

# Traffic Safety Basic Facts 2010

## Motorcycles & Mopeds

Motorcycle and moped fatalities, together referred to as Powered Two Wheelers (PTW), accounted for 17,7% of the total number of road accident fatalities in 2008 in the EU-23 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 2008, 1.213 riders (drivers and passengers) of mopeds were killed in the EU-16 in traffic accidents, 7,8% less than the number in 2007 in the same countries. The annual total decreased by 47% during the decade for these countries, an average of 6,6% per year.

Table 1: Moped fatalities by country, 1999-2008<sup>2</sup>

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
BE	56	66	63	68	45	33	30	36	26	32
CZ	10	16	9	17	11	5	8	3	3	2
DK	41	47	43	38	43	46	29	24	48	30
DE	-	157	138	131	134	122	107	107	100	110
EE	-	-	-	-	-	-	2	2	4	6
IE*	-	-	-	-	-	-	-	-	-	-
EL	108	90	77	55	53	55	58	57	43	41
ES	515	474	461	383	391	361	312	303	233	181
FR	492	456	450	387	393	339	356	317	324	291
IT	611	637	578	452	520	456	385	346	358	294
LV	-	-	-	-	-	-	-	6	4	4
LU	0	0	0	0	0	1	0	0	1	0
HU	-	-	-	-	36	22	40	42	31	26
NL	107	107	78	98	94	57	56	63	60	51
AT	48	44	37	46	47	44	41	39	24	25
PL	-	-	63	59	54	51	53	57	59	87
PT	253	225	184	145	157	121	106	97	71	71
RO	1	3	4	6	10	1	20	45	81	150
SI	-	22	16	5	4	5	5	12	12	8
SK	-	-	-	-	-	-	-	-	-	-
FI	8	9	7	7	12	14	4	13	11	13
SE	12	10	9	12	9	18	8	15	14	11
UK**	17	15	14	21	25	26	23	29	18	21
EU-16	2.279	2.199	2.014	1.735	1.810	1.577	1.436	1.387	1.315	1.213
Yearly change		-3,5%	-8,4%	-13,9%	4,3%	-12,9%	-8,9%	-3,4%	-5,2%	-7,8%
CH	-	-	-	-	-	9	9	9	9	9

\* IE does not distinguish between motorcycles and mopeds. Mopeds are counted as motorcycles.

\*\* For the UK the distinction between mopeds and motorcycles takes place in the CARE database. Additionally, scooters with engine size <50cc are not included, as they are counted with motorcycles.

Source: CARE Database / EC  
Date of query: November 2010

In EU-16 the number of moped rider fatalities decreased by 47% between 1999 and 2008

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<sup>1</sup> See Table "Country abbreviations used and definition of EU-level" on page 16 and "Definition and regulations on motorcycles and mopeds" on page 14-15.

<sup>2</sup> Using latest data available, i.e. 2008 for all countries except CH (2004).

Table 2: Motorcycle rider fatalities by country, 1999-2008<sup>2</sup>

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
BE	142	118	147	158	124	120	123	130	139	108
CZ	108	100	86	117	101	97	116	113	136	121
DK	26	24	12	24	25	23	16	21	36	40
DE	-	945	964	913	946	858	875	793	807	656
EE	-	-	-	-	-	-	5	5	10	1
IE*	43	40	50	44	55	49	56	29	33	29
EL	453	406	426	341	310	379	399	440	420	394
ES	387	392	370	401	367	399	472	488	640	484
FR	983	964	1.092	1.063	883	866	892	789	853	817
IT	569	770	848	907	1.035	1.139	1.120	1.127	1.182	1.086
LV	-	-	-	-	-	-	-	10	10	14
LU	5	8	6	0	13	10	6	8	5	9
HU	-	-	-	-	66	72	100	89	112	91
NL	75	89	76	93	95	84	77	57	64	67
AT	103	112	107	89	109	98	98	95	96	91
PL	-	-	169	167	145	181	157	164	215	262
PT	253	212	229	225	213	181	188	137	145	116
RO	12	15	9	13	8	19	23	35	73	90
SI	-	19	36	18	25	27	33	42	41	40
SK	-	-	-	-	-	-	45	37	54	39
FI	13	10	16	22	23	22	32	26	32	36
SE	36	39	38	37	47	56	46	55	60	51
UK**	521	583	558	571	648	539	531	555	546	460
EU-16	3.729	3.882	4.070	4.105	4.056	4.081	4.195	4.105	4.460	3.999
Yearly change		4,1%	4,8%	0,9%	-1,2%	0,6%	2,8%	-2,2%	8,7%	-10,3%
CH	-	-	-	-	-	114	114	114	114	114

\* IE does not distinguish between motorcycles and mopeds. Mopeds are counted as motorcycles.

\*\* For the UK the distinction between mopeds and motorcycles takes place in the CARE database. Additionally, scooters with engine size <50cc are not included, as they are counted with motorcycles.

Source: CARE Database / EC  
Date of query: November 2010

During the decade the number of motorcycle rider fatalities has increased by 7,2% in EU-16

In 2008, 3.999 riders (drivers and passengers) of motorcycles were killed in the EU-16 countries in traffic accidents, 10,3% less than the number reported in 2007 for the same countries. However, the annual total increased for these countries by 7,2% during the decade, an average of 0,9% 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.

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 Greece and Portugal than in the other countries.

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Motorcycles &amp; Mopeds

Car occupants

Heavy Goods Vehicles and Buses

Motorways

Junctions

Urban areas

Roads outside urban areas

Seasonality

Single vehicle accidents

Gender

Table 3: Fatality rate (fatalities per million inhabitants) of PTW riders, 1999-2008<sup>2</sup>

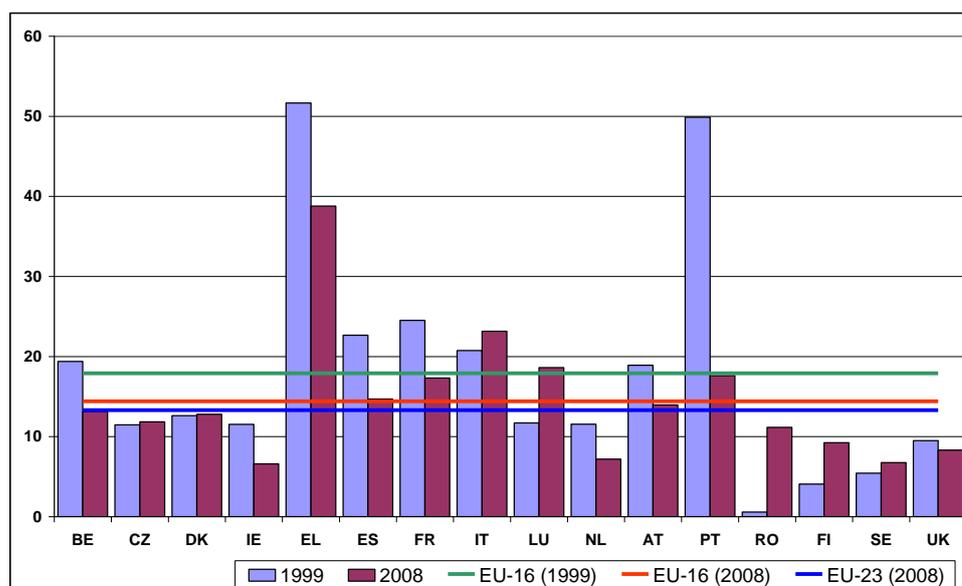
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
BE	19,4	18,0	20,5	21,9	16,3	14,7	14,6	15,8	15,6	13,1
CZ	11,5	11,3	9,3	13,1	11,0	10,0	12,1	11,3	13,5	11,8
DK	12,6	13,3	10,3	11,5	12,6	12,8	8,3	8,3	15,4	12,8
DE	-	13,4	13,4	12,7	13,1	11,9	11,9	10,9	11,0	9,3
EE	-	-	-	-	-	-	5,2	5,2	10,4	5,2
IE	11,5	10,6	13,0	11,3	13,9	12,2	13,6	6,9	7,7	6,6
EL	51,7	45,5	46,0	36,1	33,0	39,3	41,2	44,7	41,4	38,8
ES	22,7	21,6	20,5	19,1	18,2	17,9	18,2	18,1	19,6	14,7
FR	24,5	23,4	25,3	23,6	20,6	19,3	19,9	17,6	18,5	17,3
IT	20,7	24,7	25,0	23,8	27,1	27,6	25,7	25,1	26,0	23,1
LV	-	-	-	-	-	-	-	7,0	6,1	7,9
LU	11,7	18,5	13,7	0,0	29,0	24,2	13,0	17,1	12,6	18,6
HU	-	-	-	-	10,1	9,3	13,9	13,0	14,2	11,6
NL	11,5	12,4	9,6	11,9	11,7	8,7	8,2	7,3	7,6	7,2
AT	18,9	19,5	18,0	16,7	19,3	17,4	16,9	16,2	14,5	13,9
PL	-	-	6,1	5,9	5,2	6,1	5,5	5,8	7,2	9,2
PT	49,9	42,8	40,2	35,8	35,6	28,8	27,9	22,1	20,3	17,6
RO	0,6	0,8	0,6	0,9	0,8	0,9	2,0	3,7	7,1	11,1
SI	-	20,6	26,1	11,5	14,5	16,0	19,0	27,0	26,4	23,9
SK	-	-	-	-	-	-	8,4	6,9	10,0	7,2
FI	4,1	3,7	4,4	5,6	6,7	6,9	6,9	7,4	8,1	9,2
SE	5,4	5,5	5,3	5,5	6,3	8,2	6,0	7,7	8,1	6,8
UK	9,5	10,4	10,1	10,6	12,0	10,2	9,7	10,1	10,1	8,3
EU-16	17,9	17,6	17,0	15,5	17,1	16,2	15,3	15,0	15,4	14,4
EU-23	-	-	-	-	-	-	-	13,8	14,5	13,3
CH	-	-	-	-	-	16,7	16,7	16,7	16,7	16,7

Source: CARE Database / EC  
Date of query: November 2010  
Source of population data: Eurostat

The most significant reduction in the number of motorcycle and moped fatalities between 1999 and 2008 occurred in Portugal

The fatality rate of PTW riders in Greece and Italy in 2008 was still above the EU-16 average of 1999

Figure 1: Motorcycle and moped rider fatalities per million inhabitants, 1999 versus 2008



Source: CARE Database / EC  
Date of query: November 2010  
Source of population data: Eurostat

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In 2008, riders of powered two wheelers made up 17,7% of the total road accident fatalities in EU-23

Motorcycling is the only mode of transport for which the number of fatalities increased between 1999 and 2008

Figure 1 indicates that between 1999 and 2008 the fatality rate of PTW declined in most of the EU-16 countries. The most significant reduction occurred in Portugal (32,3%), whereas the fatality rate increased in Czech Republic, Denmark, Italy, Luxembourg, Romania, Finland and Sweden.

**Table 4: PTW rider fatalities as percentages of the total number of road accident fatalities by country, 1999-2008<sup>2</sup>**

%	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
BE	14,2	12,5	14,1	17,3	13,9	13,2	14,0	15,5	15,4	14,8
CZ	8,1	7,8	7,1	9,4	7,7	7,4	9,6	10,9	11,4	11,4
DK	13,0	14,3	12,8	13,4	15,7	18,7	13,6	14,7	20,7	17,2
DE	-	14,7	15,8	15,3	16,3	16,8	18,3	17,7	18,3	17,1
EE	-	-	-	-	-	-	4,1	3,4	7,1	5,3
IE	10,4	9,6	12,1	11,6	16,3	13,0	14,0	7,9	9,8	10,4
EL	26,5	24,3	26,8	24,2	22,6	26,0	27,6	30,0	28,7	28,0
ES	15,7	15,0	15,1	14,7	14,0	16,0	17,7	19,3	22,8	21,5
FR	17,4	17,6	18,9	18,9	21,1	21,8	23,5	23,5	25,5	25,9
IT	17,6	19,9	20,1	19,5	23,7	26,1	25,9	26,0	30,0	29,2
LV	-	-	-	-	-	-	-	3,9	3,3	5,7
LU	8,6	10,5	8,6	0,0	24,5	22,0	12,8	18,6	13,0	25,7
HU	-	-	-	-	7,7	7,3	11,0	10,1	11,6	11,7
NL	16,7	18,1	15,5	19,4	18,4	17,5	17,7	16,4	17,5	17,4
AT	14,0	16,0	15,0	14,1	16,8	16,2	18,1	18,4	17,4	17,1
PL	-	-	4,2	3,9	3,5	4,1	3,9	4,2	4,9	6,4
PT	25,4	23,5	24,7	22,1	24,0	23,3	23,6	24,1	22,1	21,1
RO	0,5	0,7	0,5	0,8	0,8	0,8	1,6	3,1	5,5	7,8
SI	-	13,1	18,7	8,6	12,0	11,7	14,7	20,6	18,1	22,4
SK	-	-	-	-	-	-	7,4	6,0	8,2	6,4
FI	4,9	4,8	5,3	7,0	9,2	9,6	9,5	11,6	11,3	14,2
SE	8,3	8,3	8,1	8,8	10,6	15,4	12,3	15,7	15,7	15,6
UK	15,6	17,1	16,5	17,5	19,5	18,0	17,5	18,6	20,1	19,2
EU-16	15,3	15,6	16,1	15,9	17,1	17,9	18,5	19,2	20,8	20,4
EU-23	-	-	-	-	-	-	-	16,7	17,9	17,7
CH	-	-	-	-	-	24,1	24,1	24,1	24,1	24,1

Source: CARE Database / EC  
Date of query: November 2010

Table 4 shows that the number of PTW fatalities as a proportion of the national fatality total varied in the EU-23 countries from 5,3% to 29,2% in 2008.

Figure 2 shows that the trend for motorcycle user fatalities differs clearly from the trend for other modes of transport. Motorcycling is the only mode of transport for which number of fatalities has increased over the period studied, which stresses the importance of taking immediate appropriate counter measures.

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The Elderly (Aged > 64)

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Urban areas

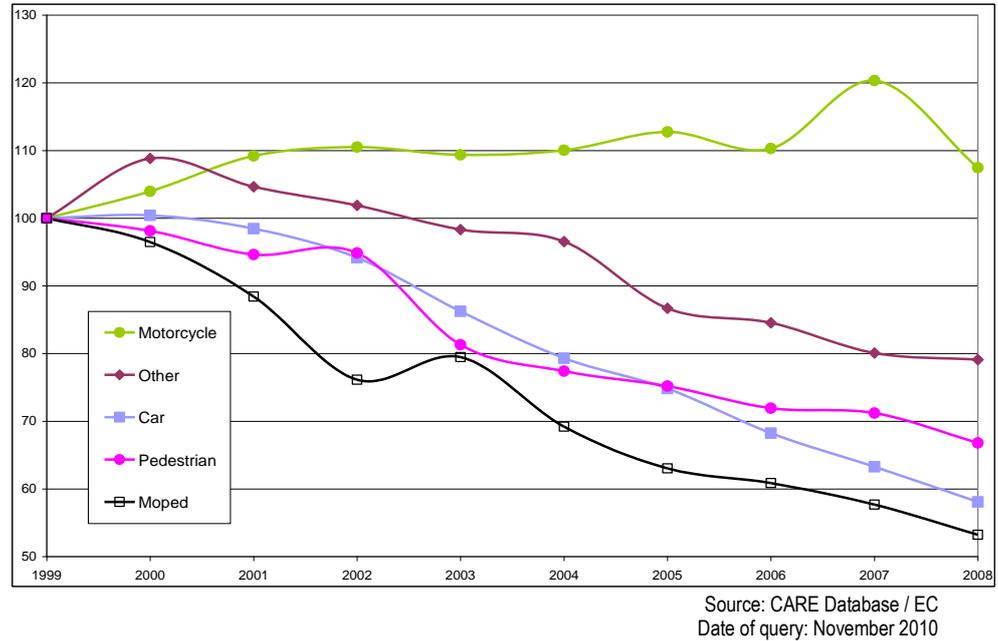
Roads outside urban areas

Seasonality

Single vehicle accidents

Gender

Figure 2: Index (1999=100) of motorcycle and moped fatalities compared with other modes EU-16, 1999-2008



### Age and gender

Table 5 shows the distribution of motorcycle and moped rider fatalities by age group and gender. In 2008, almost 25% of motorcycle and moped rider fatalities were younger than 25 years old. The age at which driving a moped or motorcycle is allowed varies across the European Community.

As shown in Table 5, a large majority of the PTW fatalities were male in all countries. 10% of moped fatalities were females, and 6,5% of motorcycle riders.

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In 2008, almost 25% of the motorcycle and moped rider fatalities were younger than 25 years old

Table 5: Percentage of motorcycle and moped rider fatalities by age and gender, 2008<sup>2</sup>

Age group	0-14		15-24		25-44		45-64		>64		unknown
	fem.	male	fem.	male	fem.	male	fem.	male	fem.	male	
BE	0,0	1,4	2,1	19,3	4,3	57,1	2,1	12,9	0,0	0,7	0,0
CZ	0,0	0,8	1,6	20,3	2,4	59,3	0,8	9,8	0,0	4,1	0,8
DK	0,0	0,0	1,4	21,4	5,7	40,0	1,4	21,4	0,0	8,6	0,0
DE	0,0	0,4	2,7	23,1	5,0	46,1	1,0	13,8	0,1	7,7	0,0
EE	0,0	0,0	0,0	57,1	0,0	14,3	14,3	0,0	0,0	14,3	0,0
IE*	0,0	0,0	3,4	34,5	0,0	58,6	0,0	3,4	0,0	0,0	0,0
EL	0,0	0,5	2,8	26,4	3,4	52,0	0,5	9,0	0,2	5,1	0,2
ES	0,4	0,5	2,8	20,6	4,9	56,0	0,3	8,9	0,0	4,7	0,9
FR	0,2	0,7	3,0	28,2	4,0	50,6	0,5	10,1	0,5	2,2	0,0
IT	0,0	0,9	2,0	21,6	2,4	54,3	0,9	10,1	0,4	6,3	1,1
LV	0,0	5,6	5,6	44,4	5,6	33,3	0,0	5,6	0,0	0,0	0,0
LU	0,0	0,0	0,0	0,0	0,0	55,6	0,0	26,2	0,0	0,0	18,2
HU	0,9	0,0	2,6	21,4	2,6	58,1	0,0	8,5	0,0	6,0	0,0
NL	0,0	0,0	3,4	23,7	1,7	42,4	2,5	14,4	0,8	11,0	0,0
AT	0,0	0,0	5,2	19,8	4,3	40,5	1,7	15,5	0,9	12,1	0,0
PL	0,3	0,9	2,9	37,2	2,0	46,4	1,1	3,7	0,3	4,9	0,3
PT	0,0	0,6	1,2	15,8	3,7	55,5	1,8	9,7	2,4	9,1	0,0
RO	0,0	0,8	2,5	22,1	0,8	52,9	1,3	15,8	0,0	3,8	0,0
SI	0,0	0,0	0,0	27,1	2,1	47,9	0,0	20,8	0,0	2,1	0,0
SK	0,0	0,0	0,0	23,1	7,7	41,0	0,0	8,6	0,0	2,6	17,0
FI	0,0	2,0	10,2	24,5	2,0	42,9	0,0	12,2	2,0	4,1	0,0
SE	0,0	3,2	1,6	14,5	1,6	58,1	0,0	17,7	0,0	3,2	0,0
UK**	0,4	0,2	0,8	23,0	2,9	58,0	0,8	10,6	0,0	3,3	0,0
Moped	0,1	0,1	4,3	34,5	2,7	28,0	1,5	12,9	1,1	14,5	0,3
Motorcycles	0,1	0,8	2,0	20,9	3,6	58,3	0,7	10,2	0,1	2,7	0,6
EU-23	0,1	0,7	2,5	23,8	3,4	51,8	0,9	10,8	0,4	5,2	0,5
CH	0,0	3,3	4,3	15,2	3,3	38,0	1,1	20,7	2,2	12,0	0,0

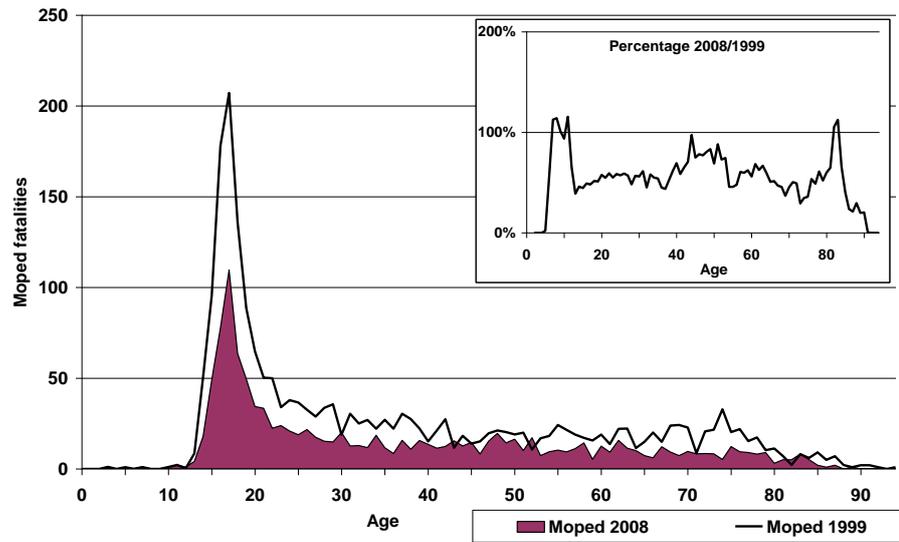
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\*\* For the UK the distinction between mopeds and motorcycles takes place in the CARE database. Additionally, scooters with engine size <50cc are not included, as they are counted with motorcycles.

Source: CARE Database / EC  
Date of query: November 2010

The number of moped and motorcycle rider fatalities by single year of age is presented in Figures 3 and 4. The insets express the numbers in 2008 relative to the numbers in 1999 (the numbers have been averaged over the age one year before and after in order to smooth the age dependency). The inset in Figures 3 shows that the number of moped rider fatalities fell between 1999 and 2008 for almost all ages.

Figure 3: Moped rider fatalities by age in 1999 and 2008, both EU-16\*\*



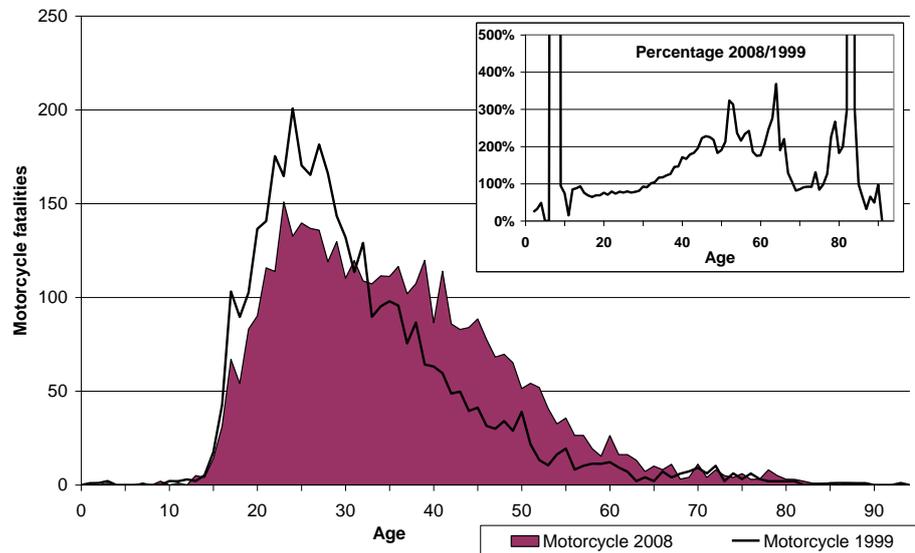
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Source: CARE Database / EC  
Date of query: November 2010

Almost 40% of the moped rider fatalities are aged between 15 and 24 years old in 2008

The number of motorcycle rider fatalities fell between 1999 and 2008 only for those under the age of 30, while it rose for most ages over 30.

Figure 4: Motorcycle rider fatalities by age in 1999 and 2008, both EU-16\*\*



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

Source: CARE Database / EC  
Date of query: November 2010

The number of motorcycle rider fatalities aged 40-60 year old doubled between 1999 and 2008

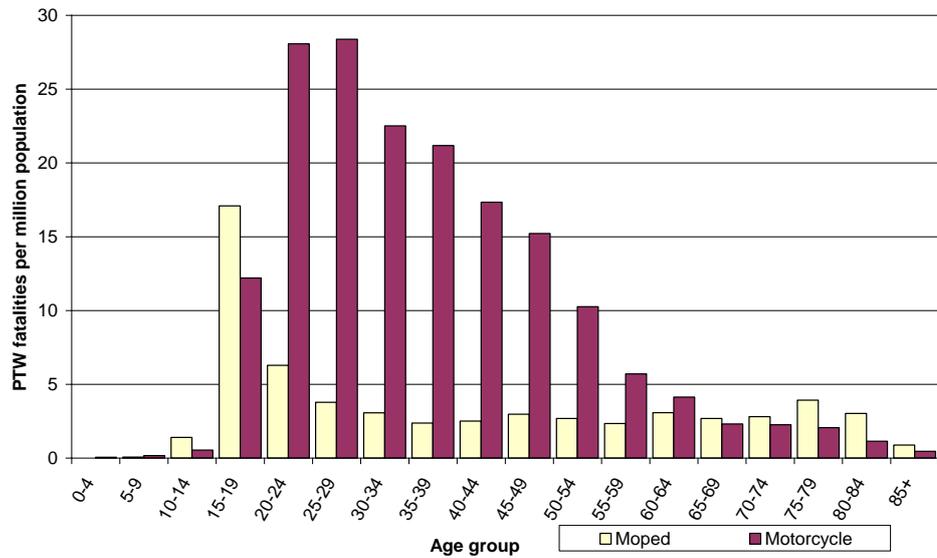
Figure 5 shows the fatality rate by age group in the EU-16 countries. The rates for moped riders aged 15-19 and motorcycle riders aged 20-29 are particularly high.

Almost all fatalities among PTW users were drivers, only 6,4% were passengers

69% of female moped riders who were killed were drivers

54% of female motorcycle riders were killed were passengers

Figure 5: Motorcycle and moped fatalities per million inhabitants by age group - EU-23, 2008



Source: CARE Database / EC  
Date of query: November 2010

### Drivers and passengers

Table 6: Driver and passenger fatalities on motorcycle and mopeds, 2008<sup>2</sup>

	female		male		Total		
	driver	pas-senger	driver	pas-senger		driver	pas-senger
BE	5	7	121	7	140	90%	10%
CZ	2	4	114	3	123	94%	6%
DK	5	1	64	0	70	99%	1%
DE	43	25	687	11	766	95%	5%
EE	1	0	6	0	7	100%	0%
IE*	0	1	26	2	29	90%	10%
EL	15	15	391	14	435	93%	7%
ES	27	30	590	18	664	93%	7%
FR	51	39	975	43	1.108	93%	7%
IT	39	43	1.257	41	1.380	94%	6%
LV	0	2	13	3	18	72%	28%
LU	1	0	8	0	9	100%	0%
HU	2	5	107	3	117	93%	7%
NL	8	2	106	2	118	97%	3%
AT	8	6	102	0	116	95%	5%
PL	10	13	305	21	349	90%	10%
PT	13	5	166	3	187	96%	4%
RO	1	10	217	12	240	91%	9%
SI	0	1	46	1	48	96%	4%
SK	0	5	34	0	39	87%	13%
FI	6	1	40	2	49	94%	6%
SE	2	0	60	0	62	100%	0%
UK**	13	12	475	9	509	96%	4%
Mopeds	99	44	1.257	63	1.463	93%	7%
Motorcycles	153	182	4.653	133	5.121	94%	6%
EU-23	252	226	5.910	196	6.582	94%	6%
CH	5	5	81	1	92	93%	7%

\* IE does not distinguish between motorcycles and mopeds. Mopeds are counted as motorcycles.

\*\* For the UK the distinction between mopeds and motorcycles takes place in the CARE database. Additionally, scooters with engine size <50cc are not included, as they are counted with motorcycles.

Source: CARE Database / EC  
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Moreover, the proportion of passengers among PTW fatalities is relatively high (28%) in Latvia, 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, 2008<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	21	11	0	0	34	65	9	0	39%	54%	6%	-
CZ	2	0	0	0	52	68	1	0	44%	55%	1%	-
DK	19	11	0	0	8	28	4	0	39%	56%	6%	-
DE	47	63	0	0	165	451	40	0	28%	67%	5%	-
EE	1	5	0	0	0	1	0	0	14%	86%	0%	-
IE*	0	0	0	0	7	22	0	22	14%	43%	0%	43%
EL	27	1	0	13	253	16	35	90	64%	4%	8%	24%
ES	77	104	0	0	133	338	13	0	32%	67%	2%	-
FR	148	143	0	0	292	498	27	0	40%	58%	2%	-
IT	191	103	0	0	556	476	54	0	54%	42%	4%	-
LV	4	0	0	0	8	6	0	0	67%	33%	0%	-
LU	0	0	0	0	0	9	0	0	0%	100%	0%	-
HU	17	8	1	0	39	44	8	0	48%	44%	8%	-
NL	32	0	0	19	18	0	0	49	42%	0%	0%	58%
AT	14	11	0	0	17	72	2	0	27%	72%	2%	-
PL	51	34	0	2	141	110	0	11	55%	41%	0%	4%
PT	47	23	1	0	73	35	8	0	64%	31%	5%	-
RO	118	32	0	0	65	25	0	0	76%	24%	0%	-
SI	5	3	0	0	5	35	0	0	21%	79%	0%	-
SK	0	0	0	0	18	21	0	0	46%	54%	0%	-
FI	4	9	0	0	10	24	2	0	29%	67%	4%	-
SE	2	9	0	0	21	27	3	0	37%	58%	5%	-
UK**	11	10	0	1	203	254	14	17	42%	52%	3%	4%
EU-23	838	580	2	35	2118	2625	220	189	45%	51%	4%	-
%	57,6%	39,9%	0,1%	2,4%	41,1%	51,0%	4,3%	3,7%				
CH	4	5	0	0	19	59	5	0	25%	70%	5%	-

\* IE does not distinguish between motorcycles and mopeds. Mopeds are counted as motorcycles.

\*\* For the UK the distinction between mopeds and motorcycles takes place in the CARE database.

Additionally, scooters with engine size <50cc are not included, as they are counted with motorcycles.

Source: CARE Database / EC

Date of query: November 2010

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

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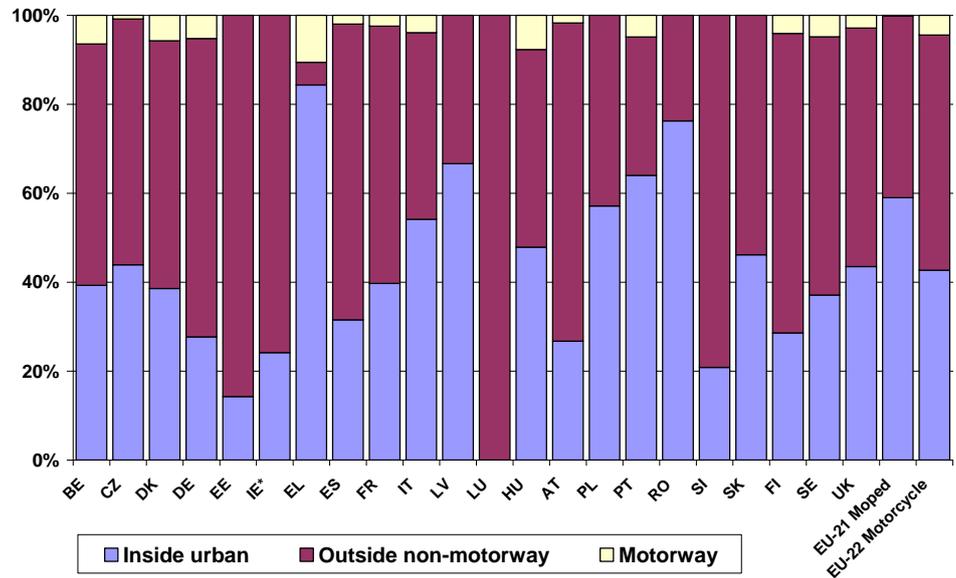
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In Greece, Latvia and Portugal far more PTW fatalities occurred inside urban areas than outside

Figure 6 shows that in 2008, 42% of the motorcycle rider fatalities and 58% of the moped rider fatalities were killed inside urban areas. These proportions are considerably larger than for car occupants (23%).

Figure 6: The distribution of PTW fatalities by area and road type, 2008



NL is not included in Figure 6 as fatality data by road network type are not available for 2008

Source: CARE Database / EC  
Date of query: November 2010

In 2008, relatively few motorcycle rider fatalities occurred on motorways (5%), compared to car occupant fatalities (7%).

### Junction type

Table 8 indicates that almost a third of all motorcycle rider and moped rider fatalities occur at a junction (28,6%). The respective figure for car occupant fatalities occurring at a junction is only 14%.

Nearly 50% of the overall motorcycle/moped rider fatalities recorded at a junction occurred at crossroads.

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Table 8: Motorcycle and moped occupant fatalities by junction type, 2008

	Not at junction	At junction					Not defined	Total
		cross-road	t or y junction	level crossing	round-about	other junction type / unknown		
AT	81	13	0	0	6	0	16	116
BE	99	0	0	2	0	39	0	140
CZ	77	21	1	0	24	0	0	123
DK	37	17	0	0	0	16	0	70
DE	313	231	1	0	0	45	176	766
EE	4	1	0	0	2	0	0	7
IE	0	2	0	1	2	1	23	29
EL	379	0	0	0	0	56	0	435
ES	451	85	0	22	84	23	0	665
FR	939	65	4	15	60	25	0	1.108
IT	857	232	2	36	0	253	0	1.380
LV	16	0	0	0	0	0	2	18
LU	9	0	0	0	0	0	0	9
HU	81	32	3	0	0	1	0	117
NL	67	44	3	2	0	2	0	118
PL	279	69	0	1	0	0	0	349
PT	128	17	1	3	30	1	7	187
RO	211	27	2	0	0	0	0	240
SI	39	0	0	0	0	0	9	48
SK	35	0	0	0	2	0	2	39
FI	38	0	0	0	0	10	1	49
SE	0	20	0	0	0	2	40	62
UK	282	24	0	20	130	53	0	509
EU-23	4.422	900	17	102	340	527	276	6.584
%	67,2%	13,7%	0,3%	1,5%	5,2%	8%	4,2%	100%

Source: CARE Database / EC  
Date of query: November 2010

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-23, 2008\*\*

	Not at junction	At junction	Not defined
Pedestrian	72,1%	20,9%	7,0%
Bicycle	54,8%	36,3%	8,9%
Moped	64,1%	31,9%	4,0%
Motorcycle	66,8%	27,8%	5,4%
Car + taxi	63,8%	14,3%	21,9%
Lorry, under 3.5 tonnes	81,2%	11,5%	7,3%
Heavy goods vehicle	78,4%	10,3%	11,3%
Other / Unknown	75,8%	17,7%	6,5%
EU-23 all modes	68,3%	23,4%	8,3%

\* IE does not distinguish between motorcycles and mopeds. Mopeds are counted as motorcycles.

\*\* For the UK the distinction between mopeds and motorcycles takes place in the CARE database. Additionally, scooters with engine size <50cc are not included, as they are counted with motorcycles.

Source: CARE Database / EC  
Date of query: November 2010

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

## 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-23, 2008<sup>2</sup>

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
BE	4	5	2	16	14	20	20	20	20	6	9	4	140
CZ	2	2	2	14	18	21	19	20	12	7	5	1	123
DK	2	1	2	7	11	8	11	9	8	8	2	1	70
DE	16	27	19	65	127	114	98	107	104	65	18	6	766
EE	0	0	1	1	1	1	0	1	0	0	2	0	7
IE	3	1	1	4	1	5	3	7	1	1	2	0	29
EL	21	16	27	37	46	55	43	65	37	46	29	13	435
ES	49	46	58	68	51	72	77	68	50	45	51	30	665
FR	66	63	62	84	124	93	158	124	102	105	65	62	1.108
IT	47	66	101	115	158	180	183	186	115	118	57	54	1.380
LV	0	1	0	2	1	3	5	2	3	0	0	0	17
LU	0	0	0	2	2	1	0	2	1	0	1	0	9
HU	2	8	4	12	17	15	14	13	10	13	7	2	117
NL	7	9	8	13	15	12	6	13	17	13	4	1	118
AT	0	3	2	8	17	17	20	22	19	7	1	0	116
PL	4	7	17	37	41	61	61	57	30	23	6	5	349
PT	7	14	14	25	18	15	19	26	15	13	14	8	188
RO	4	4	8	22	24	33	21	51	29	29	10	5	240
SI	0	0	0	5	6	6	6	10	7	5	2	1	48
SK	0	1	1	1	8	3	5	9	7	3	1	0	39
FI	0	2	1	4	5	2	12	14	6	1	2	0	49
SE	0	1	1	7	9	11	13	9	8	2	1	0	62
UK	19	33	29	40	58	53	74	52	36	64	27	24	509
moped	83	80	98	123	151	140	182	177	139	128	92	67	1.460
motorcycles	172	235	267	471	632	676	707	721	503	453	229	152	5.219
EU-23	253	310	360	589	772	801	868	887	637	574	316	217	6.584
%	3,8%	4,7%	5,5%	8,9%	11,7%	12,2%	13,2%	13,5%	9,7%	8,7%	4,8%	3,3%	100%
CH	2	5	4	5	11	15	20	10	6	8	5	1	92

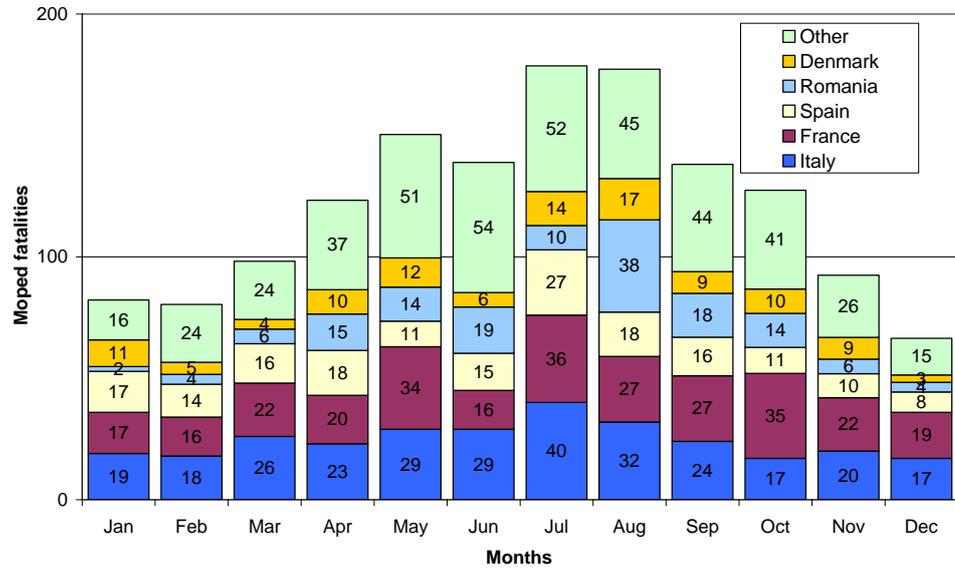
Source: CARE Database / EC  
Date of query: November 2010

In Figures 7 and 8 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 18 countries from the EU-23.

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 8.

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

Figure 7: Moped fatalities by month - top 5 countries and other EU-23, 2008\*\*



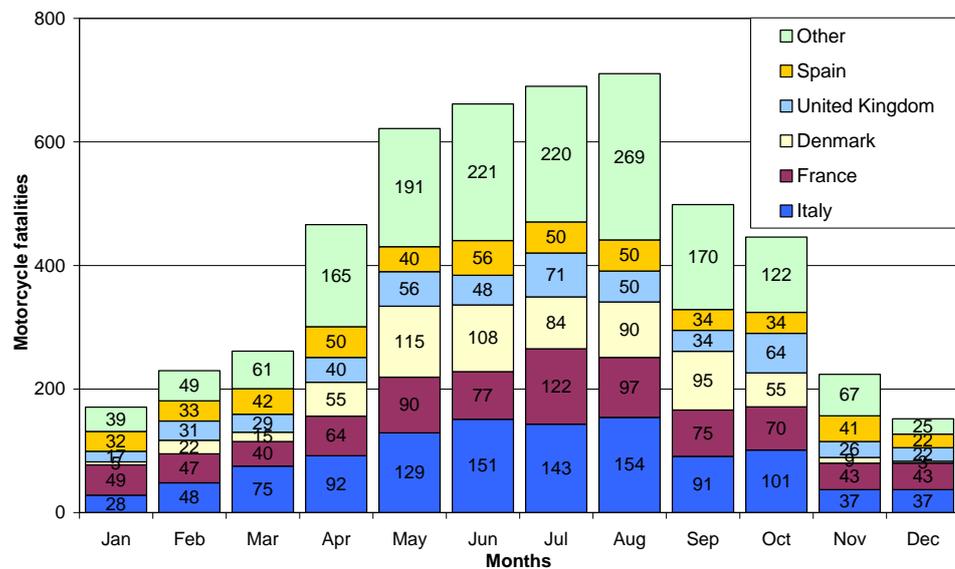
\* IE does not distinguish between motorcycles and mopeds. Mopeds are counted as motorcycles.  
 \*\* For the UK the distinction between mopeds and motorcycles takes place in the CARE database. Additionally, scooters with engine size <50cc are not included, as they are counted with motorcycles.

Source: CARE Database / EC  
 Date of query: November 2010

Denmark, Romania, Spain, France and Italy 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 8: Motorcycle fatalities by month - top 5 countries and other EU-23, 2008\*\*



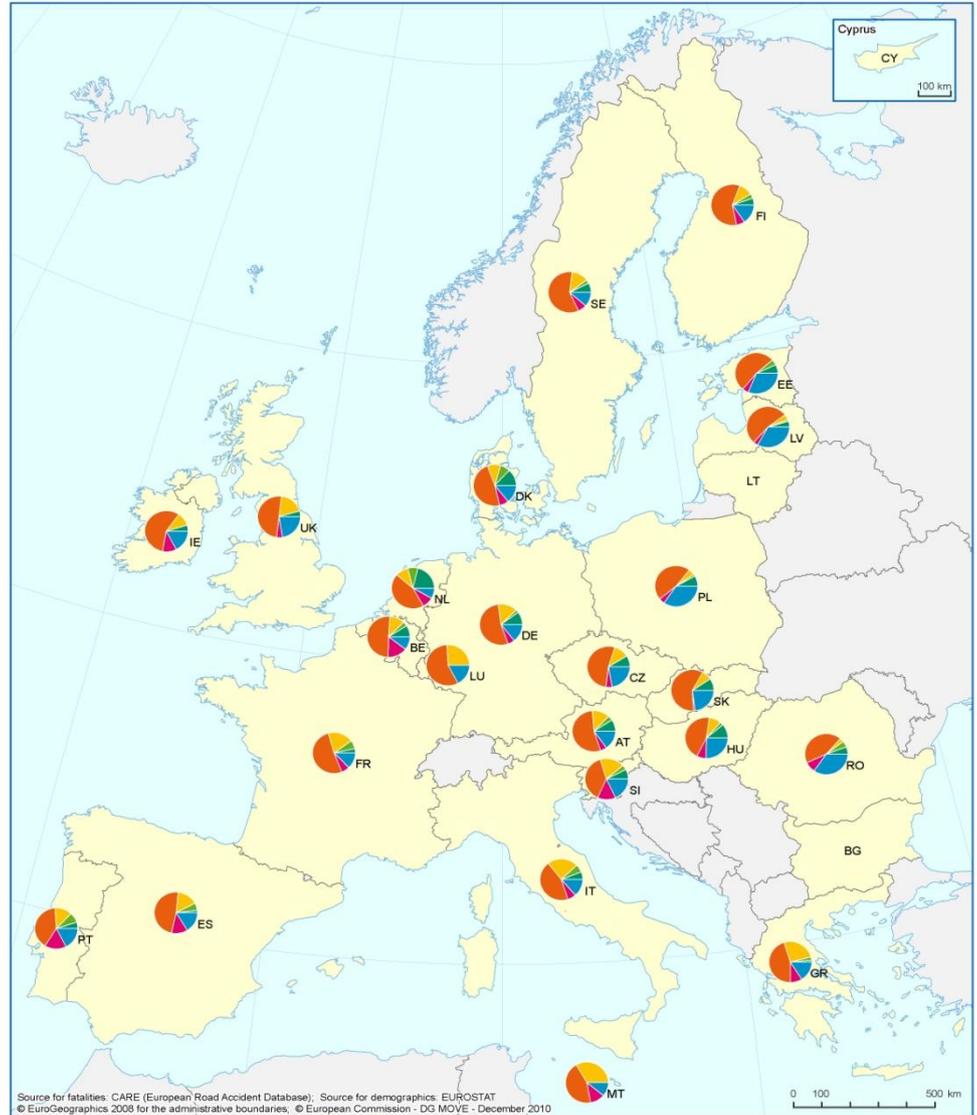
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Source: CARE Database / EC  
 Date of query: November 2010

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

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Figure 9: Distribution of fatalities by transport mode in the EU-23, 2008



Source: CARE Database / EC

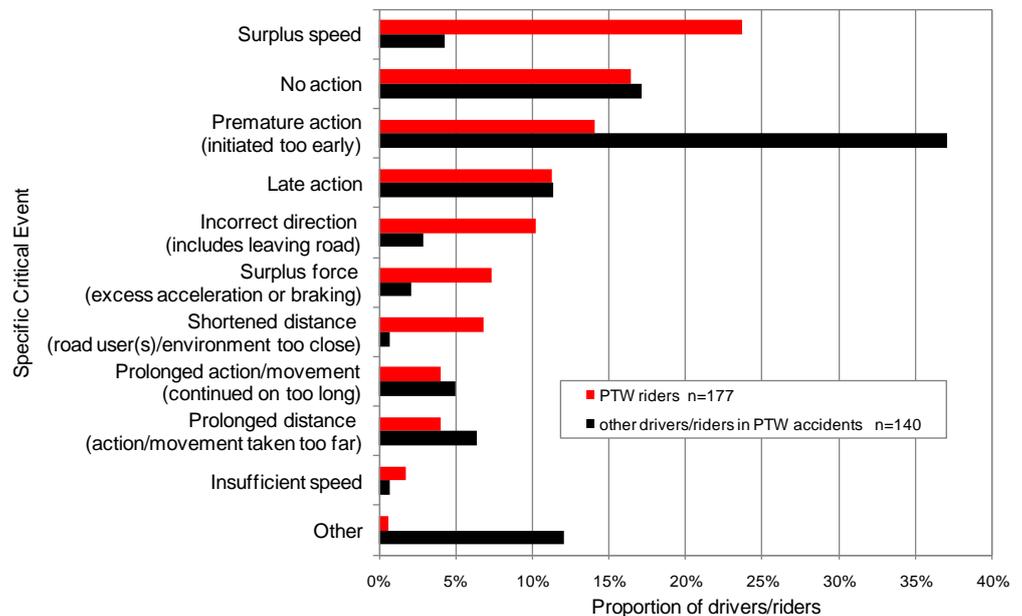
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### Accident Causation

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
Total	196

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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## 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).

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## 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:

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## Country abbreviations used and definition of EU-level

EU - 16		EU-23 = EU-16 +	
BE	Belgium	DE	Germany
CZ	Czech Republic	EE	Estonia
DK	Denmark	LV	Latvia
IE	Ireland	HU	Hungary
EL	Greece	PL	Poland
ES	Spain	SK	Slovakia
FR	France	SI	Slovenia
IT	Italy		
LU	Luxembourg		
NL	Netherlands		
AT	Austria		
PT	Portugal		
RO	Romania		
FI	Finland		
SE	Sweden		
UK	United Kingdom		

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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