European Commission

European Road Safety Observatory
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Traffic Safety Basic Facts 2018

The Elderly

(Aged >64)

Transport

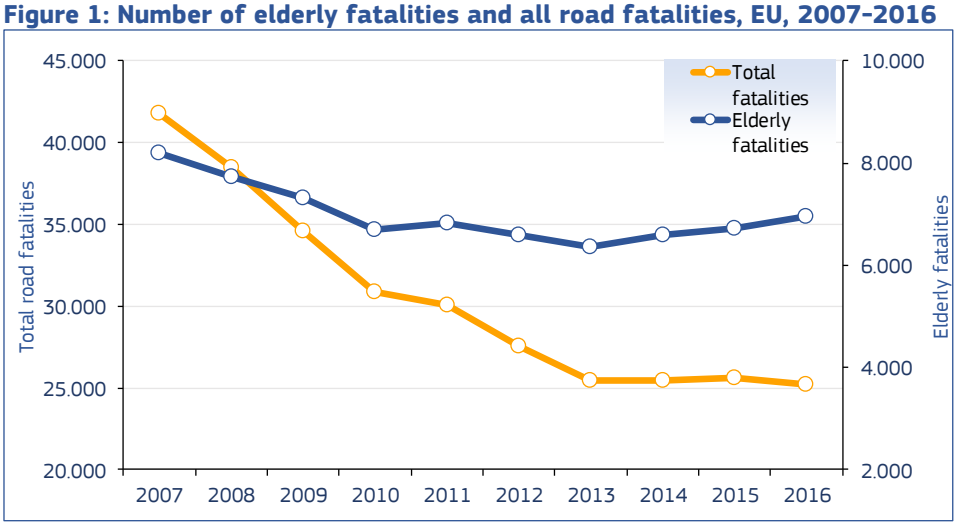
General

With the demographic shift towards an ever-increasing number of older drivers on the road, research on older drivers becomes more and more pertinent. Although older drivers are involved in fewer accidents, they represent one of the highest risk categories probably because of their great fragility and reduced tolerance to injury. In 2016, 6.957 elderly people were killed in road accidents in the EU (excluding Lithuania and Slovakia), which constitutes 28% of fatalities of all ages in 2016.

Figure 1 shows the evolution of the elderly fatalities and the total number of road fatalities over the decade 2007-2016. The number of elderly people killed in road accidents in 2016 decreased by 15%, while the total number of fatalities fell by 41% in the EU countries.

In 2016, more than 6.900 elderly people died in road accidents in the EU.

Figure 1: Number of elderly fatalities and all road fatalities, EU, 2007-2016



Source: CARE database, data available in May 2018

Table 1 presents the annual data by country from 2007 including the totals for the EU countries in the last decade. In almost all EU countries, the number of elderly fatalities fell between 2007 and 2013, while then they increased again. However, in most countries the number of elderly fatalities was still lower in 2016 compared to 2007; decreases range from 1% in Italy to 53% in Slovenia. In the Netherlands, the number of elderly fatalities increased by 9% in 2016 compared to 2007.

The number of elderly people who died in the EU countries fell by 15% between 2007 and 2016.

Table 1: Number of elderly fatalities by country, 2007-2016

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
BE	170	149	163	153	183	177	151	178	184	147
BG	-	199	158	147	120	116	107	142	147	-
CZ	201	186	167	172	141	157	155	131	178	160
DK	95	97	61	67	63	44	53	58	49	72
DE	1.153	1.066	1.104	910	1.044	994	999	987	1.024	1.049
EE	41	29	18	17	19	18	19	16	13	-
IE	58	47	26	30	37	36	46	43	-	-
EL	330	329	275	268	260	248	234	187	225	236
ES	604	544	507	527	486	506	479	479	505	515
FR	896	823	796	765	759	745	688	772	829	883
HR	110	105	116	97	74	79	75	81	63	83
IT	1.105	1.099	1.111	1.064	1.038	1.068	1.011	1.056	1.088	1.045
CY	16	14	14	11	12	9	8	11	16	14
LV	73	46	35	36	43	34	40	42	33	35
LT	-	-	-	-	-	-	52	49	66	-
LU	7	4	9	3	3	9	9	2	8	12
HU	209	179	166	137	146	121	135	155	144	159
MT	3	2	5	0	-	-	-	-	3	5
NL	181	174	187	154	188	187	164	173	176	198
AT	145	172	159	140	150	154	142	115	141	137
PL	945	962	810	674	703	653	647	692	619	656
PT	225	197	205	277	264	195	193	206	177	201
RO	617	571	593	494	453	457	422	420	450	509
SI	51	34	39	30	23	26	27	26	29	24
SK	97	72	51	48	-	-	-	-	-	-
FI	79	93	69	64	82	58	73	56	67	69
SE	105	102	92	71	91	71	76	99	70	89
UK	575	499	432	377	439	422	409	474	444	456
EU	**8.193**	**7.723**	**7.317**	**6.685**	**6.821**	**6.584**	**6.362**	**6.601**	**6.725**	**6.957**
Yearly change		-5,7%	-5,2%	-8,6%	2,0%	-3,5%	-3,4%	3,7%	1,9%	3,4%
IS	3	4	3	2	2	4	2	0	5	6
NO	51	48	37	42	37	28	44	47	24	32
CH	117	103	90	101	118	93	100	86	97	68

Source: CARE database, data available in May 2018
Totals for EU include latest available data (Data for Lithuania and Slovakia not included in the totals)

Table 2 shows the percentage of the elderly fatalities of all road fatalities by country in the EU, Iceland, Norway and Switzerland. Among the EU countries, this ranged between 18% in Slovenia and 37% in the Netherlands.

Table 2: Percentage of elderly fatalities of all road fatalities, 2007-2016

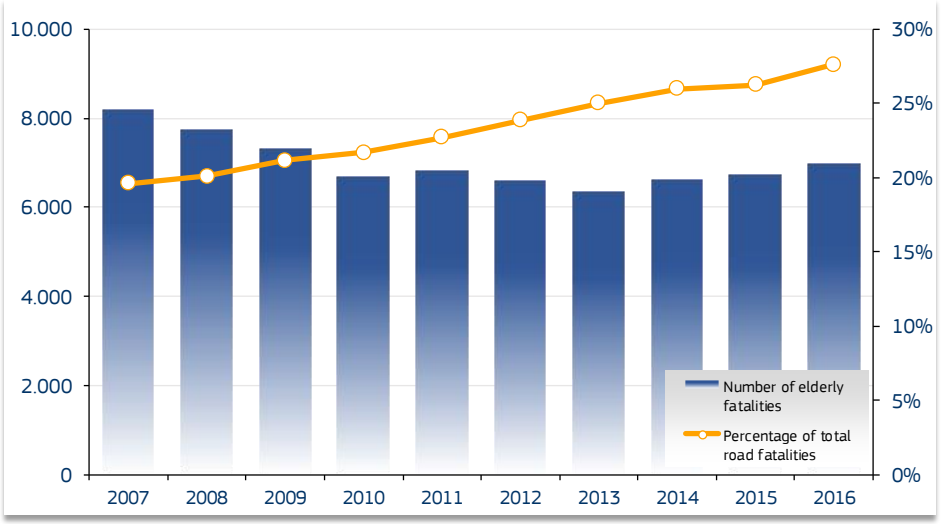
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
BE	16%	16%	17%	18%	21%	23%	21%	24%	25%	23%
BG	-	19%	18%	19%	18%	19%	18%	21%	21%	-
CZ	16%	17%	19%	21%	18%	21%	24%	19%	24%	26%
DK	23%	24%	20%	26%	29%	26%	28%	32%	28%	34%
DE	23%	24%	27%	25%	26%	28%	30%	29%	30%	33%
EE	21%	22%	18%	22%	19%	21%	23%	21%	19%	-
IE	17%	17%	11%	14%	20%	22%	24%	22%	-	-
EL	20%	21%	19%	21%	23%	25%	27%	24%	28%	29%
ES	16%	18%	19%	21%	24%	27%	29%	28%	30%	28%
FR	19%	19%	19%	19%	19%	20%	21%	23%	24%	25%
HR	18%	16%	21%	23%	18%	20%	20%	26%	18%	27%
IT	22%	23%	26%	26%	27%	28%	30%	31%	32%	32%
CY	18%	17%	20%	18%	17%	18%	18%	24%	28%	30%
LV	17%	15%	14%	17%	24%	19%	22%	20%	18%	22%
LT	-	-	-	-	-	-	20%	18%	27%	-
LU	15%	11%	19%	9%	9%	26%	20%	6%	22%	38%
HU	17%	18%	20%	19%	23%	20%	23%	25%	22%	26%
MT	25%	22%	33%	0%	-	-	-	-	27%	22%
NL	26%	26%	29%	29%	34%	33%	34%	36%	33%	37%
AT	21%	25%	25%	25%	29%	29%	31%	27%	29%	32%
PL	17%	18%	18%	17%	17%	18%	19%	22%	21%	22%
PT	23%	22%	24%	30%	30%	27%	30%	32%	30%	36%
RO	22%	19%	21%	21%	22%	22%	23%	23%	24%	27%
SI	17%	16%	23%	22%	16%	20%	22%	24%	24%	18%
SK	15%	12%	13%	13%	-	-	-	-	-	-
FI	21%	27%	25%	24%	28%	23%	28%	24%	25%	27%
SE	22%	26%	26%	27%	29%	25%	29%	37%	27%	33%
UK	19%	19%	18%	20%	22%	23%	23%	26%	25%	25%
EU	**20%**	**20%**	**21%**	**22%**	**23%**	**24%**	**25%**	**26%**	**26%**	**28%**
IS	20%	33%	18%	25%	17%	44%	13%	0%	31%	33%
NO	22%	19%	17%	20%	22%	19%	24%	32%	21%	24%
CH	30%	29%	26%	31%	37%	27%	37%	35%	38%	31%

Source: CARE database, data available in May 2018

Since 2013, more than one quarter of all road fatalities concerned elderly fatalities.

Figure 2 shows the number of elderly fatalities and the percentage of all road fatalities in the EU during the period 2007-2016. The number of elderly fatalities was decreasing up to 2013, while it increased during the last two years. This pattern, combined with the fact that the total number of fatalities has fallen faster during this decade, leads to the rise of the proportion of elderly fatalities.

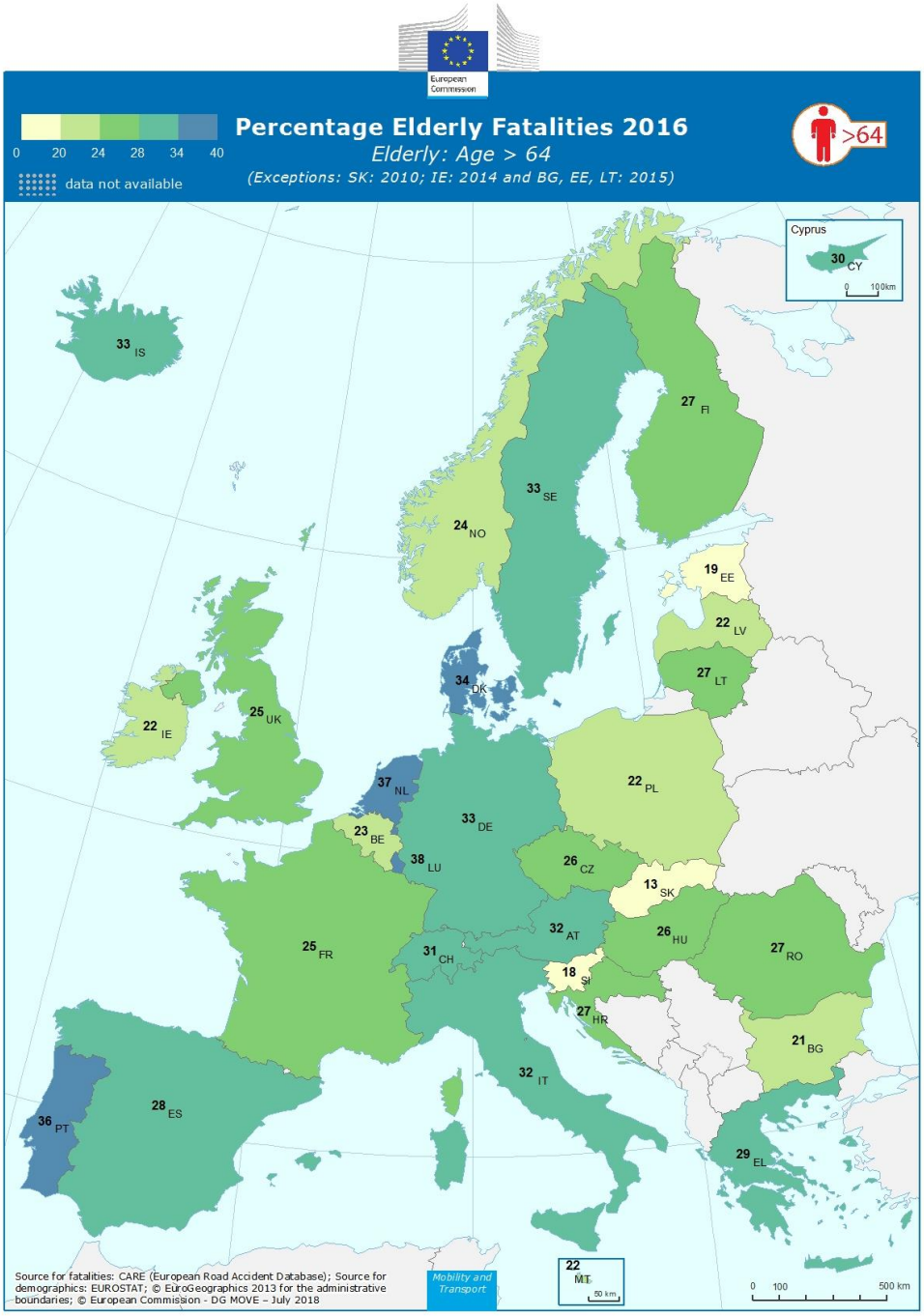
Figure 2: Number of elderly fatalities and percentage of all road fatalities, EU, 2007-2016



Source: CARE database, data available in May 2018

In 2016, the proportion of road fatalities of the elderly in the EU varies between 18% and 37%.

Map 1: Percentage of elderly fatalities of all fatalities by country, 2016 or latest available year



For a better comparison among the EU countries, the elderly fatality rates per million population were calculated, as shown in table 3a. The EU fatality rate had a decreasing trend between 2007 and 2013, but remained stable up to 2015 and then increased. In 2016, Romania had the highest fatality rate (148 fatalities per million population), whilst the United Kingdom (39) and Sweden (46) had the lowest.

Middle-aged, elderly and total fatality rates are illustrated in Figure 3a, with countries being sorted by the overall fatality rate for the elderly.

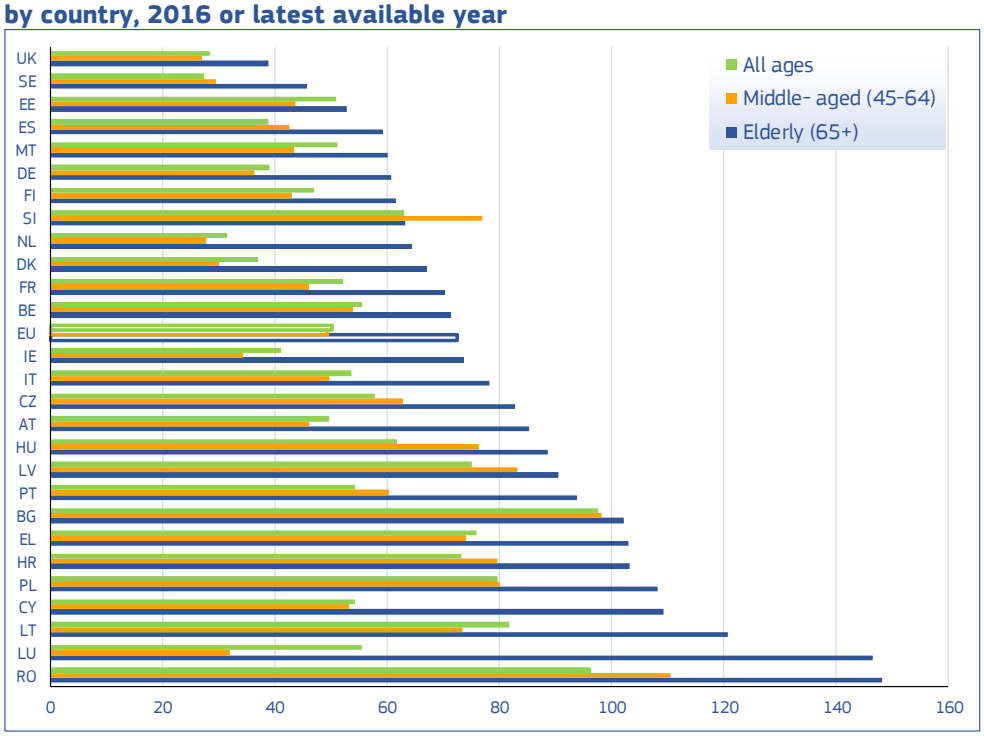
Table 3a: Elderly fatality rates per million population by country, 2007-2016

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
BE	94	82	89	82	97	92	77	89	91	71
BG	-	149	118	109	88	84	77	100	102	-
CZ	136	123	107	108	86	92	88	72	95	83
DK	114	114	70	74	67	45	53	56	47	67
DE	71	65	66	54	63	60	60	59	60	61
EE	177	124	77	73	82	77	80	66	53	-
IE	124	98	53	59	70	66	82	74	-	-
EL	161	159	132	127	121	114	106	84	99	103
ES	82	73	66	67	61	62	58	57	59	59
FR	88	80	76	73	71	68	61	66	69	72
HR	144	137	150	126	97	103	97	103	79	103
IT	94	93	93	88	85	86	80	81	82	78
CY	171	145	141	107	113	81	70	92	129	109
LV	190	119	91	94	113	90	105	110	86	91
LT	-	-	-	-	-	-	96	90	121	-
LU	105	59	131	43	42	123	120	26	100	146
HU	130	110	101	82	87	72	79	90	82	89
MT	53	35	86	0	-	-	-	-	38	60
NL	76	72	76	61	72	69	58	59	59	64
AT	104	121	110	95	102	103	93	74	89	85
PL	185	187	157	131	136	123	118	122	106	108
PT	122	105	108	143	134	97	95	100	84	94
RO	198	179	180	151	139	141	130	127	133	148
SI	160	104	117	89	68	75	77	72	79	63
SK	151	111	77	72	-	-	-	-	-	-
FI	91	106	77	70	87	59	72	53	61	61
SE	66	63	56	42	52	40	42	53	37	46
UK	59	51	43	37	42	40	37	42	39	39
EU	**99**	**92**	**86**	**77**	**78**	**74**	**70**	**71**	**71**	**72**
IS	84	110	81	53	51	99	48	0	112	130
NO	74	69	52	58	50	36	56	58	29	37
CH	96	83	71	77	89	68	71	60	66	45

Sources: CARE database (EUROSTAT for population data), data available in May 2018

Romania had the highest fatality rate, whilst the UK, and Sweden had the lowest.

Figure 3a: Middle aged, elderly and total fatality rates per million population by country, 2016 or latest available year



Sources: CARE database (EUROSTAT for population data), data available in May 2018

Table 3b compares the fatality rates of elderly people and middle-aged people (45-64 years) with the fatality rate of the whole population. The ratios of elderly to middle-aged and of elderly to all fatalities clearly show that the risk of being killed in an accident is higher for the elderly than for the middle-aged and that the elderly have an above-average fatality risk in many EU countries.

In all EU countries, the elderly are at greater risk of being killed in a road accident than the overall population. Middle-aged people (45-64 years old) are at a lower risk of being killed in a road accident than the elderly.

Table 3b: Middle aged, elderly and total fatality rates per million population and comparisons by country, 2016 or latest available year

	Fatality rate			Comparisons	
	Middle-aged (45-64)	Elderly (65+)	All ages	Elderly/ Middle-aged	Elderly/ All ages
BE	54	71	56	1,32	1,28
BG	98	102	97	1,04	1,05
CZ	63	83	58	1,32	1,43
DK	30	67	37	2,24	1,81
DE	36	61	39	1,67	1,56
EE	44	53	51	1,21	1,03
IE	34	74	41	2,15	1,80
EL	74	103	76	1,39	1,36
ES	43	59	39	1,39	1,52
FR	46	70	52	1,53	1,35
HR	80	103	73	1,30	1,41
IT	50	78	54	1,57	1,46
CY	53	109	54	2,05	2,01
LV	83	91	75	1,09	1,20
LT	73	121	82	1,64	1,47
LU	32	146	56	4,57	2,64
HU	76	89	62	1,16	1,44
MT	43	60	51	1,38	1,18
NL	28	64	31	2,33	2,05
AT	46	85	50	1,85	1,72
PL	80	108	80	1,35	1,36
PT	60	94	54	1,56	1,73
RO	110	148	96	1,34	1,54
SI	77	63	63	0,82	1,00
SK	59	61	59	1,04	1,04
FI	43	61	47	1,43	1,31
SE	29	46	27	1,55	1,67
UK	27	39	28	1,44	1,37
EU	**49**	**72**	**50**	**1,46**	**1,44**
IS	49	130	54	2,65	2,41
NO	35	37	26	1,08	1,46
CH	24	45	26	1,90	1,75

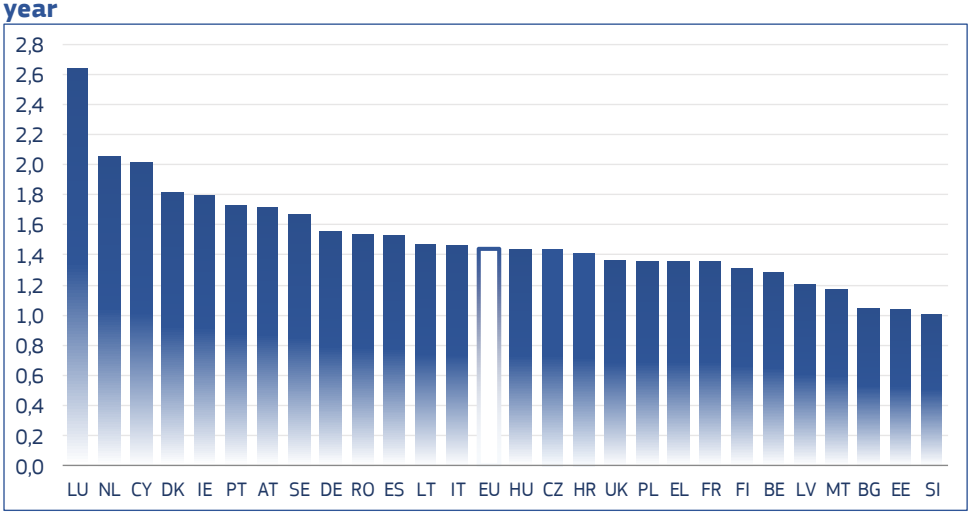
Sources: CARE database (EUROSTAT for population data), data available in May 2018

Figure 3b shows the relative fatality rates by country, allowing for a better comparison of the elderly fatality rate to the rate of the total population.

$$\text{relative fatality rate} = \frac{\text{fatality rate aged over 64}}{\text{fatality rate all ages}}$$

$$\text{where fatality rate} = \frac{\text{fatalities}}{\text{population (millions)}}$$

Figure 3b: Relative elderly fatality rates by country, 2016 or latest available year



Sources: CARE database (EUROSTAT for population data), data available in May 2018

The risk of being killed in a road accident for the elderly in the EU is about 1,4 times higher compared to the average member of the population across the EU as a whole.

The risk of being killed in a road accident for the elderly in the EU is about 1,4 times higher compared to the average member of the population across the EU as a whole. In the Netherlands, the elderly fatality risk is more than twice the overall fatality rate.

In the following tables and figures, the CARE data for 2016 are analysed in greater detail. 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.

Age and gender

Table 4a: Total number and distribution of elderly fatalities by country, age group and gender, 2016 or latest available year

	Distribution by age			Distribution by gender		Total
	65-74	75-84	85+	Female	Male	
BE	45%	44%	12%	38%	62%	147
BG	48%	41%	10%	-	-	147
CZ	51%	34%	14%	37%	63%	160
DK	29%	47%	24%	39%	61%	72
DE	33%	50%	16%	37%	63%	1.049
EE	46%	46%	8%	46%	54%	13
IE	53%	33%	14%	40%	60%	43
EL	42%	44%	15%	27%	73%	236
ES	39%	41%	20%	30%	70%	515
FR	36%	41%	23%	36%	64%	883
HR	51%	45%	5%	33%	67%	83
IT	37%	43%	20%	25%	75%	1.045
CY	21%	50%	29%	36%	64%	14
LV	60%	37%	3%	37%	63%	35
LT	44%	41%	15%	47%	53%	66
LU	33%	58%	8%	50%	50%	12
HU	45%	42%	13%	34%	66%	159
MT	20%	60%	20%	40%	60%	5
NL	33%	45%	21%	34%	66%	198
AT	40%	39%	20%	34%	66%	137
PL	49%	35%	16%	43%	57%	656
PT	48%	41%	11%	32%	68%	201
RO	47%	43%	10%	39%	61%	509
SI	46%	46%	8%	29%	71%	24
SK	46%	40%	15%	48%	52%	48
FI	39%	33%	28%	39%	61%	69
SE	42%	38%	20%	39%	61%	89
UK	32%	44%	24%	42%	58%	456
EU	**40%**	**43%**	**18%**	**35%**	**65%**	**7.071**
IS	67%	17%	17%	50%	50%	6
NO	44%	44%	13%	28%	72%	32
CH	35%	31%	34%	35%	65%	68

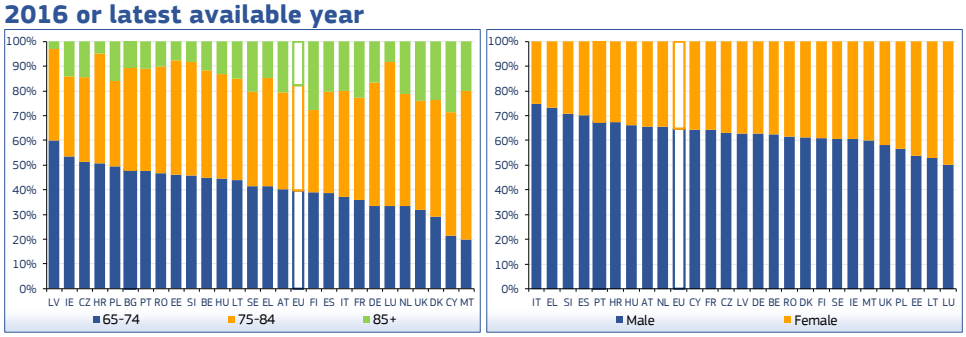
Source: CARE database, data available in May 2018

Almost two thirds of the elderly people killed in road accidents were men.

Table 4a gives more details of the age groups and of the gender distribution of elderly fatalities, using three age ranges. The highest percentage of elderly fatalities was recorded for the 75-84 age group, which was slightly higher than for the 65-74 age group. In Latvia, about 60% of elderly fatalities were aged between 65 and 74 years old.

Concerning gender, almost two thirds of elderly fatalities were men. Women make up a higher proportion of fatalities among the elderly (35%) than within the whole population (24%). Figure 4 illustrates the results from Table 4a. The highest percentage of female elderly fatalities have been recorded in Lithuania (47%) and Estonia (46%).

Figure 4: Distribution of elderly fatalities by country, age group and gender, 2016 or latest available year



Source: CARE database, data available in May 2018

Table 4b: Elderly and total fatality rates per million population by country, age group and gender, 2016 or latest available year

	Age Group			Gender		Total
	65-74	75-84	85+	Female	Male	
BE	63	90	57	47	102	71
BG	85	126	120	-	-	102
CZ	69	99	122	52	126	83
DK	33	107	144	48	90	67
DE	42	77	78	40	88	61
EE	47	66	34	37	84	53
IE	68	76	97	54	96	74
EL	88	119	110	49	170	103
ES	46	70	77	31	96	59
FR	49	90	99	44	106	70
HR	98	123	51	56	175	103
IT	59	93	104	34	136	78
CY	40	169	337	72	152	109
LV	105	91	23	50	174	91
LT	105	131	158	85	190	121
LU	92	253	92	17	33	146
HU	69	116	113	48	155	89
MT	20	120	129	44	80	60
NL	37	94	119	40	92	64
AT	66	98	128	51	131	85
PL	96	114	148	77	158	108
PT	88	107	80	52	153	94
RO	127	179	152	96	226	148
SI	55	83	43	31	108	63
SK	47	80	95	48	82	61
FI	42	67	136	42	86	61
SE	34	58	70	33	60	46
UK	23	53	70	30	50	39
EU	**55**	**89**	**95**	**43**	**107**	**72**
IS	153	72	167	6	8	130
NO	29	56	35	11	35	37
CH	30	43	112	29	67	45

Sources: CARE database (EUROSTAT for population data), data available in May 2018

Across the EU, the fatality rate for elderly men is more than twice the rate for elderly women.

In Table 4b, the rate of fatalities per million population is calculated for the three age groups in Table 4a. The over 85 age group has the highest

fatality rate (95) on average in the EU, while the 65-74 group has the lowest fatality rate (55). These differences are probably influenced by the tendency for frailty to increase. The table also shows, that in most countries the fatality rate of elderly men is over twice the rate of elderly women.

Road User Type and Transport Mode

Table 5 shows the number of elderly fatalities by road user type. The percentages reflect the reduced mobility options and the higher frailty of elderly persons. 37% of elderly fatalities were pedestrians in the EU countries. The highest percentage of elderly fatalities who were pedestrians was found in Cyprus (71%) and the lowest in the Netherlands (15%). Conversely, the proportion of elderly fatalities who were car drivers ranged between 10% in Romania and 41% in Finland. The results are illustrated in Figure 5 (sorted by the share of pedestrian fatalities).

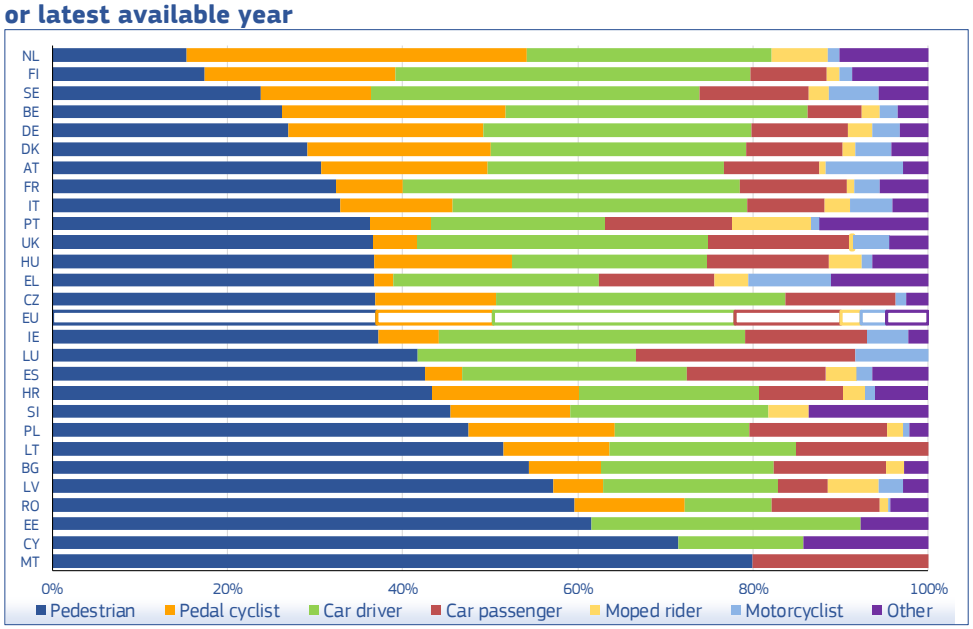
Across the EU, almost two fifths of elderly fatalities were pedestrians, while car drivers represented more than a quarter.

Table 5: Total number and distribution of elderly fatalities by country and road user type, 2016 or latest available year

	Pedest-rian	Pedal cyclist	Car driver	Car passenger	Moped rider	Motor cyclist	Others	Total
BE	26%	26%	34%	6%	2%	2%	3%	147
BG	54%	8%	20%	13%	2%	0%	3%	147
CZ	37%	14%	33%	13%	0%	1%	3%	160
DK	29%	21%	29%	11%	1%	4%	4%	72
DE	27%	22%	31%	11%	3%	3%	3%	1.049
EE	62%	0%	31%	0%	0%	0%	8%	13
IE	37%	7%	35%	14%	0%	5%	2%	43
EL	37%	2%	24%	13%	4%	9%	11%	236
ES	43%	4%	26%	16%	3%	2%	6%	515
FR	32%	8%	39%	12%	1%	3%	6%	883
HR	43%	17%	20%	10%	2%	1%	6%	83
IT	33%	13%	34%	9%	3%	5%	4%	1.045
CY	71%	0%	14%	0%	0%	0%	14%	14
LV	57%	6%	20%	6%	6%	3%	3%	35
LT	52%	12%	21%	15%	0%	0%	0%	66
LU	42%	0%	25%	25%	0%	8%	0%	12
HU	37%	16%	22%	14%	4%	1%	6%	159
MT	80%	0%	0%	20%	0%	0%	0%	5
NL	15%	39%	28%	0%	6%	1%	10%	198
AT	31%	19%	27%	11%	1%	9%	3%	137
PL	47%	17%	15%	16%	2%	1%	2%	656
PT	36%	7%	20%	14%	9%	1%	12%	201
RO	60%	13%	10%	12%	1%	0%	4%	509
SI	45%	14%	23%	0%	5%	0%	14%	24
SK	60%	17%	6%	13%	0%	2%	2%	48
FI	17%	22%	41%	9%	1%	1%	9%	69
SE	24%	13%	38%	13%	2%	6%	6%	89
UK	37%	5%	33%	16%	0%	4%	4%	456
EU	**37%**	**13%**	**28%**	**12%**	**2%**	**3%**	**5%**	**7.071**
IS	17%	0%	67%	17%	0%	0%	0%	6
NO	16%	16%	44%	16%	0%	3%	6%	32
CH	36%	16%	28%	7%	7%	3%	1%	68

Sources: CARE database, data available in May 2018

Figure 5: Distribution of elderly fatalities by country and road user type, 2016 or latest available year



Source: CARE database, data available in May 2018

47% of pedestrian fatalities and 45% of cyclist fatalities were elderly in 2016 in the EU.

Table 6: Percentage of elderly fatalities of all road fatalities by country and road user type, 2016 or latest available year

	Pedest-rian	Pedal cyclist	Car driver	Car passenger	Moped rider	Motor cyclist	Others	Total
BE	49%	52%	20%	12%	19%	4%	8%	23%
BG	49%	41%	13%	11%	27%	0%	7%	21%
CZ	45%	42%	24%	19%	0%	3%	11%	26%
DK	58%	48%	28%	38%	13%	12%	21%	34%
DE	56%	59%	28%	30%	43%	6%	21%	33%
EE	33%	-	19%	0%	-	-	20%	20%
IE	38%	23%	22%	17%	-	8%	13%	23%
EL	58%	28%	22%	34%	36%	9%	54%	29%
ES	56%	33%	26%	34%	33%	3%	17%	29%
FR	52%	41%	26%	24%	6%	4%	19%	25%
HR	54%	52%	16%	19%	20%	3%	29%	27%
IT	60%	49%	32%	25%	27%	8%	25%	32%
CY	71%	-	25%	0%	0%	0%	20%	30%
LV	36%	29%	16%	8%	33%	8%	17%	22%
LT	42%	36%	21%	20%	0%	0%	0%	28%
LU	63%	0%	25%	43%	-	33%	0%	38%
HU	38%	34%	20%	22%	38%	4%	21%	26%
MT	50%	0%	0%	33%	-	0%	-	22%
NL	55%	60%	25%	-	29%	5%	21%	33%
AT	58%	54%	25%	35%	13%	14%	15%	32%
PL	36%	41%	12%	19%	16%	2%	10%	22%
PT	59%	42%	28%	36%	41%	3%	32%	36%
RO	42%	36%	12%	17%	15%	2%	14%	27%
SI	45%	25%	11%	-	33%	0%	38%	20%
SK	23%	30%	3%	9%	-	4%	5%	13%
FI	41%	58%	24%	19%	20%	6%	19%	27%
SE	50%	50%	32%	31%	25%	14%	28%	33%
UK	36%	22%	26%	27%	13%	6%	20%	25%
EU	**47%**	**45%**	**23%**	**23%**	**24%**	**6%**	**19%**	**27%**
IS	50%	-	40%	33%	-	0%	0%	33%
NO	33%	42%	27%	31%	0%	5%	11%	24%
CH	48%	33%	33%	28%	83%	5%	14%	31%

Source: CARE database, data available in May 2018

Table 6 shows the corresponding proportions of fatalities who were elderly so, for example, 38 of the 78 pedestrian fatalities in Belgium were elderly and 38/78=49%.

Area and Road Type

Table 7 and Figure 6 show the distribution of elderly fatalities by type of road and compare it with the distribution for the middle-aged. By comparison with the middle-aged fatalities, there are fewer elderly fatalities on motorways and on rural roads, but more on urban roads. This is probably a result of the relatively high proportion of elderly fatalities who are pedestrians (most pedestrian fatalities occur on urban roads). The national distributions vary greatly between the EU countries.

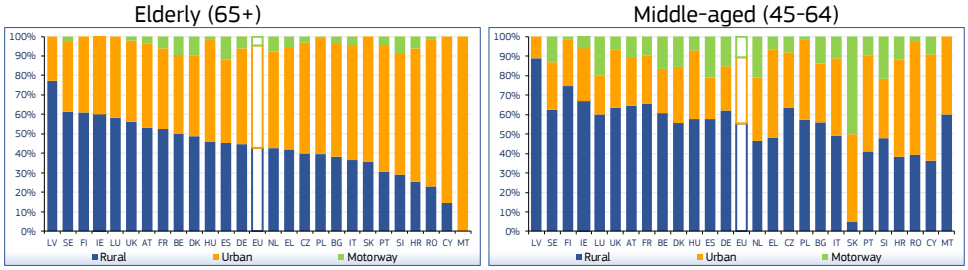
Compared with the middle-aged, more elderly people were killed on urban roads and fewer on rural roads and motorways.

Table 7: Total number and distribution of elderly and middle-aged fatalities by country, area and road type, 2016 or latest available year

	Elderly (65+)				Middle-aged (45-64)			
	Motorway	Rural	Urban	Total	Motorway	Rural	Urban	Total
BE	10%	50%	40%	147	17%	61%	23%	164
BG	3%	38%	59%	147	14%	56%	30%	196
CZ	3%	40%	57%	160	8%	64%	28%	173
DK	10%	49%	42%	72	16%	56%	29%	45
DE	6%	45%	49%	1.049	15%	62%	23%	896
EE	-	-	-	13	-	-	-	15
IE	0%	60%	40%	43	5%	68%	27%	37
EL	6%	42%	53%	236	6%	48%	45%	216
ES	12%	45%	43%	515	21%	58%	21%	546
FR	6%	52%	41%	883	10%	65%	25%	795
HR	6%	25%	69%	83	12%	38%	50%	94
IT	4%	36%	59%	1.045	11%	49%	40%	867
CY	0%	14%	86%	14	9%	36%	55%	11
LV	-	77%	23%	35	-	89%	11%	45
LT	-	-	-	66	-	-	-	60
LU	0%	58%	42%	12	20%	60%	20%	5
HU	1%	46%	53%	159	7%	58%	35%	203
MT	-	0%	100%	5	-	60%	40%	5
NL	8%	43%	49%	198	21%	47%	33%	132
AT	4%	53%	43%	137	10%	64%	25%	115
PL	1%	39%	60%	656	2%	57%	41%	816
PT	4%	30%	65%	201	10%	41%	49%	173
RO	1%	23%	76%	509	2%	39%	58%	594
SI	8%	29%	63%	24	22%	48%	30%	46
SK	0%	35%	65%	48	50%	5%	45%	134
FI	0%	61%	39%	69	2%	75%	24%	63
SE	2%	61%	36%	89	13%	62%	25%	72
UK	2%	56%	42%	456	7%	63%	30%	453
EU	**5%**	**43%**	**52%**	**7.071**	**11%**	**56%**	**34%**	**6.971**
IS	-	33%	67%	6	-	100%	0%	4
NO	0%	71%	29%	32	0%	80%	20%	46
CH	4%	37%	59%	68	5%	61%	34%	56

Source: CARE database, data available in May 2018

Figure 6: Distribution of elderly and middle-aged fatalities by country, area and road type, 2016 or latest available year



Source: CARE database, data available in May 2018

Day of the week and Time of the day

Table 8 shows the distribution of elderly fatalities by time of the day, dividing the day into six 4-hour periods. 85% of all elderly fatalities occurred between 8am and 8pm. While the number of elderly fatalities decreased after 8pm in many countries, it stayed high during evening hours in Cyprus and Latvia.

About 85% of all elderly road fatalities occurred between 8am and 8pm.

Table 8: Total number and distribution of elderly fatalities by country and time of the day, 2016 or latest available year

	00.00-03.59	04.00-07.59	08.00-11.59	12.00-15.59	16.00-19.59	20.00-23.59	Total
BE	1%	3%	31%	30%	26%	9%	147
BG	1%	7%	24%	31%	28%	9%	147
CZ	1%	14%	26%	25%	28%	6%	160
DK	1%	3%	32%	25%	31%	8%	72
DE	1%	5%	27%	34%	27%	5%	1.049
EE	0%	15%	15%	31%	31%	8%	13
IE	2%	5%	23%	28%	33%	9%	43
EL	4%	8%	31%	21%	25%	11%	236
ES	2%	5%	30%	29%	25%	10%	515
FR	2%	4%	31%	26%	31%	6%	883
HR	2%	11%	18%	19%	37%	12%	83
IT	2%	5%	30%	22%	30%	12%	1.045
CY	0%	14%	29%	14%	21%	21%	14
LV	6%	0%	18%	21%	33%	21%	35
LT	2%	9%	12%	24%	44%	9%	66
LU	0%	8%	0%	33%	42%	17%	12
HU	3%	11%	32%	24%	24%	6%	159
MT	0%	20%	40%	0%	20%	20%	5
NL	2%	2%	24%	41%	26%	6%	198
AT	1%	6%	28%	30%	28%	7%	137
PL	1%	10%	30%	24%	30%	6%	656
PT	0%	3%	25%	30%	32%	10%	201
RO	1%	10%	24%	23%	30%	12%	509
SI	0%	13%	8%	33%	33%	13%	24
SK	0%	15%	19%	27%	38%	2%	48
FI	3%	9%	30%	35%	20%	3%	69
SE	1%	2%	24%	45%	19%	9%	89
UK	2%	5%	28%	32%	27%	6%	456
EU	**2%**	**6%**	**28%**	**28%**	**29%**	**8%**	**7.071**
IS	0%	17%	0%	50%	33%	0%	6
NO	6%	3%	16%	38%	25%	13%	32
CH	1%	7%	24%	34%	29%	4%	68

Source: CARE database, data available in May 2018

Table 9: Total number and distribution of elderly fatalities by country and day of the week, 2016 or latest available year

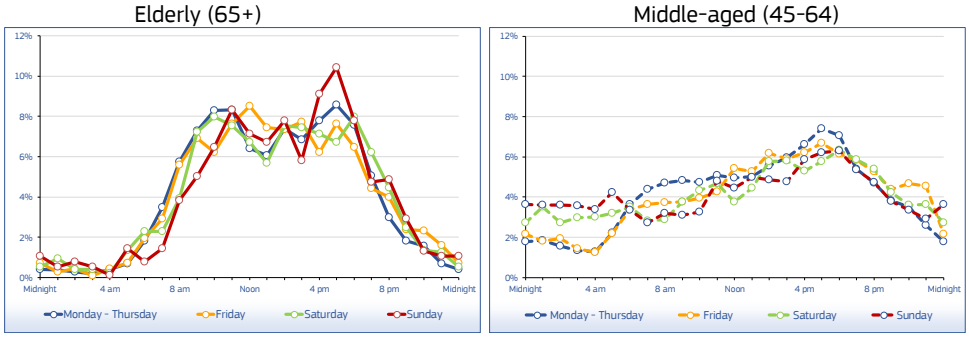
	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
BE	16%	18%	18%	10%	14%	12%	12%	147
BG	14%	13%	9%	16%	22%	14%	12%	147
CZ	23%	13%	12%	13%	21%	11%	8%	160
DK	19%	14%	10%	18%	15%	13%	11%	72
DE	15%	17%	16%	16%	15%	10%	11%	1.049
EE	23%	15%	23%	8%	23%	0%	8%	13
IE	14%	14%	14%	21%	19%	5%	14%	43
EL	9%	17%	18%	14%	15%	14%	12%	236
ES	16%	13%	17%	17%	14%	12%	10%	515
FR	15%	17%	14%	14%	15%	13%	11%	883
HR	11%	10%	20%	14%	17%	18%	10%	83
IT	15%	14%	17%	13%	15%	16%	10%	1.045
CY	7%	7%	0%	7%	21%	36%	21%	14
LV	14%	6%	11%	14%	26%	20%	9%	35
LT	12%	18%	12%	11%	17%	23%	8%	66
LU	17%	17%	8%	17%	8%	33%	0%	12
HU	16%	16%	14%	13%	19%	13%	9%	159
MT	0%	0%	20%	20%	0%	20%	40%	5
NL	15%	16%	13%	16%	15%	13%	13%	198
AT	13%	12%	14%	16%	16%	16%	13%	137
PL	15%	14%	16%	14%	18%	14%	9%	656
PT	12%	16%	13%	13%	15%	18%	12%	201
RO	14%	11%	14%	16%	16%	15%	14%	509
SI	8%	17%	17%	17%	21%	8%	13%	24
SK	19%	6%	17%	13%	19%	19%	8%	48
FI	12%	13%	28%	12%	13%	17%	6%	69
SE	15%	13%	16%	16%	11%	17%	12%	89
UK	13%	13%	12%	18%	18%	15%	11%	456
EU	**15%**	**15%**	**15%**	**15%**	**16%**	**14%**	**11%**	**7.071**
IS	0%	0%	17%	17%	33%	17%	17%	6
NO	16%	19%	3%	25%	19%	9%	9%	32
CH	9%	16%	9%	25%	21%	15%	6%	68

Source: CARE database, data available in May 2018

The highest number of elderly road fatalities was recorded on Fridays, and the lowest on Sundays.

Figure 7 investigates whether the EU distribution of fatalities by time of the day varies depending on the day of the week for the elderly and for the middle-aged. The weekday distributions (Monday-Thursday) are similar, so have been combined in the figure. There are 168 hours per week, thus, on average 0,6% of fatalities would occur per hour through the week, if equally distributed. There are clear differences between middle-aged and elderly fatality distributions and limited but significant differences by day of the week. Relatively few elderly people were killed in road accidents at night. The middle-aged distributions had clear daily peaks in the late afternoon, especially during the weekend. The elderly distributions had peaks slightly earlier in the afternoon, with additional peaks before noon.

Figure 7: Distribution of elderly and middle-aged fatalities by day of the week and time of the day, EU, 2016 or latest available year



Source: CARE database, data available in May 2018

Seasonality

The peak of the fatality distribution occurred earlier in the afternoon for the elderly than for middle-aged, with a secondary peak before noon.

Table 10: Total number and distribution of elderly fatalities by country and month, 2016 or latest available year

	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total
BE	24%	23%	24%	28%	147
BG	22%	17%	27%	33%	147
CZ	28%	16%	29%	28%	160
DK	25%	21%	32%	22%	72
DE	22%	21%	31%	25%	1.049
EE	38%	8%	15%	38%	13
IE	23%	21%	23%	33%	43
EL	20%	25%	28%	27%	236
ES	24%	21%	28%	26%	515
FR	21%	24%	28%	28%	883
HR	19%	30%	22%	29%	83
IT	22%	21%	30%	28%	1.045
CY	21%	21%	36%	21%	14
LV	31%	11%	34%	23%	35
LT	24%	17%	15%	44%	66
LU	33%	8%	25%	33%	12
HU	26%	22%	20%	32%	159
MT	0%	60%	20%	20%	5
NL	22%	19%	30%	29%	198
AT	21%	28%	27%	23%	137
PL	20%	22%	26%	32%	656
PT	28%	19%	22%	31%	201
RO	19%	22%	26%	33%	509
SI	21%	33%	21%	25%	24
SK	21%	15%	23%	42%	48
FI	16%	25%	29%	30%	69
SE	19%	30%	33%	18%	89
UK	21%	22%	26%	31%	456
EU	**22%**	**22%**	**28%**	**29%**	**7.071**
IS	33%	17%	17%	33%	6
NO	28%	19%	38%	16%	32
CH	22%	29%	26%	22%	68

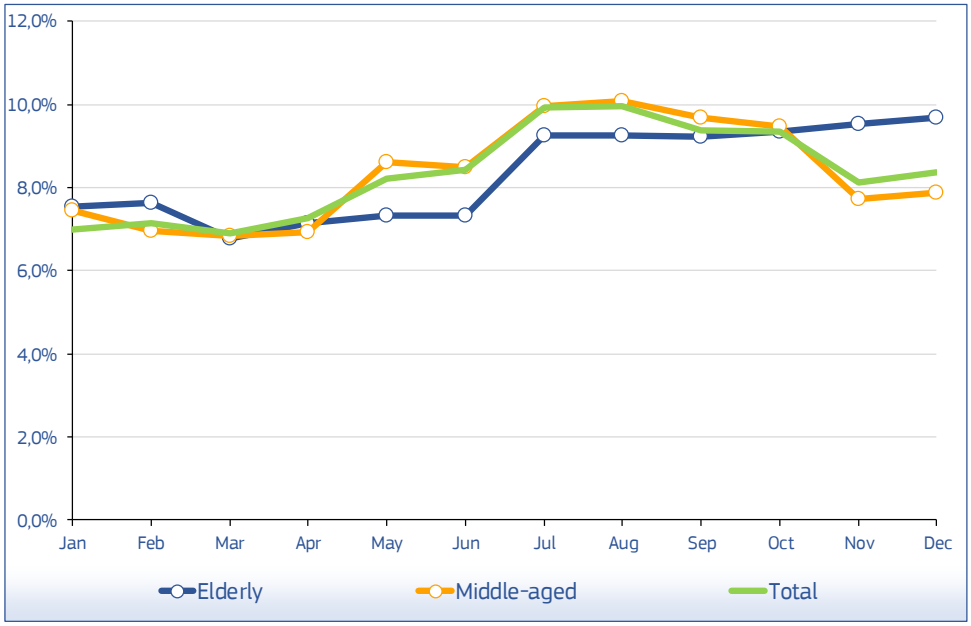
Source: CARE database, data available in May 2018

Table 10 shows the distribution of elderly fatalities in each quarter of the year. For most countries, as in the EU, the number of elderly fatalities peaks in the last quarter (October to December).

Figure 8 compares the distribution by month of elderly and middle-aged fatalities with the overall distribution. The number of elderly and middle-aged fatalities have a similar trend from June to August, while from August and up to December trends are opposite. Relatively more elderly fatalities compared to the total number of fatalities occurred between November and February.

There are relatively few elderly fatalities between May and September, and relatively many between November and February.

Figure 8: Distribution of middle-aged, elderly and total fatalities by month, EU, 2016 or latest available year



Source: CARE database, data available in May 2018

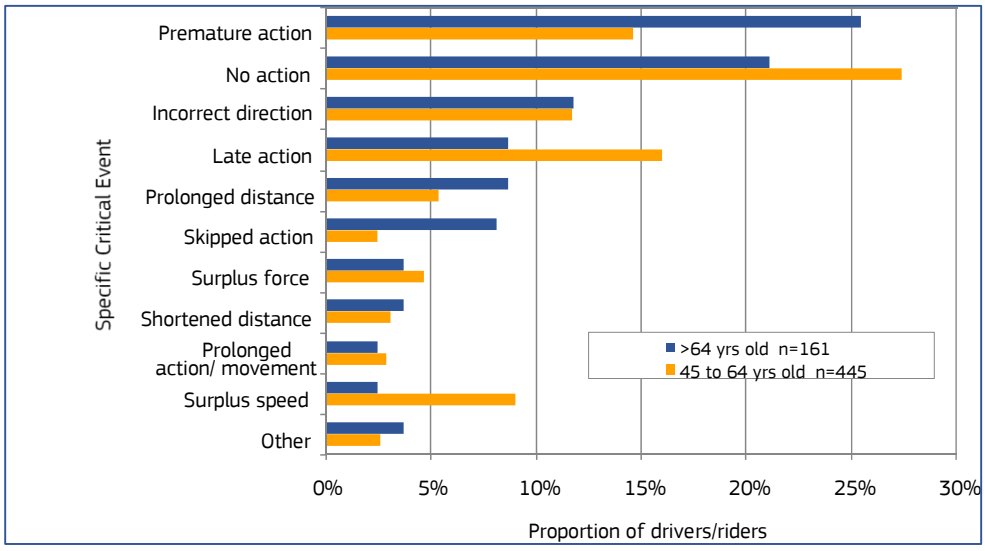
Accident Causation

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. 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.

These data have been analysed to compare the causation recorded for elderly and middle-aged drivers and riders. Of the accidents in the database, 15% (155) involve an elderly driver or rider (aged > 64 years old). Males account for 79% of this group and 75% are drivers of passenger cars, followed by 15% who were bicycle riders. Figure 9 compares the distribution of specific critical events for elderly drivers/riders against the distribution for the middle-aged group (45 to 64 year olds).

Specific critical events relating to 'timing' are recorded for 55% of elderly drivers and riders in the sample.

Figure 9: Distribution of specific critical events – elderly and middle-aged drivers/riders



Source: SafetyNet Accident Causation Database 2005 to 2008 / EC
Date of query: 2010
N=606

Specific critical events under the general category of 'timing', no action, premature action and late action, are important for both the elderly and middle-aged groups. A premature action is one undertaken before a signal has been given or the required conditions are established, for example entering a junction before it is clear of other traffic. Premature action is recorded more frequently for the elderly group, whilst no action and late action are more frequent for the middle-aged group. No action describes those drivers/riders who have not reacted at all (or at least in an effective time frame) to avoid a collision, for example, to avoid an oncoming vehicle. Looking at other differences, prolonged distance and skipped action are more prevalent in the elderly group, whilst surplus (excess) speed is less prevalent. Prolonged distance is an action taken too far, such as entering a junction across a give way line, and skipped action is missing a part of the driving task, such as not looking before changing lane. Examples of incorrect direction, the third most frequent specific critical event for the elderly group, are making a manoeuvre in the wrong direction, turning left instead of right and going off the road instead of following the lane. Table 11 gives the most frequent links between causes for elderly drivers/riders in the dataset. For this group there are 166 such links.

12% of the links between causes are observed to be between 'faulty diagnosis' and 'information failure'.

Table 11: Ten most frequent links between causes – elderly drivers/riders

Links between causes	Frequency
Faulty diagnosis - Information failure (between driver and traffic environment or driver and vehicle)	20
Observation missed - Permanent obstruction to view	17
Observation missed - Temporary obstruction to view	14
Observation missed - Faulty diagnosis	13
Observation missed - Distraction	7
Observation missed - Inattention	7
Observation missed - Inadequate plan	6
Faulty diagnosis - Communication failure	6
Faulty diagnosis - False observation	5
Faulty diagnosis - Cognitive bias	5
Others	66
Total	**166**

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

Faulty diagnosis is an incorrect or incomplete understanding of road conditions or another road user's actions. It is linked to information failure (for example, a driver 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).

For this group it is also linked, although in lower numbers, to false observation (for example, incorrectly recognising a green traffic light as being red) and cognitive bias (taking in and processing information but with incorrect cognitive interpretation, for example, reading a green light for the next set of traffic lights further on). The causes leading to observation missed fall into two groups, physical 'obstruction to view' type causes (for example, parked cars at a junction) and human factors (for example, missing a red light due to distraction or inattention).

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

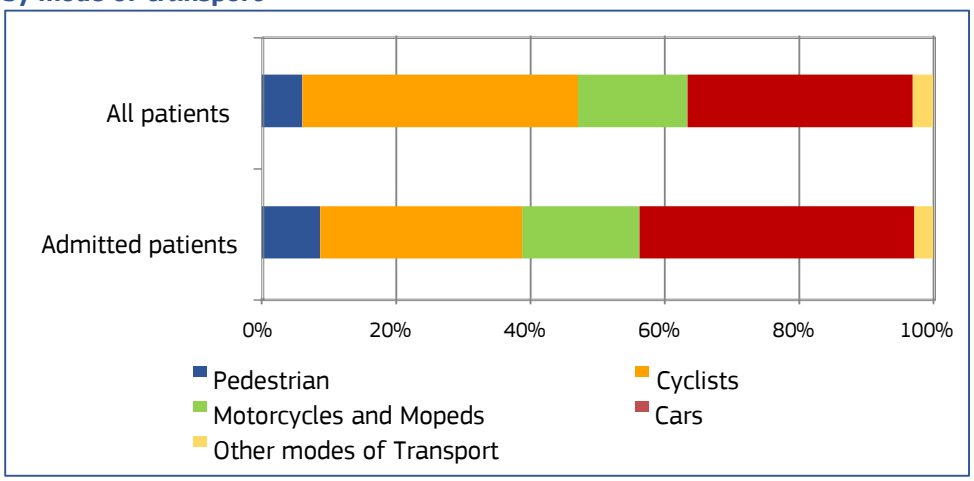
According to estimates based on the EU IDB more than four million people are injured annually in road traffic accidents, one million of whom have to be admitted to hospital

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. 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).

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 10: Distribution of non-fatal road accident casualties attending hospital by mode of transport

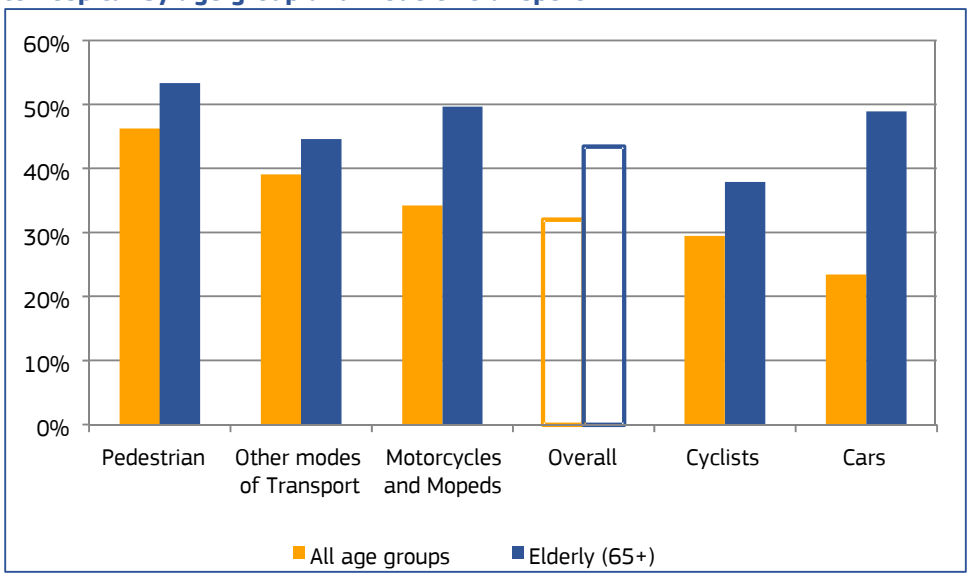


EU Injury Database (EU IDB AI) - hospital treated patients. IDB AI Transport module and place of occurrence (code 6.n [public road]); n-all = 73.600: n-admitted = 2.568 (DE, DK, LV, MT, AT, NL, SE, SI, CY, years 2005-2008).

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 hospital, and for over half of casualties admitted to the hospital (56%). Figure 11 shows that 32% of road accident casualties recorded in the IDB were admitted to the hospital overall, and 43% for older people. Figure 12 shows that the average length of stay was eight days overall, and twelve for older people.

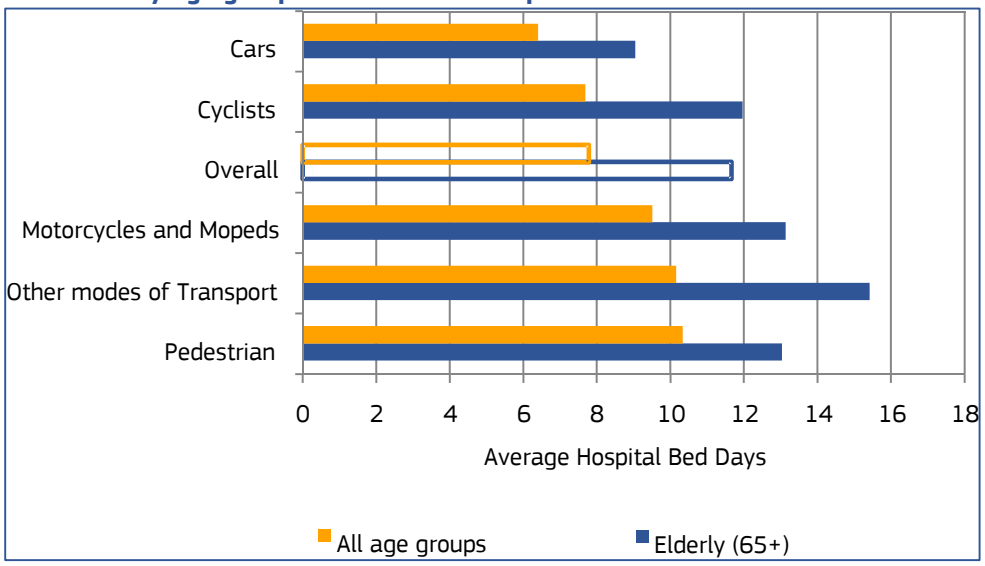
More than 40% of older casualties who attended a hospital were admitted to the hospital; their average stay in hospital was twelve days.

Figure 11: Percentage of non-fatal road accident casualties who were admitted to hospital by age group and mode of transport



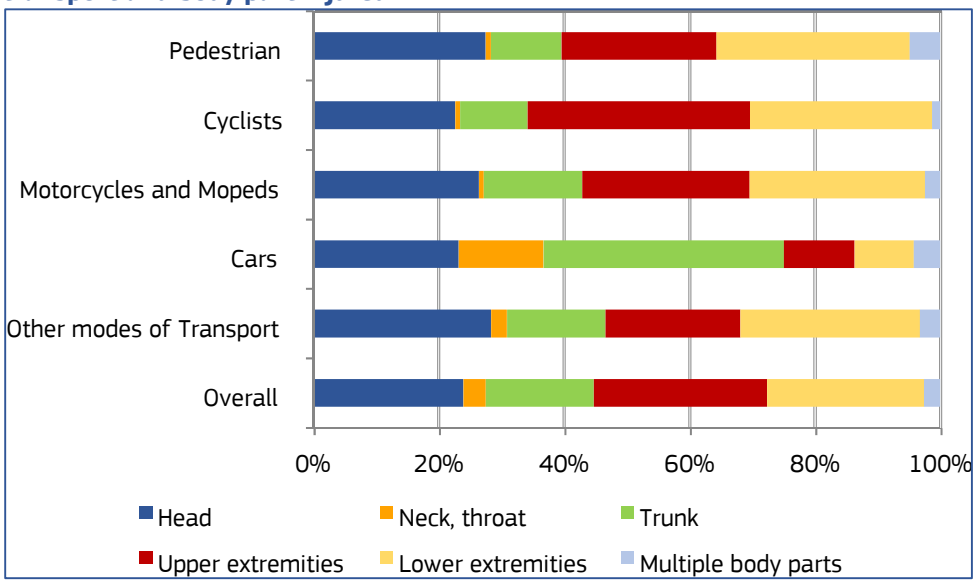
EU Injury Database (EU IDB) - hospital treated patients. IDB AI Transport module and place of occurrence (code 6.n [public road]); n = 23.568, n-elderly = 7.447, n-elderly = 3.235 (DE, DK, LV, MT, AT, NL, SE, SI, CY, years 2005-2008).

Figure 12: Average length of stay (hospital bed days) of non-fatal road accident casualties by age group and mode of transport



EU Injury Database (EU IDB) - hospital treated patients. IDB AI Transport module and place of occurrence (code 6.n [public road]); n = 23.568, n-elderly = 7.447, n-elderly = 3.235 (DE, DK, LV, MT, AT, NL, SE, SI, CY, years 2005-2008).

Figure 13: Distribution of non-fatal road accident elderly casualties by mode of transport and body part injured



EU Injury Database (EU IDB) - hospital treated patients. IDB AI Transport module and place of occurrence (code 6.n [public road]); n = 23.568, n-elderly = 7.447, n-elderly = 3.235 (DE, DK, LV, MT, AT, NL, SE, SI, CY, years 2005-2008).

Fractures account for more than 40% of all traffic injuries suffered by older people attending hospital.

Naturally, hospital data can provide information on the injury patterns sustained by the accident victims. Figure 13 illustrates the distribution of body parts injured in elderly casualties by type of road user.

Table 12 shows the types of injuries most frequently recorded in the EU IDB. It compares the distribution of injuries among older people and all types of road users.

Table 12: Ten most frequently recorded types of injury by age group

	Older people (65+years)	All age 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%**

EU Injury Database (EU IDB) - hospital treated patients. IDB AI Transport module and place of occurrence (code 6.n [public road]); n = 23.568, n-elderly = 7.447, n-elderly = 3.235 (DE, DK, LV, MT, AT, NL, SE, SI, CY, years 2005-2008).

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. Data for Lithuania and Slovakia are not included in the totals of data comparing the years 2007-2016.

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

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

8. Disclaimer
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9. Please refer to this Report as follows:
European Commission, Traffic Safety Basic Facts on The Elderly, European Commission, Directorate General for Transport, June 2018.


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