



Medizinische Hochschule  
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# 7<sup>th</sup> International Conference **ESAR** “Expert Symposium on Accident Research”

## An overview of car occupant fatalities in the European countries

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Verkehrssicherheit



# Introduction

- Car occupants have a **high level of mortality** in road accidents, since passenger cars are the prevalent mode of transport.
- ‘**Cars**’ refer to both private vehicles and vehicles used for commercial purposes (i.e. taxis).
- ‘**Car occupants**’ refer to both the driver and any passengers.
- In 2013, **11.838 car occupants were killed** in road accidents in the EU.
- Car occupant fatalities constitute **45% of all road fatalities** in the EU in 2013.
- From 2004 to 2013, there was **a reduction of 51% in car occupant fatalities** in the EU countries.



# Objectives

- **Macroscopic analysis** of basic road safety parameters related to car occupants, using data from the EU CARE database with disaggregate data on road accidents.
- EU IDB data for the period 2005 – 2008 are used to **identify injury patterns and improve the assessment** of injury severity.
- **Additional insight** into accident causation recorded for car occupants is offered through analysis of a set of in-depth data, collected for the period 2005 – 2008.



*The paper is based on work done within the development of the Traffic Safety Basic Facts 2015 – Car Occupants (European Commission, 2015), as well as through SAFETYNET and DaCoTA EC co-funded research projects and the European Road Safety Observatory (ERSO - [http://ec.europa.eu/transport/wcm/road\\_safety/erso/index-2.html](http://ec.europa.eu/transport/wcm/road_safety/erso/index-2.html)).*





# Methodology

- **Macroscopic road accident data** from the EU CARE database, in-depth accident data from the SafetyNet Accident Causation System (SNACS) and injury data from the EU Injury Database (EU IDB).
- **Macroscopic time series** data from 27 EU countries for the period 2004-2013.
- **In-depth data** from 6 EU countries for the period 2005-2008 using a common methodology.
- **Injury data** from hospitals in 9 EU countries for the period 2005-2008 using a common methodology.
- **Road accident data** involving car occupants correlated with basic safety parameters: casualty age and gender, road type and presence of junction, season of the year, day of week and time of day
- **Population data** from Eurostat (used as exposure).



Traffic Safety  
Basic Facts 2015

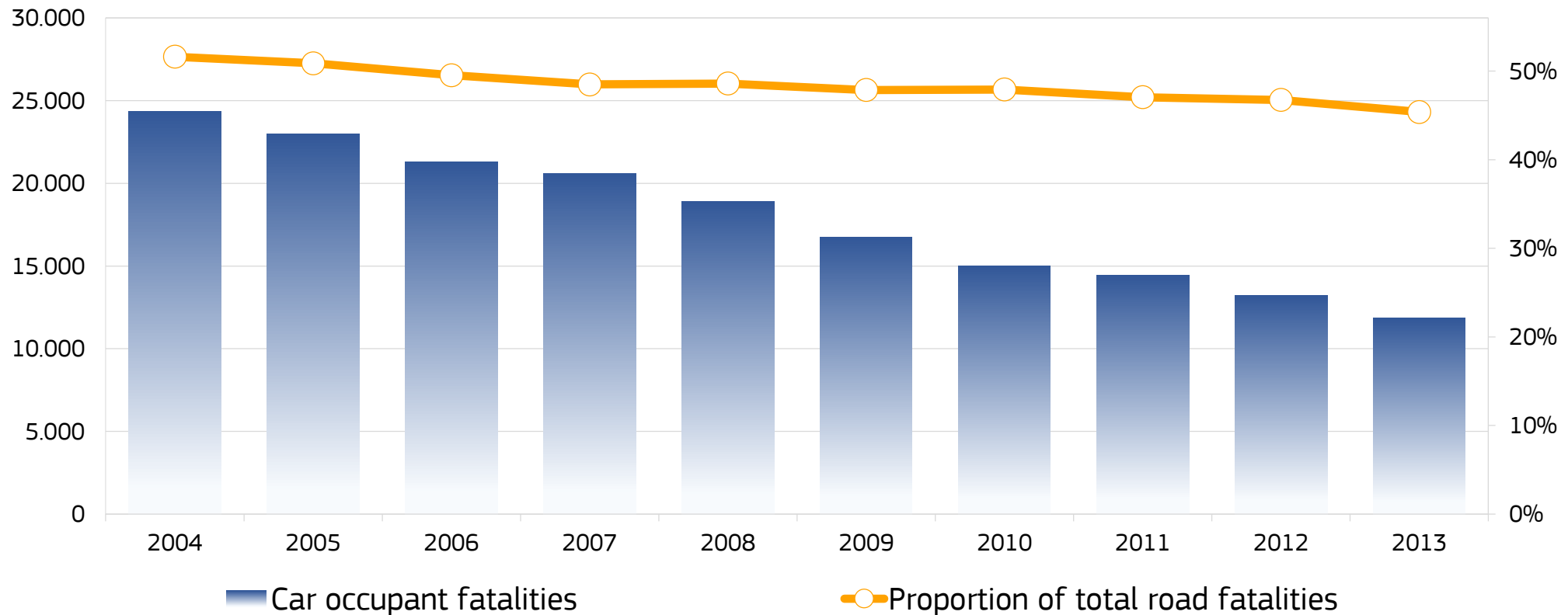


Car occupants



transport

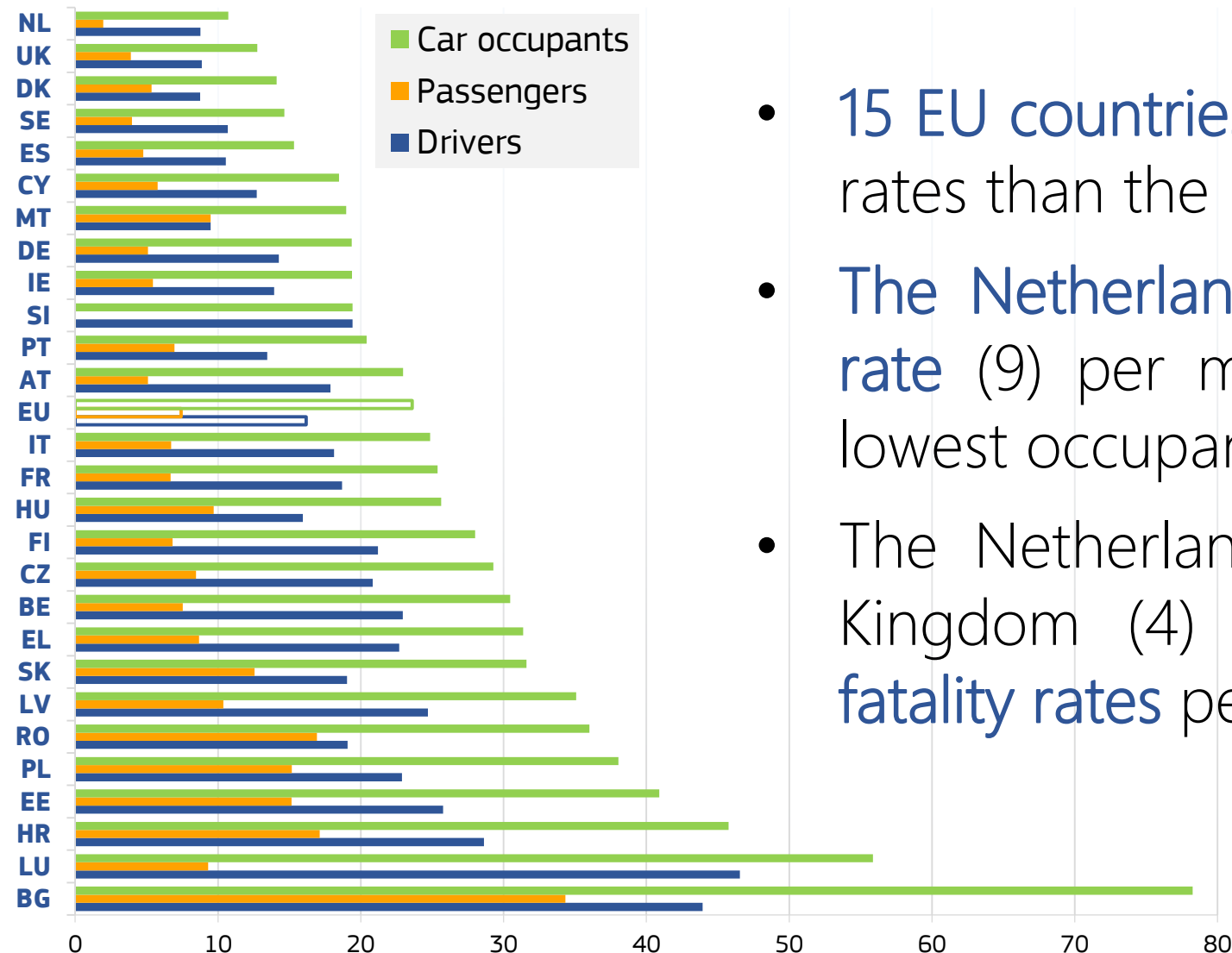
# Overall Trends



- The number of car occupant fatalities in 2013 was **51% lower than the respective number in 2004 in the EU**.
- The respective reduction of the overall road fatalities was **45% over the same period in the EU**.
- The proportion of car occupant fatalities **fell by 12% between 2004-2013**.



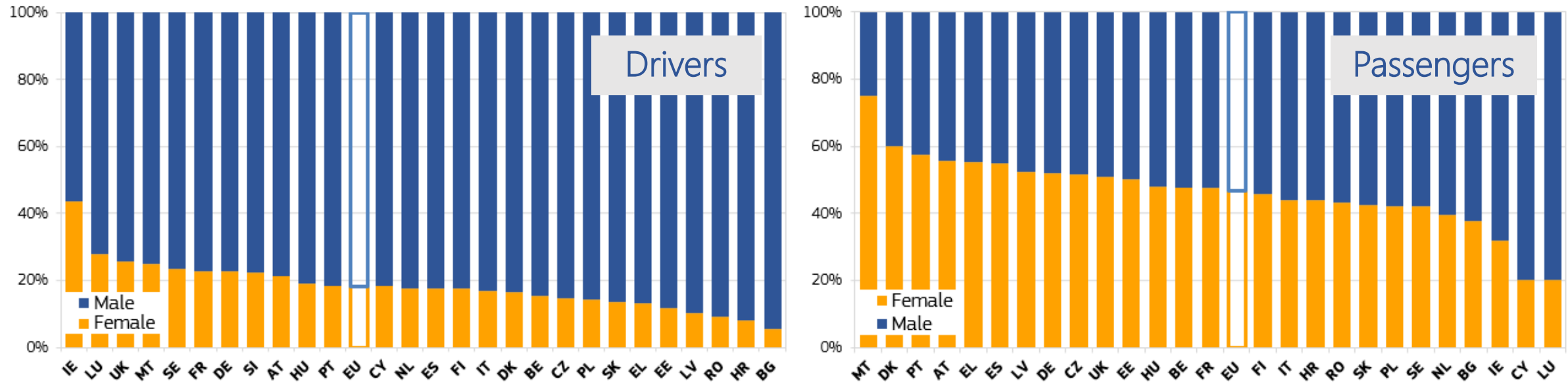
# Car occupant, driver and passenger fatality rates



- 15 EU countries had higher car occupant fatality rates than the EU on average.
- The Netherlands had the lowest driver fatality rate (9) per million population, as well as the lowest occupant rate (11).
- The Netherlands (2), Sweden and the United Kingdom (4) had the lowest car passenger fatality rates per million population.



# Car occupant fatalities by gender and age



- Female driver fatalities account for only 18% of EU car occupant fatalities, while the percentage of female car passenger fatalities was 47% in 2013.
- Ireland had the highest proportion of female driver fatalities (44%) in 2013.
- The proportion of male passenger fatalities is much higher for the age group 18-49 years. In contrast, more female passenger fatalities are recorded for the aged over 50 years.
- In the 65+ years old group, female passenger fatalities are 2,5 times higher than male ones.

# Car occupant fatalities by road type and junction



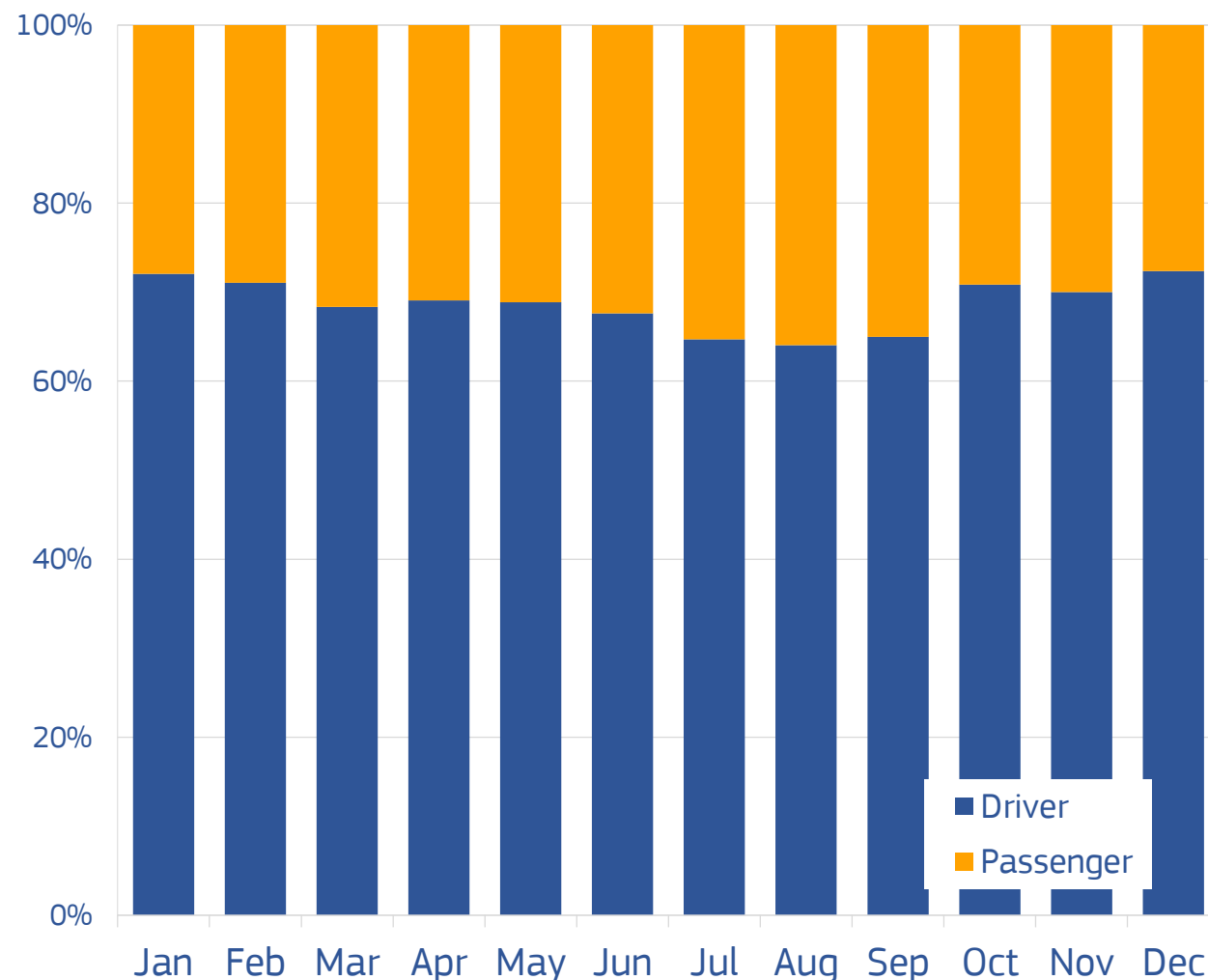
- 70% of the car occupant fatalities in the EU countries occurred **outside urban areas on non-motorways** in 2013.
- **Finland and Sweden** were the countries which experienced the highest numbers of fatalities outside urban areas (91%).
- Around one-fifth of car occupant fatalities in the EU countries occurred **inside urban areas**.
- Only around 11% of the fatalities **occurred at junctions** in the EU countries in 2013.
- Among the larger countries, **the United Kingdom had the greatest share** of fatalities at junctions (26%).





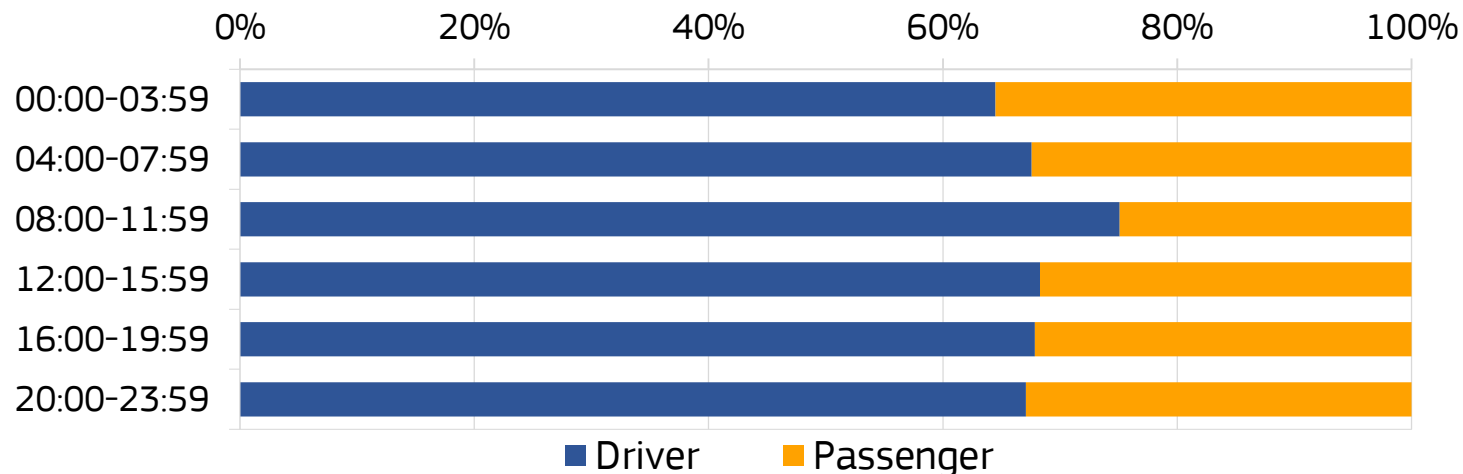
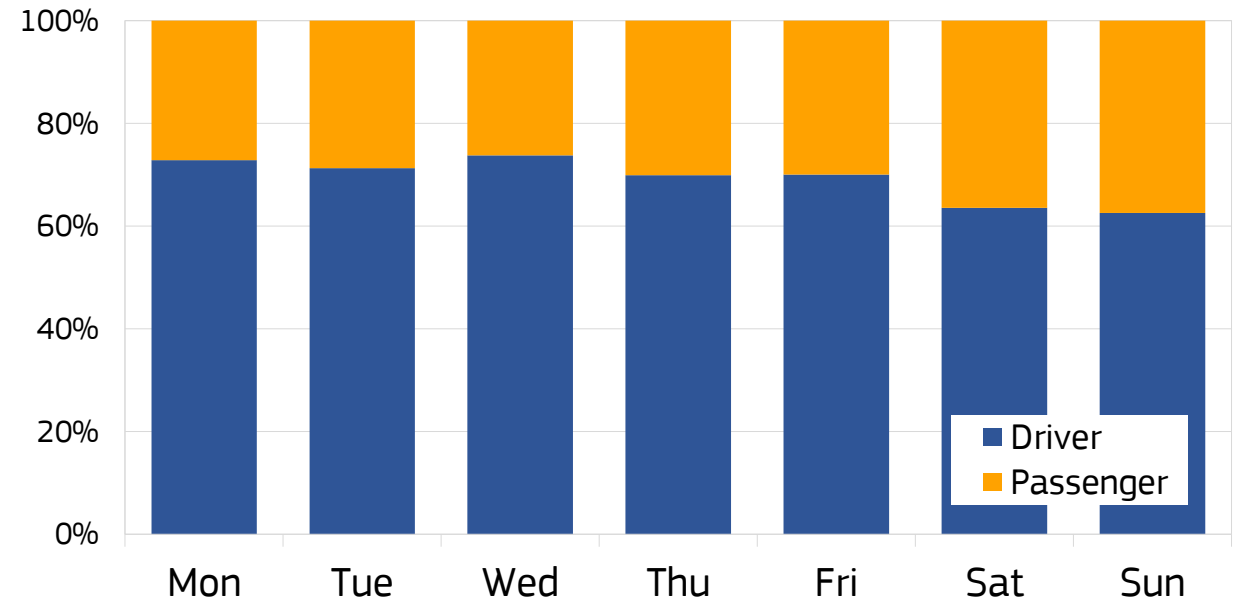
# Car occupant fatalities by month

- The number of car occupant fatalities was **slightly increased** between July and October in the EU in 2013.
- The distribution of car driver and passenger fatalities in the EU per month **was relatively stable over the year**.
- In July, August and September the proportion of car passenger fatalities **was relatively higher (35% - 36%)**.



# Car occupant fatalities by day of the week and time of the day

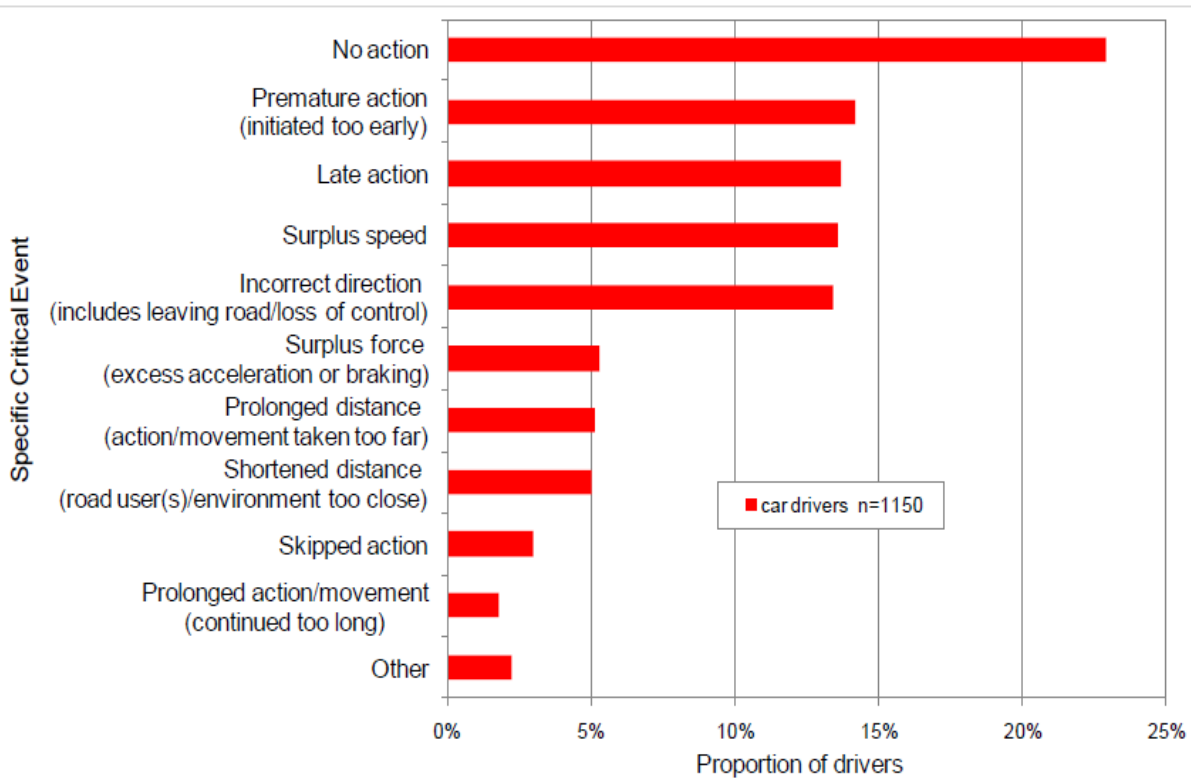
- The majority of car occupant fatalities occurred **either on a Saturday or a Sunday** (34,7%).
- The percentage of passenger fatalities **was also higher in weekends** compared to the respective percentage on weekdays.



- The percentage of car passenger fatalities **was highest (35%) between 00:00 and 04:00**, but there is little variation during the day.



# Accident causation

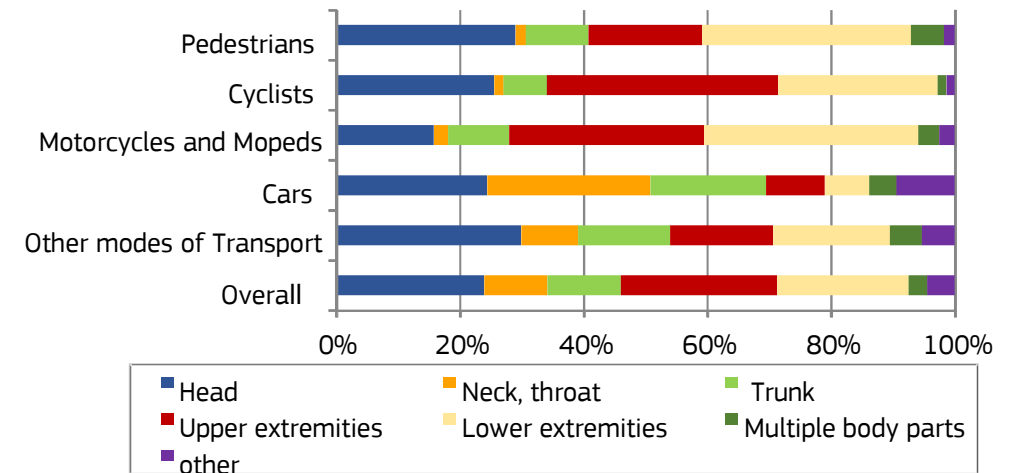
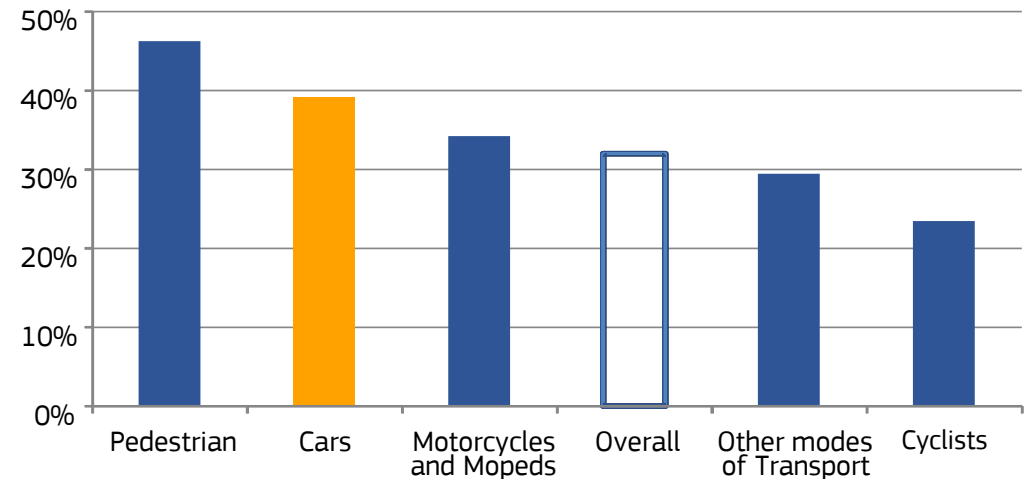


Links between causes	Frequency
Faulty diagnosis - Information failure (driver/environment or driver/vehicle)	209
Observation missed - Distraction	86
Observation missed - Temporary obstruction to view	83
Observation missed - Faulty diagnosis	77
Faulty diagnosis - Communication failure	66
Inadequate plan - Insufficient knowledge	62
Observation missed - Permanent obstruction to view	60
Observation missed - Inadequate plan	52
Observation missed - Inattention	47
Inadequate plan – Under the influence of substances	45
Others	516
Total	1.303

- **Specific critical events** under the general category of ‘timing’, ‘no action’, ‘premature action’ and ‘late action’ are recorded most often for car drivers.
- ‘Surplus speed’ and ‘incorrect direction’ follow in **equal measure**.
- ‘Faulty diagnosis’ and ‘observation missed’ are **two dominant causes of road accidents for car drivers**.

# Road accident health indicators

- By 2012, **thirteen member states routinely collected data** in a sample of hospitals and contributed them to the EU Injury Database (IDB).
- **Overall 32% of road accident casualties** recorded in the IDB were admitted to hospital, compared with 39% of car occupants.
- The overall average length of stay in the hospital for injured in road accidents was eight days, **but six days for car occupants**.
- Car occupants, show **the greatest proportion of neck and throat injuries** among all types of road users, presumably linked to the incidence of whip-lash.





# Conclusions

- A considerable decrease by 51% in the number of car occupant fatalities was recorded within the decade 2004-2013.
- Most of the car occupant fatalities in the EU countries occurred outside urban areas, on non-motorways.
- The results of the analysis allow for a better understanding of the car occupant safety problem in the European road network, providing thus useful support to decision makers working for the improvement of safety in the European road network.
- Exposure data related to the mobility are needed for a more complete picture.





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