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Driving under the influence of alcohol and drugs

ESRA thematic report no. 2

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ESRA thematic report no. 2

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List of Abbreviations

Country codes

AT	Austria
BE	Belgium
CH	Switzerland
DE	Germany
DK	Denmark
EL	Greece
ES	Spain
FI	Finland
FR	France
IE	Ireland
IT	Italy
NL	the Netherlands
PL	Poland
PT	Portugal
SE	Sweden
SI	Slovenia
UK	United Kingdom
USA	United States of America

Other abbreviations

AAAFTS	AAA Foundation for Traffic Safety
BAC	Blood alcohol concentration
DRUID	Driving under the Influence of Drugs, Alcohol and Medicines
ERSO	European Road Safety Observatory
ESRA	European Survey of Road users' safety Attitudes
ETSC	European Transport Safety Council
EU	European Union – but, in figures and tables of the present report 'EU' refers to the 17 countries participating in ESRA
GRSP	Global Road Safety Partnership
ITF	International Transport Forum
OECD	Organisation for Economic Co-operation and Development

ESRA weights

European weight A	European weight based on all ESRA 2015 countries except Italy
European weight B	European weight based on all ESRA 2015 countries
European weight C	European weight based on all ESRA 2015 countries except Slovenia
Individual country weight	Individual country weight based on gender and age

Summary

Objective and methodology

The ESRA project (European Survey of Road users' safety Attitudes) is a joint initiative of research organisations and road safety institutes in 17 European countries aiming at collecting comparable (inter)national data on road users' opinions, attitudes and behaviour with respect to road traffic risks. The project was funded by the partners' own resources.

The first ESRA survey was conducted online using representative samples (at least N=1,000) of the national adult populations in 17 European countries. A common questionnaire was developed and translated into 20 different country-language versions. The survey covered a range of subjects, including the attitudes towards unsafe traffic behaviour, self-declared (unsafe) behaviour in traffic and support for road safety policy measures. Data collection took place simultaneously in all countries in June/July 2015. In total, data from more than 17,000 road users (of which 11,000 frequent car drivers) were collected. Hence, the ESRA survey produced a very rich dataset. An overview of the project and the results are available on: www.esranet.eu.

This thematic ESRA report on driving under influence of alcohol and drugs describes the attitudes and opinions on impaired driving of road users in Europe. It includes comparisons amongst the participating countries as well as results in relation to gender and age. The thematic report covers: the acceptability of impaired driving, attitudes towards unsafe traffic behaviour, the self-declared (unsafe) behaviour in traffic and the perceived likelihood of getting caught for impaired driving.

Key results

While a large part of the population is aware of the inappropriateness of driving after having consumed an impairing substance, a small proportion of persons (about 3.5%) expressed the opinion that driving under the influence of an impairing substance is acceptable or rather acceptable.

Almost 90% of the respondents think that consumption of alcohol or drugs seriously increases the risk of an accident.

In all countries, but to varying degrees, the respondents estimate that the 'perceived social acceptability' of drink-driving or drug-driving is higher than their 'personal acceptability'.

The level of acceptability for such behaviours is clearly lower among women than men and among the oldest age group (55 years and older) than the youngest (18-34 years old).

Similarly, the proportion of people not perceiving impaired driving as increasing the risk of an accident is also lower among women and among the oldest age group.

Drink-driving is the behaviour (referring to the last 12 months) which has been reported by the largest proportion of respondents (31%), followed by driving after having taken medication which may influence the driving ability (22%). Drug-driving was mentioned by 'only' 11% of the respondents.

In France and Spain, proportions both of self-reported drink-driving and drug-driving are above average. In Finland, on the contrary, both proportions are clearly below average. Belgium belongs to the countries with the highest rate of self-reported drink-driving and at the same time to the countries with the lowest rate of self-reported drug-driving.

The percentages of persons declaring that they have driven under the influence of an impairing substance are clearly higher among men than women and are also higher among young adults than among the older age categories.

In the general car driver population, the perceived likelihood of being checked for impaired driving is not especially high: only 18% think that on a typical journey, the probability of being submitted to an alcohol test by the police is big or very big. The expectation of a drug control is even smaller: only 11% think that the chance of such a police control is big or very big. Large differences can be observed among the countries. The percentage of car drivers thinking that the chance of being

checked for alcohol is big or very big is the highest in Poland (44%), followed by France (29%), Slovenia (27%), Spain (24%) and Portugal (23%). In Denmark (2%) and Finland (4%), but also in Germany (8%), in the United Kingdom (9%), in Ireland (9%) and in the Netherlands (10%), the car drivers have a particularly low expectation of being checked for alcohol.

There is a clear relationship between the perceived likelihood of being checked for alcohol and the perceived likelihood of being checked for drugs. In most countries where the expectation of being checked for alcohol is high, the anticipation of possible drug controls is also rather high and vice-versa.

Impaired driving is associated with several risk factors, among them: being a male, driving frequently, having the opinion that drink-driving is an acceptable behaviour, not acknowledging that drink-driving increases the risk of an accident, having the feeling that penalties concerning alcohol are too severe or having been checked by the police for alcohol at least once in the past 12 months.

There is a clear positive relationship between the self-reported drink-driving rate according to ESRA and the prevalence of alcohol according to the roadside surveys of the DRUID-project ($R^2=0.6216$). In the countries where the self-reported drink-driving rate is high, the prevalence of alcohol in the roadside surveys also tends to be high (Belgium, Italy, Portugal and Spain), and in the countries where the self-declared drink-driving rate is low, the prevalence of alcohol is also low (Finland, Poland and Sweden).

There is also a positive relationship between the self-reported drug-driving rate according to ESRA and the prevalence of drugs according to the roadside surveys of the DRUID-project ($R^2=0.4188$). In Spain, the self-reported drug-driving rate and the prevalence of illegal drugs are particularly high. At the other extreme, Finland and Belgium have an especially low self-declared drug-driving rate and a very low prevalence of illegal drugs according to the roadside surveys in the DRUID-project.

Key recommendations

The efforts made in the past decades in order to reduce road casualties due to impaired driving must continue. The potential of reducing road traffic accidents due to impaired driving differ however greatly between the countries. Further research is needed for a better understanding of the influence that illegal and medicinal drugs may have on driving ability and to estimate the prevalence in the course of time of drug among the driving population. Recent studies conducted in the USA suggest that drug-driving is as prevalent as alcohol-driving. Moreover, it is expected that with the ageing population in Europe, there will in the future be an increasing proportion of persons driving under the influence of medicines that may impair the driving ability.

Policy recommendations at European level

- Develop common principles and goals for effective and efficient impaired driving strategies in the Member States as part of European Union directives and/or other legislative mechanisms (including standards, controls and rehabilitation measures).
- Define impaired driving related indicators and set targets at European Union level, such as the number of alcohol checks, the number of impaired drivers and the number of traffic casualties attributable to alcohol and drugs.
- Harmonise the regulations of the conditions for license withdrawal due to impaired driving in all European countries.
- Facilitate and support the exchange of best practice in terms of countermeasures for impaired driving across Member States.
- Support the development of tools for physicians and pharmacists for understanding the driving impairment effects of drugs prescribed/delivered.

Policy recommendations at national and regional level

- Establish an impaired driving strategy that is based on a combination of measures, such as legislative initiatives, enforcement practices, awareness campaigns through media (if possible combined with deterrence through enforcement) and further research.
- Raise awareness of the impact of impaired driving on road safety and the need of alcohol and drugs controls.
- Have a nationwide system for random breath testing and random drug testing of drivers.
- Conduct awareness-raising campaigns on the risks of impaired driving and the legal consequences of drink/drug-driving, combined with more frequent police controls, primarily in the countries where a relative large proportion of drivers are drink-driving and/or drug-driving.
- Mandatory installation of ignition interlocks in cars of drivers who have already been convicted for drink-driving.
- Test for alcohol and drugs for all drivers involved in fatal crashes.

Specific recommendations to particular stakeholders

- *[To Non-Governmental Organizations (NGOs)]* Contribute to education and awareness raising campaigns and events against impaired driving.
- *[To physicians and pharmacists]* Always explicitly mention the risks of driving under the influence of the medication they prescribe/deliver.
- *[To pharmaceutical companies]* Improve the information in the patient information leaflet on the potential impairing effect of the drug on driving ability.
- *[To vehicle manufacturers and other companies]* Develop low cost solutions to be incorporated in vehicles that can detect or prevent impaired driving.

Conclusion

The ESRA project has demonstrated the feasibility and the added value of joint data collection on road safety attitudes and performance by partner organizations in a large number of European countries. The intention is to repeat this initiative on a biennial or triennial basis, retaining a core set of questions in every wave, allowing the development of time series of road safety performance indicators. This will become a solid foundation for a joint European (or even global) monitoring system on road safety attitudes and behaviour.

1. Introduction

Driving under the influence of alcohol and/or drugs constitutes a main cause of road casualties. It is estimated that between 20% and 25% of all road fatalities in Europe are alcohol related (GRSP, 2007; ERSO, 2006). The role of drugs other than alcohol, though less well documented, should not be underestimated. According to a report of the OECD and the International Transport Forum (ITF), the overall incidence of drugs among drivers injured or killed in motor vehicle crashes ranges between 14% and 17% (OECD and ITF, 2010).

In Europe, experts from the DRUID project (Driving under the Influence of Drugs, Alcohol and Medicines; homepage: www.druid-project.eu) consider drink-driving as a more problematic issue than drug-driving (Schulze et al., 2012, Meesmann et al., 2011). According to the DRUID roadside surveys conducted in 13 different European countries between 2007 and 2009, 3.9% of the drivers were under the influence of alcohol (3.5% only alcohol and 0.4% in combination with drugs), 1.9% had consumed illegal drugs, 1.4% medicinal drugs and 0.4% were under the influence of a combination of drugs (Houwing et al., 2011 in Meesmann et al., 2011). In the USA, a roadside survey conducted in the years 2013 and 2014 shows that the proportion of drivers under the influence of drugs exceeds that of drivers under the influence of alcohol (Berning, Compton & Wochinger, 2015).

Compared to drink-driving, drug-driving is a far more complex issue. Drink-driving is a problem which has been studied for several decades. The consumption of alcohol leads to increased reaction time, lower vigilance, poor judgement, and impairs some visual functions. Drivers who have consumed alcohol therefore have a higher risk of being involved in crashes and this risk rises with an increasing blood alcohol concentration (BAC). Drugs (illegal as well as prescription or over-the-counter drugs) comprise a great variety of psychoactive substances that may impair the driving ability. Depending on the type of substance, alertness and perception are affected, impulsiveness is stimulated, reaction times are slowing, etc. (OECD and ITF, 2010). Another point is that drug presence does not necessarily result in impairment. Moreover, the relationship between concentrations of drugs and driver performance is difficult to establish (Berning, Compton & Wochinger, 2015). The role of medicines in road accidents is not clear as they can influence the capacity of driving positively or negatively (on the one hand they suppress or mitigate the manifestations of an illness, on the other hand they may have undesirable side effects). If a driver is under the influence of a combination of alcohol and drugs, the risk of being involved in crashes further increases. In the DRUID project, the estimates of the relative risk of getting seriously injured or getting killed in a road accident while positive for alcohol and drugs, respectively positive for a combination of drugs, is substantially increased, ranging from 5 to 200x (Hels et al., 2011). According to OECD and ITF, the predominant substance is cannabis, followed by benzodiazepines (OECD and ITF, 2010).

Between 2001 and 2013/2014, in Europe, the number of road deaths attributed to alcohol has decreased even more significantly than the total number of road deaths (ETSC, 2015). Changing public attitudes towards drink-driving, the adoption of legal measures and enhanced enforcement have certainly contributed to the decrease of road deaths attributed to alcohol. The trends are, however, quite different from country to country.

In order to better understand the reasons for these disparities, projects like SARTRE (Social Attitudes to Road Traffic Risk) in Europe and later on ESRA (European Survey of Road users' safety Attitudes) were launched. SARTRE was realised four times (1991, 1996, 2002 and 2010) and ESRA once (2015). Thanks to these projects, it is possible to study and compare the opinions and attitudes and reported behaviour of the road users in different countries.

2. Methodology

The ESRA project (European Survey of Road users' safety Attitudes) is a joint initiative of research organisations and road safety institutes in 17 European countries aiming at collecting comparable (inter)national data on road users' opinions, attitudes and behaviour with respect to road traffic risks. The project was funded by the partners' own resources.

The first ESRA survey was conducted online using representative samples (at least N=1,000) of the national adult populations in 17 European countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, the Netherlands, United Kingdom). A common questionnaire (see Appendix - ESRA 2015 Questionnaire) was developed and translated into 20 different country-language versions. The subjects covered a range of subjects, including the attitudes towards unsafe traffic behaviour, self-declared (unsafe) behaviour in traffic, and support for road safety policy measures – overall over 222 variables. The ESRA questionnaire was inspired by the previous European project, SARTRE, and also includes some questions of the AAAFTS-survey (USA) 'Traffic Safety Culture Index', which enables tentative comparisons with these projects. Data collection took place simultaneously in all countries in June/July 2015. A Belgian polling agency coordinated the field work to guarantee a uniform sampling procedure and methodology. In total, data from more than 17,000 road users (of which 11,000 frequent car drivers) were collected. Hence, the ESRA survey produced a very rich dataset.

Seven institutes – BRSI (BE), KfV (AT), NTUA (EL), CTL (IT), ITS (PL), PRP (PT), bfu (CH) – combined their expertise to analyse the common data and to disseminate the results. The results of the 2015 survey are published in a [Main report](#) and six thematic reports:

- [Speeding](#)
- [Driving under the influence of alcohol and drugs](#)
- [Distraction and fatigue](#)
- [Seat belt and child restraint systems](#)
- [Subjective safety and risk perception](#)
- [Enforcement and support for road safety policy measures](#)

There are also 17 country fact sheets in which the main results per country are compared with an European average. An overview of the project and the results are available on www.esranet.eu.

The present report summarizes the ESRA-results with respect to driving under the influence of alcohol and drugs. An overview of the data collection method and the sample per country can be found in the [Main report](#).

This thematic report presents the results of the 2015 ESRA survey on driving under the influence of alcohol and drugs.

We have considered the answers to the specific questions listed below. Other questions in ESRA would have been of interest for this report also (for example, 'Do you support each of the following measures...? ...Drivers who have been caught drunk driving on more than one occasion should be required to install an interlock... or Zero tolerance for alcohol (0,0‰) for all drivers'), but they were analysed in detail in the thematic report [Enforcement and support for road safety policy measures](#).

The present thematic report on driving under influence of alcohol and drugs embraces the following questions:

Where you live, how acceptable would most other people say it is for a driver to...?
(Answers from 1 (unacceptable) to 5 (acceptable))

- drive when they think they may have had too much to drink
- drive 1 hour after using drugs (other than medication)
- drive after using both drugs (other than medication) and alcohol

How acceptable do you, personally, feel it is for a driver to...?

(Answers from 1 (unacceptable) to 5 (acceptable))

- drive when they think they may have had too much to drink
- drive 1 hour after using drugs (other than medication)
- drive after using both drugs (other than medication) and alcohol

In the past 12 months, as a road user, how often did you...?

(Answers from 1 (never) to 5 ((almost) always))

- drive after drinking alcohol
- drive after using illegal drugs
- drive while taking medication that carries a warning it may influence your driving ability

Over the last 30 days, how many times did you drive a car, when you may have been over the legal limit for drinking and driving?

(Number of days)

To what extent do you agree with each of the following statements?

(Answers from 1 (disagree) to 5 (agree))

- Driving under the influence of alcohol seriously increases the risk of an accident
- Most of my acquaintances / friends think driving under the influence of alcohol is unacceptable
- If you drive under the influence of alcohol, it is difficult to react appropriately in a dangerous situation
- Driving under the influence of drugs seriously increases the risk of an accident
- Most of my acquaintances / friends think driving under the influence of drugs is unacceptable

On a typical journey, how likely is it that you (as a driver) will be checked by the police for...?

(Answers from 1 (very small chance) to 5 (very big chance))

- ...alcohol, in other words, being subjected to a Breathalyser test
- ...the use of drugs

These questions allow the analyses of acceptability of drink-driving, resp. drug-driving, attitudes towards impaired driving, self-declared behaviours in these matters and the perceived likelihood of being checked for impaired driving.

The results are presented in two parts. Part one comprises descriptive analyses. In order to assess if the answers were significantly different from one group to another (for example men vs. women), statistical tests were applied (Chi-square tests). Part two (further analyses) consists of inferential statistics (logistic regression models describing the relationship between several explanatory variables such as gender, age, level of education, driving frequency, attitudes towards impaired driving, support of measures, acceptability of impaired driving, risk perception and the binary dependent variable 'presence or absence of self-reported drink-driving, respectively self-reported drug-driving').

3. Results

3.1. Descriptive analysis

The first part of this chapter (descriptive analysis) focuses on the attitudes and opinions towards drink-driving, resp. drug-driving. The acceptability of such behaviours and the opinion about the risks related to these behaviours are analysed in detail. In the second part of this chapter, the analyses will concentrate on self-reported driving under the influence of an impairing substance, including medication.

3.1.1. Acceptability of impaired driving (other people and personally)

Two similar questions were asked in order to find out the level of acceptability of the behaviour 'driving under the influence of an impairing substance':

- 'Where you live, how acceptable would most other people say it is for a driver to drive under the influence of...?'
- 'How acceptable do you, personally, feel it is for a driver to drive under the influence of...?'

The impairing substances mentioned in these two questions were alcohol, drugs and the combination of alcohol and drugs (Figure 1). The answering scale ranged from 1 (unacceptable) to 5 (acceptable).

A large majority of the respondents (about 97%) were of the opinion that driving under the influence of an impairing substance is unacceptable, rather unacceptable or were neutral (scores 1 to 3) and only 3.0% to 3.5% considered these behaviours as acceptable (scores 4 to 5).

Most of the respondents seem to believe that other people somewhat find these behaviours more acceptable than they do: the percentages of persons answering that 'others' find it acceptable to drive under the influence of an impairing substance ranged between 5.0% and 5.6%.

The level of acceptability of the three behaviours 'drink-driving', 'drug-driving' and 'drink-drug-driving' is very close. Drink-driving seems to be a little bit more acceptable than driving under the influence of both alcohol and drugs.

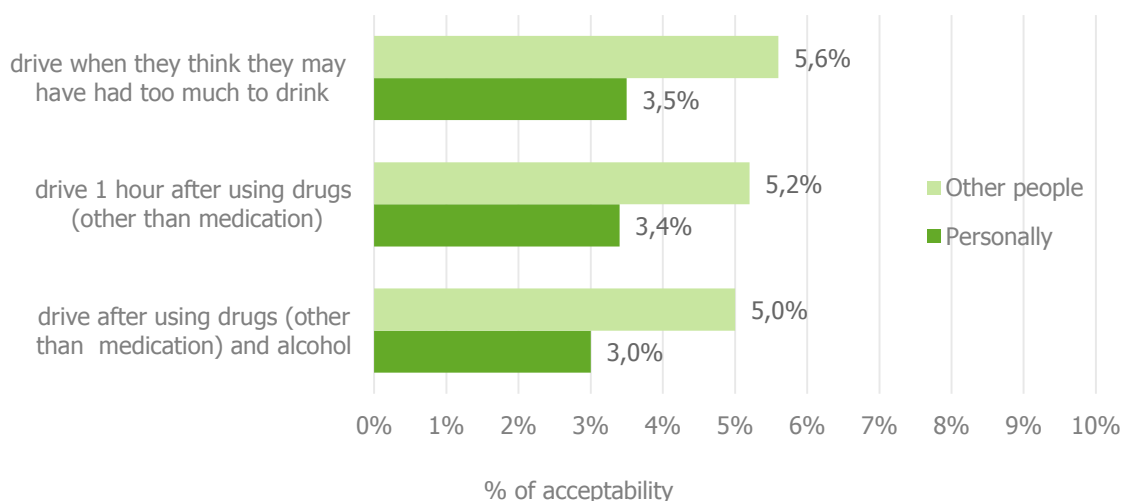


Figure 1: Acceptability of impaired driving, in Europe.

Notes: (1) % of acceptability: scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable'. (2) European weight B.

In all countries, the same phenomenon can be observed: the respondents consider that other people somewhat more readily accept drink-driving or drug-driving than they do themselves. The differences

between the 'perceived social acceptability' and the 'personal acceptability' differ widely between countries (Table 1). The highest differences concern Greece: 14.2% of the respondents in this country answered that 'most other people would say that it is acceptable to drive after using both drugs (other than medication) and alcohol' whereas only 3.3% personally think that this is an acceptable behaviour. The differences are the smallest in Denmark (at the most 0.4 percentage points).

The level of personal acceptability of drink-driving is the lowest in Finland (0.6%) and in Denmark (0.7%) and the highest in Italy (5.6%) and France (5.3%). The 'perceived social acceptability rates' on this matter are the lowest in the same two countries where the level of personal acceptability was the smallest (1.1% in Denmark and 1.8% in Finland) and the highest in Greece (11.8%) and in Italy (7.4%). The countries with the lowest and highest acceptability (perceived social as well as personal) rates for 'drink-driving' also have the lowest and highest acceptability rates for drink-drug-driving. An exception is the country with the second highest personal acceptability rate: Poland in place of France.

The acceptability rate of drug-driving by country reveals an interesting fact: the country with the maximum respondents indicating that it is acceptable to start driving 1 hour after using drugs (other than medication) is Finland, whereas it has one of the lowest acceptability rate for drink-driving (see also point 4 Discussion). The country with the second highest personal acceptability rate of drug-driving is Italy (4.8%) and the two smallest personal acceptability rates are to be found in Denmark (0.8%) and Belgium (1.1%). The 'perceived social acceptability rates' on this matter are the highest in Greece (13.0%) and Finland (12.7%) and the smallest in Denmark (0.8%) and Switzerland (2.0%).

Table 1: Acceptability of drink-driving and/or drug-driving, by country.

	drive when they think they may have had too much to drink		drive 1 hour after using drugs (other than medication)		drive after using both drugs (other than medication) and alcohol	
	Other people	Personally	Other people	Personally	Other people	Personally
AT	3.1%	1.0%	2.1%	1.3%	2.1%	0.8%
BE	3.5%	1.6%	2.6%	1.1%	2.5%	0.8%
CH	2.2%	1.0%	2.0%	2.2%	1.8%	1.0%
DE	6.3%	2.7%	4.5%	2.6%	4.6%	2.0%
DK	1.1%	0.7%	0.8%	0.8%	0.7%	0.5%
EL	11.8%	3.1%	13.0%	3.8%	14.2%	3.3%
ES	4.7%	2.4%	4.9%	2.6%	3.9%	2.8%
FI	1.8%	0.6%	12.7%	5.9%	0.9%	0.5%
FR	7.2%	5.3%	6.0%	4.3%	5.9%	3.1%
IE	6.0%	2.9%	5.7%	2.7%	4.3%	3.0%
IT	7.4%	5.6%	6.6%	4.8%	8.5%	5.0%
NL	2.7%	2.5%	3.8%	2.7%	2.5%	2.1%
PL	5.1%	3.8%	4.7%	4.2%	5.1%	4.3%
PT	3.9%	1.1%	3.8%	1.6%	3.1%	1.0%
SE	4.3%	2.6%	5.5%	2.7%	4.0%	3.1%
SI	3.8%	2.2%	5.9%	2.6%	4.7%	2.1%
UK	4.5%	3.8%	5.1%	3.7%	4.0%	3.2%
EU	5.6%	3.5%	5.2%	3.4%	5.0%	3.0%

Notes: (1) % of acceptability: scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable'. (2) Countries based on individual country weight, Europe based on European weight B. (3) The two countries with the lowest rates are indicated in green, and the two countries with the highest rates in yellow. (4) In Finland, the English word 'drug' was translated into the word 'Lääke' which means not only drugs but also psychoactive substances like benzodiazepines.

The fact that the respondents consider that other people more readily accept drink-driving or drug-driving than they themselves do, can also be observed in the gender or age groups. As the difference between the social and the personal acceptability is for all groups about the same (around 2

percentage points), we renounce presenting the results concerning the perceived social acceptability by gender and age group. The next two figures focus on the personal acceptability of drink-driving, drug-driving, and drink-drug-driving.

For the three topics, the level of personal acceptability is clearly smaller among women than among men (Figure 2).

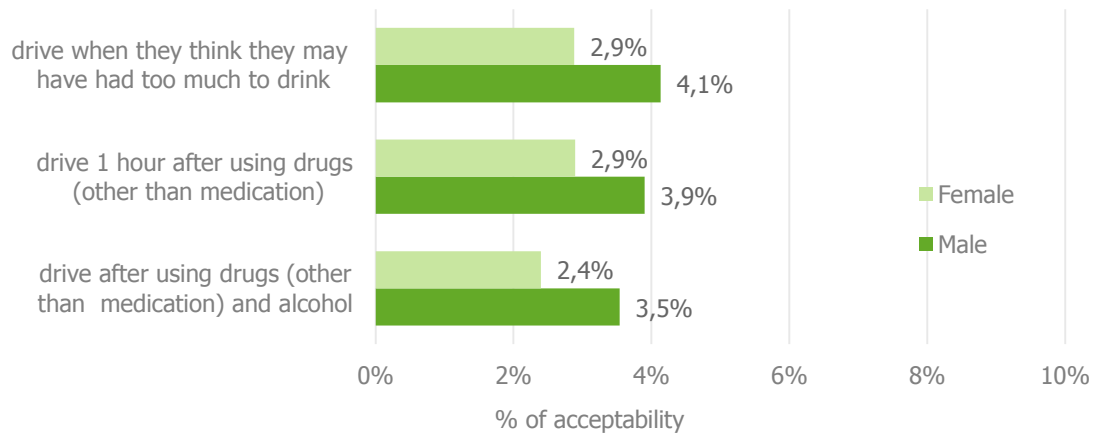


Figure 2: Acceptability of impaired driving, by gender.

Notes: (1) % of acceptability: scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable'. (2) European weight B. (3) All $p < .01$.

The level of acceptability of driving under the influence of an impairing substance clearly depends on the age group (Figure 3). It is much lower among the oldest age group (55 years and older) and significantly higher among the youngest (18-34 years old).

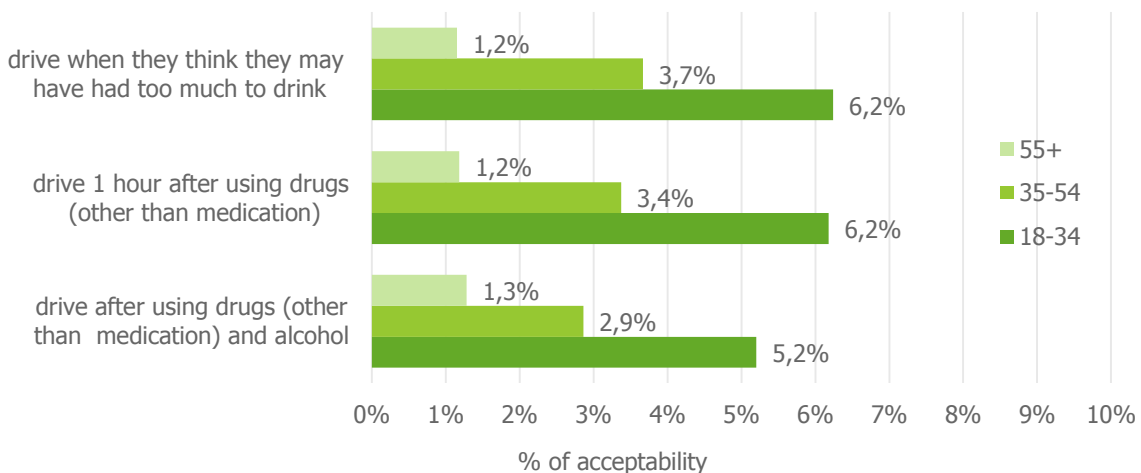


Figure 3: Acceptability of impaired driving, by age group.

Notes: (1) % of acceptability: scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable'. (2) European weight B. (3) All $p < .01$.

3.1.2. Acceptability of impaired driving among my acquaintances/friends

A further indicator for the acceptability of drink-driving and drug-driving is available from the answers to the following question:

- To what extent do you agree with each of the following statements?
 - Most of my acquaintances/friends think driving under the influence of alcohol is unacceptable
 - Most of my acquaintances/friends think driving under the influence of drugs is unacceptable

A scale from 1 (disagree) to 5 (agree) was proposed for the answers. In this analysis, agreement is based on the scores 4 and 5. Almost 8 respondents out of 10 have answered that 'most of their acquaintances/friends think driving under the influence of alcohol, resp. drugs is unacceptable' (Figure 4). Inversely, 2 out of 10 think that their acquaintances/friends find it acceptable or don't have an opinion (neutral). There is almost no difference between alcohol and drugs. Drug-driving seems to be slightly less accepted than drink-driving. The proportion of respondents who express the opinion that, for the acquaintances/friends, impaired driving is acceptable or that they are neutral on that matter is larger than the one related to the questions 11 and 12 presented in the former section.

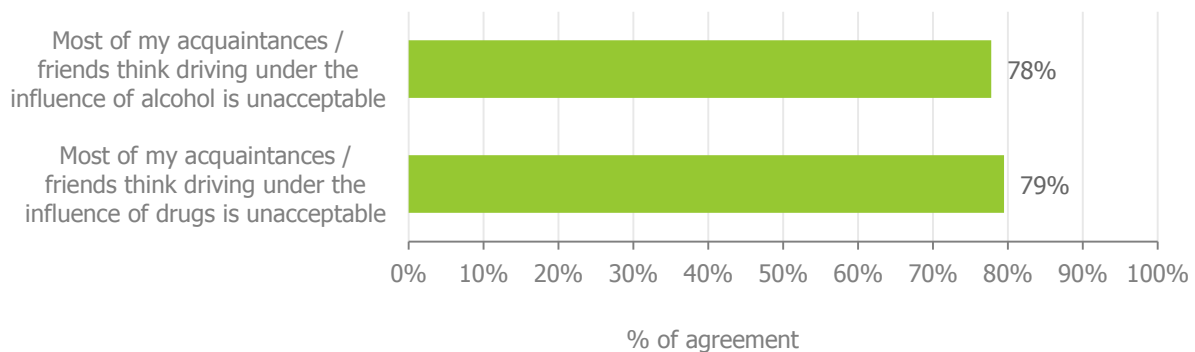


Figure 4: Acceptability of impaired driving (among my acquaintances/friends), in Europe.

Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) European weight B.

Relevant differences can be observed between the countries (Figure 5). The countries with the lowest agreement rate concerning the sentence 'most of my acquaintances/ friends think driving under the influence of alcohol is unacceptable' are Belgium (70%), Austria (71%) and France (73%). The countries with the highest agreement rate are Finland (92%), Denmark (89%) and Poland (83%).

If we consider the same sentence, except for the impairing substance (drugs instead of alcohol), we observe that the countries with the lowest agreement rate are Ireland (73%), France (73%) and the United Kingdom (74%). The three countries with the highest agreement rate are Finland (91%), Italy (89%) and Denmark (89%).

In most of the countries, the answer patterns for the two sentences are very similar. In Belgium, Austria and Italy however, the degree of agreement is almost 10 percentage points better for the drug than for the alcohol issue. Curiously, the percentages obtained in some countries regarding the acceptability of drink-driving seem in contradiction with the ones presented in the previous section. In Belgium and Austria for example, the level of acceptability (other people and personally) of drink-driving is clearly below average whereas here, the two countries present the lowest level of agreement with the sentence 'Most of the acquaintances/friends think that alcohol-impaired driving is unacceptable'.

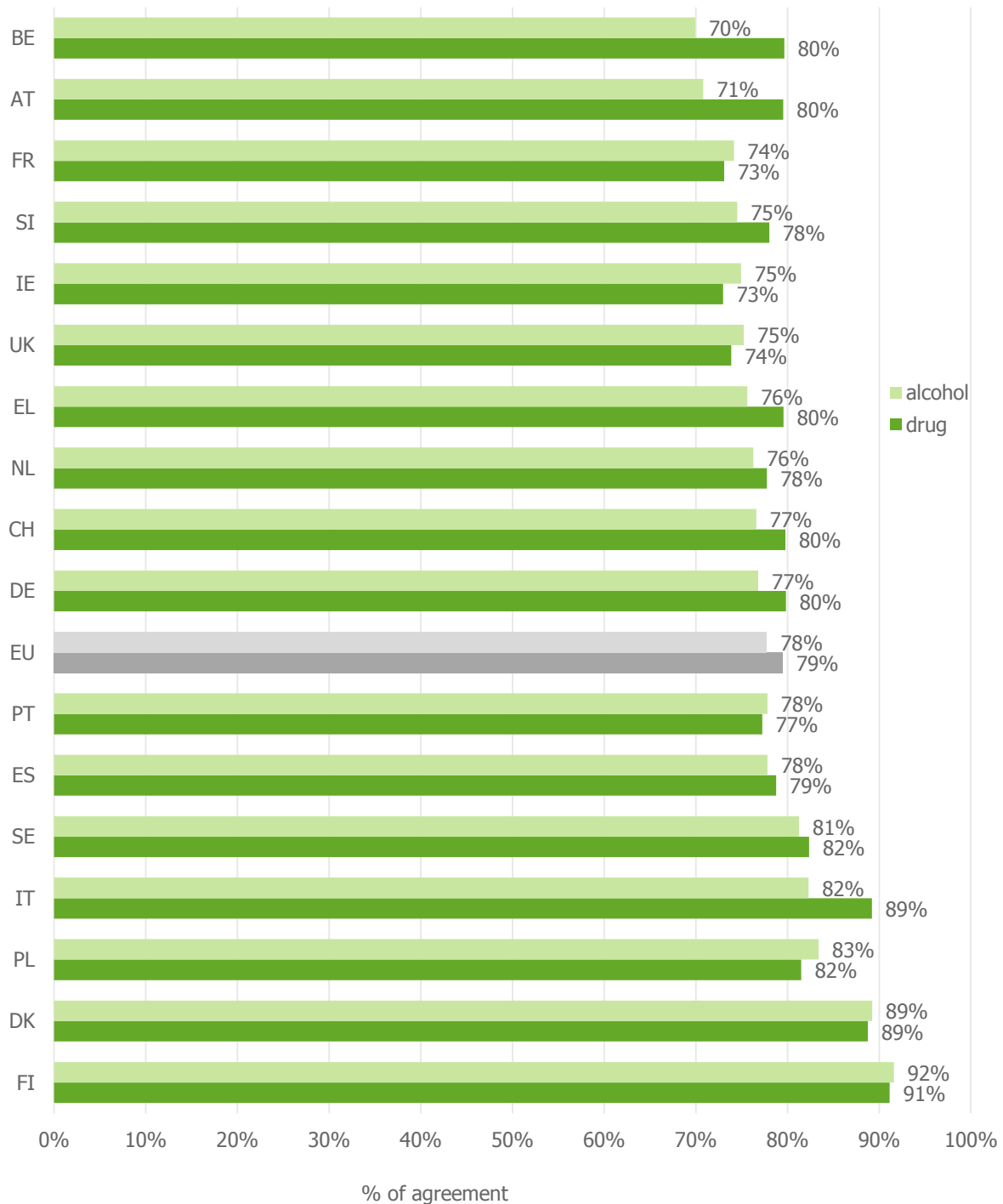


Figure 5: Agreement with the statement 'Most of my acquaintances/friends think driving under the influence of alcohol, resp. drugs is unacceptable', by country.

Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) Countries based on individual country weight, Europe based on European weight B.

On that matter, the opinion of men and women does not differ much (Figure 6). There is a slightly higher number of women supporting both sentences. Although small, these differences are significant (all $p < 0.01$).

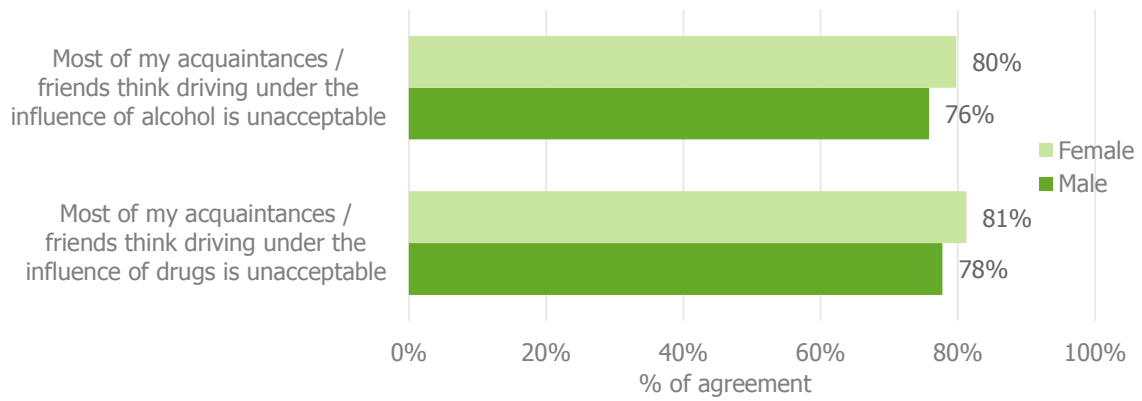


Figure 6: Acceptability of impaired driving (among my acquaintances/friends), by gender.

Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) European weight B. (3) All $p < .01$.

An age effect can also be observed on that issue (Figure 7). The older the respondents, the stronger is their support of the sentences. In the age group 55 years and older, both sentences receive an about 5 percentage points larger support than in the age group of 35 to 54 years and an about 12 percentage points larger support than in the age group between 18 and 34 years (all $p < 0.01$).

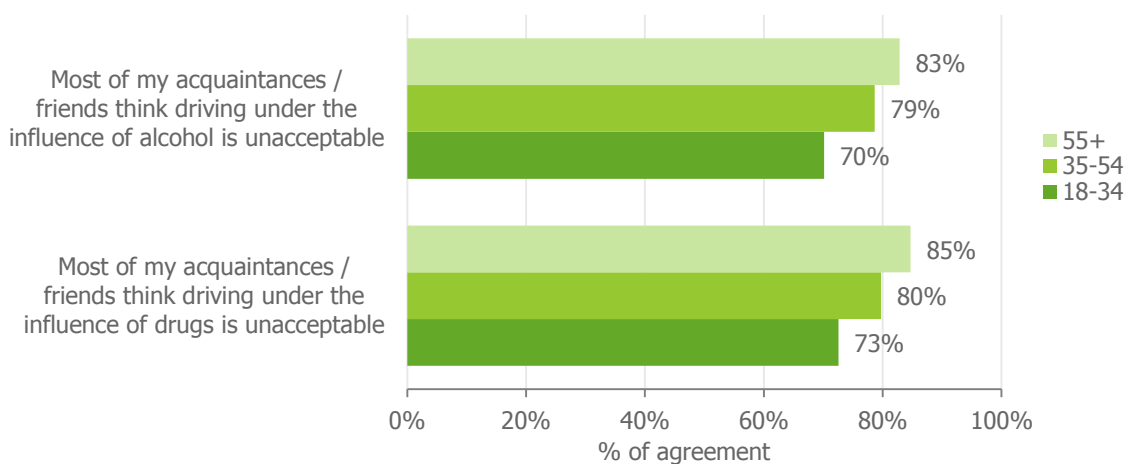


Figure 7: Acceptability of impaired driving (among my acquaintances/friends), by age group.

Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) European weight B. (3) All $p < .01$.

3.1.3. Attitudes towards drink-driving and drug-driving

Three questions in ESRA are related to the perceived risk associated with drink-driving, respectively drug-driving:

- To what extent do you agree with each of the following statements?
 - Driving under the influence of alcohol seriously increases the risk of an accident
 - If you drive under the influence of alcohol, it is difficult to react appropriately in a dangerous situation
 - Driving under the influence of drugs seriously increases the risk of an accident

The answering scale ranged from 1 (disagree) to 5 (agree). In this analysis, agreement is based on the scores 4 and 5. The levels of agreement for all three sentences is very high and similar (between 87% and 88%). The respondents do not seem to make a difference between risks related to drink-driving and drug-driving (Figure 8).

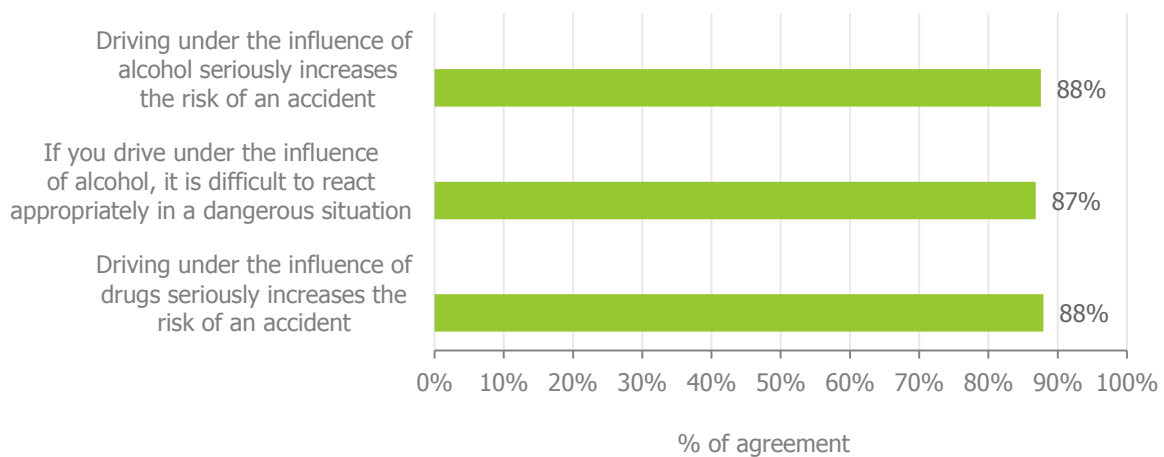


Figure 8: Attitudes towards impaired driving, in Europe.

Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) European weight B.

The levels of agreement do not greatly differ between countries. For the first sentence ('Driving under the influence of alcohol seriously increases the risk of an accident'), there is only a difference of 14 percentage points between the lowest level of agreement (82% in France) and the highest level of agreement (96% in Finland). For the two other statements, countries differ in a similar manner. For all three sentences, France is the country where the level of agreement is the lowest and Finland and Italy are the two countries where it is the highest (Table 2).

Table 2: Attitudes towards impaired driving, by country.

	Driving under the influence of alcohol seriously increases the risk of an accident	If you drive under the influence of alcohol, it is difficult to react appropriately in a dangerous situation	Driving under the influence of drugs seriously increases the risk of an accident
AT	91%	86%	89%
BE	90%	89%	94%
CH	88%	86%	87%
DE	86%	86%	86%
DK	93%	93%	91%
EL	90%	89%	90%
ES	84%	84%	86%
FI	96%	95%	96%
FR	82%	82%	84%
IE	86%	86%	87%
IT	95%	94%	97%
NL	88%	86%	88%
PL	89%	88%	88%
PT	92%	92%	92%
SE	87%	87%	88%
SI	86%	85%	88%
UK	87%	85%	85%
EU	88%	87%	88%

Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) Countries based on individual country weight, Europe based on European weight B. (3) The two countries with the lowest rates are indicated in green, and the two countries with the highest rates in yellow.

The levels of agreement for all three statements is five percentage points higher among women than men. The differences are statistically significant (chi-square test: $p < 0.01$) (Figure 9).

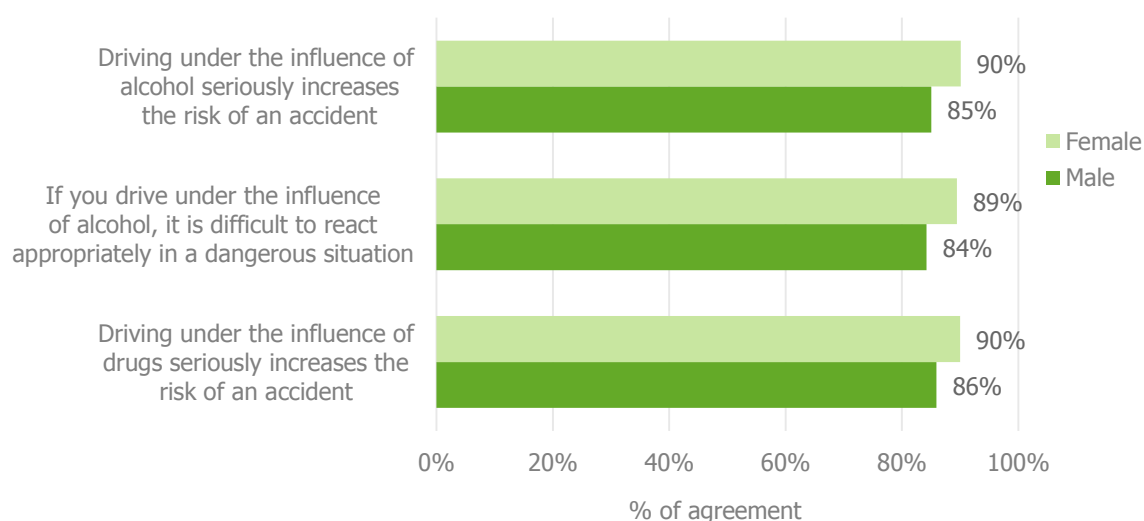


Figure 9: Attitudes towards impaired driving, by gender.

Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) European weight B. (3) All $p < .01$.

The levels of agreement for all three sentences clearly depend on the age groups. The older the respondents, the more they agree on them (Figure 10).

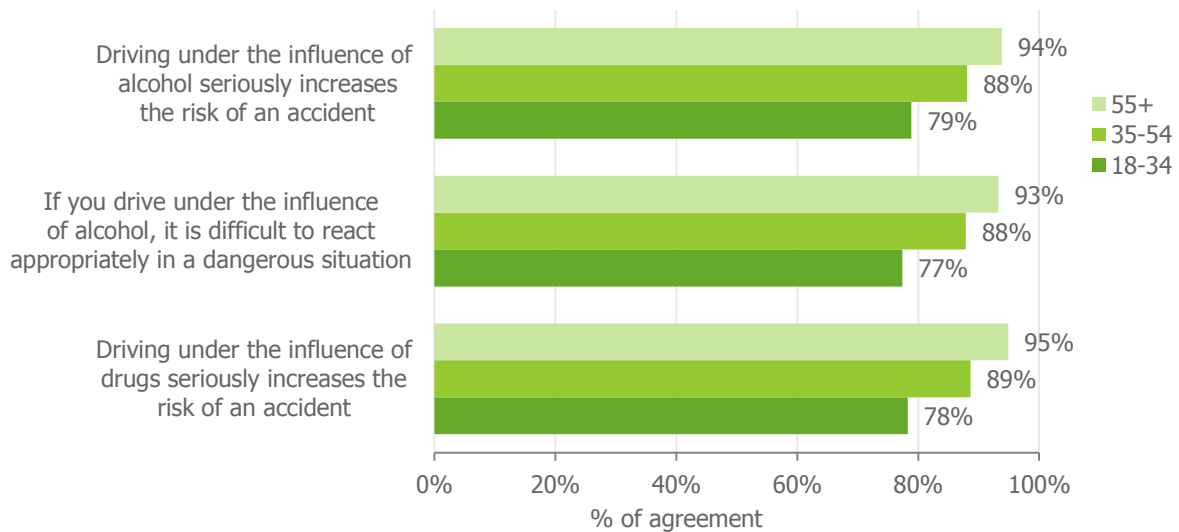


Figure 10: Attitudes towards impaired driving, by age group.

Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) European weight B. (3) All $p < .01$.

3.1.4. Self-declared behaviours of driving under the influence of an impairing substance

Two questions in the ESRA project aimed to find out how frequent behaviours like driving under the influence of an impairing substance are among the population.

- In the past 12 months, as a road user, how often did you...?
(Answers from 1 (never) to 5 ((almost) always))
 - drive after drinking alcohol
 - drive after using illegal drugs
 - drive while taking medication that carries a warning it may influence your driving ability
- Over the last 30 days, how many times did you drive a car, when you may have been over the legal limit for drinking and driving?
(Number of days)

For the period of the past 12 months, the behaviour which has been reported by the largest proportion of respondents (only drivers of vehicles, incl. bicycles), is drink-driving (31%), followed by driving after having taken medication which may influence the driving ability (22%) (Figure 11). Drug-driving was mentioned by 11% of the respondents.

For the shorter period of one month and an average amount of alcohol probably higher (because it is 'over the legal limit'), the proportion of respondents answering that they have driven at least once when they may have been over the legal alcohol limit was 12%¹.

¹ Moreover, the actual alcohol concentration in question might be different as this question refers to the national alcohol limit which is different in the countries.

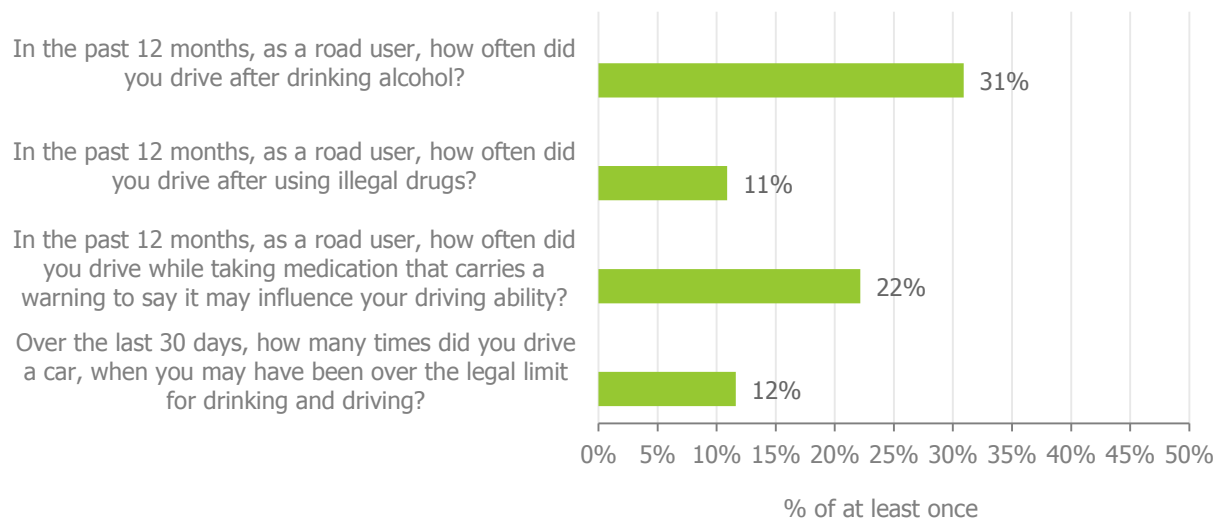


Figure 11: Self-declared behaviour as a road user having driven under the influence of an impairing substance, in Europe (% of at least once).

Note: European weight B.

The analysis by country shows that the proportion of self-reported behaviour of drink-driving differs widely between the countries (Figure 12). The countries with the highest proportions of persons having answered that they had driven under the influence of alcohol in the past 12 months are Belgium (43%), France (41%) and Switzerland (38%). Those with the lowest percentages are Poland (12%), Sweden (13%) and Finland (18%). The analysis related to the persons who had admitted driving a car when they may have been over the legal limit the previous month shows a similar pattern: the three countries with the highest percentages were once again France (22%), Belgium (18%) and Switzerland (17%), while the three countries with the lowest percentages were once more Finland (1%), Sweden (2%) and Poland (4%).

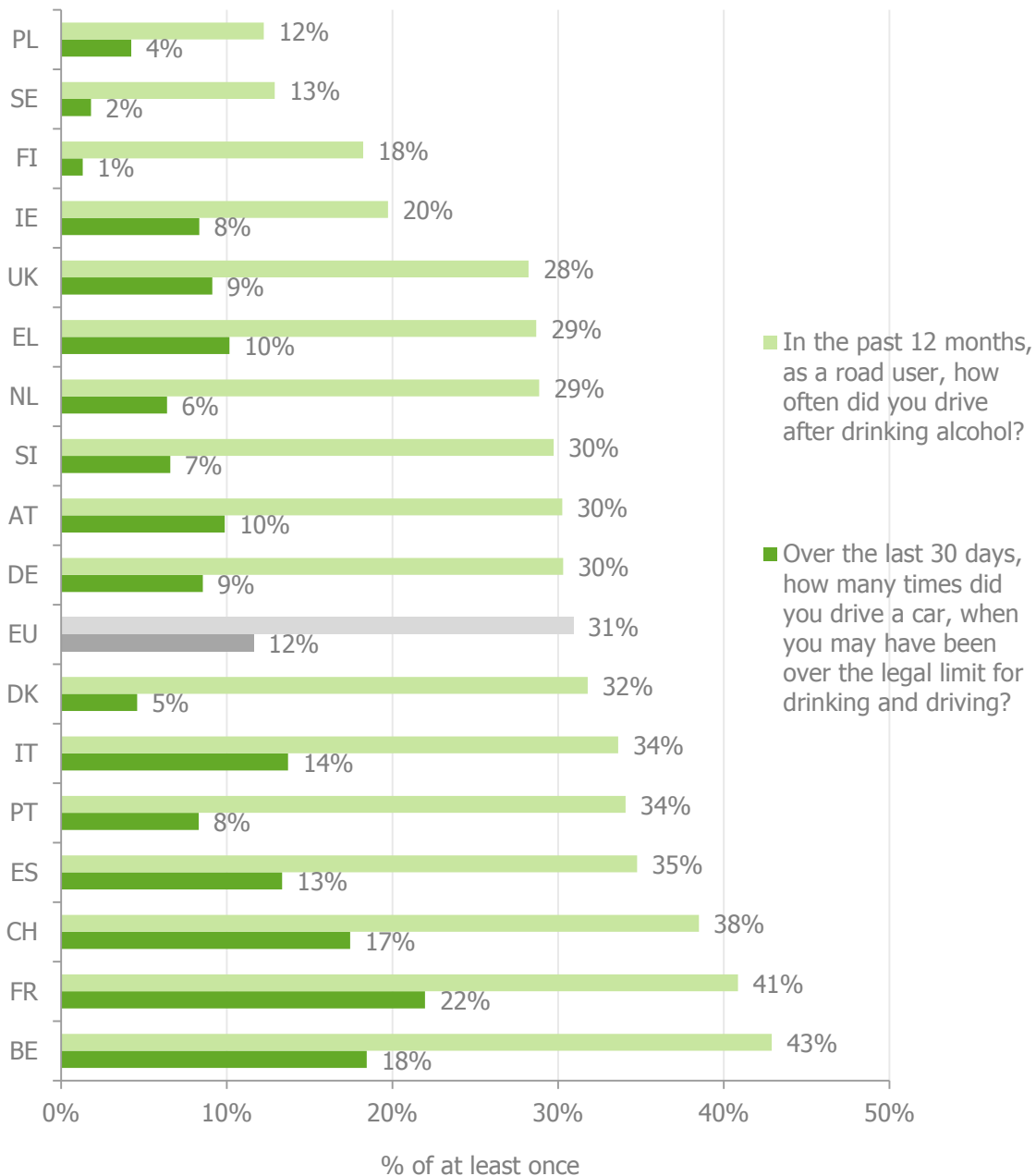


Figure 12: Self-declared behaviour as a road user having driven under the influence of alcohol, by country (% of at least once).

Note: Countries based on individual country weight, Europe based on European weight B.

The differences between the countries concerning self-reported drug-driving are smaller, ranging from 3% in Finland and Belgium to 16% in France (Figure 13).

In every participating country, the percentage of self-declared drug-driving is smaller than that of self-declared drink-driving. In France and Spain, the proportions of self-reported drink-driving as well as of drug-driving are above average. In Finland, on the contrary, both proportions are clearly below average. In Germany, both proportions are near the European average. Many countries present either a proportion of self-declared drink-driving above average, combined with a proportion of self-declared drug-driving below average or the other way round. Belgium is an interesting case: it belongs to the countries with the highest rate of self-reported drink-driving and at the same time to the countries with the lowest rate of self-reported drug-driving.

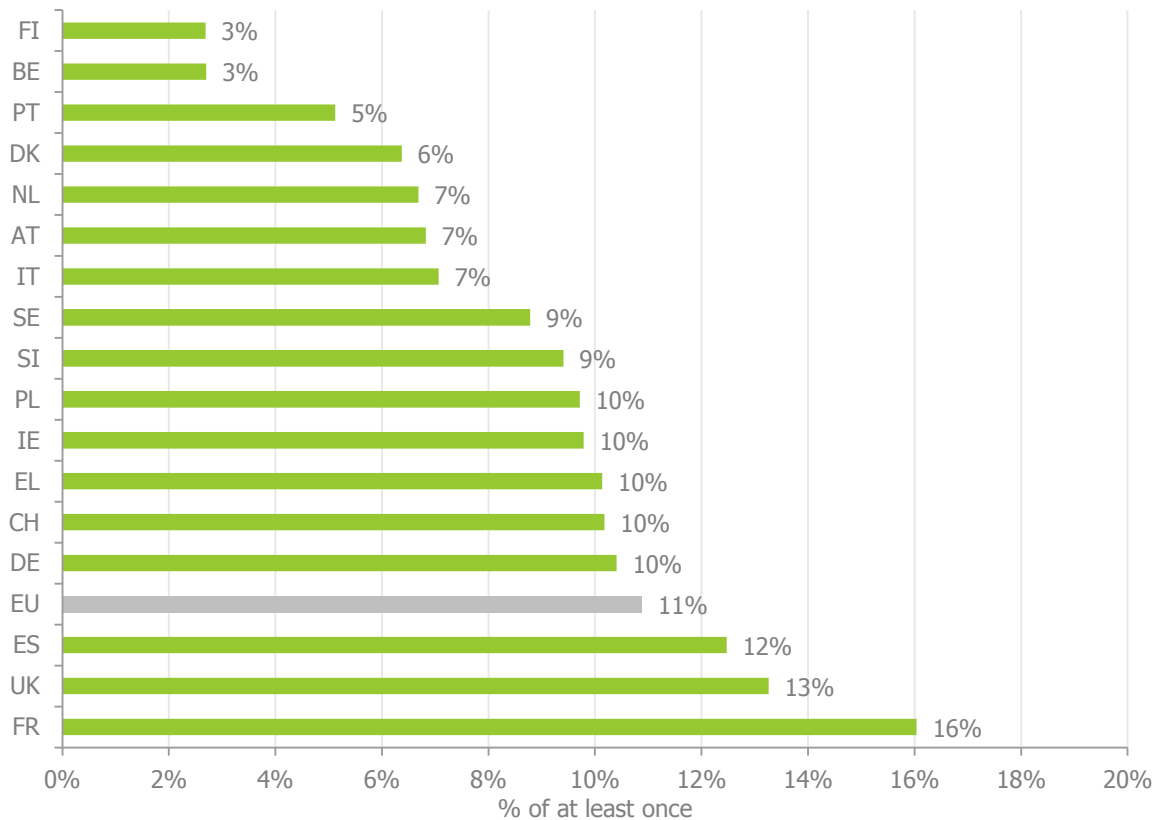


Figure 13: Self-declared behaviour as a road user having driven under the influence of drugs, by country (% of at least once within the last 12 months).

Note: Countries based on individual country weight, Europe based on European weight B.

The countries with the highest proportions of drivers declaring that they had, within the last year, driven under the influence of medication that may impair the driving ability are France (32%), Spain (24%) and Switzerland (23%) (Figure 14).

The countries with the lowest percentages of self-declared driving under the influence of medication that may impair the driving ability are Denmark (12%), Italy (15%) and Sweden (16%).

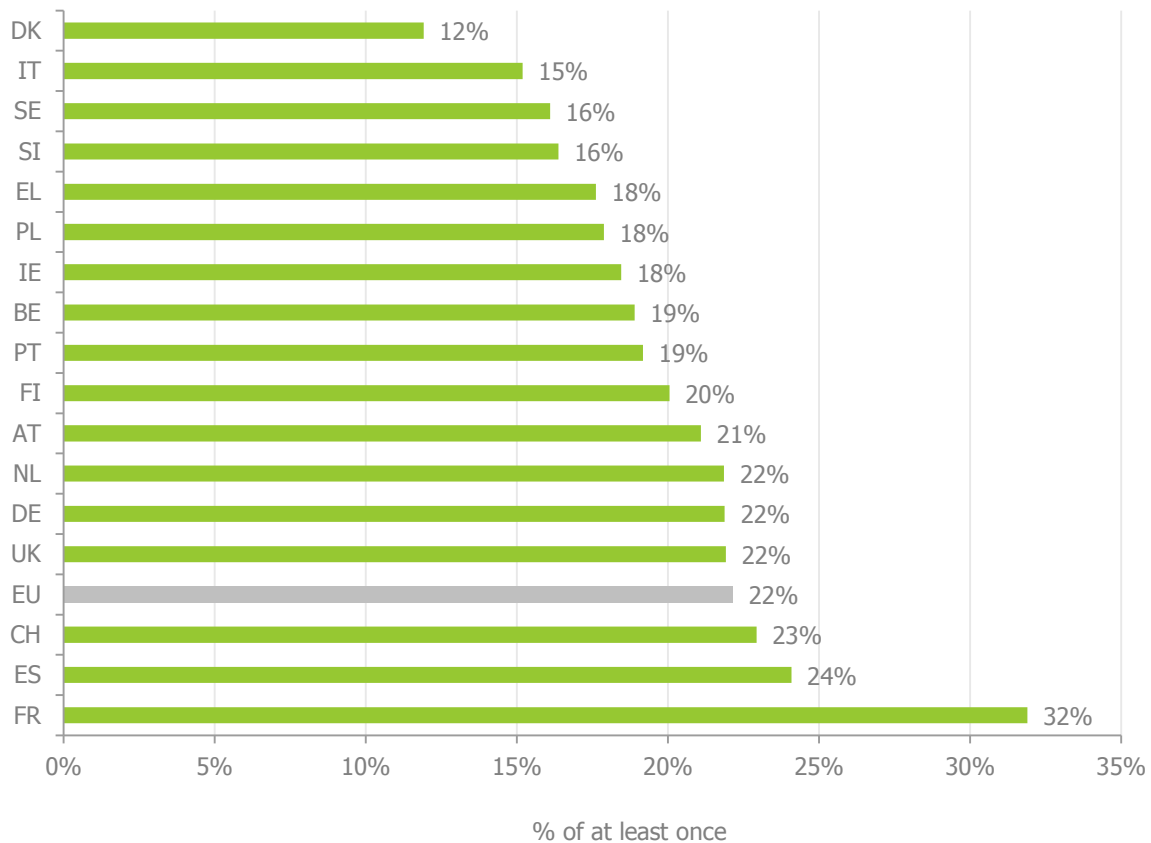


Figure 14: Self-declared behaviour as a road user having driven under the influence of medication that may impair the driving ability, by country (% of at least once within the last 12 months).

Note: Countries based on individual country weight, Europe based on European weight B.

The percentages of persons declaring that they have driven under the influence of either of the three substances are clearly higher among men than women (Figure 15) for example, 38% of the men and 'only' 23% of the women have answered that they had driven under the influence of alcohol in the past 12 months.

The differences between men and women is lower in the case of the self-declared driving under the influence of medication that may impair the driving ability than in the case of drink-driving or drug-driving.

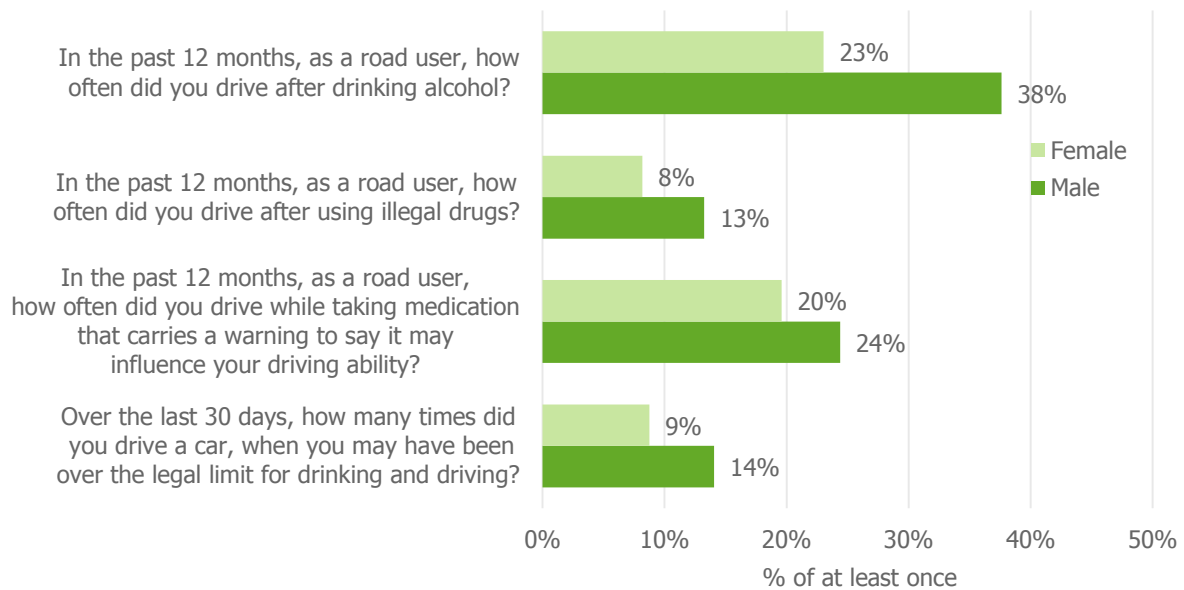


Figure 15: Self-declared behaviour as a road user having driven under the influence of an impairing substance, by gender (% of at least once).

Notes: (1) European weight B. (2) All $p < .01$.

Behaviours like drink-driving or drug-driving are clearly more frequently reported by young people (between 18 and 34 years old) than by the older age groups (Figure 16). The differences are especially notable in relation to drug-driving: 21% of the persons aged between 18 and 34 years and 'only' 4% of the persons aged 55 years or older reported that they had driven under the influence of drugs in the past 12 months.

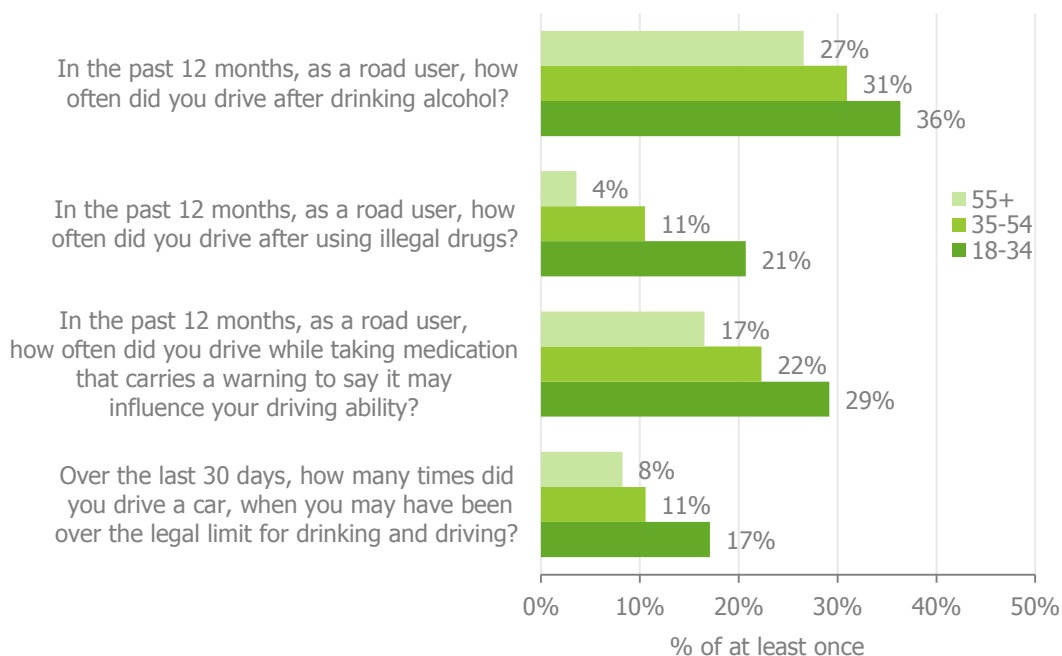


Figure 16: Self-declared behaviour as a road user having driven under the influence of an impairing substance, by age group (% of at least once).

Notes: (1) European weight B. (2) All $p < .01$.

3.1.5. Perceived likelihood of being checked for impaired driving

The perceived likelihood of getting caught for driving under the influence of alcohol or drugs is considered as an important issue. Several studies have shown that the perceived probability of being caught plays an important role in the prevention of drink-driving (Meesmann et al., 2015; Krüger & Schöch, 1995 in Cavegn et al., 2008, p.113).

In ESRA, two such questions have been addressed to the participants of the survey 'On a typical journey, how likely is it that you (as a driver) will be checked by the police for alcohol, in other words, being subjected to a Breathalyser test?' and 'On a typical journey, how likely is it that you (as a driver) will be checked by the police for the use of illegal drugs?' The answering scale ranged from 1 (very small chance) to 5 (very big chance).

In the general car driver population, the perceived likelihood of being checked for impaired driving is not especially high: only 18% think that on a typical journey, the probability of an alcohol test by the police is big or very big (Figure 17). The expectation that they could be controlled for drugs is even smaller: only 11% think that the chance of such a police control is big or very big.

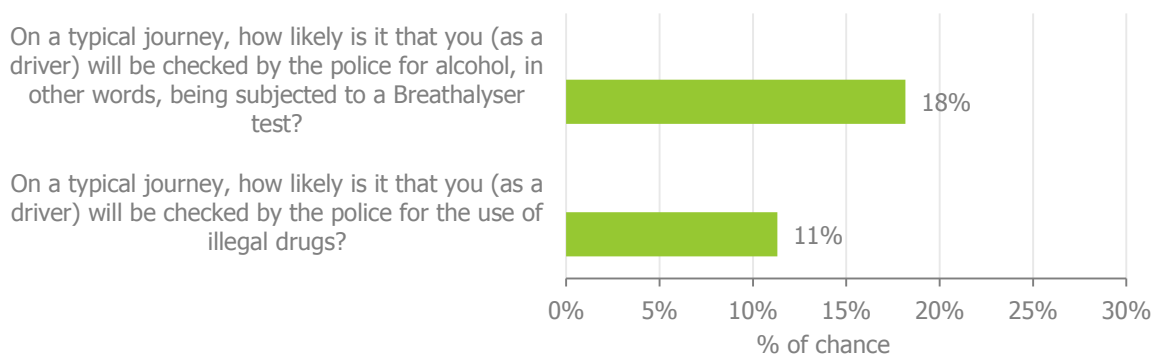


Figure 17: Perceived likelihood of being checked for impaired driving, in Europe.

Notes: (1) % of (very) big chance: scores 4 and 5 on a 5-point scale from 1 'very small chance' to 5 'very big chance'. (2) European weight B.

The answer patterns of the car drivers are very different according to the countries (Figure 18). The percentage of car drivers thinking that the chance of being checked for alcohol is big or very big is the highest in Poland (44%) and the smallest in Denmark (2%). In addition to Poland, France (29%), Slovenia (27%), Spain (24%), Portugal (23%) and Switzerland (19%) belong to the countries where the perceived likelihood of being checked for alcohol is above the European average (18%). Not only in Denmark, but also in Finland (4%), in Germany (8%), in the United Kingdom (9%), in Ireland (9%) and in the Netherlands (10%), the car drivers have a particularly low expectation of being checked for alcohol.

There is a clear relationship between the perceived likelihood of being checked for alcohol and the perceived likelihood of being checked for drugs. In most countries where the expectation to be checked for alcohol is high, the anticipation of possible drugs controls is also rather high. In Poland, the gap between the perceived likelihood of being checked for alcohol (44%) and for drugs (16%) is quite big, but the anticipation of possible drug controls (16%) is still above the European average (11%). In the countries with low expectations of alcohol controls, the expectations for drug controls are even lower.

There is also an association between the perceived likelihood of being checked for impaired driving and the level of enforcement in the different countries. This link is presented and discussed in the thematic report [Enforcement and support for road safety policy measures](#).

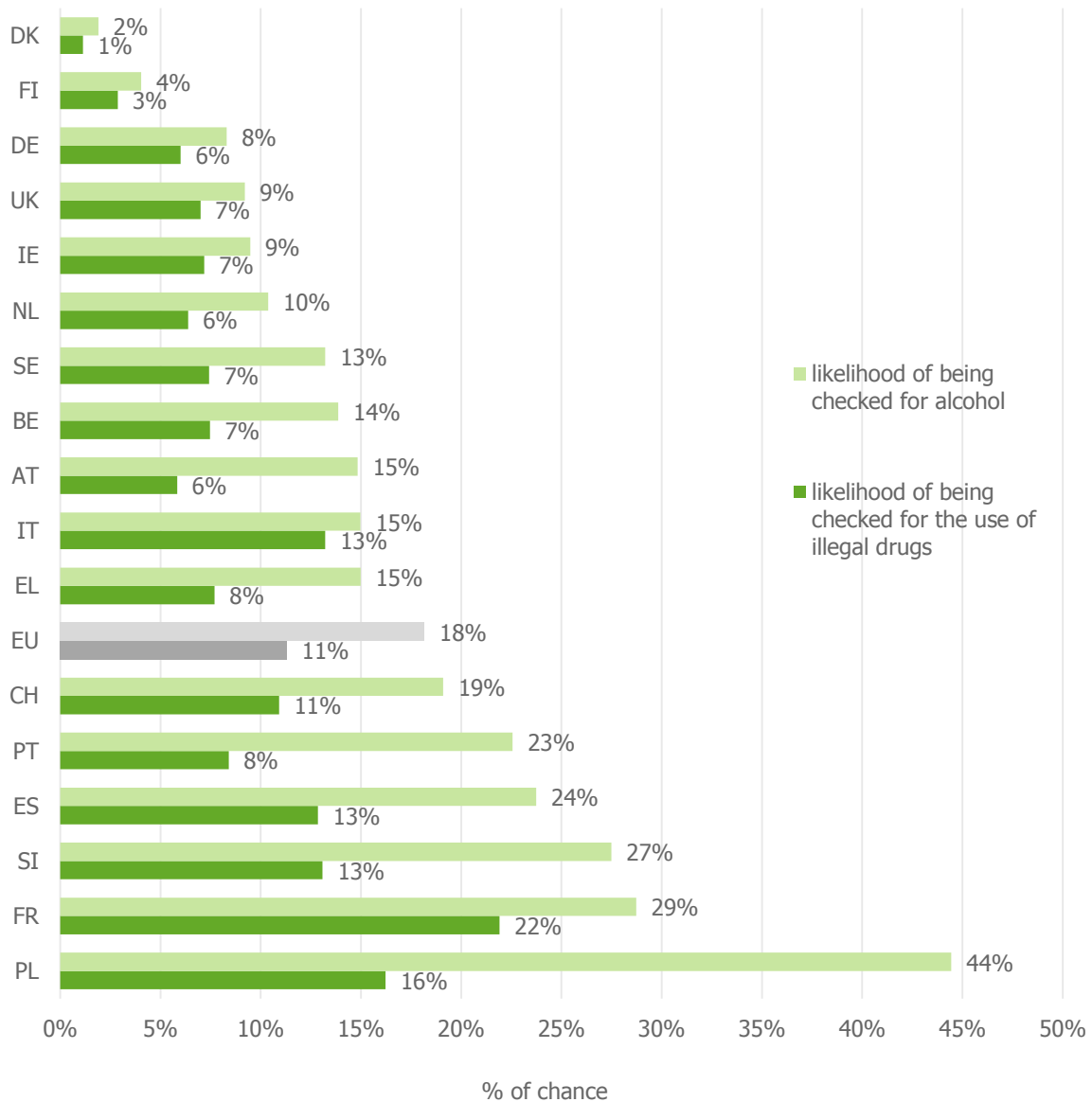


Figure 18: Perceived likelihood of being checked for impaired driving, by country.

Notes: (1) % of (very) big chance: scores 4 and 5 on a 5-point scale from 1 'very small chance' to 5 'very big chance'. (2) Countries based on individual country weight, Europe based on European weight B.

There is almost no difference between men and women concerning the perceived likelihood of being controlled for alcohol or drugs (Figure 19). The percentage of car drivers estimating that the chance of being checked is big or very big is slightly higher among women than men, but it is statistically not significant ($p > .05$).

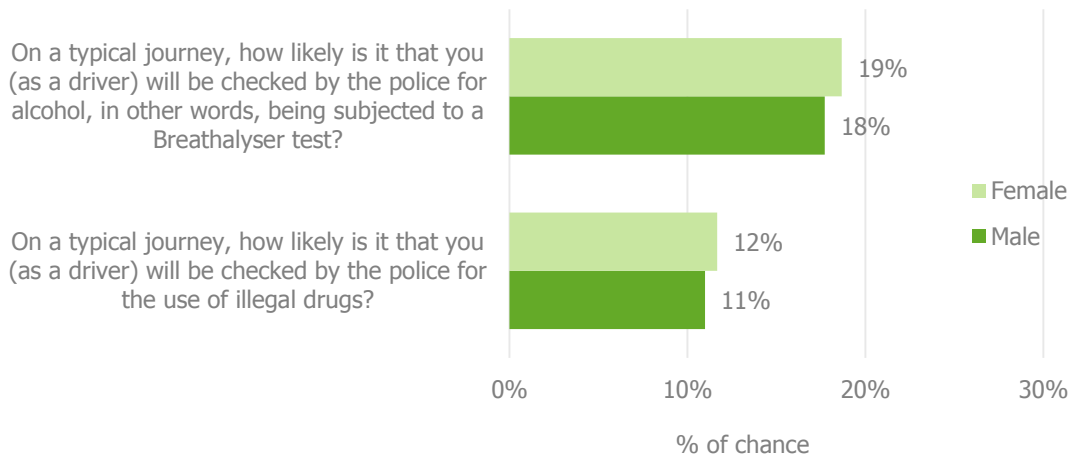


Figure 19: Perceived likelihood of being checked for impaired driving, by gender.

Notes: (1) % of (very) big chance: scores 4 and 5 on a 5-point scale from 1 'very small chance' to 5 'very big chance'. (2) European weight B. (3) All $p > .05$.

The perceived likelihood of being controlled for alcohol or drugs clearly depends on the age groups (Figure 20). The younger the respondents, the more likely they are to expect a control for alcohol or for drugs. The differences between the age groups are more pronounced in the case of expected alcohol controls than of expected drugs controls.

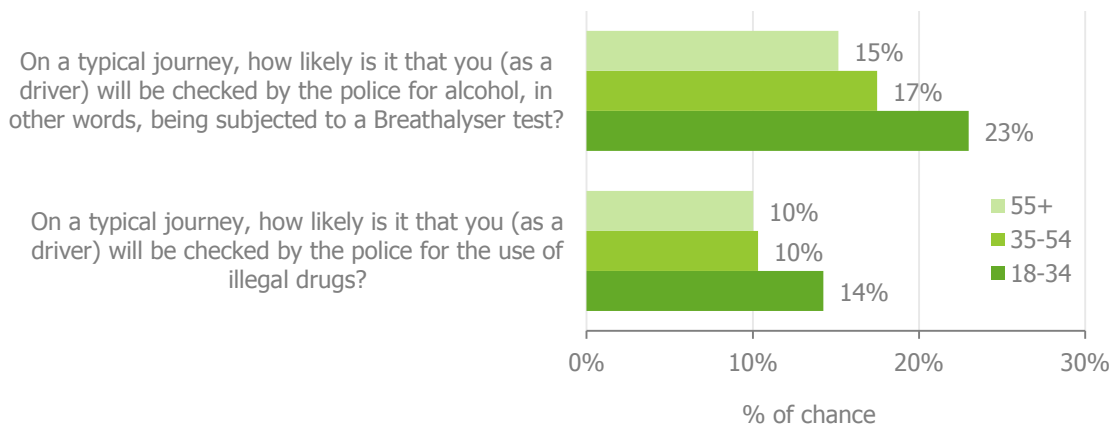


Figure 20: Perceived likelihood of being checked for impaired driving, by age group.

Notes: (1) % of (very) big chance: scores 4 and 5 on a 5-point scale from 1 'very small chance' to 5 'very big chance'. (2) European weight B. (3) All $p < .01$.

3.2. Further analysis

What are the factors affecting driving under the influence of an impairing substance? In order to investigate the association of self-declared impaired driving with the various predictors, we developed four logistic regression models. Persons who never drive a car were not included in these analyses.

The outcome variable in these models is the dichotomized variable indicating the absence (never) or presence (at least once) of self-declared impaired driving. The following explanatory variables were considered: socio-demographic variables (gender, age group and level of education), driving frequency, acceptability of impaired driving, attitudes towards impaired driving, support for road safety measures, risk perception, reported police checks and perceived likelihood of being checked for impaired driving. In models 2 and 4 the variable 'countries' has also been taken into consideration.

In these models, we obtained measures of association in terms of odds ratios (OR) and 95% confidence intervals. If $p < 0.05$, the association is considered as significant.

3.2.1. Factors affecting drink-driving

Possible factors affecting (self-declared) drink-driving are presented in this section, in the first logistic regression model without the variable 'countries' (Table 3), and in the second logistic regression model with the variable 'countries' (Table 4).

In the ESRA survey, there are two questions on drink-driving: 'In the past 12 months, as a road user, how often did you drive after drinking alcohol?' and 'Over the last 30 days, how many times did you drive a car, when you may have been over the legal limit for drinking and driving?' The degree of association between the two questions on drink-driving, given by the Phi coefficient, is 0.376. The first question is less restrictive, as some people may have answered that they have driven after having drunk, but their BAC was still under the legal limit. For the logistic regression models on drink-driving, we chose the less restrictive question, because of the similarity of the formulation of the question on drug-driving. Other advantages of the question on drink-driving we selected for the logistic regression is that it does not take into account the differences in national alcohol limits and encompasses a longer time period. In the analysis, we selected only car drivers who answered that they drive at least a few days a year and for whom the level of education was known.

The odds of self-declared drink-driving for female drivers in comparison to male drivers decrease significantly when controlling for all the other mentioned factors (OR= 0.59; $p < 0.001$). It means that women are less likely to report that they drink and drive than men.

In this model, age doesn't seem to affect the likelihood of drink-driving. The odds ratios of the different age groups are all near 1.

Compared to drivers with only a primary or even lesser education, the odds of drink-driving increase by 26% for drivers with a bachelor's degree or similar (OR=1.26; $p < 0.05$). It is the only statistically significant result concerning the level of education. According to this model, the likelihood of (self-declared) drink-driving is lower among drivers with a lower level of education. This result is rather surprising and will be commented in point 4 Discussion.

The likelihood of drink-driving increases with the driving frequency. In comparison with the persons who drive only a few days per year, the odds ratios are respectively 1.23, 1.71 and 2.16 for persons who drive a few days a month, 1-3 days a week and at least 4 days a week.

The drivers who answered that they personally think that drink-driving is acceptable are almost 5 times more likely to report that they drive under the influence of alcohol compared to drivers who think that this is not acceptable or who have no opinion (OR= 4.94; $p < 0.001$).

Drivers who agree with statements such as 'Drink-driving seriously increases the risk of accidents' or 'Most of my acquaintances/friends think drink-driving is unacceptable' are less inclined to declare that they drink-drive (OR= 0.33; $p < 0.001$, respectively OR= 0.69; $p < 0.001$).

The odds of drink-driving decrease for drivers who think that the traffic rules concerning alcohol should be more strict (OR= 0.28; $p < 0.001$) and increase for drivers who answered that the penalties concerning alcohol are too severe (OR= 1.56; $p < 0.001$). This means that the drivers thinking that

traffic rules concerning alcohol should be more strict' are less likely to report that they drink-drive and those thinking that the penalties are too severe are more inclined to declare that they drink-drive.

There is also a significant association between self-declared drink-driving and perception of risk. Drivers who think that an important part of the road traffic accidents are caused by alcohol are less likely to report that they drink-drive than drivers who think that this percentage is below 6%.

Drivers who have been checked by the police for alcohol (at least once in the last 12 months) are more likely to declare that they drink and drive (OR= 1.51; $p<0.001$). This result will be commented in point 4 Discussion. No association has been found between the perceived likelihood of being checked for alcohol and the likelihood of drink-driving (OR= 0.99; $p>0.05$).

Table 3: Logistic regression model for drink-driving in the past 12 months (Model 1).

Factors (reference category)	Odds ratio	[95% confidence interval]	
Gender (ref. male)			
Female	0.59***	0.54	0.65
Age group (ref. 18-34)			
35-54	0.98	0.87	1.11
55+	0.96	0.85	1.09
Level of education (ref. primary education or no education)			
Secondary education	1.09	0.89	1.35
Bachelor's degree or similar	1.26*	1.01	1.57
Master's degree or higher	1.23	0.98	1.53
Frequency of driving a car (ref. a few days a year)			
A few days a month	1.23	0.78	1.92
1-3 days a week	1.71*	1.14	2.56
At least 4 days a week	2.16***	1.46	3.19
Personal acceptance of drink-driving (ref. unacceptable-neutral: 1-3)			
(Rather) acceptable (4-5)	4.94***	3.62	6.74
Drink-driving seriously increases the risk of an accident (ref. disagree-neutral: 1-3)			
(Rather) agree (4-5)	0.33***	0.29	0.39
Most of my acquaintances/friends think drink-driving is unacceptable (ref. disagree-neutral: 1-3)			
(Rather) agree (4-5)	0.69***	0.61	0.78
The traffic rules concerning alcohol should be more strict (ref. no)			
Yes	0.28***	0.25	0.31
The penalties concerning alcohol are too severe (ref. no)			
Yes	1.56***	1.36	1.80
How many accidents out of 100 were caused by alcohol? (ref. 0-5)			
'6-10	0.78**	0.66	0.92
'11-30	0.77**	0.66	0.89
'31+	0.65***	0.55	0.76
On a typical journey, how likely is it that you are checked for alcohol (ref. very small chance-neutral 1-3)			
(Very) big chance (4-5)	0.99	0.86	1.13
How many times were you checked by the police for alcohol (ref. never)			
At least once (1-100)	1.51***	1.32	1.71

Notes: (1) European weight B. (2) * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Compared to Austria (reference category in the logistic regression model of Table 4), the odds of self-declared drink-driving increase significantly by 77% in Belgium, 38% in Denmark and 29% in Portugal. The countries where the likelihood of self-declared drink-driving is significantly lower than in Austria are Poland (OR=0.25), Sweden (OR= 0.26), Italy (OR= 0.31), Ireland (OR= 0.45), Finland (OR= 0.66) and United Kingdom (0.75).

Table 4: Logistic regression model for drink-driving in the past 12 months (Model 2).

Factors (reference category)	Odds ratio	[95% confidence interval]	
Country (AT)			
BE	1.77***	1.39	2.25
CH	1.24	0.97	1.58
DE	1.00	0.78	1.28
DK	1.38*	1.07	1.78
EL	0.88	0.68	1.14
ES	1.15	0.90	1.48
FI	0.66**	0.50	0.87
FR	1.27	1.00	1.63
IE	0.45***	0.35	0.59
IT	0.31*	0.12	0.79
NL	1.09	0.85	1.40
PL	0.25***	0.18	0.34
PT	1.29*	1.01	1.67
SE	0.26***	0.19	0.36
SI	0.86	0.67	1.10
UK	0.75*	0.58	0.98

Notes: (1) Individual country weights for countries. (2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. (3) Model controlling for all the other mentioned factors in Table 3.

3.2.2. Factors affecting drug-driving

In this section, the first logistic regression model presents possible factors affecting (self-declared) drug-driving without the variable 'countries' (Table 5) and the second logistic regression model includes these same factors as well as the variable 'countries' (Table 6).

Compared to men, women are less likely to report that they drug-drive (OR= 0.66; $p < 0.001$).

There is a strong association between age and drug-driving. Compared to drivers below 35 years, the odds are 0.68 ($p < 0.001$) for the 35 to 54 years old drivers and 0.30 ($p < 0.001$) for the drivers aged 55 years and more.

No association can be pointed out either between level of education and drug-driving or between driving frequency and drug-driving.

The drivers who answered that drug-driving is acceptable report 9 times more often that they drive under the influence of drugs compared to drivers that think that this is not acceptable or have no opinion (OR= 8.97; $p < 0.001$).

Affirmations such as 'Drug-driving seriously increases the risk of accidents' or 'Most of my acquaintances/friends think drug-driving is unacceptable' are strongly associated to the likelihood of self-declared drug-driving (OR= 0.16; $p < 0.001$, respectively OR= 0.41; $p < 0.001$). This means that drivers fully in agreement with these statements report less often that they drug-drive.

The odds of drug-driving decrease for drivers who think that the traffic rules concerning drugs should be more strict (OR= 0.41; $p < 0.001$) and increase for drivers who answered that the penalties concerning drugs are too severe (OR= 1.38; $p < 0.001$).

Drivers who think that an important part of the road traffic accidents are caused by drugs report less often that they drug-drive than drivers who think that this percentage is below 6%.

Drivers who have been checked by the police for drugs (at least once in the last 12 months) are more than 3 times more likely to declare that they drug-drive (OR= 3.49; $p < 0.001$). There is also a strong association between the perceived likelihood of being checked for drugs and the likelihood of drug-driving (OR= 2.55; $p < 0.001$).

Table 5: Logistic regression model for drug-driving in the past 12 months (Model 3).

Factors (reference category)	Odds ratio	[95% confidence interval]	
Gender (ref. male)			
Female	0.66***	0.56	0.78
Age group (ref. 18-34)			
35-54	0.68***	0.57	0.82
55+	0.30***	0.24	0.38
Level of education (ref. primary education or no education)			
Secondary education	1.35	0.93	1.95
Bachelor's degree or similar	1.41	0.96	2.08
Master's degree or higher	1.30	0.88	1.93
Frequency of driving a car (ref. a few days a year)			
A few days a month	1.28	0.63	2.62
1-3 days a week	1.10	0.58	2.09
At least 4 days a week	1.38	0.75	2.55
Personal acceptance of drug-driving (ref. unacceptable-neutral: 1-3)			
(Rather) acceptable (4-5)	8.97***	6.49	12.39
Drug-driving seriously increases the risk of an accident (ref. disagree-neutral: 1-3)			
(Rather) agree (4-5)	0.16***	0.13	0.20
Most of my acquaintances/friends think drug-driving is unacceptable (ref. disagree-neutral: 1-3)			
(Rather) agree (4-5)	0.41***	0.34	0.49
The traffic rules concerning drugs should be more strict (ref. no)			
Yes	0.42***	0.34	0.53
The penalties concerning drugs are too severe (ref. no)			
Yes	1.38**	1.12	1.70
How many accidents out of 100 were caused by drugs (ref. 0-5)			
'6-10	0.80*	0.63	1.00
'11-30	0.69**	0.55	0.87
'31+	0.79*	0.63	0.99
On a typical journey, how likely is it that you are checked for drugs (ref. very small chance-neutral 1-3)			
(Very) big chance (4-5)	2.55***	2.06	3.15
How many times were you checked by the police for drugs (ref. never)			
At least once (1-100)	3.49***	2.63	4.63

Notes: (1) European weight B. (2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The countries where the likelihood of self-declared drug-driving is significantly higher than in Austria (reference country) are Greece (OR= 1.91), Spain (OR= 1.87), France (OR= 1.84) and Germany (OR= 1.69). There are no countries where the likelihood of self-declared drug-driving is significantly lower than in Austria. The odds of self-declared drug-driving in Belgium and Finland are low (OR= 0.60 and OR=0.67), but they are statistically not significant in this model.

Table 6: Logistic regression model for drug-driving in the past 12 months (Model 4).

Factors (reference category)	Odds ratio	[95% confidence interval]	
Country (AT)			
BE	0.60	0.32	1.13
CH	1.36	0.83	2.23
DE	1.69*	1.04	2.75
DK	0.87	0.49	1.56
EL	1.91*	1.17	3.14
ES	1.87*	1.16	3.01
FI	0.67	0.34	1.31
FR	1.84*	1.15	2.96
IE	1.44	0.88	2.35
IT	1.11	0.27	4.54
NL	0.77	0.44	1.32
PL	1.10	0.65	1.86
PT	1.09	0.63	1.90
SE	1.32	0.77	2.25
SI	1.30	0.80	2.11
UK	1.42	0.82	2.46

Notes: (1) Individual country weights for countries. (2) * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. (3) Model controlling for all the other mentioned factors in Table 5.

4. Discussion

Driving under the influence of alcohol and/or drugs constitutes an important cause of road casualties. During the last decades, several safety measures were implemented in the European countries in an attempt to reduce road traffic crashes due to impaired driving and especially driving under the influence of alcohol. These efforts have led to some successes: between 2001 and 2013/2014, the number of road deaths attributed to alcohol has decreased more than the total number of road deaths (ETSC, 2015). There are nevertheless notable differences between the countries and little is known about the evolution of the prevalence of driving under the influence of illegal drugs or psychoactive medicines, and even less about the evolution of road traffic crashes due to these substances by country.

In order to estimate the extent to which alcohol, drugs and/or psychoactive medicines are used by drivers, we may refer to two main sources which provide information: surveys conducted among the population such as ESRA or SARTRE4 (which were realised in 2015 and 2010 respectively) on the one hand, and roadside surveys on the other hand.

4.1. Comparison ESRA and SARTRE4

According to the ESRA survey, about 12% of the drivers answered that they have driven with a BAC probably above the legal limit during the last 30 days. If we compare the answers given to the same question in the 13 countries which participated both in ESRA and SARTRE4, the data suggest that drink-driving has decreased overall from 15% in 2010 to 12% in 2015 (most countries in the graph are above the diagonal which represents 'no change', Figure 21). In France, Poland and Sweden, however, the percentage of persons who answered that they might have driven when over the legal limit during the past 30 days was higher in ESRA than in SARTRE4.

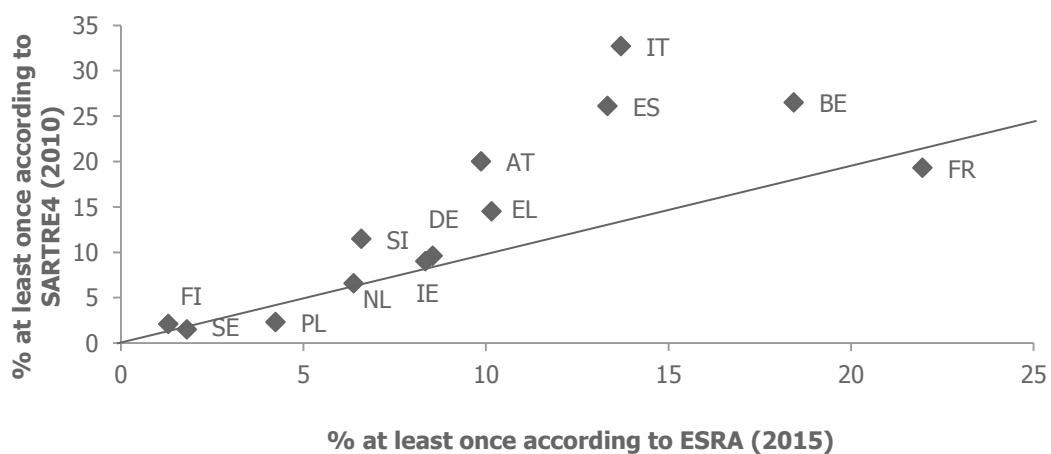


Figure 21: Drink-driving above the legal limit over the last 30 days according to ESRA and SARTRE4.

Note: The diagonal line stands for 'no change' between SARTRE4 (2010) and ESRA (2015), i.e. in a country situated on this line, the percentage of drivers who have answered that they have driven with a BAC probably above the legal limit during the last 30 days was the same in both surveys.

In both projects, Italy, Belgium, Spain and France have a rather high rate of self-reported drink-driving above BAC (at least 13% in ESRA and 19% in SARTRE4) whereas Finland, Sweden and Poland have a low rate (less than 5% in both surveys). The degree of association between the two variables is rather high ($R^2=0.6491$). The most impressive decrease of the self-reported drink-driving rate that had taken place between the two surveys was noted for Italy (decreasing from 33% in 2010 to 14% in 2015).

It is, however, difficult to assess if the observed development is real or if it is induced by the divergent methodologies used in ESRA and SARTRE4. In particular, the respondents in ESRA had to fill in a questionnaire online, whereas the survey in SARTRE4 was carried out by means of face-to-face interviews, except in the Netherlands, which used face-to-face interviews as well as an online survey among car drivers (SARTRE, 2012). According to several studies, socially-desirable responding is more likely to occur in interviewer-administered surveys than with online-surveys (Baker et al., 2010). The study comparing the Dutch results (face to face on the one side and web-panel on the other side) of SARTRE4 also shows that face-to-face respondents tend to be more inclined to give socially desirable answers on traffic behaviours and attitudes than online respondents (Goldenbeld & de Craen, 2013). As it is expected that the prevalence of driving under the influence of alcohol in face-to-face interviews (like SARTRE) is rather underestimated compared to online surveys (like ESRA), it is likely that the number of persons who drink-drive has really declined in the last five years in Europe - and probably even more than the 3 points of percentages (decrease from 15% to 12%) mentioned before.

As there were no questions on driving under the influence of illegal drugs or psychoactive medicines in SARTRE4, i.e. no questions comparable to the ones asked in ESRA, we cannot estimate the change over time of these behaviours.

4.2. Comparison ESRA and DRUID roadside surveys

Other sources which allow interesting comparisons with ESRA results on self-declared behaviours are the roadside surveys which were conducted within the DRUID-Project between January 2007 and July 2009. Among the 13 countries that participated in this project, 9 have also taken part in the ESRA survey. A clear relationship can be observed between the self-reported drink-driving rate and the prevalence of alcohol in these nine countries (Figure 22). In the countries where the self-reported drink-driving rate is high, the prevalence of alcohol in the roadside surveys also tends to be high (Belgium, Italy, Portugal and Spain), and in the countries where the self-declared drink-driving rate is low, the prevalence of alcohol is also low (Finland, Poland and Sweden). Besides, it is interesting to mention that among the countries having conducted a roadside survey within the DRUID project, participation in the study was mandatory only in Italy (Houwing et al., 2011, p. 28).

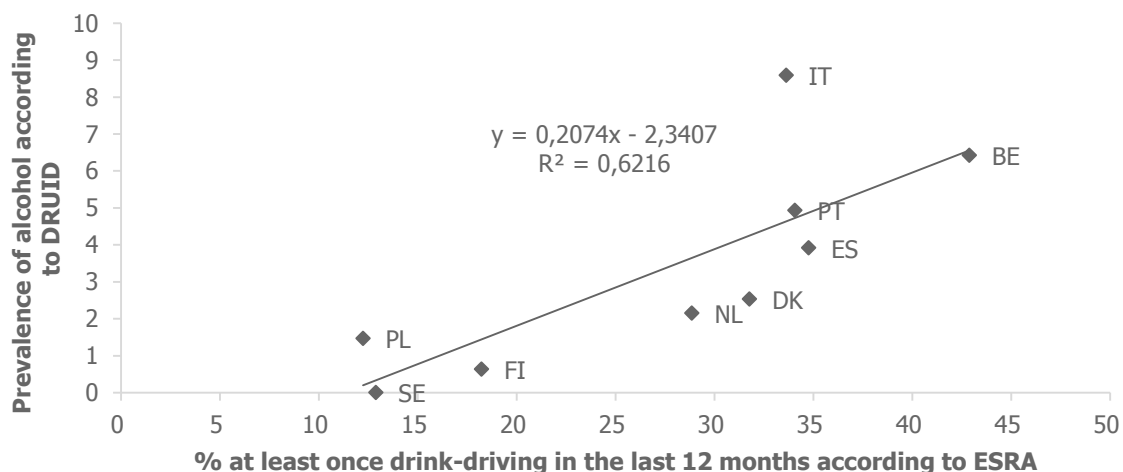


Figure 22: Drink-driving in the past 12 months according to ESRA and prevalence of alcohol according to DRUID.

There is also a positive relationship between the self-reported drug-driving rate and the prevalence of drugs in the roadside survey (Figure 23). This relationship is however strongly influenced by the results in Spain where the self-reported drug-driving rate and the prevalence of illegal drugs are particularly high. At the other extreme, we find two countries where the self-declared drug-driving rate and the prevalence of illegal drugs are particularly low (Finland and Belgium).

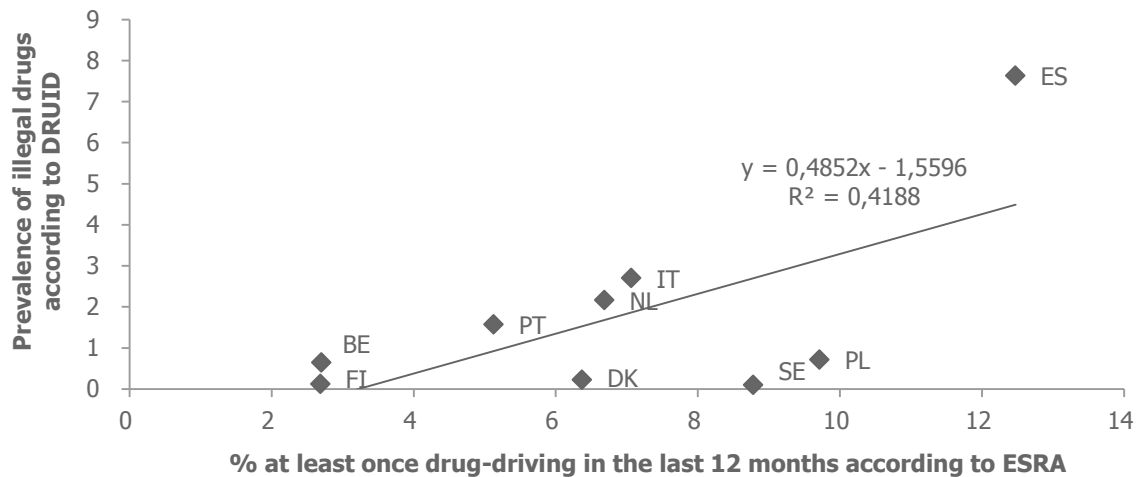


Figure 23: Drug-driving in the past 12 months according to ESRA and prevalence of illegal drugs according to DRUID.

The fact that Belgium belongs to the countries with the highest rate of self-reported drink-driving and at the same time to the countries with the lowest rate of self-reported drug driving is confirmed by the results of the roadside surveys.

No relationship can be observed between the rate of self-reported driving under the influence of medication that may influence the driving ability and the prevalence of medicinal drugs in the different countries according to the roadside surveys (Figure 24). Possible explanations are that on the one hand, many drivers seem to be unaware that they are driving under the influence of an impairing medication, and on the other hand, not all the relevant medicines were considered in the roadside surveys (i. e. medicines against depressions).

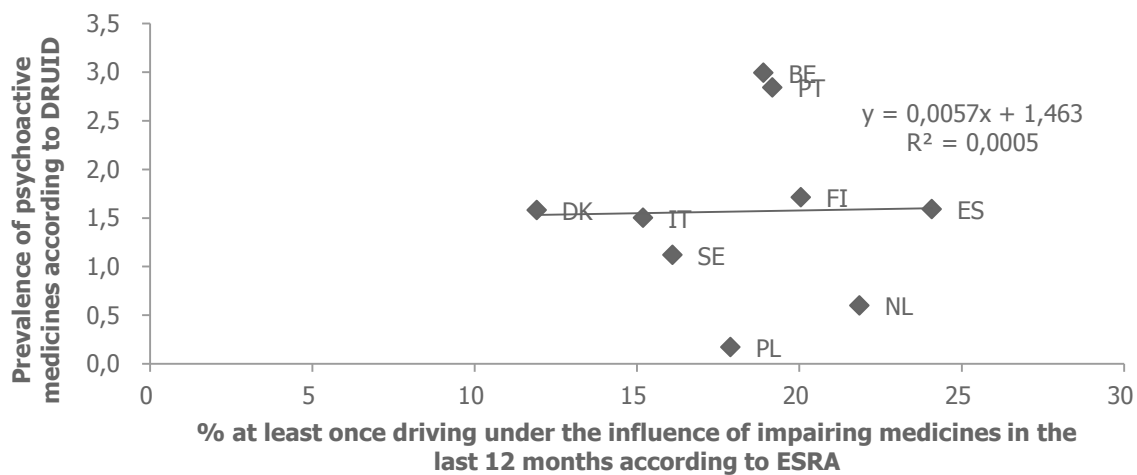


Figure 24: Driving under the influence of impairing medicines according to ESRA and prevalence of psychoactive medicines according to DRUID.

4.3. Further comments on ESRA-Results

We have seen in the chapter 'Further analyses' that impaired driving is associated with several risk factors, like being male, driving frequently, having the opinion that driving under the influence of an impairing substance is an acceptable behaviour, not acknowledging that drink-driving or drug-driving increase the risk of an accident, having the feeling that penalties concerning alcohol or drugs are too

severe or having been checked by the police for alcohol, respectively for drugs at least once in the past 12 months.

The last factor may surprise at first sight. However, such a relationship has already been pointed out in an analysis based on SARTRE4 data concerning alcohol (Meesmann et al., 2015). There are several possible explanations for this association. It might for instance be that the persons who were checked for alcohol are more likely to be underway at a time when the police suspects drink-driving (selective alcohol checks) and that they were indeed driving under the influence of alcohol. This explanation probably also holds true for drug-driving. Interestingly, an analysis on a national level suggested that countries where the likelihood of police checks for alcohol is higher have a lower prevalence of driving under influence of alcohol than countries where alcohol checks are less likely (Meesmann et al., 2015).

Another surprising result is that the persons with a Bachelor's degree or similar are more likely to report that they drink-drive than persons with a lower level of education. This is surprising because alcohol consumption is more frequent in people of lower socio-economic status. Maybe, the explanation lies in the fact that the persons with a lower level of education are even more willing to give a socially desirable answer ('I never drink when I drive') than those with a higher level of education.

The acceptability rate of drug-driving obtained in Finland was also astonishing. It is the country with the highest percentage of respondents indicating that it is acceptable to start driving 1 hour after using drugs (other than medication), while it has one of the lowest acceptability rate for drink-driving. The relatively high acceptability rate of drug-driving in Finland is probably due to the translation of the English word 'drug' into the Finnish word 'Lääke' which means not only drugs but also psychoactive substances like benzodiazepines.

5. Conclusions and recommendations

5.1. Conclusions

Driving under the influence of an impairing substance is considered a main cause of serious traffic accidents worldwide. Generally, drink-driving is perceived as more problematic than drug-driving in Europe. The harmful effects of alcohol have been studied for decades and are well documented, the effects of drugs, however, are more difficult to establish.

In Europe, alcohol is involved in about 20 – 25% of all road deaths (GRSP, 2007; ERSO, 2006). In recent years, however, the number of road fatalities attributed to drink-driving has decreased more than the number of total road fatalities. This favourable development is undoubtedly due to changing public attitudes towards drink-driving and the adoption of legal measures and intensified enforcement.

The prevalence of drugs among drivers injured or killed in motor vehicle crashes in Western countries is not uncommon and estimated in the range of 14% to 17% (OECD and ITF, 2010). The predominant substance is cannabis, followed by benzodiazepines.

There are notable disparities in the behaviours and attitudes towards impaired driving between the different countries and between population groups. Projects like SARTRE and ESRA allow investigation of these disparities.

The newest data available from the ESRA project include results of particular interest, concerning drink-driving as well as drug-driving. For instance:

- While a large part of the population is aware of the inappropriateness of driving after having consumed an impairing substance, a small proportion of persons (about 3.5%) expressed the opinion that driving under the influence of an impairing substance is acceptable or rather acceptable.
- In all countries, but to varying degrees, the respondents estimate that the 'perceived social acceptability' of drink-driving or drug-driving is higher than their 'personal acceptability'.
- The level of acceptability for such behaviours is clearly lower among women than men and among the oldest age group (55 years and older) than the youngest (18-34 years old).
- Drink-driving is the behaviour (referring to the last 12 months) which has been reported by the largest proportion of respondents (31%), followed by driving after having taken medication which may influence the driving ability (22%). Drug-driving was mentioned by 'only' 11% of the respondents.
- In France and Spain, proportions both of self-reported drink-driving and drug-driving are above average. In Finland, on the contrary, both proportions are clearly below average. Belgium belongs to the countries with the highest rate of self-reported drink-driving and at the same time to the countries with the lowest rate of self-reported drug-driving.
- The percentages of persons declaring that they have driven under the influence of an impairing substance are clearly higher among men than women and are also higher among young adults than among the older age categories.
- There is a clear positive relationship between the self-reported drink-driving rate according to ESRA and the prevalence of alcohol according to the roadside surveys of the DRUID-project. In the countries where the self-reported drink-driving rate is high, the prevalence of alcohol in the roadside surveys also tends to be high and vice-versa. There is also a positive relationship between the self-reported drug-driving rate according to ESRA and the prevalence of drugs according to the roadside surveys of the DRUID-project.

The efforts made in the past decades in order to reduce road casualties due to impaired driving must continue. The potential of reducing road traffic accidents due to impaired driving differ however greatly between the countries. Further research is needed for a better understanding of the influence that illegal and medicinal drugs may have on driving ability and to estimate the prevalence in the course of time of drug among the driving population. Recent studies conducted in the USA suggest

that drug-driving is as prevalent as alcohol-driving. Moreover, it is expected that with the ageing population in Europe, there will in the future be an increasing proportion of persons driving under the influence of medicines that may impair the driving ability.

5.2. Recommendations²

5.2.1. Policy recommendations at European level

- Develop common principles and goals for effective and efficient impaired driving strategies in the Member States as part of European Union directives and/or other legislative mechanisms (including standards, controls and rehabilitation measures).
- Define impaired driving related indicators and set targets at European Union level, such as the number of alcohol checks, the number of impaired drivers and the number of traffic casualties attributable to alcohol and drugs.
- Harmonise the regulations of the conditions for license withdrawal due to impaired driving in all European countries.
- Facilitate and support the exchange of best practice in terms of countermeasures for impaired driving across Member States.
- Support the development of tools for physicians and pharmacists for understanding the driving impairment effects of drugs prescribed/delivered.

5.2.2. Policy recommendations at national and regional level

- Establish an impaired driving strategy that is based on a combination of measures, such as legislative initiatives, enforcement practices, awareness campaigns through media (if possible combined with deterrence through enforcement) and further research.
- Raise awareness of the impact of impaired driving on road safety and the need of alcohol and drugs controls.
- Have a nationwide system for random breath testing and random drug testing of drivers.
- Conduct awareness-raising campaigns on the risks of impaired driving and the legal consequences of drink/drug-driving, combined with more frequent police controls, primarily in the countries where a relative large proportion of drivers are drink-driving and/or drug-driving.
- Mandatory installation of ignition interlocks in cars of drivers who have already been convicted for drink-driving.
- Test for alcohol and drugs for all drivers involved in fatal crashes.

5.2.3. Specific recommendations to particular stakeholders

- *[To Non-Governmental Organizations (NGOs)]* Contribute to education and awareness raising campaigns and events against impaired driving.
- *[To physicians and pharmacists]* Always explicitly mention the risks of driving under the influence of the medication they prescribe/deliver.
- *[To pharmaceutical companies]* Improve the information in the patient information leaflet on the potential impairing effect of the drug on driving ability.
- *[To vehicle manufacturers and other companies]* Develop low cost solutions to be incorporated in vehicles that can detect or prevent impaired driving.

² These recommendations reflect the common view of all authors of the ESRA core group.

The initial aim of ESRA was to develop a system for gathering reliable information about people's attitudes towards road safety in a number of European countries. This objective has been achieved and the initial expectations have even been exceeded. The outputs of the ESRA project can become building blocks of a road safety monitoring system in Europe that goes beyond monitoring road traffic casualties and also includes indicators for the underlying causal factors.

The ESRA project has also demonstrated the feasibility and the added value of joint data collection on road safety attitudes and performance by partner organizations in a large number of European countries. The intention is to repeat this initiative on a biennial or triennial basis, retaining a core set of questions in every wave allowing the development of time series of road safety performance indicators. This will become a solid foundation for a joint European (or even global) monitoring system on road safety attitudes and behaviour.

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Appendix - ESRA 2015 Questionnaire

Legend

Dichotomization of the variables has been indicated in green below the question; the reference category is indicated in italics.

Introduction

In the questionnaire, we ask about different traffic situations and your reactions to them. We would like to ask you when responding to **only be guided by your opinion on road safety in [COUNTRY]**, and to not take into account any experience with road safety abroad.

Thank you for your contribution!

Socio-demographic information (1)

Q1) Are you a... male - female

Q2a) In which year were you born?

Q2b) In which month were you born?

Mobility and exposure

Q3) Do you have a car driving licence or permit? yes – no

Q4) How often do you drive a car?

Items: At least 4 days a week – 1 to 3 days a week – A few days a month – A few days a year – Never – Don't know / no response

Q5a) During the last 12 months, which of the following transport modes have you been using in [COUNTRY]...

Items: walking (pedestrian; including jogging, inline skate, skateboard,...) - cycling on an electric bicycle / e-bike / pedelec – cycling (non-electric) – moped as a driver (moped: ≤ 50 cc) – motorcycle as driver (> 50 cc) – hybrid or electrical car as driver – car as driver (non-electrical or hybrid) – car as passenger – (mini)van as a driver – truck/lorry as a driver – public transport – other

Q5b) What were your most frequent modes of transport during the last 12 months? Start with your most frequent mode first, followed by your second most frequent, and so on.

Items: only items marked in Q5a are displayed

Q6) Did you drive a car yourself in the past 6 months? yes – no

Q7) How many kilometres³ would you estimate you have driven a car in the past 6 months? ___ km in total

Q8) Think about all the trips you undertook yesterday, so not only as a car driver but also as a pedestrian or cyclist, as a car passenger,... . How many kilometres have you travelled using each of these transport modes?

Items: only items marked in Q5a are displayed

Road safety in general

Q9) How concerned are you about each of the following issues?

³ In the UK, miles instead of kilometres are used.

You can indicate your answer on a scale from 1 to 4, where 1 is “very concerned” and 4 is “not at all concerned”. The numbers in between can be used to refine your response.

Binary variable: *concerned (1-2) - not concerned (3-4)*

Items: rate of crime – pollution - road accidents - standard of health care - traffic congestion – unemployment

Acceptability of unsafe traffic behaviour

Q10) Where you live, how acceptable would most other people say it is for a driver to....?

You can indicate your answer on a scale from 1 to 5, where 1 is “unacceptable” and 5 is “acceptable”. The numbers in between can be used to refine your response.

Binary variable: *acceptable (4-5) – unacceptable (1-3)*

Items (random)

- drive 20 km per hour over the speed limit on a freeway / motorway
- drive 20 km per hour over the speed limit on a residential street
- drive 20 km per hour over the speed limit in an urban area
- drive 20 km per hour over the speed limit in a school zone
- talk on a hand-held mobile phone while driving
- type text messages or e-mails while driving
- check or update social media (example: Facebook, twitter, etc.) while driving
- drive when they're so sleepy that they have trouble keeping their eyes open
- drive through a light that just turned red, when they could have stopped safely
- drive when they think they may have had too much to drink
- drive 1 hour after using drugs (other than medication)
- drive after using both drugs (other than medication) and alcohol
- drive with incorrect tyre pressure
- drive without insurance
- park their car where it is not allowed
- not wear a seat belt in the back of the car
- not wear a seat belt in the front of the car
- transport children in the car without securing them (child's car seat, seat belt, etc.)

Q11) How acceptable do you, personally, feel it is for a driver to...?

You can indicate your answer on a scale from 1 to 5, where 1 is “unacceptable” and 5 is “acceptable”. The numbers in between can be used to refine your response.

Binary variable: *acceptable (4-5) – unacceptable (1-3)*

Items (random): idem Q10

Support for road safety policy measures

Q12) Do you support each of the following measures?

Answering options: *support (pro) – oppose (contra) – no opinion*

Items (random):

- Obligatory winter tyres for cars, trucks and buses
- A licence system with penalty points for traffic violations that results in the revocation of the licence when a certain number of points are reached
- Drivers who have been caught drunk driving on more than one occasion should be required to install an “interlock” (*) *interlock: technology that won't let the car start if the driver's alcohol level is over the legal limit*
- Zero tolerance for alcohol (0,0‰) for novice drivers (licence obtained less than 2y)
- Zero tolerance for alcohol (0,0‰) for all drivers
- Zero tolerance for using any type of mobile phone while driving (hand-held or hands-free) for all drivers
- Ban on alcohol sales in service / petrol stations along the highways / motorways

- Allowing cyclists to run red lights when permitted by specific road signs
- Having a law requiring all cyclists to wear a helmet
- Obligation for pedestrians and cyclists to wear high-visibility vests when in the dark

Q13) What do you think about the current traffic rules and penalties in your country for each of the following themes?

Answering options: *yes* – no – don't know/no response

Items (fixed order): each time for: speeding – alcohol – drugs – seat belt

- The traffic rules should be more strict
- The traffic rules are not being checked sufficiently
- The penalties are too severe

Self-declared behaviour

Q14) In the past 12 months, as a road user, how often did you...?

You can indicate your answer on a scale from 1 to 5, where 1 is "never" and 5 is "(almost) always". The numbers in between can be used to refine your response. (+ answering options: 'not applicable' and 'no response')

Binary variable: never (1) – at least once (2-5)

Binary variable for seat belt use: (almost) always (5) – at least once not (1-4)

Items (random; only items compatible with the road user types indicated in Q5a are shown):

- wear your seat belt as driver
- wear your seat belt as passenger in the front of the car
- wear your seat belt as passenger in the back of the car
- make children (under 150cm)⁴ travelling with you use appropriate restraint (child seat, cushion)
- make children (over 150cm) travelling with you wear a seat belt
- listen to music through headphones as a pedestrian
- cycle without a helmet
- cycle while listening to music through a headphone
- cycle on the road next to the cycle lane
- not wear a helmet on a moped or motorcycle
- drive faster than the speed limit inside built-up areas
- drive faster than the speed limit outside built-up areas (except motorways/freeways)
- driver faster than the speed limit on motorways/ freeways
- drive after drinking alcohol
- drive after using illegal drugs
- talk on a hand-held mobile phone while driving
- talk on a hands-free mobile phone while driving
- read a text message or email while driving
- send a text message or email while driving
- realise that you were actually too tired to drive
- stop and take a break because you were too tired to drive
- drive while taking medication that carries a warning to say it may influence your driving ability
- drive aggressively
- drive too slow
- drive without respecting a safe distance to the car in front
- not indicating directions when you overtake, turn left or turn right
- drive dangerously
- as a pedestrian, cross the road when a pedestrian light was red
- as a cyclist, cross the road when a traffic light was red
- as a pedestrian, cross streets at places other than at a pedestrian crossing

⁴ Adapted in each country to the correct legislation (e.g. in BE 135cm)

- Q15) Over the last 30 days, how many times did you drive a car, when you may have been over the legal limit for drinking and driving?** (dropdown 0 – 30 + no response)
Binary variable: *never (0) – at least once (1-30)*

Attitudes towards (unsafe) traffic behaviour

- Q16) To what extent do you agree with each of the following statements?**
You can indicate your answer on a scale from 1 to 5, where 1 is “disagree” and 5 is “agree”. The numbers in between can be used to refine your response.
Binary variable: *agree (4-5) – disagree (1-3)*

Items (random)

- Driving under the influence of alcohol seriously increases the risk of an accident
- Most of my acquaintances / friends think driving under the influence of alcohol is unacceptable
- If you drive under the influence of alcohol, it is difficult to react appropriately in a dangerous situation
- Driving under the influence of drugs seriously increases the risk of an accident
- Most of my acquaintances / friends think driving under the influence of drugs is unacceptable
- I know how many drugs I can take and still be safe to drive
- Driving fast is risking your own life, and the lives of others
- I have to drive fast, otherwise I have the impression of losing time
- Driving faster than the speed limit makes it harder to react appropriately in a dangerous situation
- Most of my acquaintances / friends feel one should respect the speed limits
- Speed limits are usually set at acceptable levels
- By increasing speed by 10 km/h, you have a higher risk of being involved in an accident
- It is not necessary to wear a seat belt in the back seat of the car
- I always ask my passengers to wear their seat belt
- The instructions for using the child restraints are unclear
- It is dangerous if children travelling with you do not wear a seat belt or use appropriate restraint
- For short trips, it is not really necessary to use the appropriate child restraint
- My attention to the traffic decreases when talking on a hands free mobile phone while driving
- My attention to the traffic decreases when talking on a hand-held mobile phone while driving
- Almost all car drivers occasionally talk on a hand-held mobile phone while driving
- People talking on a hand-held mobile phone while driving have a higher risk of getting involved in an accident
- When I feel sleepy, I should not drive a car
- Even if I feel sleepy while driving a car, I will continue to drive
- If I feel sleepy while driving, then the risk of being in an accident increases

Subjective safety and risk perception

- Q17) How (un)safe do you feel when using the following transport modes in [country]?**
You can indicate your answer on a scale from 0 to 10, where 0 is “very unsafe” and 10 is “very safe”. The numbers in between can be used to refine your response.
Items (random): only items marked in Q5a are displayed

- Q18) In your opinion, how many road traffic accidents are caused by each of the following factors? Estimate a percentage of accidents for each factor. In other words, how many accidents out of 100 were caused by the following factors. Provide a separate estimate for each factor. Always answer using a figure between 0 and 100 (+ option: don't know) The total sum of all the factors can be more than 100.**
Items (random):

- Tiredness behind the wheel
- Driving under the influence of alcohol
- Driving too close to the vehicle in front
- Driving too fast
- Taking psychoactive medication and driving (*) *psychoactive medications: with side effect on the central nervous system (e.g. sedatives, antidepressants)*
- Taking drugs and driving
- Poorly maintained roads
- Poor road design
- Using a mobile phone to make a call while driving without using a hands-free device
- Congestion / traffic jams
- Bad weather conditions
- Technical defects in vehicles
- Aggressive driving style
- Inattentiveness
- Insufficient knowledge of the rules of the road
- Sending a text message while driving

Behaviour of other road users

Q19) Can you specify, for each of the following behaviours how often you, as a road user, are confronted with these behaviours?

You can indicate your opinion by means of a number from 0 to 10. '0' is "never", and '10' is "very often". The numbers in between can be used to refine your answer.

Items (random):

- aggressive drivers
- distracted drivers (drivers who are busy with something else, e.g. phone, tuning the radio etc)
- road users who don't respect traffic rules
- speeding drivers / drivers who drive too fast
- drivers who drive too slow
- drivers who don't leave a safe distance to the car in front
- careless drivers (e.g., not indicating direction)
- drivers who don't take into account the needs of other road users (e.g., blocking an exit etc)
- drivers committing dangerous driving offences

Q20) Do you think the occurrence of the following behaviour has increased, decreased or not changed compared to 2 years ago?

Answering options: *increased* – no change – decreased

Items (random): idem Q19

Involvement in road crashes

Q21a) In the past three months have you been involved in a road traffic accident as a ...
(if no accident: answering option: 'none of these')

Items (multiple responses possible; only items indicated in Q5a are displayed):

Extra sub-items for

- motorcycling: motorcyclist (50-125 cc) – motorcyclist (>125 cc)
- public transport: on the train – on the subway – on a tram – on the bus

Q21b) Please indicate the severity of the accident:

Answering options (multiple responses possible per transport mode (i.e.; if a respondent had multiple accidents as pedestrian e.g.)): Without material damage or

any injured parties⁵ – With only material damage – With only minor injuries to myself or others – In which someone had to be taken to hospital
Items: each transport mode indicated in Q21a

Enforcement

Q22) On a typical journey, how likely is it that you (as a driver) will be checked by the police for...

You can indicate your answer on a scale from 1 to 5, where 1 is "very small chance" and 5 is "very big chance". The numbers in between can be used to refine your response. (+ option: don't know/no response)

Binary variable: *big chance (4-5) – small chance (1-3)*

Items (random):

- ... alcohol, in other words, being subjected to a Breathalyser test
- ... the use of illegal drugs
- ... seat belt wearing
- ... respecting the speed limits (including checks by police car with a camera and/or flash cameras)

Q23a) In the past 12 months, how many times have you...

Answering options: number + don't know/no response

Items:

- been stopped by the police for a check?
- had to pay a fine for a traffic violation? (except a parking fee)
- been convicted at court for a traffic violation?

Q23b) Was this a fine for

Items (multiple responses possible): violating the speed limits – driving under the influence of alcohol – driving under the influence of drugs (other than medication) – not wearing a seat belt – transporting children in the car without securing them correctly (child's car seat, seat belt, etc.) – talking on a hand-held mobile phone while driving – other reason – no response

Q23c) Was this conviction for

Items (multiple responses possible): idem Q23b

Q24) In the past 12 months, how many times were you checked by the police for alcohol while driving a car (i.e., being subjected to a Breathalyser test)?

Binary variable: *at least once - never*

Q25) In the past 12 months, how many times have you been checked by the police for the use of drugs/medication while driving?

Binary variable: *at least once - never*

Socio-demographic information (2)

Q26) What is the highest qualification or educational certificate you obtained?

Items: None – Primary education – Secondary education – Bachelor's degree or similar – Master's degree or higher – No answer

Q27) What is the postal code of the municipality in which you live?⁶

⁵ This option refers to an 'incident', not a crash → left out in the analysis

⁶ If in a country no postal codes are in use, this question is rephrased as follows: In which county do you live?



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