ESRA

www.esranet.eu

European Survey of Road users' safety Attitudes

Seat belt and child restraint systems

ESRA thematic report no. 4

Research report number: 2016-T-04-EN
Publication date of this report: 20/06/2016
Main responsible organization for this report: BRSI - Belgian Road Safety Institute, Belgium

Please refer to this document as follows: Trotta, M., Meesmann, U., Torfs. K., Van den Berghe, W., Shingo Usami, D., & Sgarra, V. (2016). Seat belt and child restraint systems. ESRA thematic report no. 4. ESRA project (European Survey of Road users' safety Attitudes). Brussels, Belgium: Belgian Road Safety Institute.

Seat belt and child restraint systems

ESRA thematic report no. 4

Authors:

Marie Trotta, Uta Meesmann, Katrien Torfs, Wouter Van den Berghe (BRSI, Belgian Road Safety Institute, Belgium), Veronica Sgarra & Davide Shingo Usami (CTL, Centro di Ricerca per il Trasporto e la Logistica, Università La Sapienza Rome, Italy)

Partners in the ESRA project:

- BRSI - Belgian Road Safety Institute, Belgium: Uta Meesmann, Katrien Torfs, Marie Trotta, Wouter Van den Berghe
- KFV - Kuratorium für Verkehrssicherheit, Austria: Gerald Furian, Christian Brandstaetter, Susanne Kaiser, Angelika Witzik
- Raadet for Sikker Trafik - The Danish Road Safety Council, Denmark: Jesper Sølund
- Liikenneturva - Finnish Road Safety Council, Finland: Juha Valtonen, Leena Pöysti
- IFSTTAR - Institut français des sciences et technologies des transports, de l'aménagement et des réseaux, France: Marie-Axelle Granié
- BASt - Bundesanstalt für Strassenwesen, Germany: Hardy Holte, Ariane Von Below
- NTUA - National Technical University of Athens, Greece: George Yannis, Alexandra Laiou, Athanasios Theofilatos
- RSA - Road Safety Authority, Ireland: Velma Burns, Sharon Heffernan
- CTL - Centro di Ricerca per il Trasporto e la Logistica, 'Sapienza' Università di Roma, Italy: Veronica Sgarra, Davide Shingo Usami
- ITS - Instytutu Transportu Samochodowego, Poland: Ilona Buttler
- PRP - Prevenção Rodoviária Portuguesa, Portugal: Alain Areal, Carlos Pires, José Trigoso
- AVP - Javna agencija Republike Slovenije za varnost prometa, Slovenia: Vesna Marinko
- DGT - Direccion General de Trafico, Spain: Fermina Sánchez
- VTI - Väg- och transportforskningsinstitut, Sweden: Anna Vadeby
- bfu - Beratungsstelle für Unfallverhütung, Switzerland: Yvonne Achermann Stürmer, Uwe Ewert
- SWOV - Stichting Wetenschappelijk Onderzoek Verkeersveiligheid, the Netherlands: Henk Stipdonk, Charles Goldenbeld
- TI - Transport Institute, University College London, United Kingdom: Nicola Christie

Task leading organization:

BRSI - Belgian Road Safety Institute, Belgium

Project coordinator:

Uta Meesmann, BRSI - Belgian Road Safety Institute, Belgium

Reviewing organizations:

CTL - Centro di Ricerca per il Trasporto e la Logistica; BRSI - Belgian Road Safety Institute, Belgium

Table of contents

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
CRS	Child restraint system(s)
EC	European Commission
EEC	European Economic Community
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
IRTAD	International Traffic Safety Data and Analysis Group
ITF	International Transport Forum
OECD	Organisation for Economic Co-operation and Development
WHO	World Health Organisation

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
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 describes the attitudes and opinions on the use of seat belts and child restraint systems (CRS) by road users in Europe. It includes comparisons amongst the participating countries as well as results in relation to age and gender. The aspects analysed in this thematic report cover: the acceptability of unsafe traffic behaviour related to seat belt and CRS; the self-declared (unsafe) behaviour in traffic; attitudes towards unsafe traffic behaviour; support for road safety policy measures; and the reported police checks and perceived likelihood of getting caught for seat belt and CRS offences.

Key results

Acceptability of unsafe traffic behaviour

- Transporting children without securing them has the lowest acceptability (3%), followed by not wearing a seat belt in front of the car (6%). 12% of the respondents still think it is rather acceptable of not wearing a seat belt in the back of the car.
- Level of acceptability significantly different according to the gender, age and country. The level of acceptability for such risky 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).

Self-declared (unsafe) behaviour in traffic

- Analysis of the self-declared behaviour of respondents shows that seat belt wearing is much more widespread in the front of the car (84%) than in the back (62%). Here again some differences can be found according to the gender, age groups and country. There is a particular large variation in the use of seat belts in the back of the car among countries (values range between 15% and 86%).

Attitudes towards (un)safe traffic behaviour

- There is still a number of European Union citizens who think that it is not necessary to wear a seat belt in the back seat of the car (up to 23% in Greece) and that it is not really necessary to use the appropriate child restraint for short trips (up to 16% in France). Moreover, 27% of respondents think that the instructions for using the child restraint are unclear.

Support for road safety policy measures

- More than 60% of European people think that seat belt enforcement must be improved. Women drivers are more supportive than man to think that traffic rules should be more strict. Opinions by age group show coherence with the other previous sections. Younger drivers are more numerous to think that there is no reason to enforce traffic rules, unlike the older ones that request more severity.

- Based on the particular ESRA findings on seat belt and child restraint use issues the following recommendations can be derived.

Reported police checks and perceived likelihood of getting caught for traffic offences

- Not using the proper restraints for transporting children is very rarely punished (about 3% out of the 15% of road users surveyed who had to pay a fine). Fines for not wearing a seat belt were reported by 7% of those respondents.

Further analysis: logistic regression on self-declared usage of CRS

- Compared to men, women are more likely to report that they always secure children under 150 cm when transporting them (OR= 1.43; p<.001).
- There is a strong association between age and securing children. Compared to drivers below 35 years, the odds are 1.62 (p<.001) for the 35 to 54 years old drivers and even 1.84 (p<.001) for the drivers aged 55 years and more. The older the respondent, the higher the chance he/she correctly secures children before transporting them.
- No association can be pointed out either between driving frequency and self-declared behaviour on the child restraint system use. Even the personal acceptability on transporting children without securing them is not significant.
- The drivers who answered that it is dangerous if children, travelling with them, do not wear a seat belt or use appropriate restraint have 8.5 more chance to report to (almost) always use properly the child restraint system (OR= 8.51; p<.001). On the other side, people who think instructions are unclear are less inclined of use the child restraint system (OR= 0.57; p<.001).

Key recommendations

Policy recommendations at European level

- Include the use of seat belts and child restraint systems (CRS) in the future Policy orientations on Road Safety.
- Facilitate and support the exchange of best practice in terms of the use and enforcement of seat belts and child restraint systems across Member States.
- Type-approval requirements for the general safety of motor vehicles should include seat belt reminders as standard equipment for all seats.
- Define seat belt and CRS related indicators and set targets at European Union level, such as the prevalence of seat belt wearing, the adequate use of CRS, the number of controls for seat belts and the number of traffic fatalities attributable to not wearing seat belts and inadequate use of CRS.

Policy recommendations at national and regional level

- Develop a strategy to increase the usage of passive safety devices.
- Set national targets for wearing seat belts and develop an appropriate monitoring programme to measure progress.
- Conduct awareness-raising campaigns on the risks of not wearing seat belts (especially on the rear seats) and the inadequate use of CRS.
- Increase enforcement (and enforcement perception) in relation to wearing of seat belts and the use of CRS.
- *[For countries where seat belt wearing rates are already high]* Develop innovative ways to increase the seat belt wearing rates even further.

Specific recommendations to specific stakeholders

- *[To Non-Governmental Organizations (NGOs)]* Contribute to education and awareness raising campaigns and events promoting the use of seat belts and child restraint systems.

- *[To producers of child restraint systems]* Make the CRS easy to use and make the instructions more easy to understand (so that less inadequate use occurs).

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

In EU (European Union) countries, car occupants represent over 45% of all road deaths (European Commission, 2015). Wearing a seat belt is one of the most effective measures that can substantially reduce the risk for serious crash-related injuries and or the number of persons killed on the road. The risk of a fatal accident decreases by 40% for adult passengers in front of the vehicle, by 30 to 45% for adult passengers in the back and by about 40 to 50% for children seated in an appropriate child restraint system (CRS) (Glassbrenner & Starnes, 2009; SWOV, 2012).

A seat belt is accessible to all the car passengers as it does not require any special technology and is fitted in all cars (European Commission, 2014). A child restraint system combines a seat, fixed to the structure of the vehicle by appropriate means, and a safety belt for which at least one anchorage point is located on the seat structure.

Failure to use seat belts and child restraints are two of the five key behavioural risk factors affecting road injuries and fatalities to be tackled according to the Global status report on road safety 2015 (WHO, 2015). '*Failure to wear a seat belt is the 2nd main killer on the road, after speeding but ahead of drink-driving* (European Commission, 2014)'. The European transport safety council (ETSC) estimates that across the EU, 8,600 car occupants survived serious collisions in 2012 because they wore a seat belt. 900 additional lives would have been saved if 99% of the passengers were wearing a seat belt when the crash happened (ETSC, 2014). The effectiveness of child restraints varies by type of restraint. Rear-facing restraints for 0-4 year old children have been shown to reduce the risk of severe injuries or fatality by 90% compared to being unrestrained. Forward facing child restraints reduce the risk of injury by 55% (Elvik, 2009).

Since 1991, wearing a seat belt in the EU is mandatory by law for all car passengers (Directive 91/671/EEC). However, the date of application of the law varies from one European country to another (e.g. in Greece it became compulsory in 2003). The use of restraint systems specially adapted to the size and weight of children became compulsory in 2003 (Directive 2003/20/EC).

Wearing rates vary widely in EU Member States, and they are usually higher in front seats. Values for front seat occupants typically range between 70% and nearly 100%, while on rear seats the range is between 23% in Greece and 97% in Germany (IRTAD/ITF, 2015). A 2015 survey on attitudes carried out in seven European countries (Belgium, France, Germany, Italy, Romania, Spain, and The UK) concluded that more than one-in-three people in Europe still do not wear a seat belt in the rear seats of a car (The pan-European survey, 2015).

SARTRE3 (2004) concluded that seat belt use rates were too low in many countries (especially in built-up areas). In addition, too many drivers underestimated the benefits of wearing belts if one drives carefully. Since SARTRE3, there is a lack of comparable data cross Europe on road safety attitudes concerning the use of seat belts. The last figures for CRS date from 2009 (SARTRE4, 2012). This thematic ESRA report aims at filling this gap by providing information on the attitudes and opinions of road users in 17 European countries on use of seat belts and child restraint systems.

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 seat belt and CRS. An overview of the data collection method and the sample per country can be found in the Main report.

This thematic report covers the following topics:

(1) Acceptability of unsafe traffic behaviour: seat belt and CRS

Question: Where you live, how acceptable would most other people say it is for a driver to
- not wear a seat belt in the back of the car?
- not wear a seat belt in the front of the car?
- to transport children in the car without securing them (child's car seat, seat belt, etc.)?

Question: How acceptable do you, personally, feel it is for a driver to
- not wear a seat belt in the back of the car?
- not wear a seat belt in the front of the car?
- to transport children in the car without securing them (child's car seat, seat belt, etc.)?

In both these questions, the respondents were asked to rate the acceptability levels using a 5-point (Likert) scale, from 1 (= unacceptable) to 5 (= acceptable). The results from both questions are presented side by side in order to compare the 'personal' acceptability with the 'other people' acceptability.

(2) Self-declared (unsafe) behaviour in traffic

Question: In the past 12 months, as a road user, how often did you

- 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 150 cm) travelling with you use appropriate restraint (child seat, cushion)?
- make children (over 150 cm) travelling with you wear a seat belt?

The respondents were asked to give an answer in a 5-point (Likert) scale, from 1 (= never) to 5 (= almost always).

(3) Attitudes towards unsafe traffic behaviour

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

- 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

The respondents were asked to give an answer on a 5-point (Likert) scale, from 1 (= disagree) to 5 (= agree).

(4) Support for road safety policy measures

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

- The traffic rules (on seat belt) should be stricter
- The traffic rules (on seat belt) are not being checked sufficiently
- The penalties (for seat belt) are too severe

The respondents were asked to provide a 'yes' or 'no' response, with an additional option of 'don't know / no response'.

(5) Reported police checks and perceived likelihood of getting caught for traffic offences

Question: In the past 12 months, how many times have you had to pay a fine for a traffic violation (except a parking fee)? (at least once)

- Was this a fine for not wearing a seat belt?
- Was this a fine for transporting children in the car without securing them correctly (child's car seat, seat belt, etc.)?

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. More precisely, in order to investigate the association of self-declared behaviour on CRS with the various predictors at an individual level, we developed two logistic regression models. Persons who never drive a car were not included in these analyses. In the first model, the following explanatory variables were considered: socio-demographic variables (gender, age group and level of education), driving frequency, acceptability on child system restraints, attitudes towards seat belt use, support for road safety measures, risk perception and perceived likelihood of being checked for seat belt use. The country where the respondent is living was also included in the second model in order to explore differences/similarities between the countries, controlling for other factors.

3. Results

3.1. Descriptive analysis

This section presents the results of the analysis on acceptability, self-declared behaviour, attitudes towards unsafe behaviours and enforcement related to seat belt and CRS use. The emphasis is on gender, age and country comparisons.

3.1.1. Acceptability of unsafe traffic behaviour

The questions which were used to gather opinions on the acceptability of unsafe traffic behavior were

'How acceptable do you, personally, feel it is for a driver to…?'
'Where you live, how acceptable would most other people say it is for a driver to….?'
not wear a seat belt in the back of the car?
not wear a seat belt in the front of the car?
to transport children in the car without securing them (child's car seat, seat belt, etc.)?

Respondents were asked about their personal and perceived social acceptability of seat belt and CRS related unsafe behavior (see Figure 1). Despite the fact that wearing a seat belt on any seat of a car is now mandatory in all European countries, 12% of the respondents still consider that it is acceptable not to wear a seat belt in the back of the car. For front seats, the acceptability level is lower (6%). Personal acceptability for transporting children without securing them has the lowest level of acceptability with a mean of 3%.

Most of the respondents seem to believe that other people find these behaviours more acceptable than they do. They are about twice more numerous to think that others would judge those behaviours as acceptable.

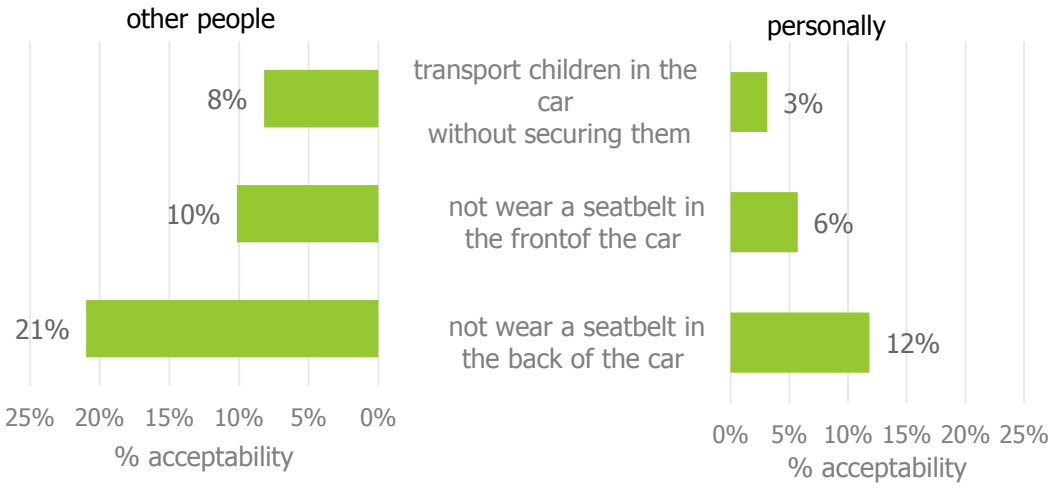


Figure 1: Acceptability of 'not using a seat belt or a CRS', in Europe.
Notes: (1) % of acceptability: scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable'. (2) European weight B.

Personal and perceived social acceptabilities of not using seat belt and CRS use vary according to the gender and the age (Figure 2 and Figure 3). Men generally think it is more acceptable not to use a seat belt or a restraint system than women. Acceptability of not wearing a seat belt in the back of the car reaches 14% for male. In addtion, the older the respondents, the fewer who accept not wearing a seat belt or using a child restraint system. There is 2-3% of difference between the age groups 18-34

and 35-54 and 3-5% between 18-35 and 55+ on personal acceptability. The same trends emerge on perceived social acceptability but here the percentages are higher.

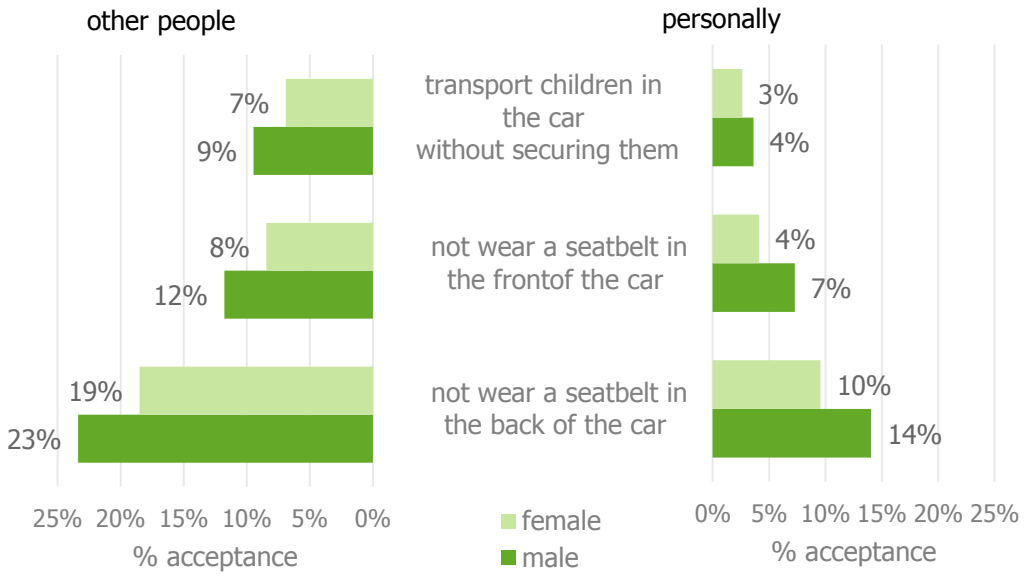


Figure 2: Acceptability of 'not using a seat belt or a CRS', by gender.
Notes: (1) % of acceptability: scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable'. (2) European weight B. (3) all p<.01.

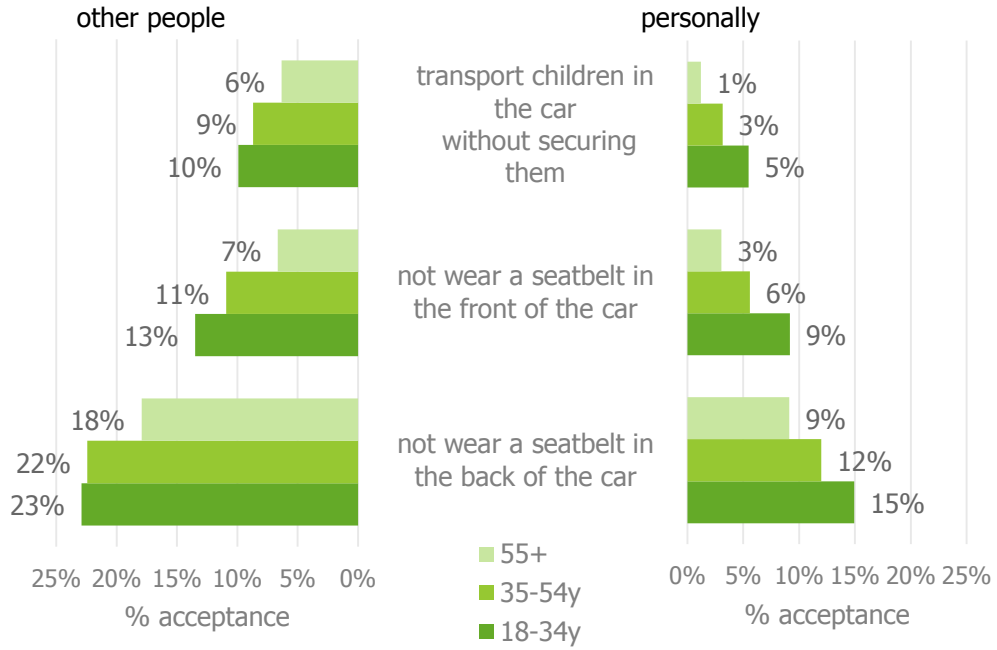


Figure 3: Acceptability of 'not using a seat belt or a CRS', by age group.
Notes: (1) % of acceptability: scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable'. (2) European weight B. (3) all p<.01.

From our analyses it appears that country variability is much higher than the age and gender differences (Figure 4). As an example, the personal acceptability for not wearing a seat belt in the back of the car ranges from 5% in Denmark to 25% in Italy. In the front of the car, the personal acceptability is lower, ranging from 2% to 10%. Greece, Poland, Switzerland and Italy have higher percentages than the European mean on both questions. The lowest percentages are found in Denmark, Spain and the United Kingdom. The European mean is strongly influenced by the highest percentages as only four countries are above this mean for thes two questions. Concerning the usage of CRS, country differences are much smaller as personal acceptability is low for all the countries and does not exceed 7%.

In all countries the perceived social acceptability is higher than the personal acceptability. The differences are particularly high in Italy and Greece. For not using child restraints systems, Greece and Italy have the lowest personal acceptability but the highest perceived social acceptability.

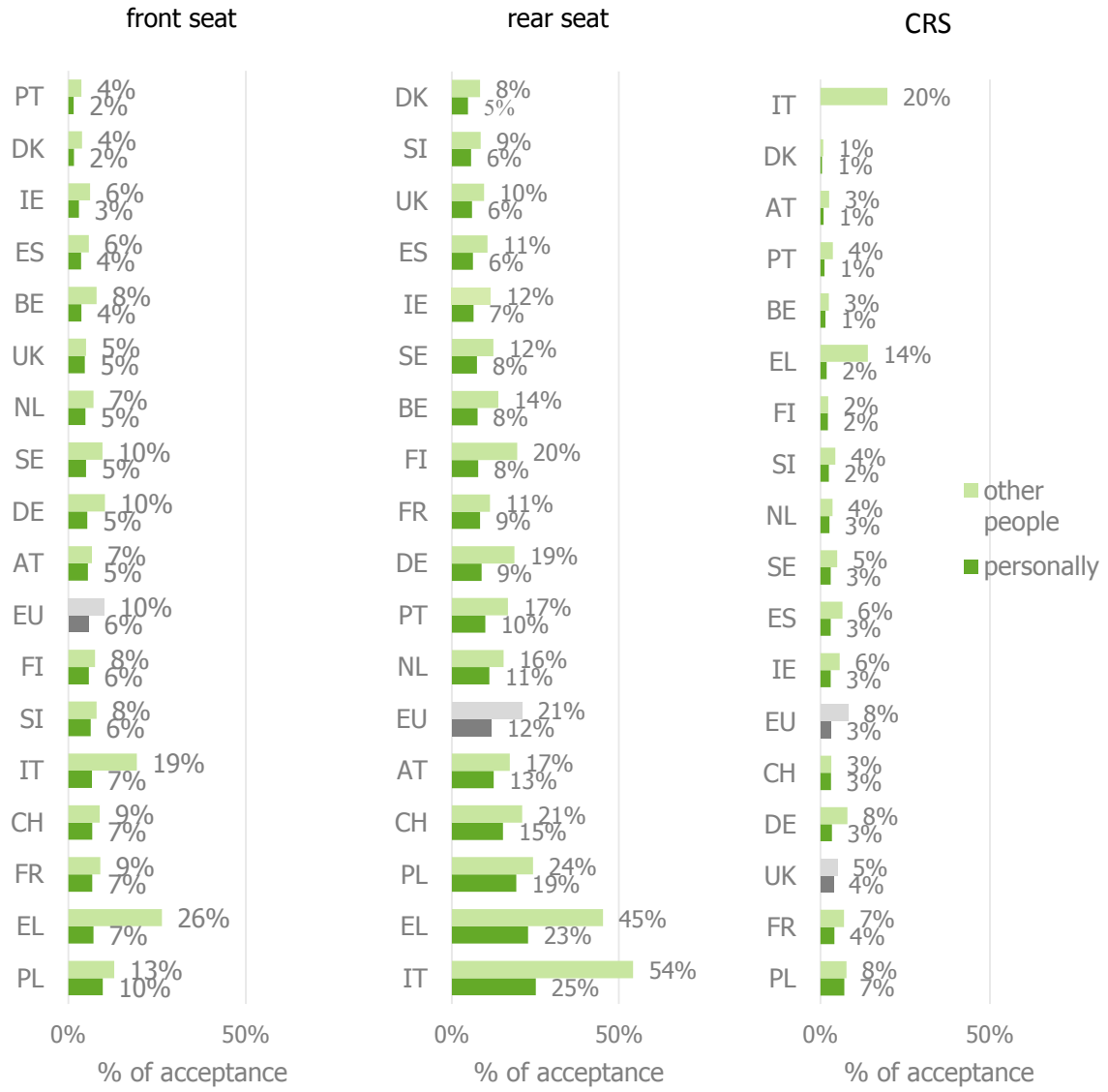


Figure 4: Acceptability of 'not wear a seat belt' in (1) the front of the car, (2) in the back of the car, (3) transport children in the car without securing them (child's car seat, seat belt, etc.), by country.
Notes: (1) % of acceptability: scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable'. (2) European weight B (3) all p<.01.

3.1.2. Self-declared (unsafe) behaviour in traffic

The question which was used to gather information on self-declared (unsafe) behaviour in traffic was:

In the past 12 months, as a road user, how often did you
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 150 cm) travelling with you use appropriate restraint (child seat, cushion)?
make children (over 150 cm) travelling with you wear a seat belt?

Wearing of seat belts is clearly more widespread in the front of the car (European mean respectively of 80% for drivers and 84% for passengers) than in the back (European mean of 62%). Less than 70% of the respondents declared that, when travelling with children, they did not always use an appropriate CRS or seat belt (European means of respectively 62% and 65% concerning children under and over 150 cm[1]). This result is much lower than it would be expected given the low personal acceptability of not using child restraint systems.

Female respondents are more likely to (almost) always use their seat belt as a driver, in the front of the car and in the back and to (almost) always use CRS. The differences between men and women range from 6% for wearing the seat belt as a passenger, to 10% for wearing it in the back of the car.

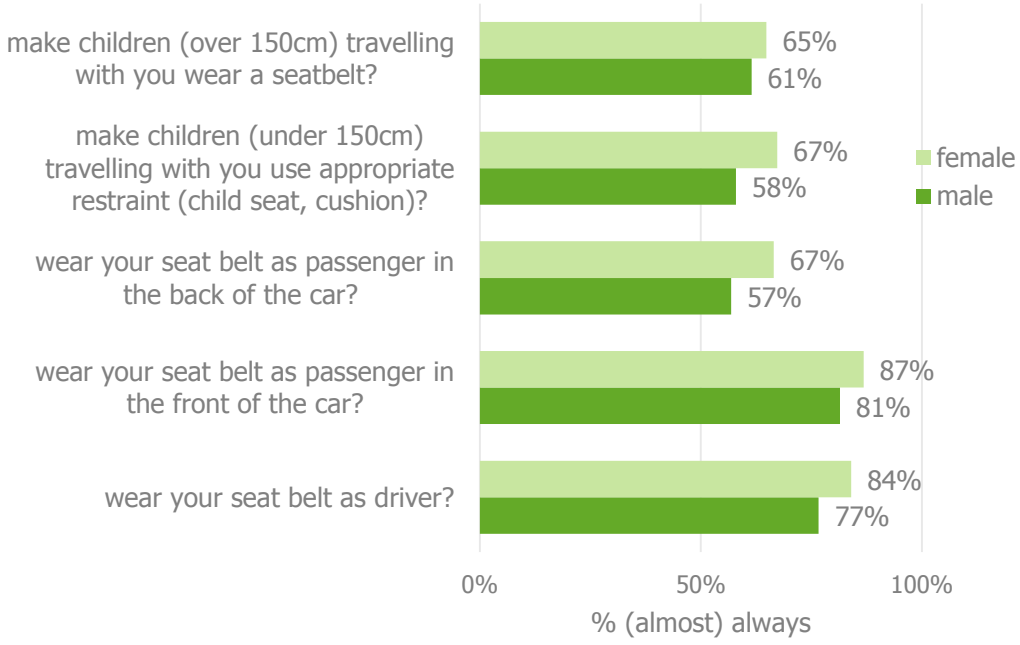


Figure 5: Self-declared (unsafe) behaviour as a road user in the past 12 months (seat belt and child restraint systems), by gender.
Notes: (1) % of (almost) always: score 5 on a 5-point scale from 1 'never' to 5 '(almost) always. (2) European weight B (3) all p<.01.

Differences were also found between different age categories. The youngest (18-34) are those with the lowest percentages on all the questions while the oldest (55+) are those with the highest use. There are larger differences concerning the use of CRS. For example, while 72% of respondents older than 55 declare (almost) always making children (over 150 cm) travelling with them wear their seat belt, only 49% of the youngest group (18-34 years old) did. The smallest differences are observed for

[1] *The limit of 150 cm was adapted to 135 cm in some countries according to their legislation on CRS.*

the wearing of seat belts in the back of the car, though this is also where we observe the lowest frequencies for people over 34.

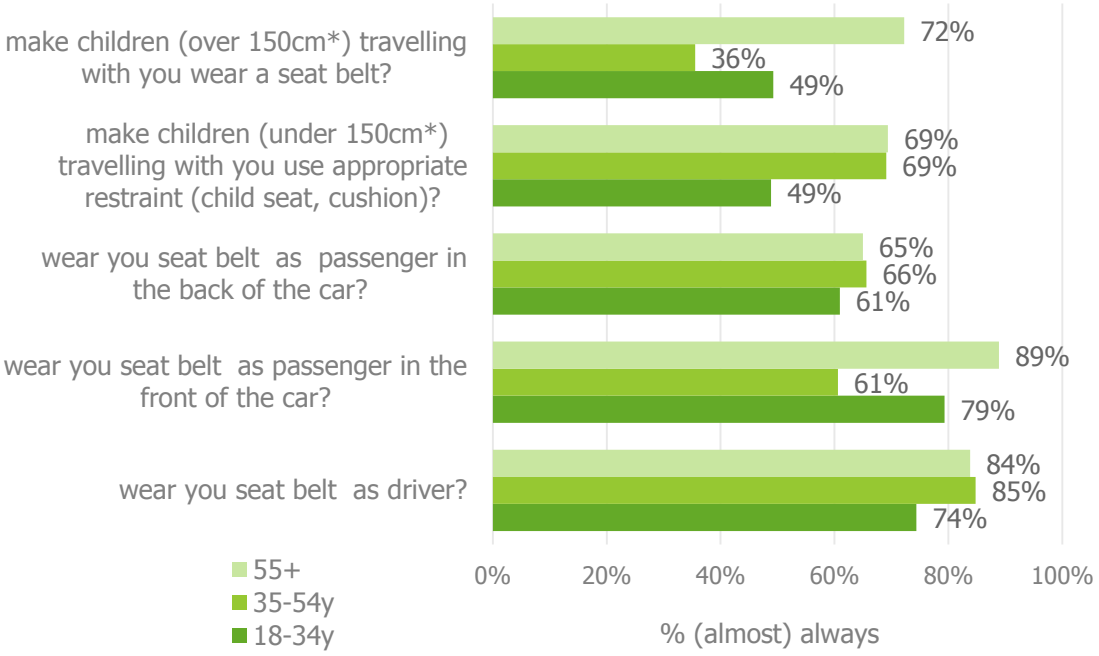


Figure 6: Self-declared (unsafe) behaviour as a road user in the past 12 months (seat belt and child restraint systems), by gender.

Notes: (1) % of (almost) always: score 5 on a 5-point scale from 1 'never' to 5 '(almost) always. (2) European weight B (3) all p<.01.

The variability in self-declared behaviour by country is displayed in Figure 7. In each country, the figures for drivers and passengers in the front of the cars are very similar, with a range of values comprised respectively between 72% (71%) and 92% (93%). The self-declared behaviour of wearing a seat belt in the back of the car varies much more between countries. The four countries with the highest percentages (Finland, Denmark, Belgium and Sweden) are the same as top four for wearing a seat belt as a driver or a passenger in the front of the car. Differences according to the seat position for these countries are small (between 6 and 15%). But countries with the smallest scores at the back of the car show much larger differences. In Italy, 85% declare wearing (almost) always their seat belt in the front of the car, but only 24% in the back. Greece, Poland and Slovenia obtain quite low percentages for the three questions compared to other European countries (they are always in the five lowest percentages). Greece obtains the lowest percentages for both the use in the back (71%) and in the front of the car (15%) which makes a difference of about 55%.

Concerning the self-declared use of CRS (Figure 8), Denmark, Belgium and Slovenia constitute the top three countries with percentages above 75%. The European mean on those questions is quite low, about 60% but this low score is mainly due to the results of five countries: Poland, Portugal, Greece, the United Kingdom and the Netherlands.

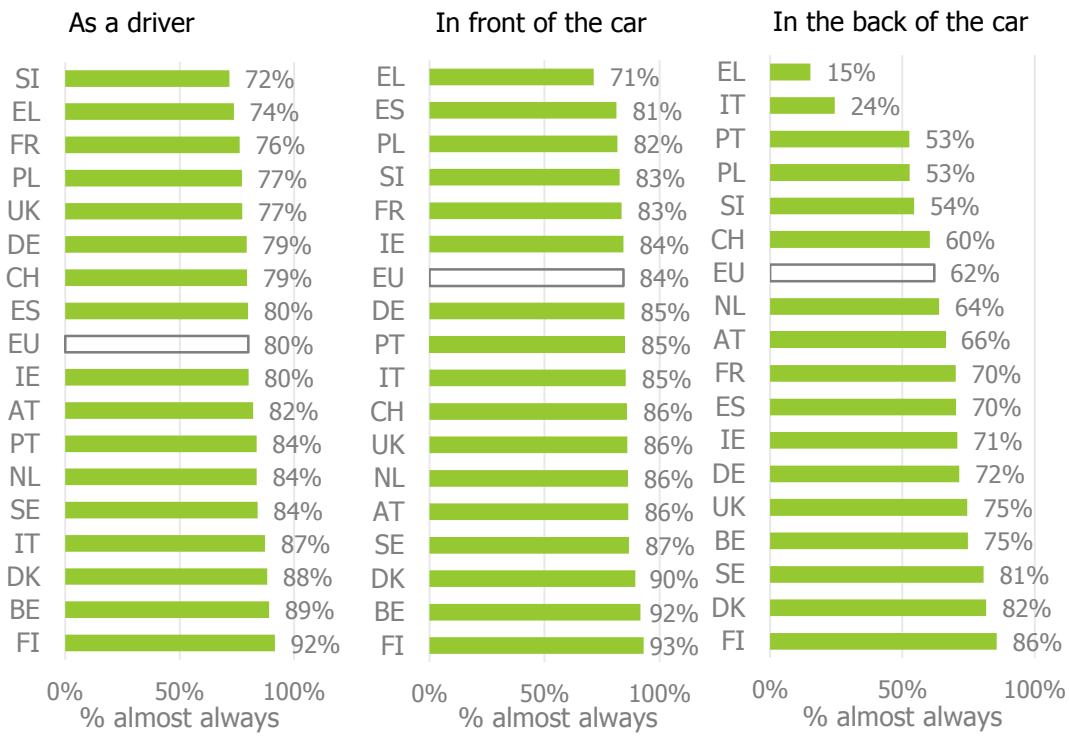


Figure 7: Self-declared (unsafe) behaviour as a road user in the past 12 months for wearing a seat belt…, by country.

Notes: (1) % of (almost) always: score 5 on a 5-point scale from 1 'never' to 5 '(almost) always. (2) European weight B (3) all p<.01.

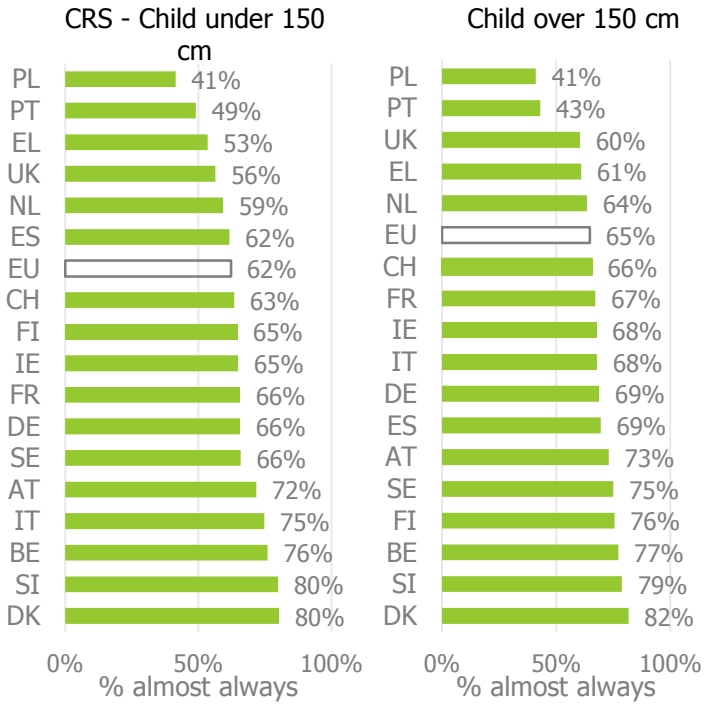


Figure 8: Self-declared (unsafe) behaviour as a road user in the past 12 months for making children (1) (under 150 cm) travelling with you use appropriate restraint (child seat, cushion) - (2) making children (over 150 cm) travelling with you wear a seat belt, by country.

Notes: (1) % of (almost) always: score 5 on a 5-point scale from 1 'never' to 5 '(almost) always. (2) European weight B (3) all p<.01.

3.1.3. Attitudes towards (un)safe traffic behaviour

The question which was used to gather information on the attitudes towards (un)safe traffic behaviour was:

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

- *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*

Please note that the questions related to attitudes on seat belt and CRS concern both unsafe (above the dotted line in Figure 9) and safe (below the dotted line) propositions.

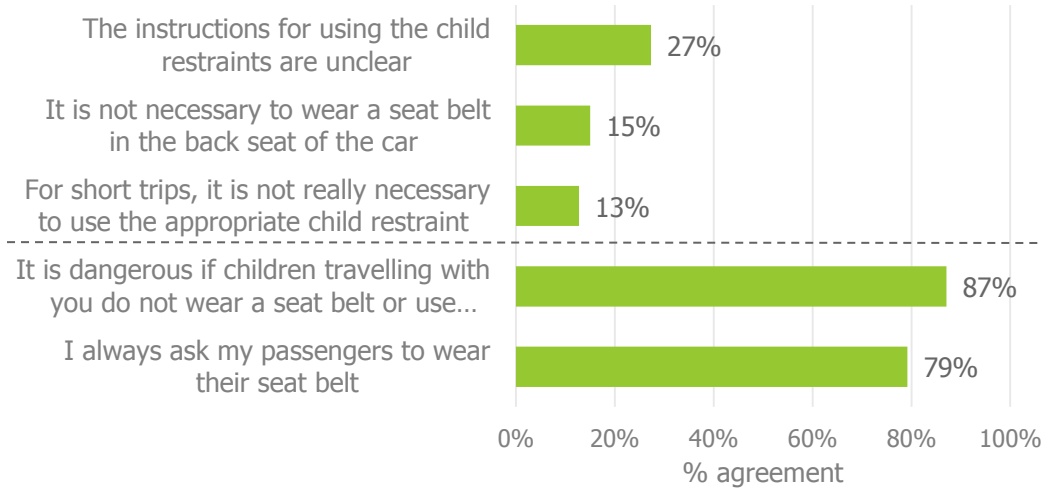


Figure 9: Attitudes on seat belt use and its influence on road safety, in Europe.
Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) European weight B.

15% of European still think that it is not necessary to wear a seat belt in the back seat of the car and 13% that it is not really necessary to use the appropriate child restraint for short trips. A worrying finding is also that 27% say that the instructions for using the child restraints are unclear.

The extent of agreement with the statements depends on gender and age (Figure 11). Female respondents agree less with statements on dangerous attitudes such as 'it is not necessary to wear a seat belt in the back of the car' or 'for short trips, it is not necessary to use the appropriate child restraint'. By contrast, for safe attitudes (below the dotted line), females are generally more likely to agree. There is no significant difference concerning the instructions for using the child restraints between male and female respondents.

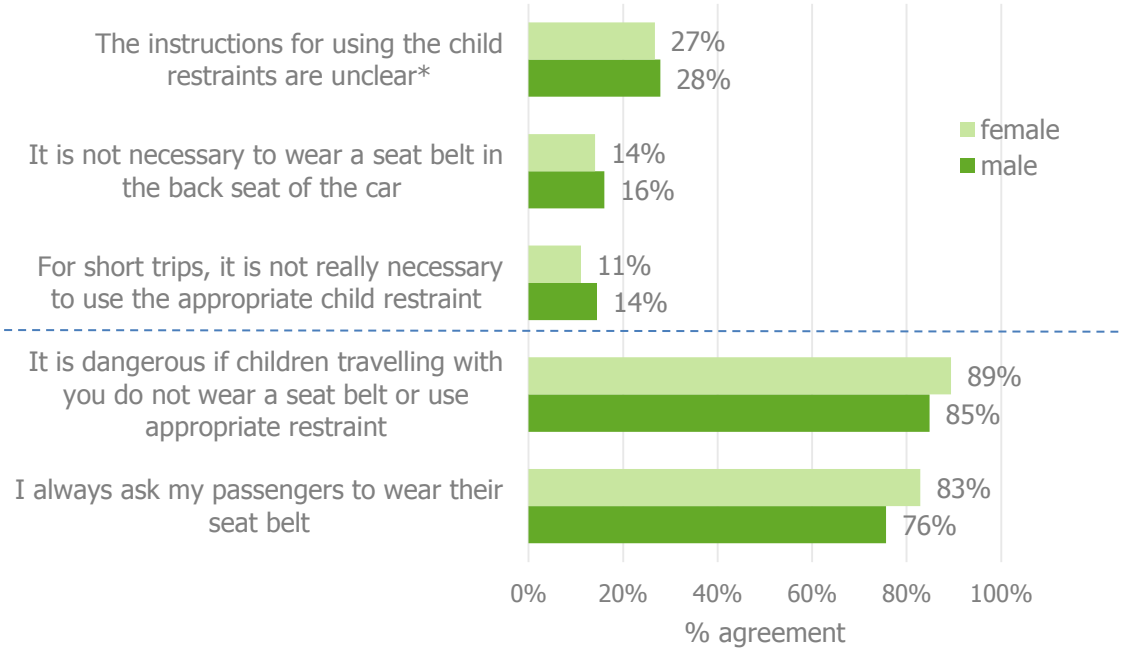


Figure 10: Attitudes on seat belt and CRS uses and their influences on road safety, by gender.
Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) European weight B.

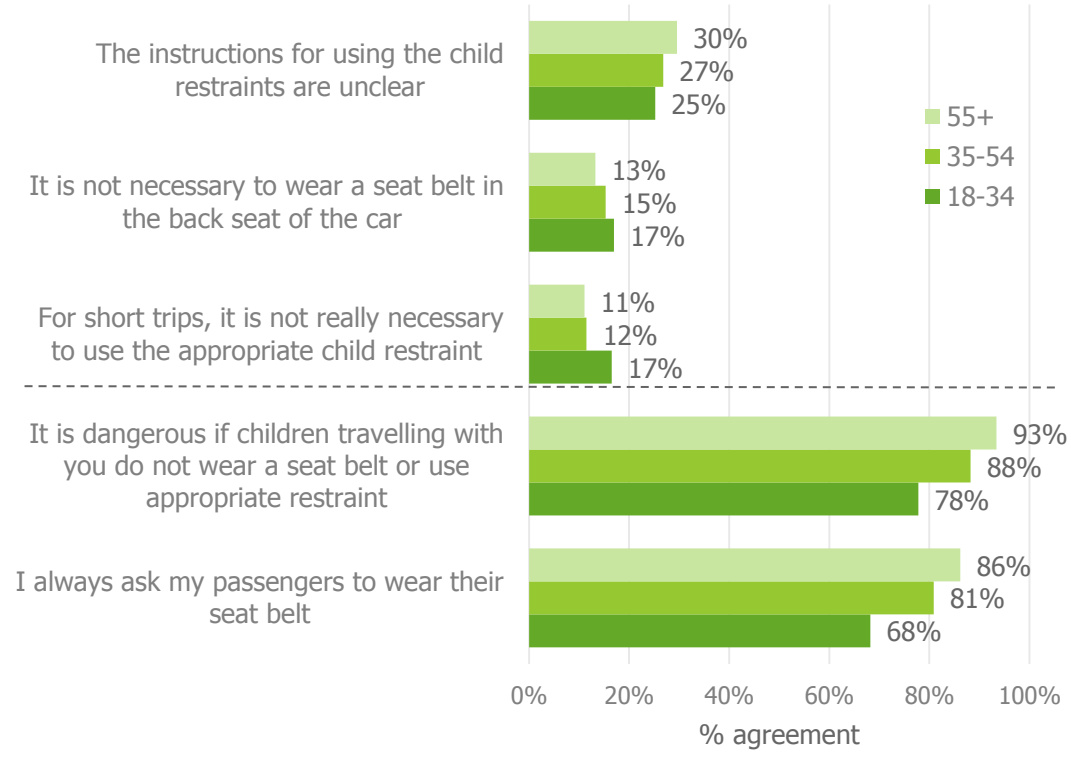
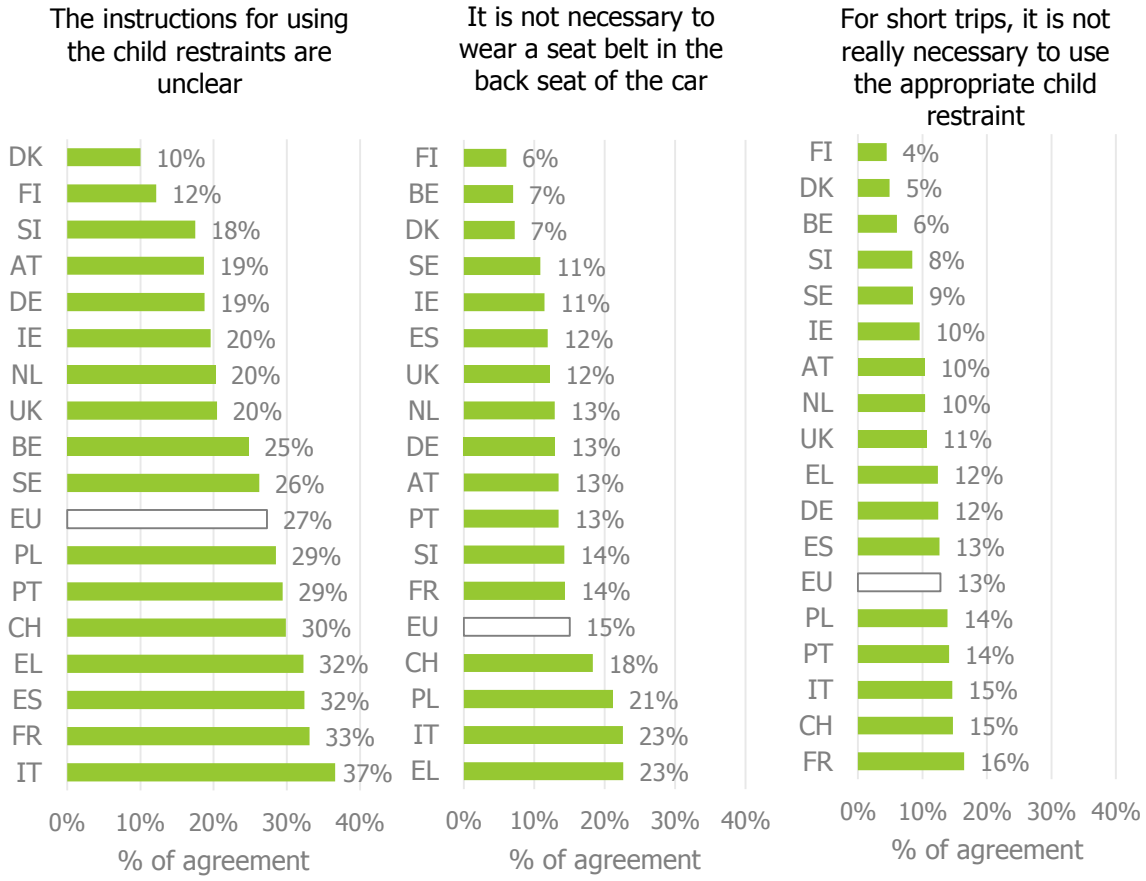


Figure 11: Attitudes on seat belt and CRS uses and their influences on road safety, by age group.
Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) European weight B.

The extent of agreement with statements on safe attitudes is higher among old respondents. As regards unsafe attitudes, there are no differences between the 35 to 54 years old respondents and those older than 55 on the statement: 'For short trips it is not really necessary to use the appropriate child restraint'. It should also be noted that elderly people estimate that instructions for using child restraints are unclear, more than the other age groups.

The level of agreement also differs from one country to another (Figure 12). With regard to attitudes of thinking that it is not necessary to wear a seat belt in the back of the car, most countries (13 out of 17) are below the European mean of 15%. Percentages of agreement range from 6-7% (Finland, Belgium, Denmark) to more than 20% (Greece, Italy and Poland). The extent of agreement on 'for short trips, it is not really necessary to use the appropriate child restraint' is slightly lower, ranging between 4% and 16%. The countries with the lowest percentage are similar to those of the previous questions but most countries have a percentage close to the European mean.

Agreement on the risk for making children travelling without a seat belt or appropriate restraint system is high in every country, ranging from 84% in Sweden to 94% in Finland. Agreement on 'I always ask my passenger to wear their seat belt' is slightly lower, ranging from 73% in Greece to 86% in Finland. People in Finland, Belgium and Portugal agree the most with these two questions.



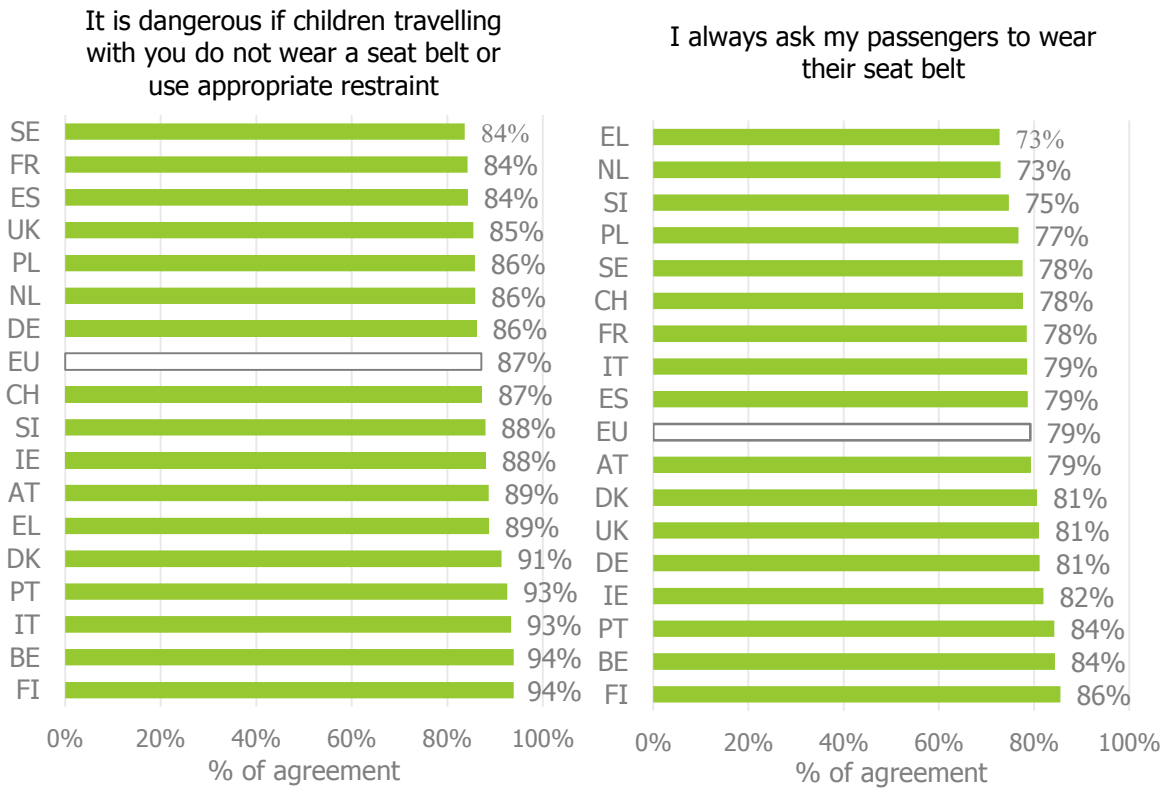


Figure 12: Attitudes on seat belt and CRS uses and their influences on road safety, by country.
Notes: (1) % of agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'. (2) European weight B.

3.1.4. Support for road safety policy measures

The question which was used to gather opinions on the support for road safety policy measures was:

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

- *The traffic rules (on seat belt) should be stricter*
- *The traffic rules (on seat belt) are not being checked sufficiently*
- *The penalties (for seat belt) are too severe*

Over 60% of the respondents believe that improvement on seat belt enforcement is still required. For 63% of the respondents, the traffic rules are not sufficiently checked and for 67%, they should be more strict. More women than men think that traffic rules should be more strict (Figure 13). Only 28% of the respondents consider the penalties as being too severe. Young people (18-35 years old) show less support for enforcement, especially compared to the oldest category of respondents (55+) (Figure 14).

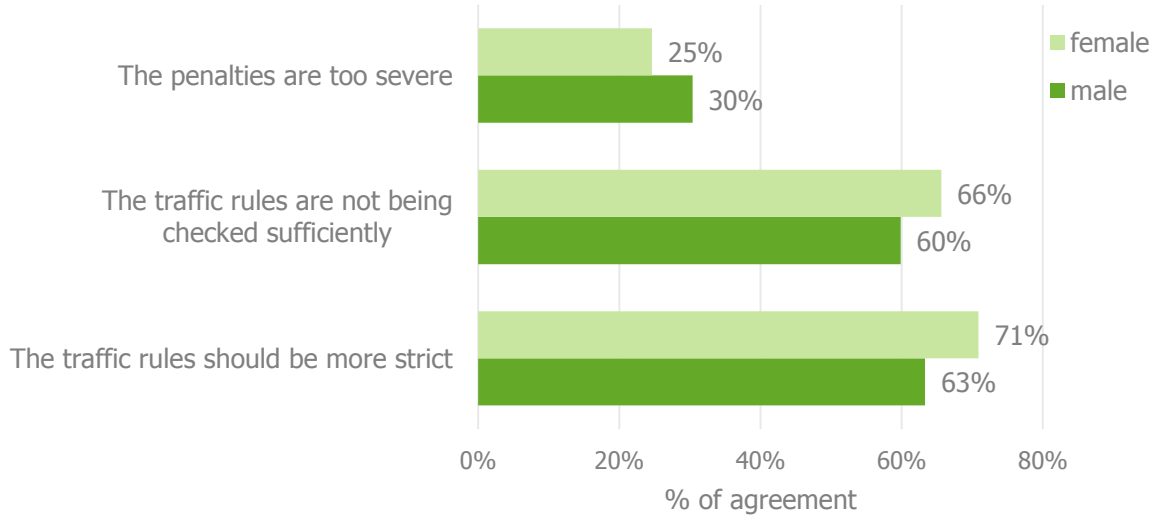


Figure 13: Opinions on national traffic rules, enforcement and penalties related to seat belt, by gender.
Note: European weight B.

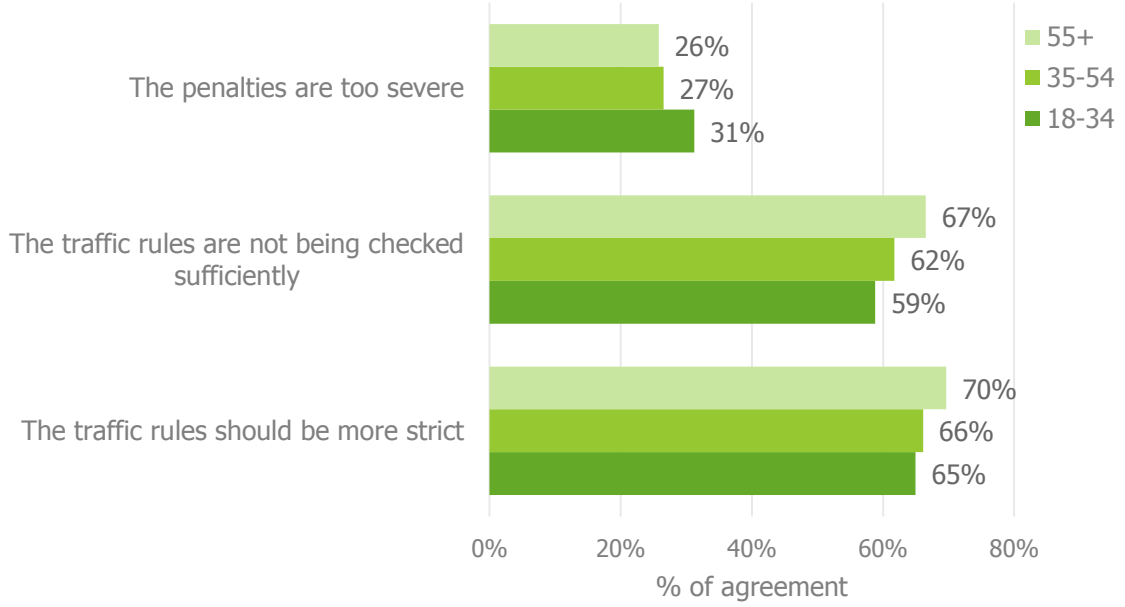


Figure 14: Opinions on national traffic rules, enforcement and penalties related to seat belt, by age group.
Note: European weight B.

People in all participating European countries agree in general that the traffic rules with respect to seat belt use should be stricter and that these rules are not checked sufficiently. In almost all countries, more than 50% of the respondents agree on those two statements. However, three countries have percentages slightly below 50% for stricter traffic rules: Slovenia (45%), Denmark (45%) and Switzerland (48%). Switzerland and Slovenia are also the two countries with the lowest percentage of respondents agreeing on the insufficient checks of traffic rules, respectively 46% and 50%. By contrast, Greece and Ireland are the two countries with the highest percentage on both questions, reaching 80% for stricter traffic rules.

With respect to penalties for not using seat belts, 57% of the Slovenian people find them too severe, followed by the Portuguese (40%). Italy and Ireland have the lowest percentage for that question, respectively 16% and 18%

Table 1: Opinions on national traffic rules, enforcement and penalties related to seat belt, in Europe and by country.

	the traffic rules (for seat belt) should be stricter	the traffic rules (for seat belt) are not being checked sufficiently	the penalties (for seat belt) are too severe
AT	58%	55%	30%
BE	70%	70%	25%
CH	48%	46%	34%
DE	62%	63%	23%
DK	45%	59%	21%
EL	80%	76%	36%
ES	75%	62%	35%
FI	66%	70%	21%
FR	68%	60%	34%
IE	80%	73%	18%
IT	69%	61%	16%
NL	60%	54%	39%
PL	62%	63%	35%
PT	74%	62%	40%
SE	56%	49%	25%
SI	45%	71%	57%
UK	73%	63%	22%
EU	67%	55%	28%

Note: European weight B.

3.1.5. Reported police checks and perceived likelihood of getting caught for traffic offences

The question which was used to gather information on the experience with traffic enforcement was:

In the past 12 months, how many times have you had to pay a fine for a traffic violation (except a parking fee)? (at least once)

- *Was this a fine for not wearing a seat belt?*
- *Was this a fine for transporting children in the car without securing them correctly (child's car seat, seat belt, etc.)?*

Not using the proper restraints for transporting children is very rarely punished (about 3% out of the 15% of road users surveyed who had to pay a fine in the past 12 months). Fines for not wearing a seat belt were reported by 7% of the respondents, which is the second most often reported type of fines after speeding (63%) (see also thematic report Enforcement and support for road safety policy measures).

It should be noted that there is no clear relationship between self-declared behaviour and the percentage of people who had to pay a fine. Figure 15 and Figure 16 provides two different pieces of information on enforcement. First, the base corresponds to the percentage of respondents who had to pay a fine in the past 12 months. Most countries have percentage between 8 and 20%. The percentages are rather low for Finland (4%), Sweden (4%), the United Kingdom (6%) and Ireland (6%) while it is particularly high in Austria (25%), Switzerland (26%) and Italy (35%). Second, the percentage describes the share of fines related to seat belt use. This gives an indication on how concerned the police is about this subject and how people respect the rules on seat belt use. Most

countries have a percentage below 20%. Greece has an atypical result (41%). This high number is not surprising when it is associated with the self-declared behaviour. Indeed, although it is mandatory to wear a seat belt at both the front and back of the car, only 15% of the Greek respondents declare wearing it (almost) always. This percentage is really low compared to the European average of 62%. Italy also had low percentage on self-declared behaviour for seat belt in the back of the car (24%). However, police enforcement does not seem to focus there on this usage as it is shown by the low share of fines for seat belt (only 7%).

In five countries (Finland, Belgium, Spain, the Netherlands and Germany), less than 5% of the fines relate to seat belt use. Finland and Belgium (the lowest percentages, respectively 0 and 1%) also have very high self-declared use rates (cf. above).

For child restraint systems, there are only five countries where percentage of fines reaches more than 3%: France, Ireland, Sweden, the United Kingdom and Denmark - which has a very high percentage (15%). In 10 out of the 16 countries, the percentage is inferior or equal to 1%.

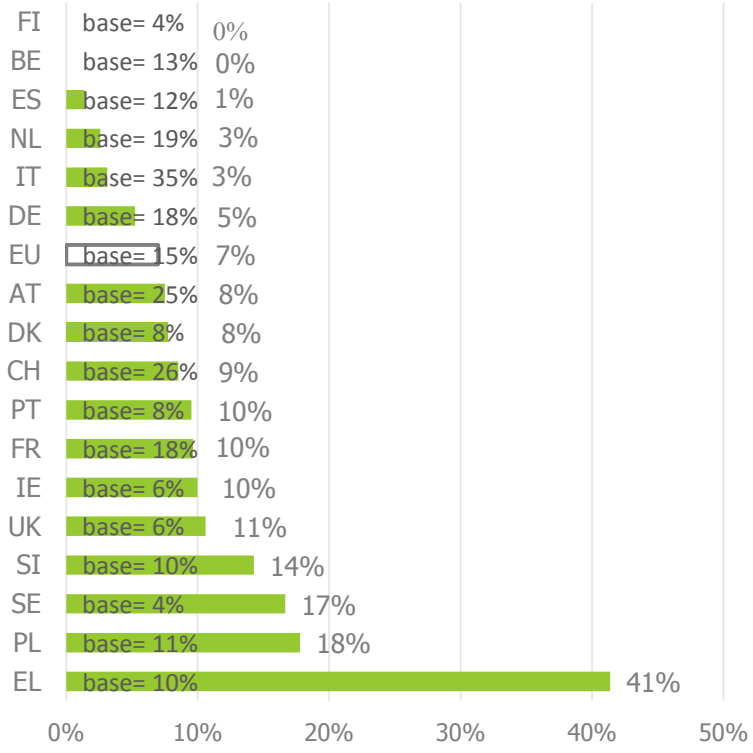


Figure 15: Seat belt related fines in the past 12 months, by country; base = % people who had to pay a fine during the past 12 months.
Note: European weight B.

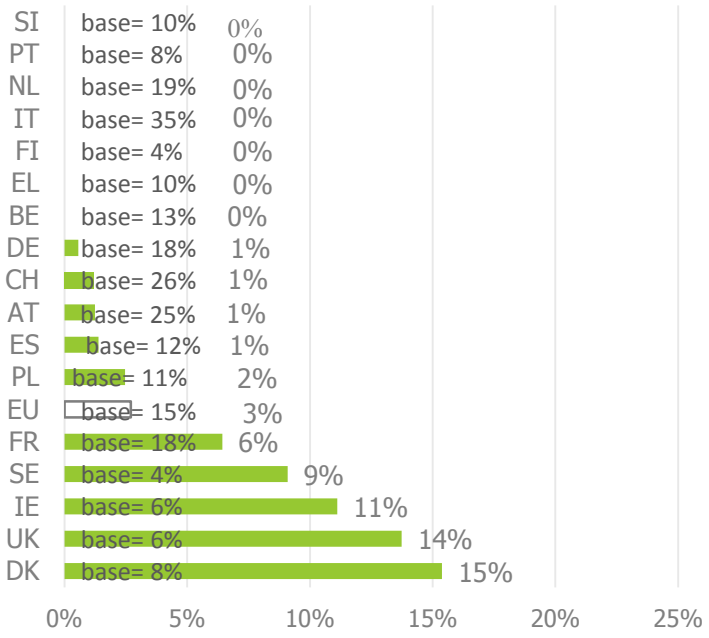


Figure 16: Child restraint system related fines in the past 12 months, by country; base = % people who had to pay a fine during the past 12 months.
Note: European weight B.

3.2. Further analysis

Several studies analysed the parameters affecting seat belt use with logistic regression (e.g.: SARTRE3, 2004 & Yannis, 2011). From such analyses it has appeared that variables such as gender, age or travel type (e.g on motorways, in built-up areas, etc.) significantly impact on seat belt use as well as the country where the respondent is living.

But less is known about CRS. While acceptability on transporting children without a proper restraint is rather low – only 62% of ESRA respondents declare they always secure correctly children in their car. Besides – previous figures on CRS use relied on face to face interviews (SARTRE4, 2012) that tended to produce more desirable answers.

Therefore, the further analysis focuses on CRS self-declared behaviours and tries to identify the factors impacting on CRS usage. The descriptive results (section 3.1) are based on aggregated data on age groups, gender or country but did not inform on the association between variables at an individual level. The regression analysis quantifies the effects of several variables on the propensity to secure children when transporting them. We developed two logistic regression models for the question: '*In the past 12 months, how often did you make children (under 150 cm) travelling with you use appropriate restraint (child seat, cushion)?'* Persons who never drive a car were not included in these analyses.

The outcome variable in these models is the dichotomized variable: 'almost always use appropriate restraint'. In this first model, the following explanatory variables were considered: socio-demographic variables (gender, age group and level of education), driving frequency, acceptability on child system restraints, attitudes towards seat belt use, support for road safety measures, risk perception and perceived likelihood of being checked for seat belt use. The country where the respondent is living was also included in the second model in order to explore differences/similarities between the countries, controlling for other factors. Odds ratios (and the respective 95% confidence intervals) were used to measure the strength of association between the variables. To assess the fit of the models, the Hosmer-Lemeshow test was used (Hosmer et al., 2013).

The results of this regression analysis are given in Table 2 and can be summarized as follows:

- Compared to men, women are more likely to report that they always secure children under 150 cm when transporting them (OR= 1.43; p<.001).
- There is a strong association between age and securing children. Compared to drivers below 35 years, the odds are 1.62 (p<.001) for the 35 to 54 years old drivers and even 1.84 (p<.001) for the drivers aged 55 years and more. The older the respondent, the higher the chance he/she correctly secures children before transporting them.
- No association can be pointed out either between driving frequency and self-declared behaviour on the child restraint system use. Even the personal acceptability on transporting children without securing them is not significant.
- The drivers who answered that it is dangerous if children, travelling with them, do not wear a seat belt or use appropriate restraint have 8.5 more chance to report to (almost) always use properly the child restraint system (OR= 8.51; p<.001). On the other side, people who think instructions are unclear are less inclined of use the child restraint system (OR= 0.57; p<.001).

Table 2: Logistic regression model for making children (under 150 cm) travelling with you use appropriate restraint (child seat, cushion) in the past 12 months (1)

	OR	2.50%	97.50%
(Intercept)	0.28	0.17	0.47
Gender (reference male)			
Female ***	1.43	1.28	1.59
Age (ref. 18-34)			
Age_3category35-54y***	1.62	1.42	1.84
Age_3category55+***	1.84	1.60	2.12
Level of education (ref. primary education or no education)			
Secondary education**	0.70	0.55	0.89
Bachelor's degree or similar	0.91	0.71	1.16
Master's degree or high.	0.81	0.62	1.04
Frequency of driving a car (ref a few day a year)			
A few day a month	0.81	0.48	1.34
1-3 days a week	0.94	0.58	1.48
At least 4 days a week	0.95	0.60	1.48
Personal acceptability on transporting children in the car without securing them (ref. unacceptable-neutral)			
(rather) acceptable (4-5)	0.98	0.75	1.28
The instructions for using the child restraints are unclear (ref. (rather) disagree-neutral)***			
(rather) agree (4-5)	0.57	0.51	0.64
It is dangerous if children travelling with you do not wear a seat belt or use appropriate restraint (ref. (rather) disagree-neutral)*			
(rather) agree (4-5)	8.51	7.30	9.95
On a typical journey, how likely is it that you (as a driver) will be checked by the police for seat belt wearing? (ref. (very) small chance/neutral (1-3))***			
(very) big chance (4-5)	0.80	0.71	0.91
The traffic rules should be more strict: seat belt (ref. agree (yes))			
Do not agree (no)	1.00	1.00	1.00

Table 3 shows the odds ratio of each country for the regression model presented in Table 2. In this model, the country with the frequency closest to the EU average was chosen as the reference category. To identify groups of countries with similar likelihoods of self-declared behaviours, they were grouped according to the odds ratios (different colours in Table 3): 0.6 or lower (red); from 1.5 to 2.3 (green), between 0.7 and 1.38 (withe).

Slovenia, Denmark, Belgium and Italy are the countries where it is the more likely to correctly secure children under 150 cm. On the contrary, Poland, Portugal and Greece have the lowest odds.

Table 3: Logistic regression model for making children (under 150 cm) travelling with you use appropriate restraint (child seat, cushion) in the past 12 months (1) – Odds ratio by country

	OR	2.50%	97.50%
AT	1.38	0.94	2.07
BE	1.58	0.99	2.61
CH	1.08	0.74	1.59
DE	1.09	0.90	1.33
DK	1.83	1.04	3.41
EL	0.57	0.40	0.81
FI	0.81	0.48	1.39
FR	1.25	1.03	1.51
IE	1.02	0.62	1.70
IT	1.58	1.23	2.03
NL	0.84	0.61	1.16
PL	0.38	0.30	0.48
PT	0.46	0.33	0.65
SE	1.19	0.77	1.86
SI	2.28	1.17	4.81
UK	0.74	0.60	0.91

4. Discussion

4.1. Comparison of ESRA self-declared behaviour on seat belt and IRTAD seat belt wearing rates

The monitoring of road user behaviour can either be based on objective behavioural measurements (such as observational roadside surveys) or on the road users' self-declared behaviour (e.g. through questionnaires). Behavioural measurements are generally performed at a national or regional level but the drawback is that scope and methodologies across countries differ (ETSC, 2014). Another problem is that roadside surveys are expensive, which can impact on the measurement frequency.

By contrast, the ESRA survey has the great advantage of being relatively cheap and using a common methodology across European countries. This allows a country comparison of self-declared behaviour. However, there might be cultural ways to answer questions. In this chapter, ESRA results on self-declared behaviours by country are compared to results of roadside surveys in order to see to what extent both methods lead to comparable outcomes.

The last available road side rates come from IRTAD experts (IRTAD, 2016), in most cases measured in 2014. The proportion of car occupants using seat belts (i.e. the wearing rate) was estimated through roadside counts. The selection of data must be cautiously done. The road side observations concern selected locations on different road types (motorways, urban and rural areas that are aggregated based on shares of traffic per road type in a global rate).

Table 4: IRTAD roadside seat belt wearing rates - features and selection

country	last available year	divergence from front or rear seat passengers	road side survey	included
AT	2014		yes	yes
BE	2015		yes	yes
CH	2014		yes	yes
DE	2014		yes	yes
DK	2014	% for driver – not front seat passenger	?	only for rear seat
EL	2009		yes	yes
ES	2012		yes	yes
FI	2014		yes	yes
FR	2010		?	yes
IE	Missing		yes	no
IT	2011	% for urban roads only	yes	no
NL	2010		yes	yes
PL	2014		yes	yes
PT	2004	% for urban roads only	?	no
SE	2014		yes	yes
SI	2011		yes	yes
UK	2014		yes	yees

Notes-: '?' stands for unknown (no metadata provided). Sources: IRTAD, 2015 & Lequeux, 2016

Four countries: Denmark, Ireland, Italy and Portugal were excluded from the analysis either because their measurement was too divergent (e.g. restricted to urban areas or not available for front passenger), or because there was no measurement available in the IRTAD database. In addition, three countries have more outdated measurements: Greece, Italy, the Netherlands and Slovenia (2011 or before). Belgium rates were adapted with the 2015 measurement (Lequeux, 2016).

For front seats, the correlation between IRTAD wearing rates and ESRA percentages on self-declared behaviour is significant (R^2= 0.63). The order of the countries is still no completely respected. This is not surprising as in most countries, the wearing rates are very high (between 90% and 98%) as well as the self-declared behaviours (between 80% and 93%). Those differences are small to be completely apprehended by the correlation. France and Germany are the two countries showing the larger differences. While the road side wearing rate is about 98% in Germany, only 85% of the respondents declared almost always wearing it.

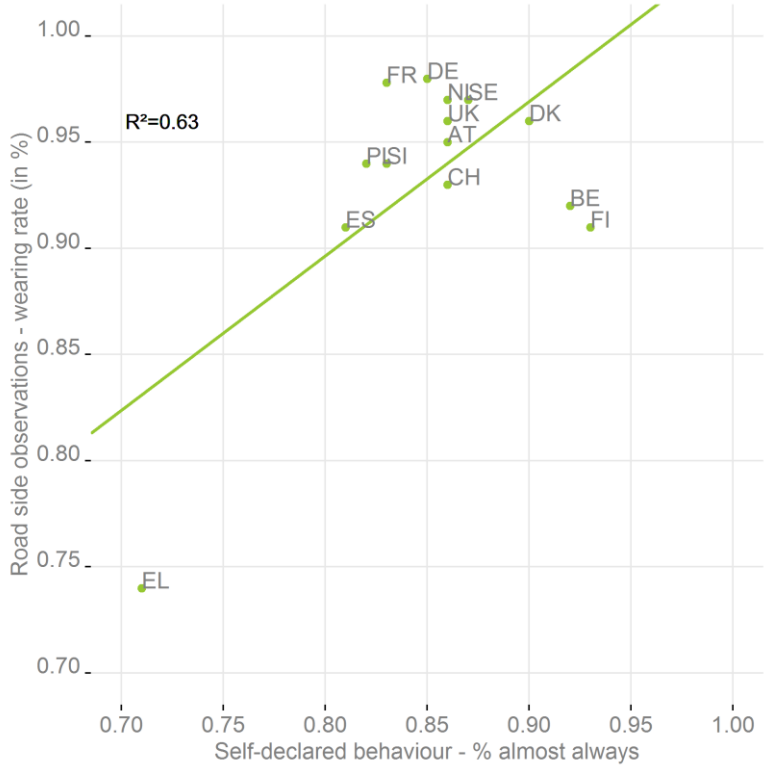


Figure 17: Front seat: relationship between self-declared behaviour and wearing rates from road-side surveys

For rear seats, the correlation is even stronger (R^2= 0.92). IRTAD numbers are slightly higher than self-declared behaviour (in average 10% of difference). In Sweden, Denmark and Finland, both wearing rates and show Germany and Portugal show the highest differences (about 25%). In Denmark, Finland, and Sweden the differences are very small (between 0% and 3%). In Denmark, Finland and Belgium, both ESRA and IRTAD percentages are high. In Italy and Greece, they are both low. The R^2 is of course influenced by the low values of Greece. However, the correlation without Greece is still high (R^2= 0.7).

Overall, the analysis shows a good relationship between ESRA and IRTAD measurements. This relationship is particularly valuable when the variations between countries are important as it was observed for the correlation on rear seats.

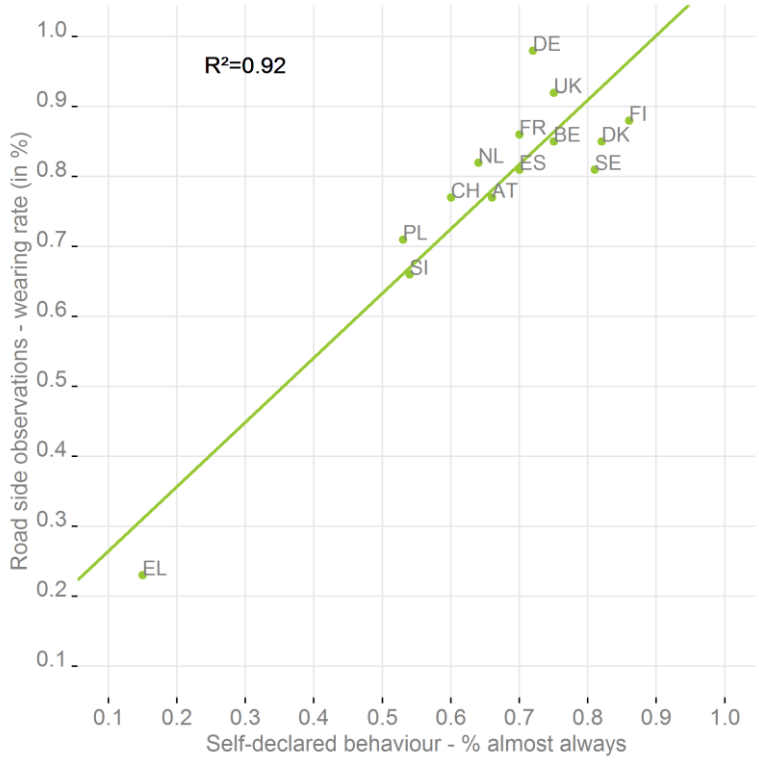


Figure 18: Rear seat: relationship between self-declared behaviour and wearing rates from road-side surveys

4.2. Comparison with SARTRE4 results for CRS

The last European survey including questions on self-declared use of seat belts was carried on in 2004 (SARTRE3), which is more than a decade ago. The percentage of car drivers who declared always wearing a seat belt was: 62% in built-up areas, 74% on country roads, 79% on main roads between towns and 84% on motorways. There has been improvement since 2004 as ESRA results show an average of 80% of car drivers declaring (almost) always wearing.

The ESRA results on self-declared behaviour for CRS are worse than those resulting from the previous European attitude survey (SARTRE4). Between 82 and 86% (depending on the road type/journey) of SARTRE4 respondents declared always securing correctly children, the figures was only 62% in ESRA.

However, we have reasons to believe that this difference is not directly attributable to behaviour changes but rather to methodological modifications. SARTRE4 used (almost always) face-to-face interviews while ESRA results are based on the response of an online panel. But in SARTRE4, there was an exception in the Netherlands two panels were used: one face-to-face and one online (Goldenbeld & de Craen, 2013). 97% of people from the face-to-face panel declared always making children travelling with them wear a seat belt or use appropriate restraint on motorways – but only 90% of the online panel gave the same answer. The same trend was observed on roads within built-up areas (face-to-face: 95% and online: 90.5%).

Social desirability in face to face surveys might thus partially explain the differences for CRS between SARTRE4 and ESRA. Besides, SARTRE4 answers always concerned a specific environment (motorways, within built-up areas). ESRA questions are more general and, implicitly includes all the environment, what can also partially explain the lower percentages. The ESRA online approach points out more unsafe behaviours for CRS.

5. Conclusions and recommendations

5.1. Conclusions

Wearing a seat belt is one of the most effective measures to substantially reduce the risk for serious crash-related injuries or the number of persons killed on the road. It is a legal requirement for all car occupants (Directive 91/671/EEC). This also holds for the use of CRS adapted to the size and weight of children (Directive 2003/20/EC).

The last European study on seat belt (SARTRE3, 2004) concluded that use rates were too low in many countries. In addition, too many drivers underestimated the benefits of wearing belts. With regard to CRS, the use rates found in SARTRE4 (2012) appear to be affected by a bias toward social desirable answers. Since those surveys were carried out, there was a lack of comparable data across Europe on road safety attitudes and self-declared behaviour on the use of seat belt and CRS

This thematic report described the attitudes and opinions on seat belt and CRS uses of road users in Europe. The survey results show that the level of acceptability of risky behaviour (i.e. not using a safety restraint) differs significantly according to gender, age and country. The level of acceptability for such risky behaviours is clearly lower among women and the oldest age group (55 years and older). Transporting children without securing them has a very low acceptability (3%), followed by not wearing a seat belt in front of the car (6%). 12% of the respondents still think it is rather acceptable of not wearing a seat belt in the back of the car.

Despite low levels of acceptability, the use rates are still too low. The analysis of the self-declared behaviour of respondents shows that seat belt wearing is much more widespread in the front of the car (84%) than in the back (62%). Here again some differences can be found according to the gender, age groups and country. There is a particular large variation in the use of seat belts in the back of the car among countries (values range between 15% and 86%).

CRS usage rates also show low values (European mean of 62% for CRS), especially when we compare these to SARTRE3 figures. Several factors impact on CRS appropriate use as studied by the logistic regression, among them gender and age. Compared to men, women are more likely to report that they always secure children under 150 cm when transporting them. Besides, only 49% of the youngest (18-34 years old) declare always securing correctly children under 150 cm and they are fewer to be aware of the risk of not securing them.

The risk awareness has a great impact on the use of CRS. The drivers who answered that it is dangerous if children, travelling with them, do not wear a seat belt or use appropriate restraint have 8.5 more chance to report to (almost) always use properly the child system. Specific awareness campaigns on child restraints are required to change behaviours, especially among young people. This action is even more important given that young people are often parents of young children.

It was also found that unclear instructions are also linked to lower usage of child restraints. There is still room for improvement in their description and control of their proper use. Those results call for strategies to increase the usage of passive safety devices.[2]

Europeans are favorable to strengthening enforcement measures for seat belt. Currently, carrying children without proper restraints is very rarely punished (about 3% out of the 15% of road users surveyed that had to pay a fine). However, in the less performing countries, people are mostly (60% or more) favorable to stricter traffic rules and increased number of controls.

2 For instance, systems exist including a sensor for detecting the presence of the child occupant, a sensor for determining whether the belt assembly is properly adjusted, and a sensor for determining whether the vehicle is in motion. The control unit provides an alert signal if the child is present, the vehicle is in motion and the belt assembly is not properly adjusted (Lawrence, 2006). The installation of such systems would help car occupants to ensure a proper use of the CRS. Innovative tools in this direction must be encouraged. With regard to seat belts, seat belt reminders systems could systematically be installed on rear seats.

5.2. Recommendations[3]

5.2.1. Policy recommendations at European level

- Include the use of seat belts and child restraint systems (CRS) in the future Policy orientations on Road Safety.
- Facilitate and support the exchange of best practice in terms of the use and enforcement of seat belts and child restraint systems across Member States.
- Type-approval requirements for the general safety of motor vehicles should include seat belt reminders as standard equipment for all seats.
- Define seat belt and CRS related indicators and set targets at European Union level, such as the prevalence of seat belt wearing, the adequate use of CRS, the number of controls for seat belts and the number of traffic fatalities attributable to not wearing seat belts and inadequate use of CRS.

5.2.2. Policy recommendations at national and regional level

- Develop a strategy to increase the usage of passive safety devices.
- Set national targets for wearing seat belts and develop an appropriate monitoring programme to measure progress.
- Conduct awareness-raising campaigns on the risks of not wearing seat belts (especially on the rear seats) and the inadequate use of CRS.
- Increase enforcement (and enforcement perception) in relation to wearing of seat belts and the use of CRS.
- [For countries were seat belt wearing rates are already high] Develop innovative ways to increase the seat belt wearing rates even further.

5.2.3. Specific recommendations to specific stakeholders

- *[To Non-Governmental Organizations (NGOs)]* Contribute to education and awareness raising campaigns and events promoting the use of seat belts and child restraint systems.
- *[To producers of child restraint systems]* Make the CRS easy to use and make the instructions more easy to understand (so that less inadequate use occurs).

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.

***

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

List of tables and figures

References

Elvik, R., Vaa, T., Erke, A., & Sorensen, M. (Eds.). (2009). *The handbook of road safety measures*. Emerald Group Publishing. 1124p.

ETSC (2014). *Ranking EU Progress on Car Occupant Safety (PIN Flash 27).* Retrieved from: http://etsc.eu/ranking-eu-progress-on-car-occupant-safety-pin-flash-27/ [14/05/2016].

European Commission (2014). Seat belts. Retrieved from: http://ec.europa.eu/transport/road_safety/topics/vehicles/seat_belts/index_en.htm [14/05/2016].

European Commission (2015). Fatalities at 30 days by transport mode in EU countries. Retrieved from: http://ec.europa.eu/transport/road_safety/pdf/statistics/2014_transport_mode_graph.pdf [18/05/2016].

Glassbrenner, D., & Strarnes, M. (2009). *Lives saved calculations for seat belts and frontal air bags*. NHTSA Technical Report DOT HS 811 206. 68p.

Goldenbeld, C., & de Craen, S. (2013). The comparison of road safety survey answers between web-panel and face-to-face; Dutch results of SARTRE-4 survey. *Journal of Safety Research*, *46*, pp. 13-20. http://doi.org/http://dx.doi.org/10.1016/j.jsr.2013.03.004.

Hosmer, Jr., D. W., Lemeshow, S. & Sturdivant, R. X. (2013). *The Multiple Logistic Regression Model, in Applied Logistic Regression*, Third Edition, John Wiley & Sons, Inc., Hoboken, NJ, USA. 510p. http://dx.doi.org/10.1002/9781118548387.

IRTAD (2016). Seat belt wearing rates (front and rear seat passengers). Data extracted from OECD.Stat [01/06/2016] .

Lawrence, R., Kincaid, K., Fortune, K., Porter, S., Sullivan, S. & Wallner, E. (2006). *Child Restraint System With In-Motion Belt Status Monitoring*. US 2006/0049929 A1.

Lequeux, Q. (2016). *Quid du respect du port de la ceinture de sécurité? Résultats de la mesure de comportement ceinture 2015*. Bruxelles, Belgique: Institut Belge pour la Sécurité Routière - Centre de Connaissance Sécurité Routière. 30 p.

OECD/ITF (2015). *Road Safety Annual Report 2015*, OECD Publishing, Paris. http://dx.doi.org/10.1787/irtad-2015-en.

SARTRE (2004). European drivers and road risk. SARTRE 3 results. Part 1. Report on principal analyses. INRETS, Arcueil Cedex. Retrieved from: http://www.attitudes-roadsafety.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/Results/SARTRE%203%20results/S3_reports/Part%201_Report%20on%20principal%20results.pdf&t=1465653992&hash=59014417c394fd1c86d1824582b87fa3 [10/05/2016].

SARTRE (2004). *European drivers and road risk. SARTRE3 results. Part 2. Report on in-depth analyses.* INRETS, Arcueil Cedex. Retrieved from http://www.attitudes-roadsafety.eu/index.php?eID=tx_nawsecuredl&u=0&file=fileadmin/Results/SARTRE%203%20results/S3_reports/Part%202_Report%20on%20in-depth%20analyses.pdf&t=1465653992&hash=ac83bdf60a1379d750f073683ac668ef [07/05/2016].

SARTRE (2012). *European road users' risk perception and mobility. The SARTRE4 survey.* Retrieved from: http://www.attitudes-roadsafety.eu/index.php?eID=tx_nawsecuredl&u=0&file=uploads/media/Sartre-4-report.pdf&t=1464707730&hash=b4e3c5362de175defd5873e0899326f3 [28/03/2016].

SWOV (2012). *Seat belts, airbags and child protection devices. Fact sheet.* Leidschendam, Netherlands. 7p.

The pan-European survey (2015). *Main results.* Retrieved from: https://media.ford.com/content/fordmedia/feu/en/news/2015/04/08/over-1-in-3-in-europe-risk-their-lives-by-ignoring-rear-seatbelt.html [04/05/2016].

World Health Organization (2015). *Global status report on road safety 2015.* Retrieved from: http://www.who.int/violence_injury_prevention/road_safety_status/2015/en/ [20/05/2016].

Yannis, G., Laiou, A., Vardaki, S., Papadimitriou, E., Dragomanovits, A., & Kanellaidis, G. (2011). Parameters affecting seat belt use in Greece. *International Journal of Injury Control and Safety Promotion*, 18(3), pp. 189-197. http://doi.org/10.1080/17457300.2011.551941.

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 kilometres[4] 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?

[4] *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)[5] 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

[5] *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 parties[6] – 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?[7]

[6] *This option refers to an 'incident', not a crash → left out in the analysis*

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

ESRA

www.esranet.eu

European Survey of Road users' safety Attitudes