

# Traffic Safety Basic Facts 2012

## Motorcycles & Mopeds

Motorcycle and moped fatalities, together referred to as Powered Two Wheelers (PTW), accounted for 15% of the total number of road accident fatalities in 2010 in the EU-24 countries. The two types<sup>1</sup> will be discussed separately when possible, as some countries do not distinguish between motorcycles and mopeds, whereas in other cases it is not possible to analyse the data in detail because of small fatality numbers. In 2010, 1.094 riders (drivers and passengers) of mopeds were killed in the EU-19 in traffic accidents, 11% less than the number in 2009 in the same countries. The annual total decreased by more than 51% during the decade for these countries, an average of more than 7% per year.

Table 1: Moped fatalities by country, 2001-2010<sup>2</sup>

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BE	63	68	45	33	30	36	26	32	25	22
CZ	9	17	11	5	8	3	3	2	9	7
DK	43	38	43	46	29	24	48	30	15	11
DE	138	131	134	122	107	107	100	110	99	74
EL	77	55	53	55	58	57	43	41	28	36
ES	461	383	391	361	312	303	233	181	156	99
FR	450	387	393	339	356	317	324	291	299	248
IT	578	452	520	456	385	346	358	292	212	203
LU	0	0	0	1	0	0	1	0	0	0
HU	-	-	36	22	40	42	31	26	23	19
NL	78	98	94	57	56	63	60	51	47	-
AT	37	46	47	44	41	39	24	25	30	18
PL	63	59	54	51	53	57	59	87	68	83
PT	184	145	157	121	106	97	71	71	58	77
RO	4	6	10	1	20	45	81	150	122	114
SI	16	5	4	5	5	12	12	8	3	7
FI	7	7	12	14	4	13	11	13	11	9
SE	9	12	9	18	8	15	14	11	11	-
UK	14	21	25	26	23	29	18	21	16	9
EU-19	2.267	1.966	2.038	1.777	1.641	1.605	1.516	1.442	1.232	1.094
Yearly reduction		-13,3%	3,7%	-12,8%	-7,6%	-2,2%	-5,5%	-4,9%	-14,5%	-11,2%
EE	-	-	-	-	2	2	4	6	3	-
LV	-	-	-	4	5	6	4	4	1	4
CH	-	-	-	9	-	-	-	9	8	4

Source: CARE Database /EC  
Date of query: September 2012

<sup>1</sup> See Table "Country abbreviations used and definition of EU-level" on page 23 and "Definition and regulations on motorcycles and mopeds" on page 22.

<sup>2</sup> Where a number is missing for an EU-19/20/24 country in a particular year, its contribution to the EU-19/20/24 total is estimated as the most recent known value. EU-23 is EU-24 without IE. For UK data is the sum of GB (2010) and NI (2009).

In EU-19 the number of moped rider fatalities decreased by more than 51% between 2001 and 2010

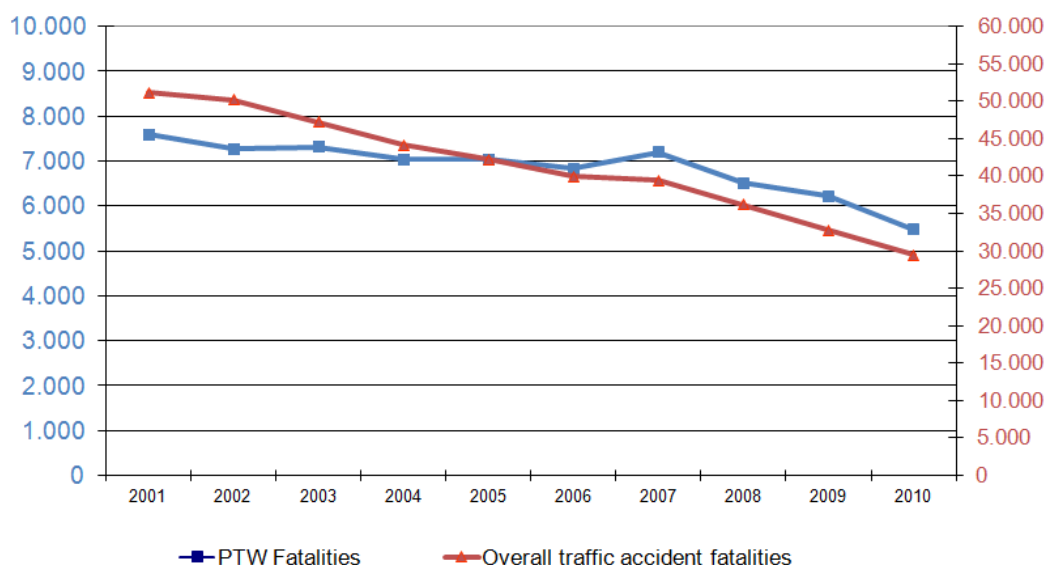
Table 2: Motorcycle fatalities by country, 2001-2010<sup>2</sup>

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BE	147	158	124	120	123	130	139	108	137	102
CZ	86	117	101	97	116	113	136	121	85	92
DK	12	24	25	23	16	21	36	40	27	22
DE	964	913	946	858	875	793	807	656	650	635
EL	426	341	310	379	399	440	420	394	405	367
ES	370	401	367	399	472	488	640	484	437	386
FR	1.092	1.063	883	866	892	789	853	817	908	734
IT	848	907	1.035	1.139	1.120	1.127	1.182	1.085	1.037	943
LU	6	0	13	10	6	8	5	9	7	1
HU	-	-	66	72	100	89	112	91	73	49
NL	76	93	95	84	77	57	64	67	68	-
AT	107	89	109	98	98	95	96	91	87	68
PL	169	167	145	181	157	164	215	262	290	259
PT	229	225	213	181	188	137	145	116	115	91
RO	9	13	8	19	23	35	73	90	74	59
SI	36	18	25	27	33	42	41	40	28	17
FI	16	22	23	22	32	26	32	36	27	18
SE	38	37	47	56	46	55	60	51	47	-
UK	580	607	690	581	561	583	596	488	472	410
EU-19	5.277	5.261	5.225	5.212	5.334	5.192	5.652	5.046	4.974	4.368
Yearly reduction		-0,3%	-0,7%	-0,2%	2,3%	-2,7%	8,9%	-10,7%	-1,4%	-12,2%
EE	-	-	-	-	5	5	10	1	2	-
IE	50	44	55	49	56	29	33	29	25	17
LV	-	-	-	-	2	10	10	6	5	10
MT	-	-	-	-	3	2	4	3	2	3
SK	-	-	-	-	45	37	54	39	34	27
CH	-	-	-	114	-	-	-	83	78	68
IS	-	0	0	2	1	3	3	1	2	1

Source: CARE Database / EC  
Date of query: September 2012

During the decade the number of motorcycle rider fatalities has decreased by 17% in EU-19

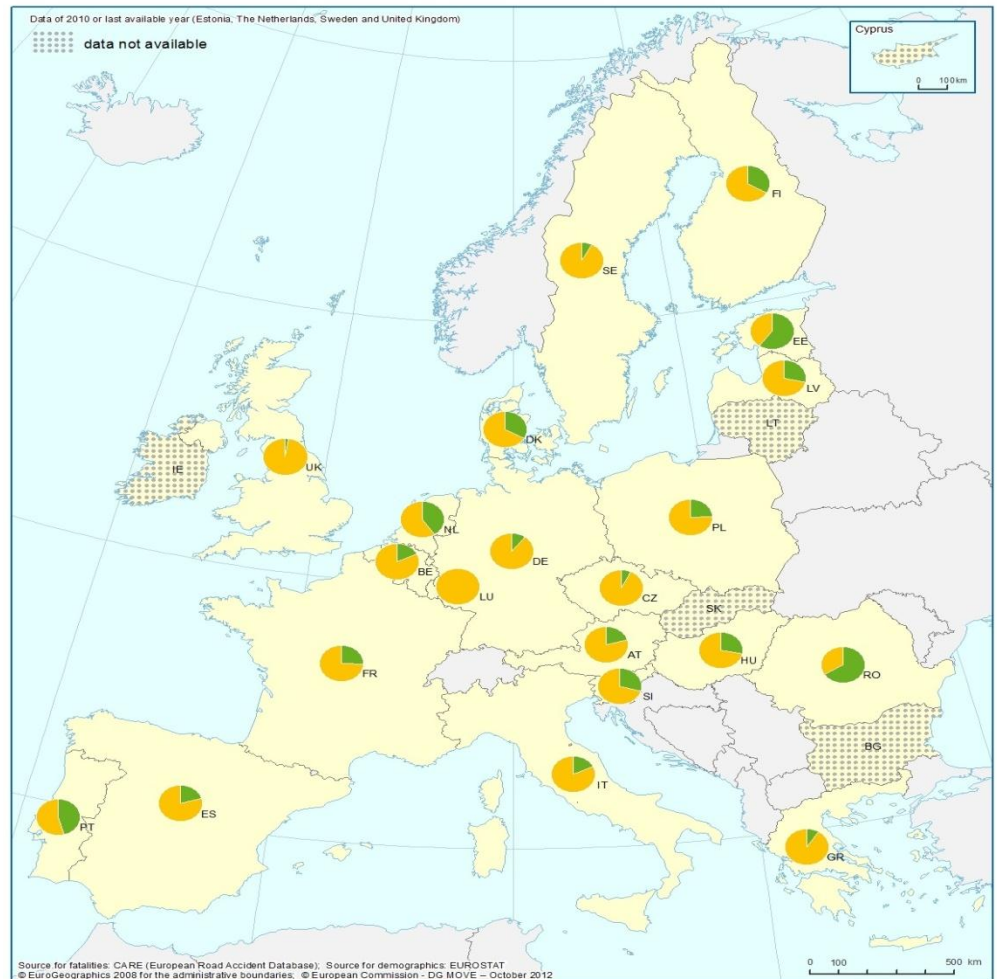
Figure 1: Distribution of road traffic fatalities in the EU-20<sup>1</sup> 2001-2010<sup>2</sup>



Source: CARE Database / EC  
Date of query: September 2012

In 2010, 4,368 riders (drivers and passengers) of motorcycles were killed in the EU-19 countries in traffic accidents, 12% less than the number reported in 2009 for the same countries. A higher annual total decrease for these countries by more than 17% occurred over the decade, an average of 1,7% a year. As there is no reliable data available about the exposure of PTWs (vehicle kilometres or fleet numbers) in each of the above countries, it is difficult to interpret the numbers of fatalities in the group of PTW or the difference in the distribution over mopeds and motorcycles. In some countries, like Greece and Czech Republic, the majority of PTW fatalities are motorcyclists. By definition in Ireland and the United Kingdom there are hardly any moped fatalities.

Map 1: Percentage of mopeds and motorcycles in PTW fatalities, 2010<sup>2</sup>



Source: CARE Database / EC

Table 3 shows the fatality rate of motorcycle and moped riders, which is defined as the number of PTW rider fatalities per million inhabitants. The fatality rate is much higher in Southern European countries like Greece, Italy and Portugal than in the other countries.

<sup>3</sup> For UK distinction between mopeds and motorcycles takes place in the CADAS database. Additionally, scooters with engine size <50cc are not included, as they are counted with motorcycles. IE does not distinguish between motorcycles and mopeds. Mopeds are counted as motorcycles.

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Table 3: Fatality rate (fatalities per million inhabitants) of PTW riders, 2001-2010<sup>2</sup>

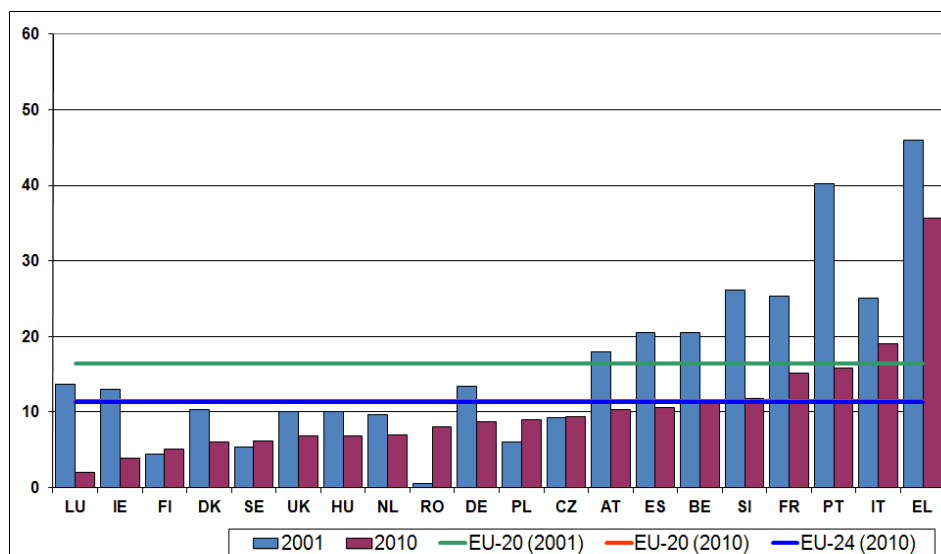
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BE	20,5	21,9	16,3	14,7	14,6	15,8	15,6	13,1	15,1	11,4
CZ	9,3	13,1	11,0	10,0	12,1	11,3	13,5	11,8	9,0	9,4
DK	10,3	11,5	12,6	12,8	8,3	8,3	15,4	12,8	7,6	6,0
DE	13,4	12,7	13,1	11,9	11,9	10,9	11,0	9,3	9,1	8,7
IE	13,0	11,3	13,9	12,2	13,6	6,9	7,7	6,6	5,6	3,8
EL	46,0	36,1	33,0	39,3	41,2	44,7	41,4	38,8	38,5	35,6
ES	20,5	19,1	18,2	17,9	18,2	18,1	19,6	14,7	12,9	10,6
FR	25,3	23,6	20,6	19,3	19,9	17,5	18,5	17,3	18,8	15,2
IT	25,0	23,8	27,1	27,6	25,7	25,1	26,0	23,1	20,8	19,0
LU	13,7	0,0	29,0	24,2	13,0	17,1	12,6	18,6	14,2	2,0
HU	-	-	10,1	9,3	13,9	13,0	14,2	11,6	9,6	6,8
NL	9,6	11,9	11,7	8,7	8,2	7,3	7,6	7,2	7,0	-
AT	18,0	16,7	19,3	17,4	16,9	16,2	14,5	13,9	14,0	10,3
PL	6,1	5,9	5,2	6,1	5,5	5,8	7,2	9,2	9,4	9,0
PT	40,2	35,8	35,6	28,8	27,9	22,1	20,3	17,6	16,3	15,8
RO	0,6	0,9	0,8	0,9	2,0	3,7	7,1	11,1	9,1	8,1
SI	26,1	11,5	14,5	16,0	19,0	27,0	26,4	23,9	15,3	11,7
FI	4,4	5,6	6,7	6,9	6,9	7,4	8,1	9,2	7,1	5,0
SE	5,3	5,5	6,3	8,2	6,0	7,7	8,1	6,8	6,3	-
UK	10,1	10,6	12,0	10,2	9,7	10,1	10,1	8,3	7,9	6,8
EU-20	16,4	15,7	15,7	15,1	15,0	14,5	15,2	13,7	13,0	11,4
EE	-	-	-	-	5,2	5,2	10,4	5,2	3,7	-
LV	-	-	-	1,7	3,0	7,0	6,1	4,4	2,7	6,2
MT	-	-	-	-	7,5	4,9	9,8	7,3	4,8	7,2
SK	-	-	-	-	8,4	6,9	10,0	7,2	6,3	5,0
EU-24	-	-	-	-	-	14,8	14,3	15,1	13,5	12,9
CH	-	-	-	16,7	-	-	-	12,1	11,2	9,2
IS	-	-	-	6,9	3,4	10,0	9,8	3,2	6,3	3,1

Source: CARE Database / EC  
Date of query: September 2012  
Source of population data: Eurostat

The most significant reduction in the number of motorcycle and moped fatalities between 2001 and 2010 occurred in Portugal

The fatality rate of PTW riders in Greece and Italy in 2010 was still above the EU-20 average of 2001

Figure 2: Motorcycle and moped rider fatalities per million inhabitants, 2001 versus 2010<sup>2</sup>



Source: CARE Database / EC  
Date of query September 2012  
Source of population data: Eurostat

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Figure 2 indicates that between 2001 and 2010 the fatality rate of PTW declined in most of the EU-20 countries. The most significant reduction occurred in Portugal (61%), whereas the fatality rate increased in Romania, Finland, Sweden, Poland and Czech Republic.

**Table 4: PTW rider fatalities as percentages of the total number of road accident fatalities by country, 2001-2010<sup>2</sup>**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
BE	14%	17%	14%	13%	14%	16%	15%	15%	17%	15%
CZ	7%	9%	8%	7%	10%	11%	11%	11%	10%	12%
DK	13%	13%	16%	19%	14%	15%	21%	17%	14%	13%
DE	16%	15%	16%	17%	18%	18%	18%	17%	18%	19%
IE	12%	12%	16%	13%	14%	8%	10%	10%	11%	8%
EL	27%	24%	23%	26%	28%	30%	29%	28%	30%	32%
ES	15%	15%	14%	16%	18%	19%	23%	21%	22%	20%
FR	19%	19%	21%	22%	23%	23%	25%	26%	28%	25%
IT	20%	19%	24%	26%	26%	26%	30%	29%	29%	28%
LU	9%	0%	25%	22%	13%	19%	13%	26%	15%	3%
HU	8%	7%	8%	7%	11%	10%	12%	12%	12%	9%
NL	16%	19%	18%	18%	18%	16%	17%	17%	18%	18%
AT	15%	14%	17%	16%	18%	18%	17%	17%	18%	16%
PL	4%	4%	4%	4%	4%	4%	5%	6%	8%	9%
PT	25%	22%	24%	23%	24%	24%	22%	21%	21%	18%
RO	1%	1%	1%	1%	2%	3%	6%	8%	7%	7%
SI	19%	9%	12%	12%	15%	21%	18%	22%	18%	17%
FI	5%	7%	9%	10%	9%	12%	11%	14%	14%	10%
SE	8%	9%	11%	15%	12%	16%	16%	16%	16%	16%
UK	17%	18%	20%	18%	18%	19%	20%	19%	21%	21%
EU-20	15%	14%	15%	16%	17%	17%	18%	18%	19%	19%
EE	-	-	-	-	4%	3%	7%	5%	5%	-
LV	-	-	-	1%	2%	4%	3%	3%	2%	6%
MT	-	-	-	-	18%	18%	33%	33%	13%	23%
SK	-	-	-	-	7%	6%	8%	6%	9%	7%
EU-24	-	-	-	-	16%	17%	18%	18%	19%	18%
CH	-	-	-	24%	-	-	-	26%	25%	22%
IS	-	-	-	9%	5%	10%	20%	8%	12%	13%

Source: CARE Database / EC  
Date of query: September 2012  
Source of population data: Eurostat

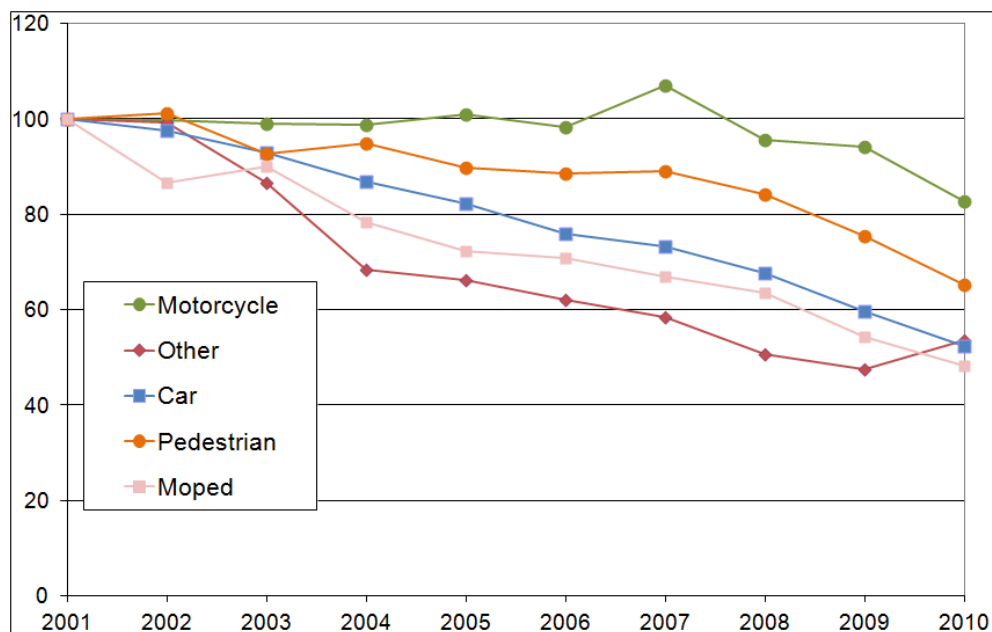
Table 4 shows that the number of PTW fatalities as a proportion of the national fatality total varied in the EU-24 countries from 6% to 32% in 2010.

Figure 3 shows that the trend for motorcycle riders' fatalities differs clearly from the trend for other modes of transport. Motorcycle is the only mode of transport for which number of fatalities has increased over the first seven years of the period studied and only during the last year there was significant decrease compared to 2001. However, this is still eight times less than next smaller one of pedestrians which stresses the importance of taking immediate appropriate counter measures.

In 2010, riders of powered two wheelers made up 18% of the total road accident fatalities in EU-24

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Figure 3: Index (2000=100) of motorcycle and moped fatalities compared with other modes EU-20<sup>3</sup>, 2001-2010<sup>2</sup>



Source: CARE Database / EC  
Date of query: September 2012

Motorcycle is the only mode of transport for which the number of fatalities increased between 2001 and 2010

### Age and gender

Table 5 shows the distribution of motorcycle and moped rider fatalities by gender. As presented, the large majority of the PTW fatalities were male in all countries. In 2010 11% of moped riders and 6% of motorcycle riders who were killed were female.

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Table 5: Percentage of motorcycle and moped rider fatalities by gender, 2010<sup>2</sup>

Gender	Mopeds		Motorcycles	
	female	male	female	male
BE	18%	82%	2%	98%
CZ	14%	86%	8%	92%
DK	27%	73%	5%	95%
DE	15%	85%	9%	91%
EE	33%	67%	0%	100%
IE	-	-	6%	94%
EL	8%	92%	6%	94%
ES	11%	89%	6%	94%
FR	12%	88%	7%	93%
IT	10%	90%	7%	93%
LV	0%	100%	10%	90%
LU	-	-	0%	100%
HU	0%	100%	6%	94%
MT	-	-	0%	100%
NL	30%	70%	7%	93%
AT	22%	78%	4%	96%
PL	8%	92%	5%	95%
PT	5%	95%	5%	95%
RO	3%	97%	3%	97%
SI	0%	100%	0%	100%
SK	-	-	0%	100%
FI	11%	89%	6%	94%
SE	9%	91%	11%	89%
UK	11%	89%	5%	95%
EU-24	11%	89%	6%	94%
CH	0%	100%	9%	91%
IS	-	-	100%	0%

Source: CARE Database / EC  
Date of query: September 2012

The number of moped and motorcycle rider fatalities by single year of age is presented in Figures 4 and 5. These figures express the numbers in 2010 relative to the numbers in 2001 (the numbers have been averaged over the age one year before and after in order to smooth the age dependency). Figure 4 shows that the number of moped rider fatalities fell between 2001 and 2010 for almost all ages.

In 2010, 11% of moped and 6% of motorcycle riders fatalities, were females.

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Heavy Goods Vehicles

Motorways

Junctions

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Roads outside urban areas

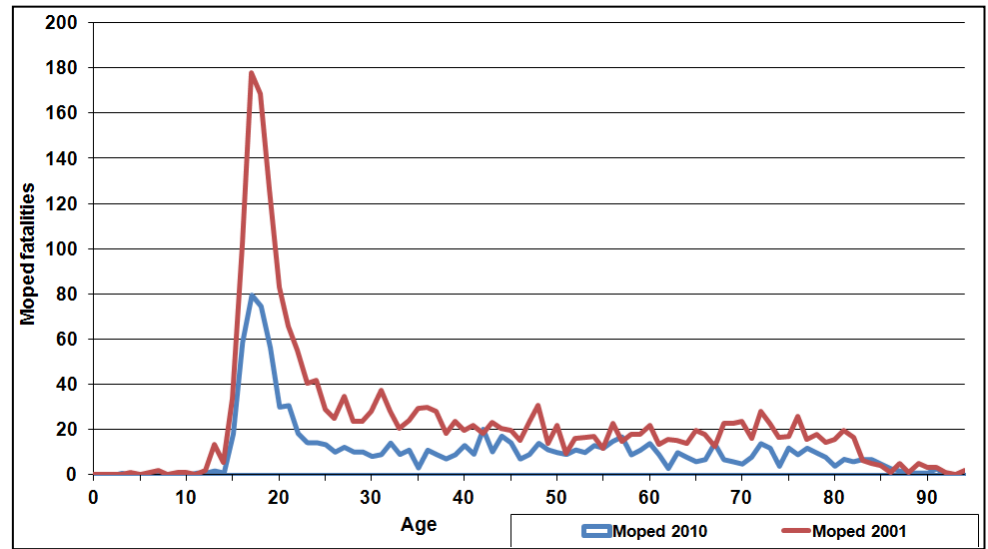
Seasonality

Single vehicle accidents

Gender

Causation

Figure 4: Moped rider fatalities by age in 2001 and 2010<sup>2</sup>, both EU-19<sup>1</sup>

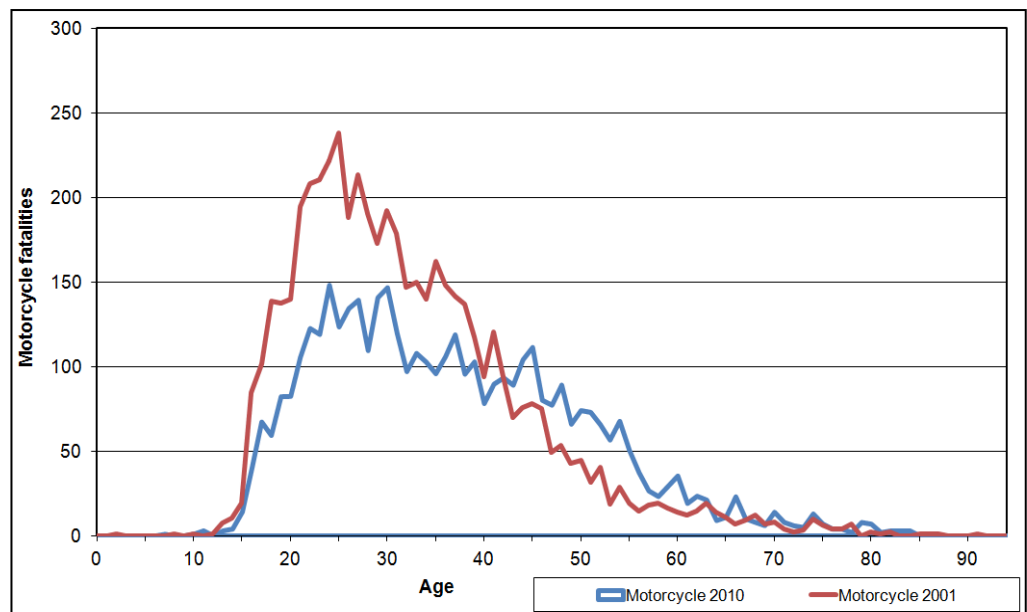


Source: CARE Database / EC  
Date of query: September 2012

Almost 39% of the moped rider fatalities were aged between 15 and 24 years old in 2010

The number of motorcycle rider fatalities fell between 2001 and 2010 only for those between 11 and 42 years old, while it rose for most ages over 42.

Figure 5: Motorcycle rider fatalities by age in 2001 and 2010<sup>2</sup>, both EU-20<sup>1</sup>

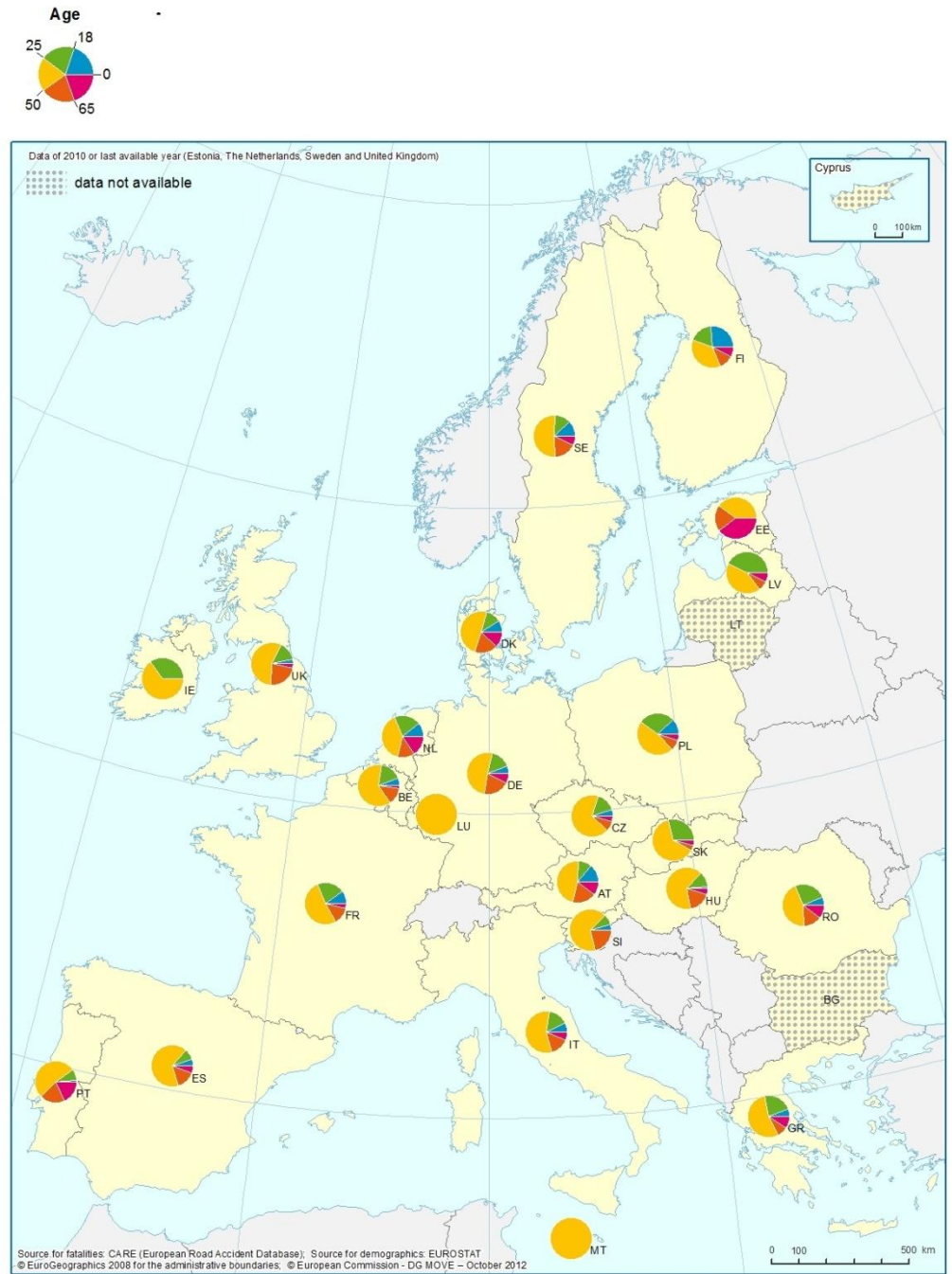


Source: CARE Database / EC  
Date of query: September 2012

The number of motorcycle rider fatalities between 40 and 65 years old increased by 38% between 2001 and 2010



Map 2: Percentage of motorcycle and moped rider fatalities by age group, 2010<sup>2</sup>

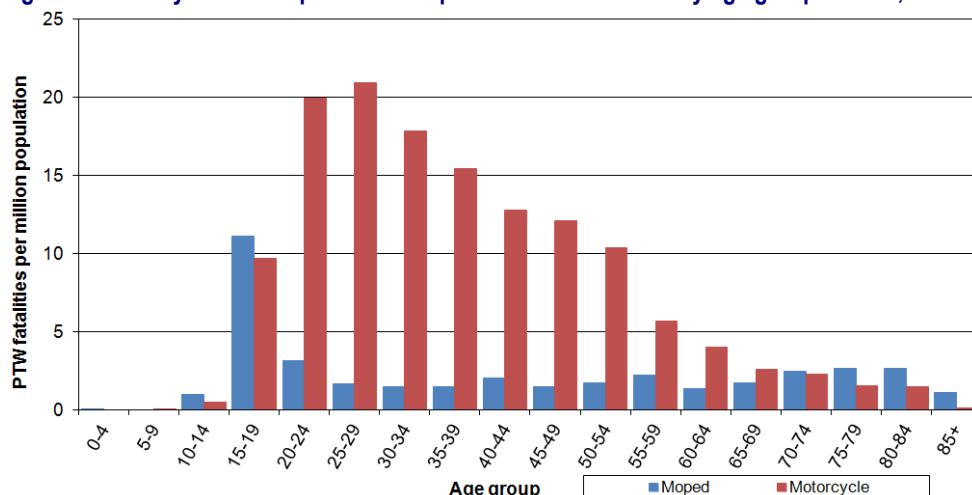


Source: CARE Database / EC

Figure 6 shows the fatality rate by age group in the EU-24 countries. The rates for moped riders aged 15-19 and motorcycle riders aged 20-29 are particularly high.

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Figure 6: Motorcycle and moped fatalities per million inhabitants by age group - EU-24, 2010<sup>2</sup>



Source: CARE Database / EC  
Date of query: September 2012

Almost all fatalities among PTW users were drivers, only 6% were passengers

Almost 80% of female moped riders who were killed were drivers

More than 57% of female motorcycle riders who were killed were passengers

### Drivers and passengers

Table 6: Driver and passenger fatalities on motorcycle and mopeds, 2010<sup>2</sup>

	female		male		Total		
	driver	pass-enger	driver	pass-enger		driver	pass-enger
BE	4%	1%	93%	2%	124	97%	3%
CZ	2%	6%	89%	3%	99	91%	9%
DK	6%	6%	85%	3%	33	91%	9%
DE	6%	4%	90%	1%	709	95%	5%
EE	0%	20%	80%	0%	5	80%	20%
IE	0%	6%	94%	0%	17	94%	6%
EL	3%	3%	88%	6%	403	91%	9%
ES	3%	4%	91%	2%	486	94%	6%
FR	5%	4%	88%	3%	982	93%	7%
IT	4%	4%	91%	2%	1,146	94%	6%
LV	7%	0%	86%	7%	14	93%	7%
LU	0%	0%	100%	0%	1	100%	0%
HU	1%	3%	91%	4%	68	93%	7%
MT	0%	0%	100%	0%	3	100%	0%
NL	14%	3%	83%	0%	115	97%	3%
AT	5%	3%	92%	0%	86	97%	3%
PL	4%	2%	90%	4%	342	94%	6%
PT	2%	4%	92%	3%	168	93%	7%
RO	1%	2%	89%	8%	173	90%	10%
SI	0%	0%	100%	0%	24	100%	0%
SK	0%	0%	89%	11%	27	89%	11%
FI	4%	4%	89%	4%	27	93%	7%
SE	5%	5%	86%	3%	58	91%	9%
UK	3%	2%	93%	2%	403	96%	4%
<b>Mopeds EU-24</b>	<b>9%</b>	<b>2%</b>	<b>85%</b>	<b>4%</b>	<b>1,084</b>	<b>94%</b>	<b>6%</b>
<b>Motorcycles EU-24</b>	<b>3%</b>	<b>4%</b>	<b>91%</b>	<b>3%</b>	<b>4,429</b>	<b>94%</b>	<b>6%</b>
<b>PTW-24</b>	<b>4%</b>	<b>3%</b>	<b>90%</b>	<b>3%</b>	<b>5,513</b>	<b>94%</b>	<b>6%</b>
CH	6%	3%	89%	3%	72	94%	6%
IS	100%	0%	0%	0%	1	100%	0%

Source: CARE Database / EC  
Date of query: September 2012

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Moreover, the highest proportion of passengers among PTW fatalities is in Slovakia (11%) by comparison with other countries.

### Road network: area and road type

The majority of PTW fatalities in all countries occur on non-motorway road network. In case of mopeds, this can be justified by the fact that mopeds are not allowed to circulate on motorways in most European countries. The existence of medians, separating opposite traffic flows on motorways, also results in a reduction in the number of fatal PTW accidents.

The majority of moped fatalities occur in urban areas whereas the majority of motorcycle fatalities occur in rural areas.

Table 7: Motorcycle and moped rider fatalities by area and road type, 2010<sup>2</sup>

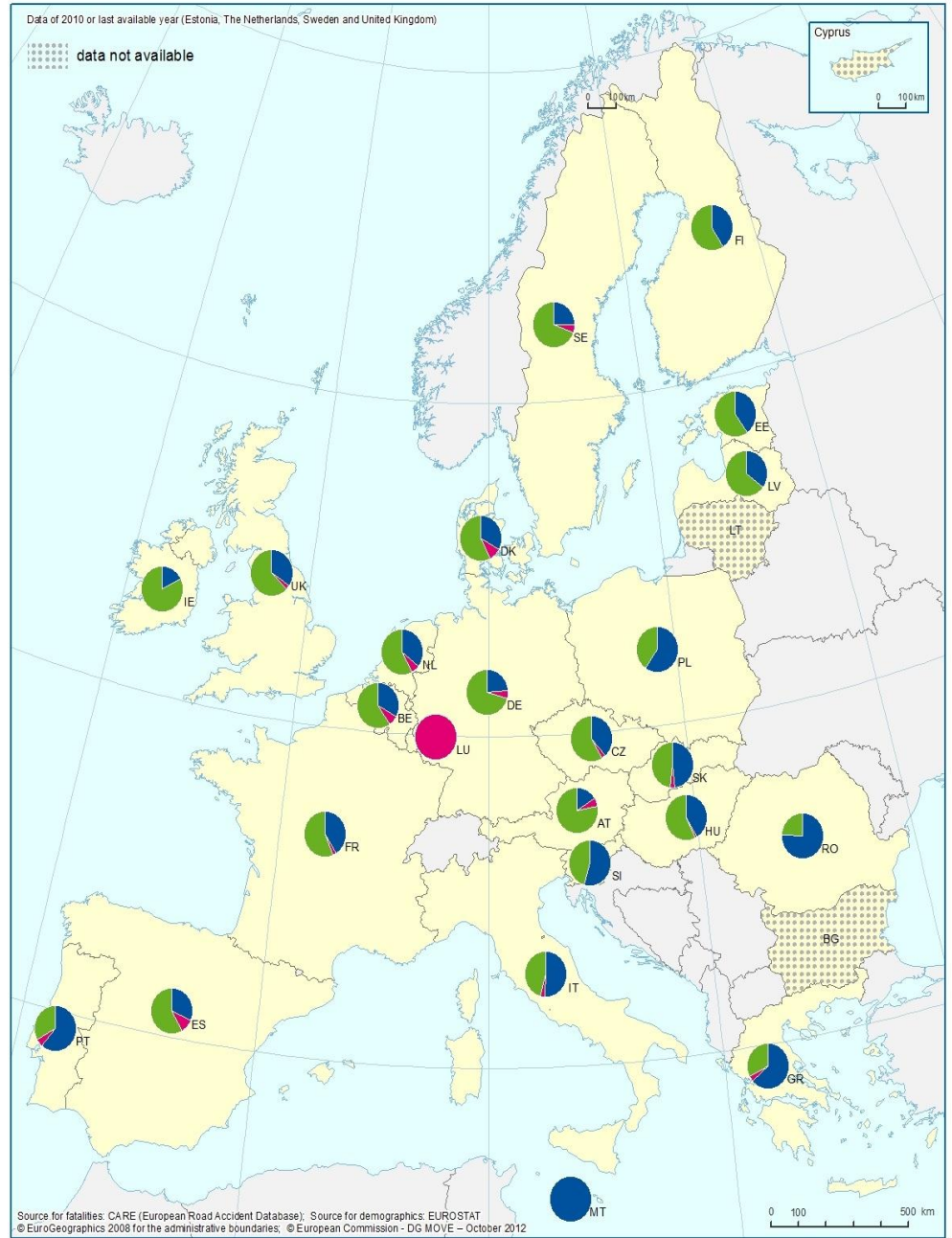
	Fatalities Moped				Fatalities Motorcycle				PTW fatalities as percentage of all fatalities by road type			
	Inside urban area	Outside urban area			Inside urban area	Outside urban area			Inside urban area	Outside urban area		
		Non motorway	Motorway	Not defined		Non motorway	Motorway	Not defined		Non motorway	Motorway	Not defined
BE	11	11	0	0	30	63	9	0	17%	15%	8%	-
CZ	3	4	0	0	35	54	3	0	13%	12%	11%	-
DK	6	5	0	0	5	14	3	0	14%	13%	12%	-
DE	29	45	0	0	141	454	40	0	17%	23%	9%	-
EE	1	2	0	0	1	1	0	0	11%	4%	0%	-
IE	-	-	-	-	3	14	0	0	7%	9%	0%	-
EL	26	10	0	0	228	123	16	0	43%	23%	18%	-
ES	45	52	2	0	107	232	47	0	28%	19%	12%	-
FR	123	124	1	0	279	427	28	0	35%	21%	12%	-
IT	132	70	1	0	446	454	43	0	33%	27%	12%	-
LV	2	2	0	0	3	7	0	0	6%	6%	0%	-
LU	0	0	0	0	0	0	1	0	0%	0%	3%	-
HU	9	10	0	0	19	29	1	0	10%	9%	2%	-
MT	0	0	0	0	3	0	0	0	23%	0%	0%	-
NL	25	22	0	0	16	44	7	1	18%	20%	8%	50%
AT	7	11	0	0	7	56	5	0	10%	19%	8%	-
PL	45	38	0	0	159	100	0	0	11%	7%	0%	-
PT	48	29	0	0	55	27	9	0	21%	16%	8%	-
RO	89	25	0	0	42	17	0	0	9%	5%	0%	-
SI	5	2	0	0	8	9	0	0	22%	19%	0%	-
SK	0	0	0	0	13	13	1	0	8%	7%	7%	-
FI	5	4	0	0	6	12	0	0	17%	8%	0%	-
SE	2	7	0	2	12	32	3	0	16%	16%	16%	-
UK	8	1	0	0	136	261	13	0	19%	24%	11%	-
EU-24	621	474	4	2	1754	2443	229	0	21%	18%	10%	-
%	56,4%	43,0%	0,4%	0,2%	39,6%	55,2%	5,2%	0,0%				-
CH	4	0	0	0	14	52	2	0	16%	27%	9%	-
IS	0	0	0	0	0	1	0	0	0%	25%	0%	-

Source: CARE Database / EC  
Date of query: September 2012

The majority of moped fatalities occur in urban areas whereas the majority of motorcycle fatalities occur in rural areas

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Map 3: Percentage of PTW rider fatalities by area type, 2010<sup>2</sup>



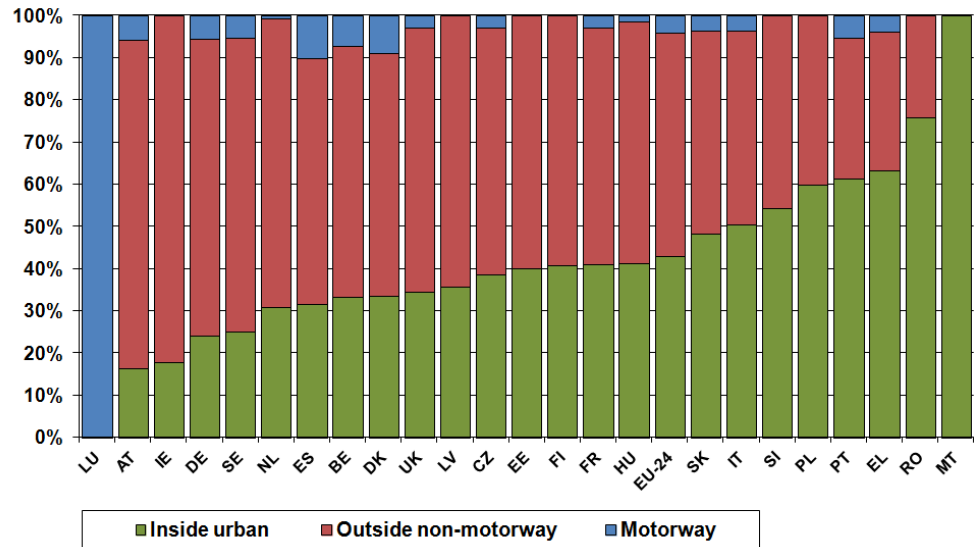
Source: CARE Database / EC

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Figure 7 shows that in the EU-24 in 2010, 43% of the motorcycle and moped rider fatalities were killed inside urban areas.

Figure 7: The distribution of PTW fatalities by area and road type, 2010<sup>2</sup>



Source: CARE Database / EC  
Date of query: September 2012

In Romania, Greece, Portugal and Poland far more PTW fatalities occurred inside urban areas than outside

In 2010, relatively few motorcycle rider fatalities occurred on motorways (5%), compared to car occupant fatalities (11%).

### Junction type

Table 8 indicates that less than a third of all motorcycle and moped rider fatalities occur at a junction (28%). The respective figure for car occupant fatalities occurring at a junction is only 18%.

Crossroads is the most dangerous type of junctions for motorcycles and mopeds, as 51% of the overall respective fatalities recorded at a junction occurred there.

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**Table 8: Motorcycle and moped occupant fatalities by junction type, 2010<sup>2</sup>**

	Not at junction	At junction					Not defined	Total
		cross-road	t or y junction	level crossing	round-about	other junction type		
BE	72%	0%	0%	0%	1%	27%	0%	124
CZ	79%	8%	13%	0%	0%	0%	0%	99
DK	61%	21%	0%	0%	3%	15%	0%	33
DE	40%	32%	0%	0%	0%	4%	23%	709
EE	60%	20%	0%	0%	0%	20%	0%	5
IE	0%	0%	18%	0%	0%	0%	82%	17
EL	89%	0%	0%	0%	0%	0%	11%	403
ES	72%	11%	10%	0%	4%	2%	0%	486
FR	81%	8%	7%	0%	2%	3%	0%	982
IT	63%	16%	0%	0%	2%	19%	0%	1146
LV	79%	0%	0%	0%	0%	21%	0%	14
LU	0%	0%	0%	0%	0%	0%	100%	1
HU	59%	35%	0%	0%	1%	4%	0%	68
MT	0%	0%	0%	0%	0%	0%	100%	3
NL	62%	36%	0%	3%	0%	0%	0%	115
AT	69%	19%	12%	0%	1%	0%	0%	86
PL	77%	22%	0%	0%	0%	1%	0%	342
PT	64%	12%	15%	4%	2%	1%	2%	168
RO	87%	13%	0%	0%	0%	0%	0%	173
SI	88%	13%	0%	0%	0%	0%	0%	24
SK	70%	7%	22%	0%	0%	0%	0%	27
FI	63%	0%	0%	0%	0%	37%	0%	27
SE	62%	0%	0%	0%	0%	38%	0%	58
UK	60%	6%	22%	0%	1%	11%	0%	419
EU-24	3.742	791	270	10	71	411	234	5.529
%	67,7%	14,3%	4,9%	0,2%	1,3%	7,4%	4,2%	100,0%
CH	0%	4%	11%	0%	0%	0%	85%	72
IS	0%	100%	0%	0%	0%	0%	0%	1

 Source: CARE Database / EC  
 Date of query: September 2012

Table 9 indicates that the majority of fatalities occur away from junctions for all transport modes. The highest proportions of fatalities at junctions are found for bicycles and powered two-wheelers.

**Table 9: Fatalities by junction type and mode of transport - EU-24, 2010<sup>2</sup>**

	Not at junction	At junction	Not defined
Pedestrian	74%	19%	7%
Bicycle	59%	33%	8%
Moped	67%	29%	4%
Motorcycle	67%	27%	6%
Car and taxi	77%	14%	9%
Lorry, under 3,5 t.	76%	13%	11%
Heavy goods vehicle	71%	7%	23%
Other / Unknown	81%	15%	5%
EU-24 all modes	73%	19%	8%

 Source: CARE Database / EC  
 Date of query: September 2012

The highest percentage of fatalities occurring at junctions are found for cyclists and powered two-wheelers' riders

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## Month of the year

There are relatively few fatalities in the winter, and relatively many in the summer. This reflects the seasonal pattern of use of mopeds and motorcycles.

Table 10: Motorcycle and moped fatalities by month, EU-24, 2010<sup>2</sup>

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
BE	2%	3%	7%	16%	12%	15%	20%	8%	7%	7%	2%	1%	124
CZ	1%	0%	1%	8%	6%	23%	27%	12%	6%	13%	2%	0%	99
DK	0%	0%	15%	9%	6%	12%	18%	27%	3%	6%	3%	0%	33
DE	0%	0%	4%	14%	10%	14%	17%	12%	15%	9%	4%	1%	709
EE	0%	0%	0%	0%	0%	0%	80%	0%	20%	0%	0%	0%	5
IE	0%	0%	0%	12%	29%	12%	12%	12%	6%	12%	6%	0%	17
EL	6%	5%	4%	8%	9%	11%	10%	16%	9%	9%	8%	5%	403
ES	6%	6%	6%	6%	10%	9%	11%	12%	10%	11%	8%	5%	486
FR	4%	4%	7%	9%	10%	12%	16%	12%	12%	8%	4%	3%	982
IT	3%	4%	6%	7%	11%	15%	16%	13%	10%	8%	3%	4%	1.146
LV	0%	0%	0%	14%	7%	29%	14%	21%	7%	7%	0%	0%	14
LU	0%	0%	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	1
HU	0%	0%	13%	9%	7%	7%	18%	13%	19%	10%	0%	3%	68
MT	0%	0%	0%	67%	0%	0%	0%	33%	0%	0%	0%	0%	3
NL	2%	4%	9%	16%	12%	10%	11%	14%	7%	9%	7%	0%	115
AT	0%	0%	3%	8%	6%	13%	22%	16%	15%	14%	2%	0%	86
PL	0%	1%	5%	10%	13%	16%	14%	16%	14%	7%	4%	0%	342
PT	7%	7%	8%	7%	6%	8%	15%	12%	10%	8%	5%	7%	168
RO	1%	1%	10%	8%	12%	12%	11%	15%	13%	8%	7%	2%	173
SI	0%	0%	13%	25%	13%	13%	21%	4%	4%	4%	4%	0%	24
SK	0%	4%	0%	15%	4%	22%	11%	22%	4%	15%	4%	0%	27
FI	7%	4%	0%	11%	11%	19%	19%	4%	11%	15%	0%	0%	27
SE	0%	0%	0%	12%	14%	14%	19%	19%	12%	5%	2%	3%	58
UK	3%	3%	7%	10%	13%	13%	9%	15%	11%	12%	4%	1%	419
moped	5%	4%	7%	8%	8%	11%	14%	12%	12%	10%	6%	4%	1.102
motorcycles	2%	3%	6%	10%	11%	13%	15%	14%	11%	9%	4%	2%	4.427
EU-24	153	168	331	525	570	712	825	743	615	498	241	148	5.529
PTW %	3%	3%	6%	10%	10%	13%	15%	13%	11%	9%	4%	3%	100%
CH	0%	1%	6%	17%	13%	13%	17%	13%	11%	7%	3%	1%	72
IS	0%	0%	0%	0%	0%	100%	0%	0%	0%	0%	0%	0%	1

Source: CARE Database / EC  
Date of query: September 2012

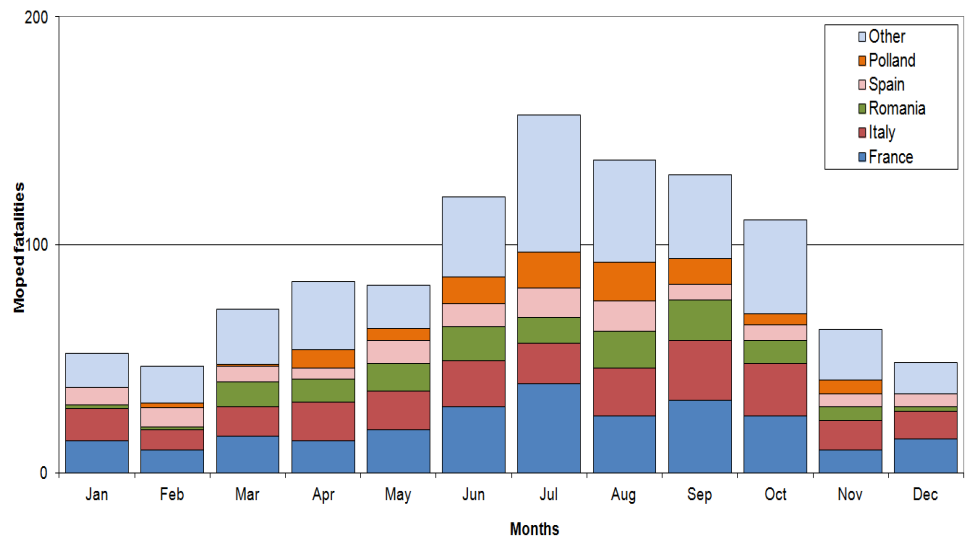
In Figures 8 and 9 the fatalities' annual distribution by month is displayed for mopeds and motorcycles respectively. The five countries with the largest numbers are displayed, as well as the total number of the remaining 19 countries from the EU-24.

The number of moped fatalities does not vary over the months as much as the numbers of motorcycle fatalities, however in all countries there are more fatalities per month in the period April-October, as indicated in Figure 9.

Fewer motorcycle and moped riders are killed in the winter than in the other seasons

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Figure 8: Moped fatalities by month - top 5 countries and other EU-24, 2010<sup>2</sup>

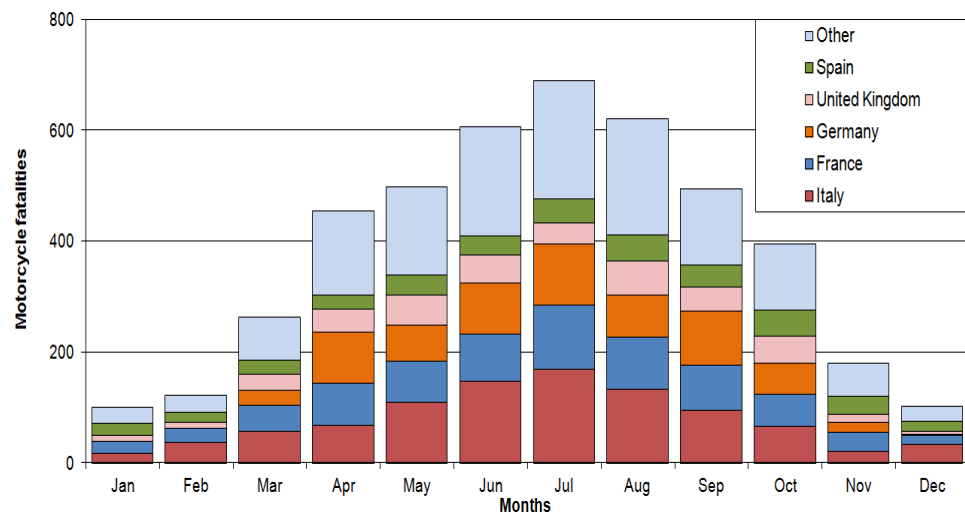


Source: CARE Database / EC  
Date of query: September 2012

Poland, Spain, Romania, Italy and France are the 5 countries with the highest number of moped fatalities

Figure 8 shows that a large number of motorcycle fatalities occurred when the weather was good, especially from May to September.

Figure 9: Motorcycle fatalities by month - top 5 countries and other EU-24, 2010<sup>2</sup>



Source: CARE Database / EC  
Date of query: September 2012

Spain, United Kingdom, Denmark, France and Italy are the 5 countries with the highest number of motorcycle fatalities

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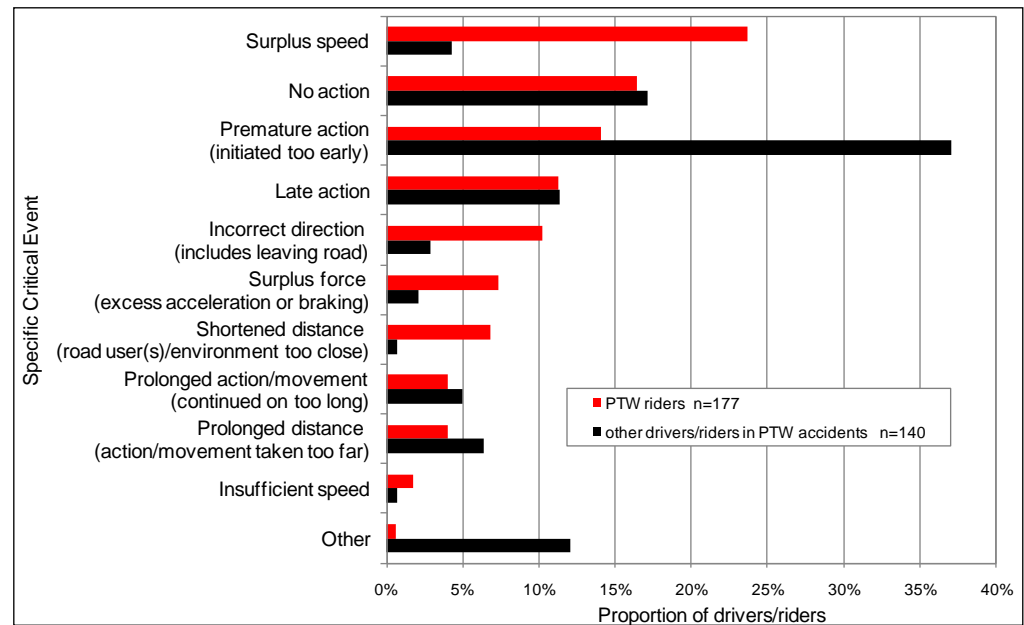
Causation

### Accident Causation

During the EC SafetyNet project, in-depth data were collected using a common methodology for samples of accidents that occurred in Germany, Italy, The Netherlands, Finland, Sweden and the UK<sup>3 4</sup>. The SafetyNet Accident Causation Database was formed between 2005 and 2008, and contains details of 1.006 accidents covering all injury severities. A detailed process for recording causation (SafetyNet Accident Causation System – SNACS) attributes one specific critical event to each driver, rider or pedestrian. Links then form chains between the critical event and the causes that led to it. For example, the critical event of late action could be linked to the cause observation missed, which was a consequence of fatigue, itself a consequence of an extensive driving spell.

In the database, 17% (175) of the accidents involve the rider of a powered two wheeler (PTW – motorcycle or moped). Males account for 83% of this group and the mean age is 32 years old. Figure 10 compares the distributions of specific critical events for PTW riders and other drivers or riders in PTW accidents.

Figure 10: Distribution of specific critical events - PTW riders and other drivers/riders in PTW accidents



N=317

Source: SafetyNet Accident Causation Database 2005 to 2008 / EC  
Date of query: 2010

The most frequently recorded specific critical event for PTW riders is surplus speed, very much in contrast to other drivers/riders in PTW accidents. Surplus speed describes speed that is too high for the conditions or manoeuvre being carried out, travelling above the speed limit and also if the rider is travelling at a speed unexpected by other road users. It is recognised that the PTW riders here are in a mix of single vehicle and multiple vehicle accidents, whilst the other

<sup>3</sup> SafetyNet D5.5, Glossary of Data Variables for Fatal and Accident Causation Databases  
<sup>4</sup> SafetyNet D5.8, In-Depth Accident Causation Database and Analysis Report

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drivers/riders are, by selection, in multiple vehicle accidents. Single vehicle accidents will be reflected in higher representations of surplus speed and incorrect direction (as it includes leaving the road).

The events under the general category of ‘timing’, no action, premature action and late action, account for the next three most frequent events after surplus speed. Premature action (one undertaken before a signal has been given or the required conditions are established, for example entering a junction too early) is recorded far more often for the other drivers/riders in PTW accidents than for the PTW riders.

Table 11 gives the most frequent links between causes for PTW riders. For this group there are 196 such links in total.

**Table 11: Ten most frequent links between causes – PTW riders**

Links between causes	Frequency
Faulty diagnosis - Information failure (driver/environment or driver/vehicle)	26
Inadequate plan - Insufficient knowledge	24
Observation missed - Permanent obstruction to view	16
Observation missed - Temporary obstruction to view	16
Observation missed - Inadequate plan	13
Observation missed - Inattention	12
Faulty diagnosis - Communication failure	8
Inadequate plan - Psychological stress	8
Observation missed - Faulty diagnosis	5
Insufficient knowledge - Inadequate training	5
Others	63
<b>Total</b>	<b>196</b>

Source: SafetyNet Accident Causation Database 2005 to 2008 / EC  
Date of query: 2010

Faulty diagnosis, inadequate plan and observation missed are frequently recorded causes. Faulty diagnosis is an incorrect or incomplete understanding of road conditions or another road user’s actions. It is linked to both information failure (for example, a rider thinking another vehicle was moving when it was in fact stopped and colliding with it) and communication failure (for example, pulling out in the continuing path of a driver who has indicated for a turn too early).

The main cause leading to inadequate plan (a lack of all the required details or that the driver’s ideas do not correspond to reality) is lack of knowledge (for example, not understanding a complex junction layout), followed by psychological stress. The causes leading to observation missed can be seen to fall into two groups, physical ‘obstruction to view’ type causes (for example, parked cars at a junction) and human factors (for example, not observing a red light due to distraction or inattention).

13% of the links between causes are observed to be between ‘faulty diagnosis’ and ‘information failure’.

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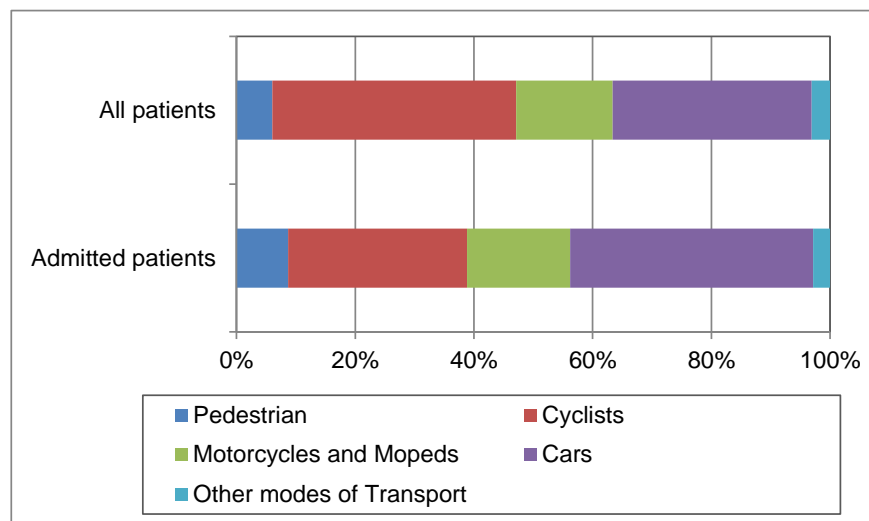


## ROAD ACCIDENT HEALTH INDICATORS

Injury data can be obtained from a wide range of sources, such as police and ambulance reports, national insurance schemes, and hospital records, each of which provides a specific but yet incomplete picture of the injuries suffered in road accidents. In order to obtain a comprehensive view of these injuries, the EU Council issued a Recommendation that urges member states to use synergies between existing data sources and to develop national injury surveillance systems rooted in the health sector.<sup>5</sup> At present, thirteen member states are routinely collecting injury data in a sample of hospitals and delivering these data to the Commission. This system is called the EU Injury Database (EU IDB).<sup>6</sup>

Within the EU IDB “transport module” injuries suffered in road accidents are recorded by “mode of transport”, “role of injured person” and “counterpart”. These variables can complement information from police records, in particular for injury patterns and the improved assessment of injury severity. The indicators used include the percentage of casualties attending hospital who are admitted to hospital, the mean length of stay of hospital admissions, the nature and type of body part injured, and potentially also long term consequences of injuries.

Figure 11: Distribution of non-fatal road accident casualties attending hospital, by mode of transport



EU Injury Database (EU IDB AI) - hospital treated patients. IDB AI Transport module and place of occurrence (code 6.n [public road]); n-all = 73 600; n-admitted = 23.568 (DE, DK, LV, MT, AT, NL, SE, SI, CY, years 2005-2008).

Figure 11 is based on IDB data from nine countries for accidents that occurred between 2005 and 2008. Vulnerable road users (pedestrians, cyclists, motorcycles and mopeds) accounted for almost two thirds (63%) of road accident casualties attending a hospital, and for over half of casualties admitted to a hospital (56%).

<sup>5</sup> OJ C 164/1, 18.7.2007

<sup>6</sup> <https://webgate.ec.europa.eu/sanco/heid/index.php/IDB>

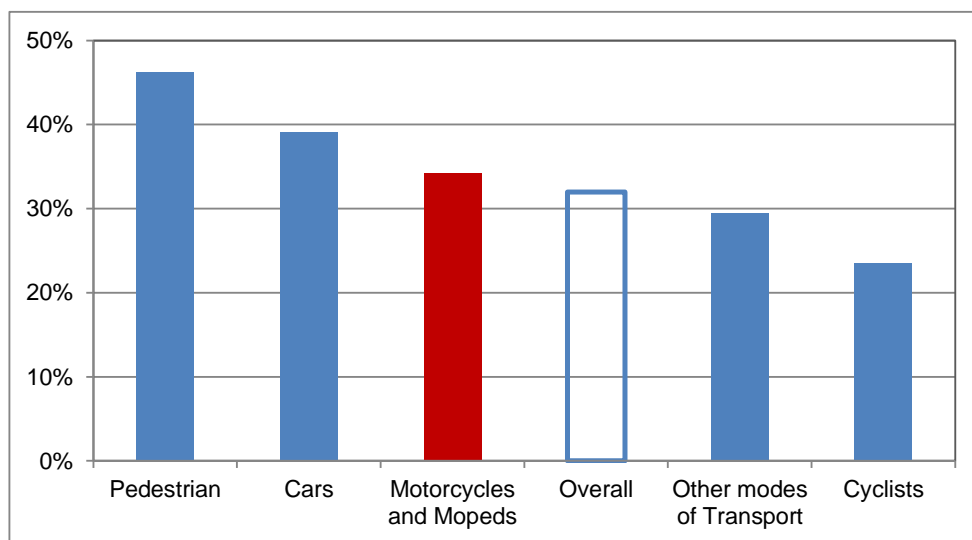
By 2012, thirteen member states routinely collected data in a sample of hospitals and contributed them to the EU injury Database.

According to estimates based on the EU IDB more than four million people are injuries annually in road traffic accidents, one million of whom have to be admitted to hospital.

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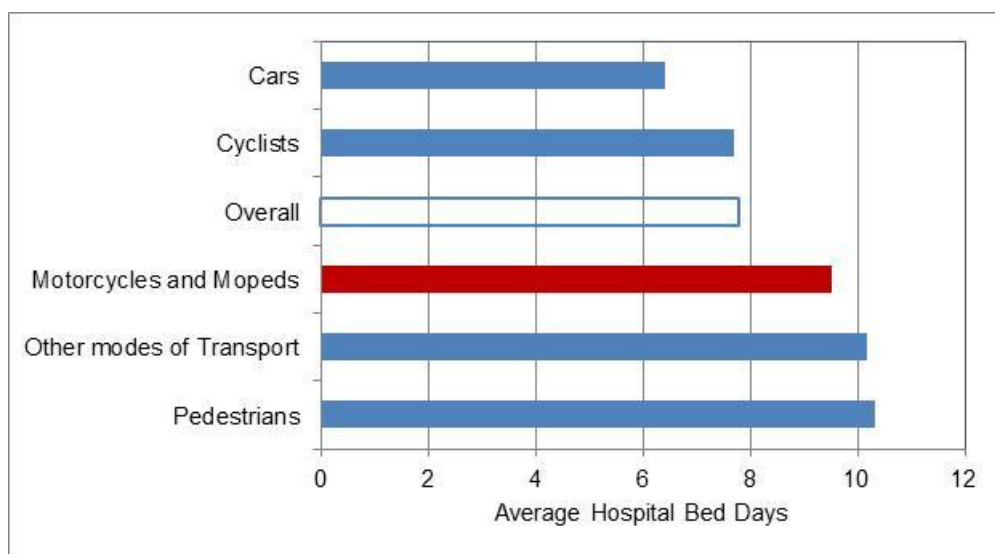
Figure 12 shows that overall 32% of road accident casualties recorded in the IDB were admitted to the hospital, compared with 34% of riders of mopeds and motorcycles. Figure 13 shows that the overall average length of stay was eight days, compared with almost ten days for riders of mopeds and motorcycles.

Figure 12: Proportion of casualties who attended a hospital who were admitted to hospital, by mode of transport



Source: See Figure 11.

Figure 13: Average length of stay (hospital bed days), by mode of transport

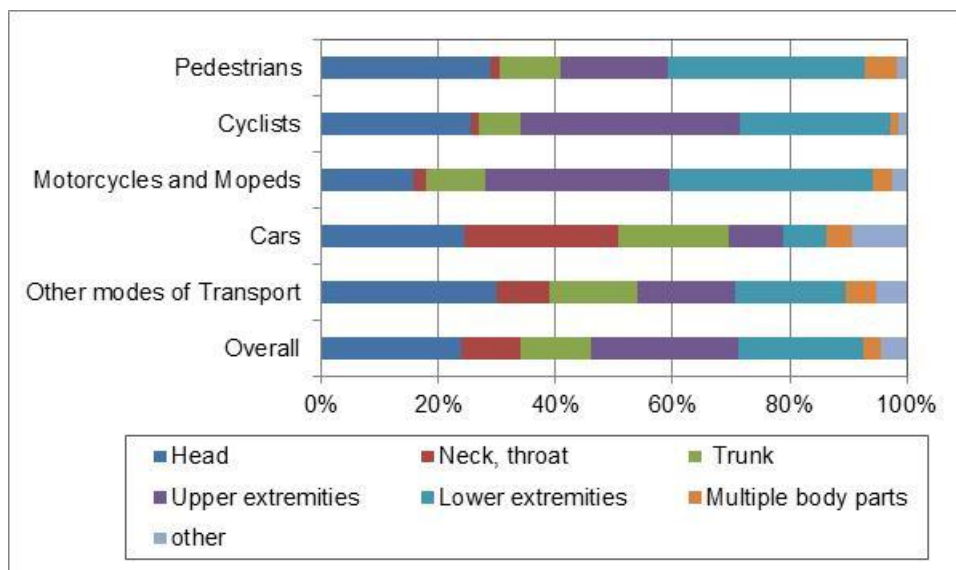


Source: See Figure 11.

34% of the moped & motor cycle casualties who attended a hospital were admitted to the hospital; their average stay in hospital was almost ten days.

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Figure 14: Body part injured, by mode of transport



Source: See Figure 11.

Naturally, hospital data can provide information on the injury patterns sustained by the accident victims. Figure 14 presents the distribution of body parts injured of the various road user types. Injured riders of mopeds and motorcycles, for example, suffered relatively many injuries to the lower extremities.

Table 12 shows the types of injury most frequently recorded in the EU IDB. It compares the distribution of injuries among riders of mopeds and motorcycles and all types of road users.

Table 12: Top ten types of injury in mopeds & motor cycles

	Mopeds & motor cycles	All road user groups
Contusion, bruise	26%	34%
Fracture	42%	27%
Open wound	10%	10%
Distortion, sprain	3%	8%
Concussion	6%	7%
Other specified brain injury	2%	2%
Luxation, dislocation	2%	2%
Injury to muscle and tendon	1%	2%
Abrasion	1%	1%
Injury to internal organs	1%	1%
Other specified types of injury	6%	6%
Total	100%	100%

Source: See Figure 11.

Fractures account for more than 40% of all injuries inflicted on moped & motor cycle casualties attending hospital.

## Definition and regulations for motorcycles and mopeds

### Moped:

In most EU countries a moped is defined as a PTW with an engine size below 50cc and design speed up to 50 km/h, prohibited on motorways. The minimum age for the driver varies between 14 and 16 years old. The use of a helmet is required in most of the countries, a compulsory theoretical test is often required and in most of the countries a practical test too. A licence plate and vehicle register is being introduced to more and more countries.

### Motorcycle:

A motorcycle is a PTW with an engine size above 50cc, allowed on motorways. A driving licence is compulsory. The minimum age is allowed between 16 and 18 years old for engine sizes up to 125cc or power up to 11kW (A1). Larger engine sizes (A2, A) are allowed after 2 years of experience. A helmet is required. Scooters should be assigned to one of the categories depending on their engine size.

The country regulations are subject to (new) EU directives, see [ec.europa.eu/transport/home/drivinglicence/index\\_en.htm](http://ec.europa.eu/transport/home/drivinglicence/index_en.htm).

### **Disclaimer**

The information in this document is provided as it is and no guarantee or warranty is given that the information is fit for any particular purpose. Therefore, the reader uses the information at their own risk and liability.

### **For more information**

Further statistical information about fatalities is available from the CARE database at the Directorate General for Mobility and Transport of the European Commission, 28 Rue de Mot, B -1040 Brussels.

Traffic Safety Basic Fact Sheets available from the European Commission concern:

- Main Figures
- Children (Aged <15)
- Youngsters (Aged 15-17)
- Young People (Aged 18-24)
- The Elderly (Aged >64)
- Pedestrians
- Cyclists
- Motorcycles and Mopeds
- Car occupants
- Heavy Goods Vehicles and Buses
- Motorways
- Junctions
- Urban areas
- Roads outside urban areas
- Seasonality
- Single vehicle accidents
- Gender
- Accident causation

**Country abbreviations used and definition of EU-level**

EU-19		EU-20 = EU-19 +		EU-24 = EU-20 +	
BE	Belgium	IE	Ireland	EE	Estonia
CZ	Czech Republic			LV	Latvia
DK	Denmark			MT	Malta
DE	Germany			SK	Slovakia
EL	Greece				
ES	Spain				
FR	France				
IT	Italy				
LU	Luxembourg				
HU	Hungary				
NL	Netherlands				
AT	Austria				
PL	Poland				
PT	Portugal				
RO	Romania				
SI	Slovenia				
FI	Finland				
SE	Sweden				
UK	United Kingdom (GB+NI)				

Detailed data on traffic accidents are published annually by the European Commission in the Annual Statistical Report. This includes a glossary of definitions on all variables used.

More information on the DaCoTA Project, co-financed by the European Commission, Directorate-General for Mobility and Transport is available at the DaCoTA Website: <http://www.dacota-project.eu/index.html>.

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