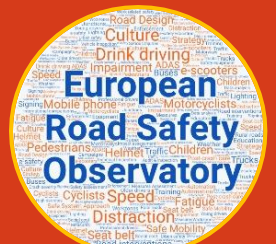




European
Commission



Safety Performance Indicator (SPI) **Alcohol and Drugs**



The purpose of the Safety Performance Indicator reports is to provide an overview of recent statistics on road safety performance indicators that are linked to traffic safety.

Contract:	This document has been prepared in the framework of the EC Service Contract MOVE/C2/SER/2022-55/SI2.888215 with National Technical University of Athens (NTUA), SWOV Institute for Road Safety Research and Kuratorium für Verkehrssicherheit (KFV).
Version:	October 4, 2023
Authors:	Maartje de Goede & Agnieszka Stelling (SWOV)
Internal Review:	Katerina Folla (NTUA)
Referencing:	Reproduction of this document is allowed with due acknowledgement. Please refer to the document as follows: <i>European Commission (2023). Safety Performance Indicator report – Alcohol and drugs. European Road Safety Observatory. Brussels, European Commission, Directorate General for Transport.</i>

Disclaimer

Whilst every effort has been made to ensure that the matter presented in this document is relevant, accurate and up to date, the (sub)contractors cannot accept any liability for any error or omission, or reliance on part or all of the content in another context.

Any information and views set out in this document are those of the author(s) and do not necessarily reflect the official opinion of the European Commission. The Commission does not guarantee the accuracy of the data included in this study. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use that may be made of the information contained therein.

© European Commission, 2023. The EU does not own the copyright in relation to the following elements:

- Cover page photos, © www.shutterstock.com

Contents

1. Summary	4
2. Introduction	5
2.1 Safety Performance Indicators (SPIs)	5
2.2 Aim of the ERSO SPI reports	5
2.3 SPI Alcohol and Drugs.....	6
2.4 Overview of Data Sources.....	6
2.4.1 ESRA	6
2.4.2 Baseline	7
3. The occurrence of driving under the influence in Europe	8
3.1 Driving under the influence of alcohol.....	8
3.1.1 Roadside measurements (Baseline)	8
3.1.2 Survey data (ESRA)	9
3.2 Driving under the influence of drugs	11
3.2.1 Survey data (ESRA)	11
4. Consequences of alcohol in traffic.....	12
5. Legislation and enforcement.....	14
5.1 Legislation.....	14
5.1.1 Alcohol.....	14
5.1.2 Drugs.....	15
5.2 Enforcement.....	15
5.2.1 Alcohol.....	15
5.2.2 Drugs.....	16
6. Limitations.....	16
7. References.....	17

1. Summary

Driving under the influence of alcohol and/or drugs is one of the main causes of road fatalities. This ERSO report *SPI Alcohol & Drugs* provides an overview of available data on driving under the influence of alcohol and drugs for EU member states and EFTA countries. Moreover, it provides information on their relationship with alcohol and drug regulations and enforcement.

In general, data on driving under the influence of alcohol/drugs are scarce and large differences exist in data collection methods. For this report data from the ESRA project (survey data) and the Baseline project (roadside measurements) are used.

Based on these data sources the following can be concluded for the SPIs alcohol & drugs:

1. For the seven Member States who carried out police-assisted random breath testing during roadside alcohol checks, the percentage of drivers driving within the legal limit for blood alcohol content (BAC) ranges from 0.1% and 2.7%. It is nevertheless estimated that within the EU this equates to millions of drivers driving potentially billions of kilometres under the influence of alcohol.
2. Drivers who comply with the legal BAC limit are generally observed during weekday daytime, and drivers whose BAC levels are higher than the legal limit are more common during weekend night-time.
3. Males are more likely to drive under the influence of alcohol or drugs than females.
4. A higher share of drivers under the influence have used alcohol compared to drugs, notwithstanding the difficulties of measuring drug use.
5. There is more variation among countries for the proportion of people driving under the influence of alcohol than for people driving under the influence of drugs.
6. The countries that have the lowest self-reported scores on driving under the influence of alcohol (<10%) (Bulgaria, Czech Republic, Finland, Hungary, The Netherlands, and Sweden) also have relatively low mortality rates (≤ 9.1 alcohol related deaths per million inhabitants)
7. The countries which have the lowest BAC limits (<0.5 g/L) are among the countries that have the lowest drunk-driving self-reported scores: Czech Republic (0.0 g/L), Hungary (0.0 g/L), Norway (0.2 g/L), Poland (0.2 g/L) and Sweden (0.2 g/L).

2. Introduction

2.1 Safety Performance Indicators (SPIs)

The most common indicators used for evaluating traffic safety are the number of traffic crashes, or the number of fatal/serious injuries due to a traffic crash. However, these numbers insufficiently reflect the actual problem and the underlying factors that lead to the crash. Moreover, crashes are relatively rare events, and are under-registered. Therefore, alternative proactive approaches have been adopted to evaluate safety. For example, events/behaviors/attitudes which have a recognized relationship with crash frequency, and that are sensitive to policy measures, can be used as a proactive approach to evaluate safety. Since the 90's these so-called safety performance indicators (SPIs) are increasingly used to develop traffic safety policies.

The following *SPIs* are detailed in ERSO SPI reports:

- Speeding
- Distraction
- Fatigue
- Driving under the influence of alcohol and drugs
- Protection – the use of seat belts, helmets, and child restraint systems
- Support for policy measures
- Subjective safety/risk perception

Speeding, distracting driving, and using protective equipment are behaviours which can be observed, through roadside observations or measurements. For the SPI driving under the influence of alcohol and/or drugs, police-assisted random breath testing during roadside alcohol checks provide potentially the best data.

On the other hand, fatigued driving, support for policy measures or subjective risk perception are (practically) not observable. For those ones well-designed questionnaire surveys may provide valuable data on road safety performance.

2.2 Aim of the ERSO SPI reports

The ERSO SPI reports provide an overview of the available data in the EU Member States as well as EFTA countries for each listed SPI. The reports aim to give insight into the differences between (groups) of countries regarding their road user behaviour or attitude. Where feasible, the reports look at whether SPIs are related to existing policies and regulations, providing possible effective interventions to increase

safe behaviour, or discourage unsafe behaviour. In addition to identifying relevant interventions, SPI data can be used to evaluate these measures and interventions.

For most SPI subjects an ERSO thematic report exists as well. In these reports background information of risks, effects and causes are provided (see: [Thematic reports \(europa.eu\)](https://europa.eu)).

2.3 SPI Alcohol and Drugs

This report is on the road safety effects of drivers' alcohol and drug use. Both substances will be treated separately in this report.

The **SPI Alcohol** is defined as:

"Percentage of drivers driving within the legal limit for blood alcohol content (BAC)".

The **SPI Drugs** is defined as:

"Percentage of drivers driving with no blood drug content".

The term drugs in this document refers to illicit drugs e.g., globally prohibited drugs such as cocaine, heroin, methamphetamines and cannabis.

SPIs are defined 'positively', that is the percentages of drivers that perform the behaviour that is considered safe. However, presenting the percentages of unsafe behaviour conveys a better picture of the differences between the countries and time periods. Therefore, percentages of driving under the influence of alcohol and drugs (DUI) are presented in this report. See the Thematic Report by Goldenbeld (2023) for background information on the subject of DUI.

2.4 Overview of Data Sources

Data on DUI presented in this report are based on two data sources: ESRA (E-Survey of Road users' Attitudes), and the European Baseline project.

2.4.1 ESRA

Within ESRA (www.esranet.eu) a joint collective of road safety institutes, research centres, public services, and private sponsors collect and analyse comparable data on road safety performance, in particular on road safety culture and behaviour of road users worldwide.

ESRA data are collected by means of online panel surveys, providing a representative sample of the national adult population in each

participating country (at least $N = 1,000$ per country). The extensive survey is conducted in 68 participating countries, covering 6 continents. Data on driving under the influence of alcohol and drugs are collected across 24 European countries, 22 of which are among the European Union and/or EFTA countries. In this report the ESRA data for these 22 European countries are presented, i.e., Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, and Switzerland. The data in this report are restricted to car-drivers. For details on the methodology of the data collection and analysis see: Achermann Stürmer, Meesmann, and Berbatovci (2019); Meesmann, Torfs, Wardenier, and Van den Berghe (2023).

2.4.2 Baseline

The EU has made funding available to support the EU Member States in the collection and analysis of the mentioned SPIs. Eighteen Member States participated in a common project, called Baseline (see: [Baseline \(vias.be\)](https://vias.be)), with the aim to support Member State authorities to collect and report SPI data in a harmonized way, helping to gain more insight in the underlying factors of traffic safety. Based on the findings, future European goals and targets can be set. Baseline has ended in 2023. Its successor is the Trendline project (trendlineproject.eu), which started in 2022 and will continue until 2025.

The Baseline data on driving a passenger car under the influence of alcohol for passenger car drivers was collected through one of the following methods (Yannis & Folla, 2022):

- Random breath testing, i.e., roadside breath testing of randomly selected drivers.
- Breath testing results from enforcement actions (not random).
- Self-reported behaviour through anonymous surveys.

In total, fifteen countries collected data for the SPI Alcohol in the Baseline project: Austria, Belgium, Bulgaria, Czechia, Finland, Germany, Greece, Ireland, Latvia, Luxembourg, The Netherlands, Poland, Portugal, Spain, and Sweden. Eight countries collected data through roadside measurements (breath testing) by the police. One country used (non-randomly collected) breath testing results from enforcement actions following road crashes. Another six countries collected data on self-reported data on driving under the influence of alcohol.

From the Baseline method, only the data were used from countries where random roadside measurements were collected. The data of those countries, excluding The Netherlands (since it did not meet the

requirements of the Baseline project), are presented in this report. For details on the methodology of the data collection and analysis (see Yannis and Folla (2022)).

3. The occurrence of driving under the influence in Europe

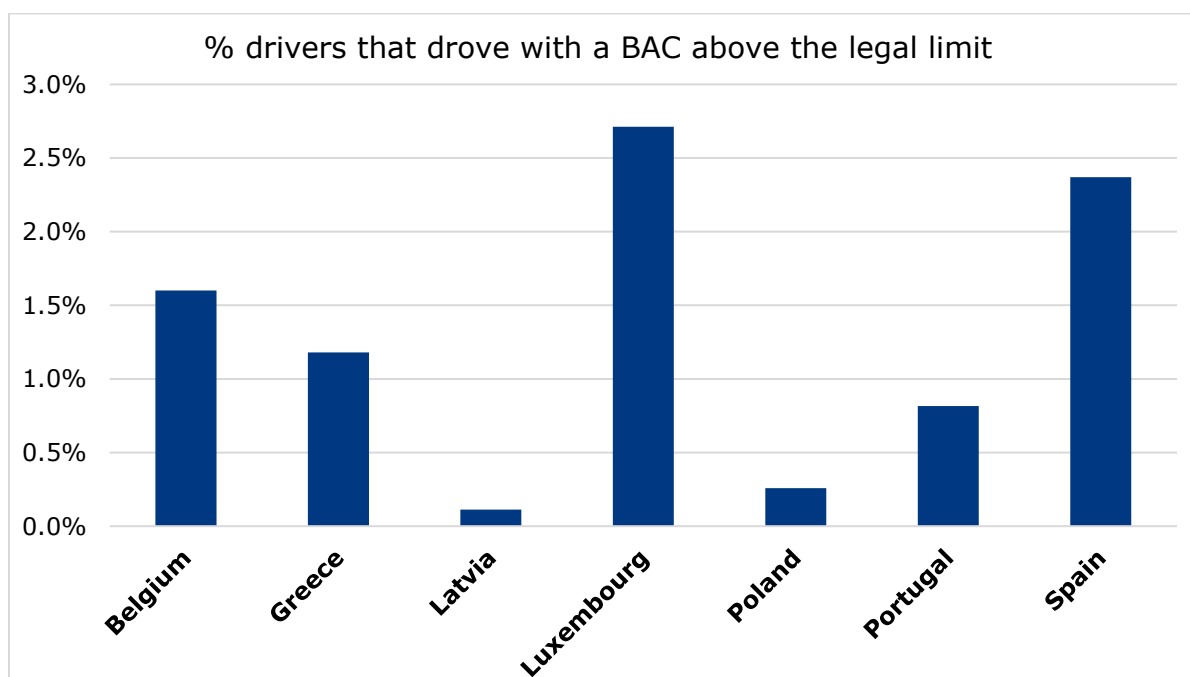
3.1 Driving under the influence of alcohol

Both the ESRA project and the Baseline project collected data on driving under the influence of alcohol. The results in this section are presented per data source.

3.1.1 Roadside measurements (Baseline)

Figure 1 shows the percentage of drivers driving above the legal Blood Alcohol Content (BAC) limit. This main indicator is based on the collected results at four time periods (weekday daytime, weekday night-time, weekend daytime, and weekend night-time), and three road types (urban roads, rural roads, and motorways). For disaggregated results per time period, see 3.1.1.1. Note that the 'driving above the legal limit' is dependent on the acceptable BAC level in the different countries. See Table 2 for an overview of legal BAC limits.

Figure 1. Percentage of drivers driving with a BAC above the national legal limit (Source: <https://www.baseline.vias.be>)

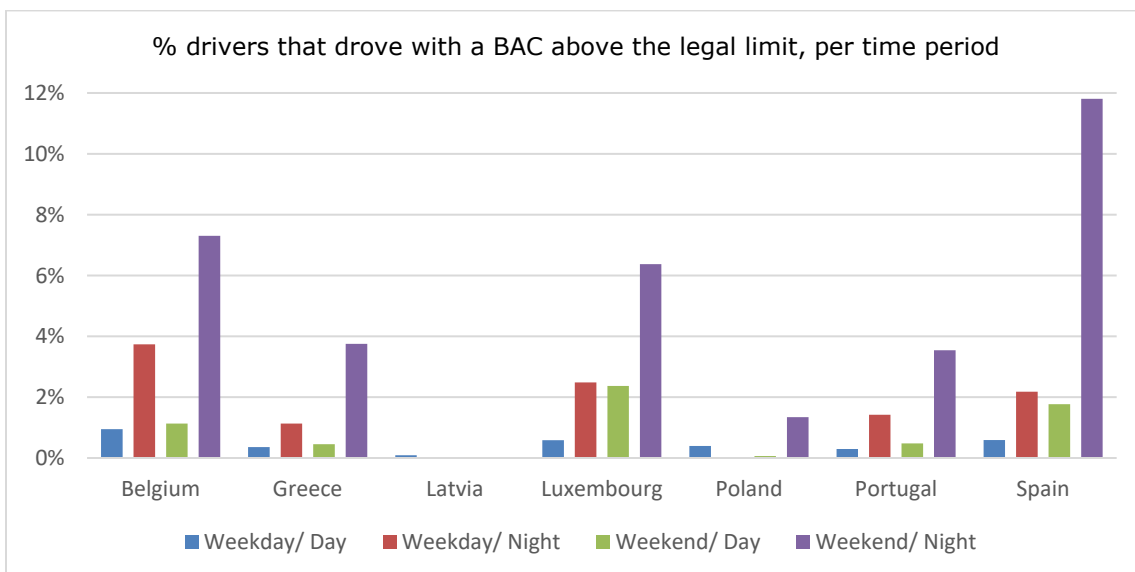


The lowest percentages of illegal BAC levels were observed in Poland (0.3%) and Latvia (0.1%), the highest were recorded in Luxembourg (2.7%) and Spain (2.3%). It is important to bear in mind that while compliance appears relatively high (violation percentages are only between 0.1% and 2.7%), it is nevertheless estimated that within the EU this equates to millions of drivers driving potentially billions of kilometres under the influence of alcohol.

3.1.1.1 Differences in time period

Figure 2 shows the percentage of drivers that indicated having driven above the legal BAC limit, per time period. Four time periods were included: weekday daytime, weekday night-time, weekend daytime and weekend night-time. The highest percentages of drivers driving above the legal BAC limit were generally observed during weekend night-time and the lowest were at weekday daytime. For weekdays and weekends, the percentages are generally higher during night-time than during daytime.

Figure 2. Percentage of drivers driving above the legal limit for blood alcohol concentration (BAC). (Source: <https://www.baseline.vias.be>)



3.1.2 Survey data (ESRA)

Within the ESRA survey the following two questions were asked regarding driving under the influence of alcohol:

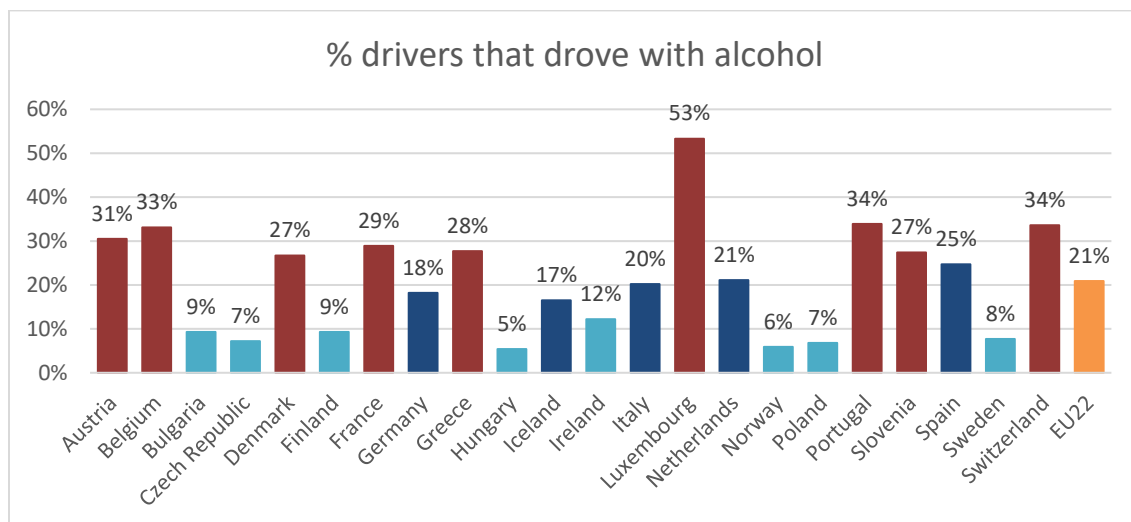
Over the last 30 days how often did you as a car driver:

- *drive after drinking alcohol?*
- *drive when you may have been over the legal limit of drinking and driving?*

The answer options ranged from 1 'never' to 5 '(almost) always'. Note that the answer on the second question is dependent on the legal BAC level in force in the different countries (see Table 2). The data represent the percentage of car drivers that answered values 2 to 5 (at least once) on the above questions.

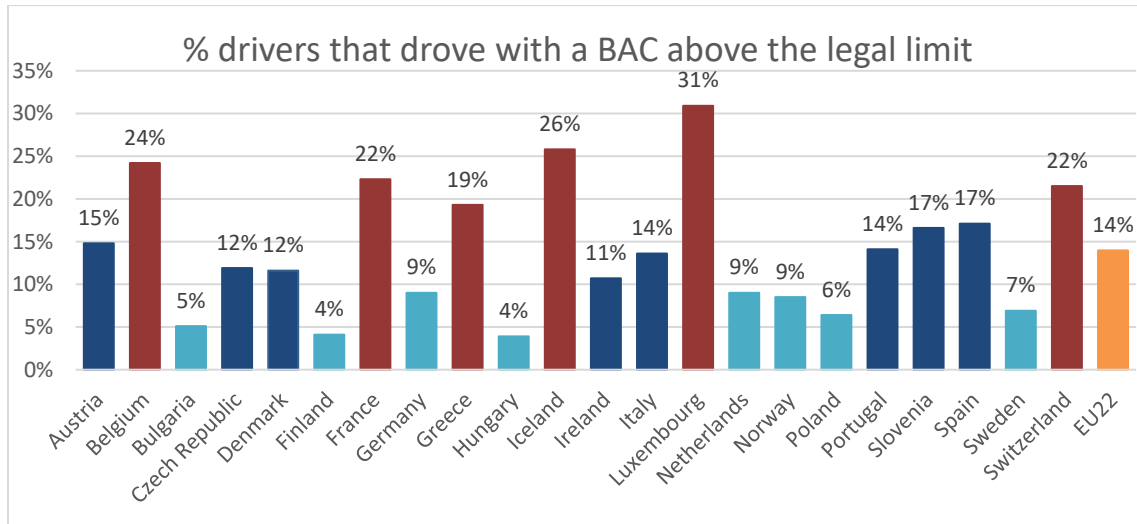
Figure 3 shows the percentages of drivers that indicated having driven after drinking alcohol. On average, 21% of European drivers reported drinking before driving. The scores per country varied between 53% (Luxemburg) and 5% (Hungary). Of the 22 countries, 9 countries were more than 5% below the EU average (bars in light blue), and 13 countries scored more than 5% above the EU average (bars indicated in red).

Figure 3. Percentage of drivers that indicated having driven after drinking alcohol during the past 30 days.
(Source: <https://www.esranet.eu/>)



Compared to driving after drinking alcohol (first question), the shares of drivers driving with a BAC above the national legal limit were lower, as one might expect: on average 14% of drivers reported driving beyond their national limit (see Figure 4). The highest prevalence was again found in Luxemburg (31%) and the lowest again in Hungary (4%). Of the 22 countries, 6 countries were more than 5% below the EU average (bars in light blue), and 9 out of the 22 countries were more than 5% above the EU average (bars in red).

Figure 4. Percentage of drivers that indicated having driven after drinking alcohol above the national BAC limit during the past 30 days. (Source: <https://www.esranet.eu/>)



3.1.2.1 Gender differences

With regards to gender, lower shares of females (13%) were reported driving after drinking alcohol compared to 37% of males. This was also the case for driving outside the legal BAC limit: 9% of females, vs 19% of males.

3.2 Driving under the influence of drugs

In the Baseline project (roadside measurements), no data on driving under the influence of drugs was collected. Therefore, in this section only the ESRA data (survey data) are presented.

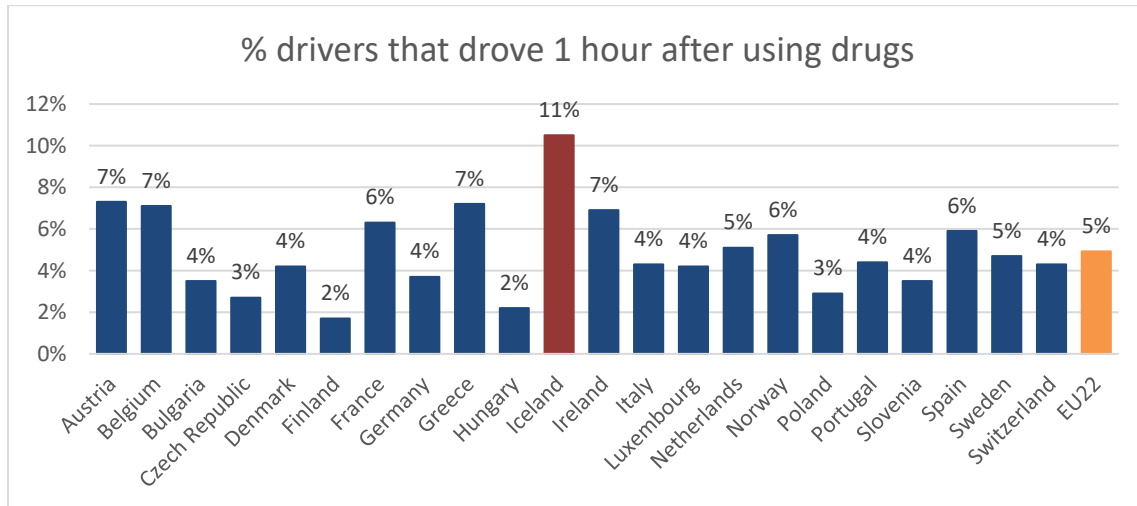
3.2.1 Survey data (ESRA)

Within the ESRA survey the following question was asked regarding driving under the influence of drugs:

- *Over the last 30 days how often did you as a car driver drive 1 hour after having used drugs (other than medicine)?*

On average 5% of European drivers reported driving after taking drugs (see Figure 5). The highest proportion was reported in Iceland (10.5%) and the lowest in Finland (1.7%). Compared to the alcohol data, scores on driving after drug use are much more homogeneous across Europe.

Figure 5 Percentage of drivers that indicated having driven 1 hour after taking drugs over the past 30 days. Source: <https://www.esranet.eu/>



3.2.1.1 Gender differences

A lower percentage of females (13%) than males (27%) reported driving after having used drugs.

4. Consequences of alcohol in traffic

No recent data exists on drug related fatalities. Therefore, only the consequences of alcohol are discussed in this section.

For countries gathering survey data (ESRA) on driving under the influence of alcohol, the number of alcohol related fatalities per million inhabitants was calculated based on available data for 2019 (ETSC, 2022). The ratios are shown in Table 1. The data on alcohol related fatalities were not available for three countries, therefore the ratios are only presented for 19 countries.

Table 1. *The share of alcohol related deaths (ETSC, 2022) and the self-reported percentage of car drivers that reported driving after drinking alcohol.*

Country	Alcohol related deaths per million inhabitants	% of car drivers that drove with alcohol
Austria	3.6	30.5%
Belgium	3.3	33.1%
Bulgaria	0.9	9.3%
Czech Republic	5.6	7.2%
Denmark	6.5	26.7%
Finland	9.1	9.3%
France	16.2	28.9%
Germany	2.7	18.2%
Greece	3.2	27.7%
Hungary	6.4	5.4%
Luxembourg	16.3	21.1%
Netherlands	0.9	5.9%
Norway	3.8	6.8%
Poland	8.6	33.9%
Portugal	18.6	21.1%
Slovenia	15.9	27.4%
Spain	6.3	24.7%
Sweden	3.6	7.7%
Switzerland	2.9	33.6%

The countries that have the lowest self-reported scores on driving under the influence of alcohol (<10%) (Bulgaria, Czech Republic, Finland, Hungary, The Netherlands, and Sweden) also have relatively low mortality rates (≤ 9.1 alcohol related deaths per million inhabitants) (see Table 1). However, a low mortality is not always related to a low score on driving under the influence of alcohol.

5. Legislation and enforcement

5.1 Legislation

5.1.1 Alcohol

One element of legal frameworks to discourage driving under the influence of alcohol is the legal maximum Blood Alcohol Concentration (BAC), and sanctions for non-compliance with this limit. Differences in the legal BAC limit when driving are limited between European countries, with a maximum of 0.8 g/L (Table 2). Therefore, it is not possible to statistically relate BAC limits to scores on driving under the influence of alcohol. However, the data shows that the countries with the lowest standard BAC limits (Czech Republic 0.0 g/L, Hungary 0.0 g/L, Norway 0.2 g/L, Poland 0.2 g/L, and Sweden 0.2 g/L), are among the countries that have the highest scores on driving sober (see Figure 3).

Table 2. Overview of legal BAC limits

Country	Standard	Commercial drivers	Novice drivers
Austria	0.5	0.1	0.1
Belgium	0.5	0.2	0.5
Bulgaria	0.5	0.5	0.5
Czechia	0.0	0.0	0.0
Denmark	0.5	0.5	0.5
Finland	0.5	0.5	0.5
France	0.5	0.5 ¹	0.2
Germany	0.5	0.0	0.0
Greece	0.5	0.2	0.2
Hungary	0.0	0.0	0.0
Iceland	0.2	0.2	0.2
Ireland	0.5	0.2	0.2
Italy	0.5	0.0	0.0
Luxembourg	0.5	0.2	0.2
Netherlands	0.5	0.5	0.2
Norway	0.2	0.2	0.2
Poland	0.2	0.2	0.2
Portugal	0.5	0.2	0.2
Slovenia	0.5	0.0	0.0
Spain	0.5	0.3	0.3 ²
Sweden	0.2	0.2	0.2
Switzerland	0.8	0.8	0.8

¹ 0.2 for bus drivers

² 0.0 for under 18

<https://etsc.eu/issues/drink-driving/blood-alcohol-content-bac-drink-driving-limits-across-europe/>. Last updated: December 2021

5.1.2 Drugs

Most European countries have specific legislation on drug limits but there is a lack in uniformity on how each country approaches the problem of driving with drugs. In general, there are four types of approaches in drug legislations (Modijefsky et al., 2021):

- 1. Impairment approach:** it must be proven that a driver was under the influence or impaired by drugs. Applicable in: Austria, Croatia, Cyprus, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia.
- 2. 'Per se' limits:** which states that driving with a blood concentration which exceeds a certain threshold is an offence. Applicable in: The Netherlands.
- 3. Zero tolerance:** Applicable in: Bulgaria, Czechia, Finland, France, Germany, Italy, Slovenia, Sweden.
- 4. Two-tier system:** a combination of the impairment approach and 'per se' approach. Applicable in: Belgium, Denmark, Ireland, Luxembourg, Norway Spain, Switzerland, United Kingdom.

Since the legislation is so diverse, even among countries that apply the same overall approach, it is not possible to conclude anything on the relationship between legislation and drug use and driving.

5.2 Enforcement

5.2.1 Alcohol

Table 3 presents the number of roadside alcohol checks by the police in EU countries where recent alcohol SPI data as well as enforcement data are available. The countries with the highest number of road checks, i.e., Poland and Hungary, seem to perform well on driving sober (see Figure 3 and Figure 4). However, countries with a relative low number of road checks (e.g., Italy and Ireland), do not necessarily have a higher level of drink driving. Please note that 2020 was a non-typical year due to COVID and traffic restrictions in most countries.

Table 3. The number of roadside alcohol checks by the police per 1000 inhabitants in 2017-2019. (Source: ETSC, 2022)

Country	2017	2018	2019	2020
Austria	196	197	204	137
Finland	264	249	170	74
France	157	145	139	108
Hungary	241	298	279	173
Ireland	73	65	64	21
Italy ¹	23	22	21	10
Norway	211	177	180	64
Poland	470	434	444	177
Portugal	172	172	186	115
Slovenia	191	171	203	172
Spain ¹	111	118	141	69
Sweden	117	116	125	35

5.2.2 Drugs

Data on police-checks for drug-driving are too scarce to relate enforcement to any type of drug-driving.

6. Limitations

Driving under the influence of alcohol and/or drugs is an important risk factor in road safety. However, data on the prevalence of driving under the influence of alcohol and/or drugs in European countries are scarce. The two data sources used in this report for the SPI Alcohol and the SPI Drugs are from the ESRA and Baseline projects. The ESRA data is based on self-reports collected on a larger scale than Baseline and providing information on both drink driving and drug use and driving. The data obtained through roadside surveys in the Baseline project are available for fewer countries and concern driving under the influence of alcohol only.

There are limitations regarding the data sources used. The ESRA data based on self-reported data can have disadvantages, such as social desirability bias (the tendency of respondents to provide answers which present a favourable image of themselves), non-accurate recall, misunderstanding of questions or selective non-response bias (occurring when subjects who refuse to take part in a study, or who

¹ Data are only available for part of the road network

drop out before the study can be completed, are systematically different from those who participate).

The Baseline data is based on random breath testing, i.e., roadside breath testing of randomly selected drivers, and therefore does not have these disadvantages. However, the limitation of the Baseline data is that they are not fully comparable among countries mainly due to various deviations from the minimum methodological requirements, small samples for specific strata or weighting of data.

7. References

- Achermann Stürmer, Y., Meesmann, U., & Berbatovci, H. (2019). *Driving under the influence of alcohol and drugs. ESRA2 Thematic report Nr. 5.*
- ETSC. (2022). *How traffic law enforcement can contribute to safer roads.*
- Goldenbeld, C. (2023). ERSO Thematic Report - Alcohol and drugs.
- Meesmann, U., Torfs, K., Wardenier, N., & Van den Berghe, W. (2023). *ESRA2 methodology. ESRA2 report Nr. 1 (updated version).*
- Modijefsky, M., Janse, R., Spit, W., Jankowska-Karpa, D., Buttler, I., & Eikefjord, B. (2021). *Prevention of driving under the influence of alcohol and drugs*
- Yannis, G., & Folla, K. (2022). *Baseline report on the KPI Driving under the Influence of Alcohol*

