OTI DUI Report 2022

Based on fatal accidents investigated by Finnish road accident investigation teams during 2016–2020

Accidents with natural causes of death are excluded from the report.

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The Finnish Crash Data Institute OTI

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Definitions

Drink driving accident
Accident caused by a person whose blood alcohol content was at least 0.5 g/l. The person could also have been under the influence of a combination of alcohol and another substance (illegal drugs and/or medicines that might affect driving).

Drug driving accident
Accident caused by a person who was under the influence of illegal drugs. The person could also have been under the influence of a combination of illegal drug and another substance (alcohol and/or medicines that might affect driving).

Medicine accident
Accident caused by a person who was under the influence of medicines (prescription or not) that might affect driving. The person could also have been under the influence of a combination of medicines and another substance (alcohol and/or illegal drugs).

Data

This report examines the fatal road accidents investigated by Finnish road accident investigation teams during 2016–2020. The report includes accidents where the driver, cyclist or pedestrian was under influence of alcohol and/or illegal drugs and/or medicines that might affect driving.

Accidents with natural causes of death are excluded from the report.

The Finnish Crash Data Institute OTI

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.

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Preface

This report examines fatal road accidents investigated by Finnish road accident investigation teams during 2016–2020. The report includes accidents where the driver, cyclist or pedestrian was under the influence of alcohol and/or illegal drugs and/or medicines that might affect driving. Longer time series on drink driving accidents and drug driving accidents are presented as well.

During 2016–2020 Finnish road accident investigation teams investigated 974 fatal road accidents. A total of 1,064 people lost their life in these accidents: 872 motor vehicle drivers and passengers, 83 cyclists and 109 pedestrians. Accidents with natural cause of death are excluded from aforementioned numbers.

Calculation of percentages

It has to be noted when reading this report that information on intoxicants was not available for every driver, cyclist and pedestrian. Information was available for 748 drivers of 784 drivers causing fatal motor vehicle accidents. Respectively, information was available for 74 cyclists of 83 killed cyclists and for 88 pedestrians of 109 killed pedestrians.

All percentages presented in this report are calculated from those cases where information was available. For example, the proportion of drink driving accidents was calculated in relation to all investigated fatal motor accidents where the information of driver's blood alcohol content was available. The proportion of seat belt users was calculated in relation to persons whose use or non-use of seat belt was known.

Natural cause of death accidents

Accidents where natural causes (i.e. no trauma) were the only causes of death were excluded from this report. A total of 143 accidents were excluded due to this limitation.

1 Fatal motor vehicle accidents

During 2016–2020 Finnish accident investigation teams investigated a total of 784 fatal motor vehicle accidents from where 748 consist sufficient information on drivers' intoxicants. From 748 drivers who caused the accidents, 284 (36%) were driving under the influence of alcohol, drugs or medicines, or their combination.

Controlled by types of intoxicants, 202 (27%) of fatal motor vehicle accidents were drink driving accidents, 83 (11%) drug driving accidents and 98 (13%) medicine accidents. 85 (30%) of the intoxicated drivers were under the influence of two or more substances (please see also chapter 1.5 Mixed substance abuse).

A total of 321 people died in accidents caused by intoxicant-drivers, of whom 253 were intoxicant-drivers who caused the accident, 47 were passengers in the vehicles driven by intoxicant-drivers, and 21 in collision partner vehicles.

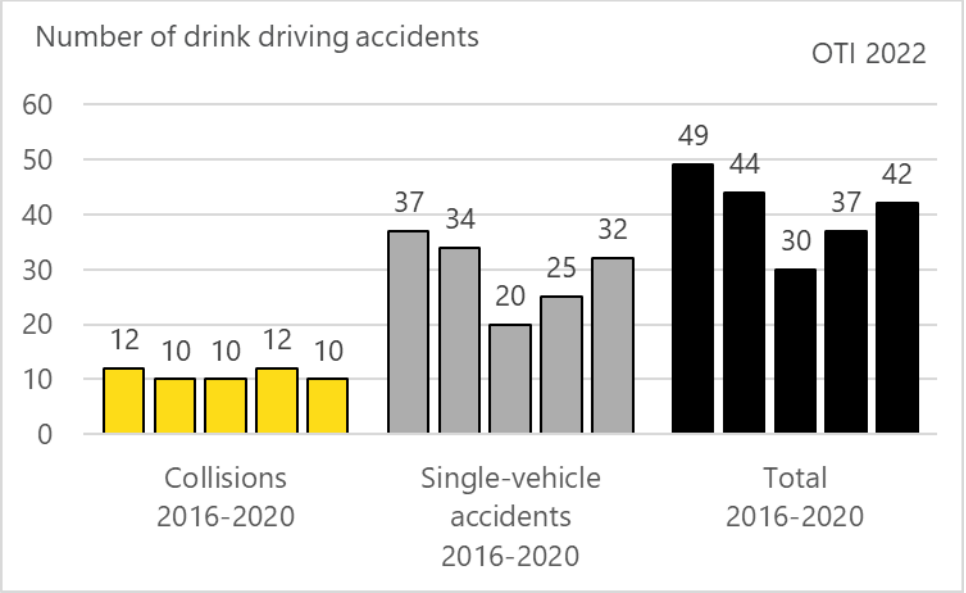

Figure 1. Numbers of drink driving accidents during 2016–2020.

1.1 Drink driving accidents

202 (27%) of all fatal motor vehicle accidents investigated by Finnish road accidents investigation teams in 2016–2020 were drink driving accidents.

Of the 202 accidents caused by drink drivers, 148 (73%) only involved a single vehicle and 54 (27%) were collisions with one or more vehicles (Figure 1). By accident types, 144 (74%) were running-off-the-road accidents, 43 (21%) were head-on collisions, and the remaining 15 (8%) were accidents classed in the category of 'others', such as collisions with obstacles or rollovers.

DEFINITION: Drink driving accidents are caused by drivers whose blood alcohol content was at least 0.5 g/l. The driver could also have been under the influence of a combination of alcohol and another substance (drugs and/or medicines that might have affected driving).

Between 2016 and 2020, a total of 232 people lost their lives in 202 motor vehicle accidents caused by drink drivers (Figure 5). Of those who died, 178 (77%) were drink drivers, 38 (16%) were passengers in a vehicle driven by a drink driver, and 16 (7%) died in counter party vehicles.

1.1.1 Blood alcohol content and other substances

The blood alcohol content of drivers under the influence of alcohol causing a fatal motor vehicle accident exceeded the limit of aggravated drink driving (1.2 g/l) in 151 (75%) of the accidents (Table 1).

50 (25%) of drink drivers causing a fatal motor vehicle accident were under the influence of a combination of alcohol and another substance (drugs or medicines) that might have affected driving:

- 12 drivers were under the influence of only drugs in addition to alcohol.
- 23 drivers were under the influence of only medicines that might have affected driving in addition to alcohol.
- 15 drivers were under the influence of alcohol, drugs and medicines that might have affected driving in addition to alcohol.

Please see also chapter 1.5 Mixed substance abuse.

In addition to 202 drink drivers (blood alcohol content at least 0.5 g/l) causing fatal motor vehicle accident, 14 drivers had blood alcohol content 0.2–0.49 g/l.

Of 524 drivers of counter party vehicles, one had blood alcohol content at least 0.5 g/l and two drivers had blood alcohol content 0.2–0.49 g/l. Blood alcohol content of 74 counter party drivers is not known.

Table 1. Number of drivers under the influence of alcohol causing a fatal motor vehicle accident in 2016–2020 by blood alcohol content.

Blood alcohol content (g/l)	2016	2017	2018	2019	2020	Total	Total %
0,50-1,19	12	7	6	12	14	51	25
1,20-1,99	17	19	14	16	13	79	39
2,00 or more	20	18	10	9	15	72	36
Total	49	44	30	37	42	202	100

1.1.2 Driver's age and sex

In the 202 motor vehicle accidents caused by drink drivers, 182 (90%) accidents were caused by male drivers and 20 (10%) were caused by a female drivers. Of the drivers causing the drink driving accidents, 55 (27%) were under 25 years and 112 (56%) were aged between 25 and 54. The rest of the drivers, 35 (17%), were at least 55 years. The limit of aggravated drink driving, 1.2 g/l, was exceeded by 139 (76%) of male and 12 (60%) of female drink drivers (see also Figure 2).

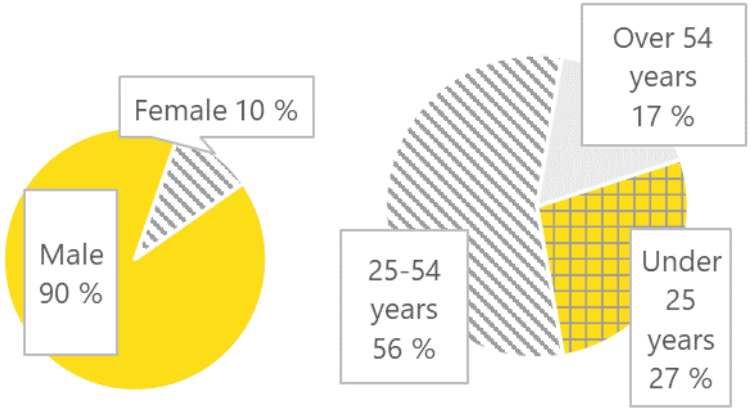

Figure 2. Drink drivers' age and sex.

1.1.3 Right to drive and previous convictions

Of the drivers causing a drink driving accident, 166 (82%) 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 25 (12%) drink drivers had been banned from driving or were without a right to drive for some another reason. Of them, 2 had an expired right to drive and eight had never held a driving licence. Information of three drivers' right to drive was missing.

Of the drink drivers, 62 (34%) had previous drink driving convictions over the period of five years preceding the accident. Respectively, 129 of the drink drivers (70%) had at least one previous traffic conviction (including drink driving convictions) and 28 (15%) at least five traffic convictions. Previous convictions of 19 drivers not known.

1.1.4 Vehicles

Of the drink drivers, 167 (83%) were driving a passenger car or van, 14 (7%) a motorcycle, eight (4%) a tractor or other working machine and 13 (6%) were driving other vehicles.

Of the drink drivers, 10 (5%) were driving a stolen vehicle and 29 (14%) were driving a legitimately borrowed or leased vehicle.

1.1.5 Car passengers

Of the 160 drink drivers who were driving a passenger car, 114 (71%) were driving alone and 46 (29%) had at least one passenger in the car. A total of 76 passengers were in a car driven by a drink driver, 35 (46%) of whom died in accidents.

1.1.6 Use of safety equipment

61 (32%) of the 202 drink drivers used a seat belt or a properly attached helmet at the time of the accident. Of the 160 passenger car drivers, 48 (31%) used a seat belt and, likewise, 34 (42%) of the 76 car passengers used the seat belt. Seat belt use of six drivers and three passengers is not known.

1.1.7 Time and day of the week

Drink driving accidents mostly took place during weekends, in the evening and during the night. Nearly half (45%, n=91) of the accidents caused by drink drivers occurred between Friday 6 pm and Sunday 6 am. May (n=25) and July (n=25) were the worst months in terms of drink driving accidents. (Figure 3 and Tables 2–3).

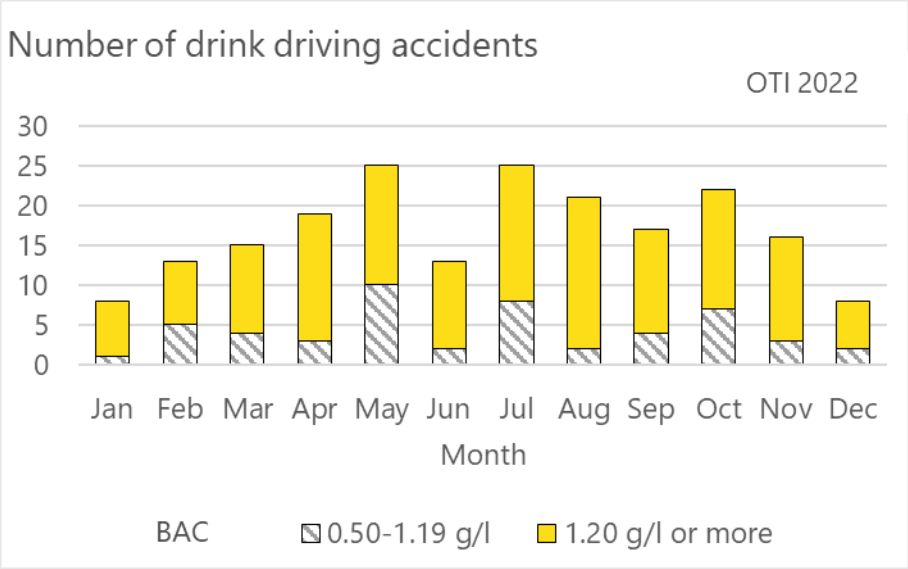

Figure 3. Numbers of drink driving accidents by month in 2016–2020.

Table 2. Numbers of drink driving accidents by time and day of the week in 2016–2020.

Weekday	time 00.01-06.00	time 06.01-12.00	time 12.01-18.00	time 18.01-24.00	Total
Monday	6	1	3	9	19
Tuesday	6	3	4	5	18
Wednesday	6	2	5	5	18
Thursday	9	2	8	10	29
Friday	8	1	7	12	28
Saturday	28	7	6	11	52
Sunday	27	6	3	2	38
Total	90	22	36	54	202

Table 3. Numbers of drink driving accidents by month and blood alcohol content in 2016–2020.

Blood alcohol content (g/l)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
0.50–1.19	1	5	4	3	10	2	8	2	4	7	3	2	51
1.20 or more	7	8	11	16	15	11	17	19	13	15	13	6	151
Total	8	13	15	19	25	13	25	21	17	22	16	8	202

1.1.8 Speeding and place of accident

When existed in drink driving accidents, the speeding was typically excessive. Of the drink drivers causing an accident, 127 (70%) were speeding by at least 10 km/h and 89 (49%) exceeded the speed limit of the road by at least 30 km/h at the time of the accident (Figure 4). Driving speed of 21 drivers is not known.

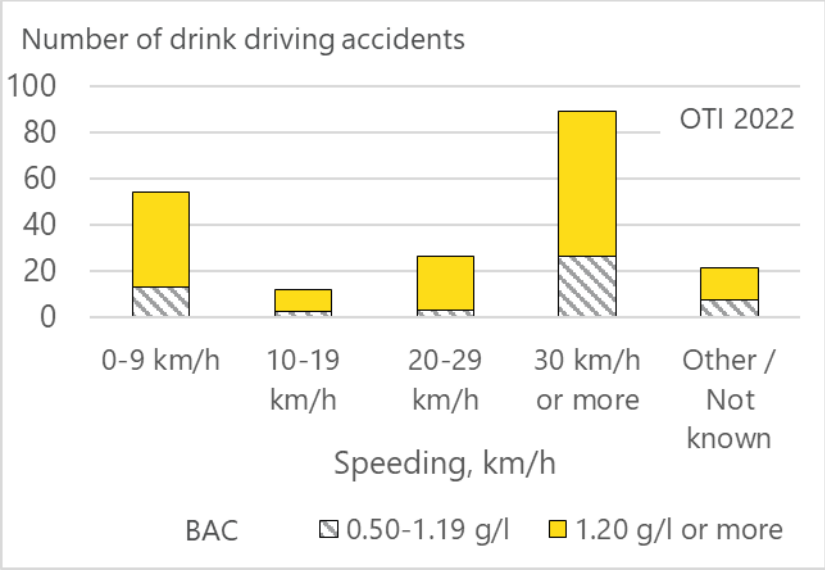

Figure 4. Numbers of drink driving accidents by speeding and blood alcohol content in 2016–2020.

Of the accidents caused by drink drivers, 46 (23%) took place in an urban area or close to an urban area (sub urban area) and 156 (77%) in a rural area. Of the accidents in rural areas, 64 (41%) occurred on main roads, 46 (41%) on regional or connection roads, 20 (13%) on private roads and areas, and 1 (1%) in other areas.

Table 4. Numbers of drink driving accidents by speeding and blood alcohol content in 2016–2020.

Speeding (over road's speed limit)	0.50-1.19 g/l	1.20 g/l or more	Total	Total %
0–9 km/h	13	41	54	30
10–19 km/h	2	10	12	7
20–29 km/h	3	23	26	14
30 km/h or more	26	63	89	49
Total	44	137	181	100
Not relevant or speed not known	7	14	21	-
Total	51	151	202	-

1.1.9 Drink driving accidents and their fatalities over twenty years

A total of 1,062 fatal drink driving accidents were investigated by Finnish accident investigations teams during 2001–2020. The first decade in figure 5 show higher annual accident numbers than the latter and the 20-year trend is generally decreasing. The latter decade does not however show any continuation for the decreasing trend. 42 fatal drink driving accidents were investigated in year 2020 which was 29% of all fatal motor vehicle accidents. (Figure 5 and Table 5).

A total of 1,184 persons lost their lives in fatal drink driving accidents. Most of those who died, were drink drivers. (Figure 6 and Table 6).

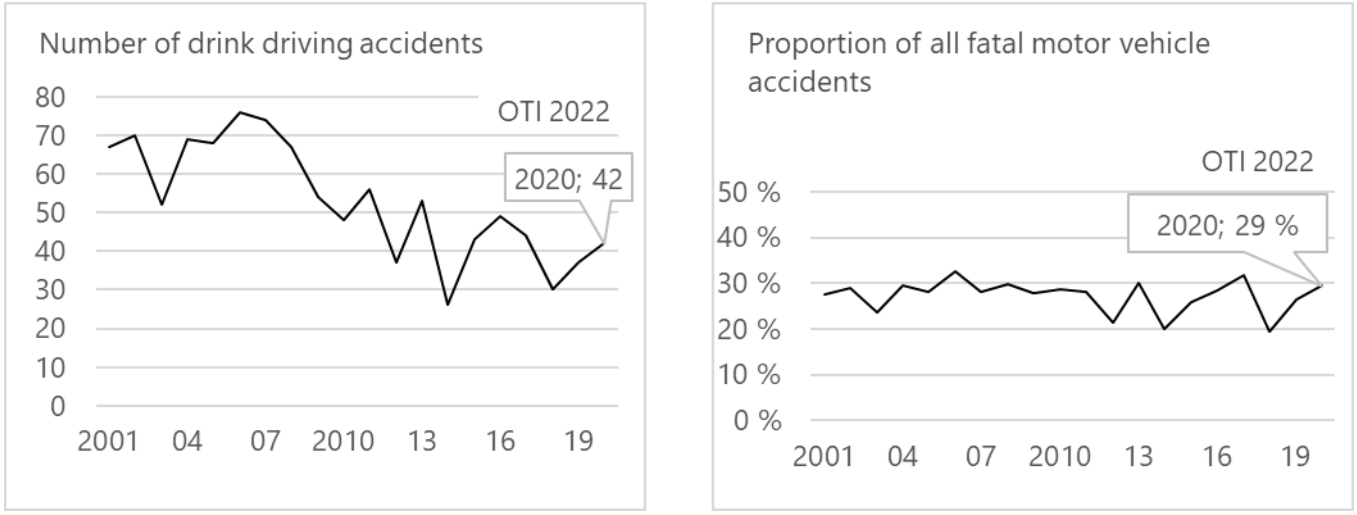

Figure 5. Drink driving accidents over twenty years 2001–2020.

Table 5. Drink driving accidents over twenty years 2001–2020.

Drink driving accidents	2001	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
Number of drink driving accidents	67	70	52	69	68	76	74	67	54	48	56	37	53	26	43	49	44	30	37	42
Proportion of all fatal motor vehicle accidents, %	27	29	24	29	28	33	28	30	28	29	28	21	30	20	26	28	32	19	26	29

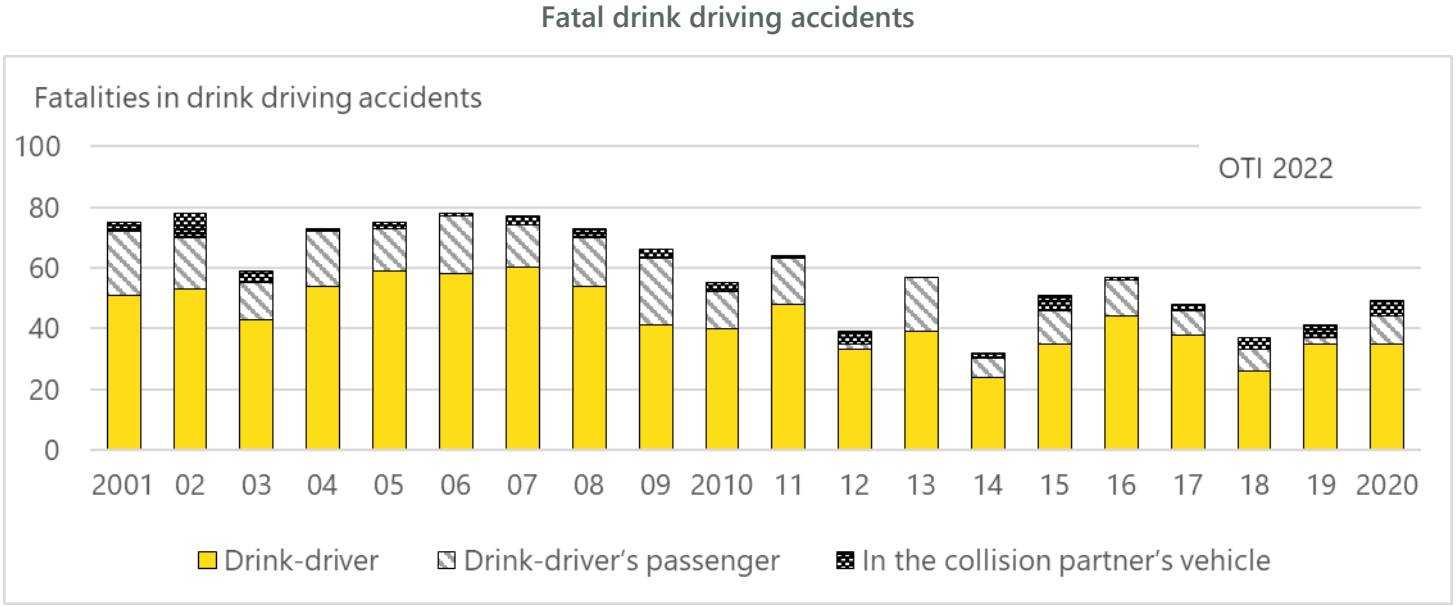

Figure 6. Fatalities in motor vehicle accidents caused by drink drivers 2001–2020.

Table 6. Fatalities in motor vehicle accidents caused by drink drivers 2001–2020.

Victim's seat or vehicle	2001	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
Drink driver	51	53	43	54	59	58	60	54	41	40	48	33	39	24	35	44	38	26	35	35
Drink driver's passenger	21	17	12	18	14	19	14	16	22	12	15	2	18	6	11	12	8	7	2	9
In the collision partner's vehicle	3	8	4	1	2	1	3	3	3	3	1	4	0	2	5	1	2	4	4	5
Total	75	78	59	73	75	78	77	73	66	55	64	39	57	32	51	57	48	37	41	49

1.2 Drug driving accidents

This chapter presents information on accidents caused by persons who were under the influence of drugs. The persons could also have been under the influence of a combination of drugs and another substance (alcohol and/or medicines that might have affected driving).

Drivers under the influence of illegal drugs caused a total of 83 fatal motor vehicle accidents during 2016–2020 which is 11% of all investigated motor vehicle accidents. 87 persons killed in these accidents. During the previous five-year period (2011–2015), there were a total of 60 accidents caused by drug drivers.

Of the 83 drug drivers, 61 (73%) were mixed substance abusers having alcohol or medicines in their blood in addition to drugs:

- 12 drivers had only alcohol (at least 0.5 g/l) in addition to drugs.
- 34 drivers had only medicines that might have affected driving in addition to drugs.
- 15 drivers were under the influence of alcohol, drugs and medicines that might have affected driving.

In addition, four drug drivers had blood alcohol content 0.2–0.49 g/l. Please see also chapter 1.5 Mixed substance abuse.

Note
Two drivers of counter party vehicles were under the influence of illegal drugs.

1.2.1 Drug driving accidents over twenty years

A total of 245 fatal drug driving accidents were investigated by Finnish accident investigations teams during 2001–2020. 23 fatal drug driving accidents were investigated in year 2020 which was 16% of all fatal motor vehicle accidents (Figure 7 ja Table 7).

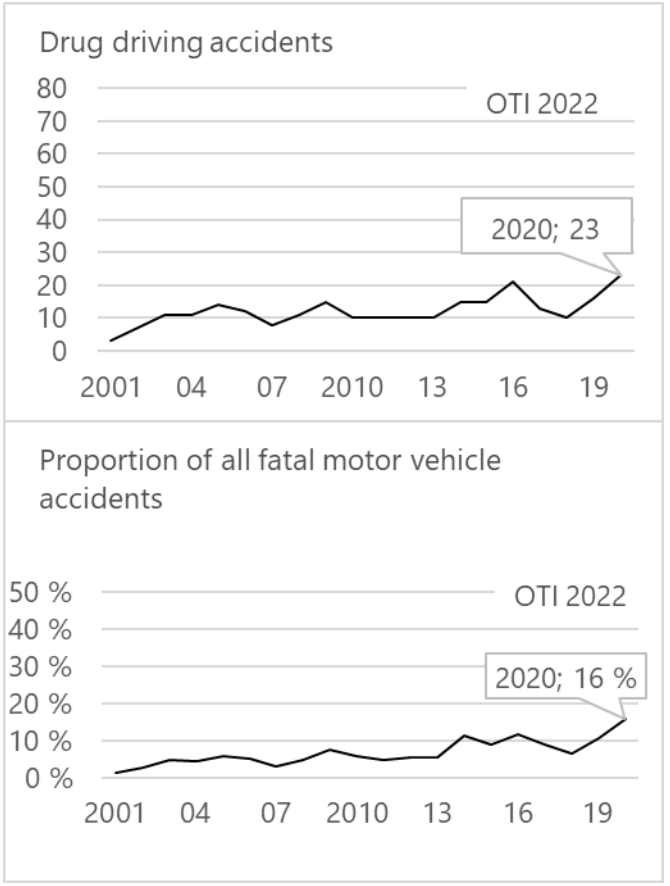

Figure 7. Drug driving accidents over twenty years 2001–2020.

Table 7. Drug driving accidents over twenty years 2001–2020.

Drug driving accidents	2001	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20
Number of drug driving accidents	3	7	11	11	14	12	8	11	15	10	10	10	10	15	15	21	13	10	16	23
Proportion of all fatal motor vehicle accidents, %	1	3	5	5	6	5	3	5	8	6	5	6	6	11	9	12	9	6	11	16

1.3 Drug driving accidents without alcohol

This chapter presents 54 accidents caused by drug drivers who were not under the influence of alcohol (blood alcohol content less than 0.5 g/l) The drug drivers could have also been under the influence of medicines that affect driving.

Of these 54 motor vehicle accidents caused by drug drivers, 23 (43%) were collisions and 31 (57%) single-vehicle accidents. Of the accidents, 37 (69%) took place in a sparsely populated area.

A total of 57 people lost their lives in the 54 motor vehicle accidents caused by drug drivers. Of those who died, 49 were drug drivers and 5 their passengers, and 3 died in collision partner vehicles.

1.3.1 Driver's age and sex

Of the drug drivers, 51 (94%) were males and 3 (6%) females. Of the drivers, 15 or 28% were under 25 years of age, 37 (68%) were 25 to 54 years of age and 2 (4%) were at least 54 years of age. (Figure 8.).

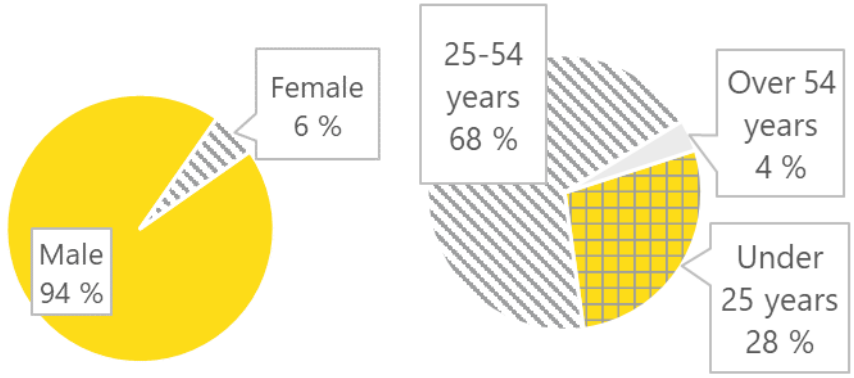

Figure 8. Drug drivers' age and sex.

1.3.2 Vehicles and use of safety equipment

Of the drug drivers, 44 (81%) were driving a passenger car or van, 9 (17%) a motorcycle and 1 drove a moped. Of the drug drivers, 3 were driving a stolen vehicle and 14 were driving a legitimately borrowed or leased vehicle.

17 (33%) of the 54 drug drivers used a seat belt or a properly attached helmet at the time of the accident. Of the 42 passenger car drivers, 9

(21%) used a seat belt and, likewise, 9 (45%) of the 20 car passengers used the seat belt. Seat belt use of five drivers is not known.

1.3.3 Right to drive and previous convictions

Of the drivers causing a drug driving accident, 25 (47%) had a valid driving licence at the time of the accident, although some of them (n=2) did not have a right to drive the vehicle concerned. A total of 28 (53%) drug drivers had been banned from driving or were without a right to drive for some another reason. Of them, 3 had an expired right to drive and 9 had never held a driving licence. Information of one driver's right to drive was missing.

Of the drug drivers, 30 (57%) had previous convictions of intoxicated driving over the period of five years preceding the accident. Respectively, 45 of the drug drivers (90%) had at least one previous traffic conviction (including intoxicated driving convictions) and 20 (40%) at least five traffic convictions. Previous convictions of 3 drivers not known.

1.3.4 Time and day of the week

Numbers of accidents caused by drug drivers were the highest in May–September. Saturday was the most typical weekday. Most of the accidents occurred during evening, night and early morning. Of the accidents, 29 (54%) occurred before sunset. (Table 8.).

Table 8. Numbers of drug driving accidents by time and day of the week in 2016–2020.

Weekday	time 00.01-06.00	time 06.01-12.00	time 12.01-18.00	time 18.01-24.00	Total
Monday	0	0	0	6	6
Tuesday	5	2	0	1	8
Wednesday	1	1	2	1	5
Thursday	1	2	3	2	8
Friday	3	1	0	3	7
Saturday	3	3	3	3	12
Sunday	4	1	1	2	8
Total	17	10	9	18	54

1.3.5 Speeding

Of the drug drivers causing an accident, 32 (64%) were speeding by at least 10 km/h and 19 (38%) exceeded the speed limit of the road by at least 30 km/h at the time of the accident. Driving speed of four drug drivers is not known.

1.4 Medicine accidents

This chapter presents 98 accidents caused by drivers who were under the influence of medicines that might affect driving. The drivers could have also been under the influence of alcohol (blood alcohol content at least 0.5 g/l) and illegal drugs.

Drivers under the influence of medicines caused a total of 98 fatal motor vehicle accidents during 2016–2020 which is 13% of all investigated motor vehicle accidents. 110 persons killed in these accidents. Of those who died, 92 were drivers under the influence of medicines and 10 their passengers, and eight died in collision partner vehicles.

Of the 98 drivers, 72 (73%) were mixed substance abusers having alcohol or drugs in their blood in addition to medicines:

- 23 drivers had only alcohol (at least 0.5 g/l) in addition to medicines.
- 34 drivers had only drugs in addition to medicines.
- 15 drivers were under the influence of alcohol, drugs and medicines that might have affected driving.

In addition, four drivers had blood alcohol content 0.2–0.49 g/l. Medicines having an impact on driving ability are intoxicating especially when used concurrently with alcohol or other narcotic substances. Please see also chapter 1.5 Mixed substance abuse.

1.5 Mixed substance abuse

Of the 284 intoxicated drivers causing fatal motor vehicle accidents 85 (30%) were under the influence of two or more substances. Of the intoxicated drivers, 202 (71%) were under the influence of alcohol, 83 (29%) under the influence of drugs and 98 (35%) were under the influence of medicines that might have affected driving. 15 drivers were under the influence of all three substance types simultaneously. (Table 9, Figures 9–11)

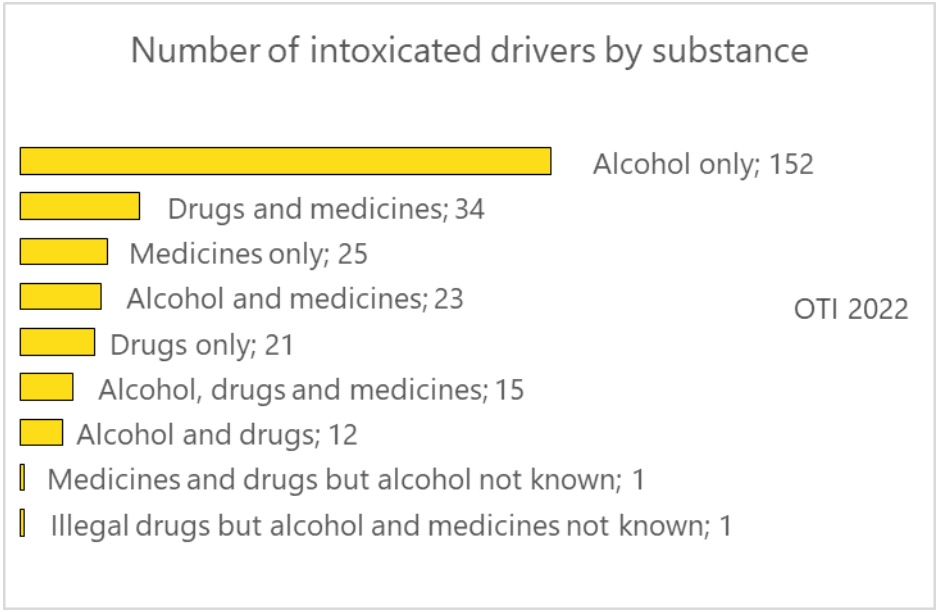

Figure 9. Numbers of intoxicated drivers by substance types and combinations 2016–2020.

Table 9. Number of drivers causing fatal motor vehicle accidents in 2016–2020 by substance types and combinations.

Drivers causing fatal motor vehicle accidents by substance types and combinations	No. drivers
Drivers causing drink driving accidents	**202**
Only alcohol, no other substances	152
Alcohol and drugs	12
Alcohol and medicines that might affect driving	23
Alcohol, drugs and ja medicines that might affect driving	15
Drivers causing drug driving accidents	**83**
Only drugs, no other substances	21
Drugs and alcohol	12
Drugs and medicines that might affect driving	34
Drugs, alcohol and medicines that might affect driving	15
Drugs, other substances not known	1
Drivers causing medicine accidents	**98**
Medicines that might affect driving, no other substances	25
Medicines that might affect driving and alcohol	23
Medicines that might affect driving and drugs	34
Medicines that might affect driving, alcohol and drugs	15
Medicines that might affect driving, other substances not known	1
Intoxicated drivers total (note: not a direct sum of table rows because several rows may include the same driver)	**284**

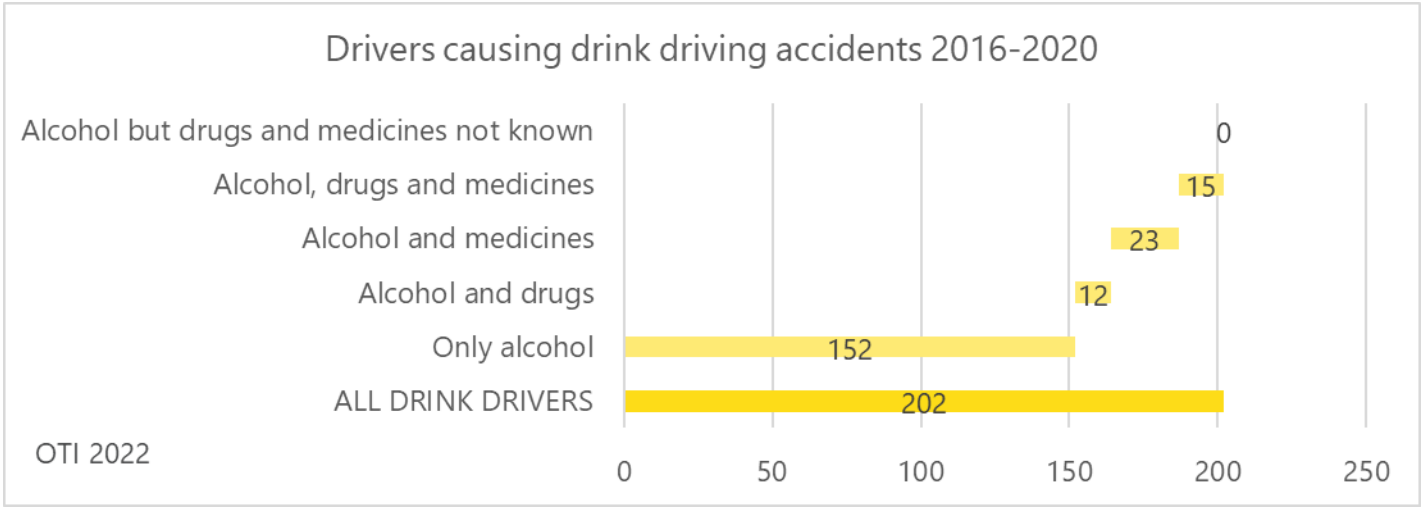

Figure 10. Mixed substance abuse in fatal drink driving accidents in 2016–2020.

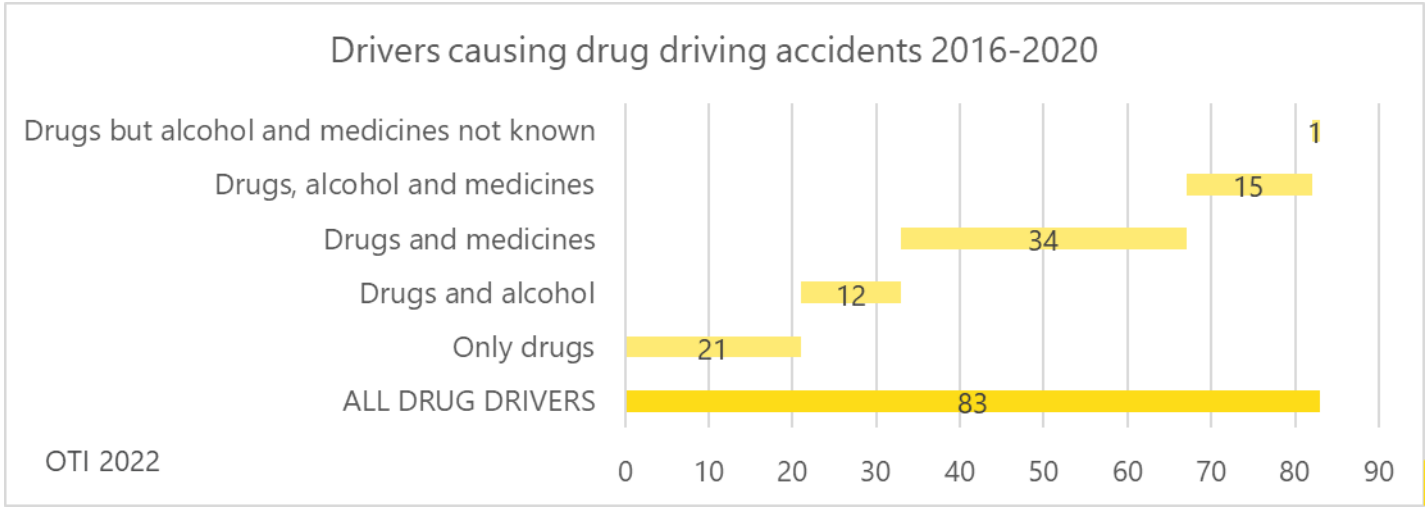

Figure 11. Mixed substance abuse in fatal drug driving accidents in 2016–2020.

2 Accidents resulting in a death of a pedestrian or cyclist

During 2016–2020, road accident investigation teams investigated a total of 83 fatal cyclist accidents and 109 fatal pedestrian accidents. A total of 176 motor vehicle drivers were involved in the accidents. 100 (57%) of them were the party causing the accident. Of the cycling accidents, 15 were single-vehicle accidents.

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

Of the 100 motor vehicle drivers who caused the accident, 5 (5%) were under the influence of intoxicants. Four cyclists and one pedestrian were killed in accidents caused by intoxicated motor vehicle drivers. In two cases the cyclist was also intoxicated. Intoxication of 14 drivers is not known.

Of the five intoxicated motor vehicle drivers, two were under the influence of alcohol (at least) and three were under the influence of other substances than alcohol. In addition, one driver had blood alcohol content between 0.2–0.49 g/l.

None of 76 drivers of counter party motor vehicles were sober. Intoxication of 12 drivers is not known.

2.2 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 2016–2020, a total of 109 pedestrians and 83 cyclists were killed in the accidents investigated by the accident investigation teams. Information on substances was available for 88 pedestrian and 74 cyclists. The following information is based on cases where the information was available.

Of killed 74 cyclists, 14 were under the influence of alcohol (at least 0.5 g/l) and of killed 88 pedestrians, 19 were under the influence of alcohol. In addition to alcohol, one cyclist and two pedestrians were under the influence of other substances.

Pedestrians and cyclists were typically heavily intoxicated, with 32 (97%) of them having a blood alcohol content more than 1.2 g/l.

Of the killed 14 cyclists who were under the influence of alcohol, 7 died in single vehicle accidents and 7 in collisions with motor vehicles. Cyclist was the causing party in five of the seven collisions.

Of the killed 19 pedestrians who were under the influence of alcohol, all died in collisions with motor vehicles. Pedestrian was the causing party in 11 collisions.

Of the 35 accidents where a pedestrian or cyclist was under the influence of alcohol, 16 occurred between Friday 6 pm and Sunday 6 am. Of the accidents, 16 took place in a densely populated area. Of the accidents, 19 took place in June–September.

Of the 19 pedestrians under the influence of alcohol, six were aged between 18 and 24, eight between 25 and 44, and four between 45 and 74. Of the 14 cyclists under the influence of alcohol, three were aged between 25 and 44 and 11 between 45 and 74.

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

The task of the road accident investigation teams is to determine the underlying reasons for an accident and to propose the necessary actions to improve traffic safety. The investigation team prepares an investigation report that includes a description of how the accident happened, the factors leading up to it and its consequences, as well as the investigation team's proposed improvements to traffic safety.

3.1 Risk factors

In addition to effect of substances, other common risk factors in accidents caused by intoxicated drivers have been speeding, non-use of safety equipment and non-compliance with traffic laws.

Common risk factors were also drivers' state of mind, different medication issues, tiredness, not having a driving licence, inadequate driving experience and drunken passengers.

General risk factors related to the intoxicant-driver's vehicle are various kinds of shortcoming in the tyres. The passenger cars (227 vehicles) of the intoxicant-drivers who caused the fatal motor vehicle accident were 16 years old on average. Of the passenger cars driven by intoxicant-drivers, eight had technical faults that contributed to the occurrence of the accident and 20 were uninspected.

During the same period, the average age of passenger cars driven by non-intoxicated drivers causing fatal motor vehicle accidents (320 vehicles) was 14 years, five had technical faults and 17 vehicles were uninspected.

The most typical risk factors related to road and infrastructure were the road design without physical separation of opposing traffic lanes and fixed roadside obstacles (trees, poles, etc.).

3.2 Safety 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 teams also support stricter penalties.

The accident investigation teams recognize the importance of awareness-raising and dissemination of information especially regarding to the effects of alcohol, drugs and medicines on driving ability. The accident investigation teams perceived driving under the influence of alcohol and other substances as a driving health problem. The teams proposed improved procedures in referral to rehabilitation, and geographical and institutional broadening of the traffic physician system in Finland. The information sharing protocols between healthcare and other authorities should also be improved, especially when the driver has diseases that affect driving.

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 means, such as preferring road design with physical separation of opposing traffic, and the removal of fixed crash obstacles from the traffic environment.

4 Summary

Of the 748 drivers causing fatal motor vehicle accidents during 2016–2020 in Finland 284 (36%) were intoxicated. In addition, four cyclists and one pedestrian were killed in accidents caused by intoxicated motor vehicle drivers.

Of the 284 intoxicated drivers causing fatal motor vehicle accidents 85 (30%) were under the influence of two or more substances. Controlled by types of intoxicants, 202 (27%) of fatal motor vehicle accidents were drink driving accidents, 83 (11%) drug driving accidents and 98 (13%) medicine accidents.

The blood alcohol content of drivers under the influence of alcohol causing a fatal motor vehicle accident exceeded the limit of aggravated drink driving (1.2 g/l) in 151 (75%) of the accidents. Drink driving accidents mostly took place during weekends, in the evening and during the night and they were more typically single vehicle accidents than collisions between two or more motor vehicles.

Of the 83 drug drivers, 61 (73%) were mixed substance abusers having alcohol or medicines in their blood in addition to drugs. Compared to the previous five-year period (2011–2015), the number of drug driver accidents increased by 23 (a total 60 accidents in 2011–2015). This trend reflects the observations made by police according to which driving under the influence of drugs has tripled in the past ten years.

Drug driving accidents occurred quite evenly over the week, but Saturday showed the highest accident numbers from the weekdays. Most of the accidents occurred during the evening, night and early morning.

Unlike drink driving accidents, drug driving accidents were more often collisions than single vehicle accidents. Of drink driving accidents, 27% were collision whereas 43% of drug driving accidents were collisions.

The most common age group was drivers of 25–54 years for drink driving accidents and drug driving accidents, and the driver was in most cases male.

Most of those who died in motor vehicle accidents caused by intoxicated drivers were the drivers himself. The high severity of the accidents was often linked to the non-use of safety equipment.

Intoxicants had a role in several accidents fatal to pedestrians and cyclists as well. Of the killed 74 cyclists, 18 were intoxicated and of the killed 88 pedestrians 24 were intoxicated. Half of the drunken cyclists' accidents were single-vehicle accidents: falling, collisions to an obstacle or running off the road.

Of all 100 motor vehicle drivers causing a fatal pedestrian or cyclist accident, five drivers were intoxicated.

The accident investigation teams perceived driving under the influence of alcohol and other substances as a driving health problem. The teams proposed improvements in rehabilitation procedures, traffic physician system and information sharing protocols between healthcare and other authorities.

In their safety improvement proposals related to vehicles, the accident investigation teams regarded the development of technologies related to the support of driver's performance (e.g. driving speed support) and tech-

nologies for ensuring the driving right and safety belt use. The investigation teams found it important to increase the installation rate of alcohol interlocks.

Reporting and recording of medicine observations is challenging in many ways. For example, it is far easier to report only findings of medicines than to analyse and report those cases when the medicines affected driving. A need for detailed research was recognized.

After excluding the natural cause of death accidents, the Finnish accident investigation teams investigated a total of 784 fatal motor vehicle accidents during 2016–2020 which is 11% less than in 2011–2015. Respectively, the number of drink driving accidents was 6% smaller, drug driving accidents 38% higher and the number of medicine accidents was 31% higher.