OTI DUI Report

2019

Based on fatal accidents investigated by road accident investigation teams during 2013–2017

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This report examines the fatal road accidents investigated by road accident investigation teams during 2013–2017. The report includes accidents where the road user was under influence of alcohol and/or illegal drugs and/or medicines.

The Finnish Crash Data Institute (OTI)
Report prepared by Esa Räty

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DUI REPORT 2013–2017

1 Executive summary

During 2013–2017, road accident investigation teams investigated a total of 921 fatal motor vehicle accidents, which is 19% less than during 2008–2012. The number of drink-driving[1] accidents decreased by 18% during the same period. However, the number of drugs-related accidents increased: during 2008–2012, the number of drug-drivers causing an accident was 59, whereas during 2013–2017, the corresponding number was 78. Of the 78 drivers, 25 were mixed substance abusers, i.e. they were under the influence of both drugs and alcohol. The increase in the number of drug and mixed substance abusers appears indicative of an increase in the use of drugs in Finland. The number of drug-drivers reported to the police has increased as well.

The accident profiles of the different types of intoxicated drivers differ to a certain extent in terms of the intoxicants used. Drug-drivers' accidents occur evenly throughout the week and at different times of the day (however, mostly in the afternoon), while drink-drivers' accidents mostly occur during weekends and at night. Drug-drivers' accidents are more frequently collisions with other vehicles, whereas alcohol drink-drivers' accidents are typically single-vehicle accidents. The differences between the times of accident can partly explain the differences between the types of accidents: there are more road users in the afternoon than at night.

Alcohol drink-drivers and drug-drivers are predominantly male, the largest age group being 25 to 54 years old. However, the proportion of over 55-year-old drivers in drink-driving accidents has increased compared to the previous reporting period of 2008–2012. The majority of those who died in the accident were travelling in the vehicle of the intoxicant-driver. This relates to the non-use of safety belt: 69% of drink drivers and 59% of drug-drivers did not wear a safety belt or helmet properly. In addition, the majority of fatal motor vehicle accidents in both categories of intoxicant-drivers occur in April–September.

The number of accidents caused by motor vehicle drivers under the influence of medicinal substances having an impact on driving ability was at the same level as in 2008–2012. The impact of different medicinal substances on driving ability is difficult to assess and should be the subject of a separate study.

Of the drink-drivers who caused a fatal accident, 81% exceeded the limit of aggravated drink-driving. Consequently, investigation teams have perceived driving under the influence of alcohol as a driving health problem and proposed treatment guidance and the adoption of a nationwide traffic physician system in Finland. Investigation teams continue to see the fitting of breath alcohol ignition interlock devices in vehicles as an important means of preventing drink-driving accidents.

Of the motor vehicle drivers who caused a fatal pedestrian or cyclist accident, 6 (5% of the drivers) were under the influence of intoxicants. In 2013-2017, a total of six pedestrians and cyclists were killed in accidents caused by intoxicated motor vehicle drivers, 4 of whom died in accidents caused by alcohol drink-drivers (at least 0.5 g/l).

In 2013–2017, a total of 265 pedestrians and cyclists were killed in the accidents investigated by the accident investigation teams. Of them, 48 (18%) were under the influence of alcohol (27 were pedestrians and 21 were cyclists). Of the cyclists' accidents, 12 (50%) were various types of single-vehicle accidents: falling, collisions to an obstacle or running off the road.

[1] In Finland the legal drink-driving limit (BAC) for all motor vehicle drivers is 0.5 g/l

2 Driving under the influence of alcohol in fatal motor vehicle accidents

This report summarizes fatal motor vehicle accidents in which the driver's blood alcohol content was at least 0.5 per mille. In addition to alcohol, the driver may have been under the influence of other intoxicants, see section 1.1.5.

2.1 Accidents

During 2013–2017, road accident investigation teams investigated a total of 222 fatal motor vehicle accidents in which the blood alcohol content of the driver who caused the accident was at least 0.5g/l. This is 24% of all[2] the investigated fatal motor vehicle accidents, including the cases where the driver's alcohol level had not been measured. In collision accidents, none of the collision counter parties had alcohol in their blood.

2.1.1 Accident types

Of the 222 accidents caused by drink-drivers, 170 (77%) only involved a single vehicle and 52 (23%) were collisions with one or more vehicles (Figure 1). Of all 222 accidents, 164 (74%) were running-off-the-road accidents, 49 (22%) were head-on collisions, and the remaining 9 (4%) were accidents classed in the category of 'others', such as collisions with obstacles or rollovers.

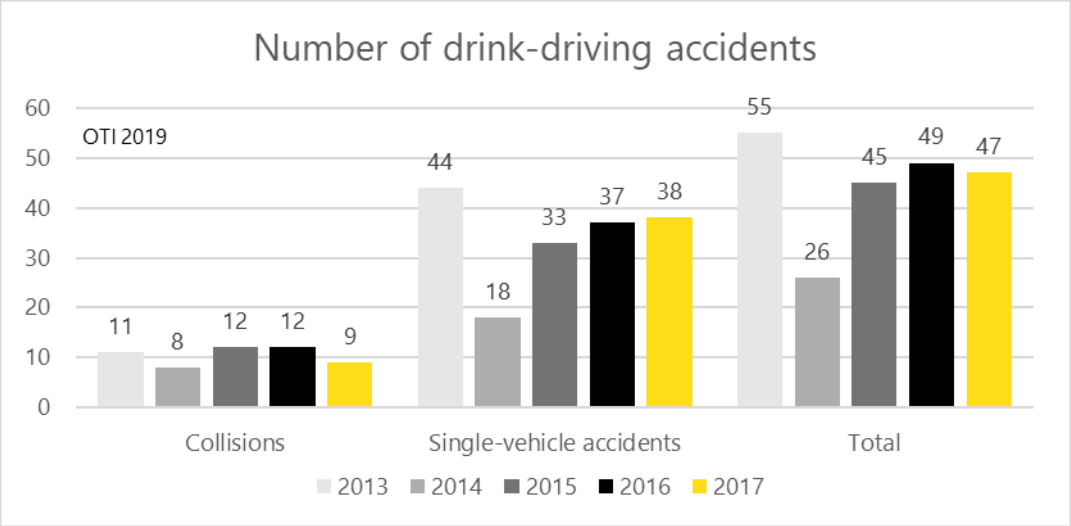


Figure 1. Annual numbers of drink-driving accidents in fatal motor vehicle accidents 2013–2017.

2.1.2 Fatalities

Between 2013 and 2017, a total of 252 people lost their lives in 222 motor vehicle accidents caused by drink-drivers (Figure 5). Of those who died, 188 (75%) were drink-drivers, 54 (21%) were passengers in a vehicle driven by a drink-driver, and 10 (4%) died in counter party vehicles. Fatalities in pedestrian and cyclist accidents are presented in section 4.

[2]During 2013–2017, road accident investigation teams investigated a total of 921 fatal motor vehicle accidents, of which the alcohol level of 72 drivers who caused the accident is not known.

2.1.3 Blood alcohol content

The blood alcohol content of drivers under the influence of alcohol causing a fatal motor vehicle accident exceeded the limit of aggravated drink-driving (1.2g/l) in 81% of the accidents (Table 1). Between 2013 and 2017, 13 of the drivers causing a motor vehicle accident were under illegal limit (0.20–0.49g/l).

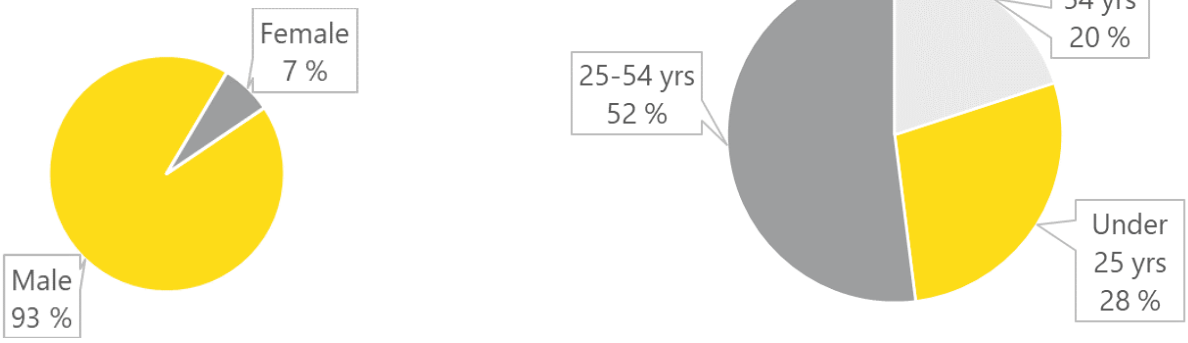
Table 1. Drivers' blood alcohol content in fatal motor vehicle accidents caused by drink-drivers 2013–2017.

	2013		2014		2015		2016		2017		Total	
Blood alcohol content (g/l)	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
0,50-1,19	10	18	4	15	8	18	12	24	9	19	43	19
1,20-1,99	21	38	13	50	20	44	17	35	19	40	90	41
2,00 or more	24	44	9	35	17	38	20	41	19	40	89	40
Total	**55**	**100**	**26**	**100**	**45**	**100**	**49**	**100**	**47**	**100**	**222**	**100**

2.1.4 Driver's age and sex

In the 222 motor vehicle accidents caused by drink-drivers, in 206 (93%) cases the accident was caused by a man and in 16 (7%) cases caused by a woman. Of the drivers causing the drink-driving accidents, 63 (28%) were under 25 years and 115 (52%) were aged between 25 and 54. The rest of the drivers, 44 (20%), were at least 55 years.

The limit of aggravated drink-driving, 1.2g/l, was exceeded by 169 (82%) of male and 10 (63%) of female drink-drivers (see also Figure 5).



2.1.5 Other substances having an impact on driving ability

Of the 222 drink-drivers, 51 (23%) were under the influence of a combination of alcohol and another substance (drugs or medicines) having an impact on driving ability. Of the 51 drivers, 25 were under the influence of drugs and 36 under the influence of medicines impacting driving ability (see also Table 2). In 10 cases the driver was under the influence of alcohol, drugs and medicines.

2.1.6 Use of safety equipment

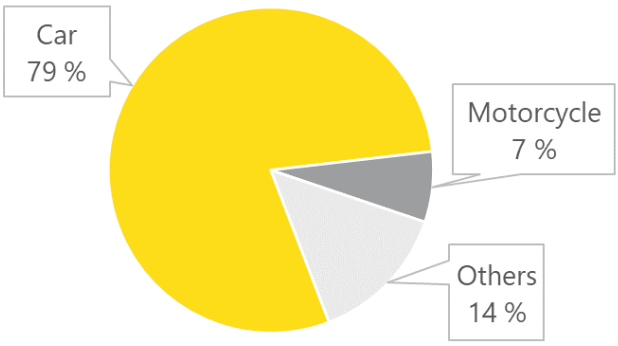
Between 2013 and 2017, 149 (69% of the known cases) of the drink-drivers were not wearing a safety belt or a helmet (properly attached) at the time of the accident. Of the passenger car drivers, 122 (71% of the known cases) were not using a safety belt and, likewise, 58 car passengers (63% of the known cases).

2.1.7 Place of accident

Of the accidents caused by drink-drivers, 27 (12%) took place in an urban area, 23 (10%) close to an urban area (sub urban area) and 172 (78%) in a rural area. Of the accidents in rural areas, 75 (44%) occurred on main roads, 70 (41%) on regional or connection roads, 25 (15%) on private roads and areas, and 2 (1%) in other areas.

2.1.8 Vehicles

Of the drink-drivers, 176 (79%) were driving a passenger car, 16 (7%) a motorcycle, 9 (4%) quadricycles or equivalent (eg. class L6 and L7 vehicles), 6 (3%) a van, 6 (3%) a tractor, 5 (2%) a snowmobile, 3 (1%) a moped, and 1 driver was driving a truck.



2.1.9 Right to drive and ownership of vehicle

Of the drivers causing a drink-driving accident, 184 (83%) had a valid driving licence at the time of the accident, although some of them (n=7) did not have a right to drive the vehicle concerned. A total of 27 (12%) drink-drivers had been banned from driving or were without a right to drive for some another reason. Of them, 4 had an expired right to drive and 7 (3%) had never held a driving licence.

Of the drink-drivers, 12 (5%) were driving a stolen vehicle and 35 (16%) were driving a legitimately borrowed or leased vehicle

2.1.10 Passengers

Of the drink-drivers who were driving a passenger car, 117 (66%) were driving alone and 58 (34%) had at least one passenger in the car (37 had one passenger and 21 at least two passengers in the car). A total of 95 passengers were in a car driven by a drink-driver, 50 (53%) of whom died in accidents.

2.1.11 Previous convictions

Of the drink-drivers, 77 (38% of the known cases) had previous drink-driving convictions over the period of five years preceding the accident. Respectively, 141 of the drink-drivers (70% of the known cases) had at least one previous traffic conviction (including drink-driving convinctions) and 35 (17%) at least five traffic convictions

2.1.12 Time and day of the week

Drink-driving accidents mostly took place during weekends, in the evening and during the night. Half (48%) of the accidents caused by drink-drivers occurred between Friday 6 pm and Sunday 6 am.

The majority of motor vehicle accidents caused by drink-drivers took place in May–June (an annual average of 6 accidents/month). The number of drink-driving accidents in December–March was half lower than during the summer. (Figure 2.)

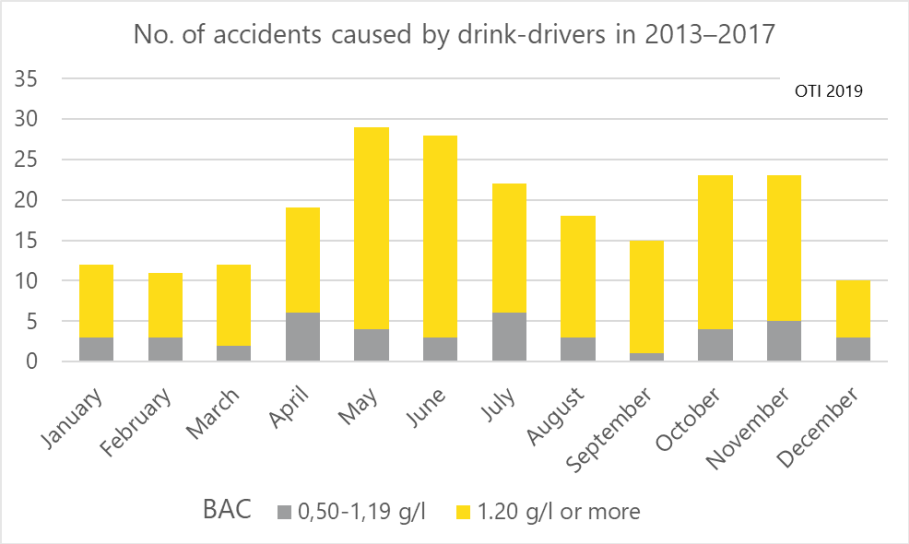


Figure 2. Fatal motor vehicle accidents caused by drink-drivers by month 2013–2017.

2.1.13 Speeding

Of the drink-drivers causing an accident, 142 (69%) were speeding by at least 10 km/h and 92 (45%) exceeded the speed limit of the road by at least 30 km/h at the time of the accident (Figure 3).

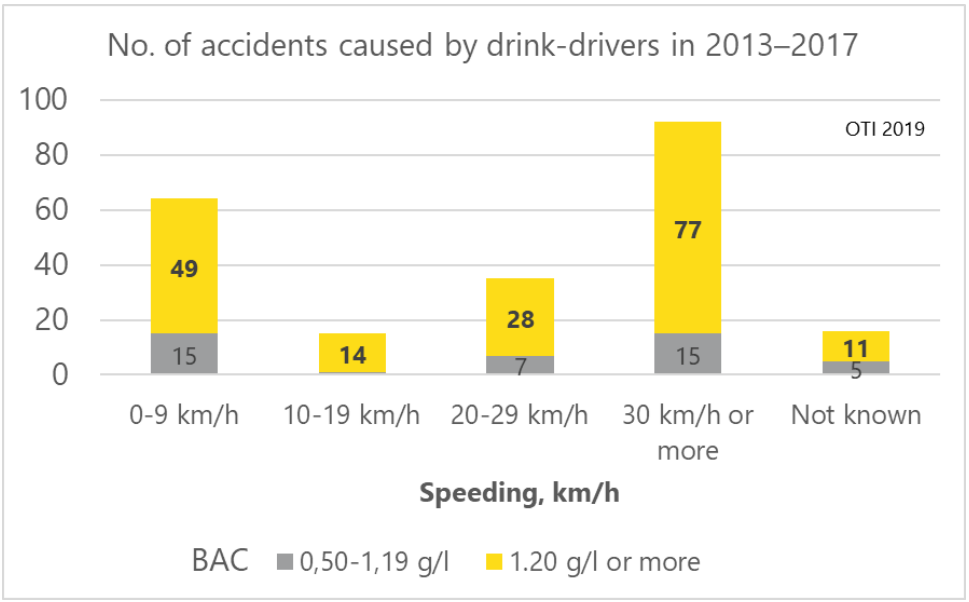


Figure 3. Speeding and BAC level in fatal motor vehicle accidents caused by drink-drivers 2013–2017.

2.2 Drink-driving accidents and their fatalities over twenty years

The number of fatal motor vehicle accidents decreased during the period 1998-2017. The number of drink-driving accidents has also decreased from that of ten years ago (Figure 4). The numbers of drink-driving accidents were exceptionally small in 2012 and 2014. In 2017, the proportion of drink-driving accidents of all fatal motor vehicle accidents was 28%.

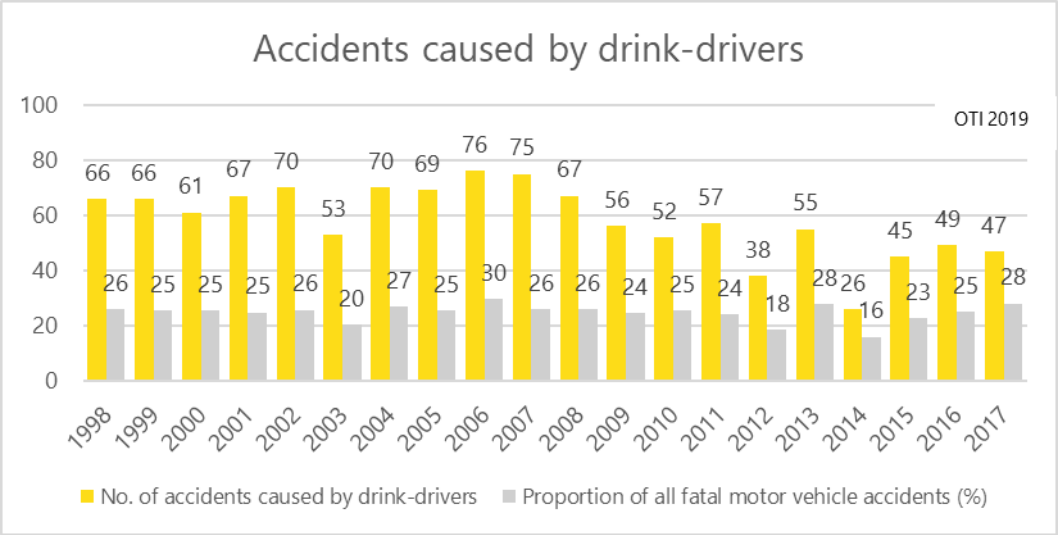


Figure 4. Fatal motor vehicle accidents caused by drink-drivers 1998–2017.

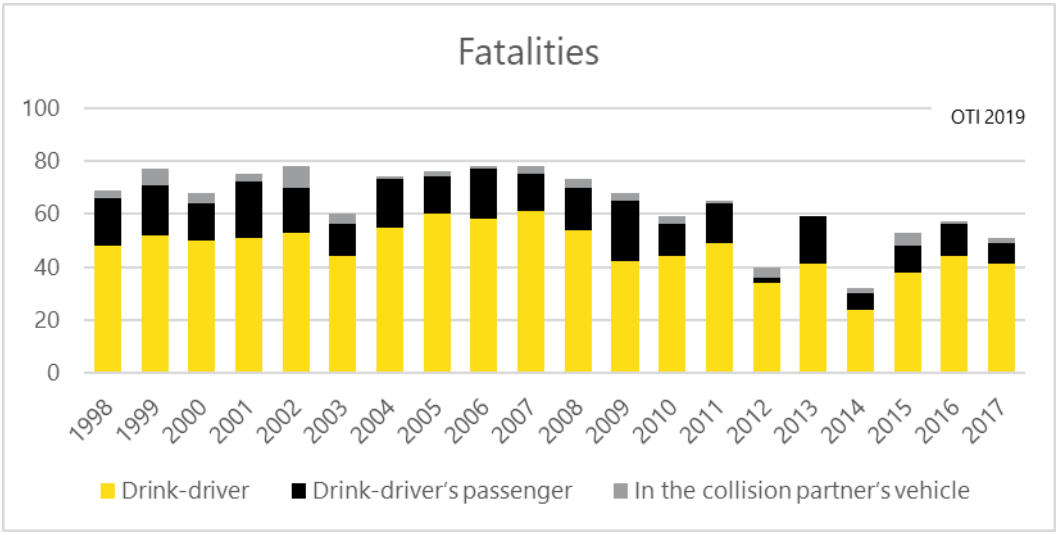


Figure 5. Fatalities in motor vehicle accidents caused by drink-drivers 1998–2017.

3 Drivers under the influence of drugs or medicines in fatal motor vehicle accidents

3.1 Motor vehicle accidents, drivers under the influence of drugs

During 2013–2017, road accident investigation teams investigated a total of 78 fatal motor vehicle accidents caused by a driver under the influence of illegal drugs. In one accident, the driver under the influence of drugs was a collision partner not causing the collision. During the previous five-year period (2008–2012), there were a total of 59 drug-drivers causing the accident.

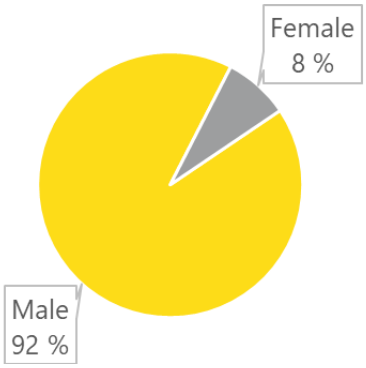
Of the 78 drug-drivers, 25 had at least alcohol in their blood in addition to a narcotic substance (these cases are also included in the alcohol drink-drivers presented earlier in this report) and 32 had at least a medicine having an impact on driving ability in their blood in addition to drugs (Table 2). Four drug-drivers were mildly intoxicated (0.20–0.49 g/l).

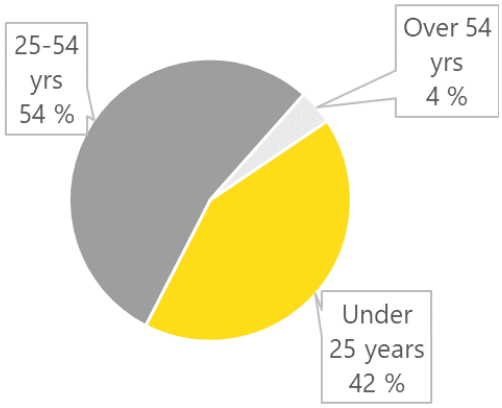
To determine the differences between accidents caused by drug-drivers and alcohol drink-drivers, **only accidents caused by drug-drivers who were not under the influence of alcohol are analysed below.**

When the 25 mixed substance abusers (drivers who had both alcohol and a drug in their blood) are excluded from the analysis, the remaining number of accidents caused by drug-drivers is 53. Of these 53 motor vehicle accidents caused by drug-drivers, 26 (49%) were collisions and 27 (51%) single-vehicle accidents. Of the accidents, 39 (74%) took place in a sparsely populated area.

3.1.1 Drivers and the use of safety equipment

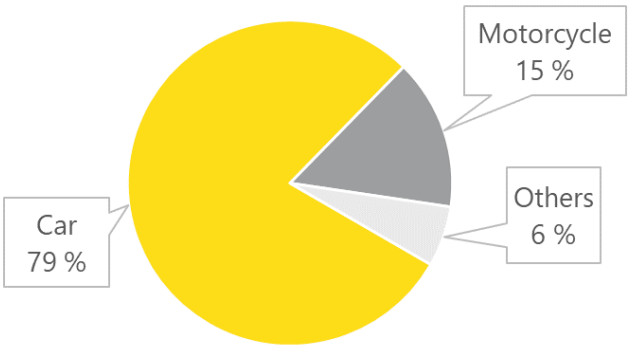
Of the drug-drivers, 22 or 42% were under 25 years of age, 29 (54%) were 25 to 54 years of age and 2 (4%) were at least 54 years of age. 49 (92%) of them were male. A total of 15 (29% of the known cases) drivers had been banned from driving or were without a right to drive for some another reason. A safety belt or helmet was used by 20 drivers (41% of the drivers whose use or non-use of safety equipment is known).





3.1.2 Vehicles

Of the drug-drivers, 42 (79%) were driving a passenger car, 8 (15%) a motorcycle and the remaining 3 (6%) other vehicles. Three (6%) of the vehicles were stolen.



3.1.3 Fatalities

In 2013–2017, a total of 58 people lost their lives in the 53 motor vehicle accidents caused by drug-drivers. Of those who died, 48 were drug-drivers and 8 their passengers, and 2 died in collision partner vehicles.

3.1.4 Time of the accident and lightness

Of the accidents caused by drug-drivers, 32 (60%) occurred in April–September. Drug accidents occurred evenly over the week: the weekend is not discernible as any specific peak in the accident statistics. The accidents also occurred relatively evenly at different times of day. During the afternoon, from 12 noon to 6 pm (17 accidents, 34%), as many accidents occurred as after midnight, i.e. from 12 midnight to 6 am (17 accidents, 34%). Of the accidents, 27 (51%) occurred before sunset.

3.2 Fatal motor vehicle accidents, drivers under the influence of medicines

Medicines having an impact on driving ability are intoxicating especially when used concurrently with alcohol or other narcotic substances.

During 2013–2017, road accident investigation teams investigated a total of 87 fatal motor vehicle accidents caused by a driver under the influence of a medicine having an impact on driving ability (additionally, 1 driver was a collision partner).

25 drivers were only under the influence of a medicine having an impact on driving ability (30% of the known cases, also including 2 mildly intoxicated drivers with a BAC level of 0.20-0.49g/l, who were not under the influence of other intoxicants). Of the 25 accidents caused by them, 23 were collisions. A total of 26 people died in the accidents. Of those who died, 22 were drivers only under the influence of a medicine having an impact on driving ability, 1 was their passenger and 3 died in the collision partner's vehicle.

In 36 of the medicines-related accidents, the driver was also under the influence of alcohol, and in 32 accidents, also under the influence of a narcotic substance (Table 2). Additionally, a total of 6 drivers were mildly intoxicated (0.20–0.49 g/l). Of the medicine-drivers, 10 were under the influence of medicines, alcohol and drugs.

4 Fatal motor vehicle accidents, summary of intoxicant-related accidents

During 2013–2017, a total of 304 fatal motor vehicle accidents caused by intoxicant-drivers (drivers under the influence of alcohol, drugs or medicines having an impact on driving ability) were investigated. The amount equals one-third (33%) of all fatal motor vehicle accidents.

A total of 340 people died in accidents caused by intoxicant-drivers, of whom 261 were intoxicant-drivers who caused the accident, 63 were passengers in the vehicles driven by intoxicant-drivers, and 16 in collision partner vehicles.

Of the 304 drivers, 222 were at least under the influence of alcohol, 78 at least under the influence of a narcotic substance and 87 at least under the influence of a medicine having an impact on driving ability (Table 2). Of the alcohol drink-drivers, 170 (77%) were only under the influence of alcohol (Figure 6). Of the drug-drivers, 27 (35%) were only under the influence of drugs (Figure 7). Of the drivers, 10 were simultaneously under the influence of medicines, alcohol and drugs.

The passenger cars (244 vehicles) of the intoxicant-drivers who caused the motor vehicle accident were 15.2 years old on average*. Of the passenger cars driven by intoxicant-drivers, approximately 5% had technical faults that contributed to the occurrence of the accident and 9% were uninspected.

**During the same period, the average age of all passenger cars causing fatal motor vehicle accidents (675 vehicles) was 13.6 years, 4% had technical faults and 4% of the vehicles were uninspected.*

Table 2. Intoxicants-related accidents, use of substances.

Fatal intoxicants-related accidents	
1.1 Alcohol-related accidents total	**222**
Accidents in which the driver only had alcohol in their blood	170
Accidents in which the driver also had at least drugs in their blood in addition to alcohol	25
Accidents in which the driver also had at least medicines having an impact on driving ability in their blood in addition to alcohol	36
Accidents in which the driver also had drugs and medicines having an impact on driving ability in their blood in addition to alcohol	10
1.2 Drugs-related accidents total	**78**
Accidents in which the driver only had drugs in their blood	27
Accidents in which the driver also had at least alcohol in their blood in addition to drugs	25
Accidents in which the driver also had at least medicines having an impact on driving ability in their blood in addition to drugs	32
Accidents in which the driver also had alcohol and medicines having an impact on driving ability in their blood in addition to drugs	10
1.3. Medicines-related accidents total	**87**
Accidents in which the driver only had medicines having an impact on driving ability in their blood	25
Accidents in which the driver also had at least alcohol in their blood in addition to medicines having an impact on driving ability	36
Accidents in which the driver also had at least drugs in their blood in addition to medicines having an impact on driving ability	32
Accidents in which the driver also had alcohol and drugs in their blood in addition to medicines having an impact on driving ability	10

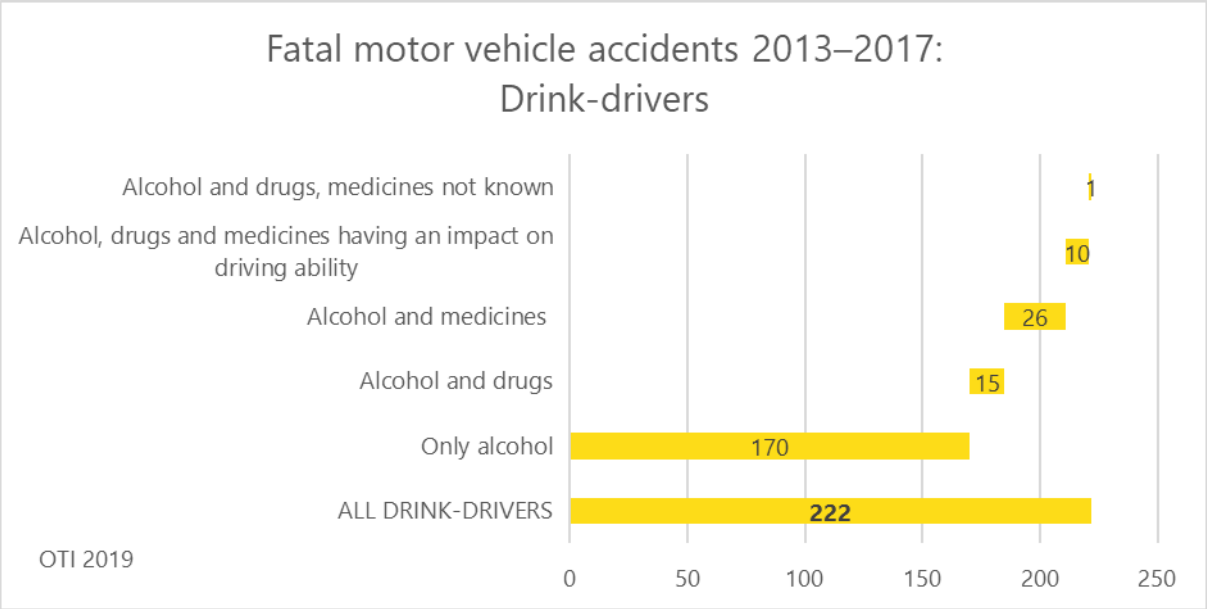


Figure 6. Numbers of drivers who were only under the influence of alcohol and numbers of mixed substance abusers in fatal motor vehicle accidents caused by alcohol drink-drivers in 2013–2017.

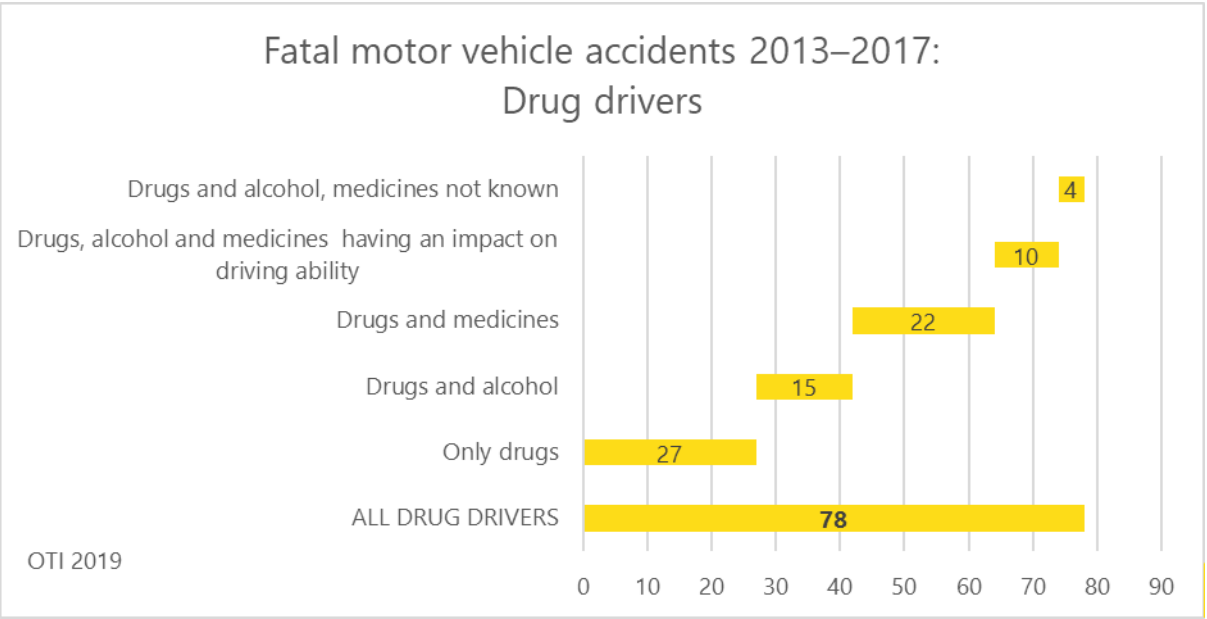


Figure 7. Numbers of drivers who were only under the influence of drugs and numbers of mixed substance abusers in fatal motor vehicle accidents caused by drug-drivers in 2013–2017.

5 Accidents resulting in a death of a pedestrian or cyclist

During 2013–2017, road accident investigation teams investigated a total of 264 fatal pedestrian or cyclist accidents. A total of 218 motor vehicle drivers were involved in the accidents. 118 (54%) of them were the party causing the accident.

In the accidents, 119 cyclists and 144 pedestrians were killed, along with two people who moved by other means. Of the cycling accidents, 42 were single-vehicle accidents.

5.1 Accidents caused by a motor vehicle driver under the influence of intoxicants resulting in the death of a pedestrian or cyclist

Of the 118 motor vehicle drivers who caused the accident, 6 (5% of the drivers) were under the influence of intoxicants:

- 2 drivers under the influence of alcohol,
- 2 drivers under the influence of alcohol and medicines, and
- 2 drivers under the influence of drugs and medicines.

Additionally, 1 driver under the influence of alcohol was involved in the accident as the collision partner. In two of the alcohol-related accidents, also the pedestrian was under the influence of alcohol. Additionally, the blood alcohol content of two motor vehicle drivers was between 0.2 and 0.49g/l.

A total of six pedestrians or cyclists were killed in accidents caused by intoxicated drivers of motor vehicles:

- 4 pedestrians were killed in the accidents caused by drink-drivers (at least 0.5g/l), and
- 2 cyclists in accidents caused by drug-drivers.

5.2 Accidents resulting in the death of a pedestrian or cyclist under the influence of intoxicating substances

Based on the accident investigation method the investigation teams determine the causing party in each accident. In addition to drivers' substances, information on pedestrians' and cyclists' substances is recorded in the database.

In 2013–2017, a total of 265 pedestrians and cyclists were killed in the accidents investigated by the accident investigation teams. Of them, 48 (18%) were under the influence of alcohol (27 were pedestrians and 21 were cyclists). In 67% of the collisions, a pedestrian or cyclist was the main cause of the accident. Of the cyclists' accidents, 12 (50%) were single-vehicle accidents: falling, collisions to an obstacle or running off the road.

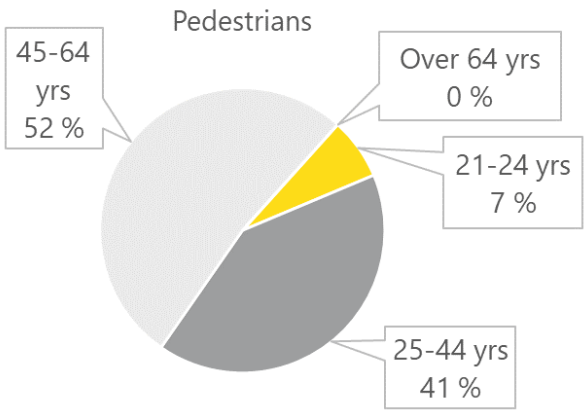
Of the accidents where a pedestrian or cyclist was under the influence of alcohol, every other (24 accidents, 50%) occurred between Friday 6 pm and Sunday 6 am. Of the accidents, 28 (58%) took place in a densely populated area, 7 (15%) close to a densely populated area and 13 (27%) in a sparsely populated area. Of the accidents, 29 (60%) took place in May–September.

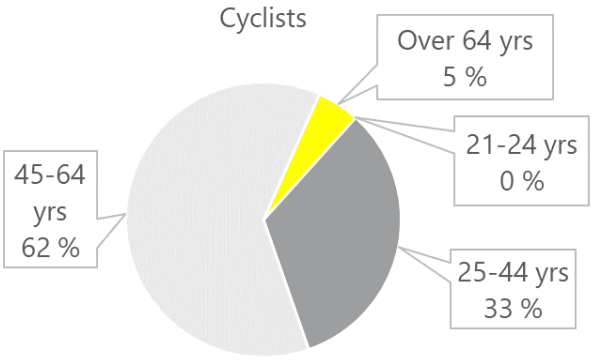
Of the 27 pedestrians under the influence of alcohol,

- 2 (7%) were aged between 21 and 24,
- 11 (41%) between 25 and 44, and
- 14 (52%) between 45 and 64.

Of the 21 cyclist under the influence of alcohol,

- 7 (33 %) were aged between 25 and 44,
- 13 (62%) between 45 and 64, and
- 1 was more than 64 years of age.





Of the intoxicated pedestrians who died in the accidents, 24 were only under the influence of alcohol; three were under the influence of drugs, and three were under the influence of both alcohol and drugs. Of the cyclists, 20 were under the influence of alcohol and 1 under the influence of drugs. Pedestrians and cyclists were typically heavily intoxicated, with 39 (81%) of them having a blood alcohol content in excess of 1.2g/l.

6 Risk factors noted and safety improvement proposals made by the road accident investigation teams

6.1 Risk factors

In addition to drugs, medicines and alcohol, the most typical risk factors involved in the accidents caused by intoxicant-drivers noted by the road accident investigation teams are speeding, non-use of safety belt and general disregard of traffic regulations.

Other common risk factors related to human actions include risks related to the driver's state of mind and medication, tiredness, not having a driving licence, the driver's inexperience, and drunken travel companions.

General risk factors related to the intoxicant-driver's vehicle are various kinds of shortcoming in the tyres. The most typical risk factors related to the traffic environment are the lack of central or edge guardrails and fixed crash barriers (trees, poles, etc.).

6.2 Improvement proposals

In their safety improvement proposals, the accident investigation teams emphasise the significance of breath alcohol ignition interlock devices in the prevention of drink-driving. Traffic control-related proposals that emphasise general improvement in the efficiency of speeding and drink-driving control and the development of regional prioritisation are very common.

The accident investigation teams recognise the importance of awareness-raising and dissemination of information especially with regard to the effects of alcohol, drugs and medicines on driving ability, but they also support stricter penalties. The accident investigation teams perceived driving under the influence of alcohol as a driving health problem and proposed treatment guidance and the adoption of a traffic physician system in Finland.

In their safety improvement proposals related to vehicles, the accident investigation teams regarded measures for promoting the turnover of the vehicle fleet as of primary importance. Furthermore, the most common proposals are those related to the support of driver's performance (e.g. driving stability) and technologies for ensuring the driving right and safety belt use.

Safety proposals related to the traffic environment focus on the prevention of veering off the driving lane with various guardrails, such as the central guardrail, and the removal of fixed crash barriers from the traffic environment.

The Finnish Crash Data Institute (OTI) works to prevent road accidents in Finland. OTI coordinates the operations of road accident investigation teams and administers the data collected in the investigations, in addition to its other traffic accident statistics. The amount and quality of the statistical data are unique by international standards. OTI provides important information that can be used to improve traffic safety at both legislative and practical levels. The institute operates as an independent unit within the Finnish Motor Insurers' Centre. Read more at www.oti.fi.

Definitions:

Party involved: road user involved in an accident (motor vehicle driver [or motor vehicle], cyclist or pedestrian)

Drink-driver: driver whose blood alcohol content was 0.50g/l or more

Collision partner: party involved with whom the driver under the influence of alcohol collided

Pedestrian/cyclist accident: collision in road traffic as a result of which a pedestrian or cyclist has died, or a fatal single-vehicle cyclist accident

Motor vehicle accident: fatal multiple- or single-vehicle accident in which a person travelling in/on motor vehicle has died

Additional information:
The Finnish Crash Data Institute (OTI)
Itämerenkatu 11–13, FI-00180 Helsinki, Finland
Communications, tel. +358 40 450 4700

Road Safety Director **Kalle Parkkari**
kalle.parkkari@oti.fi
tel. +358 40 450 4627

Road Safety Manager **Esa Räty**
esa.raty@oti.fi
tel. +358 40 922 1365

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