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Driving under the influence of alcohol and drugs – international comparison of 25 countries

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Abstract

In 2015/2016, the first E-Survey or Road users' Attitudes (ESRA1) was conducted online using representative samples (N=1,000) of the national adult populations in 25 countries across the world. The aim of the survey is to collect comparable national information on road users' attitudes and to provide scientific support for road safety policy. In total, the ESRA1 survey covers almost 27,000 respondents, among which more than 16,000 regular car drivers. The present paper is giving an overview of the results on impaired driving. Drink-driving was reported by 30% of the drivers and drug-driving by 14%. The national results differ substantially, ranging from 11 to 43% for alcohol and from 3 to 24% for drugs. Different factors have been found to be associated with impaired driving, among others 'gender', 'personal acceptability' and 'perceived likelihood of being checked for alcohol, respectively for drugs'. The intention is to repeat this survey on a triennial basis, retaining a core set of questions which will allow the development of time series of road safety performance indicators.

Keywords: drink-driving; drug-driving; self-declared behaviour; opinions; attitudes

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1. Introduction

Driving under the influence of alcohol and/or drugs constitutes a main cause of road accidents worldwide. Alcohol induces a longer reaction time, lower vigilance, defective judgement and visual impairment. The higher the blood alcohol concentration (BAC), the higher the risk of being implicated in a crash. In some countries, like Canada, the United States of America or Portugal, the percentage of road traffic deaths involving alcohol is close to one third (WHO, 2015). The effects of drug-driving are more varied and less well known. Illegal as well as prescription or over-the-counter drugs comprise a large number of different psychoactive substances that may have an influence on the ability to drive. Certain substances affect the alertness or the perception, others stimulate the impulsiveness or slow down reaction times. However, drugs do not necessarily impair driving. In addition, it is difficult to establish the link between concentrations of drugs and driver performance (Berning, Compton & Wochinger, 2015, Watson & Mann, 2016). According to the Organisation for Economic Co-operation and Development (OECD) and the International Transport Forum (ITF), the predominant drug (other than alcohol) among drivers is cannabis, followed by benzodiazepines (OECD and ITF, 2010).

In Europe, the prevalence of drink-driving is higher than that of drug-driving (Houwing et al., 2011; Meesmann et al., 2011). DRUID roadside surveys conducted in 13 different European countries between 2007 and 2009 revealed that 3.9% of the drivers were under the influence of alcohol (3.5% only alcohol and 0.4% in combination with drugs). Furthermore, 1.9% had consumed illegal drugs, 1.4% medicinal drugs, and 0.4% were under the influence of a combination of drugs. In the United States of America, a roadside survey conducted in the years 2013 and 2014 showed that the proportion of drivers under the influence of drugs exceeded that of drivers under the influence of alcohol (Berning, Compton & Wochinger, 2015).

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). In the United States of America, the number of road fatalities due to alcohol declined by 27% between 2005 and 2014 (NHTSA, 2015a). During the same period, the total number of persons killed in road traffic accidents decreased by 25% (NHTSA, 2015b). Nevertheless, the most important reduction in drink-driving was achieved during the previous decades: the proportion of drivers with a BAC of 0.8 g/l involved in road traffic fatalities dropped from 35% in 1982 to 20% in 1997 in the United States of America (Fell et al., 2015).

Changing public attitudes towards drink-driving, the adoption of legal measures and enhanced enforcement have contributed to the decrease. However, this trend is not uniform, and the proportion of persons driving under the influence of an impairing substance greatly differs from country to country, as is pointed out by the E-Survey or Road users' Attitudes (ESRA). The ESRA project allows studies and comparisons of the reported behaviours and the opinions as well as the attitudes of the road users in many countries. This paper presents some of these results, focusing on the questions related to drink-driving and drug-driving.

2. Methodology

The ESRA project is a joint initiative of research organizations and road safety institutes all over the world (25 countries in ESRA1). The aim is to collect comparable national data on road users' opinions, attitudes and behaviours with respect to traffic and road safety and to provide policy makers with data on which they may base their policy measures. A first ESRA survey (ESRA1) was conducted in the following 25 countries: Australia (AU), Austria (AT), Belgium (BE), Canada (CA), Czech Republic (CZ), Denmark (DK), Finland (FI), France (FR), Germany (DE), Greece (EL), Hungary (HU), Ireland (IE), Israel (IL), Italy (IT), the Republic of Korea (KR), Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), United Kingdom (UK) and the United States of America (US).

The ESRA1 survey is a web survey using access panels. Two Belgian market research agencies (iVOX & GfK) organized the fieldwork under the supervision of the Belgian Road Safety Institute. The target population was the adult population (≥18y) of each country. The targeted number of respondents was 1,000 in each country. At least 600 respondents should be regular car drivers (i.e. be in possession of a valid driving license and having driven at least 1,500 km with a car or a van in the last 6 months). If needed, the sample of 1,000 respondents could be extended in order to fulfil both requirements of 600 regular car drivers and a national representative sample. The

fieldwork was carried out in two waves, the first one in June-July 2015, and the second one in November 2016. The market research agencies used quota for age and gender (interlaced) and monitored a geographical distribution. The total sample size consisted of 26,856 road users from 25 countries.

3. Analyses and results

The results in this paper are presented in two parts. Part one comprises descriptive analyses, mainly on self-declared impaired driving as well as on opinions about this behaviour in the different countries. Part two consists of multivariate analyses. Binary logistic regression models were used to investigate the association between several explanatory variables and self-declared impaired driving. In each model, the outcome is a binary variable indicating the absence (0=never) or the presence (1= at least once) of self-declared impaired driving in the past 12 months. The explanatory variables include personal characteristics such as gender, age or level of education, as well as variables like opinions about impaired driving, support of measures, acceptability of impaired driving and risk perception. SPSS, version 24.0, was used for all analyses.

3.1. Descriptive analysis

3.1.1. Self-declared impaired driving

According to ESRA1, a large part of the drivers reported driving under the influence of an impairing substance during the previous 12 months: 30% indicated drink-driving, 26%, driving while taking medication carrying a warning that the driving ability may be affected, and 14%, drug-driving. The percentages of persons declaring that they have driven under the influence of one of the three kinds of substances are clearly higher among men than women. For example, 38% of the men and 'only' 22% 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 are smaller in the case of self-declared driving under the influence of medication that may impair the driving ability than in the case of drink-driving or drug-driving.

Behaviours like drink-driving or drug-driving are clearly more frequently reported by young people (between age 18 and 34) than by the older age groups. The differences are especially notable in the case of drug-driving: 25% of the persons aged between 18 and 34 and 'only' 5% of the persons aged 55 years or older reported that they had driven under the influence of drugs at least once in the past 12 months.

The analysis by country shows that the proportion of self-reported drink-driving in the past 12 months differs widely between the countries (Fig. 1a). The highest proportions were found in Belgium (43%), France (41%) and Switzerland (38%). The countries with the lowest percentages are Hungary and the Czech Republic (both 11%) and Poland (12%).

Regarding self-reported drug-driving, the countries with the lowest percentages are Finland, Belgium and Hungary (each of them 3%) and the ones with the highest percentages are the Republic of Korea (24%) and the United States of America (19%).

All participating countries have a lower percentage of self-declared drug-driving than of self-declared drink-driving (Fig 1a and 1b). For France, the United States of America and Australia, the proportions of self-reported drink-driving as well as of drug-driving are above average. For Hungary, the Czech Republic and Finland, on the contrary, both proportions are clearly below average. For Germany, Canada and the United Kingdom, both proportions are close to 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 around. Belgium is an interesting case: it belongs at the same time to the countries with the highest rate of self-reported drink-driving and to those with the lowest rate of self-reported drug-driving.

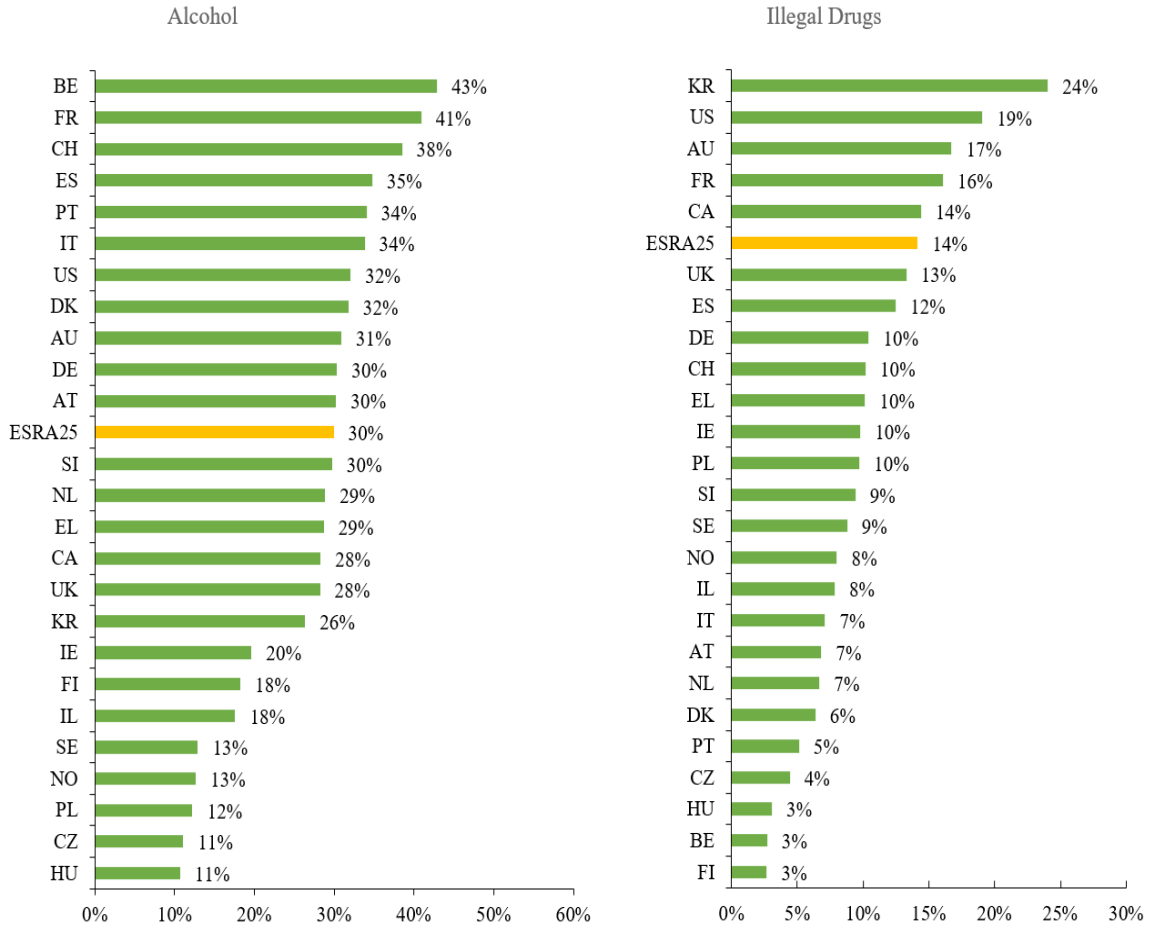

Figure 1: Self-declared behaviour as a road user having driven under the influence of alcohol (a), respectively of illegal drugs (b), by country (% of at least once within the last 12 months); country results based on individual country weights and ESRA25 based on weighted means of all 25 participating countries.

3.1.2. Opinions about impaired driving in the countries

Several questions in the ESRA project provide insight into the opinions about impaired driving. Table 1 presents a selection of the results by country. The proportion of persons who feel that drink-driving is rather acceptable are above the average for the United States of America, Australia, Italy and France. In all of these countries, drink-driving is more frequently reported than the average (see. Fig. 1). The measure ‘zero tolerance for alcohol for all drivers’ has particularly low support in Denmark, Switzerland, Italy, France and Australia. The five countries with the lowest percentage of persons in favour of the measure ‘zero tolerance for alcohol for novice drivers’, namely Denmark, Finland, France, the Republic of Korea and the United States of America have no legislation on that matter. The two countries with the lowest percentage of persons who rather agree with the statement ‘driving under the influence of alcohol seriously increases the risk of an accident’ (France and Spain) belong to the countries with the highest percentages of reported drink-driving.

In the two countries with the lowest percentages of self-declared drink-driving, i.e. Hungary and the Czech Republic, the personal acceptability rate of drink-driving is particularly low (less than 1%) and the measures ‘zero tolerance for alcohol for all drivers’ and ‘zero tolerance for alcohol for novice drivers’ are supported by an above average proportion of drivers. Moreover, the percentage of drivers who answered that they rather agree with the statement ‘Driving under the influence of alcohol seriously increases the risk of an accident’ is particularly high.

The United States of America, Australia and the Republic of Korea are the countries with the highest percentages of self-declared drug-driving. At the same time, these three countries have the highest percentages of persons who indicate that drug-driving is rather acceptable. The five countries with the lowest percentages of persons who rather agree with the statement ‘driving under the influence of drugs seriously increases the risk of an accident’ (France,

the Republic of Korea, the United Kingdom, Spain and Germany) belong to the countries with the highest percentages of self-declared drug-driving.

The two countries with the smallest percentages of self-declared drug-driving are Finland and Belgium. In these two countries, the proportion of drivers who answered that drug-driving is rather acceptable differed largely: only 1.1% in Belgium and 5.9% (above average) in Finland. An explanation for this surprising result is given later, in point 4 'Discussion'. Concerning the statement 'Driving under the influence of drugs seriously increases the risk of an accident', the proportion of drivers who answered that they rather agree was particularly high in both countries.

Table 1: Selected results of ESRA1 related to opinions about impaired driving, by country

Country	Personal acceptability of drink-driving (proportion of 'rather acceptable')	Zero tolerance for alcohol for all drivers (proportion of 'pro')	Zero tolerance for alcohol for novice drivers (proportion of 'pro')	Driving under the influence of alcohol seriously increases the risk of an accident (proportion of 'rather agree')	Personal acceptability of drug-driving (proportion of 'rather acceptable')	Driving under the influence of drug seriously increases the risk of an accident (proportion of 'rather agree')
AU	7.1%	50.9%	83.2%	90.8%	7.6%	89.9%
AT	1.0%	51.5%	85.5%	90.9%	1.3%	88.8%
BE	1.6%	57.6%	82.7%	90.1%	1.1%	93.5%
CA	4.0%	62.2%	83.2%	87.7%	4.6%	86.3%
CZ	0.9%	73.8%	90.5%	93.2%	1.1%	93.5%
DK	0.7%	47.6%	68.2%	92.5%	0.8%	91.4%
FI	0.6%	52.1%	71.3%	95.7%	5.9%	96.0%
FR	5.3%	50.1%	73.1%	82.3%	4.3%	83.9%
DE	2.7%	62.6%	87.2%	85.7%	2.6%	85.9%
EL	3.1%	60.0%	76.7%	90.1%	3.8%	89.9%
HU	0.4%	80.3%	85.3%	93.8%	0.7%	94.2%
IE	2.9%	67.7%	78.7%	86.2%	2.7%	87.2%
IL	3.8%	76.7%	89.1%	87.6%	3.4%	86.8%
IT	5.6%	49.5%	76.0%	95.4%	4.8%	96.9%
KR	4.4%	80.2%	72.9%	87.7%	5.9%	84.2%
NL	2.5%	70.7%	84.0%	87.6%	2.7%	87.7%
NO	1.9%	68.3%	77.0%	93.2%	2.3%	92.4%
PL	3.8%	70.8%	79.9%	88.8%	4.2%	87.7%
PT	1.1%	57.0%	78.1%	92.4%	1.6%	92.1%
SI	2.2%	54.0%	86.9%	86.4%	2.6%	87.6%
ES	2.4%	70.6%	82.0%	84.1%	2.6%	85.8%
SE	2.6%	71.8%	78.9%	87.4%	2.7%	87.9%
CH	1.0%	48.9%	78.9%	88.5%	2.2%	87.2%
UK	3.8%	63.7%	77.2%	86.6%	3.7%	85.3%
US	7.3%	62.7%	75.6%	87.9%	8.2%	87.2%
ESRA25	4.8%	62.7%	78.4%	88.2%	5.2%	87.8%

Note: country results based on individual country weights and ESRA25 based on weighted means of all 25 participating countries.

3.2. Multivariate analyses

In order to investigate the association of self-declared impaired driving with the various predictors, we developed two binary logistic regression models. The outcome variables in these models are the dichotomized variables 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, opinions about impaired driving, support for road safety

measures, risk perception, reported police checks and perceived likelihood of being checked for impaired driving. In these models, we obtained measures of association in terms of odds ratios (OR) and 95% confidence intervals. In case of $p<0.05$, the association is considered as significant.

3.2.1. Factors affecting drink-driving

The first logistic regression model comprises possible factors influencing (self-declared) drink-driving and the results are presented in table 2.

The personal acceptability of drink-driving appears to be the factor which has the greatest impact on the self-declared drink-driving. As a matter of fact, in this first model, the drivers who answered that they personally think that drink-driving is acceptable are 11 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=11.37; $p<0.001$).

Table 2: Binary logistic regression model for drink-driving in the past 12 months

	Dependent variable: self-declared drink-driving (0=never; 1=at least once)
Factors (reference categories)	**Odds ratio** (CI 95%)
Gender (ref. male)	
Female	**0.59***** [0.54 - 0.65]
Age group (ref. 18-34)	
35-54	**1.06** [0.96 - 1.17]
55+	**1.07** [0.96 - 1.19]
Level of education (ref. primary education or no education)	
Secondary education	**1.02** [0.82 - 1.26]
Bachelor's degree or similar	**1.28*** [1.02 - 1.59]
Master's degree or higher	**1.10** [0.88 - 1.38]
Frequency of driving a car (ref. a few days a year)	
A few days a month	**0.93** [0.64 - 1.35]
1-3 days a week	**1.04** [0.75 - 1.44]
At least 4 days a week	**1.28** [0.93 - 1.76]
Personal acceptability of drink-driving (ref. unacceptable-neutral: 1-3)	
(Rather) acceptable (4-5)	**11.37***** [8.9 - 14.53]
Drink-driving seriously increases the risk of an accident (ref. disagree-neutral: 1-3)	
(Rather) agree (4-5)	**0.37***** [0.32 - 0.41]
Most of my friends think drink-driving is unacceptable (ref. disagree-neutral: 1-3)	
(Rather) agree (4-5)	**0.72***** [0.65 - 0.79]
The traffic rules concerning alcohol should be more strict (ref. no)	
Yes	**0.35***** [0.32 - 0.39]
The penalties concerning alcohol are too severe (ref. no)	
Yes	**1.42***** [1.28 - 1.59]
How many accidents out of 100 were caused by alcohol? (ref. 0-5)	
'6-10	**0.78***** [0.69 - 0.89]
'11-30	**0.76***** [0.67 - 0.85]
'31+	**0.69***** [0.61 - 0.78]
Likelihood of being checked for alcohol (ref. very small chance-neutral 1-3)	
(Very) big chance (4-5)	**1.23***** [1.11 - 1.36]
How many times were you checked by the police for alcohol (ref. never)	
At least once (1-100)	**1.53***** [1.37 - 1.71]

Note: Analysis based on weighted means of all 25 participating countries in ESRA1; * p<0.05, ** p<0.01, *** p<0.001

Further predictors related to the attitude or opinion of the drivers show that there is a clear relationship between them and self-declared drink-driving. 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 likely to declare that they drink-drive (OR=0.37; $p<0.001$, respectively OR=0.72; $p<0.001$). The drivers thinking that traffic rules concerning alcohol should be more strict are less likely to report that they drink-drive (OR=0.35; $p<0.001$) and those thinking that the penalties are too severe are more inclined to declare that they drink-drive (OR=1.42; $p<0.001$). The perception of risk is also significantly associated with self-declared drink-driving: drivers who think that an important part of the road traffic accidents is caused by alcohol are less likely to report that they drink-drive than drivers who think that this percentage is below 6%.

Not all the socio-demographic variables in this first model show a statistically significant association. Women are less likely to report that they drink and drive than men (OR=0.59; $p<0.001$). Age does not 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 28% for drivers with a bachelor's degree or similar (OR=1.28; $p<0.05$). It is the only statistically significant result concerning the level of education. The likelihood of drink-driving seems to increase with the driving frequency, but the results are statistically not significant (all OR concerning the driving frequency are near 1).

3.2.2. Factors affecting drug-driving

The second logistic regression model includes possible factors influencing (self-declared) drug-driving (table 3).

As was the case with alcohol-driving, the predictor with the highest impact on self-declared drug-driving is the personal acceptability of this behaviour. Drivers who personally think that drug-driving is acceptable are 12 times more likely to report drug-driving than drivers who think that this is not acceptable or who have no opinion (OR=12.18; $p<0.001$).

The other predictors related to attitudes or opinions used in this model are also strongly associated with the likelihood of self-declared drug-driving. Drivers in agreement with statements such as 'Drug-driving seriously increases the risk of accidents' or 'Most of my acquaintances/friends think drug-driving is unacceptable' report less often that they drug-drive than drivers who don't agree with these affirmations (OR=0.26; $p<0.001$, respectively OR=0.49; $p<0.001$).

The odds of drug-driving decrease for drivers who think that the traffic rules concerning drugs should be more strict (OR=0.48; $p<0.001$) and increase for drivers who answered that the penalties concerning drugs are too severe (OR=2.11; $p<0.001$). 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%.

The perceived likelihood of being checked for drugs is strongly associated with the likelihood of reporting drug-driving (OR=2.67; $p<0.001$) and drivers who were checked by the police for drugs (at least once in the last 12 months) are more than 2 times more likely to declare that they drug-drive (OR=2.73; $p<0.001$).

Women are less likely than men to report that they drug-drive (OR= 0.65; $p<0.001$). There is a strong association between age and drug-driving. The older the drivers, the more likely they report no drug-driving. Compared to drivers below 35 years, the odds are 0.73 ($p<0.001$) for the 35 to 54-year-old drivers and 0.31 ($p<0.001$) for the drivers aged 55 years and older. Compared to drivers with only a primary or even lesser education, the drivers with a higher education are more likely to report that they drug-drive: odds of 1.62 ($p<0.05$) for the drivers with a secondary education, 2.04 ($p<0.001$) for drivers with a bachelor's degree or similar and 1.85 ($p<0.01$) for drivers with a master's degree or higher.

There is no significant association between driving frequency and drug-driving, with all OR close to 1.

Table 3: Binary logistic regression model for drug-driving in the past 12 months

	Dependent variable: self-declared drug-driving (0=never; 1=at least once)
Factors (reference categories)	**Odds ratio** (CI 95%)
Gender (ref. male)	
Female	**0.65***** [0.57 - 0.73]
Age group (ref. 18-34)	
35-54	**0.73***** [0.64 - 0.83]
55+	**0.31***** [0.26 - 0.37]
Level of education (ref. primary education or no education)	
Secondary education	**1.62*** [1.10 - 2.39]
Bachelor's degree or similar	**2.04***** [1.37 - 3.01]
Master's degree or higher	**1.85**** [1.24 - 2.75]
Frequency of driving a car (ref. a few days a year)	
A few days a month	**1.08** [0.62 - 1.87]
1-3 days a week	**0.76** [0.47 - 1.25]
At least 4 days a week	**0.95** [0.59 - 1.53]
Personal acceptability of drug-driving (ref. unacceptable-neutral: 1-3)	
(Rather) acceptable (4-5)	**12.18***** [9.76 - 15.22]
Drug-driving seriously increases the risk of an accident (ref. disagree-neutral: 1-3)	
(Rather) agree (4-5)	**0.26***** [0.22 - 0.30]
Most of my friends think drug-driving is unacceptable (ref. disagree-neutral: 1-3)	
(Rather) agree (4-5)	**0.49***** [0.43 - 0.57]
The traffic rules concerning drugs should be more strict (ref. no)	
Yes	**0.48***** [0.41 - 0.56]
The penalties concerning drugs are too severe (ref. no)	
Yes	**2.11***** [1.83 - 2.43]
How many accidents out of 100 were caused by drugs? (ref. 0-5)	
'6-10	**0.72***** [0.61 - 0.85]
'11-30	**0.57***** [0.48 - 0.68]
'31+	**0.64***** [0.54 - 0.76]
Likelihood of being checked for drugs (ref. very small chance-neutral 1-3)	
(Very) big chance (4-5)	**2.67***** [2.30 - 3.10]
How many times were you checked by the police for drugs (ref. never)	
At least once (1-100)	**2.73***** [2.23 - 3.35]

Note: Analysis based on weighted means of all 25 participating countries in ESRA1; * p<0.05, ** p<0.01, *** p<0.001

4. Discussion

Driving under the influence of alcohol and/or drugs constitutes an important cause of road casualties. In order to reduce road traffic crashes due to impaired driving, several safety measures were implemented in the different countries during the last decades. Thanks to these measures, the decrease in the number of road deaths due to alcohol has been stronger than the decrease of the total number of road deaths. 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 proportion of drivers that are under the influence of impairing substances while driving, it is possible to refer to surveys such as ESRA conducted among the general population. The answers obtained in such surveys may be biased by social desirability and faulty recall, but they still provide valuable insight into the extent of impaired driving and reveal the characteristics of the drivers who report doing so, as pointed out by

OECD and ITF (2010). Roadside surveys in which drivers are randomly selected by the police and requested to provide fluid samples permit a different approach. As the analysis of these samples produce objective information on the type(s) and level(s) of the substances consumed, this approach can potentially provide the most valid data. The main problem consists in the fact that some drivers refuse to provide a sample, and that these drivers are most likely more often under the influence of impairing substances than the ones who participate, so that the proportion of drivers who are drink-driving and/or drug-driving may be underestimated (OECD and ITF, 2010).

In Europe, roadside surveys were conducted within the DRUID-project between January 2007 and July 2009 (Houwing et al., 2011). A comparison between the results of ESRA1 and those of the roadside surveys within the DRUID-project has been realised (Achermann Stürmer, 2015). A clear relationship was found between the self-reported drink-driving rate and the prevalence of alcohol in the nine countries that participated in the DRUID project as well as in the ESRA1 survey (R^2=0.62). 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 and the prevalence of drugs in the roadside surveys. 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 identified two countries where the self-declared drug-driving rate and the prevalence of illegal drugs are particularly low, i. e. Finland and Belgium (Achermann Stürmer, 2015). 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.

According to the results of ESRA1, in the countries where the acceptability rates of drink-driving are low, the acceptability rates of drug-driving are also low, and vice-versa. Finland is an exception: it belongs to the countries with the lowest acceptability rates of drink-driving and at the same time to the countries with the highest acceptability rates of drug-driving. This relatively high acceptability rate is probably due to the translation of the English word ‘drug’ into the Finnish word ‘Lääke’, which stands not only for drugs, but also for psychoactive substances like benzodiazepines.

Impaired driving is associated with several factors, especially with having the opinion that driving under the influence of an impairing substance is an acceptable behaviour. Further factors are for example not acknowledging that impaired driving increases the risk of an accident or having been checked by the police for alcohol or drugs at least once in the past 12 months.

The last factor may surprise at first sight. However, such a relationship has already been described in an analysis based on data of SARTRE 4 (Social Attitudes to Road Traffic Risk in Europe) 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, the results 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. This might be explained through the general deterring effect of alcohol controls (Meesmann et al., 2015).

5. Conclusion

The results of the ESRA1 survey give valuable insight into public perception of road safety and allow the comparison of attitudes and self-declared (un)safe traffic behaviours by country. The proportion of drivers reporting impaired driving differs greatly from one country to another, ranging from 11 to 43% for alcohol and from 3 to 24% for drugs. In the countries with the lowest percentages of self-declared drink-driving, the acceptability rate of this behaviour is also particularly low. Moreover, the proportion of drivers rather in favour of measures like ‘zero tolerance for alcohol for all drivers’ and ‘zero tolerance for alcohol for novice drivers’ is above average. On the other side, in the countries with a high percentage of self-declared drink-driving, the personal acceptability rate is rather high and the support of the measures concerning alcohol mostly below average. The five countries with the highest acceptability rates of drug-driving are also the countries with the highest self-declared drug-driving. In most of them, the proportion of drivers denying the risks of drug-driving is higher than the average. Public awareness campaigns on drink-driving or drug-driving might favourably influence the opinions

and attitudes of the drivers. Such campaigns are especially indicated for countries where the acceptability rates of drink-driving and/or drug-driving are above average. Further measures like impaired driving legislation (i. e. the generalisation in all countries of zero tolerance for alcohol for the novice drivers) and enforcement (i. e. random breath testing, police training in order to enable them to recognise signs and symptoms of drug use) are to be considered. The evolutions in the opinions and attitudes as well as in self-declared impaired driving should be monitored. The intention is to repeat ESRA on a triennial basis, retaining a core set of questions which will allow the development of time series of road safety performance indicators. These in turn might provide a basis for policy measures designed to reduce the number of accidents due to impaired driving.

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