European Commission

Facts and Figures

Motorways

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: 29 January 2024

Contents

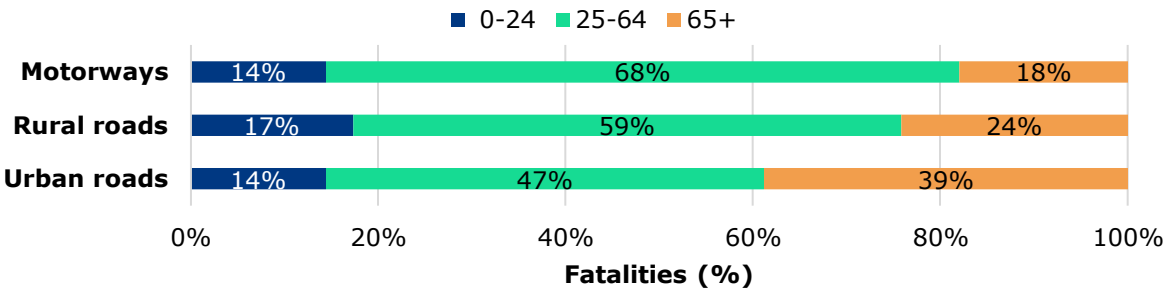
1. Key facts

This Facts and Figures report looks at motorways, which are public roads with dual carriageways, and at least two lanes each way. Some road user types, such as pedestrians, bicycles, mopeds and agricultural vehicles, are prohibited from using motorways. All differences reported were derived from the available data, the statistical significance of the differences between values has not been tested.

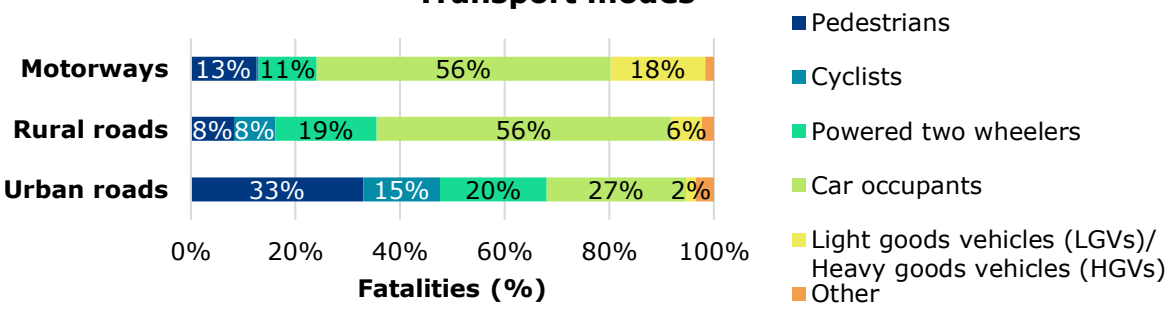
Motorways fatalities in the EU27, 2022

- 1,862 fatalities
- 9% of all road fatalities
- 1% decrease since 2012, compared to 22% decrease on urban roads and 24% on rural roads

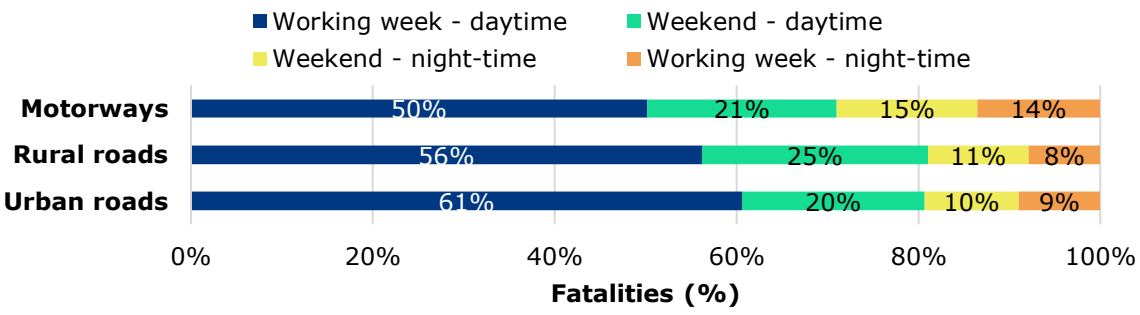
Age



Transport modes



Period of the week



2. Summary

In 2022, 9% of all road fatalities in the EU27 occurred on motorways. The number of fatalities on motorways decreased by 4% between 2019 and 2022, compared to the overall 10% decrease on other roads (rural and urban roads).

Road fatalities on motorways in 2022 also differed in other respects when compared to other road fatalities combined:

- The proportion of **25–64-year-old fatalities on motorways** was **higher,** while the proportion of **65+** year olds killed was **lower** compared to other road fatalities (rural and urban roads). **68% of motorway fatalities were between 25 and 64 years** old, compared to 54% on other roads (rural and urban roads).
- The proportion of **fatalities in heavy goods vehicles and light goods vehicles was highest on motorways** (18% on motorways compared to 6% on rural roads and 2% on urban roads). The proportion of fatalities among **vulnerable road users** (pedestrians, cyclists, powered two-wheelers) **was low on motorways**, which can be explained by the fact that certain road user types are prohibited from travelling on motorways. The proportion of pedestrians among fatalities on motorways however was 13%, even though pedestrians are not allowed on motorways.[1]
- The share of fatalities on motorways was **proportionally lower during the daytime of the working week** and **higher during night-time,** both in the working week and at the weekend compared to other road fatalities (rural and urban roads).

The highest mortality rates (number of road fatalities per million inhabitants) on motorways in 2022 **were observed in Slovenia and Croatia. Sweden, Poland and Denmark had the lowest mortality rates** with 2.0 and lower. 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 fatalities on motorways within the total number of road fatalities: **the proportion was highest in Slovenia (29%), Spain (20%), Belgium (16%), and Croatia (14%).** Fatalities per 1,000 km of motorway were also compared between EU Member States, to consider the differences between networks. **The fatality rate per 1,000 km of motorway in 2022 was highest in Romania, Slovenia, Bulgaria and Poland and lowest in Sweden and Denmark.**

[1] The share of pedestrians that die on motorways include vehicle occupants who have left their vehicles on the motorway.

COVID-19 pandemic

The impact of the global COVID-19 pandemic on the CARE data for 2020 and 2021 is evident. 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.

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 Absolute number of road fatalities

Table 1. Fatalities on motorways per country in the EU27 and EFTA (2012-2022). Source: CARE

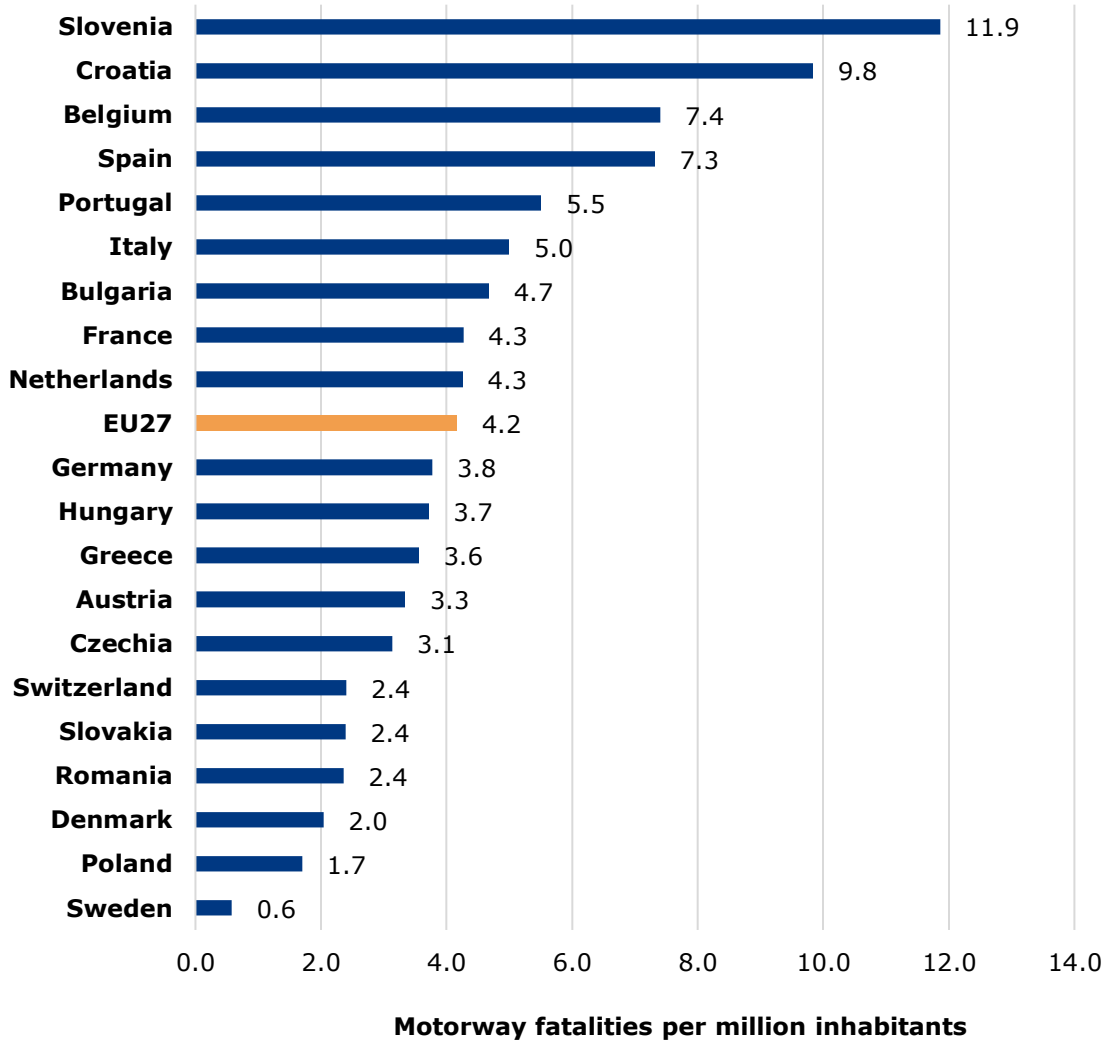
Country	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	LT*	ST*
Belgium	113	128	108	110	102	98	102	116	86	81	86	-24%	-26%
Bulgaria	20	20	39	60	42	62	58	45	35	75	32	60%	-29%
Czechia	22	25	23	31	40	25	35	31	32	22	33	50%	7%
Denmark	8	12	14	16	25	12	21	14	14	11	12		-14%
Germany	387	428	375	414	393	409	424	356	317	318	314	-19%	-12%
Estonia	-	-	-	-	-	-	-	-	-	-	-	-	-
Ireland	5	8	5	7	6	4	9	7	-	-	-	-	-
Greece	57	79	56	53	45	54	61	50	34	38	-	-33%	-24%
Spain	298	291	290	277	327	308	323	340	224	316	347	17%	2%
France	222	238	241	297	267	281	268	260	196	243	290	31%	12%
Croatia	42	38	22	16	34	22	28	18	19	36	38	-10%	111%
Italy	330	321	287	305	274	296	330	310	195	246	295	-11%	-5%
Cyprus	3	2	3	6	1	5	8	3	4	5	3	-	-
Latvia	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithuania	-	-	-	-	37	12	4	6	4	10	3	-	-
Luxembourg	7	6	3	3	5	3	9	3	6	1	5	-	-
Hungary	31	30	27	34	37	34	46	48	35	58	36	16%	-25%
Malta	-	-	-	-	-	-	-	-	-	-	-	-	-
Netherlands	68	57	57	79	77	82	76	75	55	47	75	10%	0%
Austria	50	31	36	41	34	45	28	29	26	33	30	-40%	3%
Poland	44	40	56	61	50	70	52	70	55	74	64	46%	-9%
Portugal	58	44	50	61	38	51	57	67	59	44	57	-2%	-15%
Romania	17	24	21	19	26	36	24	43	33	40	45	165%	5%
Slovenia	20	16	15	15	25	19	14	14	6	15	25	25%	79%
Slovakia	-	-	-	-	11	21	14	8	18	12	13	-	-
Finland	13	8	8	6	7	8	5	6	9	8	-	-39%	-
Sweden	16	18	31	15	17	20	24	20	6	-	-	-	-
EU	1,879	1,912	1,815	1,974	1,920	1,977	2,020	1,939	1,475	1,746	1,862	-1%	-4%
Iceland	-	-	-	-	-	-	-	-	-	-	-	-	-
Liechtenstein	-	-	-	-	-	-	-	-	-	-	-	-	-
Norway	-	-	-	-	-	-	-	-	-	-	-	-	-
Switzerland	63	23	12	21	19	25	19	24	18	15	21	-67%	-13%

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

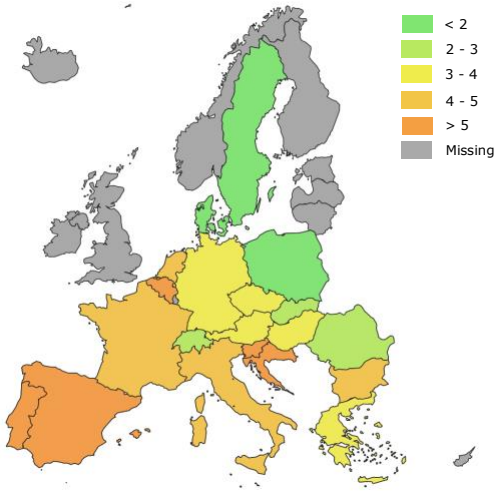
3.2 Mortality rate: number of road fatalities per million inhabitants

Slovenia and Croatia have the highest mortality rate (number of fatalities per million inhabitants) **while Sweden, Poland and Denmark have the lowest.** Looking at the countries with the highest number of fatalities on motorways (Germany, Spain, France, and Italy), only Germany has a mortality rate below the European average.

Figure 1. Fatalities on motorways per million inhabitants per country in the EU27 and EFTA (2022). Source: CARE



Notes:
- Estonia, Ireland, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Finland, Iceland, Liechtenstein and Norway are not included in the figure because there are fewer than 10 fatalities in the year 2022.

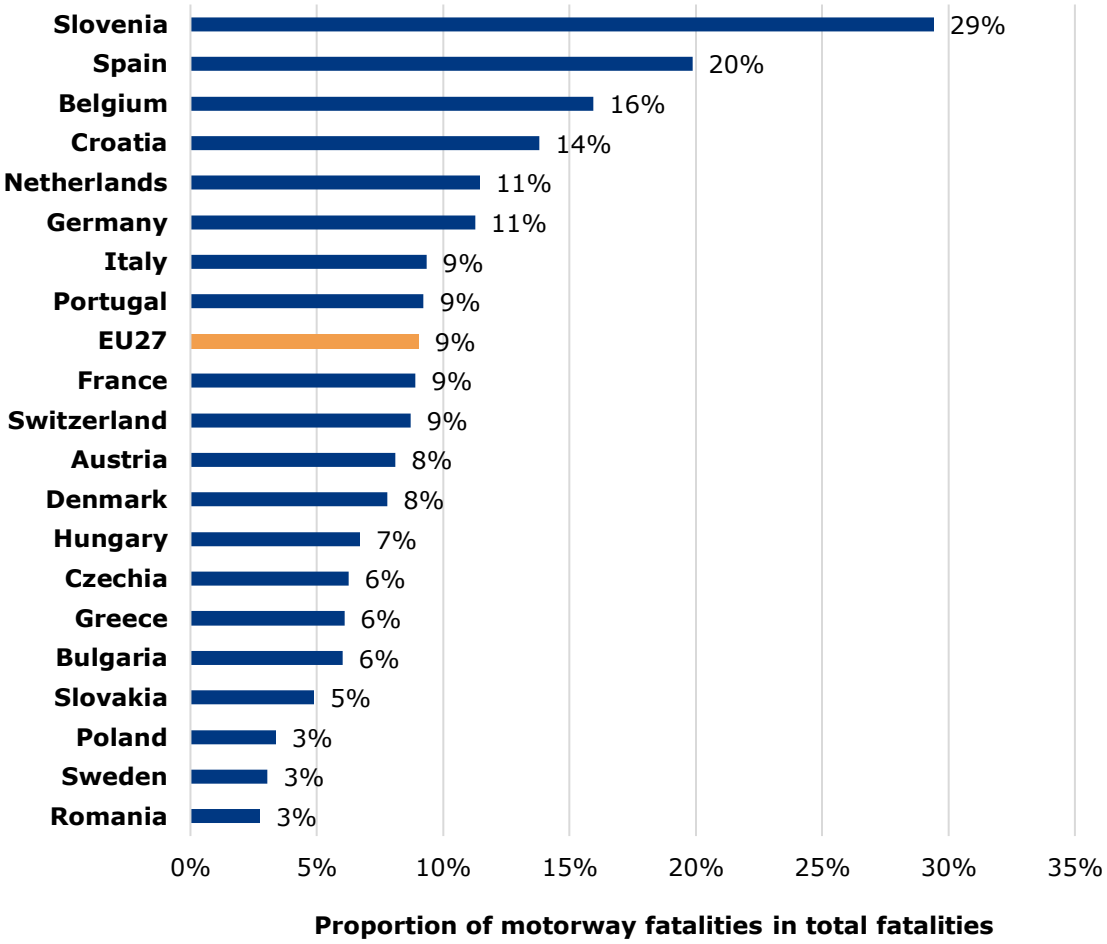


3.3 Share of fatalities on motorways in the total number of road fatalities

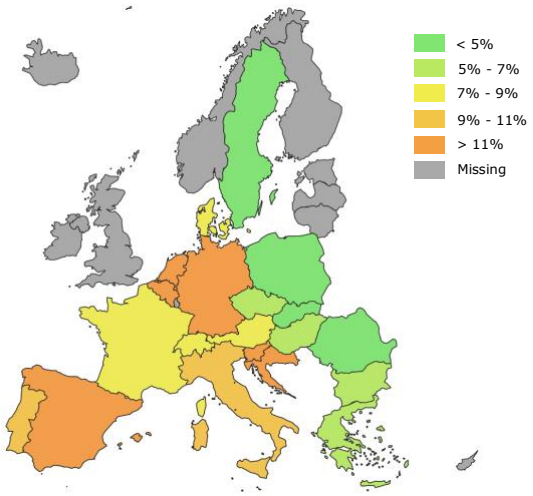
While the mortality rate is an important indicator, it does not consider differences in the general road safety performance across countries. In other words, a high mortality rate for motorways in a specific country may be influenced by a high total mortality rate for all road users in that country. Therefore, it is important to have a look at the proportion or share of fatalities on motorways within the total number of road fatalities.

The proportion of fatalities on motorways is highest in Slovenia (29%), Spain (20%), Belgium (16%) and Croatia (14%). Romania, Sweden and Poland have the lowest proportion of fatalities (3%) on motorways.

Figure 2. Proportion of motorway fatalities in the total number of fatalities, per country in the EU27 and EFTA (2022). Source: CARE



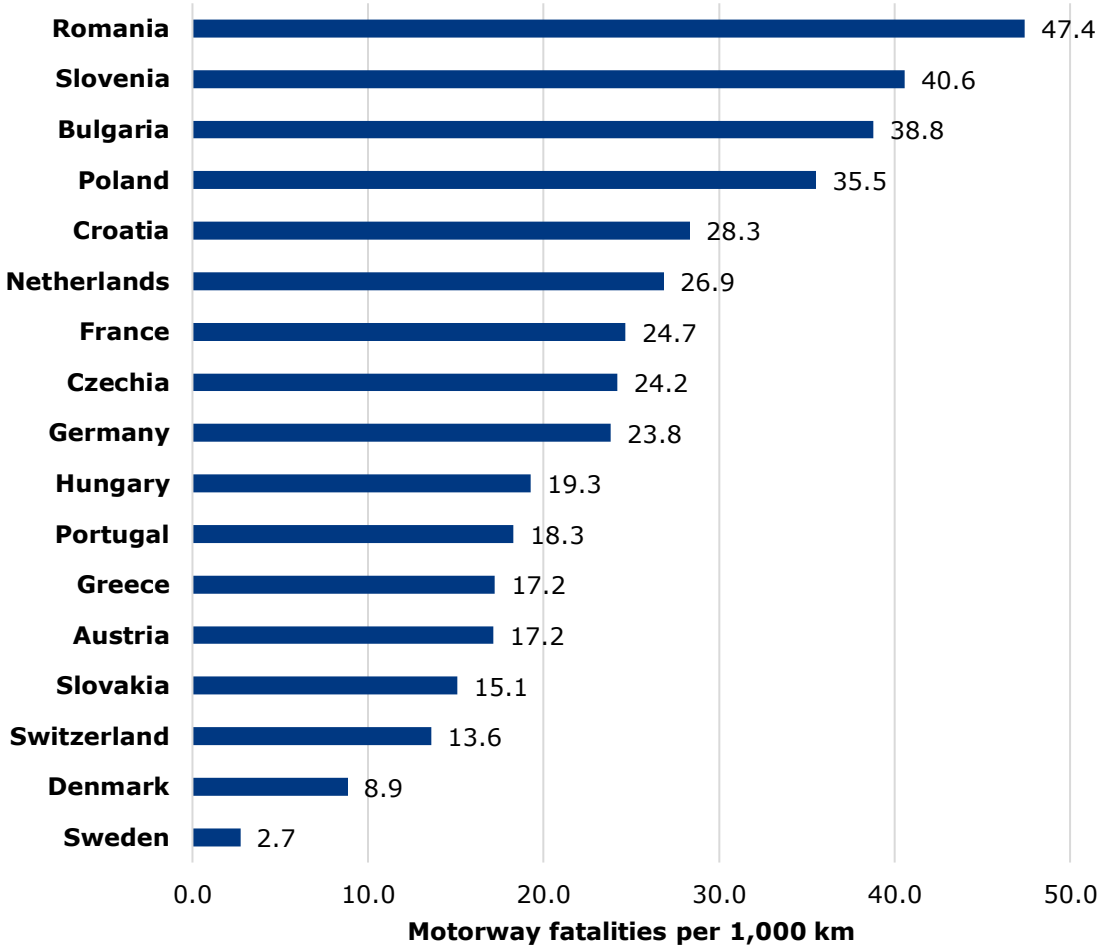
Notes:
- Estonia, Ireland, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Finland, Iceland, Liechtenstein and Norway are not included in the figure because there are fewer than 10 fatalities in the year 2022.



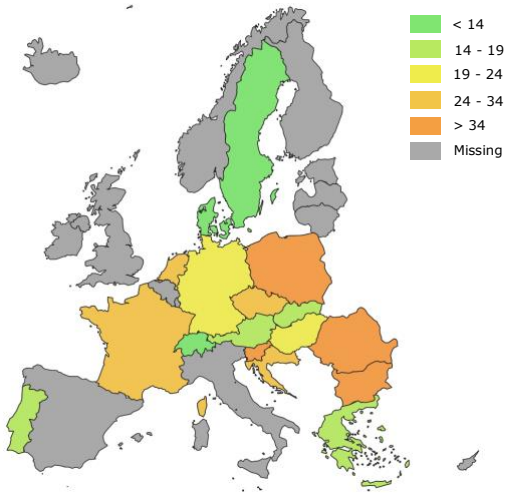
3.4 Number of fatalities on motorways per 1,000 kilometres of motorway

In the figure below, fatalities per 1,000km of motorways are compared between countries. This makes it possible to consider the differences between motorway networks. **The fatality rate per 1,000km of motorway is highest in Romania, Slovenia, Bulgaria and Poland and lowest in Sweden and Denmark.**

Figure 3. Motorway fatalities per 1,000 km of motorway per country in the EU27 and EFTA (2022). Source: CARE and EUROSTAT, EUROPEAN COMMISSION



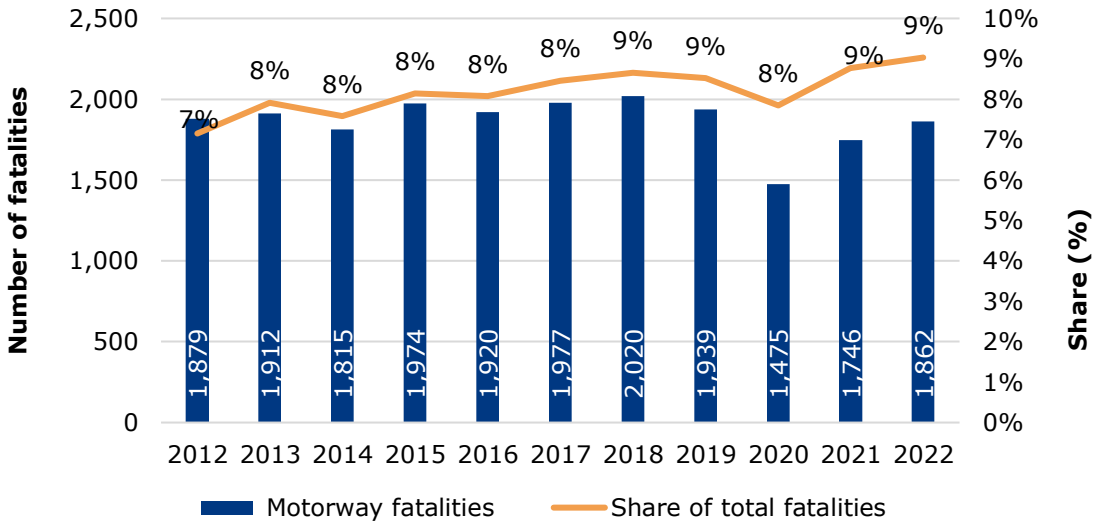
Notes:
- Estonia, Ireland, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Finland, Iceland, Liechtenstein and Norway are not included in the figure because there are fewer than 10 fatalities in the year 2022.
- Belgium, Spain and Italy are not included, as there is no motorway length data available.



3.5 Trend in the number of fatalities

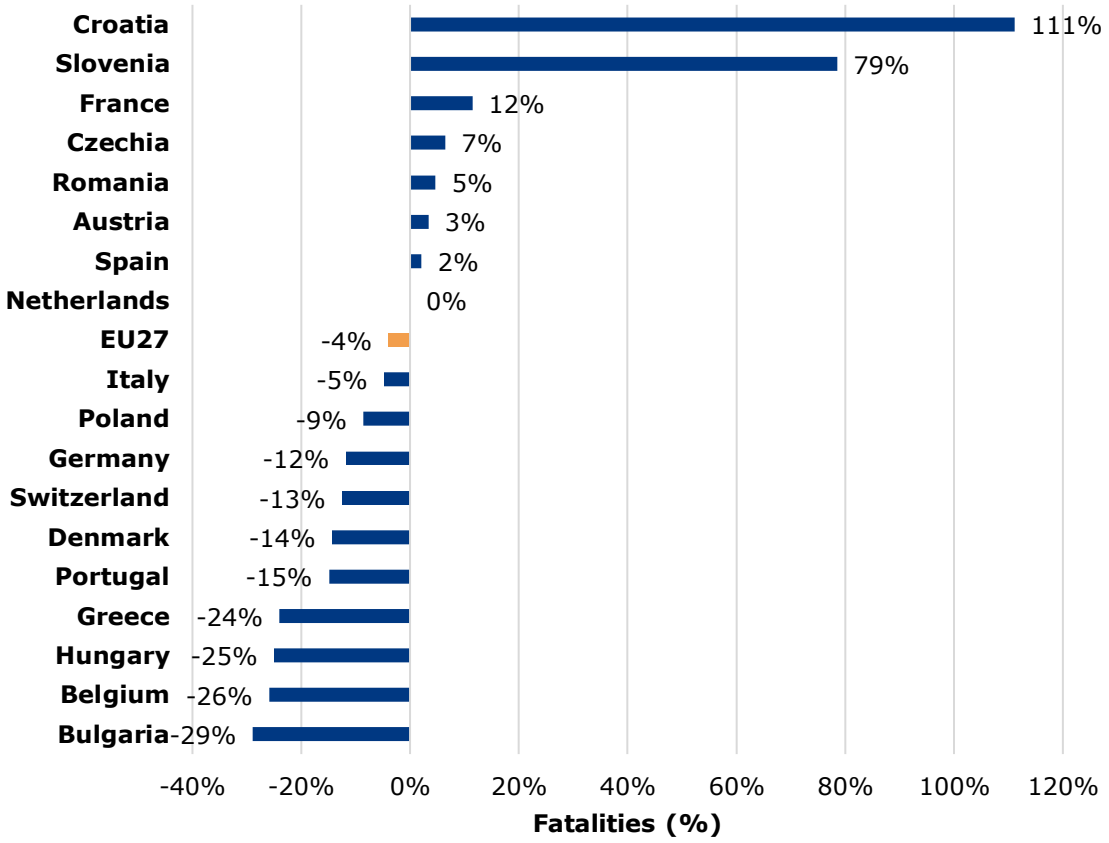
In 2022, 9% of all road fatalities in the EU27 occurred on motorways. The relative proportion of fatalities on motorways has increased slightly in the time period 2012-2022. The number of fatalities on motorways decreased by 1% between 2012 and 2022, while the total number of fatalities decreased by 22% over the same time period.

Figure 4. Annual number of motorway fatalities, and their share in the total number of fatalities in the EU27 (2012-2022). Source: CARE



Looking at the short-term changes (2019 compared to 2022), **the sharpest decline in the share of fatalities on motorways** can be observed in **Bulgaria (-29%), Belgium (-26%) and Hungary (-25%),** while the number of fatalities on motorways in **Croatia (+111%) and Slovenia (+79%) increased sharply**.

Figure 5. Percentage short term change in the number of fatalities on motorways per country in the EU27 (2019-2022) Source: CARE



Notes:
- Estonia, Ireland, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Slovakia, Finland, Iceland, Liechtenstein and Norway are not included in the figure because there are fewer than 10 fatalities in the years 2019-2022.
- Sweden is not included in the figure because there is no data on fatalities in the years 2021 and 2022.
- For some countries with comparatively low numbers of fatalities, caution is required when interpreting the data due to considerable annual fluctuations.

Table 2. Number of and trend in fatalities on motorways per country in the EU27 and EFTA (2012-2022). Source: CARE

	2012	2019	2020	2021	2022	ST*	Miniplot: trend since 2012
Belgium	113	116	86	81	86	-26%	
Bulgaria	20	45	35	75	32	-29%	
Czechia	22	31	32	22	33	7%	
Denmark	8	14	14	11	12	-14%	
Germany	387	356	317	318	314	-12%	
Greece	57	50	34	38	-	-24%	
Spain	298	340	224	316	347	2%	
France	222	260	196	243	290	12%	
Croatia	42	18	19	36	38	111%	
Italy	330	310	195	246	295	-5%	
Hungary	31	48	35	58	36	-25%	
Netherlands	68	75	55	47	75	0%	
Austria	50	29	26	33	30	3%	
Poland	44	70	55	74	64	-9%	
Portugal	58	67	59	44	57	-15%	
Romania	17	43	33	40	45	5%	
Slovenia	20	14	6	15	25	79%	
Slovakia	-	8	18	12	13	-	
Sweden	16	20	6	-	-	-	
EU27	1,879	1,939	1,475	1,746	1,862	-4%	
Switzerland	63	24	18	15	21	-13%	

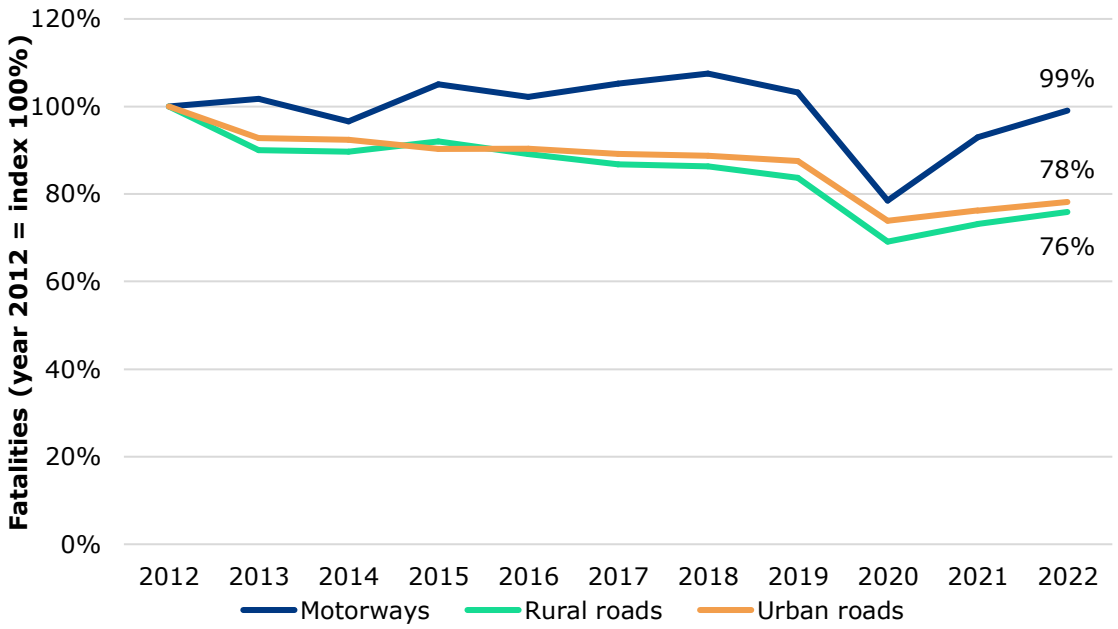
*ST = Short term change of last available year over 2019.

Notes:
- Estonia, Ireland, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Finland, Iceland, Liechtenstein and Norway are not included in the Table because there are fewer than 10 fatalities in the years 2012-2022.

3.6 Comparison with other road types

The figure below shows the total number of fatalities by type of road over the time period 2012-2022. The number of **fatalities on rural roads decreased the most (-24%) out of all road types.** The number of fatalities on **urban roads decreased by -22%** since 2012. Although the number of fatalities on motorways decreased more sharply in 2020 compared to rural and urban roads, the number of fatalities on this type of roads has decreased the least in the period 2012-2022 years (-1%).

Figure 6. Trend of fatalities on motorways, rural roads and urban roads in the EU27 (2012-2022). Source: CARE



4. Road user

4.1 Gender

78% of all fatalities on motorways in 2022 were men, compared to 74% of male fatalities on urban roads and 80% of male fatalities on rural roads. Therefore, the share is quite similar on all road types. Large differences can be observed between the **EU Member States**, as the **proportion of female fatalities on motorways ranges between 8% and 47%**.

Figure 7. Distribution of fatalities on motorways, rural roads and urban roads by gender in the EU27 (2022). Source: CARE

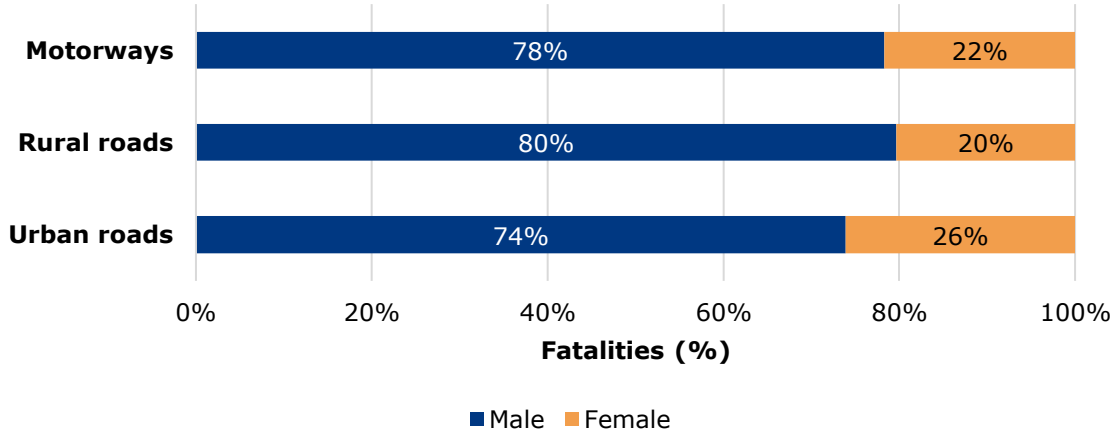
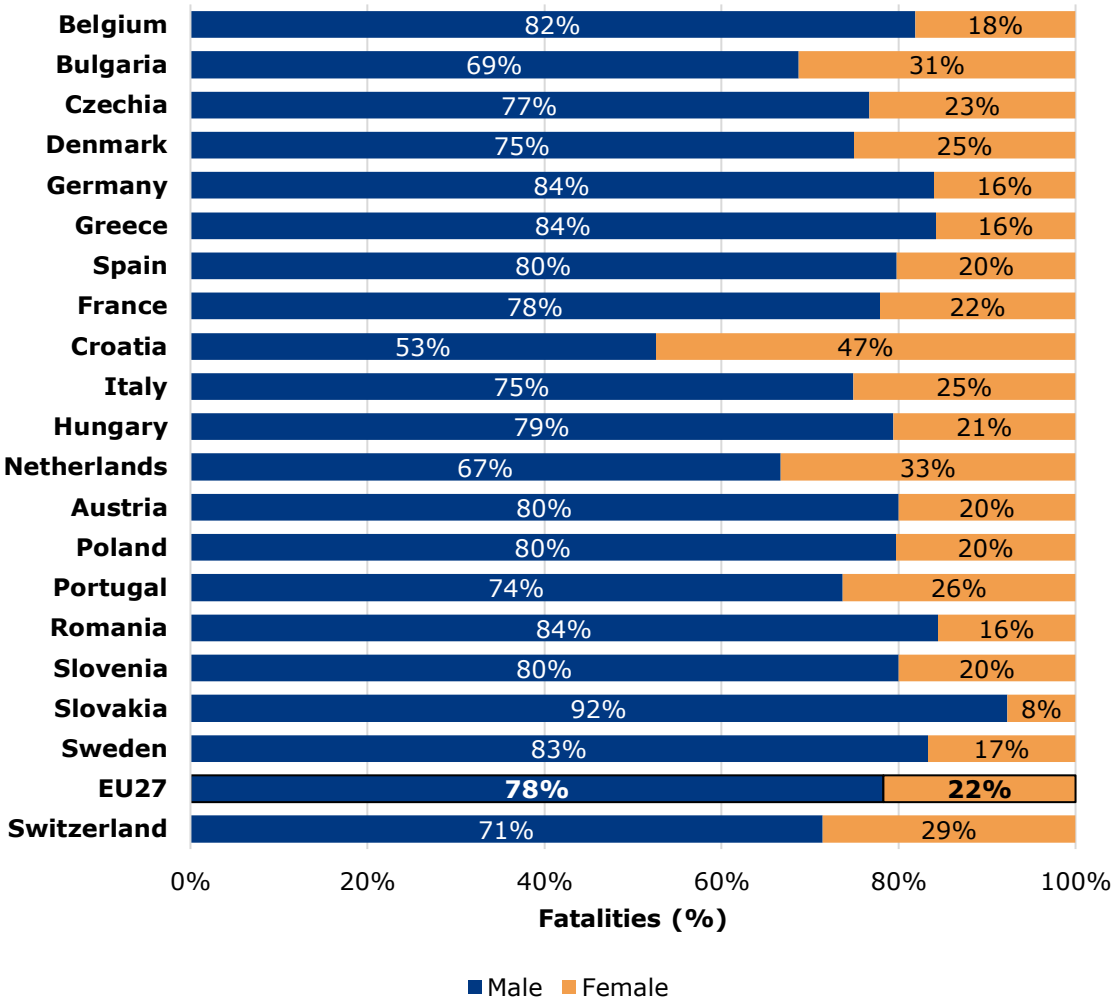
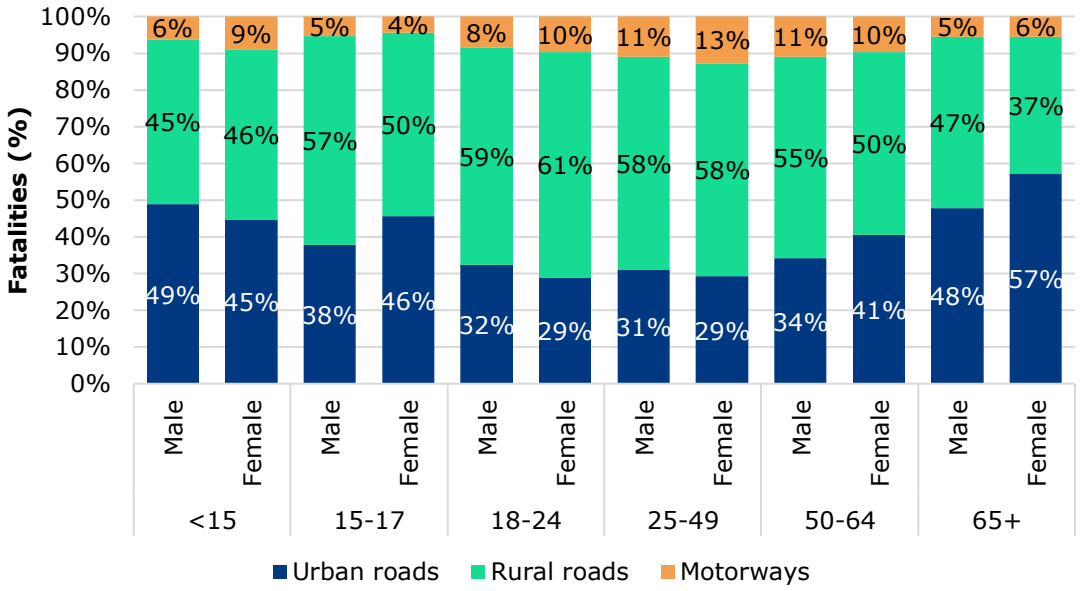


Figure 8. Distribution of motorway fatalities by gender per country in the EU27 and EFTA (2022). Source: CARE



Notes:
- Estonia, Ireland, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Finland, Iceland, Liechtenstein and Norway are not included in the figure because there are fewer than 10 fatalities in the year 2022.

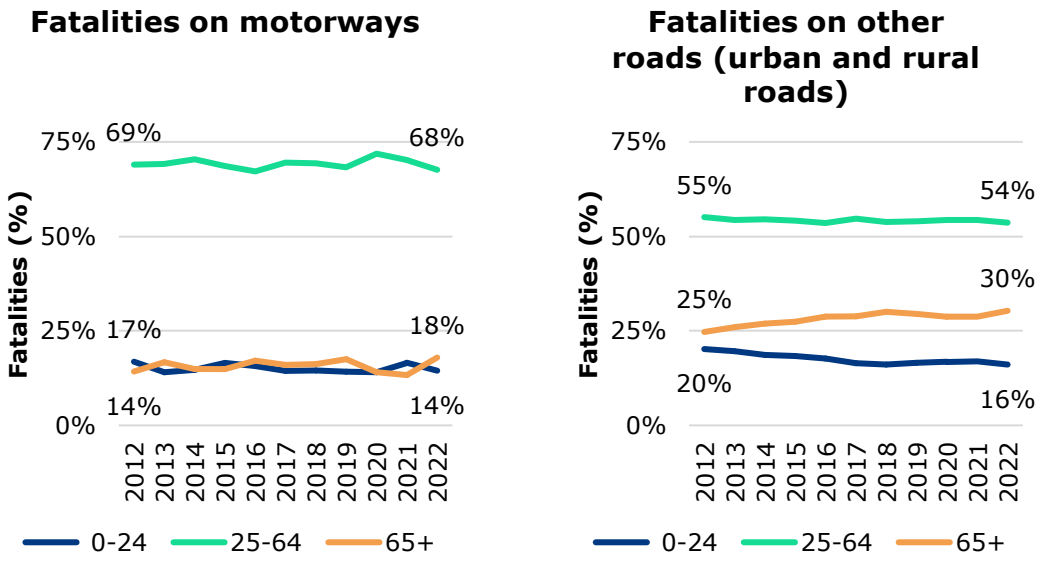
Figure 9. Distribution of fatalities by age and gender and road type in the EU27 (2022). Source: CARE



4.2 Age

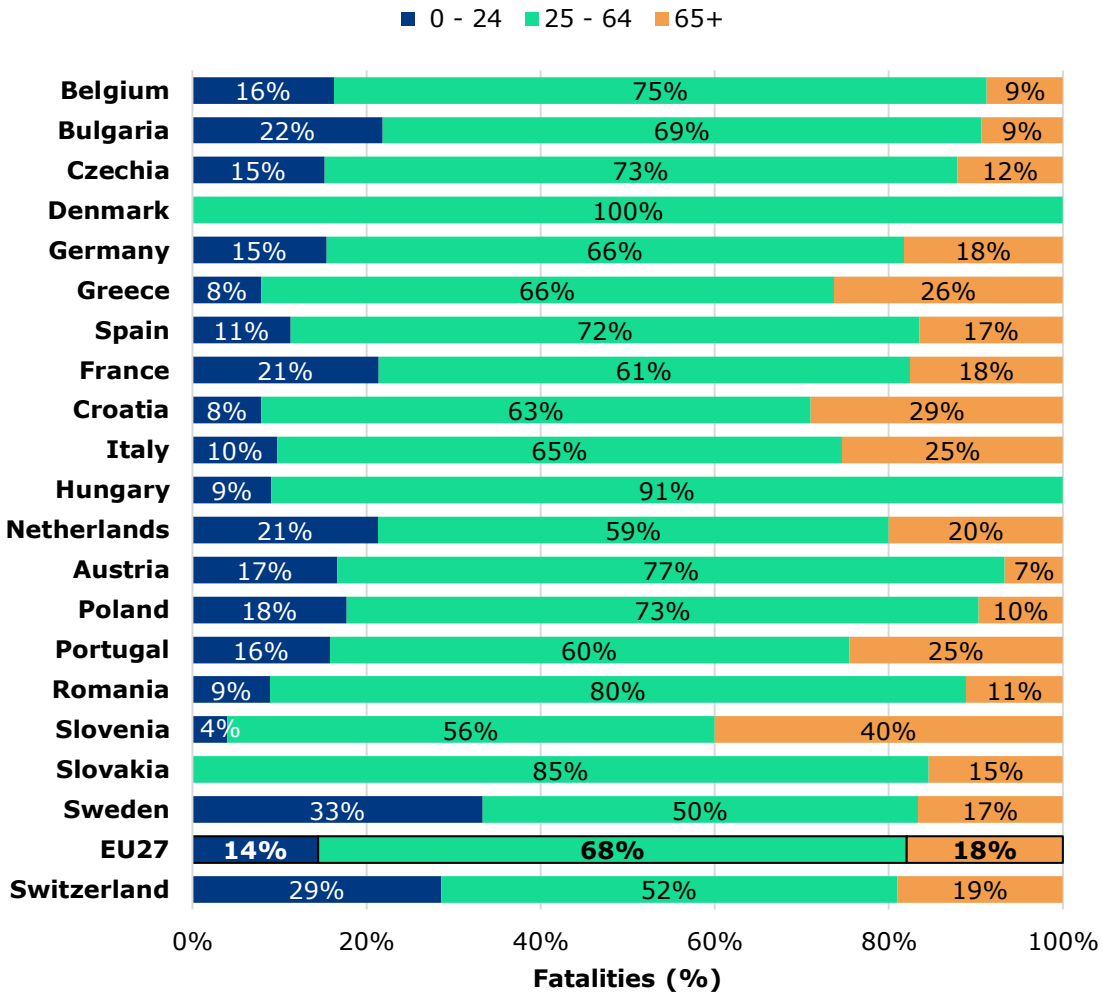
The age distribution of fatalities on motorways differs slightly from the age distribution of road fatalities on other roads. **The proportion of 25–64-year-old fatalities is higher on motorways compared to fatalities on other roads** (urban and rural roads). In 2022, 68% of motorway fatalities were between 25 and 64 years old, compared to 54% of fatalities on other roads.
The proportion of 65+ year old fatalities on motorways (18%) is lower compared to fatalities on other roads (urban and rural roads) (30%).

Figure 10. Trend of fatalities on motorways and other roads (urban and rural roads) by age group in the EU27 (2012-2022). Source: CARE



The 25-64 age group represents the highest proportion of fatalities on motorways in all countries. The proportion of 65+ years old fatalities on motorways ranges between 0% in Denmark and Hungary up to 40% in Slovenia. In some countries, such as Croatia and Greece, the over-65-year-olds account for almost a third of motorway fatalities, despite the relatively low fatality rate on motorways in these countries. The proportion of fatalities on motorways in the age group 0-24 years is higher than the proportion of 65+ year olds in other countries, for example Switzerland and Sweden.

Figure 11. Distribution of fatalities on motorways by age groups per country in the EU27 and EFTA (2022). Source: CARE



Notes:
- Estonia, Ireland, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Finland, Iceland, Liechtenstein and Norway are not included in the figure because there are fewer than 10 fatalities in the year 2022.

4.3 Transport modes

Car occupants make up more than half of all fatalities on both motorways and rural roads. The proportion of fatalities in HGVs and LGVs is the highest on motorways, while the proportion of fatalities among vulnerable road users (pedestrians, cyclist, powered two wheelers) is lower on motorways. This can be explained by the fact that certain types of road user, such as cyclists and mopeds, are prohibited from using motorways. Nevertheless, the proportion of pedestrians among fatalities on motorways is 13%, even though they are not allowed on this type of roads. Some of those counted as pedestrians are drivers and passengers of vehicles who have left their vehicles on the motorway.

Figure 12. Distribution of fatalities by transport mode and type of road in the EU27 (2022). Source: CARE

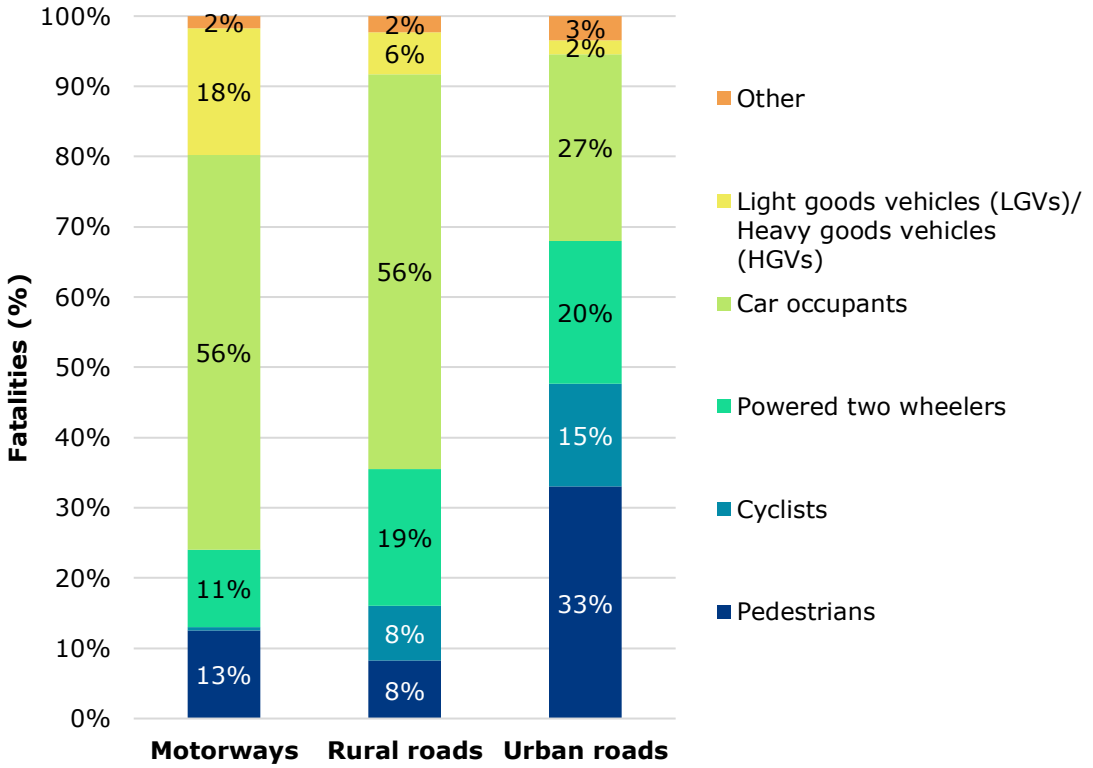
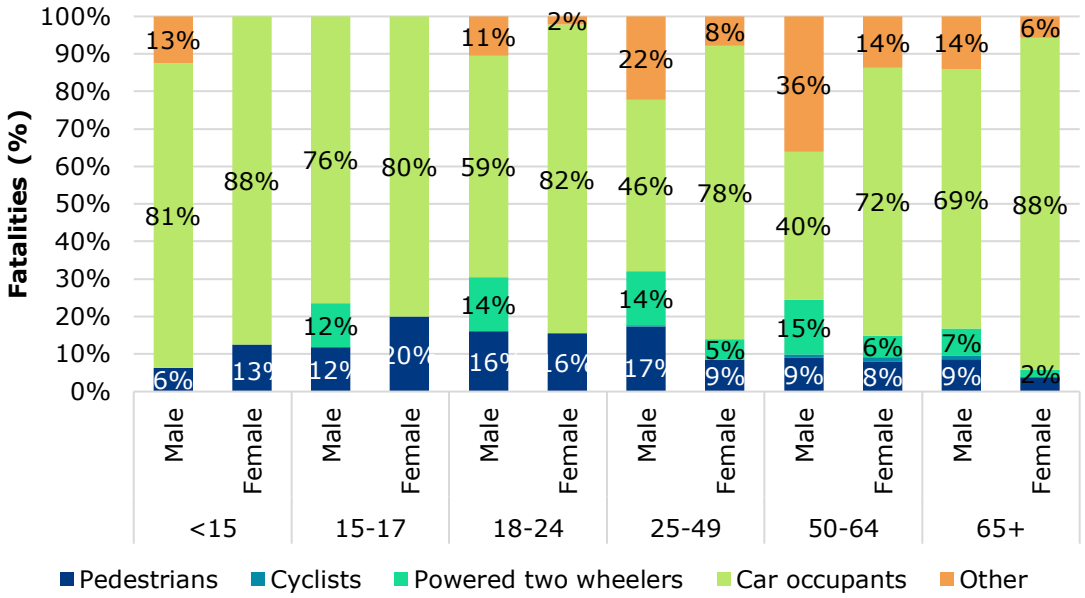


Figure 13. Distribution of fatalities by age and gender and transport modes in the EU27 (2022). Source: CARE

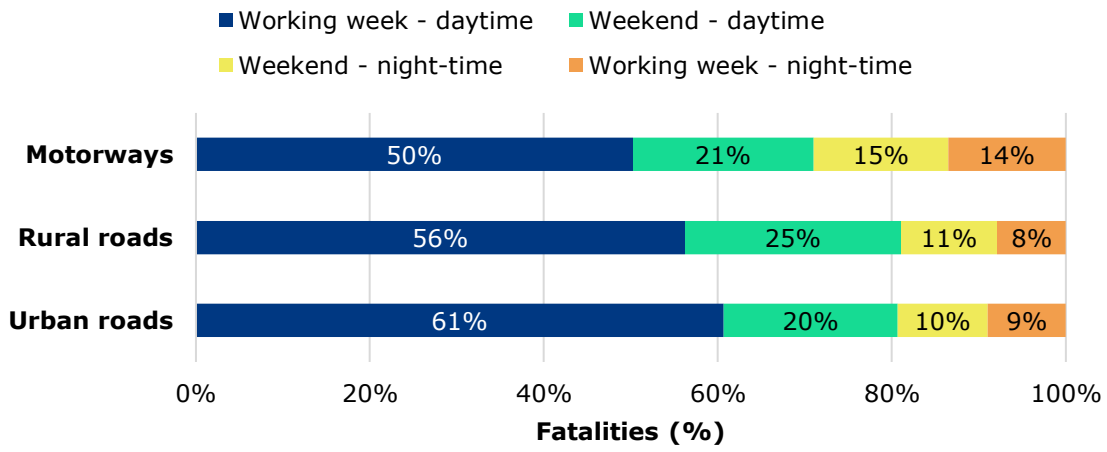


5. Time

5.1 Period of the week

The distribution of fatalities on motorways according to the period of the week differs from the distribution of rural and urban road fatalities over the week. The **share of fatalities on motorways** is proportionally **lower during daytime in the working week** and **higher during night-time, both in the working-week and at the weekend** compared to rural and urban roads**.**

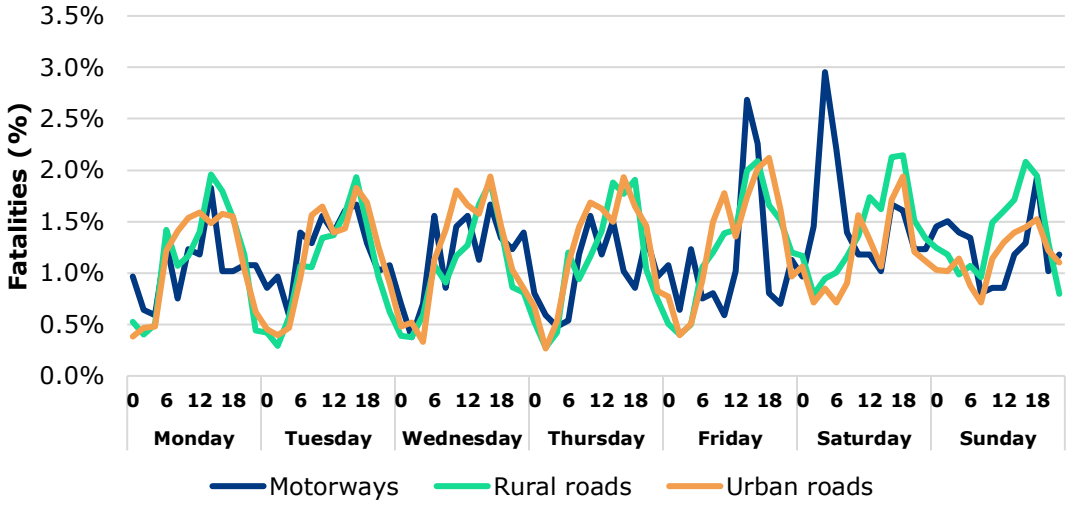
Figure 14. Distribution of fatalities according to period of the week and by road type in the EU27 (2022). Source: CARE



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

The figure below on fatalities on motorways confirms the above findings that **proportionately fewer fatalities occur on motorways at night-time** in comparison to daytime**.** There is a **large peak in fatalities on motorways on Friday afternoons and in the morning hours on Saturdays.**

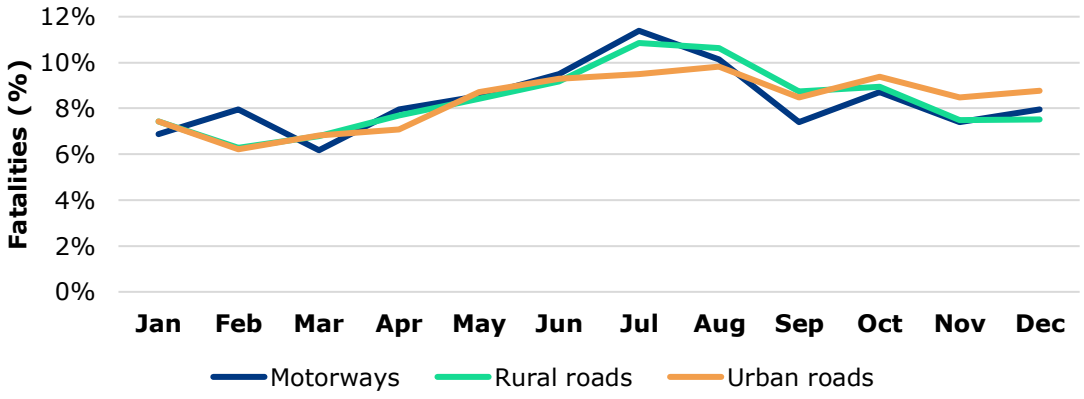
Figure 15. Distribution of fatalities by day of the week and hour and road type in the EU27 (2022). Source: CARE



5.3 Month

The **peak period of fatalities on all road types is during the summer months.** The peak period of fatalities on motorways spans between June to August, with its peak in July.

Figure 16. Monthly distribution of fatalities by road type, in the EU27 (2022). Source: CARE

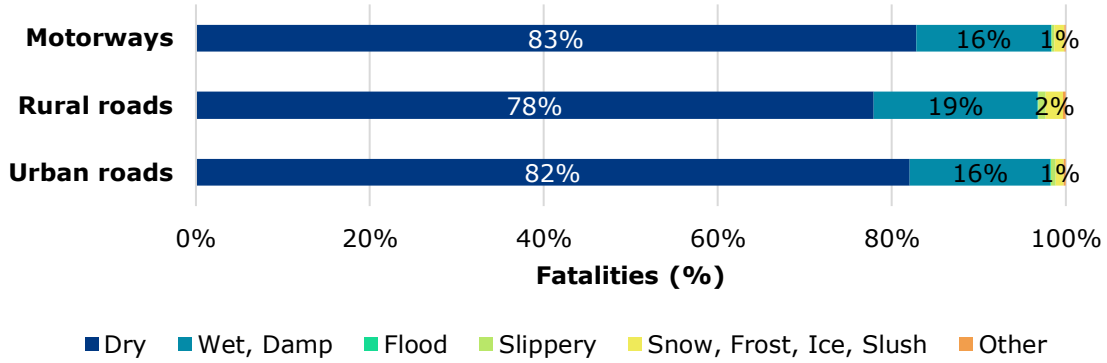


6. Location

6.1 Road Surface

In 2022, 83% of fatalities on motorways occurred in **dry surface conditions** and **16 %** of those fatalities were **in wet or damp conditions**. For only 1% of fatalities the surface conditions were snowy, frosty, icy, or slush.

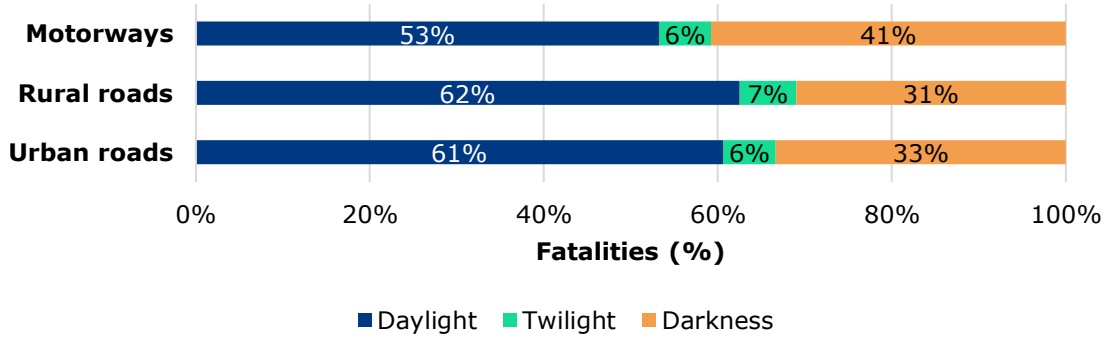
Figure 17. Distribution of fatalities by surface conditions and road type in the EU27 (2022). Source: CARE



6.2 Light conditions

41% of fatalities on motorways in 2022 occurred during darkness, which is higher than on urban roads (33%) and rural roads (31%). While the proportion of fatalities on motorways that occurred during daylight is lower (53%) compared to urban roads (61%) and rural roads (62%).

Figure 18. Distribution of fatalities by light conditions and road type in the EU27 (2022). Source: CARE



7. Notes

7.1 Definitions

The definitions below are taken from the CADAS Glossary and 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.

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.

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

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.

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

7.3 Small cells

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

7.4 Missing data

Some countries did not provide data for all years and/or all variables to the CARE database. When data are missing for specific combinations of years and countries, imputation is used to fill in the empty cells. Imputation results for individual countries are never published in the

Facts and Figures reports, but they are aggregated to generate an imputed number at EU27 level. The following imputation method for individual countries is used:

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

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

7.5 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.

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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