,289	1,194	894	744	807	939	129%	5%
Croatia	129	104	80	97	87	-	113	-	99	108	118	-9%	-
Italy	1,655	1,591	1,475	1,563	1,461	1,532	1,453	1,392	1,146	1,306	1,446	-13%	4%
Cyprus	22	20	15	24	9	15	16	8	18	18	10	-55%	-
Latvia	45	49	68	62	46	32	29	41	52	-	-	-	-
Lithuania	-	64	69	59	45	39	43	49	33	38	36	-	-27%
Luxembourg	17	17	13	17	17	11	19	12	9	9	22	29%	83%
Hungary	134	142	129	156	138	125	111	136	106	146	121	-10%	-11%
Malta	-	-	-	2	4	1	11	2	3	4	-	-	-
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-
Austria	186	142	153	166	151	146	144	116	136	129	145	-22%	25%
Poland	847	792	727	670	729	703	728	700	711	627	518	-39%	-26%
Portugal	300	234	244	169	230	219	258	280	227	236	251	-16%	-10%
Romania	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovenia	24	25	35	46	53	37	36	37	31	44	23	-4%	-38%
Slovakia	-	-	-	-	69	79	69	72	83	83	72	-	0%
Finland	79	105	89	90	107	97	94	81	87	82	69	-13%	-15%
Sweden	86	101	70	107	97	100	100	66	74	62	62	-28%	-6%
EU	7,147	6,535	7,175	7,361	7,100	7,066	6,934	6,500	5,825	6,026	6,369	-11%	-2%
Iceland	6	8	-	9	7	8	10	4	6	5	3	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	48	71	53	45	55	28	38	36	31	29	38	-21%	6%
Switzerland	161	110	94	116	80	99	99	83	109	81	112	-30%	35%

*LT = Long term change of last available year over 2012.
*ST = Short term change of last available year over 2019.

3.2 Mortality rate: number of road fatalities per million inhabitants

The figure below illustrates the single vehicle crash fatalities per million inhabitants in the EU and EFTA countries in 2022. The single vehicle crash mortality rate is the highest in Luxembourg and Croatia with rates twice higher than the EU average. Latvia, Greece, Italy, Portugal and Bulgaria have also high mortality rates: above 24 fatalities per million inhabitants. Sweden, Norway and Denmark have the lowest mortality rates.

Figure 1. Single vehicle crash fatalities per million inhabitants per country in the EU27 and EFTA (2022). Source: CARE, EUROSTAT



Notes:

- The Netherlands, Romania and Liechtenstein are not included in the figure because there is no information on the single vehicle fatalities for the whole time series.
- Malta and Iceland are not included in the figure because there are less than 10 fatalities in the year 2022.
- For Ireland and Latvia the missing value for 2022 was imputed with the last known value (2020) in the series.
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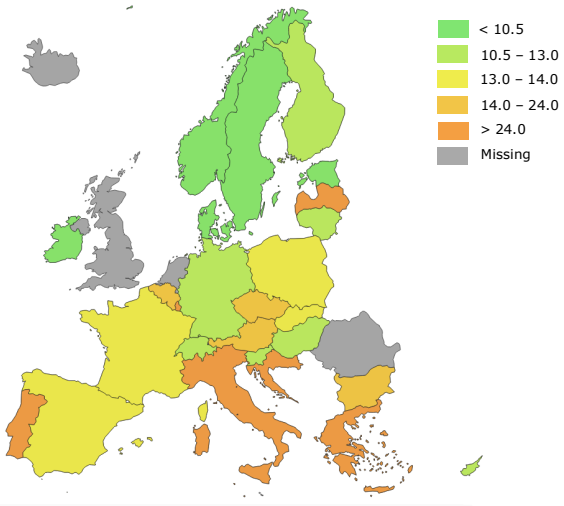
The geographical representation of single vehicle crash fatality rates in the map below shows a **tendency of fatality rates to be lower in the north in comparison to the south.**



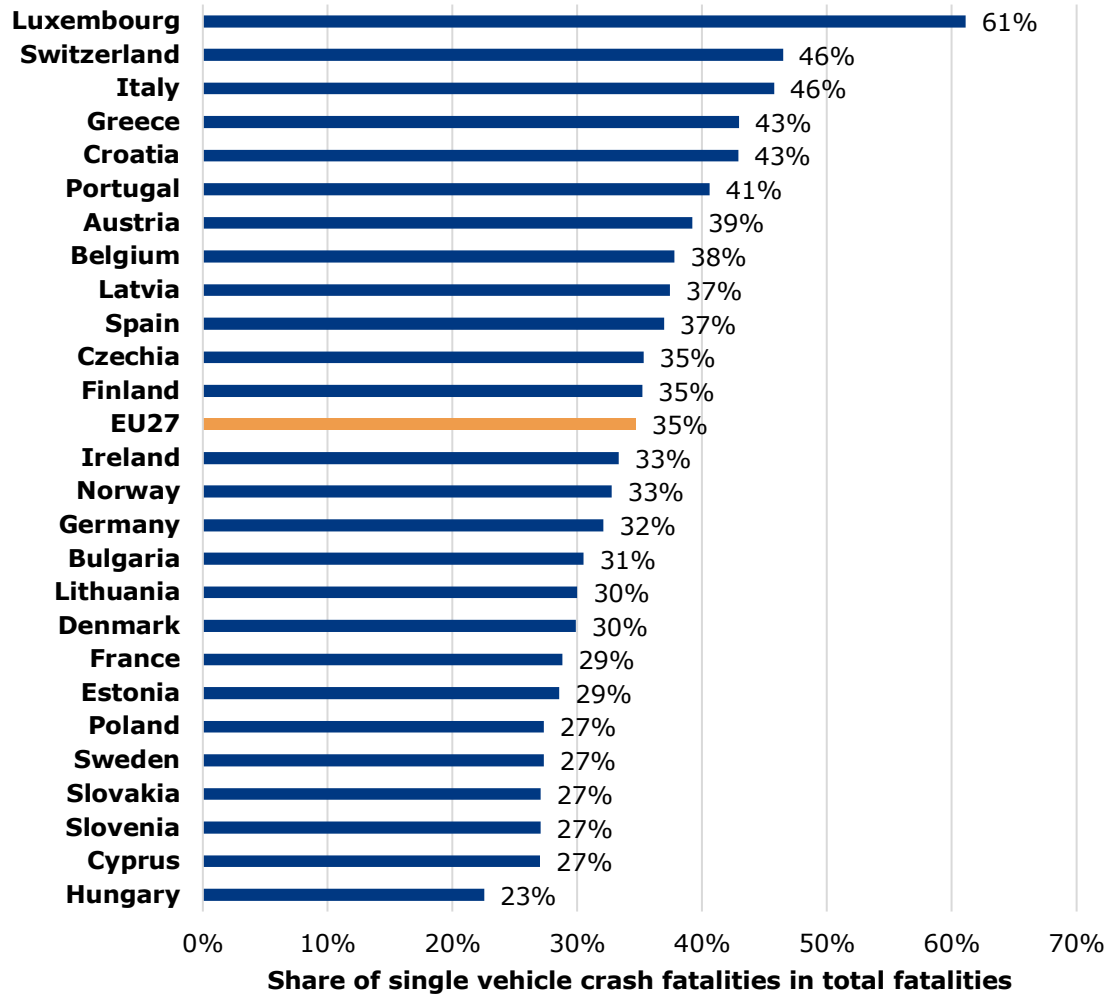
© Eurostat for the administrative boundaries

3.3 Number of single vehicle crash fatalities as a share of total fatalities

The mortality rate is an important indicator but does not take into account differences in the general road safety performance across countries. In other words, the mortality rate for single vehicle crashes in a specific country may be high because the total mortality rate for all road crashes in that country is also high. Therefore, it is important to also look at the share of single vehicle crash fatalities within the total number of road fatalities.

In the EU27, 35% of all road fatalities are the result of a single vehicle crash. The share of single vehicle crash fatalities is highest in Luxembourg with a share of 61%. Switzerland, Italy, Greece, Croatia and Portugal have high rates with a share of single vehicle crash fatalities of 41% or more. This share is lowest in Hungary.

Figure 2. Share of single vehicle crash fatalities in the total number of fatalities per country in the EU27 and EFTA (2022). Source: CARE



Notes:

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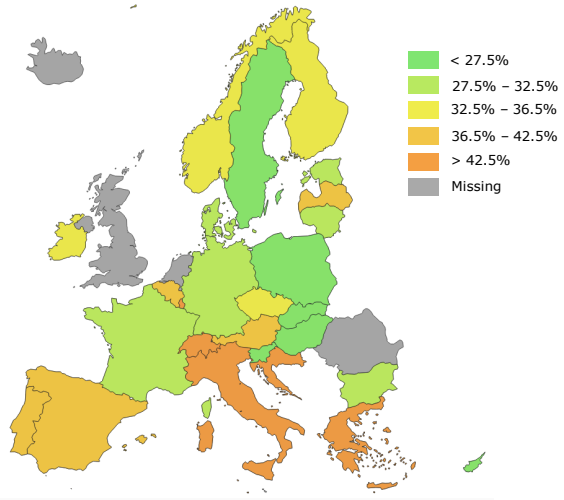
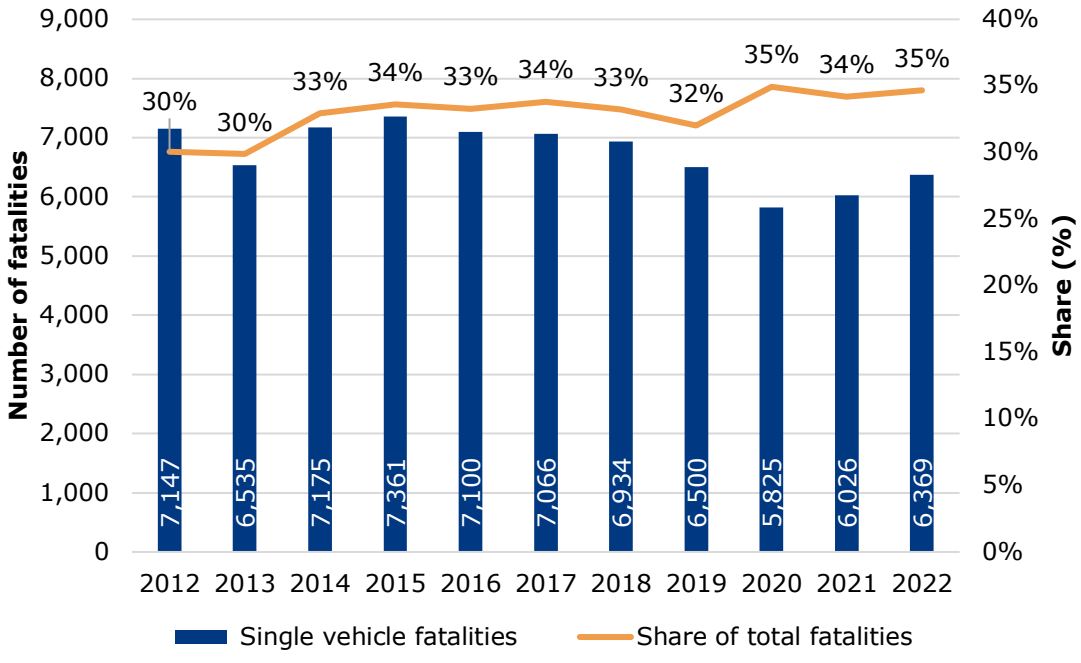
The map below shows the geographical representation of single vehicle crash fatality rates in the EU and EFTA countries in 2022.



3.4 Trend in number of fatalities

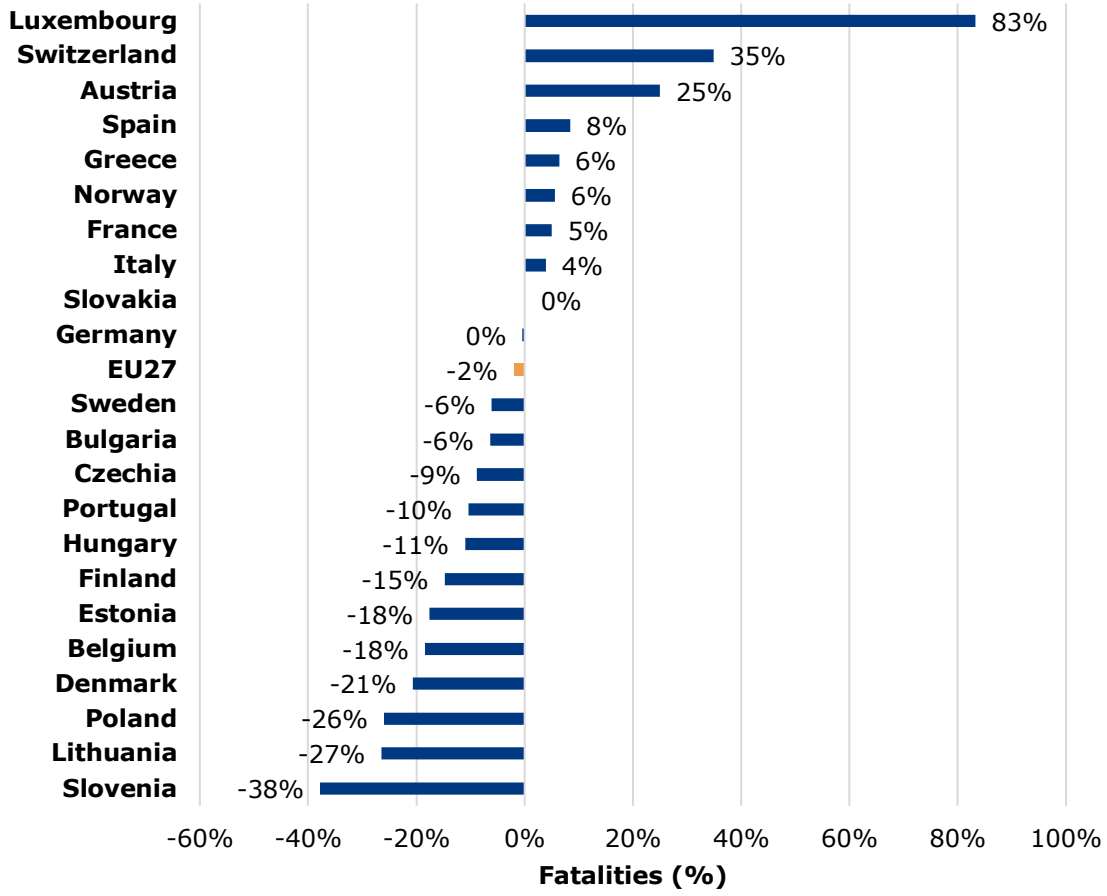
The number of single vehicle crash fatalities has decreased by around 11% (from 7,147 to 6,369) in the time period 2012-2022. The share of single vehicle crash fatalities within all road fatalities increased slightly over the last decade from 30% to 35%.

Figure 3. Annual number of single vehicle crash fatalities, and their share in the total number of fatalities in the EU27 (2012-2022). Source: CARE



For the graph below, the short-term change was calculated. The overall percentage change between 2019 and 2022 for the EU27 amounts to -2%. The largest increase in single vehicle crash fatalities is found in Luxembourg (+83%), followed by Switzerland (+35%) and Austria (+25%). In Denmark, Poland, Lithuania and Slovenia the number of single vehicle crash fatalities has decreased most.

Figure 4. Percentage change in the number of single vehicle crash fatalities per country in the EU27 and EFTA (2019-2022). Source: CARE



Notes:

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- For Slovakia the value for 2012 was imputed with the earliest known value (2016) in the series.

Table 2. Number and trend in single vehicle crash fatalities per country in the EU27 and EFTA (2012-2022). Source: CARE

	2012	2019	2020	2021	2022	ST*	Miniplot: trend since 2012
Belgium	312	250	201	190	204	-18%	
Bulgaria	199	173	139	209	162	-6%	
Czechia	243	204	160	167	186	-9%	
Denmark	-	58	53	34	46	-21%	
Germany	1,102	899	874	789	895	0%	
Estonia	-	17	22	19	14	-18%	
Ireland	-	48	48	-	-	-	
Greece	424	264	263	275	281	6%	
Spain	672	595	506	544	645	8%	
France	410	894	744	807	939	5%	
Croatia	129	-	99	108	118	-	
Italy	1,655	1,392	1,146	1,306	1,446	4%	
Cyprus	22	8	18	18	10	-	
Latvia	45	41	52	-	-	-	
Lithuania	-	49	33	38	36	-27%	
Luxembourg	17	12	9	9	22	83%	
Hungary	134	136	106	146	121	-11%	
Austria	186	116	136	129	145	25%	
Poland	847	700	711	627	518	-26%	
Portugal	300	280	227	236	251	-10%	
Slovenia	24	37	31	44	23	-38%	
Slovakia	-	72	83	83	72	0%	
Finland	79	81	87	82	69	-15%	
Sweden	86	66	74	62	62	-6%	
EU27	7,147	6,500	5,825	6,026	6,369	-2%	
Norway	48	36	31	29	38	6%	
Switzerland	161	83	109	81	112	35%	

*ST = Short term change of last available year over 2019.

Notes:

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- For Slovakia the value for 2012 was imputed with the earliest known value (2016) in the series.

4. Road user

4.1 Gender

74% of other road fatalities in 2022 are men, compared to 84% of single vehicle crash fatalities. Large differences can be observed between EU Member States. The share of female single vehicle crash fatalities ranges between 4% (Slovakia) and 41% (Luxembourg).

Figure 5. Share of single vehicle crash fatalities and other road fatalities by gender in the EU27 (2022). Source: CARE

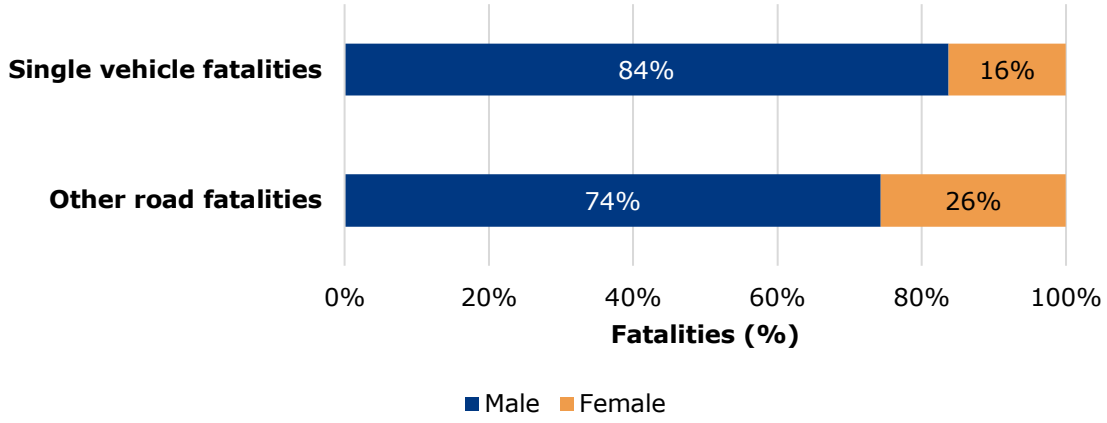
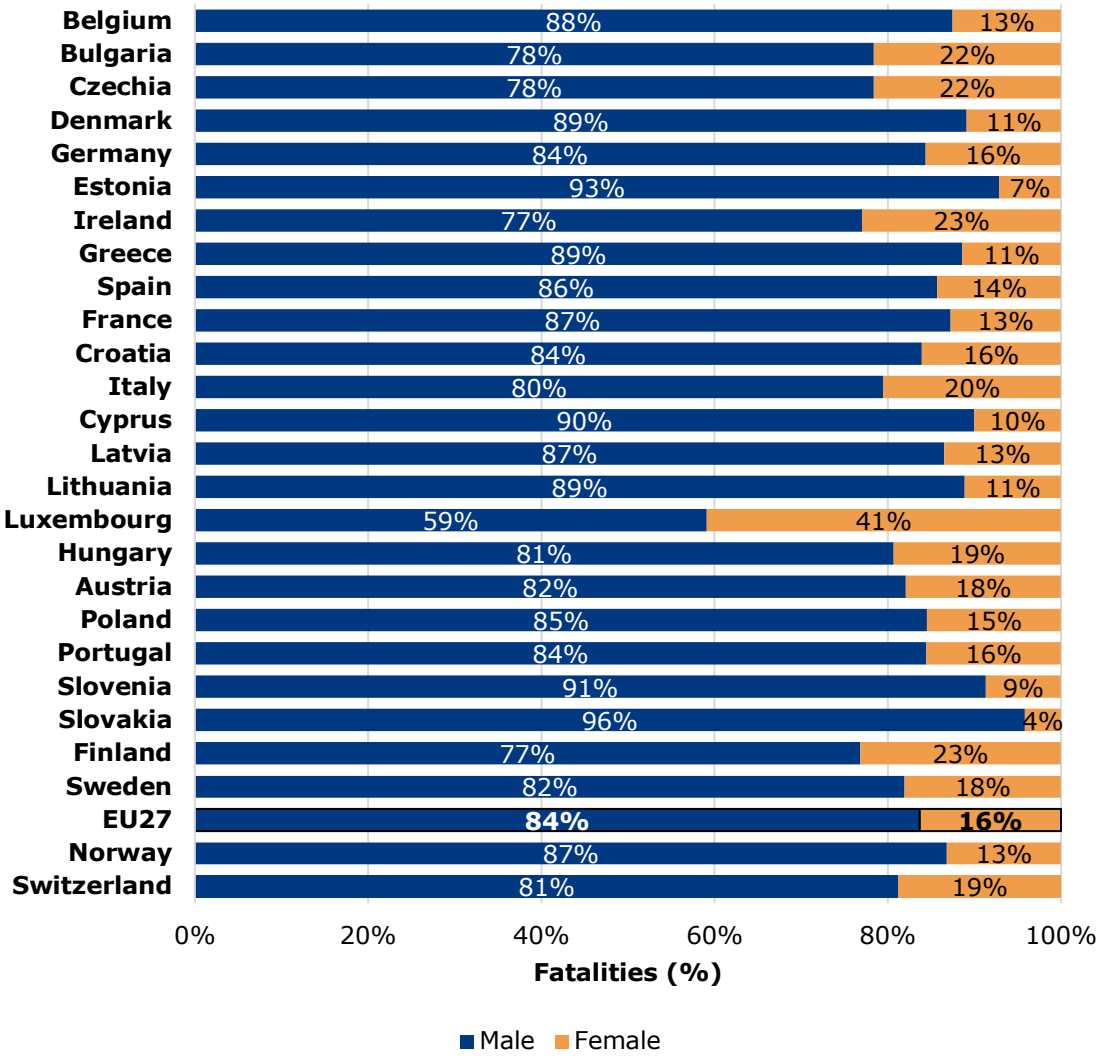


Figure 6. Share of single vehicle crash fatalities by gender per country in EU27 and EFTA (2022). Source: CARE



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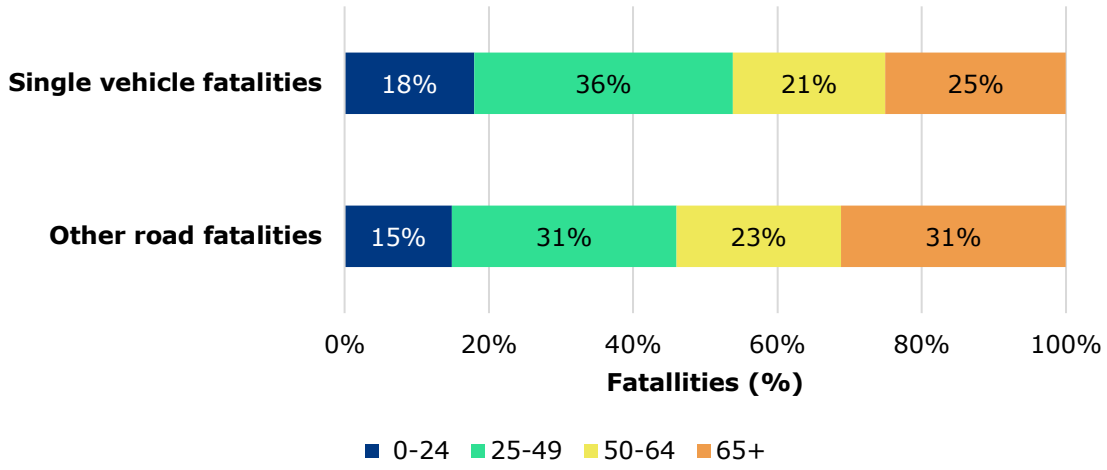
4.2 Age

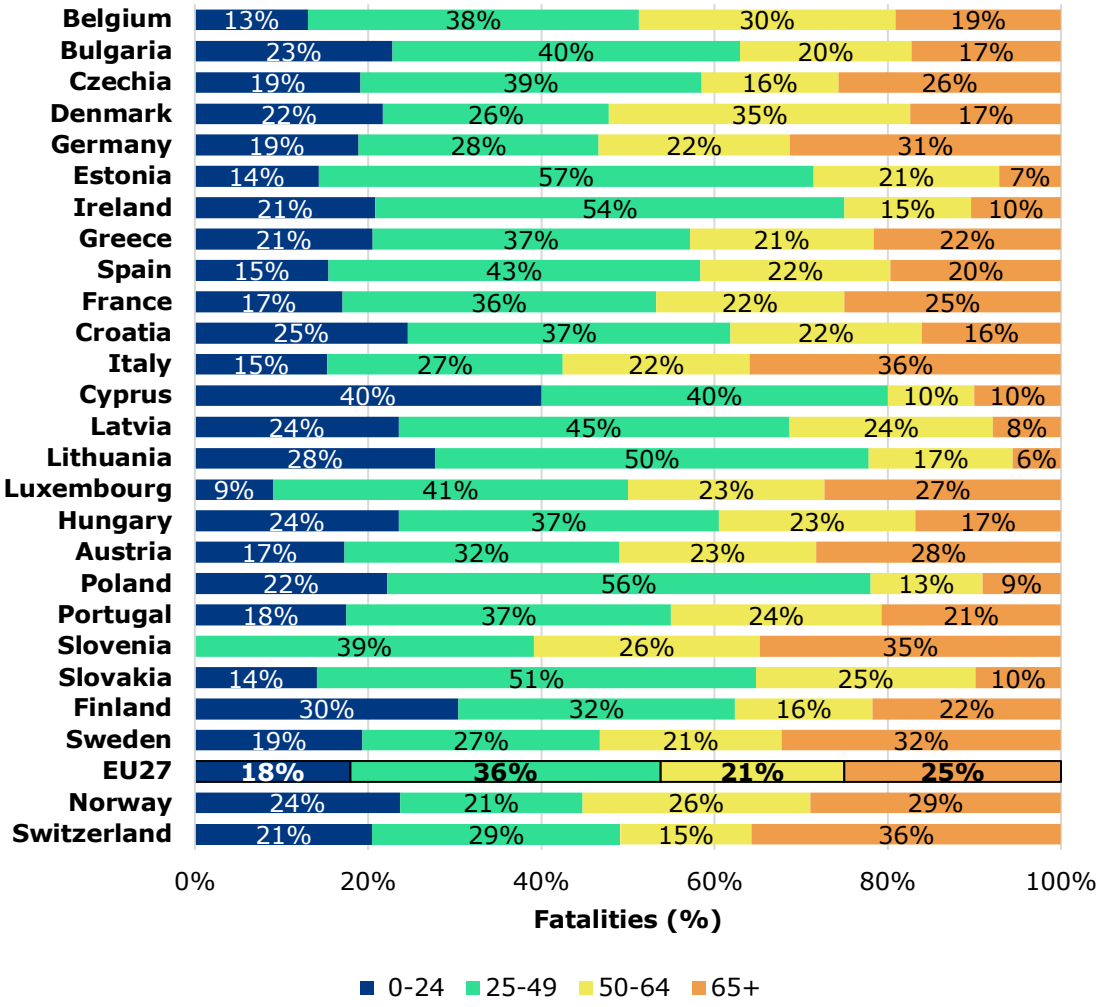
The age distribution of single vehicle crash fatalities differs slightly from the age distribution of other road fatalities. The share of young people (up to 24 years old) fatalities is higher in single vehicle crashes compared to other road crashes. In 2022, 18% of single vehicle crash fatalities were 24-year-olds or younger, compared to 15% of other road fatalities. The share of fatalities aged 65 or older is lower in single vehicle crashes compared to other road fatalities.

Figure 7. Single vehicle crash fatalities and other road fatalities by age group in the EU27 (2022). Source: CARE



The **share of single vehicle fatalities** among those aged 24 or less **ranges between 0% and 40% in 2022 in the EU und EFTA countries**. In Slovenia, no single vehicle crash fatalities were recorded in the youngest age group in 2022. The total number of single vehicle crash fatalities was low, with only 23 fatalities, all involving people older than 24 years.

Figure 8. Share of single vehicle crash fatalities by age groups per country in the EU27 and EFTA (2022). Source: CARE



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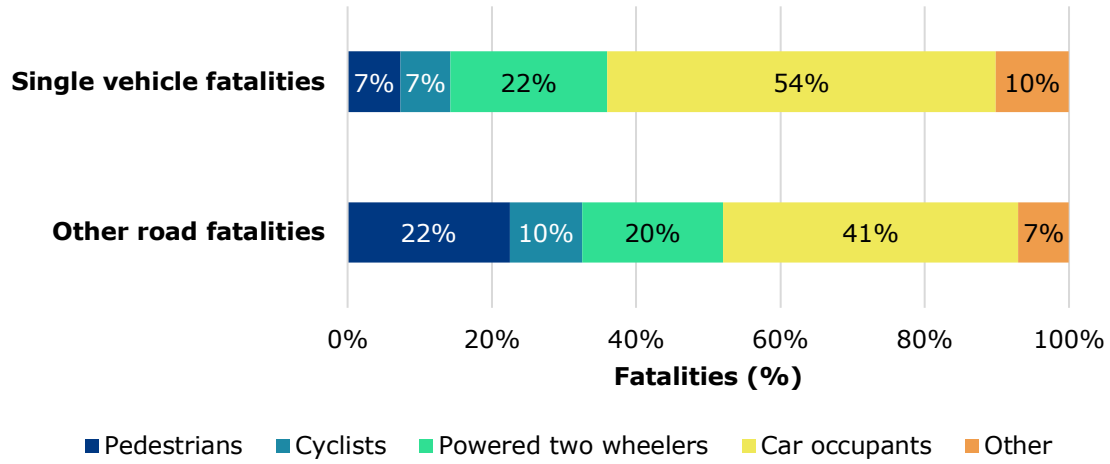
- For Slovakia the value for 2012 was imputed with the earliest known value (2016) in the series.

4.3 Transport modes

The share of single vehicle crash fatalities is highest for car occupants (54%), followed by powered two-wheelers (22%). Their share in these crashes is greater compared to other road crashes. For cyclists, the share in single vehicle fatalities is lower compared to other road fatalities. Given that evidence shows underreporting of single vehicle bicycle crashes, the picture for cyclists is likely to be even more serious (Nuyttens, 2013).

Figure 9. Share of single vehicle crash fatalities and other road fatalities by transport mode in the EU27 (2022). Source: CARE



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- For Slovakia the value for 2012 was imputed with the earliest known value (2016) in the series.

5. Location

5.1 Road type

Single vehicle crash fatalities occur proportionally slightly more often on rural roads, and slightly less often on motorways compared to other road user fatalities. This can be seen particularly vividly in Norway, Lithuania, Latvia and Estonia, where there are no single vehicle crashes on the motorway and higher shares on rural roads.

Figure 10. Share of single vehicle crash fatalities and other road fatalities by road type in the EU27 (2022). Source: CARE

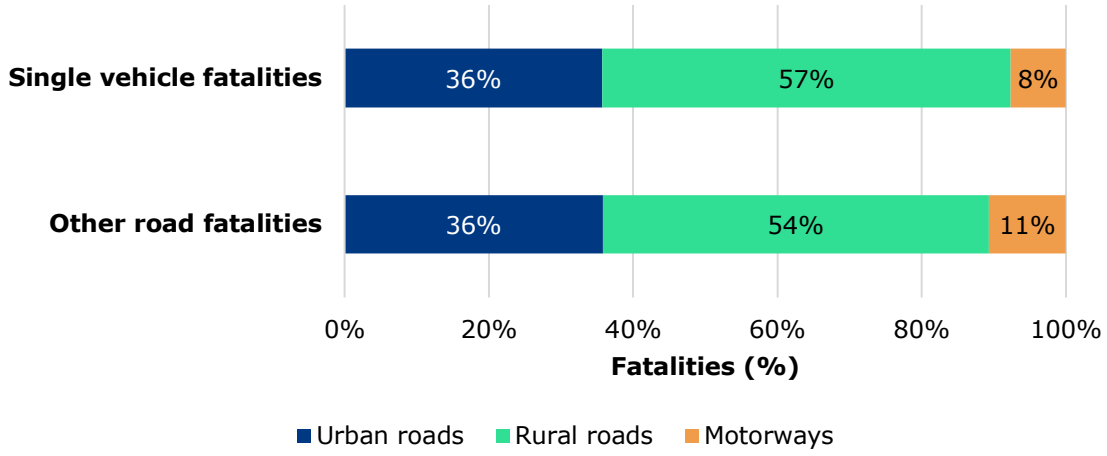
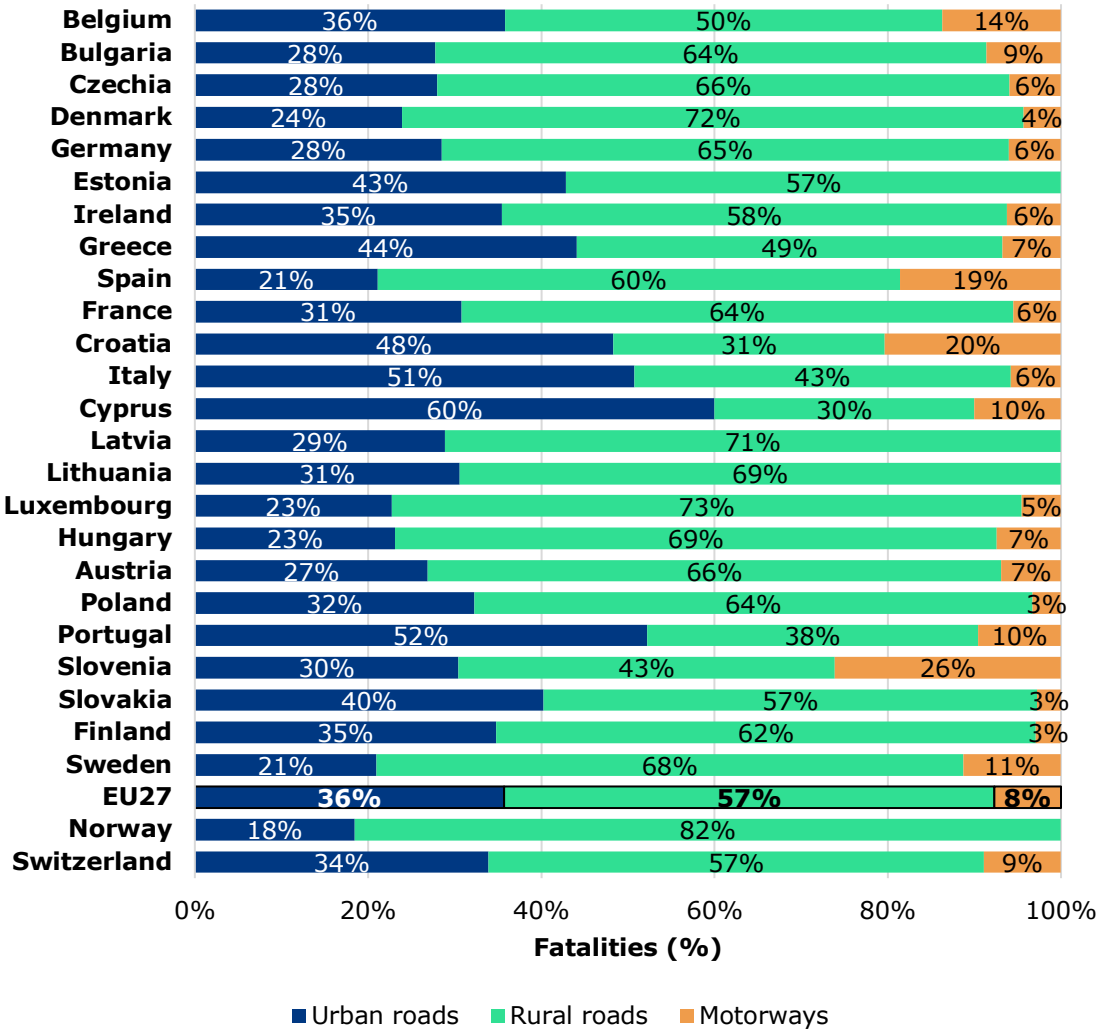


Figure 11. Share of single vehicle crash fatalities by road type per country in the EU27 and EFTA (2022). Source: CARE



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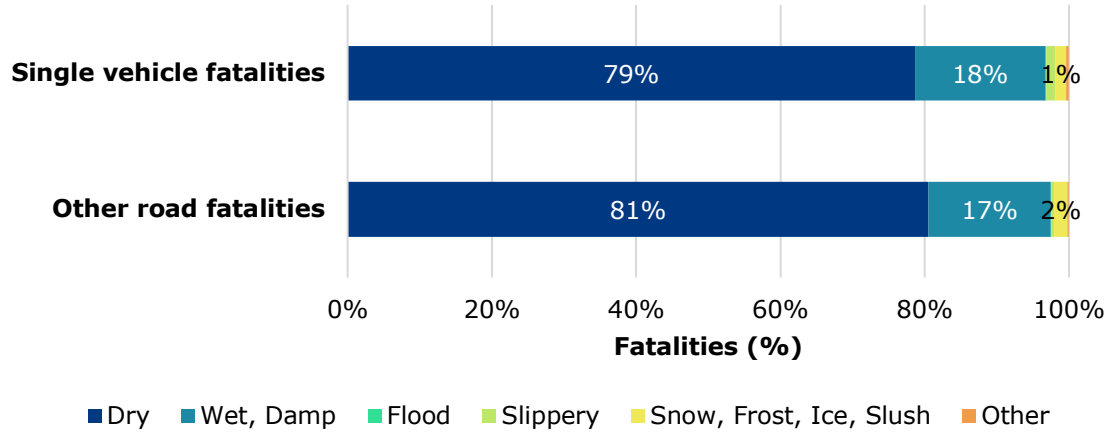
- For Slovakia the value for 2012 was imputed with the earliest known value (2016) in the series.

5.2 Road surface

Surface conditions were dry for 79% of single vehicle crash fatalities and wet for 18% of those fatalities. For only 1% of these fatalities the surface conditions were snowy, frosty, or icy. Similar findings apply to other road fatalities.

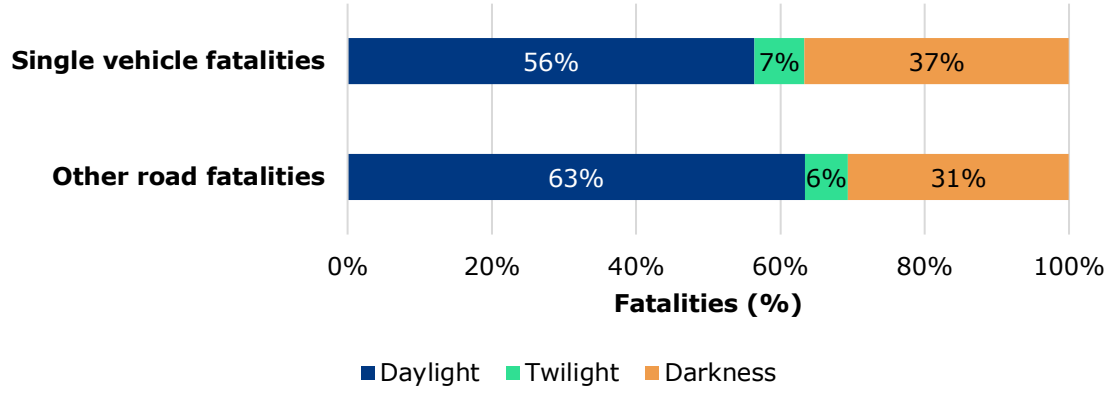
Figure 12. Share of single vehicle fatalities and other road fatalities by road surface in the EU27 (2022). Source: CARE



5.3 Light conditions

Single vehicle crash fatalities happen proportionally slightly more often in darkness, and slightly less often during daylight, compared to other road fatalities.

Figure 13. Share of single vehicle crash fatalities and other road fatalities by light conditions in the EU27 (2022). Source: CARE

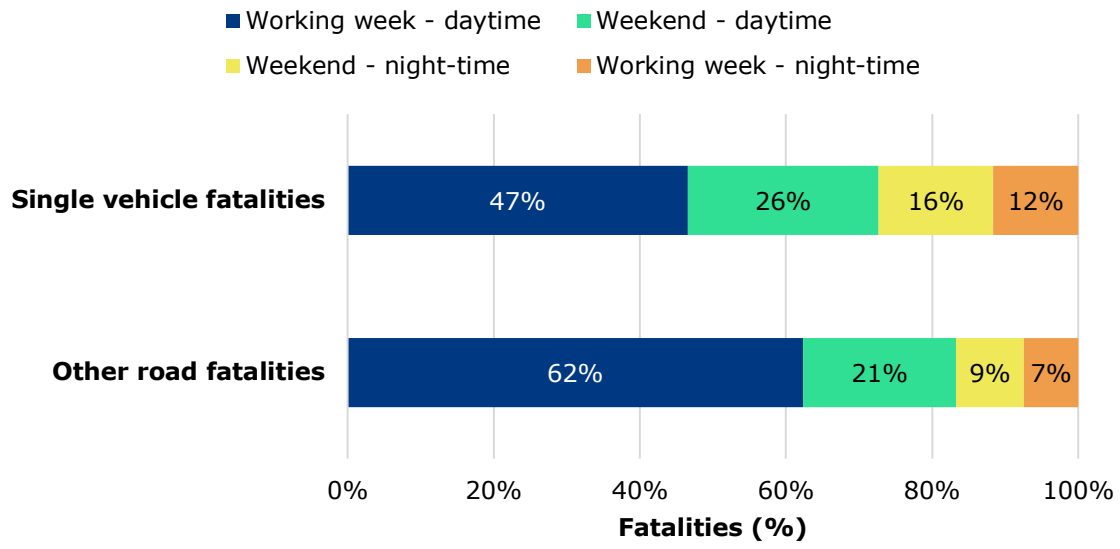


6. Time

6.1 Period of the week

Single vehicle crash fatalities occur more often at night compared to other road fatalities. There are proportionally more single vehicle fatalities during weekend nights especially (16% versus 9% of other road fatalities).

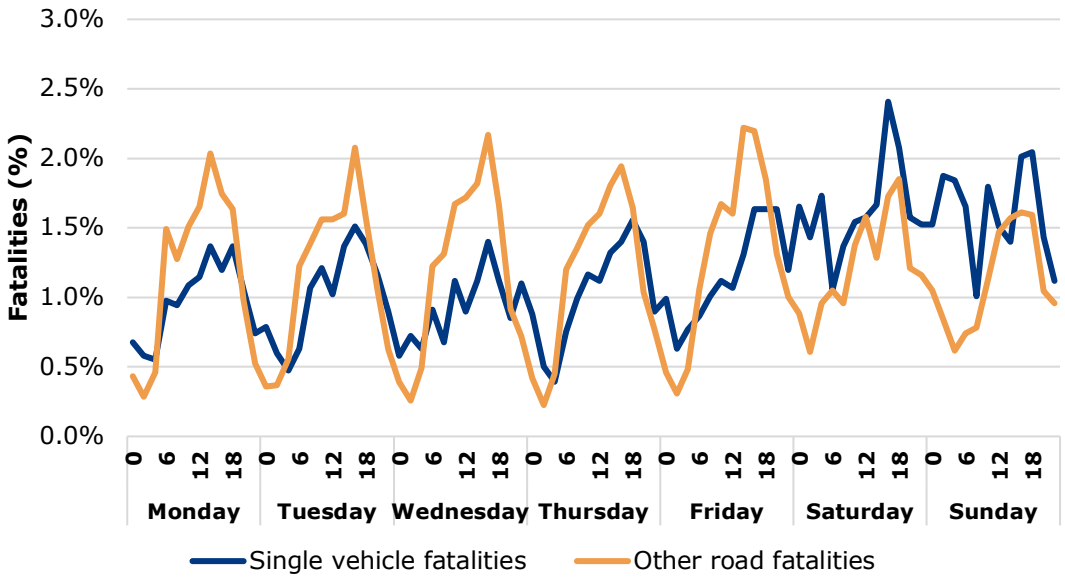
Figure 14. Share of single vehicle crash fatalities and other road fatalities according to period of the week in the EU27 (2022). Source: CARE



6.2 Day of the week, time of the day and hour

The graph below shows that single vehicle crash fatalities occur proportionally more often during weekends and weekend nights than other road fatalities.

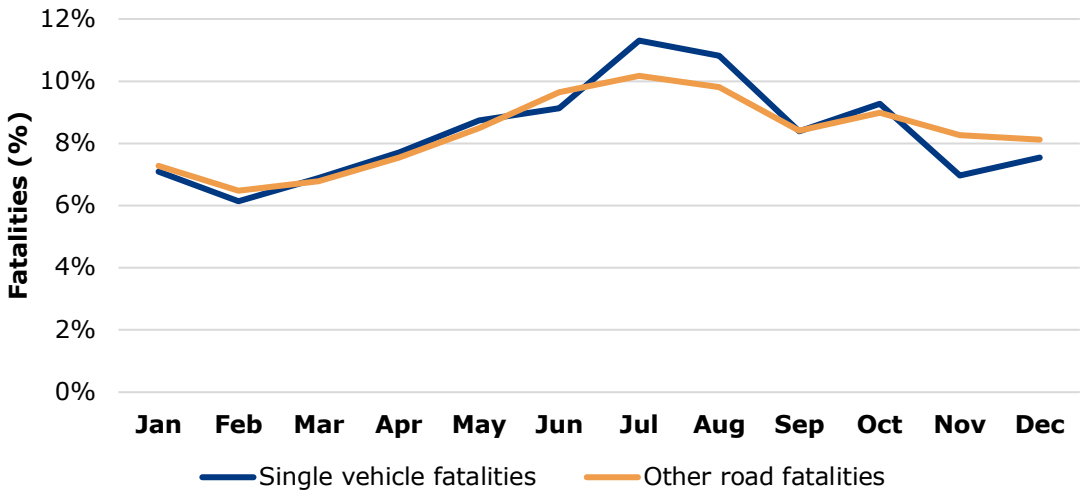
Figure 15. Share of single vehicle crash fatalities and other road fatalities by day of the week and hour in the EU27 (2022). Source: CARE



6.3 Month

The share of single vehicle crash fatalities is highest during the summer months (July and August) and lowest in February. A similar distribution across the months of the year can be noted for other road fatalities.

Figure 16. Monthly distribution of single vehicle crash fatalities and other road fatalities in the EU27 (2022). Source: CARE



7. Notes

7.1 References

Nuyttens, N. (2013) Onderregistratie van verkeersslachtoffers. Vergelijking van de gegevens over zwaar gewonde verkeersslachtoffers in de ziekenhuizen met deze in de nationale ongevallenstatistieken.

7.2 Definitions

The definitions below are taken from the CADAS Glossary as well as the UNECE Glossary.

CADAS Glossary:
https://road-safety.transport.ec.europa.eu/system/files/2023-09/CADaS%20Glossary_v%203_8_1.pdf

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

Accident / crash
An 'injury' road crash 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 and is open to interpretation by the police thus affecting the reliability of cross-country comparisons.

Single vehicle accident / crash
Crashes including only one moving vehicle. Includes crashes with fixed, non-fixed obstacles and animals (pedestrians and parked vehicles are not included), crashes without obstacles (rollover, leaving the carriageway etc.).

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.

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

Rural roads (roads outside urban areas)
Public roads outside urban boundary signs, excluding motorways.

Urban roads (roads inside urban areas)
Public roads inside urban boundary signs.

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.

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.

7.3 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 the four EFTA countries Switzerland, Norway, Iceland, and Liechtenstein. The data in the report were extracted in May 2024.

7.4 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.

7.5 Missing data

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

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

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

7.6 Data cleaning

Area / Road type

- Malta 2020 area: 'rural' recoded to 'unknown'

Transport mode: HGVs

- Poland < 2018 and Germany < 2014: HGV recoded to artificial code 'Lorries + HGVs' because obviously not separated in the data.

Serious injuries

- Data from France and the Netherlands omitted due to problems in the time series.

Junctions

- Several data issues due to different coding, inconsistent use of categories and different breaks in time series
- General grouping:
  - 'not at junction'
  - 'unknown'
  - all other codes combined to 'junction'

Data cleaning and recoding was done in the following countries: Bulgaria, Estonia, Finland, Germany, Greece, Ireland, Lithuania, Malta, Slovenia, Switzerland

7.7 COVID-19 pandemic

It is clear that the global COVID-19 pandemic had an impact on the CARE data for 2020 and 2021 and, to a lesser extent, also 2022 for some countries. Overall traffic volumes dropped sharply during the pandemic, which was associated with a significant drop in road traffic crashes and fatalities. However, the pattern was not homogeneous throughout the EU-27. For example, the number of fatalities actually increased in three Member States in 2020 during COVID-19. Therefore, the impact varied from country to country and there were also behavioural changes - for example there is some evidence of increased speeding. Further research is needed to understand the impact of the pandemic on road safety.

7.8 More detailed data

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