Main figures on road traffic accidents

Spain 2016

SUMMARY

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Presentation

«Main figures on Road Traffic Accidents» began publication in 2004, being this its 14th edition. Along these years, important changes in road safety policies have been made in our country which have led to a significant and continuous decline in fatality rate which has steadily decreased to reach the lowest annual total on record in 2013 with 1680 people being killed. In 2016, reference year of this publication, there has been an increase by 7% in fatality rate, an increase that has not been homogeneous for all types of roads and road users; there has even been a marked increase on urban roads which affects vulnerable groups especially: pedestrians, cyclists and motorcyclists.

However, Spain still remains one of the EU countries with a lower traffic fatality rate per million population and ranks fifth in the list of countries with the lowest fatality rates and with better figures than Germany, France, Italy or Finland.

In 2016 the population was 46.4 million inhabitants in Spain, the vehicle fleet was 33.6 million vehicles and there were 26.5 million registered drivers; in 2016 we have welcomed 75.3 million tourists, a 9% increase as compared with the previous year.

The factors that play an important role in our fatality rate are increased mobility, ageing of the vehicle fleet, inappropriate speed, driving under the influence of alcohol and drugs, failure to wear safety belts and child restraint systems, and distractions, especially those related to the use of mobile devices.

It would be a good thing if this document could strengthen the idea that analysis of the data is a basic engine for decision-making by the Directorate-General for Traffic (DGT). New instruments for disseminating information have gradually and steadily been incorporated in the last few years. Among these instruments we can highlight «The Statistics Portal» that includes the most relevant and consolidated data collections of the DGT and allows both researchers and experts interested in road safety accessing to detailed information on accident rate, vehicles and drivers.

Road safety is a priority area of work in developed countries and to that end it is necessary to establish cooperation channels with all stakeholders and sectors involved and, at the same time, to develop efficient public policies for combining these efforts. Accordingly, we have already initiated contacts to renew the Cooperation Agreement with the Spanish Federation of Municipalities and

Provinces in order to make progress in implementing measures in City Councils focused on reducing accident rate on urban roads.

We are also undertaking a review of the road safety strategy and the legal reforms with a view to reducing accident rate and adapting our policies to the changes in mobility patterns so that we can provide a response to the mobility in the twenty-first century. The key protagonists of those reforms will be non-motorised mobility, the use of public transport vs. private vehicles, 30 km/h zones, bicycles as transport vehicles, traffic restrictions for environmental reasons, autonomous vehicles or the new penalty points driving licence and recidivist drivers; these issues should be regulated by the new law.

In drafting this report we have been in close cooperation with the Autonomous Communities that have powers on traffic surveillance; with the death records database from the Registry Office, to determine the number of road fatalities within 30 days; with the Ministry of Health, Social Services and Equality, to obtain the information on the number of hospitalised injured casualties as well as the characteristics and severity of their injuries; with the Ministry of Development, for reviewing the information on roads under their scope; and with the Institute for Occupational Health and Safety, to analyse accidents on the way to and from work. This year we have signed a collaboration agreement with the Spanish National Toxicology and Forensic Science Institute (INTCF) and the Institutes of Forensic Medicine and Science (IML) in Murcia and Galicia, which has enabled us to significantly enrich the quantity and quality of the available information on the role that alcohol and drugs play on road traffic accidents. The Directorate-General for Traffic would like to thank all these institutions for their collaboration and the facilities offered to share their consolidated data.

DGT would also like to thank all the people who made the writing of this report possible and especially the Traffic Division of the Guardia Civil, Local Police Forces and the Autonomous Police Forces and the practitioners at Provincial Traffic Departments.

Gregorio Serrano López
Director-General for Traffic

2016 Figures

In 2016 the various police forces reported 102,362 casualties accidents. A total of 1,810 people were killed at the time of the accident or within 30 days after its occurrence; 9,755 people were admitted to hospital and 130,635 people were injured but did not require hospitalization, according to police sources. As compared with 2015, these figures represent an increase in the number of road deaths (7%), of hospitalized injured casualties (3%) and also of casualty accidents and non-hospitalized injured casualties (5%).

As for fatalities, we can highlight that 77% were male, 58% were 45 years old or over, 42% were involved in an accident as car occupants, 71% were involved in an accident on interurban roads and in particular 53% of the fatalities occurred on conventional roads. 61% of the fatalities were drivers and 21% were pedestrians. 68% of the accidents in which at least one person was killed occurred on working days and 64% of the fatalities occurred during the slot 08.00-19.59. 33% of the fatalities were as a result of run-off-road accidents. In 2016 July and August were the deadliest months with 379 fatalities recorded, which account for 21% of the annual total fatalities. The average daily fatalities were 5, being this figure higher in July, August and September. The annual average was 3.5 fatalities on interurban roads and 1.5 fatalities on urban roads, above the 2015 figures.

As regards hospitalised injured casualties reported by police authorities, it is worth noting that 70% were male, 53% were under the age of 45 years, 31% were involved in an accident as car occupants, 34% as motorcycle or moped users and 20% as pedestrians. 52% were involved in an accident on interurban roads and, in particular, 40% on conventional roads. 48% of the hospitalised injured casualties occurred on urban roads. 68% of the accidents resulting in injured casualties admitted to hospital occurred on working days.

Number of casualty accidents, fatalities, hospitalised injured casualties and non-hospitalised injured casualties and their percentage distribution. Spain, 2016

	2016				2016 Percentage distribution			
	Casualty accidents	Fatalities	Hospitalised injured casualties	Non-hospitalised injured casualties	Casualty accidents	Fatalities	Hospitalised injured casualties	Non-hospitalised injured casualties
Total	**102,362**	**1,810**	**9,755**	**130,635**	**100%**	**100%**	**100%**	**100%**
Location								
Interurban road	36,721	1,291	5,050	51,379	36%	71%	52%	39%
Motorway	3,651	90	303	5,580	4%	5%	3%	4%
Dual carriageway	8,641	242	830	13,241	8%	13%	9%	10%
Conventional road	24,429	959	3,917	32,558	24%	53%	40%	25%
Urban road	65,641	519	4,705	79,256	64%	29%	48%	61%
Cross-town link	1,465	47	149	1,805	1%	3%	2%	1%
Streets	63,438	467	4,521	76,462	62%	26%	46%	59%
Motorway/Urban dual c'way	738	5	35	989	1%	0%	0%	1%
Days of week								
Working days	77,339	1,234	6,616	96,854	76%	68%	68%	74%
Weekends	25,023	576	3,139	33,781	24%	32%	32%	26%
Type of accident								
Frontal impact	3,120	277	965	4,897	3%	15%	10%	4%
Side and sideswipe collision	30,061	253	2,241	39,153	29%	14%	23%	30%
Rear and multiple collision	24,106	145	1,028	38,078	24%	8%	11%	29%
Run-off-road	16,292	601	2,187	19,257	16%	33%	22%	15%
Rollover	2,811	22	260	2,858	3%	1%	3%	2%
Pedestrian impact [1]	14,009	386	1,957	13,450	14%	21%	20%	10%
Other type	11,963	126	1,117	12,942	12%	7%	11%	10%
Mode of travel [2]								
Bicycle	7,673	67	736	6,635	7%	4%	8%	5%
Moped	7,950	54	625	7,760	8%	3%	6%	6%
Motorcycle	25,944	343	2,681	24,364	25%	19%	27%	19%
Car	78,976	754	2,988	69,037	77%	42%	31%	53%
Goods vehicle	15,759	143	479	6,956	15%	8%	5%	5%
Bus or coach	2,214	21	83	2,137	2%	1%	1%	2%
User [2,3]								
Driver	80,291	1,101	6,158	82,458	78%	61%	63%	63%
Passenger	25,690	320	1,608	35,416	25%	18%	16%	27%
Pedestrian [1]	14,147	389	1,989	12,761	14%	21%	20%	10%

	2016				2016 Percentage distribution			
	Casualty accidents	Fatalities	Hospitalised injured casualties	Non-hospitalised injured casualties	Casualty accidents	Fatalities	Hospitalised injured casualties	Non-hospitalised injured casualties
Age [2,3]								
0-14	6,169	28	385	6,925	6%	2%	4%	5%
15-24	20,026	198	1,415	23,010	20%	11%	15%	18%
25-34	26,784	223	1,622	28,526	26%	12%	17%	22%
35-44	26,049	289	1,798	26,790	25%	16%	18%	21%
45-54	19,923	311	1,692	19,651	19%	17%	17%	15%
55-64	11,918	230	1,161	11,466	12%	13%	12%	9%
65-74	6,739	198	785	6,413	7%	11%	8%	5%
75-84	4,161	210	609	3,692	4%	12%	6%	3%
85 and over	1,170	105	172	933	1%	6%	2%	1%
Gender [2,3]								
Male	70,597	1,395	6,829	75,930	69%	77%	70%	58%
Female	46,174	410	2,904	54,208	45%	23%	30%	41%

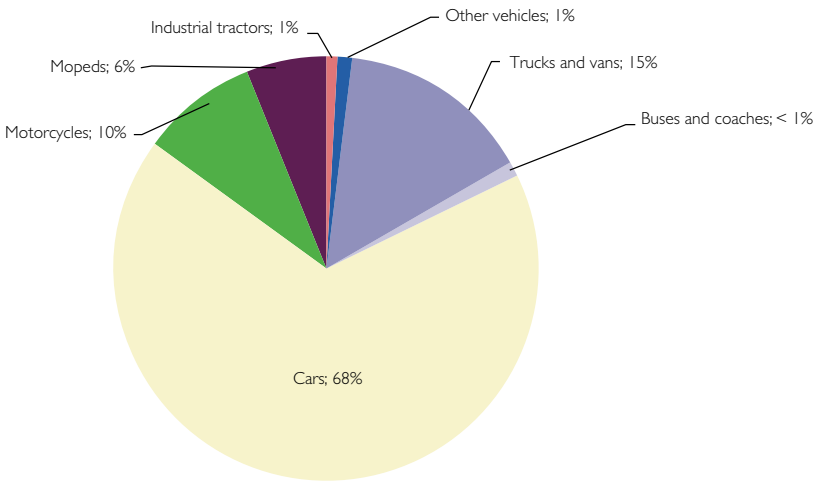
[1] *The number of people being killed when struck by a vehicle does not include all pedestrians hit by a vehicle because the classification by type of accident is made according to the first manoeuvre and not to its harmful outcome.*

[2] *In the casualty accident indicator, the addition does not correspond to the total because the same accident can fall under various subheadings.*

[3] *Accidents involving at least 1 casualty are recorded on the reference group.*

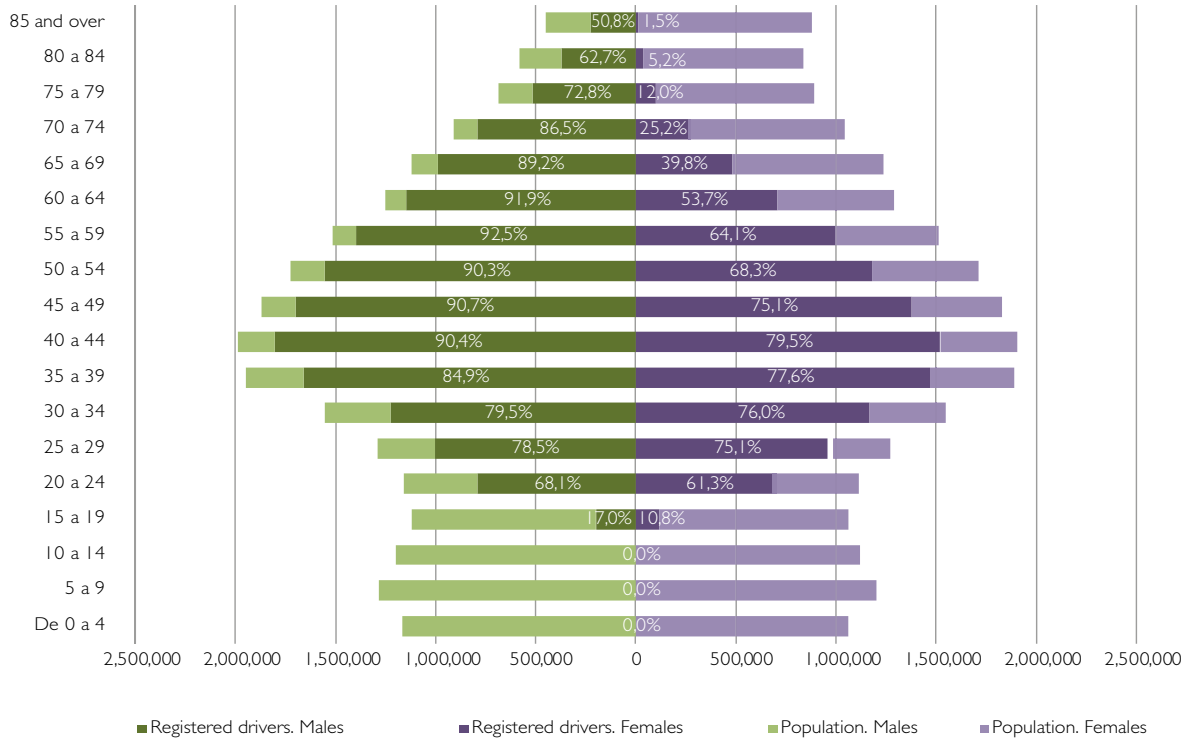
The vehicle fleet has increased by more than one million vehicles in the last decade, of which cars account for 68%. In 2016 the total vehicle fleet has increased as compared with the previous year. The greatest increase in absolute figures is for cars, with 521,281 more vehicles, which represents an increase by 2% in percentage terms. The motorcycle fleet has also grown by 4% with an increase of 132,011 motorcycles over the preceding year; as for the rest of vehicles, only mopeds have declined, 2% fewer.

Distribution of the vehicle fleet. Spain, 2016



In 2016 there were 26,514,026 registered drivers; an increase by 1% compared with the preceding year, the rate was at 673 drivers per thousand driving age population. A gradual ageing of the driving population is still observed, in parallel to that of the general population: 14% of the drivers are aged 65 years and older.

Distribution of registered drivers by age and by gender. Spain, 2016

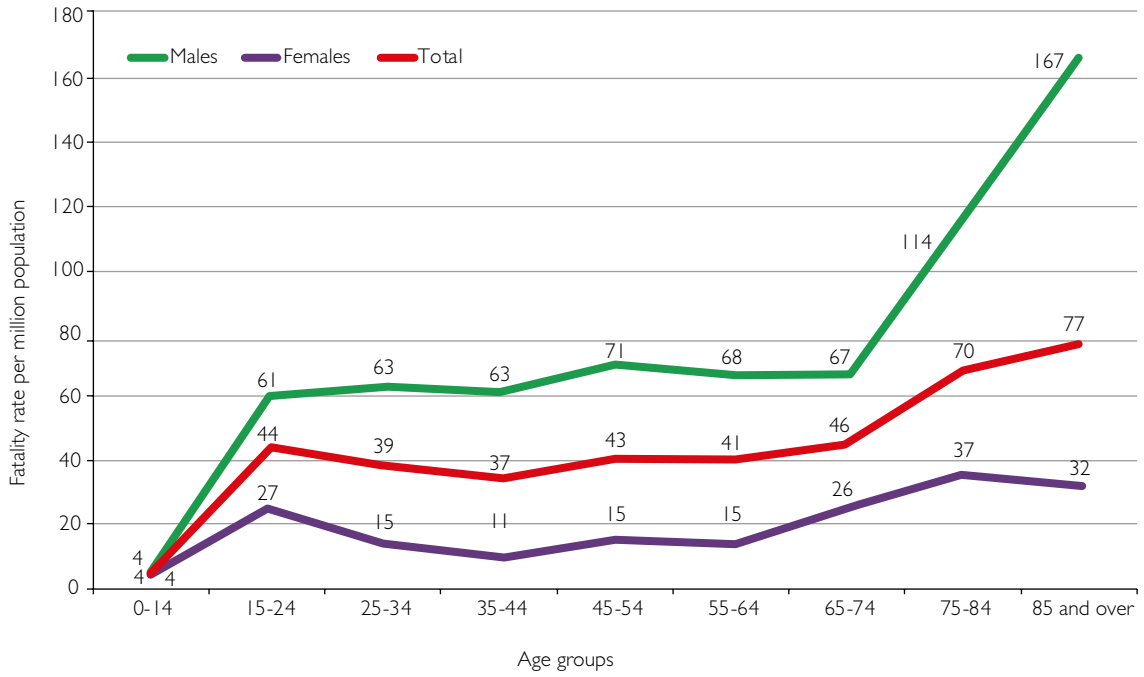


In 2016, in absolute terms and considering the population as a whole, the 45-54 age group has a significantly higher number of people being killed with 311 fatalities. For its part, the 35-44 age group accounts for the greatest number of hospitalised injured casualties with 1,798.

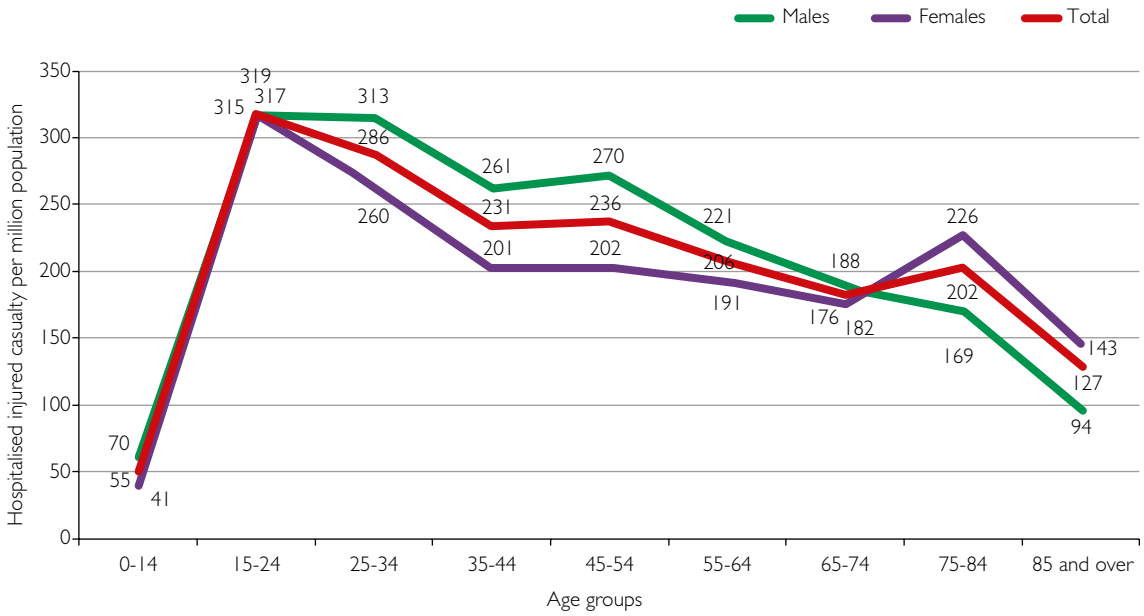
Taking into account the fatality rate per million population, the 85 and over age group recorded the highest rate at 77 fatalities per million population, followed by the 75-84 age group, at 70. The 65-74 age group ranks third, with 46 fatalities per million population. In 2016 children (aged 14 or under) presented a rate of 4 fatalities per million population.

As for hospitalised injured casualties, the 15-24 age group showed the highest rate for both genders, males presented the highest rate in most age groups, except for the 75-84 and 85+ age groups where females recorded a higher rate. In the 15-24 and 65-74 age groups similarities in the rates for both genders are observed.

Fatality rate by age and gender per million population. Spain 2016



Hospitalised injured casualty rate by age and gender per million population. Spain 2016



In 2016 there were 28 child deaths in road traffic accidents (aged 0 to 14 years), there were 6,925 non-hospitalised injured children and 385 injured children who were admitted to hospital; they accounted for 2% of total fatalities, 4% of hospitalised injured casualties and 5% of non-hospitalised injured casualties. The mortality index (fatalities per 100 casualties) rate for the 0-14 age group was 0.4 whereas for the rest of the age groups it was 1.3; the child fatality rate per million population was 4, whereas for the rest of the age groups it was 45; and the rate for hospitalised injured children per million population was 55, whereas for the rest of the age groups it was 238.

As for the 0-12 age group travelling in a car or van, 3 out of the 18 child fatalities were not using a child restraint system or a seat belt, and this was also the case for 6 out of the 81 hospitalised injured casualties and for 37 out of the 3,484 non-hospitalised injured casualties.

Severity of road traffic accidents in children as compared with the rest of the population. Spain, 2016

	Up to 14 years	Other ages
Fatalities	28	1,782
Hospitalised injured casualties	385	9,370
Non-hospitalised injured casualties	6,925	123,710
Total casualties	**7,338**	**134,862**
Mortality index	0.4	1.3
Fatalities per million population	4	45
Hospitalised injured casualties per M p.tion	55	238

In 2016, people aged 64+ were involved in 11,538 accidents and as a result there were 513 fatalities, 1,566 hospitalised injured casualties and 11,038 non-hospitalised injured casualties. Older adults have accounted for 29% of deaths, 16% of hospitalised injured casualties and 9% of total non-hospitalised injured casualties. At global level, older adults account for 19% of the Spanish population and 14% of the registered drivers. As road users, 43% of the people aged over 64 being killed were pedestrians, 40% were drivers and 17% were passengers. In addition, they were mainly admitted to hospital as pedestrians (50%), secondly as drivers (35%) and thirdly as passengers (16%).

Severity of road traffic accidents in older adults (aged 65 and over) as compared with the rest of the population. Spain, 2016

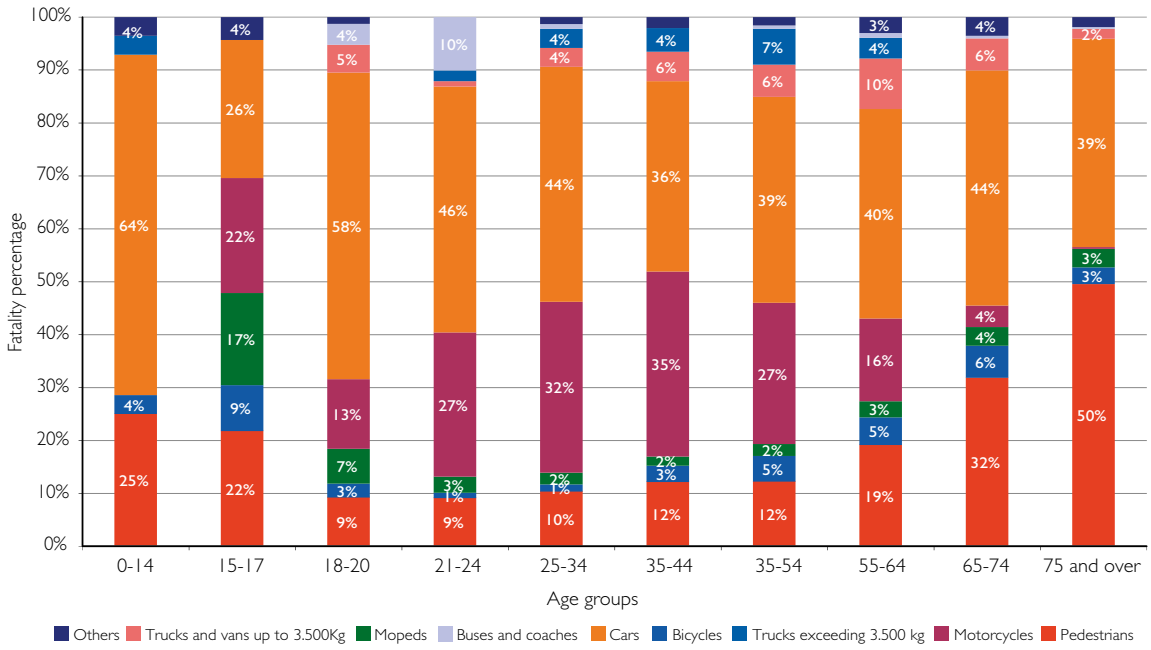
	Aged 65 and over	Other ages
Fatalities	513	1,297
Hospitalised injured casualties	1,566	8,189
Non-hospitalised injured casualties	11,038	119,597
Total casualties	**13,117**	**129,083**
Mortality index	3.9	1.0
Fatalities per million population	59	34
Hospitalised injured casualties per M p.tion	180	217

In 2016, 389 pedestrians were killed in road traffic accidents, representing 21% of total fatalities; 1,989 were hospitalised injured casualties, i.e. 20% of total hospitalised injured casualties; and 12,761 were non-hospitalised injured casualties, i.e. 10% of the corresponding total. Their mortality index was at 2.6, more than twice the index for the total number of road users, which was at 1.1. On interurban roads a total of 137 pedestrians were killed, accounting for 35% of pedestrian fatalities; there were 270 hospitalised injured pedestrians, accounting for 14%. The pedestrian mortality index rate on interurban roads was at 14.7, almost six times the index for all roads, which was at 2.6. On urban roads a total of 252 pedestrians were killed, accounting for 65% of all pedestrian fatalities; there were 14,750 injured pedestrians, of which 1,719 were admitted to hospital. The pedestrian mortality index rate on urban roads was at 1.8.

In 2016 pedal cyclists were involved in 7,673 accidents in which 67 cyclists were killed, 736 were hospitalised injured casualties and 6,635 were non-hospitalised injured casualties. These accidents happened mostly on urban roads (74%), where the majority of non-hospitalised injured cyclists also occurred, i.e 52%. However, the greatest number of pedal cyclist fatalities occurred on interurban roads resulting in 40 deaths compared to the 27 deaths on urban roads.

In 2016 motorcycle users represented 24% of the total casualty accidents, i.e they were involved in 25,944 accidents whereas the percentage of motorcycles in the vehicle fleet was 10%. 76% of the casualty accidents involving motorcycles occurred on urban roads where 55% of hospitalised injured and 77% of non-hospitalised injured motorcyclists happened. Meanwhile, fatal injuries occurred more frequently on interurban roads: 76% of motorcycling fatalities were on this type of road. Motorcyclist casualties were mostly male: 92% of killed, 89% of hospitalised injured casualties and 79% of non-hospitalised injured casualties. As regards their age, the 25-34, 35-44 and 45-54 age groups were the groups with greater presence, accumulating 74% of fatalities and 73% and 74% of the hospitalised and non-hospitalised injured casualties respectively.

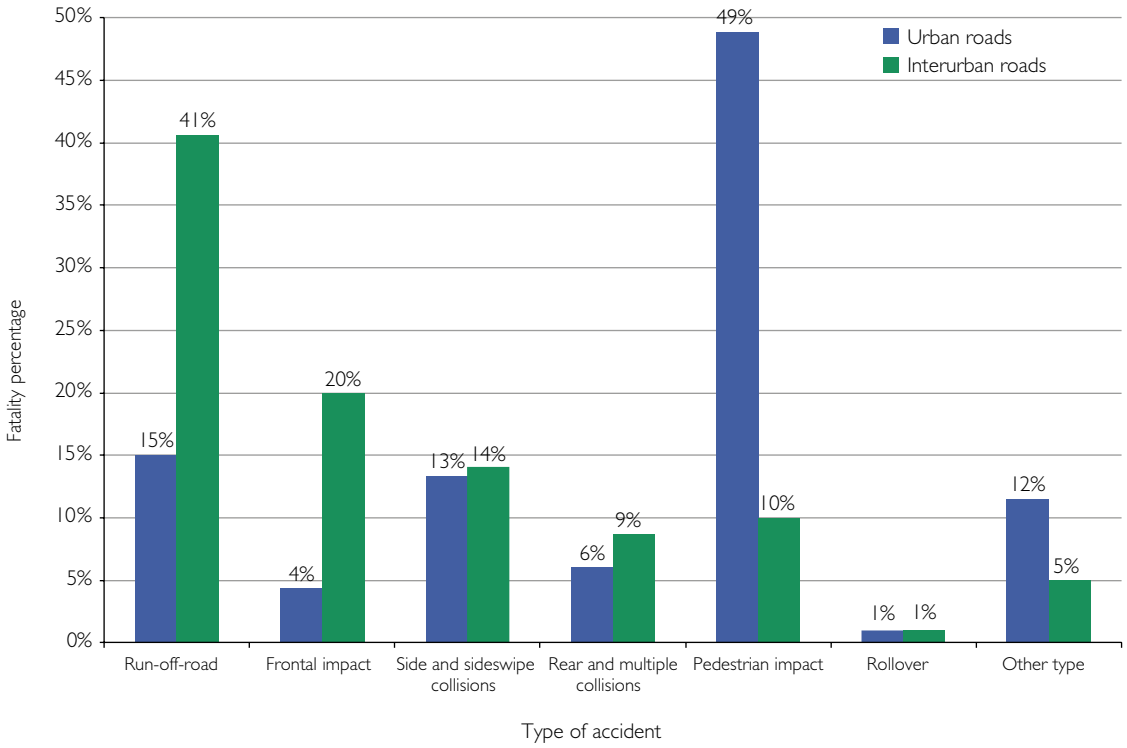
Percentage distribution of the number of fatalities by mode of travel and age. Spain 2016



On interurban roads, 41% of fatalities and 37% of hospitalised injured casualties were due to run-off-road accidents; 20% of fatalities and 17% of hospitalised injured casualties were due to head-on collisions and 14% of fatalities and 18% of hospitalised injured casualties were due to side and sideswipe collisions.

On urban roads, 49% of fatalities and 37% of hospitalised injured casualties were pedestrians being struck by a vehicle and this was the most frequent type of accident. As for fatalities, the second most frequent type of accident was run-off-road (15%), whereas for hospitalised injured casualties the second most frequent type of accident was side and sideswipe collisions (29%).

Distribution of fatalities by type of accident. Spain, 2016



As for speed, according to the estimate of the law enforcement officer at the time of the accident, in 9.5% of casualty accidents in 2016 inappropriate speed was present; this percentage rises to 17.2% when the casualty accident was on an interurban road. It was noted that speed was a contributory factor in 21.5% of fatal accidents. These percentages are similar to those of the previous year.

In 2016 the total number of traffic offences reported by DGT was 4,387,229. Of these, 66% were speed-related. These traffic offences were detected by the Traffic Division of the Guardia Civil and by fixed safety and point-to-point speed cameras and helicopters.

In 2016 we have established a collaboration agreement with the Spanish National Toxicology and Forensic Science Institute (INTCF) and the Institutes of Forensic Medicine and Science (IML) in Murcia and Galicia, with a two-fold objective: on the one hand, to standardise the definitions of road traffic fatality, as well as the exclusion criteria (suicide, illness, homicide); on the other hand, to connect the National Register for Road Traffic Accident Victims (RNVAT) database, which contains detailed information on people, vehicles, infrastructures and environments, with the INTCF and the IML databases, which contain the results of the alcohol and drug tests conducted on the samples taken from fatally injured drivers. This collaboration has enabled us to significantly enrich the quantity and quality of the available information on the role that alcohol and drugs play on road traffic accidents.

On interurban roads, 44,017 drivers were involved in casualty accidents, 68% of which were tested for alcohol. The percentage of tests performed in the case of fatally injured drivers is 73%. As for surviving drivers, tests were performed to 26% of hospitalised injured casualties, to 62% of non-

hospitalised injured casualties and 85% of uninjured drivers. These variations are related to the difficulties in performing tests to determine alcohol content in exhaled air in those cases of greater severity. The percentage of positive alcohol tests on interurban roads increases with the severity of the injury, from 5% in uninjured drivers to 25% in fatally injured drivers.

Results of alcohol testing in drivers involved in casualty accidents. Interurban roads. Year 2016, 2015 values in red and in brackets (Catalonia and Basque Country excluded)

Severity of casualty	Total drivers	Tested drivers	% of tested drivers	Positive tests	Alcohol positive percentage
Fatalities	720	525	73%	133	25%
Hospitalised injured casualties	2,752	716	26% (25%)	83	12% (9%)
Non-hospitalised injured casualties	22,861	14,060	62% (61%)	955	7% (7%)
No healthcare required	17,190	14,561	85% (85%)	677	5% (4%)
Not classified	494	181	37% (64%)	5	3% (3%)
Total	**44,017**	**30,043**	**68% (67%)**	**1,853**	**6% (6%)**

On urban roads, 75,464 drivers were involved in casualty accidents, 14% of which were tested for alcohol. The percentage of tests performed in the case of fatally injured drivers is 60%. As for surviving drivers, tests were performed to 6% of hospitalised injured casualties, to 10% of non-hospitalised injured casualties and to 19% of uninjured drivers. As with interurban roads, the percentage of positive alcohol tests increases with the severity of the injury, from 13% in uninjured drivers to 37% in fatally injured drivers. We can observe that, for all severities, the percentages of positive alcohol tests are higher than those for interurban roads.

Results of alcohol testing in drivers involved in casualty accidents. Urban roads. Year 2016 (Catalonia and Basque Country excluded).

Severity of casualty	Total drivers	Tested drivers	% of tested drivers	Positive tests	Alcohol positive percentage
Fatalities	178	107	60%	40	37%
Hospitalised injured casualties	1,986	128	6%	47	37%
Non-hospitalised injured casualties	32,728	3,111	10%	552	18%
No healthcare required	39,168	7,327	19%	961	13%
Not classified	1,404	97	7%	23	24%
Total	**75,464**	**10,770**	**14%**	**1,623**	**15%**

In relation to illegal drug consumption[1], on interurban roads, 6% of all drivers involved in casualty accidents were tested. The percentage of tests performed in the case of fatally injured drivers is 73%. As for surviving drivers, tests were performed to 10% of hospitalised injured casualties, to 3% of non-hospitalised injured casualties and to 7% of drivers who did not require health care. The percentage of positive drug testing was 13% in fatally injured drivers and 11-13% in surviving drivers.

Results of drug testing in drivers involved in casualty accidents. Interurban roads. Year 2016 (Catalonia and Basque Country excluded).

Severity of casualty	Total drivers	Tested drivers	% of tested drivers	Positive tests	Drug positive percentage
Fatalities	720	525	73%	68	13%
Hospitalised injured casualties	2,752	284	10%	32	11%
Non-hospitalised injured casualties	22,861	796	3%	106	13%
No healthcare required	17,190	1,200	7%	137	11%
Not classified	494	5	1%	1	20%
Total	**44,017**	**2,810**	**6%**	**344**	**12%**

On urban roads, 75,464 drivers were involved in casualty accidents, 1% of which were tested for drugs. The percentage of tests performed in the case of fatally injured drivers is 61%. As for surviving drivers, the percentage of tests performed ranges from 2% to less than 1% depending on the severity degree. The percentage of positive drug testing was 19% for fatally injured drivers. In the case of surviving drivers, the percentage of positives was 36% for hospitalised drivers and 18-19% for the rest. It is not possible to analyse the reason for the high value found in hospitalised drivers with the information available, although we should take into consideration that sample sizes available for drug testing in built-up areas are low and this may lead to certain random variation.

[1] The following substances have been considered: amphetamines, cocaine, cannabis, opioids and ketamine. The annual reports of the Spanish National Toxicology and Forensic Science Institute include an analysis of the presence of prescription drugs in fatally injured drivers.

Results of drug testing in drivers involved in casualty accidents. Urban roads. Year 2016 (Catalonia, Basque Country excluded in fatality figures. Catalonia, Basque Country and the city of Madrid are excluded in the rest of severity degrees)

Severity of casualty	Total drivers	Tested drivers	% of tested drivers	Positive drivers	Drug positive percentage
Fatalities[1]	178	108	61%	20	19%
Hospitalised injured casualties	1,986	33	2%	12	36%
Non-hospitalised injured casualties	32,728	107	0%	20	19%
No healthcare required	39,168	244	1%	44	18%
Not classified	1,404	5	0%	0	0%
Total	**75,464**	**497**	**1%**	**96**	**19%**

In 2016 47% of the drivers involved in accidents occurred on interurban roads committed an offence during the process that led to the accident. There were 5,801 speed infringements, i.e 28% of total traffic offences; in 5,199 cases the driver did not keep the safe distance, i.e 25% of the total; offences for disobeying a 'priority' sign were 3,559, i.e 17% of the total; and for partially occupying the oncoming lane there were 1,691 cases, 8% of the total. As regards accidents occurring on urban roads, the percentage of offending drivers was 42% in 2016. Infringements for disobeying a priority sign were the most frequent offences, 12,952, 53% of total infringements on urban roads; not keeping the safe distance is the second most frequent offence with 4,964 cases, i.e 20% of the total; and speed infringements rank third with 2,655 cases, 11% of the total.[2]

On interurban roads, in 2016, 21% of car and van fatalities aged 12 and over did not wear the seat belt and on urban roads neither did 33 out of the 83 fatalities. As for hospitalised injured casualties, 10% of them did not wear the seat belt on interurban roads and neither did 18% on urban roads.

In 2016, 2% of fatally injured and 1% of hospitalised injured motorcycle users did not wear the safety helmet on interurban roads. On urban roads, 9% of fatally injured and 3% of hospitalised injured motorcyclists did not wear the safety helmet. The number of unhelmeted motorcyclists being killed on interurban roads has declined, compared with 2015, whereas the figures for other road users without a safety helmet have remained stable.

The age of the vehicle represents a risk factor because they may lack the safety equipments and systems recently implemented, apart from the problems arising from their use. In 2016 the progressive ageing of the vehicle fleet has continued over recent years, ranging the average age of vehicles under 25 years from 9 years for industrial tractors (8.5 years in 2014) to 12 years for trucks and vans (11.4 years in 2014). The average age of cars is 11 years (10.2 years in 2014), over the average age of 9 years for motorcycles (9.4 years in 2014).

[2] Data from Catalonia, Basque Country and Madrid City Council are not included.

The proper maintenance of the vehicle is key to ensure appropriate safety conditions throughout the life of the vehicle. These safety conditions are regularly checked at the technical inspections. The period of time between one inspection and the next depends on the type of vehicle and its intended use[3].

In 2016, the percentage of vehicles involved in casualty accidents on interurban roads whose roadworthiness certificate had run out at the time of the accident fluctuates between 1% in buses and 10% in trucks up to 3,500 kg.

Status of the roadworthiness certificate at the time of the accident. Vehicles involved in casualty accidents on interurban roads*. Spain 2016

Vehicle type	Valid	Run out	Unspecified	TOTAL	% run out
Motorcycles	3,709	286	83	4,078	7%
Cars	28,783	1,625	278	30,686	5%
Vans	3,064	273	30	3,367	8%
Trucks up to 3,500kg	428	48	1	477	10%
Trucks exceeding 3,500kg	2,297	102	35	2,434	4%
Bus or coach	204	2	1	207	1%

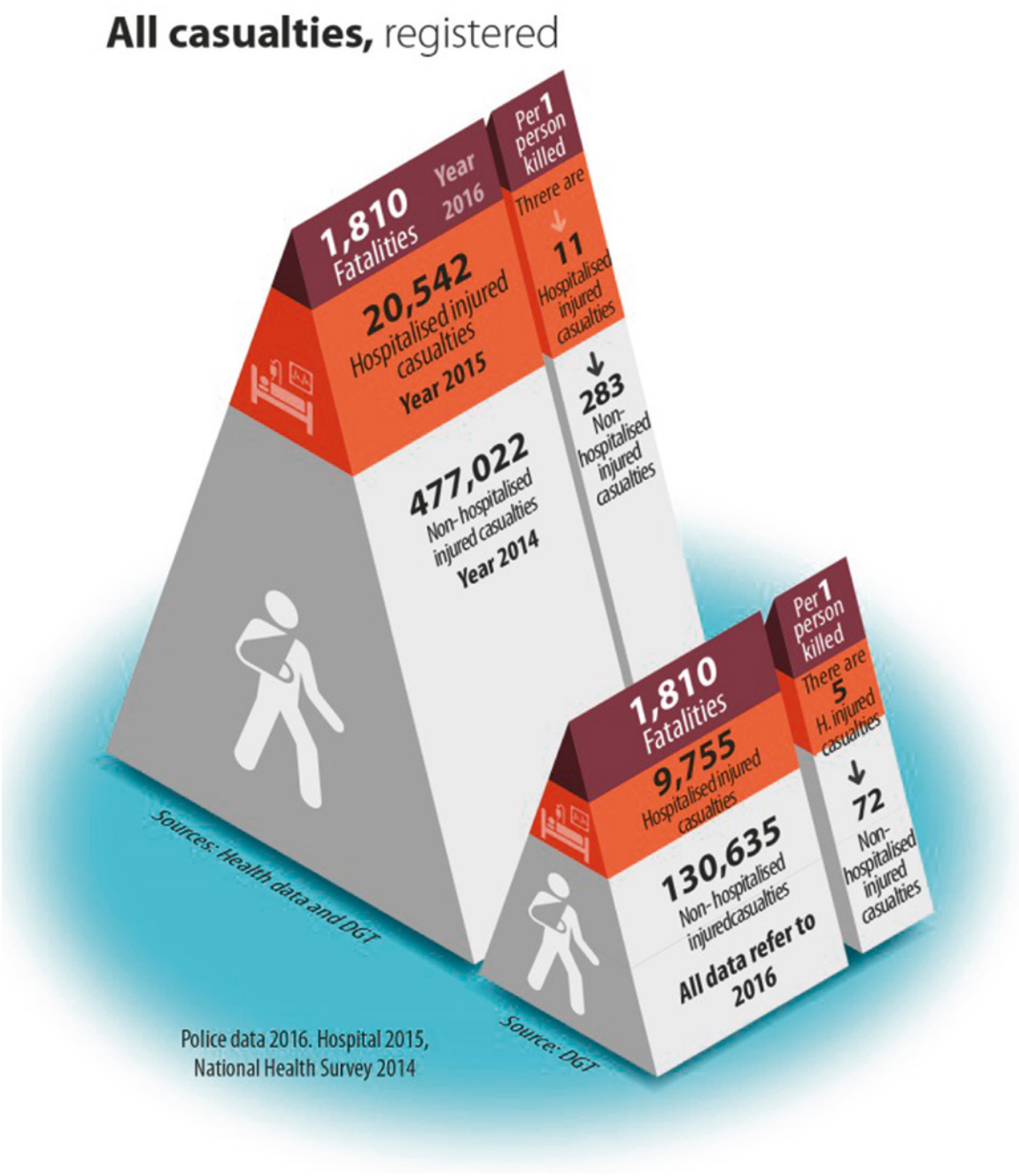
* *Those accidents occurring in the Autonomous Regions of Catalonia and the Basque Country are not included.*

[3] This regulation is included in Royal Decree 2042/1994 of 14 October regulating the technical inspection of vehicles.

Traffic-related injuries

To obtain a fuller picture of the scale of the impact that road traffic accidents have on health, we have incorporated the data from health sources into the analysis of data provided by law enforcement officers in charge of traffic control and surveillance (DGT).

From both sources it follows that for each road traffic fatality there were 11 hospitalised and 263 non-hospitalised injured casualties. When taking only into consideration the DGT Register for Road Traffic Accident Victims, as stated above, we have noted that for each road fatality there are 5 hospitalised and 72 non-hospitalised injured casualties; there is therefore a disparity between injured casualty figures, both hospitalised injured casualties (those requiring hospitalisation for more than 24 hours) and non-hospitalised injured casualties (those who have required certain degree of healthcare assistance).


All casualties, registered
1,810 Fatalities
Year 2016
20,542 Hospitalised injured casualties
Year 2015
477,022 Non- hospitalised injured casualties
Year 2014
Per 1 person killed
Threre are
11
Hospitalised injured casualties
283
Non-hospitalised injured casualties
Sources: Health data and DGT
Police data 2016. Hospital 2015,
National Health Survey 2014
1,810 Fatalities
9,755 Hospitalised injured casualties
130,635 Non- hospitalised injuredcasualties
All data refer to 2016
Per 1 person killed
There are
5
H. injured casualties
72
Non-hospitalised injured casualties
Source: DGT

The latest data available from the healthcare system, 2015 data, show that there were 20,963 hospital discharges at Spanish hospitals from road traffic accidents-related causes; the incidence rate was at 45.1 per 100,000 population. The reason for hospital discharge was death in 421 patients, of which 391 were recorded as having died within 30 days of the accident and 30 (7.1%) died after 30 days. In the analysis presented in this section a fatality is the person who had death as their reason for hospital discharge, regardless of the period of time since they were admitted to hospital. It should be recalled, however, that for international statistics on transport a road traffic fatality refers exclusively to a person who dies within 30 days of the accident.

There are considerable differences when the most common injuries and their location are analysed for fatalities and hospitalised injured casualties.

For hospital discharges, excluding fatalities, fractures have been found to be the most frequent injury in a road traffic accident: 55.0% are fractures, followed by internal injuries, 17.6%. In the cases where the cause for hospital discharge was death, it is also observed that fractures are the most frequent injuries, 53.1%, but they differ in that internal injuries also have a very high frequency, 28.9%.

Besides, for hospital discharges other than deaths the location of fractures was different to those discharges where the cause was death. For the former, the most frequent locations were the thorax and the extremities, being the most frequent in decreasing order injuries to the legs and ankles (8.9%), chest-thorax (8.5%) and shoulders and arms (6.6%). Fractures to the skull and neck account for 6.7% of total being the face the most frequent body region (4.2%). The most frequent fracture in the fatality group was type 1 traumatic brain injuries, 8.6%, fractures to the skull and neck represented 16.5% of all injuries to this group, followed by fractures to the chest and thorax (9.8%).

Barell Matrix*, ICD–9–CM codes, distribution of road traffic injuries. Spain, 2015 (20,542 discharges and 51,199 injuries)

			Fracture	Dislocation	Sprains and strains	Internal	Open wounds	Amputations	Blood vessels	Contusion or superficial	Crush	Burns	Nerves	Unspecified	Total
Head and neck	Traumatic brain injury	Type 1 TBI	843	0	0	1.900	0	0	0	0	0	0	0	0	2.743
		Type 2 TBI	297	0	0	1.599	0	0	0	0	0	0	0	0	1.896
		Type 3 TBI	157	0	0	0	0	0	0	0	0	0	0	0	157
	Other head, face and neck	Other head	0	0	0	0	494	0	0	0	0	1	17	177	689
		Face	2.147	6	0	0	1.149	0	0	0	0	4	0	0	3.306
		Eye	0	0	0	0	166	0	0	166	0	0	6	0	338
		Neck	8	0	0	0	35	0	0	0	0	1	5	0	49
		Head, face, and neck unspecified	0	0	0	0	0	0	25	552	0	10	2	119	708
Spine and back	Spinal cord (SCI)	Cervical SCI	66	0	0	32	0	0	0	0	0	0	0	0	98
		Thoracic or dorsal SCI	73	0	0	5	0	0	0	0	0	0	0	0	78
		Lumbar SCI	42	0	0	1	0	0	0	0	0	0	0	0	43
		Sacrum coccyx SCI	9	0	0	0	0	0	0	0	0	0	0	0	9
		Spine and back unspecified SCI	0	0	0	4	0	0	0	0	0	0	0	0	4
	Vertebral column (VCI)	Cervical VCI	840	97	313	0	0	0	0	0	0	0	0	0	1.250
		Thoracic or dorsal VCI	940	7	10	0	0	0	0	0	0	0	0	0	957
		Lumbar VCI	1.246	3	16	0	0	0	0	0	0	0	0	0	1.265
		Sacrum coccyx VCI	375	19	1	0	0	0	0	0	0	0	0	0	395
		Spine and back unspecified VCI	49	0	0	0	0	0	0	0	0	0	0	0	49
Torso	Torso	Chest (thorax)	4.373	17	4	3.339	16	0	40	337	1	4	0	0	8.131
		Abdomen	0	0	0	2.039	58	0	51	227	0	3	3	0	2.381
		Pelvis and urogenital	1.985	30	14	84	58	0	22	31	2	1	0	0	2.227
		Trunk	0	0	0	0	16	0	0	92	3	3	0	544	658
		Back and buttock	0	0	0	0	11	0	0	156	2	4	0	0	173
Extremities	Upper	Shoulder and upper arm	3.387	388	61	0	95	7	0	230	2	6	0	46	4.222
		Forearm and elbow	2.312	68	30	0	250	4	0	88	1	11	0	0	2.764
		Wrist, hand and fingers	1.170	153	82	0	376	41	0	141	10	18	0	18	2.009
		Other and unspecified	4	0	0	0	55	1	33	129	1	9	126	35	393
	Lower	Hip	905	89	15	0	0	0	0	93	0	0	0	0	1.102
		Upper leg and thigh	948	0	0	0	0	5	0	92	3	7	0	0	1.055
		Knee	288	123	191	0	0	0	0	218	1	6	0	0	827
		Lower leg and ankle	4.580	46	183	0	0	10	0	104	10	14	0	0	4.947
		Foot and toes	1.060	90	11	0	160	16	0	63	16	7	0	0	1.423
		Other and unspecified	19	0	111	0	800	3	82	324	5	9	0	121	1.474
Unclassifiable by site	Other Unspec.	Other or multiple	17	0	0	0	0	0	8	0	0	0	65	0	90
		Unspecified site	19	0	13	12	47	0	3	1.928	3	34	7	542	2.608
	System-wide	System-wide and late effects	0	0	0	0	0	0	0	0	0	0	0	0	681
		TOTAL	28.159	1.136	1.055	9.015	3.786	87	264	4.971	60	152	231	1.602	51.199

* *Sample: Hospitalised injured, excluding fatalities.*

The European Union has adopted the use of MAIS3+, (Maximum Abbreviated Injury Scale with a score of 3 or higher on the AIS) so as to standardise the definition of seriously injured casualties in the UE Member States. Spain has adopted that definition and DGT can prepare this report by compiling the data from the National Hospital Discharge File.

Of the 20,572 road traffic accidents-related hospital discharges (excluding fatalities 30 days after the accident) registered in 2015, 6,955 scored 3 or higher on the AIS.

34% of casualties who did not die within 30 days of the accident and were discharged from any hospital were MAIS3+; differences exist with respect to both age and gender. 30% of females and 35% of males sustained a MAIS3+ injury. In terms of age, people aged 84 years old or older sustained most serious injuries, 55% scored MAIS3+, followed by people aged 75-84 with 44% and people aged 65-74 with 39%. Children aged under one account for the smallest proportion of seriously injured casualties with 10%, followed by the 1-14 age group with 25% and by the 25-34 age group with 30%.

Evolution

The number of casualty accidents increased by 5% in 2016, compared with the previous year. With regard to the most seriously injured casualties, there were 121 more deaths as against 2015 and this means a 7% increase; 260 more hospitalised injured casualties, i.e. a 3% increase; and 5,675 more non-hospitalised injured casualties, a 5% increase.

On interurban roads there were 6% more road traffic accidents, 3% more fatalities, 6% more hospitalised injured casualties and 7% more non-hospitalised injured casualties. As for urban roads, the number of road traffic accidents increased by 4%, fatalities by 18% and non-hospitalised injured casualties by 3%, whereas the number of hospitalised injured casualties decreased by 1%.

Analysing in greater detail the distribution of the number of fatalities, certain aspects can be highlighted. Firstly, a different trend is found to exist on motorways and dual carriageways —increase by 18% in these two types of roads taken together— and on conventional roads —decrease by 1%—.

With regard to the type of accident, substantial increases can be found in head-on collisions —33% more fatalities—, side and sideswipe collisions —33% more—, pedestrians struck by vehicles —26% more— and run-off-road collisions —15% more—. Meanwhile, there was a decrease in rear and multiple collisions —14% fewer— and in accidents falling within category 'others' —55% fewer, these include falls or collisions against obstacles or road furniture items, among other accidents—.

The number of road traffic fatalities has evolved differently by mode of travel. In particular, there were increases in pedestrians, with 6% more fatalities; in cyclists, with 9 more fatalities; in motorcyclists, with 4% more; in car occupants, with 9% more; and in bus or coach occupants, with 19 more fatalities. On the contrary, there were decreases in goods vehicle occupants, with 6% fewer fatalities, and in moped users, with 2 fewer fatalities.

As regards the age of the fatalities, increases in all age groups are observed, except in the 25-34 and 65-84 year olds.

Number of casualty accidents, fatalities, hospitalised injured casualties and non-hospitalised injured casualties in 2016. Percentage difference compared with the previous year. Spain, 2016

	2016				Variation[1] 2016/2015			
	Casualty accidents	Fatalities	Hospitalised injured casualties	Non-hospitalised injured casualties	Casualty accidents	Fatalities	Hospitalised injured casualties	Non-hospitalised injured casualties
Total	**102,362**	**1,810**	**9,755**	**130,635**	**5%**	**7%**	**3%**	**5%**
Location								
Interurban road	36,721	1,291	5,050	51,379	6%	3%	6%	7%
Motorway	3,592	85	290	5,500	50%	10	30%	49%
Dual carriageway	8,641	242	830	13,241	2%	20%	12%	3%
Conventional road	24,488	964	3,930	32,638	3%	-1%	4%	4%
Urban road	65,641	519	4,705	79,256	4%	18%	-1%	3%
Cross-town link	1,465	47	149	1,805	4%	6	-11%	3%
Streets	63,438	467	4,521	76,462	3%	19%	-1%	2%
Motorway/Urban dual c'way	738	5	35	989	6%	3%	6%	7%
Days of week								
Working days	77,339	1,234	6,616	96,854	4%	11%	1%	3%
Weekends	25,023	576	3,139	33,781	7%	-1%	7%	8%
Type of accident								
Frontal impact	3,120	277	965	4,897	13%	33%	39%	18%
Side and sideswipe collision	30,061	253	2,241	39,153	9%	33%	18%	7%
Rear and multiple collision	24,106	145	1,028	38,078	1%	-14%	2%	0%
Run-off-road	16,292	601	2,187	19,257	6%	15%	11%	6%
Rollover	2,811	22	260	2,858	15%	6	59%	11%
Pedestrian impact [2]	14,009	386	1,957	13,450	7%	26%	7%	7%
Other type	11,963	126	1,117	12,942	-5%	-55%	-42%	0%
Mode of travel [3]								
Bicycle	7,673	67	736	6,635	7%	9	13%	6%
Moped	7,950	54	625	7,760	-3%	-2	-7%	0%
Motorcycle	25,944	343	2,681	24,364	7%	4%	3%	7%
Car	78,976	754	2,988	69,037	5%	9%	6%	5%
Goods vehicle	15,759	143	479	6,956	3%	-6%	-13%	-3%
Bus or coach	2,214	21	83	2,137	6%	19	34	8%
User [3,4]								
Driver	80,291	1,101	6,158	82,458	5%	5%	3%	5%
Passenger	25,690	320	1,608	35,416	3%	17%	4%	3%
Pedestrian [2]	14,147	389	1,989	12,761	4%	6%	-1%	5%

	2016				Variation[1] 2016/2015			
	Casualty accidents	Fatalities	Hospitalised injured casualties	Non-hospitalised injured casualties	Casualty accidents	Fatalities	Hospitalised injured casualties	Non-hospitalised injured casualties
Age [3,4]								
0-14	6,169	28	385	6,925	11%	3	8%	12%
15-24	20,026	198	1,415	23,010	6%	16%	8%	5%
25-34	26,784	223	1,622	28,526	3%	-6%	-2%	3%
35-44	26,049	289	1,798	26,790	4%	7%	3%	4%
45-54	19,923	311	1,692	19,651	6%	19%	7%	6%
55-64	11,918	230	1,161	11,466	4%	10%	3%	5%
65-74	6,739	198	785	6,413	4%	-2%	0%	5%
75-84	4,161	210	609	3,692	3%	-8%	1%	3%
85 and over	1,170	105	172	933	1%	31	-16%	3%
Gender [3,4]								
Male	70,597	1,395	6,829	75,930	4%	8%	3%	4%
Female	46,174	410	2,904	54,208	5%	4%	3%	5%

[1] *The differences have been estimated as a percentage when the number of cases is higher than 100 and in absolute values when the number is below 100.*

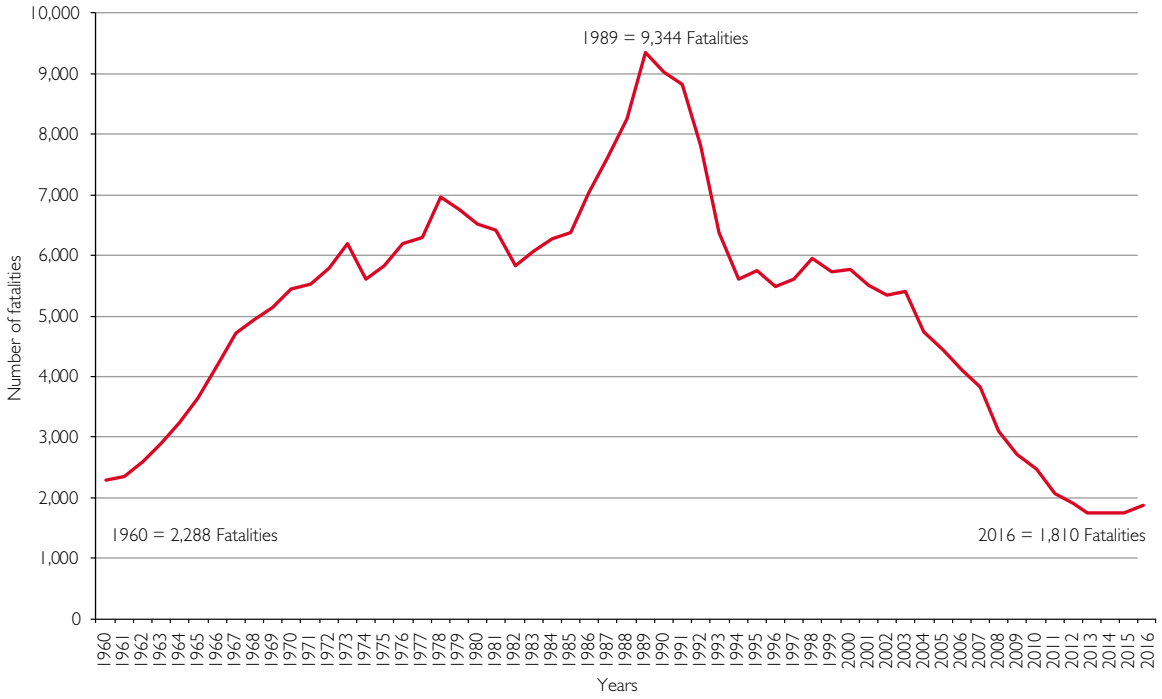
[2] *The number of people being killed when struck by a vehicle does not include all pedestrians hit by a vehicle because the classification by type of accident is made according to the first manoeuvre and not to its harmful outcome.*

[3] *In the casualty accident indicator, the addition does not correspond to the total because the same accident can fall under various subheadings.*

[4] *Accidents involving at least 1 casualty are recorded on the reference group.*

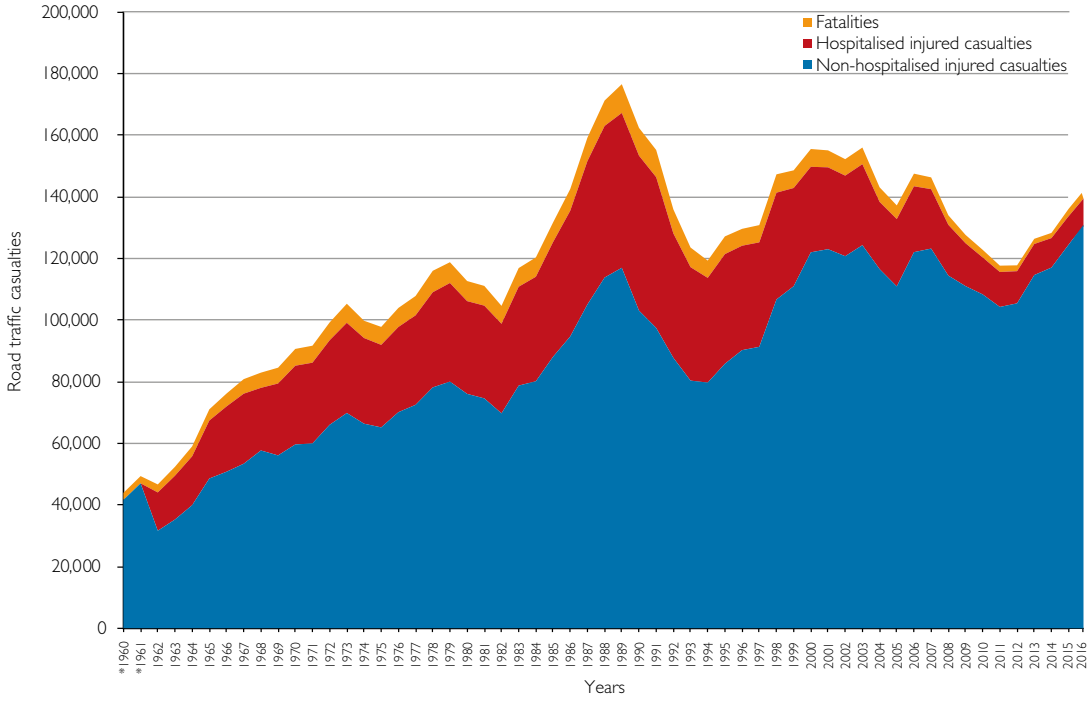
The evolution in road fatality figures shows that, since records began, as of 1960 there was an overall general upwards pattern until it reached a maximum in 1989, a year in which 9,344 fatalities were recorded. Since then, the number of deaths has steadily decreased, more or less markedly, until reaching the lowest annual total on record in 2013 with 1,680 people being killed. In 2016, the last year on record, 1,810 people were killed in road traffic accidents which means an increase by 7% as compared with 2015.

Evolution of road traffic fatalities. Spain, 1960-2016



Since 1962 data have been differentiated by the severity of injury, classifying the injured by hospitalised injured casualties and non-hospitalised injured casualties. The proportional distribution of deaths, hospitalised and non-hospitalised injured casualties, according to the reports by police forces, has varied from 1962 to 2016. In 1962 the proportions of fatalities were 5%, of hospitalised injured casualties were 27%, of non-hospitalised injured casualties were 68%, and these figures remained virtually unchanged until 1998, a year when these percentages were: 4% of fatalities, 24% of hospitalised injured casualties and 72% of non-hospitalised injured casualties. In 2003 these percentages changed and fatalities fell to 3% and hospitalised injured casualties to 17%. And they changed again as of 2008, falling to 2% in the case of fatalities and to 12% for hospitalised injured casualties. From 2014 to 2016 the percentage of fatalities and hospitalised injured casualties were 1% and 7% respectively.

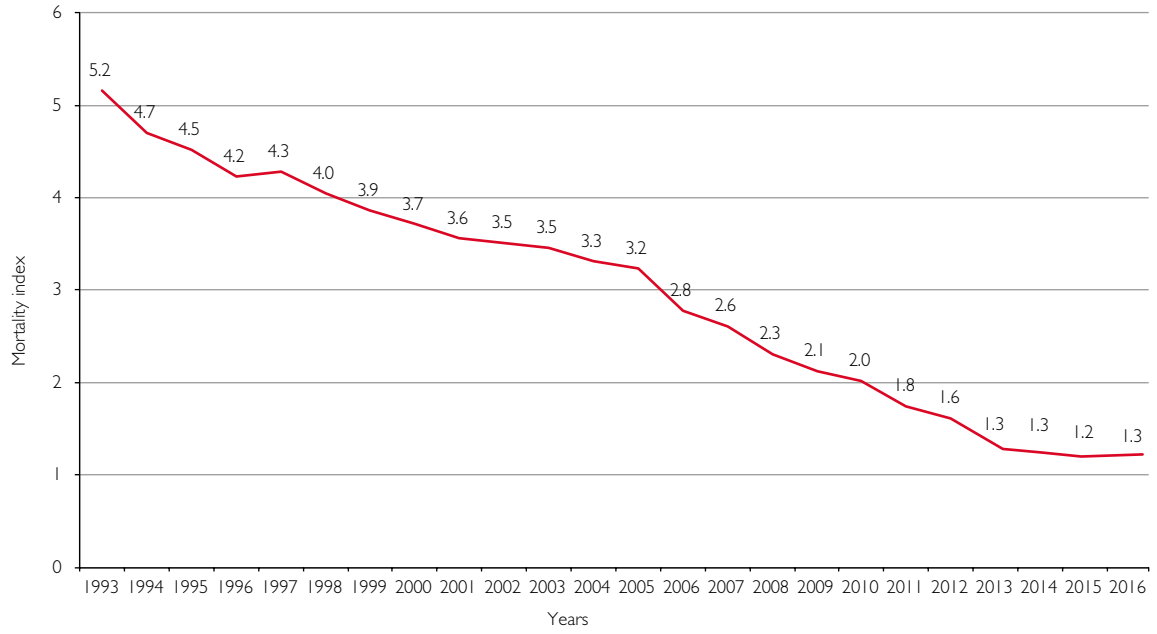
Evolution of road traffic fatalities. Spain, 1960-2016



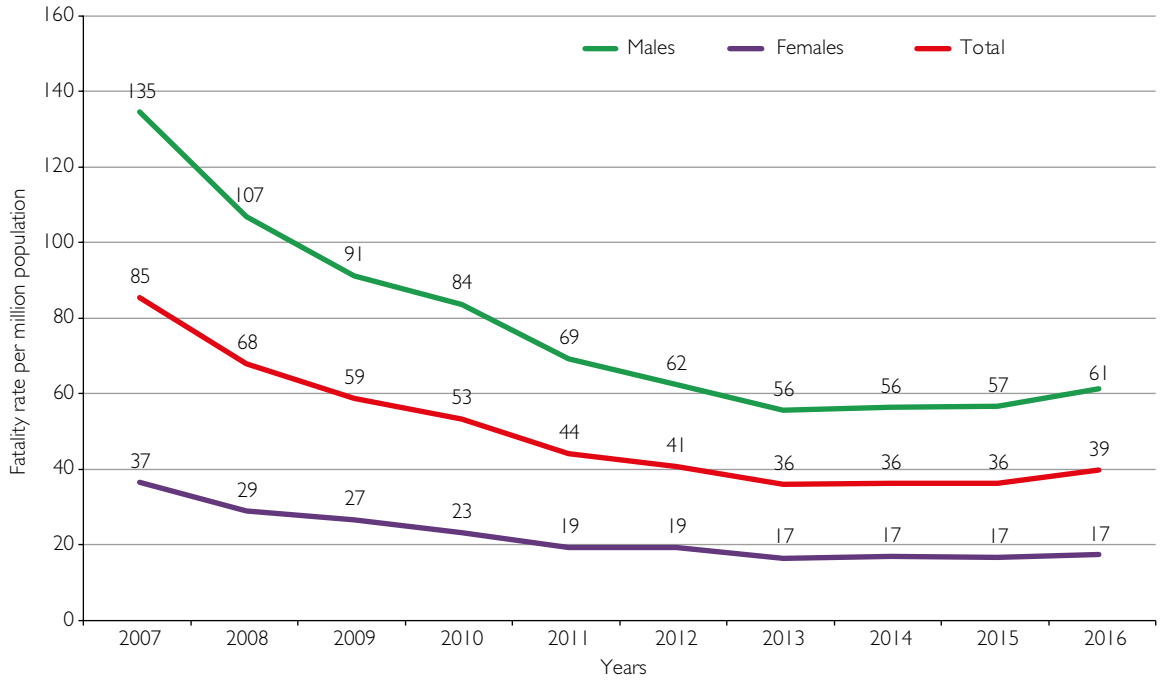
*1960 and 1961 do not segregate hospitalised and non-hospitalised injured casualties.

The mortality index rate, defined as the ratio between the number of deaths and the number of casualties, has decreased since 1993, and this is due not only to the fall in the number of deaths but also to the increase in the records of casualties who were not admitted to hospital, that in 2016 accounted for 92% of recorded casualties whereas in 1993 they represented 65%.

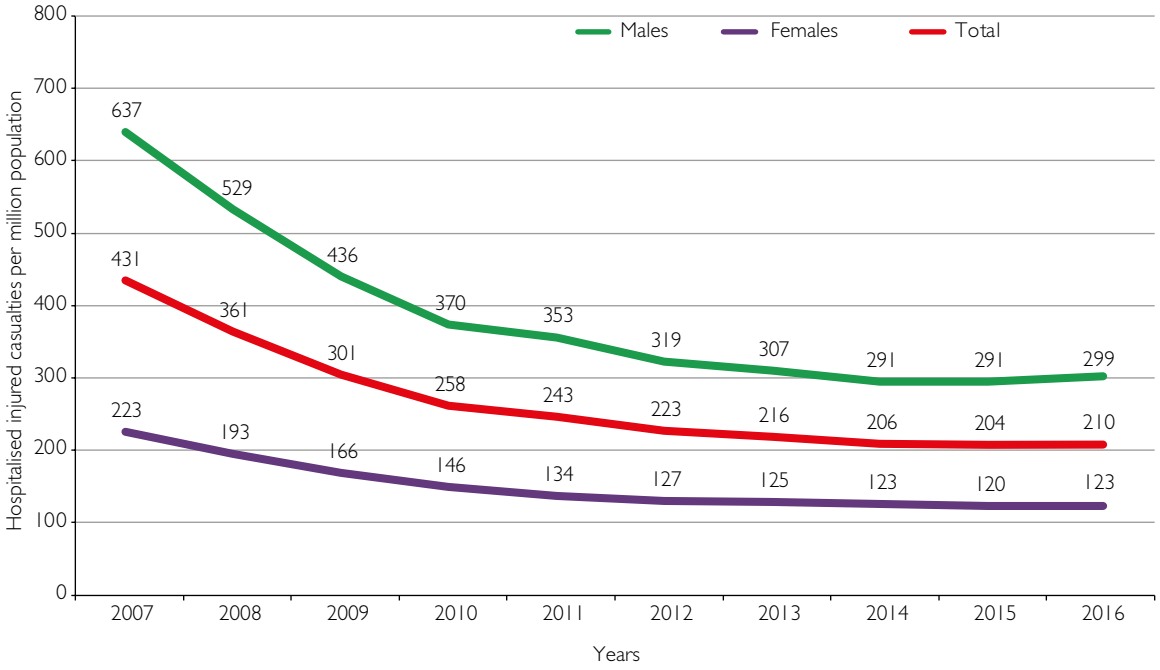
Evolution of mortality index (no. of deaths / no. of casualties x 100) in casualty accidents. Spain, 1993-2016



Evolution of fatality rate by gender per million population, 2007-2016

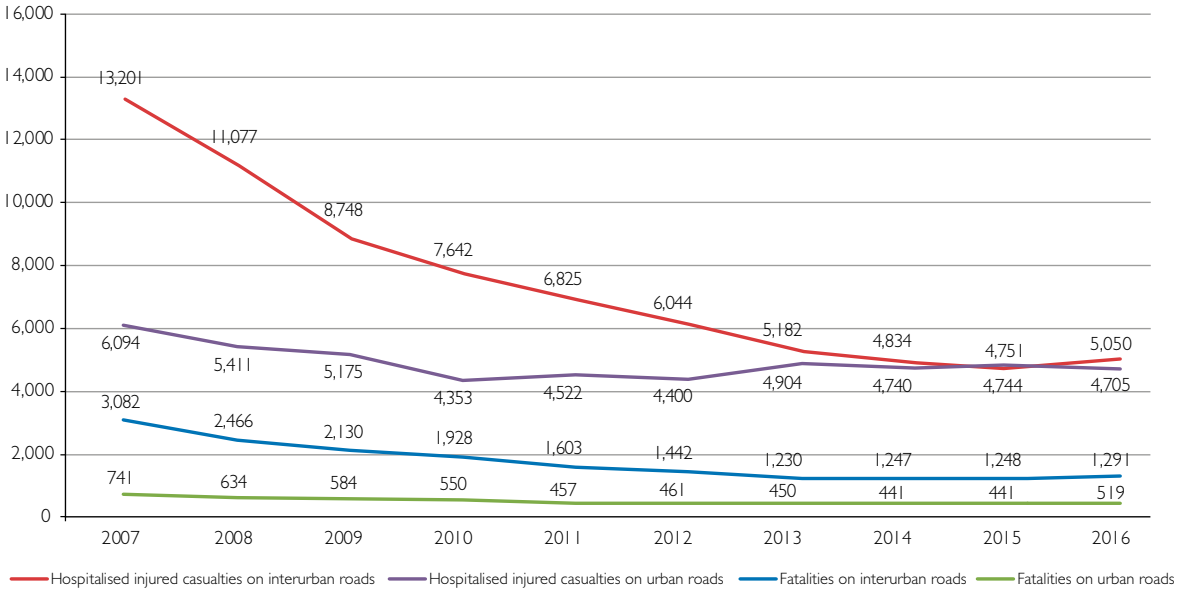


Evolution of hospitalised injured casualty rate by gender per million population, 2007-2016



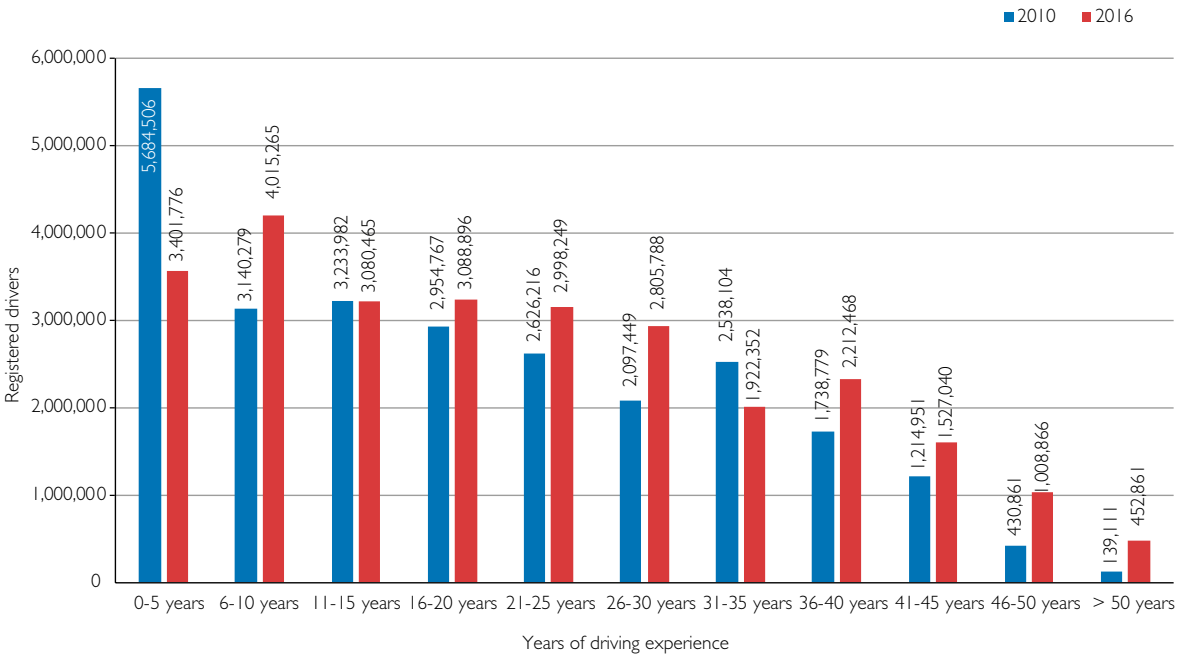
Until 2015 there were reductions in the number of fatalities and hospitalised injured casualties both on interurban and urban roads, albeit the scale of the decline had been smaller in more recent years. In 2016, the number of fatalities increased both on urban and interurban roads as well as hospitalised injured casualties on interurban roads. Between 2007 and 2016 the number of fatalities has decreased by 58% on interurban roads and by 30% on urban roads. With regard to hospitalised injured casualties, they decreased by 62% and 23% on interurban and urban roads respectively.

Evolution of road fatalities and hospitalised injured casualties occurred on interurban and urban roads. Spain 2007-2016



In 2016 there were 26,514,026 registered drivers, an increase by 1% compared with 2015. The registered driver rate was at 673 per thousand driving age population. The rate for the age group 35-49 is above 800 drivers per thousand population; for the age groups 21-34 and 50-64 is close to or above 700 drivers per thousand population; and for the 65-69 is above 600.

Registered drivers by their years of driving experience. Spain, 2010-2016

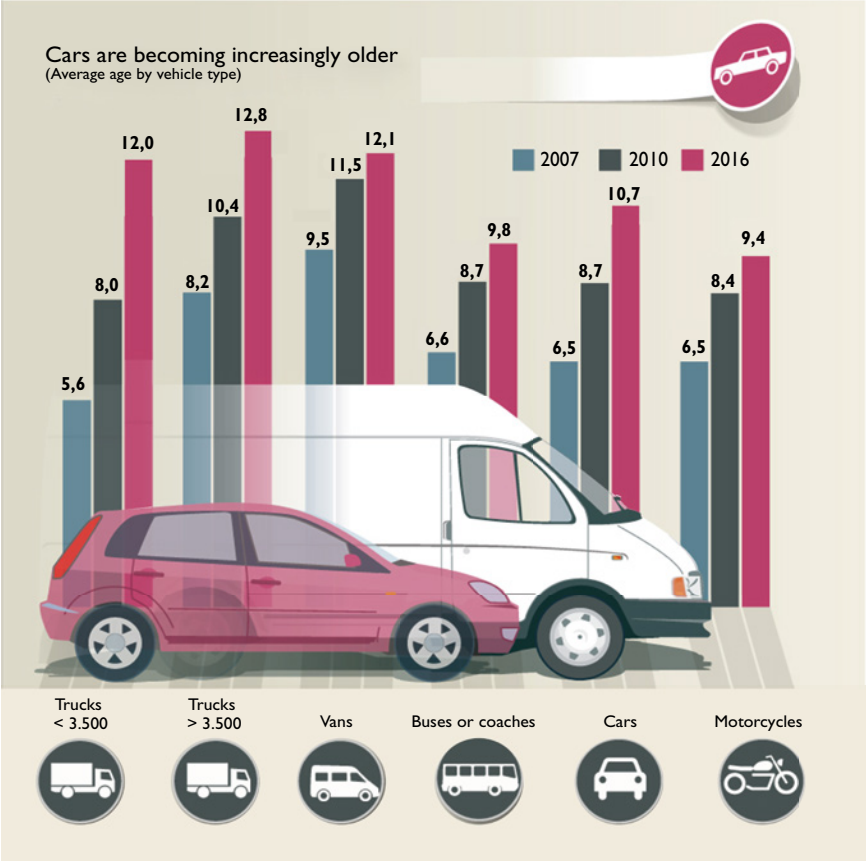


The vehicle fleet has increased by more than one million vehicles in the last decade, considering all categories of vehicles. In 2016 the total vehicle fleet has increased as compared with the previous year. The greatest increase in absolute figures is for cars, with 521,281 more vehicles, which represents an increase by 2% in percentage terms. In absolute terms, they are followed by motorcycles with 132,011 more units, which means an increase by 4% year-on-year. Moped category showed a negative result: a decrease by 2%. The vehicle fleet is mainly made up by cars with more than 22 million units accounting for 68% of the fleet; cars are followed by trucks and vans, 15%; and by motorcycles, 10%.

Vehicle Fleet	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Difference 2016/2015	Year-on-year variation 2007-2016
Trucks and vans	5,140,586	5,192,219	5,136,214	5,103,980	5,060,791	4,984,722	4,887,352	4,839,484	4,851,518	4,879,480	1%	-1%
Buses or coaches	61,039	62,196	62,663	62,445	62,358	61,127	59,892	59,799	60,252	61,838	3%	0%
Cars	21,760,174	22,145,364	21,983,485	22,147,455	22,277,244	22,247,528	22,024,538	22,029,512	22,355,549	22,876,830	2%	1%
Motorcycles	2,311,346	2,500,819	2,606,674	2,707,482	2,798,043	2,852,297	2,891,204	2,972,165	3,079,463	3,211,474	4%	4%
Mopeds	2,430,414	2,410,685	2,352,205	2,290,207	2,229,418	2,169,668	2,107,116	2,061,044	2,023,211	1,987,470	-2%	-2%
Industrial Tractors	212,697	213,366	206,730	199,486	195,960	186,964	182,822	186,060	195,657	207,889	6%	0%
Other vehicles1	427,756	436,631	447,363	450,514	459,117	460,196	463,181	475,872	420,734	425,411	1%	0%
Total	**32,344,012**	**32,961,280**	**32,795,334**	**32,961,569**	**33,082,931**	**32,962,502**	**32,616,105**	**32,623,936**	**32,986,384**	**33,650,392**	**2%**	**0%**

The average age of the vehicles under 25 years ranges from 9 years for industrial tractors to 12 years for trucks and vans. The average age of cars is 11 years, over the average age of 9 years for motorcycles.

Average age of the vehicle fleet. Vehicles aged less than 25 years, mopeds excluded. Spain, 2007, 2010, 2016

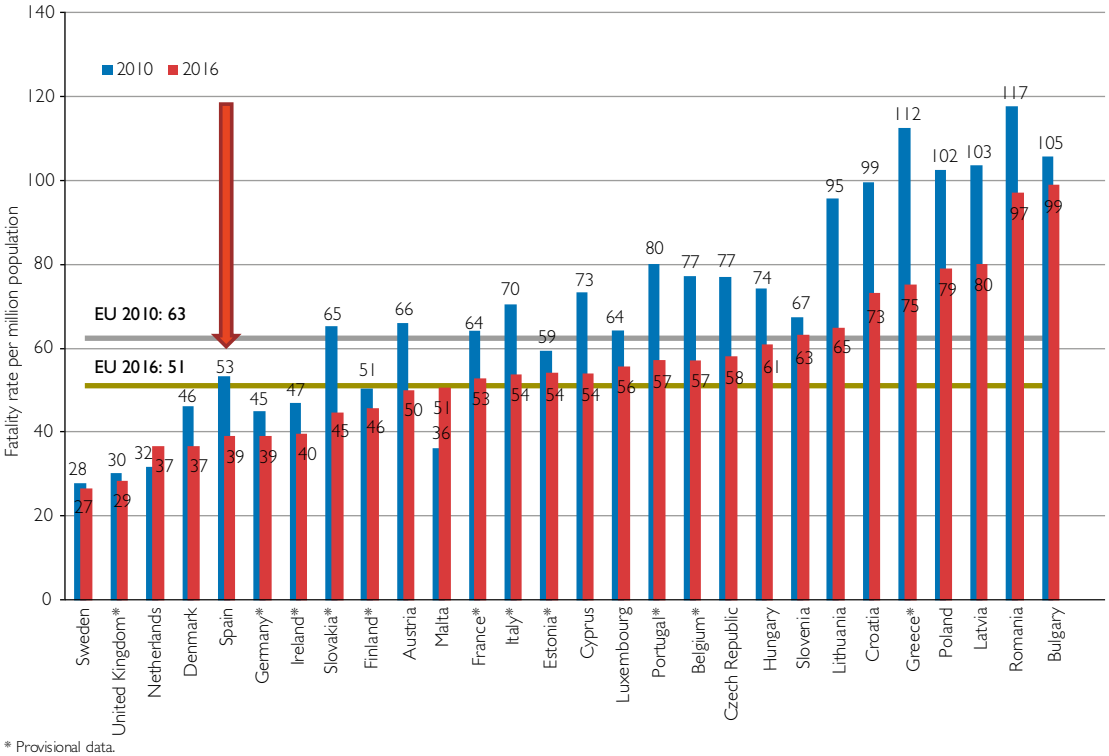


International context

In 2015 there were more than 25,600 road traffic fatalities in the 28-European Union, 7% of these fatalities occurred in Spain. That year, the Spanish population represented 9 per cent of the European population.

In 26 out of the 28 Member States of the EU fatality rate per million population decreased in 2015 compared with 2010; in 2 MS this rate increased: the Netherlands (from 32 to 37) and in Malta (from 36 to 51). In the case of Spain, the rate was at 53 fatalities per million population (2,478 deaths) in 2010, below the European average rate that was at 63. In 2016 the rate was at 39 fatalities per million population, below the European average rate for that same year (51 deaths per million population). Spain ranks fifth among countries with the lowest figures on fatality rate.

Fatality rate per million population in the European Union. 2010, 2016



* Provisional data.

Source 2010: European Commission, CARE database and Eurostat. Source 2016: European Transport Safety Council. 11 PIN Report

Road Safety Strategy Indicators. 2011-2020

Indicators	Baseline figure 2009	2015 figure	2016 figure	Target figure 2020
1. To lower fatality rate below 37 per million population	59	36	39	Below 37
2. Reduction in the number of seriously injured casualties by 35%	13,923	9,495	9,755	9,050
3. Zero children fatalities without a child restraint system	12	5	3	0
4. 25% fewer drivers aged 18 to 24 killed and seriously injured at weekends	730	353	361	548
5. 10% fewer drivers aged over 64 killed	203	200	206	183
6. 30% reduction of people being killed when hit by a vehicle	459	306	386	321
7. 1 million more cyclists without their death rate going up	1.2	1.2	1.4	1.2
8. Zero car fatalities in urban area	101	61	80	0
9. 20% fewer deaths and serious injuries amongst motorcyclists	3,473	2,928	3,024	2,778
10. 30% fewer fatalities in run-off-road accidents on conventional roads	520	285	270	364
11. 30% fewer fatalities in accidents on the way to or from work	170	101	Not available	119
12. To lower below 1% the number of exhaled breath positives at preventive random controls. DRUID, cut off point 0.05 mg/l	6.7%	1.7%	Not available	Below 1%
13. To halve the percentage of light vehicles exceeding the speed limit by more than 20 km/h	12.3% (motorways) 6,9% (dual c'ways) 15.8% (conv.90) 16,4% (conv.100)	Not available. Regular study	Not available. Regular study	6.2% (motorways) 3,5% (dual c'ways) 7.9% (conv.90) 8,2% (conv.100)

[1] *In indicators 2, 4 and 9 seriously injured casualty means a person injured in a road traffic accident who requires hospitalisation for a period exceeding 24 hours.*

[2] *Children under 12.*

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