



Traffic Safety Basic Facts 2018



Seasonality



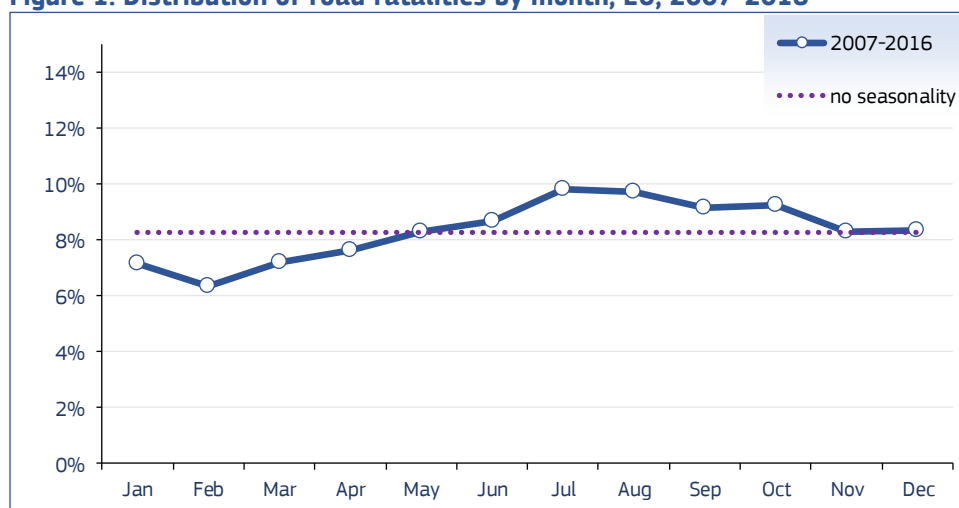
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General

This Basic Fact Sheet examines the extent to which the number of people killed in road accidents varies by month across the EU. Most Basic Fact Sheets focus on particular groups of accidents or casualties; this one examines general patterns in the CARE data so its approach is slightly different. Most analyses are of grouped data from 2012-2016, to minimise the effects of chance.

Figure 1 shows that the distribution of fatalities by month has varied very little over the period covered by the CARE data, with the fewest fatalities recorded in February and the most in July/ August. It is noted that if there was no seasonality then 8,3% of fatalities would occur each month, as shown by the line “no seasonality”, so there were relatively few fatalities per month from January to April and relatively many from June to October.

Figure 1: Distribution of road fatalities by month, EU, 2007-2016



Source: CARE database, data available in May 2018

Although the annual number of people who died in road accidents in Europe has fallen over many years, the distribution of the annual number by month has scarcely changed.

The remaining analyses are of grouped data from 2012-2016. It should be noted that the latest available data are used, meaning 2010 data for SK, 2014 data for IE and 2015 data for BG, EE and LT.

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Table 1: Average number of fatalities per year by country, 2012-2016

EU			
BE	718	LT	267
BG	643	LU	36
CZ	686	HU	615
DK	186	MT	14
DE	3.396	NL	516
EE	78	AT	465
IE	181	PL	3.219
EL	856	PT	630
ES	1.754	RO	1.905
FR	3.447	SI	123
HR	345	SK	297
IT	3.449	FI	253
CY	49	SE	269
LV	183	UK	1.818
IS	12	NO	146
LI	2	CH	264

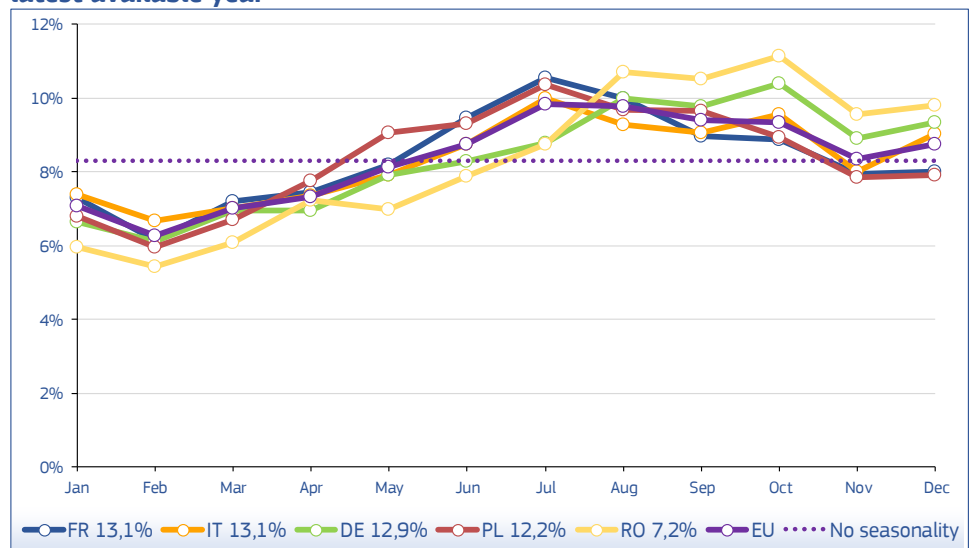
Source: CARE database or national publications, data available in May 2018

The distribution of fatalities by month varies considerably from country to country.

In order to explore seasonality by country, Figure 2 compares the distribution of road fatalities per month in the EU, in 2012-2016 with the distributions in the five Member States with the greatest fatality totals in this five-year period.

There are clear differences, with the distribution in France being very similar to the EU distribution, whereas the August and October peaks in Romania and Germany are especially pronounced. The overall proportion of EU fatalities in each of the five member states is also shown in the legend; together they accounted for about 60% of fatalities in these five years.

Figure 2: Distribution of road fatalities by country and month, 2012-2016 or latest available year

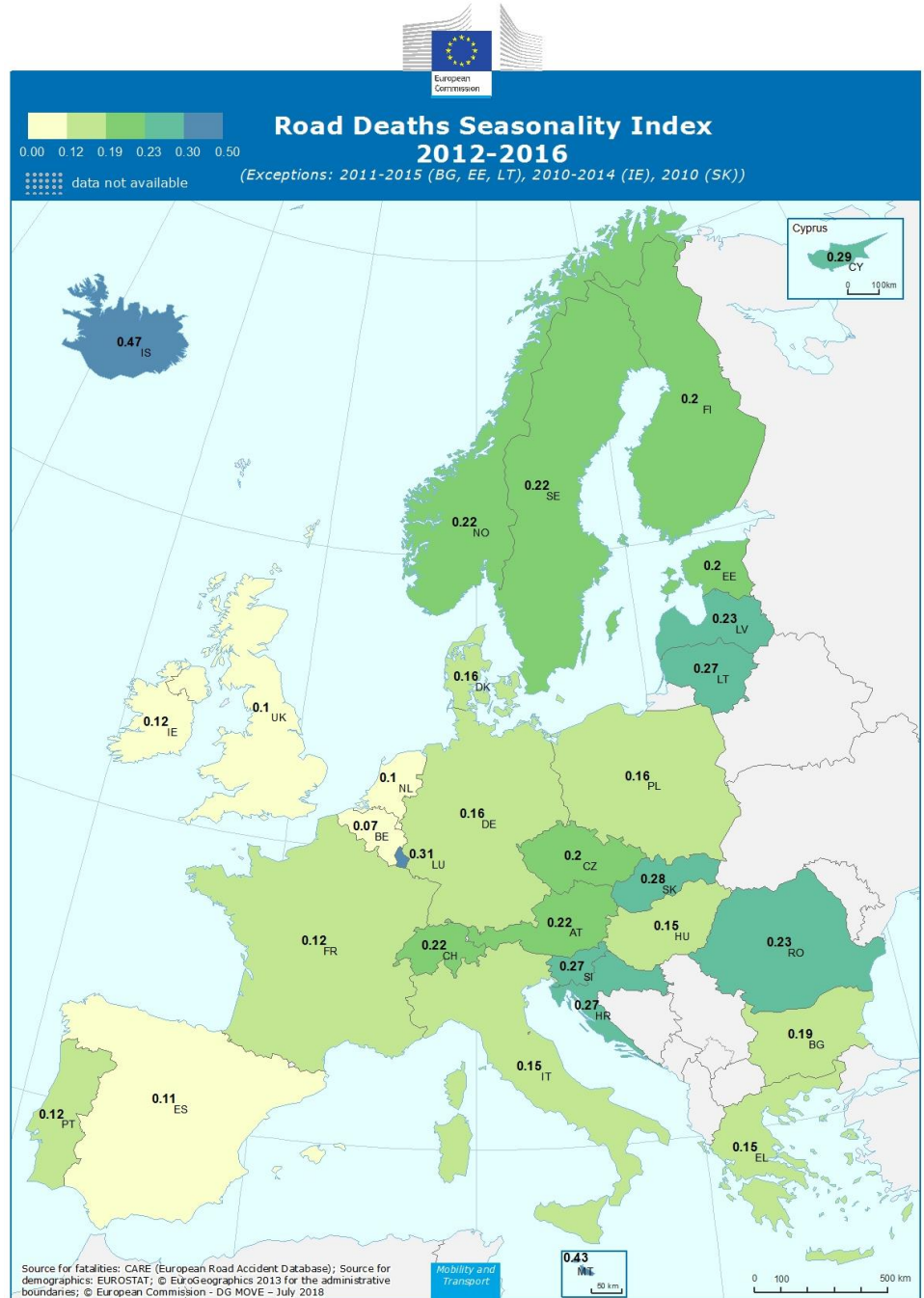


Source: CARE database, data available in May 2018

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A simple index of seasonality for each country is obtained by dividing the standard deviation of the twelve monthly fatality averages by their mean. Map 1 presents the national indices for each country. It shows that seasonality is below average in several Western EU countries, and above average in several Central and Northern EU countries.

Map 1: Road fatalities seasonality index by country, 2012-2016



The distribution of fatalities by month tends to vary most in Northern Europe and least in Western Europe.

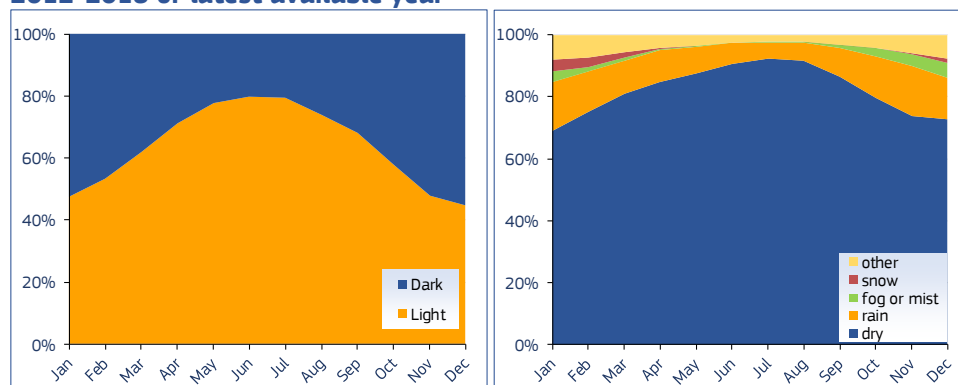
The seasonality of fatality distributions is likely to be the result of many factors. The principal factor is probably the changing pattern of travel during the year with, for example, many more trips being made for leisure and recreation during summer than winter.

Accident risk also varies seasonally with changing weather conditions and hours of daylight. The relative harshness of winters in Northern and Central Europe is likely to contribute to the greater seasonality shown in Map 1 for several countries in these areas.

Weather and hours of daylight

Variations through the year in weather and the hours of daylight are likely to contribute to seasonality, and these also vary across Europe. In the EU Member States, over the whole year, 64% of fatalities occurred in daylight (including twilight), but the percentage was below 50% between November and January. The great majority of road fatalities (84%) occurred in dry conditions, and this was still below 75% between November and January.

Figure 3: Distribution of fatalities by month, lighting and weather condition, EU, 2012-2016 or latest available year



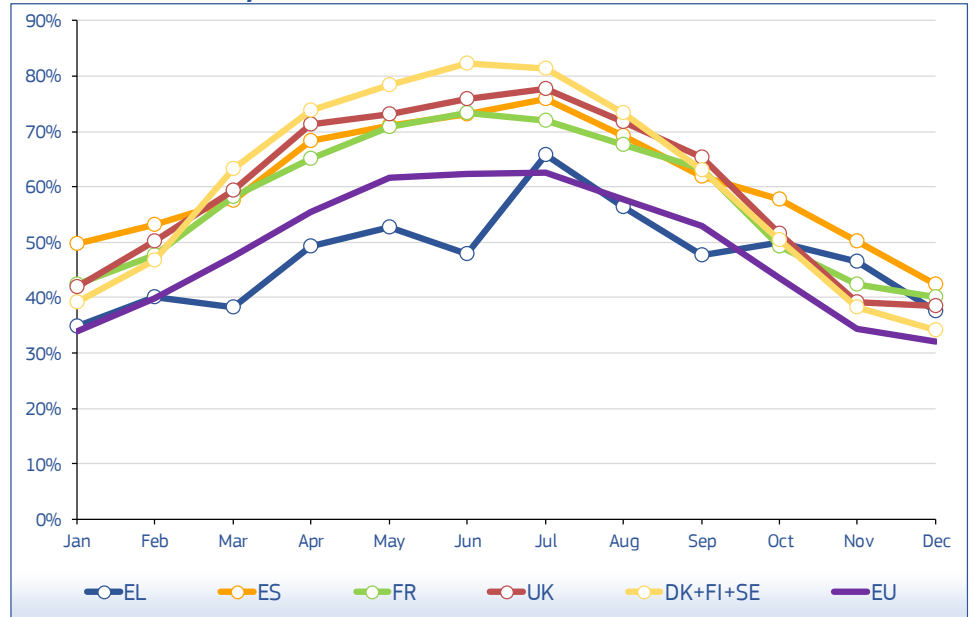
Source: CARE database, data available in May 2018

The proportion of fatalities occurring in daylight varies seasonally, which probably affects the seasonality of the fatality distribution.

The geographic variation of the proportion of fatalities occurring in daylight is examined in Figure 4, choosing countries from across Europe and combining the three EU Nordic countries (DK, FI and SE). The variation is least in the three EU Nordic countries and greatest in Greece, but differences cannot be explained simply based on day length. This depends on latitude but, for example, there are slightly more fatalities in daylight in the UK than in the EU Nordic countries during winter, despite the UK's greater day length in winter that results from its more southern location.

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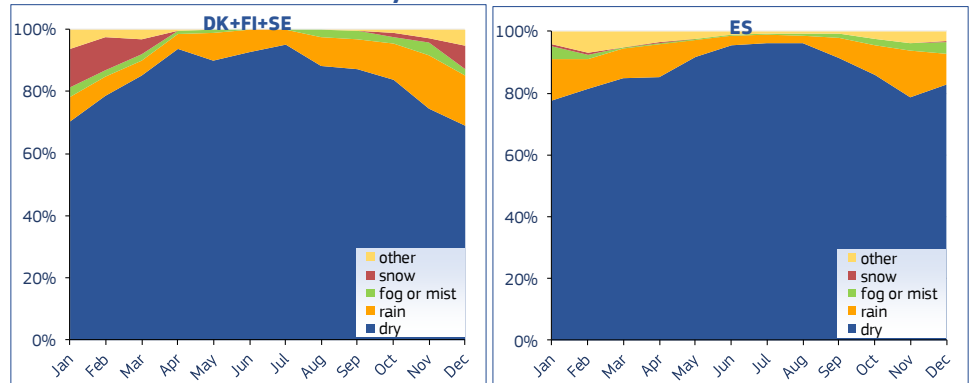
Figure 4: Distribution of fatalities in daylight by country and month, 2012-2016 or latest available year



Source: CARE database, data available in May 2018

More detailed analysis of geographic variation in the CARE data requires a different form of presentation. This is illustrated in the case of weather condition by Figure 5, which compares the distributions in Spain and the three EU Nordic countries. Spain is selected to represent the South of Europe, the EU Nordic countries to represent the North (a different selection might yield results that differ slightly in detail). The proportion of fatalities in dry conditions is only slightly greater in Spain (87% compared with 84%), but the proportion in snow is predictably much lower.

Figure 5: Distribution of fatalities by country, month and weather condition, 2012-2016 or latest available year



Source: CARE database, data available in May 2018

Mode of Transport

An important way of grouping casualties is by mode of transport. Figure 6 shows that the seasonality for several groups differs clearly from the overall pattern. Relatively more motorcyclists are killed in summer, and relatively fewer in winter, while deviations from the overall pattern are similar but to a lower degree for moped riders and pedal cyclists.

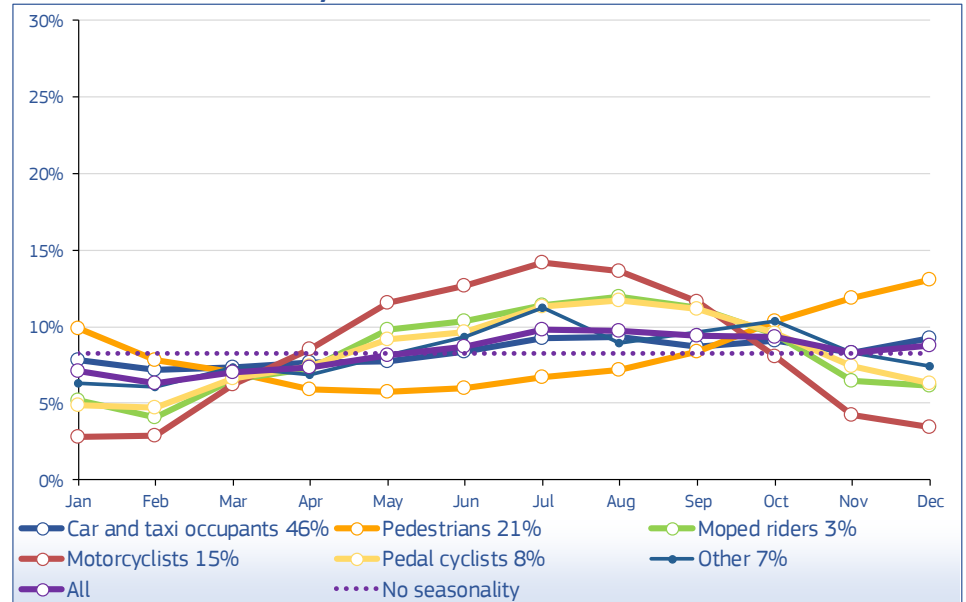
The distribution of weather conditions at the time of fatal accidents varies considerably between countries.

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Motorcycling is the mode of transport with the most seasonal fatality distribution.

These variations are probably the result of the preference of riders of two-wheeled vehicles to travel when the weather is better. The reason for the increase in pedestrian fatalities from 6% of the annual total in April to 13% in December is probably more complex. In Figure 6, the group 'others' consists mainly of occupants of goods vehicles, buses and coaches.

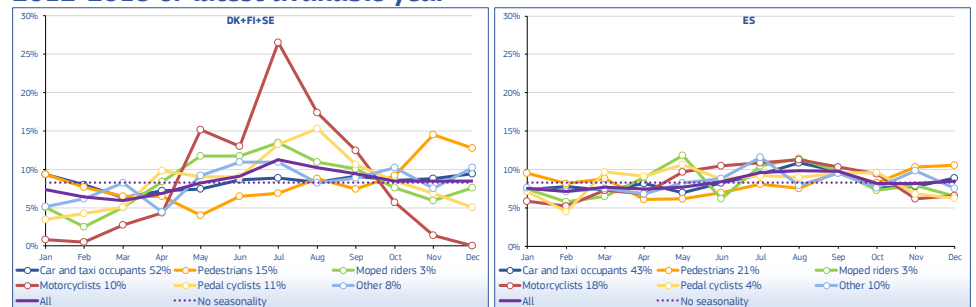
Figure 6: Distribution of fatalities by month and mode of transport, EU, 2012-2016 or latest available year



Source: CARE database, data available in May 2018

The geographic range of the seasonality of fatalities by mode of transport is illustrated in Figure 7, which compares the distributions in Spain and the three EU Nordic countries. In Spain, fatality proportions show limited variation by month, except for pedal cycling. By contrast, the proportions in the EU Nordic countries vary considerably by month, especially for pedestrians and motorcyclists.

Figure 7: Distribution of fatalities by country, month and mode of transport, 2012-2016 or latest available year



Source: CARE database, data available in May 2018

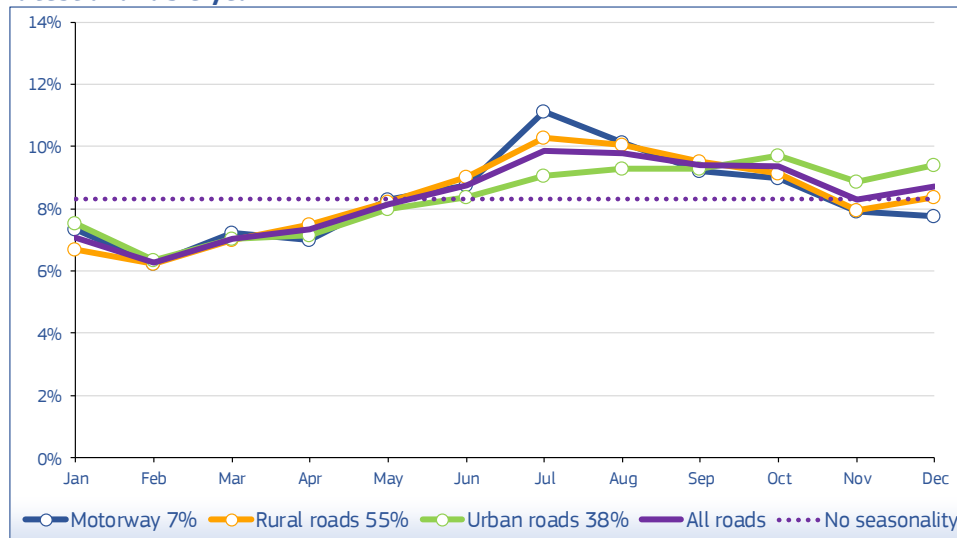
The seasonal variation of motorcycling fatalities is more pronounced in the three EU Nordic countries than in Spain.

There is less seasonal variation on urban roads than on rural roads and motorways.

Type of the road

Figure 8 compares seasonality on the three types of road that can be distinguished in the CARE data: motorways, rural roads (excluding rural motorways) and urban roads (excluding urban motorways). There are minor differences; seasonality is lower on urban roads than on rural roads and motorways.

Figure 8: Distribution of fatalities by month and road type, EU, 2012-2016 or latest available year

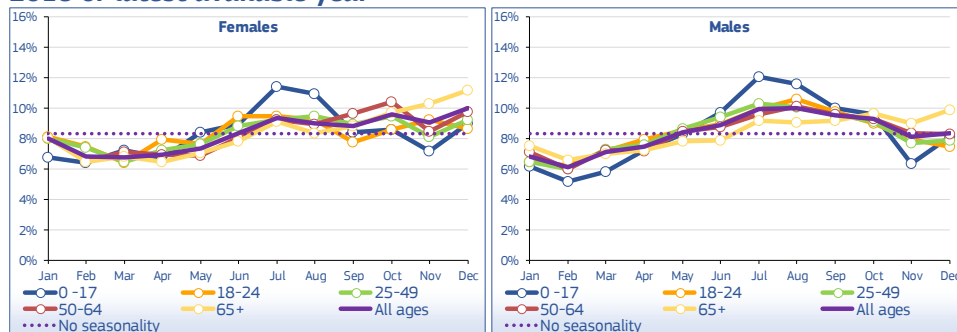


Source: CARE database, data available in May 2018

Age group and gender

In Figure 9 seasonality of female and male fatalities by age range are compared. Minimum values for male fatalities are recorded in February and for female fatalities in March; male fatalities peak in August, whilst female fatalities peak in December. There are also clear differences by age range. There is a pronounced peak for 0-17 year old fatalities in July and August, whereas the number of 65+ year old fatalities rises fairly steadily from February to December and from February to October for women and men respectively.

Figure 9: Distribution of fatalities by month, age group and gender, EU, 2012-2016 or latest available year



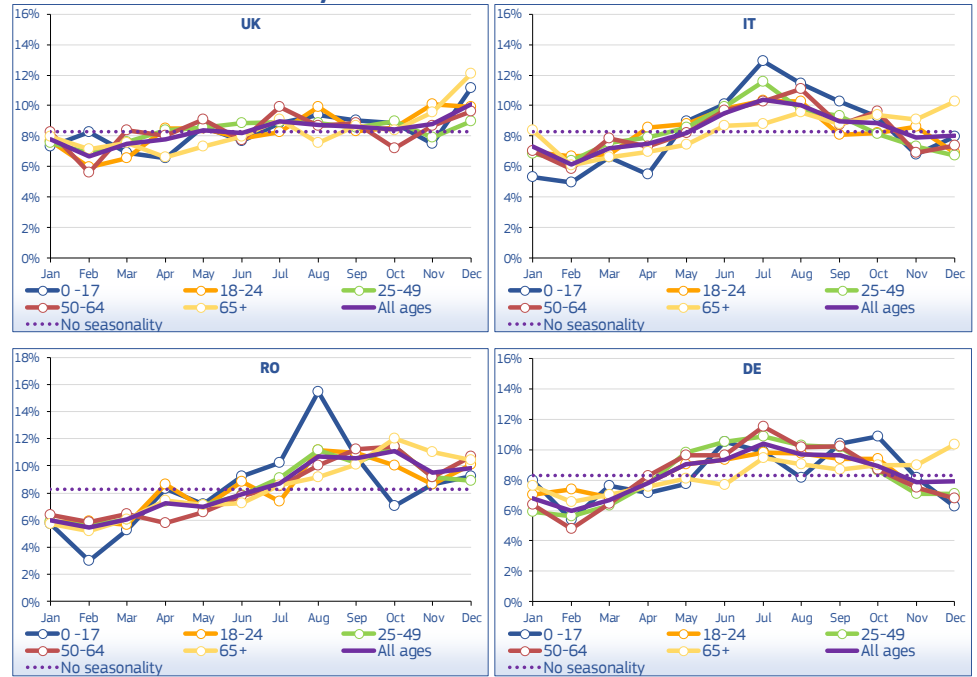
Source: CARE database, data available in May 2018

The seasonal variation of fatalities depends upon gender as well as age.

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In Figure 10 the range of patterns of seasonality by age around Europe (male and female fatalities combined) is illustrated. There are limited variations about the overall distribution in the UK, but clear differences in Italy and Romania. There are relatively few fatalities aged 65+ during spring and summer in each of the four countries, and a peak in autumn/winter.

Figure 10: Distribution of fatalities by country, month and age group, 2012-2016 or latest available year



Source: CARE database, data available in May 2018

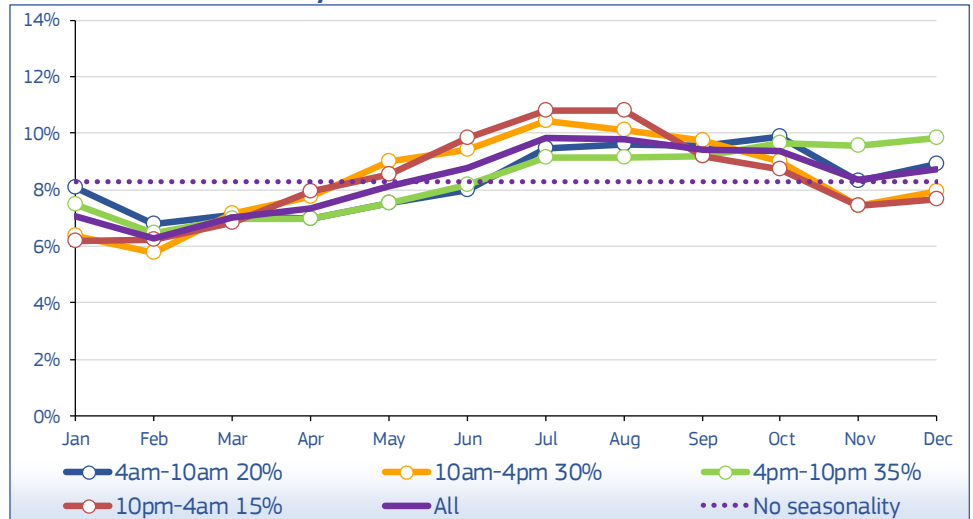
The clear differences in the seasonal variation of fatalities by age and gender shown in Figure 10 are likely to be affected by the different travel patterns of the national populations.

The seasonal variation of fatalities by age and gender differs widely across Europe.

Day of the week and time of the day

In Figure 11 the fatality proportions in four periods of the day are compared. For example, Figure 11 shows the proportions of fatalities that occurred over the five years, between 10pm and 4am in January, February etc. Seasonality is greatest in this period, and least for the 4am-10am period. There is a clear peak in August for the 10pm-4am period, while there is a steady increase from February to August for the 4pm-10pm period.

Figure 11: Distribution of fatalities by month and time of the day, EU, 2012-2016 or latest available year

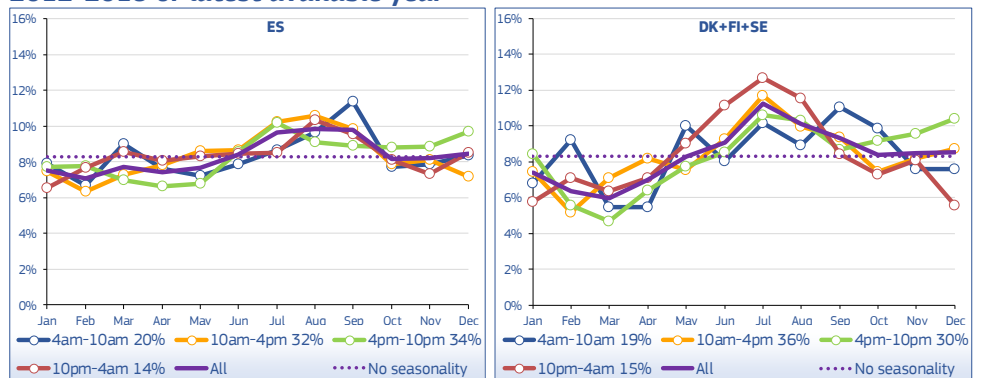


Source: CARE database, data available in May 2018

The seasonal variation is greatest for fatalities occurring in the 10pm-4am period and least for the 4am-10am period.

The geographic range of the seasonality of fatalities by time of the day is illustrated in Figure 12, which compares the distributions in Spain and the three EU Nordic countries. The fatality proportions in Spain show limited variation by month. The EU Nordic proportions vary considerably by month, however, especially during the night (10pm-4am).

Figure 12: Distribution of fatalities by country, month and time of the day, 2012-2016 or latest available year

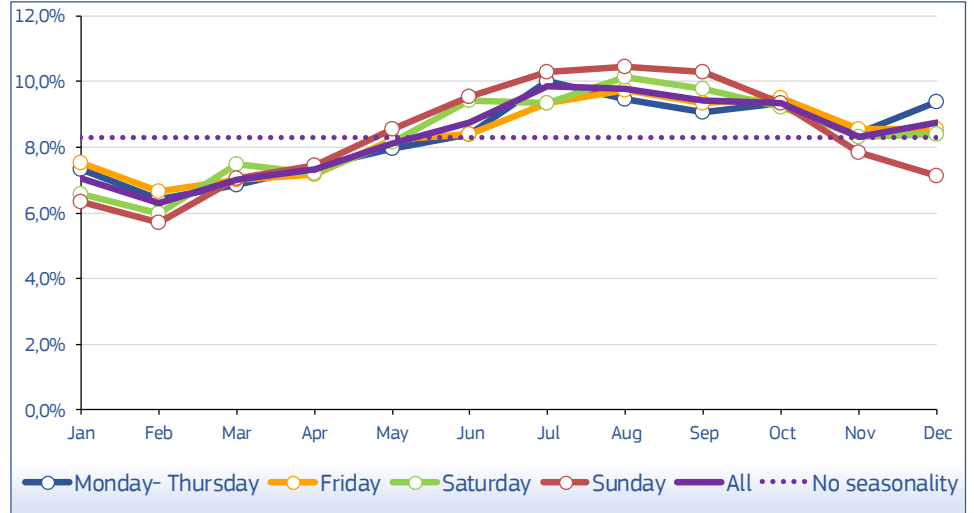


Source: CARE database, data available in May 2018

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Seasonality on each day of the week is similar to overall seasonality. The main difference concerns Sunday: there are relatively many fatalities on Sundays between June and September, and relatively few between November and February.

Figure 13: Distribution of fatalities by month and day of the week, EU, 2012-2016 or latest available year



Source: CARE database, data available in May 2018

The seasonal variation of fatalities is greater on Sundays than on other days of the week.

Notes

1. Country abbreviations

	Belgium	BE		Italy	IT		Romania	RO
	Bulgaria	BG		Cyprus	CY		Slovenia	SI
	Czech Republic	CZ		Latvia	LV		Slovakia	SK
	Denmark	DK		Lithuania	LT		Finland	FI
	Germany	DE		Luxembourg	LU		Sweden	SE
	Estonia	EE		Hungary	HU		United Kingdom	UK
	Ireland	IE		Malta	MT			
	Greece	EL		Netherlands	NL		Iceland	IS
	Spain	ES		Austria	AT		Liechtenstein	LI
	France	FR		Poland	PL		Norway	NO
	Croatia	HR		Portugal	PT		Switzerland	CH

2. Sources: CARE (Community database on road accidents)

The full glossary of definitions of variables used in this Report is available at:
http://ec.europa.eu/transport/road_safety/pdf/statistics/cadas_glossary.pdf

3. Data available in May 2018.

4. Data refer to 2016 and when not available the latest available data are used (2010 data for SK, 2014 data for IE and 2015 data for BG, EE and LT). Totals and related average percentages for EU also include latest available data.

5. At the commenting of the tables and figures, countries with small figures are omitted.

6. This 2018 edition of Traffic Safety Basic Facts updates the previous versions produced within the EU co-funded research projects SafetyNet and DaCoTA.

7. Disclaimer

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8. Please refer to this Report as follows:

European Commission, Traffic Safety Basic Facts on Seasonality, European Commission, Directorate General for Transport, June 2018.



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