

European Road Safety Observatory

Facts and Figures – Buses / coaches / heavy goods vehicles - 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.

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1 Key Facts





Road type

Rural

Motorway

Urban



In this Facts and Figures report, two types of heavy vehicles are discussed, on the one hand buses/coaches and on the other hand heavy goods vehicles. These are vehicles that transport passengers and freight respectively. Buses/coaches and heavy goods vehicles differ not only with respect to their "cargo" but also with respect to the location where they usually drive, i.e. heavy goods vehicles drive less often in urban areas than buses/coaches. Both types of vehicles, on the other hand, have in common that the **consequences of a collision are often serious for the victim** due to the mass of these vehicles. All differences reported were derived from the available data and not statistically tested.

Of all road fatalities in the EU in 2019, **14% and 2% respectively died in a crash involving an HGV or a bus/coach**. These proportions have remained virtually stable between 2010 and 2019.

The pattern of fatalities in HGV crashes was not the same in all EU Member States. Based on the "mortality" indicator, two Baltic States (i.e. Latvia and Estonia) scored worst in terms of HGV fatalities, along with Hungary, Czechia and Finland (which is generally one of the better performing Member States in terms of the relative number of road fatalities). As far as fatalities in bus/coach crashes were concerned, the problem generally appeared to be more important in Eastern Europe, both in terms of mortality and in terms of the share in the total number of fatalities.

In crashes involving heavy goods vehicles, only 12% of fatalities were the occupants of the HGV themselves. Compared to all road fatalities in the EU, the proportion of vulnerable road users (i.e. the total number of pedestrians, cyclists and powered two-wheelers) was relatively low (22% in HGV crashes versus 47%, in general), but the proportion of occupants of passenger cars and lorries under 3.5 tonnes was relatively high. In bus/coach crashes, 21% of the fatalities were the passengers in the buses/coaches themselves. Pedestrians were also overrepresented among those killed in such crashes.

Among the fatalities in **crashes involving heavy goods vehicles**, we counted **76% men and a high proportion of 25-64 year olds**, which of course partly reflects the nature of the drivers of heavy goods vehicles. Among the fatalities in **bus/coach crashes**, we saw **64% men** (this was lower than the share of men in all road fatalities in the EU, which is 77%) and a relatively large number of **people over 50**.

Compared to all fatalities across the entire EU, HGV fatalities and bus/coach also distinguished themselves in the following ways:

- Fatalities occurred more often during the day and during the working week.
- HGV fatalities occurred more often on motorways, while bus/coach fatalities occurred more often in urban areas.
- HGV vehicles in fatal crashes were more likely to be foreign vehicles than was the case for cars.

Basic definitions

Heavy goods vehicle (HGV):

includes road tractor, road tractor with semi trailer, lorry over 3,5 tonnes. Motor vehicle with at least four wheels, with a permissible gross vehicle weight of over 3,5 tonnes, used only for the transport of goods. With or without a trailer. Type C driving licence required.

Bus/coach:

Bus: passenger-carrying vehicle, most commonly used for public transport, having more than 16 seats for passengers. Coach: passenger-carrying vehicle, having more than 16 seats for passengers. Most commonly used for interurban movements and touristic trips.

Fatalities in buses/coaches and HGVs:

All statistics in this report refer to fatalities in crashes involving HGVs and buses/coaches, and hence not to fatalities in HGVs and buses/coaches. The majority of fatalities in injury accidents involving these modes of transport are not the occupants of these vehicles.

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

The number of fatalities per million inhabitants in HGV crashes is highest in the Baltic States (i.e. Latvia and Estonia), Finland, Czechia, Hungary and Slovenia.

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



Note: countries that are not included in the Figures are Bulgaria, Cyprus, Ireland, Lithuania, Luxembourg, Malta, Poland and Slovakia because these countries have missing values in the time series 2010–2019 or because of small numbers



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The mortality rate in bus/coach crashes is generally higher in the eastern part of the EU.



Figure 2. Fatalities per million inhabitants in bus/coach crashes per country in the EU27 (2017-2019). Source: CARE, EUROSTAT

Note: countries that are not included in the Figures are Croatia, Cyprus, Estonia, Ireland, Lithuania, Luxembourg, Malta, Slovakia and Slovenia because these countries have missing values in the time series 2010–2019 or because of small numbers



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2.2 Number of fatalities in HGV crashes and bus/coach crashes as a proportion of total fatalities

Mortality in bus/coach crashes and in HGV crashes is an important indicator, but does not take into account differences in the general state of road safety in different countries. In other words, it is possible that mortality for the types of vehicles investigated is so high because the total mortality for all vehicle types is high. Therefore, it is important to also look at the proportion or share of fatalities in bus/coach crashes and HGV crashes within the total number of road fatalities.

The Figure below regarding HGV crashes shows that the share in total fatalities and the mortality rate lead to similar conclusions. As with the mortality rate, the share of fatalities in HGV crashes is the highest in the east and north of the EU. The Baltic States, and Slovenia are still among the worst-

performing countries. Finland, which ranks among the best performing countries in road safety, has a particularly high share of fatalities involving HGVs.





Note: countries that are not included in the Figures are Bulgaria, Cyprus, Ireland, Lithuania, Luxembourg, Malta, Poland and Slovakia because these countries have missing values in the time series 2010–2019 or because of small numbers



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The following Figure regarding buses/coaches also shows that the share in total fatalities and the mortality rate are consistent. So, not only is the number of fatalities per million inhabitants higher in bus/coach crashes in **the eastern part of the EU**, but also the proportion of these fatalities within the total number of road fatalities.



Figure 4. Share of fatalities in bus/coach crashes in the total number of fatalities, per country in the EU27 (2017-2019). Source: CARE

Note: countries that are not included in the Figures are Croatia, Cyprus, Estonia, Ireland, Lithuania, Luxembourg, Malta, Slovakia and Slovenia because these countries have missing values in the time series 2010–2019 or because of small numbers



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Another exposure measure for fatalities is the number of vehicles¹. For this measure, more or less complete data are available from Eurostat for all countries. The ratio between the number of fatalities in bus/coach crashes and the number of registered buses/coaches/trolleys per country gives similar results as the mortality indicator and the proportion indicator, namely that countries in eastern Europe perform worst. Bulgaria, Croatia, and Romania have the highest number of fatalities per registered vehicle.

¹An alternative exposure measure for fatalities is the number of kilometres travelled, but unfortunately most EU countries do not have complete data on this.

In relation to fatalities in HGV crashes, it makes less sense to relate them to the number of registered heavy goods vehicles per country, because in many countries more than a third of the kilometres travelled by heavy goods vehicles are by vehicles registered in foreign countries.

2.3 Trend in the number of fatalities

During the last decade, there has been an **important improvement in the number of fatalities in passenger and freight accidents**. Between reference years 2010 and 2019, the number of fatalities in crashes involving heavy goods vehicles ("HGV crashes") and the number of fatalities in crashes involving buses/coaches have decreased by 27% and 34% respectively.

Because the total number of road fatalities has decreased by a similar degree (- 23%), the proportion of fatalities in these types of crashes has remained quasi constant since 2010. This **proportion in 2019 is 14% for heavy goods vehicles and 2% for buses/coaches**. In other words, crashes involving heavy goods vehicles cause five to six times as many deaths as crashes involving buses/coaches ("bus/coach crashes").

As numbers on fatalities in coach crashes are available for only 5 EU countries and the numbers are small, no analysis is carried out for buses and coaches separately.







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

Not all EU countries have experienced a substantial decline since 2010. Regarding fatalities in HGV crashes, an increase is observed in the Netherlands, Denmark, Italy and Sweden. The number of fatalities has barely decreased at all in Spain and Portugal, and has increased in Bulgaria, regarding bus/coach crashes.

These are not the only countries with performances below the EU27 average with respect to HGV fatalities. But since countries with a small population have fewer deaths and show larger annual percentual shifts, the text of this report focuses on countries with a significant number of deaths in the relevant category.





Notes:

- Countries that are not included in the Figure are Bulgaria, Croatia, Cyprus, Ireland, Lithuania, Malta, and Poland because these countries have missing values in the time series 2010–2019

- Countries that are not included in the Figure are Croatia, Estonia, Luxembourg, and Slovenia because of small numbers



Notes:

- Countries that are not included in the Figure for buses/coaches are Croatia, Ireland, Lithuania, Malta and Slovakia because these countries have missing values in the time series 2010–2019

- Countries that are not included in the Figure are Austria, Cyprus, Denmark, Estonia, Finland, Latvia, Luxembourg, Netherlands, Slovenia, and Sweden because of small numbers

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

	2010	2017	2018	2019	Trend 2017 - 2019 vs 2010 - 2012	Miniplot: trend since 2010
Austria	97	52	56	51	-35%	5
Belgium	117	107	111	110	-7%	\sim
Croatia	44	-	25	35		
Cyprus	1	1	2	3		
Czechia	175	127	125	122	-21%	\sim
Denmark	36	36	33	33	4%	~~~
Estonia	3	12	20	20		
EU27	4186	3411	3268	3040	-20%	\sim
Finland	92	74	66	67	-25%	
France	552	418	444	390	-22%	
Germany	534	626	602	528	-8%	\sim
Greece	127	51	72	48	-38%	
Hungary	144	100	117	111	-10%	\sim
Iceland	1	2	3	0		
Ireland	13	-	-	-		
Italy	358	377	348	351	10%	\sim
Latvia	41	28	40	25	-5%	
Lithuania	-	35	25	31		
Luxembourg	9	4	2	2		
Malta	1	2	0	-		
Netherlands	80	70	87	74	1%	
Norway	71	29	26	31	-47%	
Poland	947	-	497	524		
Portugal	95	74	75	58	-26%	
Romania	191	86	73	89	-53%	
Slovakia	106	55	38	40		
Slovenia	7	21	31	13		
Spain	333	321	283	236	-4%	
Sweden	41	34	68	51	20%	~~~
Switzerland	29	30	22	24	-22%	
Note:						

Note:

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

Austria Belgium Bulgaria	17 13 28	11 11	8	6		
	_	11		•		
Bulgaria	20	11	15	13	-19%	\sim
	20	34	44	28	31%	
Croatia	6	-	12	6		
Cyprus	0	3	1	0		
Czechia	20	19	24	10	-21%	\sim
Denmark	13	9	3	4		
Estonia	21	0	2	3		
EU27	788	576	585	521	-23%	
Finland	9	10	8	1		
France	60	52	43	58	-10%	\sim
Germany	91	65	56	44	-25%	\sim
Greece	31	13	10	16	-53%	
Hungary	41	43	30	23	-18%	\sim
Iceland	0	2	1	0		
Ireland	7	-	-	-		
Italy	79	60	58	46	-30%	\sim
Latvia	15	2	6	4		
Lithuania	-	8	5	8		
Luxembourg	1	0	7	0		
Malta	1	1	3	-		
Netherlands	11	5	13	5		
Norway	10	6	4	6	-48%	
Poland	119	75	81	67	-31%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Portugal	21	8	10	38	-5%	
Romania	89	65	72	68	-14%	
Slovakia	18	16	10	21		
Slovenia	3	1	3	5		
Spain	51	44	56	34	-4%	
Sweden	16	10	5	10		
Switzerland	7	5	9	5	-67%	

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

Note:

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

2.4 Trend in the number of serious injuries

The proportion of serious injuries in HGV crashes has deceased slightly in the time period 2010-2019, while this proportion has remained stable for bus/coach crashes. The proportion of serious inhuries in 2019 is 2% for both HGV crashes and bus/coach crashes.



Figure 8. Share of serious injuries in crashes involving a heavy goods vehicle and crashes involving a bus/coach in the total number of serious injuries in the EU27 (2010-2019). Source: CARE

- Countries that are not included in the Figure are France, the Netherlands, Ireland, Italy and Estonia due to problems of co 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 with other transport modes

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

The decrease in fatalities in bus/coach crashes and HGV crashes between 2010 and 2019 amounts to 27% and 34% respectively. For all modes of transport together, the decrease is 23%.





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

The analogous Figure for serious injuries is given below. This Figure shows the total number of serious injuries in road crashes involving particular modes of transport over the period 2010-2019.

The same rule applies: both serious injuries by transport mode, and the other parties seriously injured in the crash are counted (e.g. in car crashes, both the car occupants and the other parties seriously injured are counted).

Serious injuries in crashes involving a HGV show the greatest reduction in serious injuries. The decrease in serious injuries in HGV crashes between 2010 and 2019 amounts to 42%. A better evolution was recorded only for mopeds. The decrease in serious injuries in bus/coach crashes in the same time period amounts to 18%.





- Imputation was used for missing values for specific combinations of years and countries. Countries that show an unreliab 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 comissing 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 are male. More or less the **same proportion of men (76%) is observed in the fatalities in crashes involving heavy goods vehicles. In bus and coach crashes, the percentage of men is slightly lower at 64%**, which can be explained on the one hand by the more even distribution of men and women among the occupants of buses and coaches than among HGV occupants, who are mainly men. On the other hand, buses/coaches mainly collide with people outside their vehicles in urban areas; these are areas with a similar percentage of men and women on the streets.

Figure 11. Distribution of fatalities by gender in HGV crashes, bus/coach crashes and all crashes in the EU27 (2019). Source: CARE



3.2 Age

The distribution of the number of fatalities in bus/coach crashes and HGV crashes across different age categories does not differ strongly from the age distribution of road fatalities generally. We observe a **relatively high number of middle-aged fatalities in HGV crashes**. 60% are between 25 and 64 years old, compared to 54% of all fatalities. This can be explained, at least in part, by the fact that many HGV drivers belong to this age category.

Compared to the general age distribution of fatalities, the proportion of people over 65 among fatalities in HGV crashes is slightly lower. This is related to the fact that heavy goods vehicles cause many fatalities in collisions with other vehicles on motorways, and the fact that senior citizens are underrepresented on motorways because they are not part of the working population.

In **bus/coach crashes** the share of fatalities among 25-49 year olds (young workforce) is slightly lower than among all fatalities. The share of **persons over 50 on the other hand is higher in bus/coach crashes than among all fatalities**.



Figure 12. Distribution of fatalities by age category in HGV crashes, bus/coach crashes and all crashes in the EU27 (2019). Source: CARE

3.3 Other transport modes involved

The following Figure shows the distribution of transport modes in bus/coach crashes, HGV crashes and car crashes.

A minority of fatalities in crashes involving HGVs and buses/coaches crashes occur among the occupants of these vehicles. In crashes involving heavy goods vehicles, only 12% of fatalities are the occupants of the heavy goods vehicles themselves. In bus/coach crashes, 21% of fatalities are the occupants of the bus/coach itself. This is different from fatal car crashes where 60% of the fatalities are among the occupants of these vehicles themselves.

Among those killed in bus/coach crashes, there is a high proportion of vulnerable road users (37% compared to 22% in fatal HGV crashes). Especially the proportion of pedestrians is very high (29%) which is related to the urban environment in which many buses operate. In fatal HGV crashes, compared to other fatal crashes, a high proportion of fatalities occur among lorry occupants (7%).



Figure 13. Distribution of fatalities by transport mode in HGV crashes, bus/coach crashes, and car crashes in the EU27 (2019). Source: CARE

4 Time

4.1 Working week versus weekend

The proportion of road fatalities that occur during the working week is 65% in 2019. The proportion of fatalities during the working week is higher for HGV crashes and for bus/coach crashes than for all road fatalities in general. 86% of all fatalities in HGV crashes and 81% of fatalities in bus/coach crashes in 2019 occurred during the working week.

Figure 14. Distribution of fatalities by period of the week in HGV crashes, bus/coach crashes and all crashes in the EU27 (2019). Source: CARE



4.2 Day of the week and hour

The distribution of fatalities over the hours of a week is quite different for fatalities in HGV crashes than for all road fatalities combined. **Compared to all road fatalities combined, HGV fatalities occur more often during working days between 7AM and 6PM**. By contrast, they are less frequent at night and in the weekends.



Figure 15. Distribution of fatalities by day of the week and hour in HGV crashes in the EU27 (2011-2019). Source: CARE

The Figure below shows the distribution of the number of fatalities in bus/coach crashes over the hours of the week. The strong shifts in the Figure are due to the fact that the Figure uses a very fine-grained classification (because there are 168 hours in a week) for a limited number of fatalities (i.e. less than 600 bus/coach fatalities in 2019).

During the working week we see a morning peak and an evening peak in bus/coach fatalities. These two peaks are more pronounced than for HGV fatalities and for all fatalities combined. Compared to heavy goods vehicles, buses are more likely to drive in urban areas where they both transport commuters and can also collide with commuters. As with HGV crashes, we see relatively fewer fatalities at night and in the weekends. The peak in the number of fatalities on Saturday at 5PM is due to a major coach crash in Bulgaria on the 25th of August 2018.



Figure 16. Distribution of fatalities by day of the week and hour in bus/coach crashes in the EU27 (2011-2019). Source: CARE

5 Location

5.1 Road type

Rural roads account for 54% of all fatalities in HGV crashes, motorways for 23% and urban roads also for 23%. There is an almost equal proportion of fatalities in bus/coach crashes on **urban and rural roads (resp. 49% and 42% in 2018)**. The share on motorways is relatively small, at 9% in 2018.

Figure 17. Distribution of fatalities by road type in HGV crashes, bus/coach crashes and all crashes in the EU27 (2012-2019). Source: CARE



5.2 Junction type

The vast majority of road fatalities occur on road stretches and not at junctions or roundabouts. The relative share of all fatalities on road stretches averages 78% in 2019, with 72% in the case of fatalities in bus/coach crashes and 76% for fatalities in HGV crashes.



Figure 18. Distribution of fatalities by junction type in HGV crashes, in bus/coach crashes and in all crashes in the EU27 (2010-2019). Source: CARE

6 Vehicle registration country

The information in the CARE database regarding the country in which vehicles in crashes are registered indicates high numbers of vehicles where the country of registration is unknown (at least 40% for each road user type below). But based on the information available, it can be deduced that HGV vehicles in fatal crashes are more likely to be foreign vehicles than is the case for cars.

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Figure 19. Distribution of heavy goods vehicles and cars according to vehicle registration country in fatal crashes in the EU27 (2015-2019). Source: CARE



Notes:

For fatal HGV crashes, the unknown category is more than 50% for the following countries:
Cyprus, Estonia, Finland, Ireland, Italy, Poland, Portugal, and Spain
For fatal car crashes, the unknown category is more than 50% for the following countries:
Cyprus, Finland, Ireland, Italy, Poland, Portugal, and Spain

7 Notes

7.1 **Definitions**

The definitions below are taken from the CADAS Glossary and the UNECE Glossary.

CADAS Glossary: https://ec.europa.eu/transport/road_safety/system/files/2021-07/cadas_glossar y_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

Definition: total of fatalities, seriously injured and slightly injured and injured.

Heavy goods vehicle

Definition: includes road tractor, road tractor with semi trailer, lorry over 3,5 tonnes. Motor vehicle with at least four wheels, with a permissible gross vehicle weight of over 3,5 tonnes, used only for the transport of goods. With or without a trailer. Type C driving licence required.

Bus or coach

Definition bus: passenger-carrying vehicle, most commonly used for public transport, having more than 16 seats for passengers. Definition coach: passenger-carrying vehicle, having more than 16 seats for passengers. Most commonly used for interurban movements and touristic trips.

Working week – daytime

Monday to Friday 6.00 a.m. to 9.59 p.m.

Working week - night

Monday 10 p.m. to Tuesday 5.59 a.m. Tuesday 10 p.m. to Wednesday 5.59 a.m. Wednesday 10 p.m. to Thursday 5.59 a.m. Thursday 10 p.m. to Friday 5.59 a.m.

Weekend - daytime

Saturday to Sunday 6.00 a.m. to 9.59 p.m.

Weekend - night

Friday 10 p.m. to Saturday 5.59 a.m. Saturday 10 p.m. to Sunday 5.59 a.m. Sunday 10 p.m. to Monday 5.59 a.m.

7.2 Data source

The main data source for this report is CARE (Community database on Accidents on the Roads in Europe). The database contains data obtained from national data sources, not only EU members but also from the UK and the 4 EFTA countries (Switzerland, Norway, Iceland, and Liechtenstein). The data in the report were extracted on 12 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.

