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E-Survey of Road users' Attitudes

Pedestrians

ESRA2 Thematic report Nr. 10

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List of Abbreviations

Country codes

AT	Austria
AU	Australia
BE	Belgium
CA	Canada
CH	Switzerland
CZ	Czech Republic
DE	Germany
DK	Denmark
EG	Egypt
EL	Greece
ES	Spain
FI	Finland
FR	France
HU	Hungary
IE	Ireland
IL	Israel
IN	India
IT	Italy
JP	Japan
KE	Kenya
KR	Republic of Korea
MA	Morocco
NG	Nigeria
NL	Netherlands
PL	Poland
PT	Portugal
RS	Serbia
SE	Sweden
SI	Slovenia
UK	United Kingdom
US	United States
ZA	South Africa

Other abbreviations

ESRA	E-Survey of Road Users' Attitudes
EC	European Commission
ETSC	European Transport Safety Council
EU	European Union
ICW	Individual country weight used in ESRA2
ITF	International Transport Forum
WHO	World Health Organisation
SDR	Social desirable responding score

Executive summary

Objective and methodology

ESRA (E-Survey of Road users' Attitudes) is a joint initiative of road safety institutes, research centres, public services, and private sponsors from all over the world. The aim is to collect and analyse comparable data on road safety performance, in particular road safety culture and behaviour of road users. The ESRA data are used as a basis for a large set of road safety indicators. These provide scientific evidence for policy making at national and international levels.

Vias institute in Brussels (Belgium) initiated and coordinates ESRA, in cooperation with eleven core group partners (BASt, BFU, CTL, IATSS, IFSTTAR, ITS, KFV, NTUA, PRP, SWOV, TIRF). At the heart of ESRA is a jointly developed questionnaire survey, which is translated into national language versions. The themes covered include self-declared behaviour, attitudes and opinions on unsafe traffic behaviour, enforcement experiences and support for policy measures. The survey addresses different road safety topics (e.g. driving under the influence of alcohol, drugs and medicines, speeding, distraction) and targets car occupants, motorcycle and moped drivers, cyclists and pedestrians.

The present report is based on the second edition of this global survey, which was conducted in 2018 (ESRA2_2018). In total this survey collected data from more than 35 000 road users across 32 countries. An overview of the ESRA initiative and the project-results is available on: www.esranet.eu.

This thematic ESRA report on pedestrians describes the attitudes and opinions of this group of road users in 32 countries. It includes comparisons amongst the participating countries as well as results in relation to age and gender. The pedestrians' aspects analysed in this thematic report cover: the frequency of walking, feeling of safety, the self-declared risky behaviour in traffic, self-declared accident involvement, and support for road safety policy measures.

Key results

The relevant findings related to pedestrians and walking are summarised below:

- Walking is the most popular mean of transport. In ESRA2 survey 92.1% of the respondents declared that they had walked at least a few days a year, 87.6% - a few days a month, 77.5% - 1-3 days week, and 57.8% - at least four days a week. Trips on foot take place most frequently in Serbia (83.4% say they walk at least four days a week), Spain and Hungary (77,9% and 77.5% respectively), and Switzerland (76.9%). Walking is least frequently declared by residents of the United States (40.6%), Canada (42.3%), Nigeria (42.9%), and Egypt (43.8%).
- Men declared to walk more often than women. The differences between genders are significant, but the strength of the association between the frequency of walking and gender is small.
- In all age groups, European respondents declared to walk more often than in other regions. Walking is the least frequently chosen way of moving in traffic by road users in North America. Outside Europe, the gender differences are visible. Women declared that they often walk less frequently.
- ESRA2 survey participants felt very safe in public transport (tram, subway and tram/streetcar) and walking was ranked fourth in this classification (first place among private means of transport), which, given the widespread opinions about the high risk of pedestrians in road traffic, seems a bit unexpected.
- Pedestrians felt the safest in Switzerland (71.2% declared feeling "very safe"), Denmark (65.1%), Austria (62.2%), Sweden (60.3%), and Germany (58.3%). Certainly, attention should be paid to the declarations of residents of South Africa (only 19.8% of them admitted that they feel "very safe" while walking), Belgium (22.2%), the Netherlands (24.2%), the Republic of Korea (27.6%), and Japan (31.9%).
- In younger age groups, men feel safer on the road as pedestrians, in older groups - women. The undoubted surprise is that the differences between age groups are not vast, and the strength of

the association between feeling safe and age group is small. It is worth noting that, contrary to expectations, the feeling of safety while walking does not decrease significantly with age.

- It cannot be overlooked that in Europe and North America feeling of safety increases with pedestrians' age, and in Africa and Asia-Oceania at the same time the older the pedestrian, the lower the level of feeling safe in traffic.
- The link between the objective pedestrian fatality rate (number of fatalities per million population) and feeling safe is negative. The value of the Spearman rank correlation coefficient is moderate.
- The most significant changes in feeling of safety in the group of pedestrians in the last 2-3 years have taken place in Switzerland (39.4% increase), Israel (+30.9%), Canada (+26.2%), France (+25.2%) and Australia (+25.0%). A relatively small change is recorded in the Netherlands (+5.0%), Greece (+6.3%), Denmark (+7.4%), Italy (+8.3%) and the USA (+9.1%). ESRA survey results show that the feeling of safety in road traffic among pedestrians has increased in the last 2-3 years, but there are still many pedestrians who feel insecure in traffic.
- The most common pedestrian risky behaviour is crossing the road outside the pedestrian crossing. 70% of respondents stated they had behaved this way at least once in the last 30 days, 56% declared they had read a text message on the phone or checked social media while walking in the street, and 44% said they had crossed the road when a pedestrian light was red. Relatively least frequently, the surveyed respondents declared that they had listened to music through headphones.
- In countries participating in ESRA2 survey, over 70% of respondents declared that in the last 30 days they had at least once crossed the road at places other than at a nearby pedestrian crossing. This behaviour is mostly reported by pedestrians in Spain (84.5%), Serbia (81.9%), Greece (80.6%), Kenya (80.6%) and Ireland (80.3%). Relatively fewest attempts to cross the road outside the pedestrian crossing were declared in Republic of Korea (58.4%), the United States (62.4%), Australia (65.3%) and the Netherlands (66.8%).
- As expected, men and young pedestrians more often admitted to cross the road outside the designated crossings. It is worth noting, however, that even in the group of respondents aged 65+, the percentage of people declaring such behaviour is quite high (at least 69% of men and 70% of women). Undoubtedly, this is a result that should be taken into consideration.
- The country with the highest rate of crossing the road when a pedestrian light is red is Spain (75.5% respondents admitted to that behaviour at least once in the 30 days), followed by Portugal (67.3%), Ireland (67.2%), France (65.7%) and Sweden (64.1%). This behaviour was reported the least frequently by the respondents in Slovenia (30.1%), Poland (35.5%), Hungary (36%), Nigeria (37.5%), as well as the Czech Republic and Italy (37.7% each). Crossing the road at a red light is mostly declared in Europe (51,8% respondents admitted to that behaviour at least once in the 30 days) and Africa (49.1%), followed by North America (42.8%) and Asia-Oceania (40.8%).
- 50% of young men and 49% of young women (18-24 years old) admitted they had crossed the road in the last month at a red light. In the 65+ age group, this proportion dropped to 40% among men and to 35% among women.
- The highest frequency of reading a text message/email or checking social media was observed in the pedestrians group (56%). In other groups these rates were lower: moped drivers (36%), car drivers (34%), motorcyclists (30%), and cyclists (21%).
- Countries with the highest rates of pedestrians reading text messages, emails or checking social media at least once during the last 30 days include Israel (77.1%), Spain (73.7%), Kenya (72.3%), the Republic of Korea (71.8%), Serbia and Morocco (70.6%) and Egypt (70.2%). Pedestrians who were least likely to admit to this type of behaviour come from Canada (47.7%), Japan (47.9%) and Germany (49.8%).
- 68% of young men and 66% of young women (18-24 years old) admitted to read a text while walking in the street in the last 30 days. There are only slight differences among the first three age groups (18-24, 25-34, 35-44). The decrease in the frequency of using these phone functionalities in traffic was observed in the respondents over 45 years old. In all age groups, except 25-34 and 65+, men were more likely to read texts and check social media while walking.
- The countries with the highest proportions of respondents declaring that they walked while listening to music through headphones at least once in the last 30 days are Egypt (62.2%), Nigeria (56.3%), Republic of Korea (56.1%), Kenya (55.4%) and Morocco (55.1%), while the lowest shares were

noted in Slovenia (20.9%), Japan (27.3%) and Belgium (27.4%). Music through headphones while walking in the street is most often listened to by Africans, and then by residents from Asia and Oceania, North America and Europe.

- Concerning the effects of gender and age on the frequency of listening to music while walking on the streets, the collected ESRA2 results indicate a clear impact of age on the rate of using mobile devices. In the 18-24 age group, over 58% of respondents stated that during the last 30 days they had been listening to music through headphones while walking. In the 65+ age group, only 18% of men and 16% of women made the same declaration.
- Pedestrians were involved in 23.8% of all road crashes in which respondent or somebody else had to be taken to the hospital and in 22.4% with only minor injuries for respondent or other people (no need for hospitalisation). Only motorcyclists were involved in road crashes more often.
- Risk of being involved as a pedestrian in road crashes in which the respondent or somebody else had to be taken to the hospital is the highest in Indie, Egypt, Republic of Korea, Nigeria, Kenya and Morocco. A certain surprise is the high position in this ranking of countries such as Austria, the United States, Poland and Japan. In comparison, the lowest risk was noted in Finland, Germany, France, Italy, and Serbia.
- Policy measures for pedestrians enjoyed the least support among respondents of ESRA2 survey. Only 56%of them supported the ban on using headphones (earbuds) when walking on the streets and 57% supported the obligation for pedestrians to wear reflective materials when walking on the streets. Interestingly enough, respondents supported very similar solutions designed for cyclists or PTW drivers more willingly.
- The countries with the highest proportions of respondents declaring support for a legal obligation to require pedestrians to wear reflective materials when walking in the streets in the dark are Slovenia (84.9%), Finland (81.8%), Poland (79.8%) and Hungary (79.4%). In comparison, the lowest support for this measure was noted in Australia (31.1%), Israel (42.1%), Serbia (42.6%) and the Netherlands (42.9%). It is worth reminding at this point that so far the obligation for pedestrians to wear reflective materials when walking in the streets in the dark was introduced only by Serbia; in several countries (Czech Republic, Hungary, Poland, Spain) this obligation is only valid outside build-up area; in Australia, Finland and Great Britain it is a recommendation.
- The introduction of the ban on using headphones while walking in the street is mainly supported by the respondents in Kenya (75.1%), Nigeria (72.0%), India (71.5%) and Slovenia (58.7%). This measure gained lowest support in Israel (25.1%), Finland (25.3%), Sweden (25.5%) and France (31.1%). So far, only two countries - Israel and Serbia - have prohibited using headphones (or earbuds) while walking on the streets, but this rule applies only when crossing the street.

1 Introduction

Walking is the most natural and universal mean of transport and practically every trip has some walking components. Walking is commonly used for short trips. People walk primarily for shopping, to public transport stops, school or workplace, for recreation and tourism, to public utility places, etc. It is estimated that more than 75% of walks are under 1 km, with only 5% of the trips above 2 km. Walking offers essential health benefits, it is inexpensive, emission-free, equally accessible for all regardless of income, and for many citizens is a source of great pleasure (ITF, 2012; WHO, 2013). The European Commission (2018b) estimates that around 20-40% of all journeys in Europe are made on foot or by bicycle. The OECD forecasts that walking represents as much as 50% of trips in urban areas (ITF, 2012).

Despite its fundamental importance, walking is sometimes referred to as the neglected mode of transport. Pedestrians are treated as "walkers" – those who walk for pleasure rather than use walking as a mean of transportation. Part of the problem lies in the simplicity of walking (Olszewski, P., 2007) – pedestrians can move around without relying on any technology and with practically no infrastructure (a firm surface to walk upon is sufficient). With growing motorisation and rising incomes, a downward trend was observed across the world in the number of trips made on foot. Walking significance had gradually declined, first with the development of public transport and then with the increasing popularity of private cars (Olszewski, P., 2007). According to Buehler, R. et al. (2012) the modal share of walking decreased by roughly one-half in France and the United Kingdom, by one-third in Germany, and by one-fourth in Denmark. However, in the last dozen or so years, a gradual increase in the interest in walking could have been observed in many countries. For example, according to the UK's most recent National Travel Survey (Department for Transport, 2019), the average number of yearly trips made by people living in England have increased each year from 2015 to 2018. Walking was the second (after car trips) most often used mode of transport in England in 2018, constituting 27% of total trips (compared to 61% for car trips). In 2018, the number of walking trips was at the highest level since 2006, and miles travelled at the highest level since 2006. The increased interest in walking is the result of, among other things, the popularisation of active forms of transport, which combine the ability to move with physical activity beneficial for maintaining good health. Despite these changes in many countries of the world, walking is seldom captured in governmental statistics on mobility and is often neglected in planning and policy development (ITF, 2012).

Walking on the streets and roads is also dangerous. Some of the pedestrians behaviours could also be perceived as risky, not compliant with traffic rules or expectations of other road users (i.e. crossing the road outside the designated areas, sudden change of pace od direction of crossing, participation in traffic after consuming alcohol and illegal drugs). Research on pedestrians has shown that a risk experienced by a pedestrian is ten times higher than the risk experienced by car occupant (Santacreu, A., 2018). Pedestrians and cyclists suffer the most severe consequences in collisions with other road users. Each year approximately 400,000 pedestrians are killed on roads worldwide; this represents around 26% of all road traffic deaths globally (ITF, 2012; WHO, 2013). In the European Union, approx. 21% of all road traffic deaths are pedestrians (EC, 2018a), and in Africa, nearly 40% (WHO, 2018). But the real number of pedestrian fatalities is probably higher than what the official statistics show. In many countries, some pedestrian accidents are not recorded in official police road accident statistics; other crashes involving pedestrians are poorly reported (ITF, 2012; WHO, 2013). The lack of complete and reliable data on pedestrian traffic determinants makes it difficult to plan effective preventive measures at present. Fortunately, the number of deaths among pedestrians has been decreasing in the recent years, although the decline is slower than in case of vehicle occupants. In the last ten years in the European Union deaths among pedestrians decreased by 41% compared to a 53% decrease for vehicle occupants (Adminaite, D. et al., 2015).

This report presents the findings on walking provided by the second edition of the ESRA survey. Data was collected in 32 countries around the world at the end of 2018. The pedestrian aspects analysed in this thematic report cover: the frequency of walking, feeling of safety, the self-declared risky behaviour

in traffic, self-declared accident involvement, and support for road safety policy measures. It also includes comparisons amongst the participating countries as well as results concerning age and gender.

2 Methodology

ESRA (E-Survey of Road users' Attitudes) is a joint initiative of road safety institutes, research centres, public services, and private sponsors from all over the world. The aim is to collect and analyse comparable data on-road safety performance, in particular road safety culture and behaviour of road users. The ESRA data are used as a basis for a broad set of road safety indicators. These provide scientific evidence for policymaking at national and international levels.

ESRA data is collected through online panel surveys, using a representative sample of the national adult populations in each participating country (at least N = 1000 per country). At the heart of this survey is a jointly developed questionnaire, which is translated into national language versions. The themes covered include self-declared behaviour, attitudes and opinions on unsafe traffic behaviour, enforcement experiences and support for policy measures. The survey addresses different road safety topics (e.g. driving under the influence of alcohol, drugs and medicines, speeding, distraction) and targets car occupants, motorcycle and moped drivers, cyclists and pedestrians. The present report is based on the second edition of this global survey, which was conducted in 2018. In total, this survey collected data from more than 35 000 road users across 32 countries. The participating countries in ESRA2 were:

- Europe: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Poland, Portugal, Serbia, Slovenia, Spain, Sweden, Switzerland, United Kingdom;
- America: Canada, USA;
- Asia and Oceania: Australia, India, Israel, Japan, Republic of Korea;
- Africa: Egypt, Kenya, Morocco, Nigeria, South Africa.

In each country surveyed by ESRA2, about 1000 road users participated in the survey. A detailed overview of the data collection method and the sample per country can be found in (Meesmann & Torfs, 2019; ESRA2 methodology).

Vias institute in Brussels (Belgium) initiated and coordinated ESRA, in cooperation with eleven core group partners (BASt (Germany), BFU (Switzerland), CTL (Italy), IATSS (Japan), IFSTTAR (France), ITS (Poland), KFV (Austria), NTUA (Greece), PRP (Portugal), SWOV (the Netherlands), TIRF (Canada)). The results of the ESRA2_2018 survey will be published in a Main Report, a Methodology Report and at least fifteen Thematic Reports. Furthermore, 32 country fact sheets were produced, in which national key results are compared to a regional mean (benchmark) and scientific articles, national reports and many conference presentations are currently in progress. An overview of the results and news on the ESRA initiative is available on www.esranet.eu.

Driving under influence	Child restraint systems	Cyclists
Speeding	Unsafety feeling & risk perception	Moped drivers & motorcyclists
Distraction (mobile phone use)	Enforcement	Young road users
Fatigue	Vehicle automation	Elderly road users
Seat belt	Pedestrians	Gender aspects

The present report summarises the results of ESRA2 concerning pedestrians and walking. There are many definitions of pedestrians and walking. In modern times, the term pedestrian usually refers to

someone travelling on foot during at least part of the journey. Sometimes a pedestrian is also a person who is running, jogging, hiking or even sitting or lying down in the roadway (WHO, 2013). Finally, the group of pedestrians sometimes includes people who use wheelchairs, skateboards, roller skates or scooters. So it is a very diverse group. The ESRA2 survey adopted that a "pedestrian" is a person aged 18+ who has travelled 100 metres on foot (walking or running) or used human muscle-powered devices (e.g. inline skate or skateboard) for the last 12 months at least a few days a month. This definition means that persons under 18 years of age (including children) for whom walking is an essential mean of transport are excluded from the study. This report presents the results of ESRA2 questions on walking. They cover the following topics:

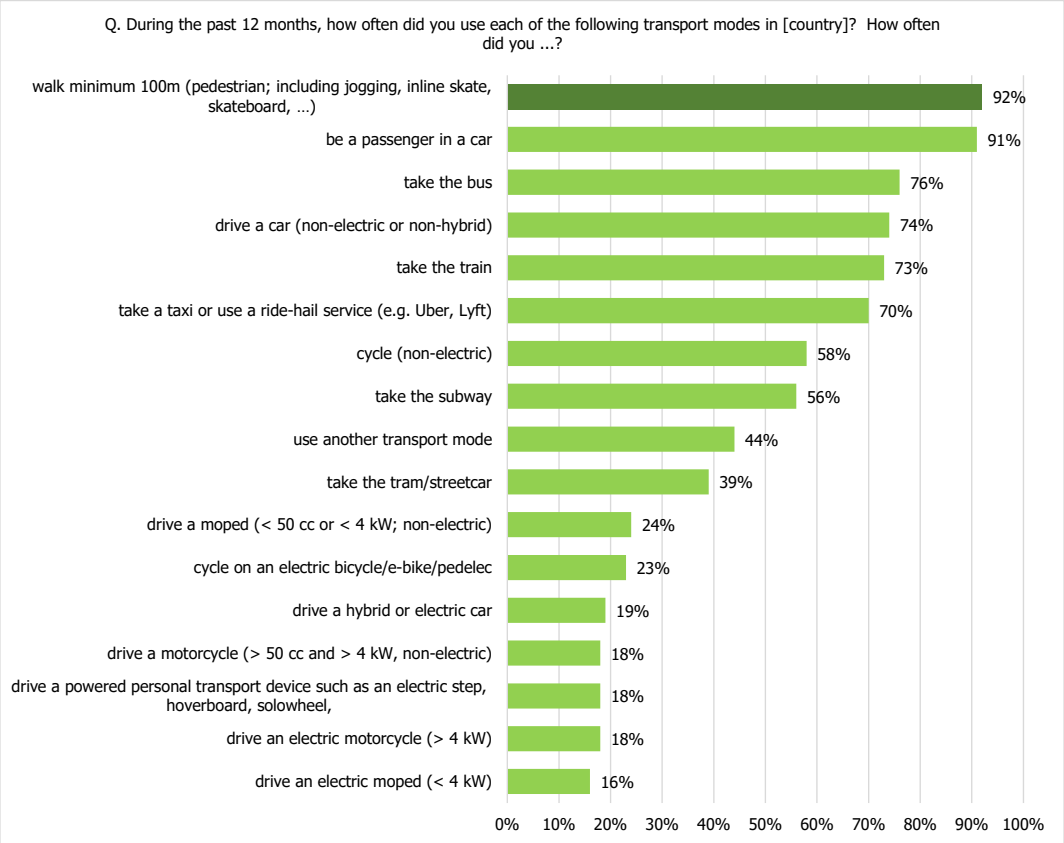
- frequency of walking (in the past 12 months),
- feeling safe when walking,
- self-declared pedestrian risky behaviour (last 30 days),
- self-declared pedestrian accident involvement (in the past 12 months),
- support for pedestrian-specific policy measures.

In the analysis of individual issues, particular attention will be paid to the comparison of countries and regions (Europe, North America, Asia-Oceania, and Africa) and the impact of age and gender on the variables analysed. Note that a weighting of the data was applied to the descriptive analyses. This weighting took into account small corrections for national representativeness of the sample based on gender and six age groups: 18-24y, 25-34y, 35-44y, 45-54y, 55-64y, 65y+; based on population statistics from United Nations data (United Nations Statistics Division, 2019). For the regions, the weighting also took into account the relative size of the population of each country within the whole set of countries from this region. SPSS 25.0 and R 3.6.0 were used for all analyses. Statistical tests of differences between regions, gender and age groups have been performed. Given the rather large sample sizes, nearly all regional, gender and age group differences described in this chapter were statistically significant at the $p < 0.001$ level. Besides statistical significance, also, the effect sizes of the tested differences were calculated.

3 Results

3.1 Frequency of walking (in the past 12 months)

In the ESRA2 survey, 22 means of transport were presented to the respondents, including walking. Respondents were asked to assess how often they had used a particular mode of transportation during the last year. They could choose from five possible answers: at least four days a week - 1 to 3 days a week - a few days a month - a few days a year - never. For further analysis, the first two answers were selected. Figure 1 shows the 17 most popular modes of transport placed in order of frequency of use.



Weighting: ESRA32 weight. Reference population: all respondents. Answer: using "a few days a year".

Figure 1: Self-declared frequency of using different transport modes during the last 12 months among all respondents.

As it can be seen from the figure, walking is the most popular mean of transport. In ESRA2 survey 92.1% of the respondents declared that they had walked at least a few days a year, 87.6% - a few days a month, 77.5% - 1-3 days week, and 57.8% - at least four days a week. It is worth remembering however, that the definition of walking adopted in the ESRA2 survey is very liberal (walk minimum 100 metres). Moreover, walking may also be an element of travel by other means of transport (e.g. to a car, public transport stop or a bicycle docking station).

The decision to walk or not to walk is influenced by a wide range of factors, for example gender, age, social values and attitudes, health, perception of risk, perception of the physical and social environment, the availability and relative attractiveness of other transport modes, type and density of urban development, quality of the walking environment, climate and weather conditions, etc. (Olszewski, P., 2007; Fyhri, A. et al.; 2010; ITF, 2012; Furian, G. et al., 2016, De Silva, C.S. et al., 2017). Table 1

shows the results of walking frequency in individual countries and regions. The countries in the table are ranked according to the percentage of respondents who declared that they had walked at least four days a week.

Table 1: Self-declared frequency of walking during the last 12 months by country and region.

Q. During the past 12 months, how often did you use each of the following transport modes in [country]? How often did you walk

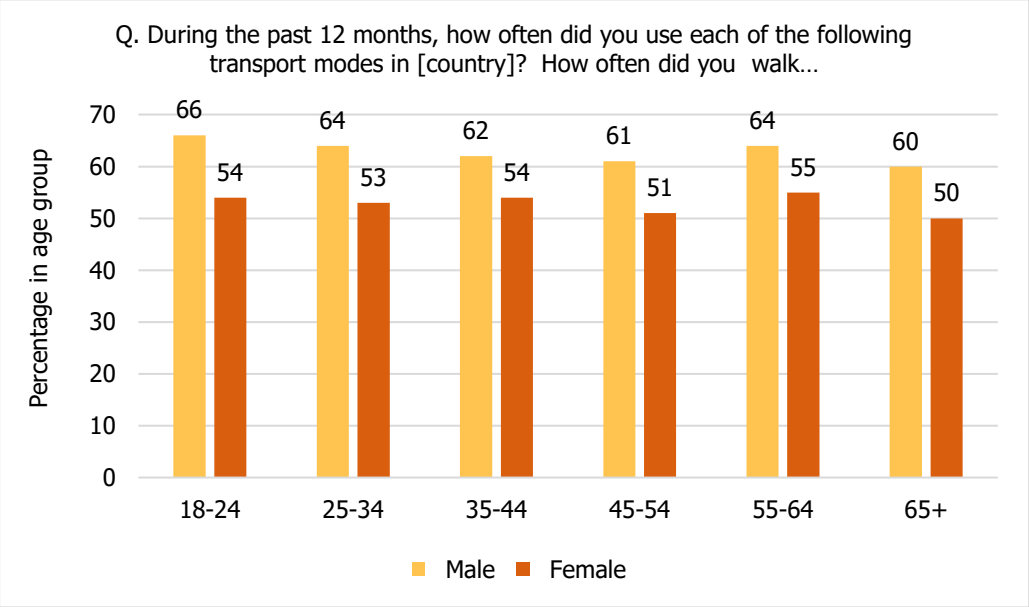
Country	At least 4 days a week	1 to 3 days a week	A few days a month	A few days a year	Never
Serbia	83.4%	7.9%	4.4%	1.7%	2.6%
Spain	77.9%	12.5%	3.7%	2.3%	3.6%
Hungary	77.5%	13.8%	6.1%	1.4%	1.3%
Switzerland	76.9%	14.6%	5.4%	1.2%	1.9%
Czech Republic	74.9%	10.2%	7.6%	4.7%	2.6%
Austria	74.3%	16.3%	7.0%	1.7%	0.7%
Slovenia	73.2%	14.9%	7.8%	2.2%	1.9%
Denmark	69.4%	17.8%	7.4%	2.1%	3.3%
Finland	68.1%	21.0%	6.5%	2.8%	1.6%
Greece	66.4%	19.2%	8.5%	2.2%	3.7%
Germany	66.0%	20.8%	6.8%	2.3%	4.1%
Kenia	65.5%	21.0%	7.9%	3.2%	2.3%
Poland	65.1%	17.2%	10.4%	3.3%	3.9%
Sweden	65.0%	19.8%	10.0%	2.4%	2.7%
Italy	64.1%	20.6%	8.3%	2.5%	4.6%
Indie	62.8%	18.6%	9.1%	4.1%	5.4%
United Kingdom	61.4%	20.1%	7.0%	2.4%	9.1%
Netherlands	60.5%	21.6%	8.8%	2.2%	6.9%
France	59.2%	20.3%	10.1%	3.0%	7.4%
Portugal	58.9%	19.4%	12.1%	4.5%	5.1%
Ireland	58.6%	20.8%	10.4%	3.4%	6.7%
Australia	56.0%	23.6%	9.3%	4.8%	6.2%
Republic of Korea	55.8%	25.7%	7.8%	1.2%	9.6%
Belgium	53.8%	23.8%	12.6%	4.0%	5.8%
Israel	53.2%	21.4%	15.5%	4.9%	5.1%
Japonia	51.7%	16.2%	8.2%	4.7%	19.2%
Moracco	49.2%	22.1%	14.1%	7.7%	6.8%
South Africa	46.8%	22.9%	16.5%	7.2%	6.6%
Egypt	43.8%	22.9%	17.0%	6.9%	9.4%
Nigeria	42.9%	27.8%	20.3%	5.3%	3.6%
Canada	42.3%	25.4%	15.2%	6.8%	10.4%
United States	40.6%	22.4%	13.7%	7.9%	15.4%
Region	**At least 4 days a week**	**1 to 3 days a week**	**A few days a month**	**A few days a year**	**Never**
Europa (20)	65.8%	18.7%	7.8%	2.6%	5.1%
Asia Oceania (5)	61.0%	18.8%	9.1%	3.9%	7.1%
Africa (5)	47.3%	22.9%	15.7%	6.9%	7.1%
North America (2)	40.9%	22.6%	13.9%	7.8%	14.8%

Weighting: For analyses on national level - Individual country weight, for analyses on the regional level - Regional weight. Reference population: all respondents.

Trips on foot take place most frequently in Serbia (83% say they walk at least four days a week), Spain and Hungary (both 78%), Switzerland (77%). Walking is least frequently declared by residents of the United States (41%), Canada (42%), Nigeria (43%) and Egypt (44%). It is also worth noting that countries where the percentage of people declaring that they have not walked at all in the last year is relatively high and exceeds 10 per cent: Japan (19%), the United States (15%), Canada and the Republic of Korea (10% each). Without precise knowledge of the specifics of a given country, it is difficult to determine accurately the reasons for these differences between countries. According to the ITF (2012), the frequency of walking may be a result of cultural differences in attitudes towards walking compared to other modes of transport. Where car use is high, the number of trips made on foot decreases. The differences between the regions are significant ($X^2_{(12)}$=1277.687, N=31786, p<0.001), but the strength of the association between frequency of walking and regions is small (Cramer's V= 0.116).

Research on choice of walking as a transport mode across different age and gender groups remains limited. For example, the European Commission (2018a) states that walking is a particularly standard travel mode for children below the age of 12 and adults aged 75 and above. Other studies indicate that some age and gender groups of pedestrians walk more than the others. For example, Pollard T.M. et al. (2017) analysing the results of more than 30 different studies from high-income countries showed, that there was consistent evidence that more women than men walk for leisure, although effect sizes were small. This effect varies by age: more younger women than younger men walk for recreation, but the gender difference diminishes with age and appears to reverse in the oldest age groups. There was no consistent gender difference in walking for transport or in total walking (Pollard, T.M. et al., 2017). In turn, a recent English study (Department for Transport, 2019b) found that women make more walking trips and walk further than men. These findings were not fully confirmed in ESRA2 study.

Figure 2 shows the information on walking frequency in different age groups. The results are presented separately for men and women. Only answers indicating frequent walking ("at least four days a week") were selected for comparison.



Weighting: ESRA32 weight. Reference population: respondents walking "at least four days a week".

Figure 2: Self-declared frequency of walking during the last 12 months among respondents.

According to the graph, men declared to walk more often than women. The differences between gender are significant ($X^2_{(4)}$=363.845, N=31787, p<0.001), but the strength of the association between the frequency of walking and gender is small (Cramer's V= 0.107). The differences between age groups are significant ($X^2_{(20)}$=329.993, N=31788, p<0.001), but the strength of the association between the

frequency of walking and age groups is small (Cramer's V= 0.051). Table 2 provides data on the age and gender of frequent walkers ("at least four days a week") by the four regions analysed in ESRA 2.

Table 2: Self-declared frequency of walking during the last 12 months by age, gender and region.

	Male					
	18-24	25-34	35-44	45-54	55-64	65+
Europe (20)	69.1%	66.8%	68.2%	70.6%	69.9%	69.6%
North America (2)	50.2%	46.9%	50.4%	42.7%	50.1%	44.3%
Asia Oceania (5)	70.3%	67.8%	64.3%	62.6%	67.6%	61.7%
Africa (5)	56.9%	57.0%	52.8%	52.7%	49.2%	39.3%
	Female					
	18-24	25-34	35-44	45-54	55-64	65+
Europe (20)	66.7%	64.1%	61.4%	65.9%	61.4%	59.9%
North America (2)	25.7%	38.3%	43.4%	37.6%	28.9%	33.1%
Asia Oceania (5)	58.3%	55.6%	56.9%	49.6%	65.0%	51.3%
Africa (5)	47.6%	39.1%	35.9%	44.1%	44.0%	29.7%

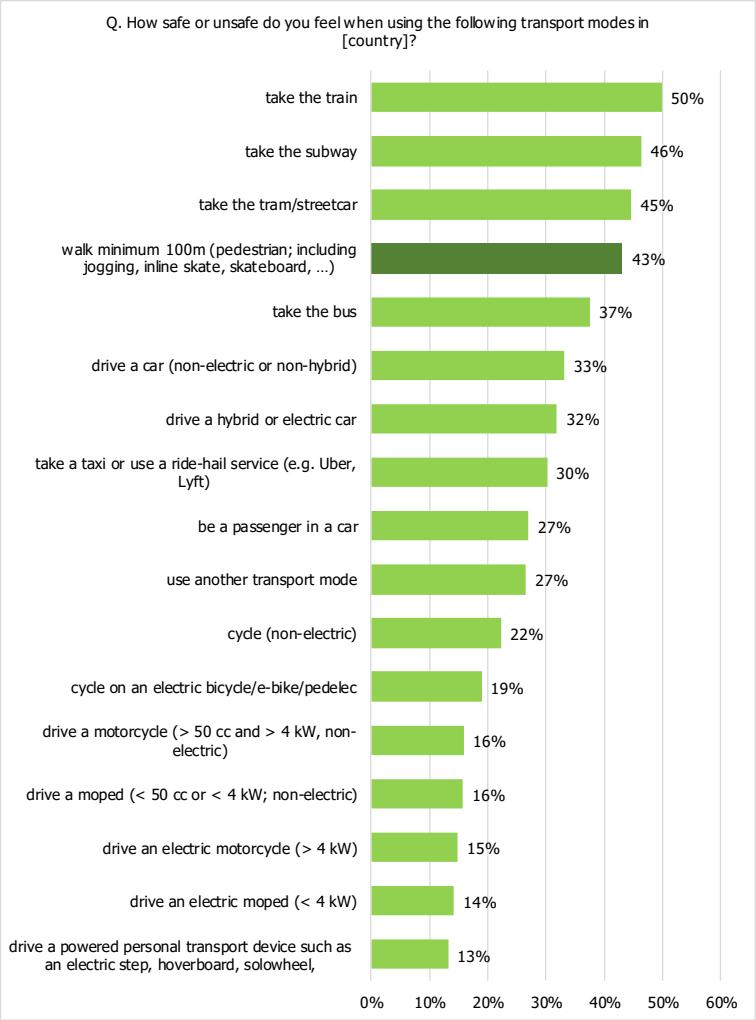
Weighting: Regional weight. Reference population: respondents walking "at least four days a week".

In all age groups, European respondents declared to walk more often than in other regions. Walking is the least frequently chosen way of moving in traffic by road users in North America. Outside Europe, the gender differences are visible. Women declared that they often walk less frequently. Perhaps one of the reasons for this situation is threats and realities of gender-based violence in public: in public transportation, parks, on the streets, women may feel less inclined to walk in certain areas at certain times. Certainly the declarations of young women (18-24 years old) from North America and older people (65+) from Africa are worth deeper analyses.

3.2 Feel safe when walking (in the past 12 months)

Feeling safe is one of the vital human's needs. It has also a significant impact on the decision to walk, especially among children and older people (ITF, 2012) and on the behaviour of pedestrians in road traffic. For pedestrian feeling of (un)safety can be related to a fear of being involved in an accident (safety-related risk perception) as well as to a fear of the risk of being a victim of criminal offence, violence or threat (security-related risk perception). Brown and Groeger (as cited in Deery, 1999) believe, for example, that the feeling of safety may depend on information regarding the potential hazards in the traffic environment and information on the ability to prevent those potential hazards.

ESRA2 respondents who had used different modes of transportation at least "a few days a year" over the past year, had to rate different modes of transport on an 11-point scale, where 0 represents "very unsafe" and 10 "very safe". For comparisons, only answers indicating a strong feeling of safety were chosen (answers 9 and 10).



Weighting: ESRA32 weight; Reference population: respondents who have used different modes of transportation at least "a few days a year". Answer 9 and 10 from an 11-point scale from 0= very unsafe to 10= very safe

Figure 3: Self-declared feeling safe when using different transport modes among all respondents.

According to the presented study, research participants felt very safe in public transport (tram, subway and tram/streetcar). Walking was ranked fourth in this classification (first place among private means of transport), which, given the widespread opinions about the high risk of pedestrians in road traffic, seems a bit unexpected. One of the possible explanations for this situation is the results of the Norwegian online public opinion poll (Backer-Grøndahl et al., 2009). Respondents were asked about their perception of ten different modes of transport. For private means of travel, the general tendency was to be related to a high perceived risk of accidents. In contrast, public means of transport were linked to a high perceived risk of unpleasant situations. Pedestrians turned out to be the "exception"; people appear to be more afraid of situations in which they think they are likely to be exposed to threats, violence, and other unpleasant conditions, than of being involved in an accident as a pedestrian. These trends occur mainly during the night hours.

The following table shows the self-declared feeling safe results per country and region. Countries are ranked according to the value "feel very safe".

Table 3: Self-declared feeling safe while walking among pedestrians during the last 12 months.

Q. How safe or unsafe do you feel walking minimum 100m (pedestrian; including jogging, inline skate, skateboard, …) in [country]?

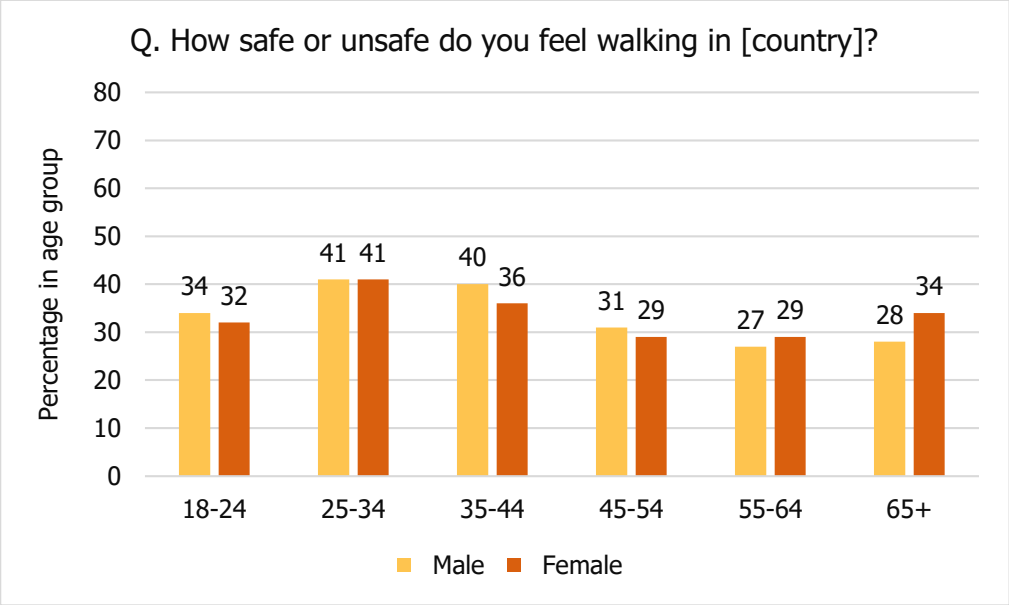
	10-Very safe	9	8	7	6	5	4	3	2	1	0-Very unsafe
Switzerland	57.4%	13.8%	11.8%	6.8%	2.8%	3.0%	1.5%	1.4%	0.7%	0.3%	0.5%
Denmark	48.9%	16.2%	13.1%	5.8%	3.4%	4.3%	1.5%	2.0%	1.8%	1.0%	2.0%
Austria	47.2%	15.0%	13.6%	7.7%	3.4%	5.3%	1.8%	2.3%	1.6%	0.5%	1.5%
Sweden	45.5%	14.8%	15.4%	7.7%	4.9%	4.1%	2.8%	2.1%	1.1%	0.4%	1.2%
Germany	40.5%	17.8%	16.7%	8.2%	4.7%	5.0%	2.2%	2.0%	1.1%	0.6%	1.1%
Israel	34.4%	20.4%	16.3%	8.5%	5.2%	5.5%	2.9%	2.2%	1.8%	1.2%	1.7%
Australia	34.0%	18.3%	19.4%	11.4%	4.7%	5.9%	2.3%	2.1%	0.8%	0.5%	0.7%
Kenya	32.5%	9.2%	11.0%	10.3%	6.2%	10.3%	3.7%	5.1%	4.0%	2.2%	5.4%
Slovenia	31.0%	12.3%	16.0%	9.3%	5.9%	10.2%	4.4%	4.0%	1.9%	1.4%	3.5%
Moracco	30.4%	8.6%	11.3%	6.4%	5.6%	11.5%	5.5%	4.9%	3.7%	2.4%	9.6%
Egypt	29.5%	7.2%	9.0%	8.1%	7.1%	14.2%	5.7%	4.5%	3.1%	1.9%	9.7%
Canada	29.2%	20.3%	20.0%	12.1%	6.3%	6.9%	1.8%	1.6%	0.8%	0.6%	0.4%
United Kingdom	28.5%	16.6%	20.3%	12.5%	5.4%	7.6%	3.3%	2.6%	1.2%	0.5%	1.3%
Spain	28.4%	18.5%	18.9%	10.3%	5.5%	7.0%	3.5%	3.7%	1.5%	0.9%	1.8%
Finland	28.0%	26.9%	20.7%	9.7%	4.3%	4.6%	2.6%	1.1%	0.9%	0.6%	0.6%
Indie	27.8%	14.5%	15.0%	10.5%	7.1%	7.8%	4.9%	3.8%	2.6%	2.2%	3.8%
Serbia	26.6%	10.6%	15.6%	8.8%	3.9%	11.7%	4.1%	5.4%	4.5%	2.1%	6.8%
Hungary	25.4%	12.0%	16.8%	13.7%	7.1%	14.4%	4.2%	2.7%	1.3%	0.5%	1.9%
Portugal	25.2%	14.3%	21.0%	12.0%	6.4%	10.6%	3.7%	2.6%	1.6%	1.0%	1.5%
Ireland	24.9%	13.8%	20.0%	11.4%	6.9%	9.3%	3.7%	4.9%	2.1%	0.7%	2.3%
Czech Republic	24.4%	17.7%	14.8%	12.5%	6.6%	10.4%	3.3%	3.6%	3.1%	2.3%	1.4%
Greece	23.9%	10.7%	17.6%	11.0%	10.2%	8.2%	4.5%	7.5%	4.7%	0.8%	1.0%
France	23.1%	17.5%	19.7%	13.0%	8.2%	9.0%	3.6%	3.1%	1.0%	1.0%	0.9%
Italy	22.8%	16.3%	19.3%	13.4%	9.6%	7.6%	3.7%	3.0%	1.1%	1.1%	2.2%
Nigeria	22.8%	7.1%	13.8%	9.9%	6.5%	13.9%	6.0%	7.7%	4.2%	3.1%	5.1%
United States	22.5%	11.7%	16.6%	13.5%	8.5%	10.6%	5.6%	4.6%	3.0%	0.6%	2.8%
Poland	22.3%	16.3%	15.2%	8.7%	7.8%	9.7%	5.3%	5.5%	4.9%	2.3%	1.9%
Republic of Korea	17.2%	10.4%	17.6%	17.6%	7.6%	13.0%	5.7%	5.3%	2.6%	1.4%	1.6%
Japonia	16.0%	15.9%	20.4%	14.3%	9.0%	11.9%	3.9%	3.3%	2.6%	0.9%	1.8%
South Africa	14.7%	5.1%	11.3%	12.3%	8.3%	16.0%	7.6%	8.7%	3.8%	2.5%	9.7%
Belgium	11.9%	10.3%	20.3%	18.7%	10.7%	12.4%	5.4%	5.0%	2.5%	1.2%	1.6%
Netherlands	10.2%	14.0%	29.2%	21.4%	9.4%	7.9%	2.1%	3.1%	1.4%	0.6%	0.8%
Region	**10-Very safe**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0-Very unsafe**
Europa (20)	28.8%	16.4%	18.4%	11.3%	6.7%	7.7%	3.4%	3.2%	1.7%	0.9%	1.5%
Africa (5)	26.7%	7.4%	10.7%	8.6%	6.7%	13.4%	5.9%	5.7%	3.6%	2.3%	9.0%
Asia Oceania (5)	26.3%	14.6%	15.8%	11.2%	7.2%	8.4%	4.8%	3.8%	2.5%	2.0%	3.4%
North America (2)	23.2%	12.7%	17.0%	13.4%	8.3%	10.2%	5.2%	4.3%	2.7%	0.6%	2.5%

Weighting: For analyses on the national level - Individual country weight, for analyses on the regional level - Regional weight. Reference population: respondents walking "at least a few days a year".

According to the presented table, pedestrians feel the safest in Switzerland (71.2% declared feeling "very safe"), Denmark (65.1%), Austria (62.2%), Sweden (60.3%) and Germany (58.3%). Certainly, attention should be paid to the declarations of residents of the Netherlands (only 10.2% of them admitted that they feel "very safe" while walking), Belgium (11.9%), South Africa (14.7%), Japan (16%) and the Republic of Korea (17.2%). The differences between the regions are significant ($\chi^2_{(30)}$= =784.290, N=29471, p<0.001), but the strength of the association between self-declared feeling safe and regions is small (Cramer's V= 0.094). Pedestrians feel very safe in Europe (45.2%), Asia-Oceania (40.9%), North America (35.9%) and Africa (34.1%). Thus, if one of the objectives of mobility policy is to increase the proportion of active forms of transport, more attention should be paid to reorganising the traffic environment so that pedestrians feel safer.

In the ESRA2 survey, it was also checked whether the feeling safe while walking depends on the age and gender of the respondents. Studies show that men (regardless of age) generally feel safer in traffic than women. In reality, men are more likely to be involved in road accidents and have higher victimisation rates than women in public spaces (De Silva et al., 2017; EC, 2018b). Similarly, although

victimisation rates are lower for elderly persons, they are more fearful about their likelihood of becoming a victim in public spaces. The results are shown in Figure 4.



Weighting: ESRA32 weight. Reference population: respondents walking "at least a few days a year". Answer 9 and 10 from an 11-point scale from 0= very unsafe to 10= very safe

Figure 4: Self-declared feeling safe while walking among pedestrians by age group and gender.

In all age groups, men feel safer walking, but the differences between the genders are significant ($\chi^2_{(10)}$=233.172, N=29276, p<0.001), and the strength of the association between feeling safe and gender is small (Cramer's V= 0.089). The differences between the age groups are significant ($\chi^2_{(50)}$=576.381, N=29471, p<0.001), and the strength of the association between feeling safe and age groups is small (Cramer's V= 0.063). It is worth noting that, contrary to expectations, the feeling safe when walking does not decrease significantly with age. These findings are to some extent in line with those of the Transport for London (2013) study. In this study it turned out that many people aged 65+ often consider older people as separate from themselves and do not accept that age limits their cognitive and physical functions; they tend to feel they are not more vulnerable than any other pedestrians unless they have a specific reason to feel this way. It is worth recalling here that in all countries pedestrians 65+ are the most vulnerable group of road users. For example, in OECD countries (ITF 2012), the 65+ age group represents 13-20% of the population, but they comprise more than 50% of pedestrian fatalities.

The next table presents data on feeling safe by age groups and gender in four regions.

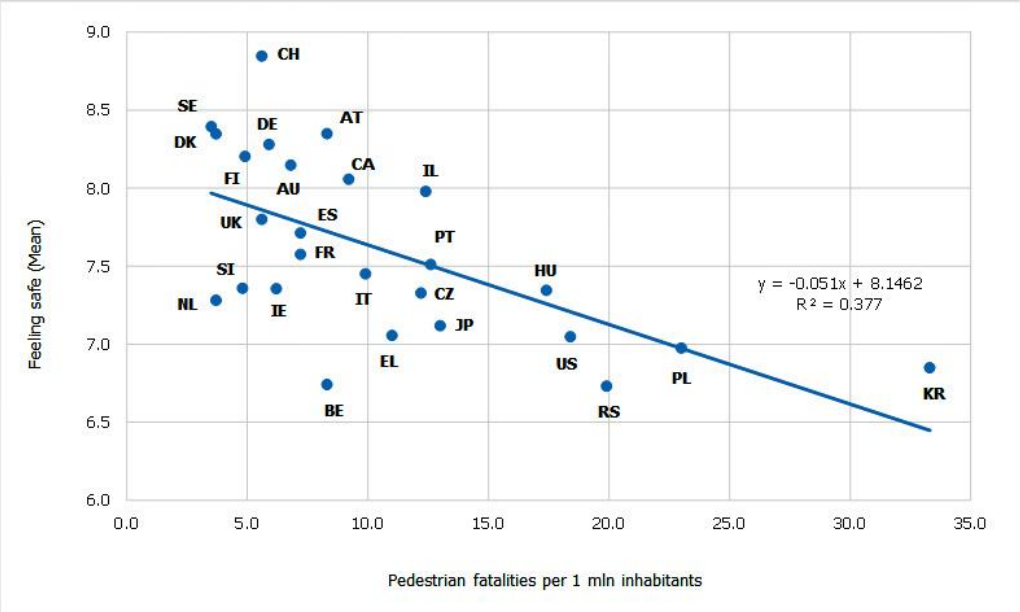
Table 4: Self-declared feeling safe while walking among pedestrians during the last 12 months by age, gender and region.

	Male					
	18-24	25-34	35-44	45-54	55-64	65+
Europa (20)	50.6%	43.8%	43.4%	47.6%	49.7%	53.1%
North America (2)	35.0%	32.8%	32.6%	35.9%	47.5%	54.0%
Asia Oceania (5)	44.7%	45.1%	48.1%	38.3%	39.7%	35.5%
Africa (5)	37.7%	42.0%	39.5%	35.9%	48.4%	27.3%
	Female					
	18-24	25-34	35-44	45-54	55-64	65+
Europa (20)	39.6%	37.9%	39.7%	42.1%	42.9%	48.2%
North America (2)	26.4%	34.3%	30.6%	29.3%	37.2%	32.1%
Asia Oceania (5)	40.0%	38.8%	37.2%	34.4%	48.1%	34.0%
Africa (5)	28.9%	29.6%	35.8%	26.4%	25.8%	18.2%

Weighting: Regional weight. Reference population: respondents walking "at least a few days a year". Answer: 10 and 9 from an 11-point scale from 0=Very unsafe to 10= Very safe

The interpretation of these results requires more detailed information about the specifics of each region. Still, it cannot be overlooked that in Europe and North America feeling safe increases with pedestrians' age, and in Africa and Asia-Oceania at the same time the older the pedestrian, the lower the level of feeling safe in traffic.

At the end of this part of the report it was examined whether there is a link between the feeling safe (mean value) declared by the respondents and the pedestrian fatality rate[1] in 26 countries for which we have data on both dimensions. The results are shown in Figure 5.



Weighting: Individual country weight. Reference population: respondents walking "at least a few days a year".

Figure 5: Relationship between self-declared feeling safe when walking among all respondents and pedestrian fatalities per million inhabitants by country.

[1] Number of fatalities in a group of pedestrians per million population.

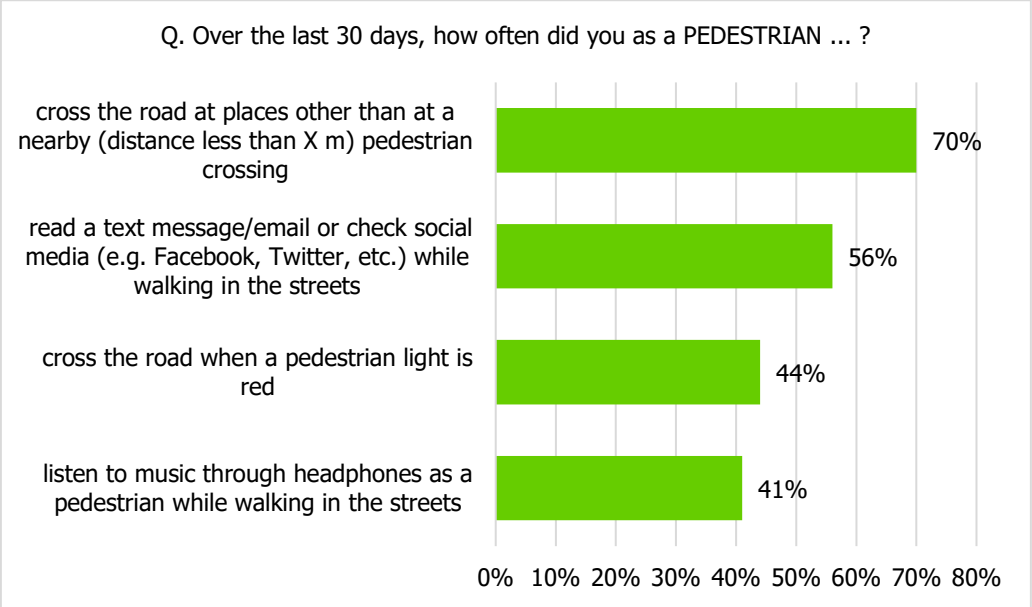
The link between the two variables analysed is negative. This means that when the objective pedestrian fatality rate increases, the feeling safe in this group of road users decreases. The value of the Spearman rank correlation coefficient, R_s, a statistical measure of the strength of a monotonic relationship between paired data, is moderate ($R_s(32991) = 0.622$, $p < 0.001$). Similar results were obtained in ESRA1 survey (Furian, G. et al., 2016). The correlation between the fatality rate of pedestrian and pedestrian's feeling safe was even weaker ($R^2=0.056$). It can therefore be assumed that when assessing their safety, pedestrians also take into account other factors, for example, a fear of the risk of being a victim of criminal offence or violence while walking.

3.3 Self-declared pedestrian risky behaviour (in the last 30 days)

Pedestrians are the most flexible road users groups, can respond most quickly to changes in traffic. Still, they are also the most unpredictable group of road users (Deb et al., 2017), because they often do not comply with existing traffic regulations (Ward et al., 1994; Deb et al., 2017). In ESRA2 survey, respondents were asked how often during the last 30 days they had:

- crossed the road when a pedestrian light was red,
- crossed the road at places other than at a nearby pedestrian crossing,
- read a text message/email or check social media (e.g. Facebook, Twitter, etc.) while walking,
- listened to music through headphones.

The answering scale ranged from 1=never to 5=(almost) always. The analysis included responses from people who declared that they had walked at least a few days a year over the past year. The results are shown in Figure 6.



Weighting: ESRA32 weight. Reference population: respondents walking "at least a few days a year". Answer: "at least once" during last 30 days

Figure 6: Self-declared risky behaviours as a pedestrian in the past 30 days.

The results collected in ESRA2 survey indicate that the most common pedestrian risky behaviour is crossing the road outside the pedestrian crossing. 70% of respondents stated they had behaved this way at least once, in the last 30 days, 56% declared they had read a text message on the phone or checked social media while walking in the street, and 44% said they had crossed the road when a

pedestrian light was red. Relatively least frequently, the surveyed respondents declared that they had listened to music through headphones. In the following sections, individual risk behaviour will be discussed in more detail.

3.3.1 Cross the road at places other than at a nearby pedestrian crossing

Crossing the roads constitutes a minor part of total walking, but presents the highest risk because of potential interaction with motor vehicles. Police see this as the most dangerous pedestrian behaviour. Analyses of road accident statistics indicate that 70-80% of collisions with pedestrians occur when they try to cross the road, including 33-50% at pedestrian crossings (ITF, 2012; DaCota, 2012; WHO, 2013).

Pedestrians are subject to specific rules defined in their national legislation. Usually, pedestrians crossing the road are obliged to be careful, cross the road at right angles, without undue delay, and are required by law to use a pedestrian crossing if one is nearby. Pedestrians who do not comply with these rules are subject to penalties. Guidelines governing crossing the road outside the designated pedestrian crossing and definition of the term "nearby" varies from country to country. For example, in Australia, Belgium and Ireland, pedestrians must not cross the road if there is a pedestrian crossing within 20 meters (15.24 m in Ireland). In Spain, Sweden or Germany this distance is 30 m; in France, Portugal and Switzerland – 50 m; and in Italy, Poland, Serbia and Slovenia – 100 m. When interpreting ESRA2 results, it is crucial to bear in mind these regulations.

Table 5 shows the summary of respondents' answers to the question of crossing the road outside the designated pedestrian crossing. To facilitate the analysis of the data presented, the understanding of

the term "nearby" pedestrian crossing in different countries is included in the first column of the table. Countries and regions were ranked according to the value "never".

Table 5: Self-declared crossing the road at places other than at a nearby pedestrian crossing during the last 30 days.

Q. Over the last 30 days, how often did you as a PEDESTRIAN cross the road at places other than at a nearby (distance less than X m) pedestrian crossing

Country	Nearby (Distance less then ..)	5 - (almost) always	4	3	2	1 - never
Spain	30 m	6.6%	17.8%	32.5%	27.6%	15.5%
Serbia	100 m	6.2%	9.4%	33.2%	33.2%	18.1%
Greece	30 m	6.6%	16.1%	32.0%	25.9%	19.4%
Kenya	30 m	18.2%	16.4%	23.1%	22.9%	19.4%
Ireland	30 m	10.2%	16.5%	31.2%	22.4%	19.7%
Finland	-	3.3%	14.8%	28.8%	33.3%	19.8%
Sweden	30 m	6.4%	15.5%	32.2%	25.9%	20.1%
Portugal	50 m	4.5%	13.7%	26.0%	35.6%	20.2%
United Kingdom	30 m	8.7%	20.7%	31.0%	17.4%	22.1%
Czech Republic	30 m	3.9%	8.5%	30.4%	34.8%	22.3%
South Africa	50 m	13.9%	13.2%	29.3%	19.8%	23.8%
Italy	30 m	3.7%	10.6%	29.1%	31.3%	25.4%
Slovenia	100 m	4.9%	7.3%	26.4%	35.6%	25.8%
Switzerland	50 m	4.1%	11.2%	26.6%	31.8%	26.2%
Morocco	30 m	7.1%	12.0%	25.0%	29.4%	26.4%
Israel	30 m	4.6%	12.8%	25.1%	30.9%	26.6%
Japan	30 m	5.8%	16.8%	27.2%	23.6%	26.7%
France	50 m	3.5%	14.3%	25.7%	29.3%	27.2%
Nigeria	30 m	12.3%	15.2%	21.9%	23.1%	27.6%
Austria	30 m	4.6%	11.9%	27.0%	28.2%	28.3%
Belgium	30-50 m	3.9%	9.7%	27.1%	30.8%	28.5%
Egypt	30 m	9.9%	12.8%	24.0%	23.6%	29.6%
Indie	-	9.5%	13.1%	25.2%	22.6%	29.7%
Denmark	-	4.6%	10.0%	26.2%	29.0%	30.2%
Canada	30-50 m	5.1%	14.9%	22.9%	26.3%	30.7%
Poland	100 m	3.0%	9.8%	25.0%	31.3%	31.0%
Hungary	30 m	2.3%	6.4%	26.0%	34.3%	31.0%
Germany	30 m	4.6%	12.3%	26.8%	23.5%	32.8%
Netherlands	30 m	4.1%	13.1%	26.7%	22.9%	33.2%
Australia	20 m	5.0%	12.0%	26.7%	21.6%	34.7%
United States	30 m	6.0%	11.6%	22.3%	22.4%	37.6%
Republic of Korea	50 m	1.6%	7.2%	21.9%	27.7%	41.6%

Region	5 - (almost) always	4	3	2	1 - never
Europa (20)	5.0%	13.6%	28.4%	27.1%	25.9%
Africa (5)	10.4%	13.1%	25.1%	24.8%	26.7%
Asia Oceania (5)	8.7%	13.1%	25.2%	22.9%	30.0%
North America (2)	5.9%	12.0%	22.3%	22.9%	36.9%

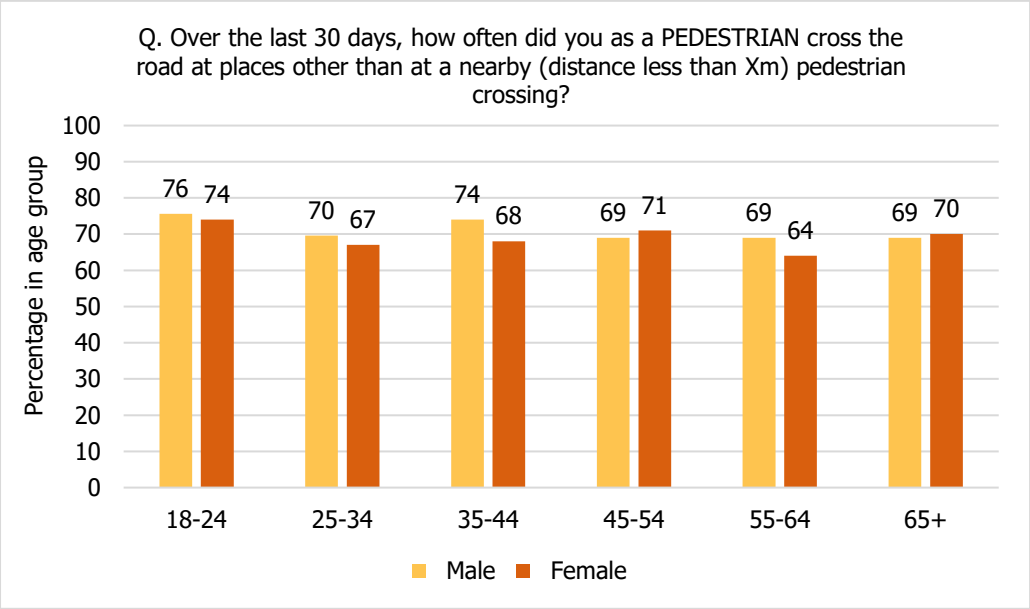
Weighting: For analyses on national level - Individual country weight, for analyses on regional level - Regional weight. Reference population: All respondents

In countries participating in ESRA2 survey, over 70% of respondents declared that in the last 30 days they had at least once crossed the road at places other than pedestrian crossing. This behaviour is mostly reported by pedestrians in Spain (84.5%), Serbia (81.9%), Greece (80.6%), Kenya (80.6%) and Ireland (80.3%). Relatively fewest attempts to cross the road outside the pedestrian crossing were

declared in Republic of Korea (58.4%), the United States (62.4%), Australia (65.3%) and the Netherlands (66.8%). It is worth noting that in Kenya, South Africa, Nigeria and Ireland, over 10% of road users declared that they almost always cross the road beyond the pedestrian crossing. These results may suggest that the organisation of pedestrian traffic in all countries participating in ESRA2 only partially takes into account pedestrian capabilities and meets their expectations. Crossing the road at places other than at a nearby pedestrian crossing is mostly declared in Europe (74.1%) and Africa (73.7%), followed by Asia-Oceania (70%) and North America (63.1%). The differences between the regions are significant ($X^2_{(12)}$=300.592, N=27859, p<0.001), but the strength of the association between crossing the road at places other than at a nearby pedestrian crossing and regions is small (Cramer's V= 0.060).

Interpretation of collected results is difficult. There are many factors identified in the literature as having an impact on the decisions of road users to cross the road at unauthorised places. For example, pedestrians will naturally look for the most direct route to get to their destination as quickly as possible. If crosswalks are located conveniently and don't require pedestrians to walk too far out of their desired path, they will use them. However, if they are missing, not located frequently enough along a street, or the traffic signals are not timed in a way that is convenient and perceived as fair to pedestrians, they will not use them and will instead cross wherever they see fit. Moreover, it is perceived as socially acceptable and because there is virtually no legal enforcement over these behaviours.

ESRA2 survey examined the impact of gender and age on the frequency of road crossings outside pedestrian crossings. Several studies have examined gender and age differences in pedestrian behaviour (Antic, B. et al., 2016). Generally, male pedestrians tend to violate traffic rules more frequently than females and are more likely to cross the road in risky situations (Moyano Díaz, 2002; Rosenbloom, 2009; Tom and Granié, 2011, Dommes, A. et al., 2015). Among the reasons for these differences, attention is drawn to more frequent participation of men in road traffic, their higher propensity to engage in risky behaviours, their roles in society and gender stereotypes. It is worth mentioning, however, that the Ren et al. (2011) study shows a contradictory finding. It was observed that male pedestrians were more likely to comply with traffic rules on signalised crosswalks. In contrast, female pedestrians (especially those who are middle-aged) tended to cross the streets in a hurry, once they had found gaps to pass, regardless of other unforeseen events. The results of ESRA2 survey with regard to crossing the road at other than nearby pedestrian crossing places by gender and age are shown in Figure 7.



Weighting: ESRA32 weight. Reference population: All respondents. Answer: "at least once" (2-5)

Figure 7: Self-declared crossing the road as a pedestrian at places other than at a nearby (distance less then x m) pedestrian crossing during the last 30 days.

As expected, men and young pedestrians more often admitted to cross the road outside the designated crossings. The difference between the gender is significant ($X^2_{(4)}$=42.935, N=27858, p<0.001), but the strength of the association between crossing the road outside the designated crossing and gender is small (Cramer's V= 0.0.039). The frequency of crossing the street at other places than designated crossing decreases with age. The differences between the age groups are significant ($X^2_{(20)}$=566.982, N=27856, p<0.001), but the strength of the association between crossing the road outside the designated crossing and age group is small (Cramer's V= 0.071). It is worth noting, however, that even in the group of respondents aged 65+, the percentage of people declaring such behaviour is quite high (at least 69% of men and 70% of women). Undoubtedly, this is a result that should be taken into consideration. So far some research shows that older pedestrians (>60 years) are more inclined to comply with traffic laws (Granié et al., 2013).

The last table presents data on crossing the road as a pedestrian at places other than at a nearby pedestrian crossing in the last 30 days by age groups and gender in four regions.

Table 6: Self-declared crossing the road as a pedestrian at places other than at a nearby pedestrian crossing in the last 30 days by age, gender and region.

	Male					
	18-24	25-34	35-44	45-54	55-64	65+
Europa (20)	81.9%	78.8%	76.1%	74.6%	73.4%	74.6%
North America (2)	82.6%	69.6%	69.8%	64.3%	64.2%	62.8%
Asia-Oceania (5)	74.9%	70.7%	73.0%	66.6%	59.6%	63.9%
Africa (5)	79.1%	78.3%	75.1%	75.0%	69.0%	60.0%
	Female					
	18-24	25-34	35-44	45-54	55-64	65+
Europa (20)	81.1%	76.6%	71.7%	70.9%	70.9%	71.3%
North America (2)	70.7%	70.9%	63.4%	63.6%	54.7%	58.5%
Asia-Oceania (5)	72.4%	67.0%	68.0%	67.4%	62.6%	66.3%
Africa (5)	76.7%	74.3%	70.3%	76.4%	63.5%	76.8%

Weighting: Regional weight. Reference population: All respondents. Answer: "at least once".

The results indicate that regardless of the region of the world, the propensity to cross the road outside the pedestrian crossing decreases with age. The same tendencies are registered in both men and women. The exception is the 65+ group of both men and women.

3.3.2 Cross the road when a pedestrian light is red

Crossing the road on a red light is considered one of the most risky pedestrian behaviours. Such behaviour is not anticipated by other road users, and it increases the risk of being hit by a motor vehicle (Brosseau et al., 2013). Some of the studies indicate that crossing the road at a red light is relatively frequent (in some studies this type of behaviour was observed even in twenty-some per cent of pedestrians). In ESRA2 survey, respondents were asked how often in the last month they had crossed the road at a red light. The results are shown in Table 7. Countries and regions were arranged according to the decreasing value of answer "never".

Table 7: Cross the road when a pedestrian light is red during the last 30 days.

Q. Over the last 30 days, how often did you as a PEDESTRIAN cross the road when a pedestrian light is red

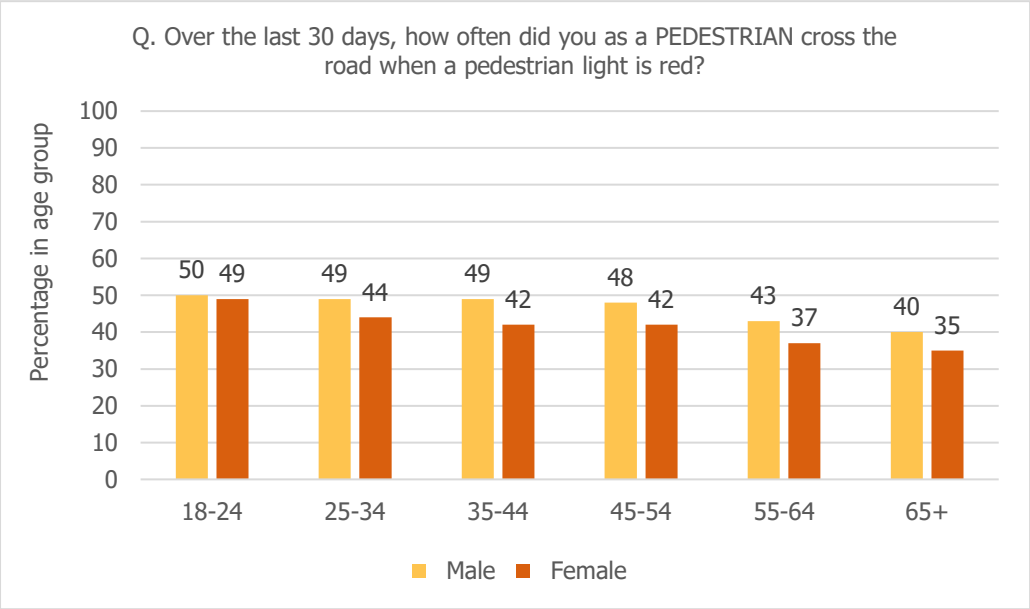
Country	5 - (almost) always	4	3	2	1 - never
Slovenia	1.2%	1.1%	8.2%	19.6%	69.9%
Poland	1.1%	3.8%	9.1%	21.5%	64.5%
Hungary	0.9%	2.9%	8.1%	24.1%	64.0%
Nigeria	8.9%	7.1%	10.9%	10.6%	62.5%
Czech Republic	1.0%	2.5%	11.9%	22.2%	62.3%
Italy	1.1%	3.4%	10.7%	22.5%	62.3%
Indie	7.1%	6.5%	10.0%	16.4%	60.0%
Australia	2.2%	6.2%	13.4%	19.8%	58.4%
Germany	1.5%	3.5%	13.6%	23.2%	58.2%
Republic of Korea	1.3%	2.3%	14.8%	24.0%	57.6%
United States	3.0%	7.0%	14.1%	18.4%	57.5%
Belgium	1.9%	5.2%	12.6%	23.2%	57.1%
Austria	1.4%	4.6%	13.2%	23.8%	57.0%
Netherlands	1.4%	7.3%	14.7%	21.3%	55.3%
Egypt	7.8%	6.4%	16.0%	15.4%	54.5%
Canada	3.2%	7.8%	13.7%	20.9%	54.4%
Denmark	1.4%	5.7%	14.2%	24.5%	54.2%
Japan	1.6%	6.2%	16.6%	22.1%	53.5%
Switzerland	2.6%	5.3%	14.5%	24.8%	52.8%
Israel	1.6%	5.2%	14.9%	26.5%	51.8%
Kenya	7.7%	7.6%	14.4%	21.8%	48.4%
Serbia	1.6%	4.6%	15.8%	30.0%	47.9%
Morocco	8.1%	6.6%	14.3%	23.7%	47.3%
South Africa	5.9%	8.5%	20.5%	18.9%	46.2%
Finland	2.1%	7.1%	18.2%	28.8%	43.7%
United Kingdom	4.3%	12.8%	26.1%	18.7%	38.0%
Greece	1.9%	7.6%	22.4%	30.9%	37.2%
Sweden	5.7%	11.8%	24.9%	21.7%	35.9%
France	3.7%	11.9%	23.3%	26.8%	34.3%
Ireland	5.3%	10.7%	27.9%	23.3%	32.8%
Portugal	2.2%	10.3%	22.9%	31.8%	32.7%
Spain	4.3%	15.4%	28.4%	27.3%	24.5%

Region	5 - (almost) always	4	3	2	1 - never
Asia Oceania (5)	6.1%	6.2%	11.0%	17.4%	59.2%
North America (2)	3.0%	7.1%	14.0%	18.7%	57.2%
Africa (5)	7.6%	7.0%	15.7%	18.8%	50.9%
Europa (20)	2.5%	7.7%	17.8%	23.8%	48.2%

Weighting: For analyses on the national level - Individual country weight, for analyses on regional level - Regional weight. Reference population: All respondents

The country with the highest rate is Spain (75.5% respondents admitted to that behaviour at least once in the 30 days), followed by Portugal (67.3%), Ireland (67.2%), France (65.7%) and Sweden (64.1%). This behaviour was reported the least frequently by the respondents in Slovenia (30.1%), Poland (35.5%), Hungary (36%), Nigeria (37.5%), as well as the Czech Republic and Italy (37.7% each). Crossing the road at a red light is mostly declared in Europe (49.5%) and Africa (48.2%), followed by North America (44.9%) and Asia-Oceania (43.6%). The differences between the regions are significant ($\chi^2_{(12)}$=585.435, N=28025, p<0.001), but the strength of the association between crossing the road at places other than at a nearby pedestrian crossing and regions is small (Cramer's V= 0.083).

In ESRA2 survey, the impact of gender and age on the frequency of crossing the road when a pedestrian light is red was examined. Research on self-reported or observed crossing behaviours has shown that red light violation is more frequent among young people and males (Moyano Diaz, 2002; Rosenbloom, 2009; Tom and Granié, 2011; Brosseau et al., 2013; Dommes et al., 2015). The results collected in ESRA2 survey in this scope are shown in Figure 8.



Weighting: ESRA32 weight; Reference population: all respondents. Answer: "at least once."

Figure 8: Self-declared crossing the road as a pedestrian when a pedestrian light is red during the last 30 days.

50% of young men and 49% of young women (18-24 years old) admitted they had crossed the road in the last month at a red light. In the 65+ age group, this proportion dropped to 40% among men and to 35% among women. The differences between gender are significant ($\chi^2_{(8)}$=157.453, N=28025, p<0.001), but the strength of the association between crossing when a pedestrian light is red and gender is small (Cramer's V=0.053). Similar relationships were noted when differences in inhibition of different age groups were analysed.

The last table presents data on crossing the road as a pedestrian when a pedestrian light is red in the last 30 days by age groups and gender in four regions.

Table 8: Self-declared crossing the road as a pedestrian when a pedestrian light is red in the last 30 days by age, gender and region.

	Male					
	18-24	25-34	35-44	45-54	55-64	65+
Europa (20)	71.3%	63.0%	58.2%	56.1%	52.4%	47.5%
North America (2)	47.1%	53.6%	57.8%	50.5%	43.1%	39.3%
Asia-Oceania (5)	44.6%	42.3%	44.0%	43.0%	37.7%	33.4%
Africa (5)	57.4%	55.0%	47.4%	46.2%	37.2%	46.8%
	Female					
	18-24	25-34	35-44	45-54	55-64	65+
Europa (20)	63.9%	57.1%	46.1%	44.8%	43.7%	38.8%
North America (2)	56.1%	47.3%	42.6%	34.2%	19.2%	26.3%
Asia-Oceania (5)	43.8%	38.6%	39.9%	42.0%	39.9%	34.1%
Africa (5)	53.3%	47.7%	39.4%	43.5%	36.8%	61.2%

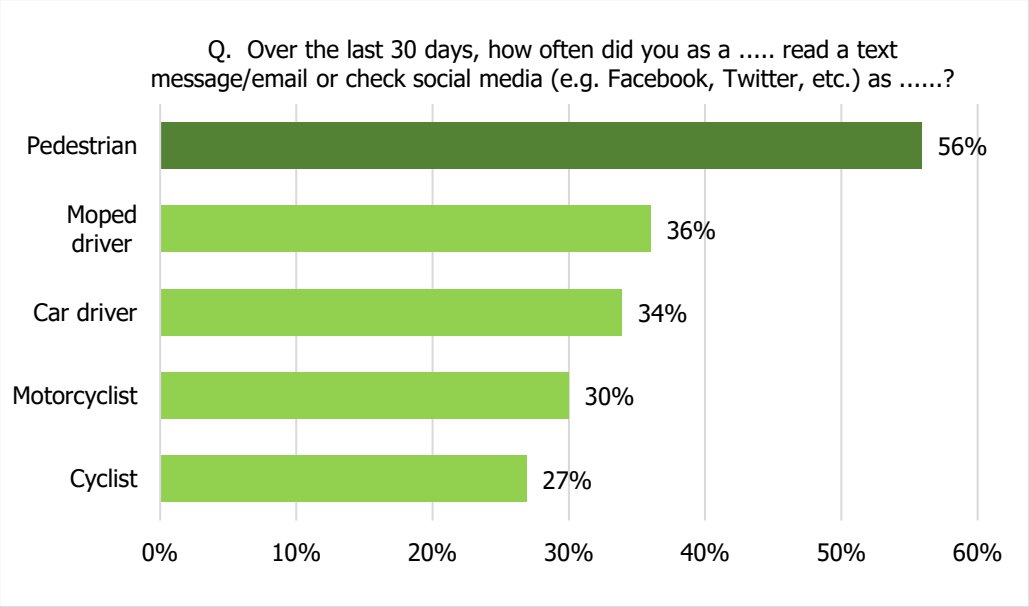
Weighting: Regional weight. Reference population: All respondents. Answer: "at least once".

The results of ESRA2 indicate that regardless of the region of the world, the propensity to cross the road as a pedestrian when a pedestrian light is red decreases with age. The same tendencies are registered in both men and women.

3.3.3 Read a text message/email or check social media (e.g. Facebook, Twitter, etc.)

The use of mobile phones, smartphones and other portable devices is quickly growing worldwide. It is estimated that 66.5% of the world's population own a mobile phone, and 42.8% a smartphone (WHO, 2013). It is generally known that with the increase in the prevalence of telephones and portable electronic devices in the population, the number of people who use these devices while driving or walking increases as well. The results of some studies indicated that headphone use and texting/interacting with a device were two most frequently observed use functions of smartphone devices by pedestrians. This was followed by pedestrians seen on a hand-held call.

In ESRA2 survey, the same question referring to reading messages or checking social media was asked in the four user groups: pedestrians, car drivers, cyclists, moped and motorcyclist drivers. Figure 9 presents the collected results. The answers of respondents who used a particular mean of transport for at least several days in the last month were analysed.



Weighting: ESRA32 weight; Revelance population: different road group users (walking, driving or cycling "a few days a month"). Answer "at least once".

Figure 9: Self-declared read a text message/email or check social media among different group of road users.

It turned out that the highest frequency of reading a text message/email or checking social media was observed in the pedestrian group (56%). In other groups these rates were lower: moped drivers (36%), car drivers (34%), motorcyclists (30%), and cyclists (27%).

Among drivers, cohort studies indicate that talking and texting while driving a vehicle is associated with crash risks ranging from 4-23 times above baseline levels (Virginia Tech., 2009). Less is known about the impact of this kind of distraction[2] on pedestrian behaviour or accident risk. Research results indicate that talking on a mobile phone, listening to music, playing games while walking or crossing the road may result in unsafe pedestrian behaviours. Pedestrians reduce attention to traffic, cross the road at a slower pace, do not follow a straight course or fail to notice objects in the environment, tend to act less cautiously and take higher risks when crossing roads (Thompson et al., 2013; Hamann et al., 2017; SWOV, 2017; Ropaka et al., 2020). Text messaging appears particularly risky. Pedestrians who were texting while walking were more likely to cross the road outside the crosswalk, probably because their vision is focused on the phone and not on the street markings (Russo et al., 2018). Thompson et al. (2013) has shown that texting is associated with an 18% increase of crossing time compared to undistracted pedestrians; walkers who were texting were also 3.9 times more likely to exhibit at least one unsafe crossing behaviour (not looking both ways, crossing outside at the crosswalk and not obeying the traffic signals).

In ESRA2 survey, respondents were asked how often during the last month they had read a text message/email or checked social media while walking in the street. The answering scale ranged from 1 (never) to 5 (at least four days a week). The results are shown in Table 9. Countries and regions were arranged according to the decreasing value of answer "(almost) always".

[2] Road user distraction is often defined as a diversion of attention away from activities critical for safety in the road environment towards a competing event (Young, Regan, & Lee, 2009; za: Horberry, T.; 2019).

Table 9: Read a text message/email or check social media (e.g. Facebook, Twitter, etc.) while walking in the street during the last 30 days.

Q. Over the last 30 days, how often did you as a PEDESTRIAN read a text message/email or check social media (e.g. Facebook, Twitter, etc.) while walking in the streets?

Country	5 - (almost) always	4	3	2	1 - never
Israel	19.4%	18.9%	23.3%	15.5%	22.9%
Spain	13.8%	19.6%	24.6%	15.8%	26.3%
Kenya	19.6%	16.2%	20.6%	15.9%	27.7%
Republic of Korea	5.8%	14.2%	32.3%	19.5%	28.2%
Serbia	15.6%	13.4%	22.8%	18.8%	29.4%
Morocco	14.7%	14.5%	21.1%	20.1%	29.4%
Egypt	14.2%	14.2%	23.7%	18.1%	29.8%
Portugal	12.0%	17.0%	21.2%	18.7%	31.0%
Nigeria	12.0%	16.5%	21.4%	17.1%	33.0%
Ireland	11.8%	14.0%	24.2%	16.0%	33.9%
Finland	7.3%	15.6%	21.8%	20.5%	34.8%
Greece	8.8%	13.5%	20.1%	20.5%	37.1%
South Africa	11.7%	13.1%	18.9%	19.1%	37.2%
Czech Republic	5.9%	10.4%	24.3%	21.4%	38.0%
Sweden	9.8%	14.5%	22.2%	14.9%	38.6%
France	9.3%	14.0%	22.6%	15.2%	38.9%
Austria	7.8%	13.2%	22.0%	17.7%	39.3%
United Kingdom	9.7%	17.8%	20.5%	12.7%	39.4%
Switzerland	7.7%	13.4%	19.5%	19.8%	39.6%
Denmark	7.5%	13.2%	21.2%	16.5%	41.6%
Slovenia	8.8%	8.2%	20.3%	20.0%	42.7%
Italy	6.4%	13.3%	15.1%	21.1%	44.0%
Belgium	8.8%	14.1%	18.4%	14.2%	44.5%
Indie	5.3%	11.0%	16.3%	21.0%	46.4%
United States	8.8%	12.4%	18.1%	13.1%	47.6%
Netherlands	8.2%	12.3%	18.7%	13.1%	47.6%
Australia	7.9%	11.5%	18.7%	14.1%	47.7%
Hungary	4.3%	9.4%	19.7%	18.9%	47.8%
Poland	6.1%	11.7%	16.7%	17.3%	48.1%
Germany	7.7%	10.9%	17.6%	13.6%	50.2%
Japan	4.8%	10.4%	16.7%	15.9%	52.1%
Canada	6.1%	12.0%	14.5%	15.0%	52.3%

Region	5 - (almost) always	4	3	2	1 - never
Africa (5)	14.1%	14.4%	21.6%	18.8%	31.2%
Europa (20)	8.7%	14.0%	19.7%	16.2%	41.3%
Asia Oceania (5)	5.4%	11.2%	17.1%	20.2%	46.1%
North America (2)	8.5%	12.3%	17.7%	13.4%	48.1%

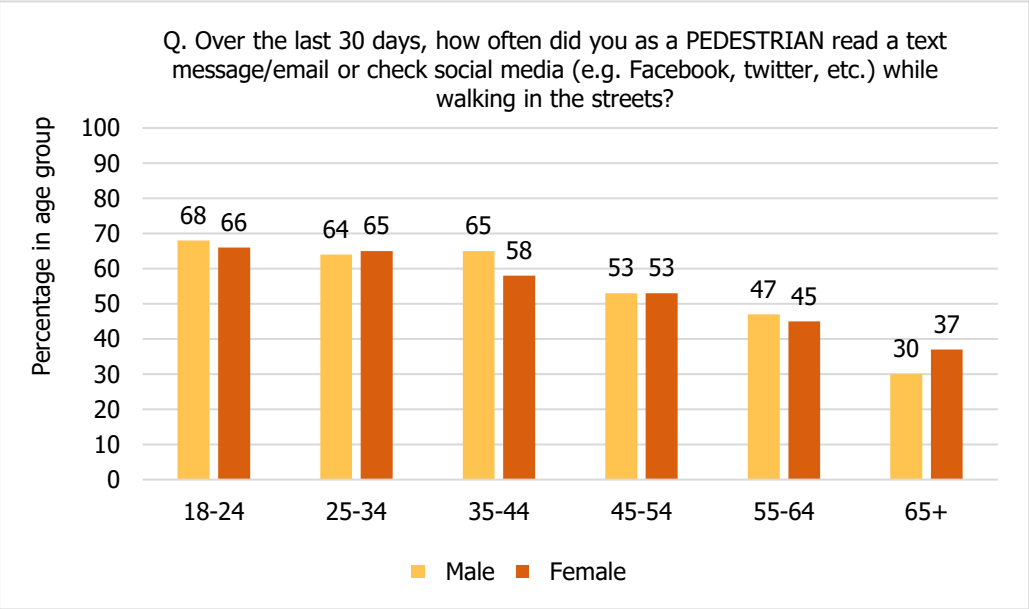
Weighting: For analyses on national level use individual country weight, for analyses on regional level use according regional weight; Revelance population: All respondents

Countries with the highest rates of pedestrians reading text messages, emails or checking social media at least once during the last 30 days include Israel (77.1%), Spain (73.7%), Kenya (72.3%), the Republic of Korea (71.8%), Serbia and Morocco (70.6%) and Egypt (70.2%). Pedestrians who were least likely to admit to this type of behaviour come from Canada (47.7%), Japan (47.9%) and Germany (49.8%). Reading a text message/email or check social media is mostly declared in Africa (68.8%) and Europe (58.7%), followed by Asia-Oceania (53.9%) and North America (51.9%). The differences

between the regions are significant ($\chi^2_{(12)}$=524.206, N=28026, p<0.001), but the strength of the association between reading a text message/email or check social media (e.g. Facebook, Twitter, etc.) while walking and regions are small (Cramer's V=0.079).

The frequency of using phones to read texts or check social media is higher in ESRA study than in other studies. For example, DEKRA study (2016) of six European capital cities revealed that across all cities, 8% of pedestrians were texting and 2.6% were on a call (with 1.4% both at the same time) while crossing the street. An Australian study (Horberry, T. et al., 2019) shows that on average 20% of pedestrians were using smartphones when crossing roads. In studies conducted in the United States (Thompson et al., 2013), approximately 30% of all observed pedestrians performed a distracting activity while crossing the road. However, it is worth remembering that ESRA2 survey addresses the declared behaviour of respondents when walking and not only when crossing the road.

The ESRA2 survey examined the impact of gender and age on the frequency of reading text messages, emails or checking social media. DEKRA Accident Research (2016) found gender-specific differences and reported it was more common for female pedestrians to be texting, whereas males were more likely to be wearing headphones/earphones. The results in this regard collected in ESRA2 survey are presented graphically in Figure 10.



Weighting: ESRA32 weight; Revelance population: all respondents. Answer: "at least once".

Figure 10: Self-declared reading a text message/email or check social media (e.g. Facebook, Twitter, etc.) as a pedestrian while walking in the street during the last 30 days.

68% of young men and 66% of young women (18-24 years old) admitted to read a text while walking in the street in the last 30 days. There are only slight differences among the first three age groups (18-24, 25-34, 35-44). The decrease in the frequency of using these phone functionalities in traffic was observed in respondents over 45 years old. In all age groups except 25-34 and 65+, men were more likely to read texts and check social media while walking. The differences between the genders are significant ($\chi^2_{(8)}$=75.062, N=28026, p<0.001), but the strength of the association between reading texts, checking social media while walking and gender is small (Cramer's V= 0.037). The differences between the age groups are significant ($\chi^2_{(20)}$=2034.821, N=28023, p<0.001.), but the strength of the association between reading texts, checking social media while walking and age groups are moderate (Cramer's V= 0.135). The results of other studies indicate similar trends. For example, according to Russo et al. (2018) people aged 16 to 29 and people walking alone were the ones most likely to be observed texting while walking. In Australia, 30% of 18-30 years old indicated that they had engaged

in texting or accessed the internet on their smartphones at least once a week while crossing the road (Williamson & Lennon, 2015).

The last table presents data on reading a text message/email or checking social media (e.g. Facebook, Twitter, etc.) as a pedestrian while walking in the last 30 days by age groups and gender in four regions.

Table 10: Self-declared reading a text message/email or check social media (e.g. Facebook, Twitter, etc.) as a pedestrian while walking in the street in the last 30 days by age, gender and region.

	Male					
	18-24	25-34	35-44	45-54	55-64	65+
Europa (20)	84.5%	76.5%	70.9%	61.8%	46.4%	35.3%
North America (2)	71.4%	63.5%	71.7%	42.7%	36.8%	22.9%
Asia-Oceania (5)	63.1%	58.3%	60.8%	50.6%	50.9%	27.2%
Africa (5)	77.3%	78.9%	72.3%	66.0%	56.5%	50.4%
	Female					
	18-24	25-34	35-44	45-54	55-64	65+
Europa (20)	85.7%	78.7%	71.8%	56.8%	43.7%	32.8%
North America (2)	70.5%	79.9%	66.1%	56.7%	34.0%	20.5%
Asia-Oceania (5)	58.4%	56.4%	51.2%	49.8%	49.7%	45.5%
Africa (5)	76.4%	72.6%	56.0%	52.7%	39.9%	73.8%

Weighting: Regional weight. Reference population: All respondents. Answer: "at least once".

The results of ESRA2 indicate that regardless of the region of the world, the propensity to read a text message/email or check social media (e.g. Facebook, Twitter, etc.) as a pedestrian while walking in the street decreases with age. The same tendencies are registered in both men and women. The exception is the group of women aged 65+ in Africa.

3.3.4 Listen to music through headphones while walking in the streets

The popularity of smartphones and personal music devices (PMD) is growing in the population. For example, a study conducted in the United States (Walker, E.J. et al., 2012) showed that 22% of pedestrians listen to music while crossing the road. There is little research on pedestrians distraction by music (Meesman, U. et al., 2009), and the results are not unambiguous. Typically, listening to music is compared to having a conversation on a mobile phone. It has also been suggested that pedestrians listening to music through headphones have less control over their surroundings, and the music impedes some of the sound signals coming from the traffic. But it is also generally acknowledged that calling and typing or reading text messages lead to more unsafe behaviour, but listening to music does this to a lesser extent (Nasar, J.L. et al., 2012). The users displayed a significantly lower proportion of unsafe behaviour than those with mobile phones. This result suggests that using mobile phones and listening to music are two different types of distractions. ESRA2 study examined how widespread is listening to music among pedestrians. Respondents were asked how often in the last month they had listened to music on headphones while walking. The results are shown in Table 11. Countries were arranged according to the decreasing value of answer "(almost) always".

Table 11: Listen to music through headphones as a pedestrian while walking in the street during the last 30 days.

Q. Over the last 30 days, how often did you as a PEDESTRIAN listen to music through headphones as a pedestrian while walking in the streets

Country	5 - (almost) always	4	3	2	1 - never
Egypt	13.1%	10.6%	21.8%	16.8%	37.8%
Nigeria	11.6%	12.1%	16.1%	16.6%	43.7%
Republic of Korea	8.7%	12.5%	20.1%	14.7%	43.9%
Kenya	16.1%	12.6%	15.7%	11.0%	44.6%
Morocco	13.9%	9.8%	16.5%	14.8%	44.9%
Sweden	17.0%	10.0%	11.1%	9.5%	52.4%
Israel	14.6%	8.9%	12.7%	10.5%	53.3%
Spain	11.2%	10.2%	12.9%	12.3%	53.4%
Ireland	12.5%	9.9%	13.0%	9.2%	55.5%
Indie	5.4%	9.8%	14.6%	14.0%	56.1%
South Africa	10.4%	6.9%	12.6%	10.7%	59.4%
Finland	9.2%	8.7%	11.3%	9.7%	61.0%
United States	7.8%	10.7%	10.4%	9.4%	61.8%
Canada	9.9%	8.6%	10.9%	8.3%	62.3%
Poland	7.2%	7.4%	11.0%	11.2%	63.3%
Greece	7.4%	6.4%	11.0%	11.0%	64.2%
United Kingdom	7.6%	9.6%	9.7%	8.5%	64.5%
Switzerland	9.1%	8.6%	9.0%	8.9%	64.5%
Denmark	9.3%	8.3%	9.4%	8.4%	64.6%
Portugal	7.3%	6.5%	9.6%	10.7%	66.0%
Australia	9.5%	9.0%	9.1%	6.3%	66.2%
Netherlands	8.2%	7.7%	10.1%	6.5%	67.5%
Italy	5.9%	5.3%	12.3%	8.7%	67.8%
Hungary	6.9%	5.6%	8.4%	10.8%	68.2%
France	7.7%	6.0%	8.8%	8.5%	69.0%
Czech Republic	5.3%	4.1%	9.7%	9.6%	71.2%
Serbia	6.6%	4.5%	9.4%	8.1%	71.4%
Austria	7.4%	5.6%	8.0%	6.4%	72.6%
Belgium	6.0%	6.3%	7.8%	7.2%	72.6%
Japan	6.7%	7.1%	6.8%	6.7%	72.7%
Germany	6.6%	5.1%	7.4%	6.4%	74.4%
Slovenia	3.7%	3.8%	6.8%	6.6%	79.1%

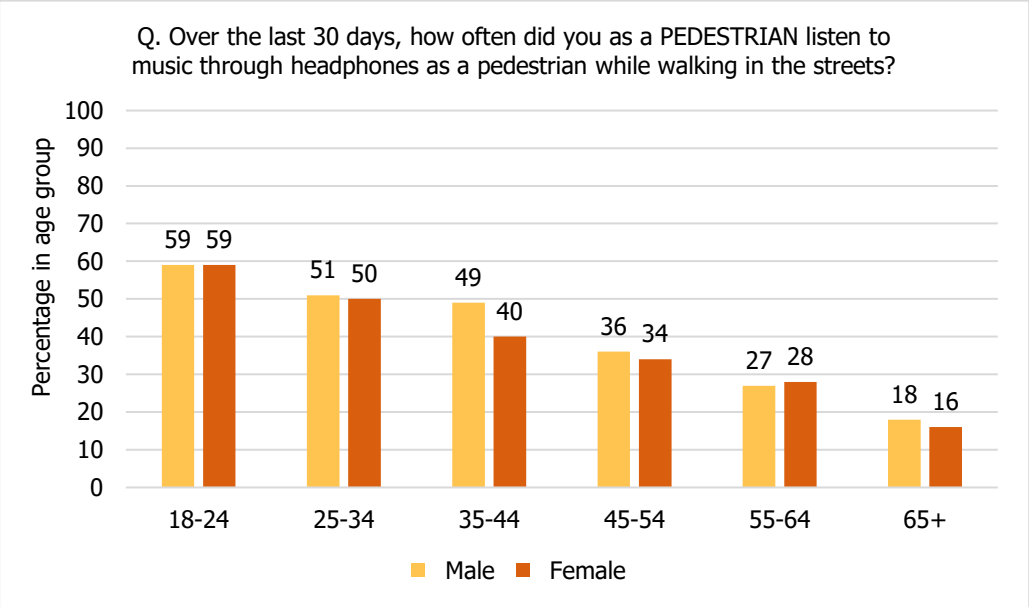
Region	5 - (almost) always	4	3	2	1 - never
Africa (5)	12.9%	9.9%	17.5%	14.7%	45.0%
Asia Oceania (5)	5.8%	9.6%	14.0%	13.1%	57.4%
North America (2)	8.0%	10.4%	10.4%	9.3%	61.8%
Europa (20)	7.7%	7.0%	9.9%	8.8%	66.6%

Weighting: For analyses on national level - Individual country weight, for analyses on the regional level - Regional weight. Reference population: All respondents

The countries with the highest proportions of respondents declaring that they walked while listening to music through headphones at least once in the last 30 days are Egypt (62.2%), Nigeria (56.3%), Republic of Korea (56.1%), Kenya (55.4%) and Morocco (55.1%), while the lowest shares were noted in Slovenia (20.9%), Japan (27.3%) and Belgium (27.4%). The differences between regions ranged from 55.0% in Africa, 42.6% in Asia-Oceania to 38.2% in North America and 33.4% in Europe and are significant ($\chi^2_{(12)}$=555.207, N=28023, p<0.001). Still, the strength of the association between listening to music through headphones while walking and regions are small (Cramer's V= 0.081).

Similar results were obtained in the Ford study (Ford, 2015). Over 10,000 pedestrians from 10 countries who used smartphones or portable devices were asked how they had behaved when crossing the road. 57% admitted they used their phones when crossing the street (even outside the crossing), and 47% to talking on the phone. Overall, 32% of pedestrians declared listening to music, 14% texting, 9% - browsing the internet, 7% using social media, and 3% playing games or watching TV/videos while crossing roads. It is also worth noting that nearly all of them said they were aware these were risky behaviours. The fact that pedestrians continue to engage in dangerous activities, despite claiming to recognize the risks, suggests that the majority of them think that this type of behaviour is hazardous to others rather than to themselves.

Figure 11 presents the influence of age and gender on listening to music through headphones as a pedestrian while walking in the street.



Weighting: ESRA32 weight. Reference population: All respondents. Answer: "at least once".

Figure 11: Self-declared listen to music through headphones as a pedestrian while walking in the streets in the last 30 days by gender and age.

Concerning the effects of gender and age on the frequency of listening to music while walking on the streets, the collected ESRA2 results indicate a clear impact of age on the rate of using mobile devices. In the 18-24 age group, over 59% of respondents stated that during the last 30 days they had been listening to music through headphones while walking. In the 65+ age group, only 18% of men and 16% of women made the same declaration. The differences between the genders are significant ($\chi^2_{(8)}$=123.641, N=28025, p<0.001), but the strength of the association between listening to music while walking on the streets and gender is small (Cramer's V= 0.047). Similar trends were also registered in the already mentioned Ford study (2015). Those aged 18-24 years old were most likely to have used mobile devices or phones (86%), talked on the phone (68%), listened to music (62%), texted (34%), and had an accident or near-miss (22%) while crossing the street. It is worth mentioning that a study by Walker et al. (2012) shows that men listening to music through headphones are more likely to observe the environment around them than men without headphones. No such differences were found in the group of women. These results have led to a suggestion that men compensate for distractions differently than women. In ESRA2 the differences between the age groups are significant ($\chi^2_{(20)}$=2816.585, N=28024, p<0.001), but the strength of the association between listening to music while walking on the streets and age groups is moderate (Cramer's V= 0.159).

The last table presents data on listening to music through headphones as a pedestrian while walking in the last 30 days by age groups and gender in four regions.

Table 12: Self-declared listen to music through headphones as a pedestrian while walking in the streets in the last 30 days by age, gender and region.

	Male					
	18-24	25-34	35-44	45-54	55-64	65+
Europa (20)	77.5%	56.7%	43.9%	31.3%	20.0%	11.1%
North America (2)	65.0%	48.8%	65.8%	41.0%	21.7%	8.1%
Asia-Oceania (5)	50.6%	48.4%	46.8%	36.5%	33.2%	25.9%
Africa (5)	78.3%	63.2%	51.1%	43.3%	29.1%	49.0%
	Female					
	18-24	25-34	35-44	45-54	55-64	65+
Europa (20)	73.4%	52.1%	38.6%	25.8%	15.0%	9.2%
North America (2)	56.9%	53.3%	42.4%	40.7%	21.8%	5.7%
Asia-Oceania (5)	54.8%	47.8%	39.6%	36.6%	38.7%	23.9%
Africa (5)	68.5%	56.4%	36.6%	37.7%	27.6%	56.8%

Weighting: Regional weight. Reference population: All respondents. Answer: "at least once".

The results of ESRA2 indicate that regardless of the region of the world, the propensity to listen to music through headphones as a pedestrian while walking in the streets decreases with age. The same tendencies are registered in both men and women. The exception is the group of women and men aged 65+ in Africa.

3.4 Self-declared accident involvement (in the last 12 months)

The development of road traffic carries several risks to road users. Particular attention should be paid to road accidents and their consequences. Pedestrians are vulnerable road users, and when they interact with the traffic of high speed and mass (EC, 2018b), the results of such events are usually severe (Methorst et al., 2010; SWOV, 2012). In ESRA2 survey it was examined whether respondents had been personally involved in road crashes. The participants in the study were asked, how many times in the past 12 months, they had participated in a road crash[3] in which respondent or somebody else had to be taken to the hospital or in road crash with only minor injuries (no need for hospitalisation) for the respondent or other people. Also, the means of transport used by the person at the time of the incident were checked. This way of formulating the questions allows only assessing how many pedestrians were involved in road crashes, making it impossible to decide what the consequences were. At the same time, the most frequently published statistics provide information on the effects of road crashes (number of fatalities or injuries) rather than the number of crashes involving pedestrians. It will, therefore, be difficult to compare the results obtained in the ESRA survey with the results of external analyses.

Table 13 presents information on the involvement of different groups of road users in road crashes. The second column of the table contains information on the share of people involved in road crashes. For example, 16.0% of those participating in ESRA2 survey declared that they had personally been involved in a road crash during the last year in which respondent or somebody else had to be taken to the hospital. The next five columns refer to different means of transport used by the respondent at the time

[3] The following definition of "road crash" was adopted in ESRA2 survey: "any collision involving at least one road vehicle (e.g. car, motorcycle, or bicycle) in motion on a public or private road to which the public has right to access. These crashes result in material damage, injury, or death. Road crashes include those between road vehicles, road vehicles and pedestrians, road vehicles and animals or fixed obstacles, road and rail vehicles, and one road vehicle alone". It should be kept in mind that the definition of road crash adopted in ESRA2 is consistent with the description in the Vienna Convention but does not take into account single pedestrian road crashes.

of the crash. The values in these columns indicate the share of transport means' users in the total number of all accidents of a given type. For example, if we assume that all accidents in which respondent or somebody else had to be taken to the hospital are 100%, then pedestrians took part in 23.8% of them.

Table 13: Self-declared personal involvement in road crashes in the past 12 months.

Q. In the past 12 months, how many times have you personally been involved in road crashes:	All respondents	Including:				
		Car drivers	Pedestrians	Cyclists	Motorcyclists	Driver of moped
- in which you or somebody else had to be taken to the hospital?	16.0%	27.3%	23.8%	12.3%	30.2%	8.0%
- with only minor injuries (no need for hospitalisation) for you or other people?	21.3%	19.3%	22.4%	15.1%	31.0%	6.8%
- with only material damage	20.9%	20.3%	28.2%	15.4%	31.6%	7.0%

Weighting: ESRA32 weight. Reference population: All respondents. Answer: "At least once".

As it can be seen from the comparison, pedestrians were involved in 23.8% of all road crashes in which respondent or somebody else had to be taken to the hospital, in 22.4% of all road crashes with only minor injuries for respondent or other people, and in 28.2% with only material damage. Only motorcyclists were involved in road crashes more often.

Table 14 provides information on self-declared personal involvement in road crashes in which respondent or somebody else had to be taken to the hospital in the past 12 months by countries and regions. Countries were arranged according to the decreasing percentage of risk of being involved as a pedestrian in road crash[4].

[4] The risk was calculated as a product of the percentages of the answers "I participated in an accident…" with "I participated as a pedestrian".

Table 14: Self-declared personal involvement in road crashes in which respondent or somebody else had to be taken to the hospital in the past 12 months by countries and regions.

Q. In the past 12 months, how many times have you personally been involved in road crashes in which you or somebody else had to be taken to the hospital?

Country	% of respondents who participated in road crash(es)	Of which: % of respondents who participated in the road crash as a pedestrian	Risk of being involved as a pedestrain in road crash
Indie	27.6	24.8	6.8
Egypt	23.1	29.1	6.7
Republic of Korea	28.0	23.0	6.4
Nigeria	19.4	19.4	3.8
Kenya	18.4	17.8	3.3
Morocco	18.1	15.5	2.8
Austria	4.4	33.5	1.5
United States	3.6	34.7	1.2
Poland	6.4	17.4	1.1
Japan	3.2	32.5	1.0
Hungary	3.8	23.3	0.9
Czech Republic	5.1	16.2	0.8
South Africa	9.1	7.7	0.7
Spain	3.8	17.6	0.7
Switzerland	1.9	34.9	0.7
Sweden	3.5	17.5	0.6
Greece	4.2	13.1	0.6
Israel	6.0	8.4	0.5
Belgium	4.0	11.6	0.5
Ireland	4.9	9.4	0.5
United Kingdom	3.9	11.1	0.4
Canada	4.7	9.0	0.4
Denmark	4.4	9.4	0.4
Netherlands	4.3	9.6	0.4
Slovenia	2.0	17.1	0.3
Australia	3.3	9.4	0.3
Portugal	3.3	8.8	0.3
Serbia	1.7	14.4	0.2
Italy	5.6	3.8	0.2
France	2.6	7.7	0.2
Germany	3.3	5.9	0.2
Finland	1.0	19.4	0.2

Region	% of respondents who participated in road crash(es)	Of which: % of respondents who participated in the road crash as a pedestrian	Risk of being involved as a pedestrain in road crash
Asia Oceania (5)	24.3	24.6	6.0
Africa (5)	18.3	21.2	3.9
North America (2)	3.7	31.3	1.2
Europa (20)	4.0	11.3	0.5

Weighting: For analyses on the national level - Individual country weight, for analyses on the regional level - Regional weight. Reference population: All respondents. Answer: "At least once".

The countries with the highest risk of being involved as a pedestrian in road crashes in which the respondent or somebody else had to be taken to the hospital include Indie, Egypt, Republic of Korea, Nigeria and Morocco. A certain surprise is a high position in this ranking of countries such as Austria, the United States, Poland and Japan. In comparison, the lowest risk was noted in Finland, Germany, France, Italy, and Serbia. Undoubtedly, attention should be paid to countries where ESRA2 participants declare that they were involved in many road crashes and where, if the crash has already occurred, the respondent participated in road traffic as a pedestrian. Improving the effectiveness of preventive actions aimed at reducing the risks to pedestrians in traffic would have a significant impact on the overall road safety level in the country. The differences between regions ranged from 6.0 in Asia-Oceania, 3.9 in Africa to 1.2 in North America and 0.5 in Europe.

When it comes to road crashes with minor injuries, Egypt, India, Republic of Korea, Morocco, Kenya and Nigeria are among the countries with the highest risk rating of being involved as a pedestrian in road crashes. In comparison, the lowest risk was noted in Portugal, France, Denmark, Italy. Countries where pedestrians declared more frequent participation in road crashes, where at least one of the participants was taken to the hospital also had higher risk rates of involvement in road accidents with minor injuries (Spearman rank correlation coefficient $R_s(36448) = .753$, $p < .001$). The risk of being involved in road crashes does not affect the self-declared feeling safe while walking.

Table 15 provides information on self-declared personal involvement in road crashes with only minor injuries (no need for hospitalisation) for the respondent or other people in the past 12 months by countries and regions. Countries were arranged according to the decreasing percentage of risk of being involved as a pedestrian.

Table 15: Self-declared personal involvement in road crashes with only minor injuries (no need for hospitalisation) for respondent or other people in the past 12 months by countries and regions.

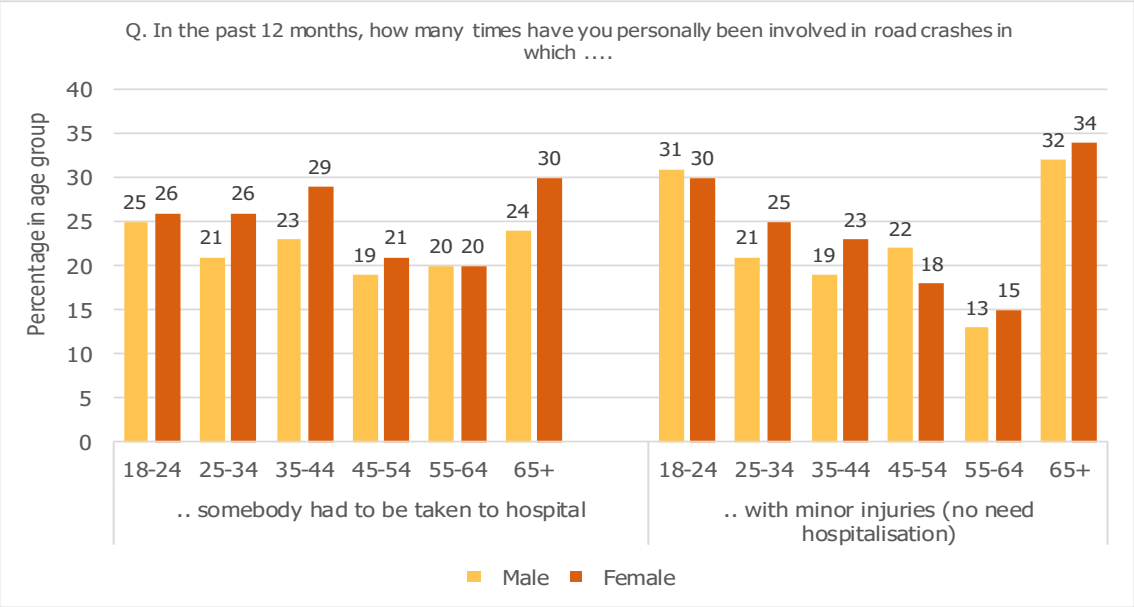
Q. In the past 12 months, how many times have you personally been involved in road crashes with only minor injuries (no need for hospitalisation) for you or other people?

	% of respondents who participated in road crashes	Of which: % of respondents who participated in the road crash as a pedestrian	Risk of being involved as a pedestrain in road crash
Egypt	36.3	35.5	12.9
Indie	37.6	23.1	8.7
Republic of Korea	27.4	24.9	6.8
Morocco	24.1	24.7	5.9
Kenya	26.5	21.2	5.6
Nigeria	25.9	20.4	5.3
Austria	4.4	30.0	1.3
Czech Republic	4.4	21.0	0.9
Switzerland	3.3	26.3	0.9
Greece	5.3	16.1	0.9
South Africa	9.6	7.8	0.7
Japan	3.9	18.4	0.7
Ireland	4.8	14.1	0.7
Canada	6.5	9.9	0.6
Slovenia	3.8	16.6	0.6
Poland	7.4	8.2	0.6
Sweden	5.2	11.6	0.6
Hungary	5.8	10.1	0.6
United States	5.0	11.4	0.6
Serbia	5.0	10.9	0.5
Israel	7.6	5.3	0.4
Belgium	4.1	9.8	0.4
Germany	4.1	9.7	0.4
United Kingdom	4.0	8.0	0.3
Australia	3.7	8.4	0.3
Netherlands	5.0	6.2	0.3
Finland	2.8	10.6	0.3
Spain	5.5	5.3	0.3
Italy	5.1	4.0	0.2
Denmark	4.9	4.1	0.2
France	2.3	4.4	0.1
Portugal	3.0	2.9	0.1

Region	% of respondents who participated in road crashes	Of which: % of respondents who participated in the road crash as a pedestrian	Risk of being involved as a pedestrain in road crash
Asia Oceania (5)	32.4	23.1	7.5
Africa (5)	25.9	28.2	7.3
North America (2)	5.1	11.2	0.6
Europa (20)	4.5	8.4	0.4

Weighting: For analyses on the national level - Individual country weight, for analyses on the regional level - Regional weight. Reference population: All respondents. Answer: "At least once".

Figure 12 presents the influence of age and gender on self-declared involvement in road crashes as a pedestrian.



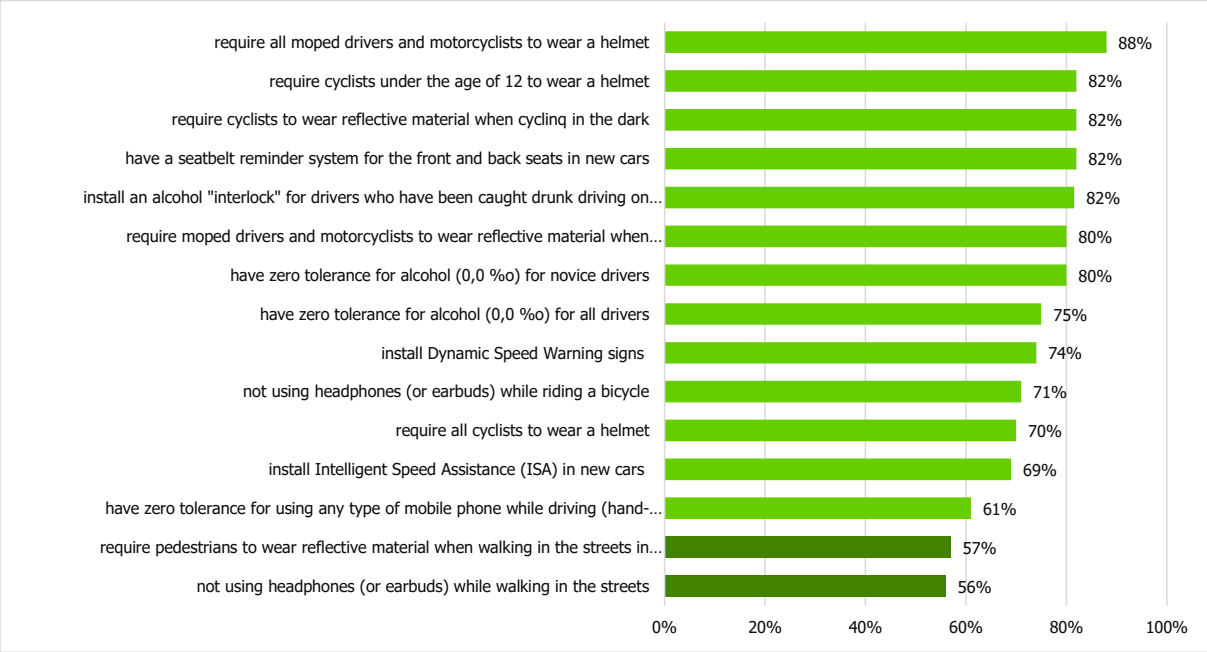
Weighting: ESRA32 weight. Reference population: All respondents. Answer: "at least once".

Figure 12: Self-declared personal involvement in road crashes in the past 12 months by age and gender.

Data on the most vulnerable groups in road traffic are inconclusive and depend on the analysed region or country (WHO, 2013). However, it is most often stressed that the elderly and children form the largest group in pedestrian fatalities. A reason for this could be the lower level of motorization in these groups, as well as the higher frailty (EC, 2018). WHO, in turn, reports that men, both children and adults, are over-represented in pedestrian collisions. The results of ESRA2 do not give rise to such clear-cut opinions. In most age groups, women are more likely to declare their participation in road crashes. For road crashes in which somebody had to be taken to hospital the differences between the genders are significant: ($\chi^2_{(6)}$=8.012, N=1846, p<0.001), but the strength of the association between crash involvement and gender is small (Cramer's V= 0.066). For road crashes with minor injuries (no need hospitalisation) the differences between the genders are not significant: ($\chi^2_{(8)}$=8.256, N=2398, p=0.409), and the strength of the association between crash involvement and gender is small (Cramer's V= 0.059).

3.5 Support for pedestrians policy measures

Reducing the risk to pedestrians in road traffic is only possible through the widespread implementation of effective and efficient preventive solutions. The ESRA2 study presented the respondents with a list of 15 different policy measures. The response scale ranged from 1 (oppose) to 5 (support). For further comparisons, answers indicating strong support were selected (answers 4 and 5). The next figure shows support for different preventive solutions.



Weighting: ESRA32 weight; Reference population: All respondents. Answer 4 and 5 from the 5-point scale from 1=oppose to 5=support.

Figure 13: Support for different policy measures among all respondents.

As it can be seen from figure 13, proposals regarding pedestrians enjoyed the least support among respondents of ESRA2 survey. Only 56% of them supported the ban on using headphones (earbuds) when walking on the streets and 57% supported the obligation for pedestrians to wear reflective materials when walking on the streets. Interestingly enough, respondents supported very similar solutions designed for cyclists or PTW drivers more willingly.

Table 16 shows the results of the respondents' support for two pedestrian prevention solutions by country and region. Again only answers indicating strong support for the presented prevention proposals were chosen (answers 4 and 5 from a 5-point scale from 1=oppose to 5=support). Countries were arranged according to the decreasing percentage of respondents who supported the solution.

Table 16: Support for pedestrian-specific policy measures by country and region.

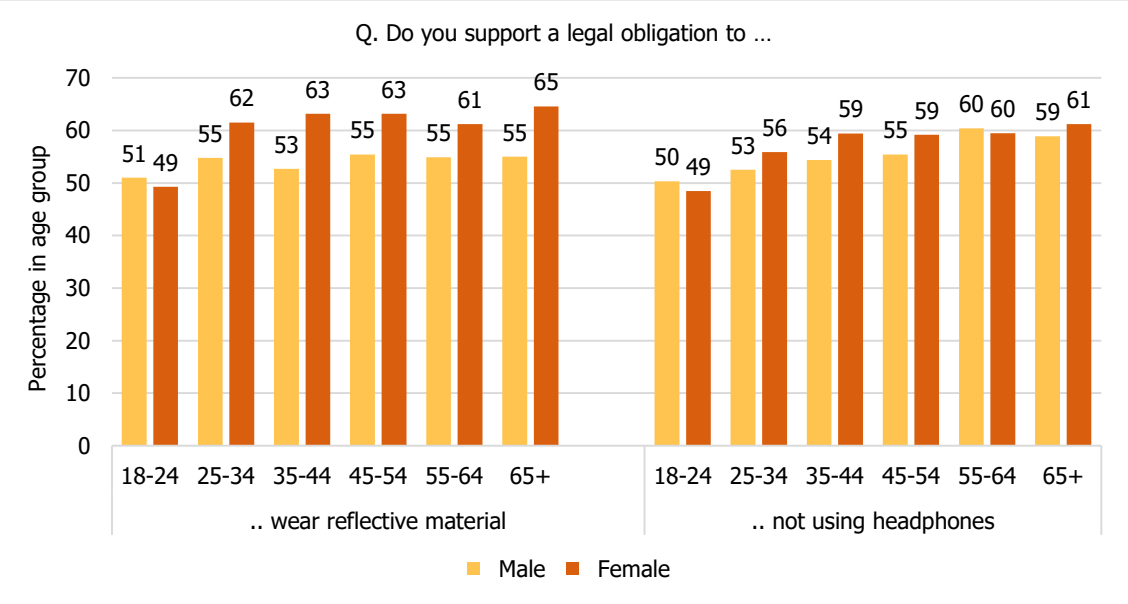
Q. Do you support or oppose a legal obligation to require pedestrians to wear reflective material when walking in the street in the dark ?		Q. Do you support or oppose a legal obligation to not using headphones (or earbuds) while walking in the street ?	
Country	Support (answer 4+5)		Support (answer 4+5)
Slovenia	84.9%	Kenya	75.1%
Finland	81.8%	Nigeria	72.0%
Poland	79.8%	Indie	71.5%
Hungary	79.4%	Slovenia	58.7%
Sweden	76.3%	Portugal	56.1%
South Africa	76.0%	South Africa	55.1%
Portugal	74.3%	Serbia	54.9%
Ireland	73.4%	Japan	50.9%
Czech Republic	65.5%	Greece	50.8%
Italy	64.8%	Germany	49.4%
Denmark	63.7%	Austria	49.1%
Belgium	60.1%	Italy	48.5%
Indie	59.9%	Czech Republic	47.1%
Nigeria	59.1%	Egypt	45.4%
Kenya	57.9%	Morocco	45.0%
Austria	57.1%	Belgium	44.6%
United States	57.0%	Poland	44.4%
France	56.6%	Canada	43.7%
Switzerland	55.2%	Spain	43.0%
Republic of Korea	55.2%	Hungary	42.0%
Canada	54.0%	Switzerland	41.3%
Germany	51.6%	United States	40.8%
Greece	51.4%	Ireland	39.6%
Japan	51.0%	Australia	38.9%
Egypt	49.7%	Netherlands	38.5%
Morocco	46.9%	Republic of Korea	37.7%
Spain	46.9%	Denmark	36.6%
United Kingdom	43.8%	United Kingdom	35.5%
Netherlands	42.9%	France	31.1%
Serbia	42.6%	Sweden	25.5%
Israel	42.1%	Finland	25.3%
Australia	31.1%	Israel	25.1%
Region	Support (answer 4+5)	Region	Support (answer 4+5)
Europe (20)	57.4%	Europe (20)	42.5%
North America (2)	56.7%	North America (2)	41.1%
Asia Oceania (5)	58.0%	Asia Oceania (5)	66.8%
Africa (5)	54.8%	Africa (5)	50.9%

Weighting: For analyses on national level - Individual country weight, for analyses on regional level - Regional weight; Revelance population: All respondents. Answer 4 and 5 from 5-point scale from 1=oppose to 5=support.

The countries with the highest proportions of respondents declaring support for a legal obligation to require pedestrians to wear reflective materials when walking in the streets in the dark are Slovenia (84.9%), Finland (81.8%), Poland (79.8%) and Hungary (79.4%). In comparison, the lowest support for this measure was noted in Australia (31.1%), Israel (42.1%), Serbia (42.6%) and the Netherlands (42.9%). It is worth reminding at this point that so far the obligation for pedestrians to wear reflective materials when walking in the streets in the dark was introduced only by Serbia; in several countries (Czech Republic, Hungary, Poland, Spain) this obligation is only valid outside build-up area; in Australia,

Finland and Great Britain it is a recommendation. The differences between regions ranged from 58.8 % in Asia-Oceania to 54.8% in Africa, and are significant ($X^2_{(12)}$=603.639, N=31889, p<0.001). Still, the strength of the association between support for a legal obligation to require pedestrian wear reflective material when walking and regions is small (Cramer's V= 0.079).

The introduction of the ban on using headphones while walking in the street is mainly supported by the respondents in Kenya (75.1%), Nigeria (72.0%), India (71.5%) and Slovenia (58.7%). This measure gained lowest support in Israel (25.1%), Finland (25.3%), Sweden (25.5%) and France (31.1%). So far, only two countries Israel and Serbia have prohibited using headphones (or earbuds) while walking on the streets, but this rule applies only when crossing the street. The results of the ESRA2 survey show that there are apparent differences between Israel and Serbia in terms of improvement. The differences between regions ranged from 66,8% in Asia-Oceania to 41.1% in North America, and are significant ($X^2_{(12)}$=2040.949, N=31998, p<0.001). Still, the strength of the association between support for a legal obligation to require pedestrian not using headphones while walking in the street and regions is moderate (Cramer's V= 0.146). The next figure analyses the impact of age and gender on the attitudes towards the two preventive measures targeted at pedestrians.



Weighting: ESRA32 weight; Reference population: All respondents. Answer 4 and 5 from the 5-point scale from 1=oppose to 5=support.

Figure 14: Support for pedestrian-specific policy measures among respondents by gender and age groups.

As expected, support for policy measures addressed at pedestrians is higher among women and slowly increases with the age of the respondents. The differences between the gender or age groups are statistically significant, but the strength of the association is small.

3.6 Comparison with ESRA1 results

So far two ESRA studies have been carried out: the first (ESRA1) in 2015-2017 and the second (ESRA2) in 2018. A total of 46 countries from five continents took part in the ESRA surveys. Still, only 24 of them took part in both studies (Australia, Austria, Belgium, Switzerland, Germany, Denmark, Greece, Spain, Finland, France, Ireland, Italy, Netherlands, Poland, Portugal, Sweden, Slovenia, United Kingdom, Czech

Republic, Israel, Canada, Republic of Korea, United States, and Hungary). The results obtained from these countries will be used in this chapter. In both ESRA1 and ESRA2, the research was based on a standardized questionnaire translated into national languages. Before presenting the results, it is worth recalling that:

- The ESRA2 questionnaire has been modified based on the experience gained from the 2015-2017 survey. Some questions have been removed, new ones have been added, and the imprecise wording of the existing questions has been improved. These necessary changes have reduced the number of items that can be used to analyse changes over time. In case of pedestrians, only two questions can be comparable over time, with some restrictions. They concern frequency of walking and feeling safe when walking. The exact wording of the questions in ESRA1 and ESRA2 survey, the definition of "walking" and the scales of responses are given in the following text.
- during the ESRA1 study seventeen countries (Austria, Belgium, Switzerland, Germany, Denmark, Greece, Spain, Finland, France, Ireland, Italy, the Netherlands, Poland, Portugal, Sweden, Slovenia, the United Kingdom) conducted their survey in mid-2015, and seven countries (Australia, the Czech Republic, Israel, Canada, Republic of Korea, United States, Hungary) in the second half of 2016. In practice, this means that in case of the latter countries, the analyses period was shorter by one year. Therefore, we highlighted these countries with an asterisk in the following summary table.

These changes may have some impact on the comparability of results over time. Given this, the results presented below should be considered as a signal of certain trends rather than an accurate description of the actual phenomena.

3.6.1 Changes in self-declared frequency of walking

Uncontrolled development of motorization in cities results in many negative consequences (e.g. air pollution, noise, destruction of natural resources, traffic jams, parking problems, road accidents). Therefore more and more countries are actively supporting sustainable urban mobility planning that promotes a shift towards cleaner ways to travel in cities. Walking is often considered as a mode of transport for short-distance trips, which characterize most urban journeys and as an alternative to motorized transport in the context of urban mobility. Changing people's travel behaviour, shifting from car to more sustainable modes of transport, such as walking, is one of the most important challenges of our times.

The ESRA study examined how often respondents had walked as a way of moving around on the road. The two questions in ESRA1 and ESRA2 on the frequency of walking as a mode of transport were formulated as follows:

Survey	Question	"Walking" definition	Answers
ESRA1	(Q05) During the last 12 months, which of the following transport modes have you been using?	walking (pedestrian; including jogging, in-line skate, skateboard,..)	Yes or No
ESRA2	(Q10) During the past 12 months, how often did you use each of the following transport modes in [country]? How often did you...?	walk **minimum 100m** (pedestrian; including jogging, inline skate, skateboard, ...)	at least 4 days a week - 1 to 3 days a week - a few days a month - a few days a year - never

In both studies, respondents were presented with a set of different means of transport, including "walking". The original 5-point scale from the ESRA2 study was dichotomized to two categories "Never" and "At least a few days a year". The countries in table 17 were ranked according to the size of the change.

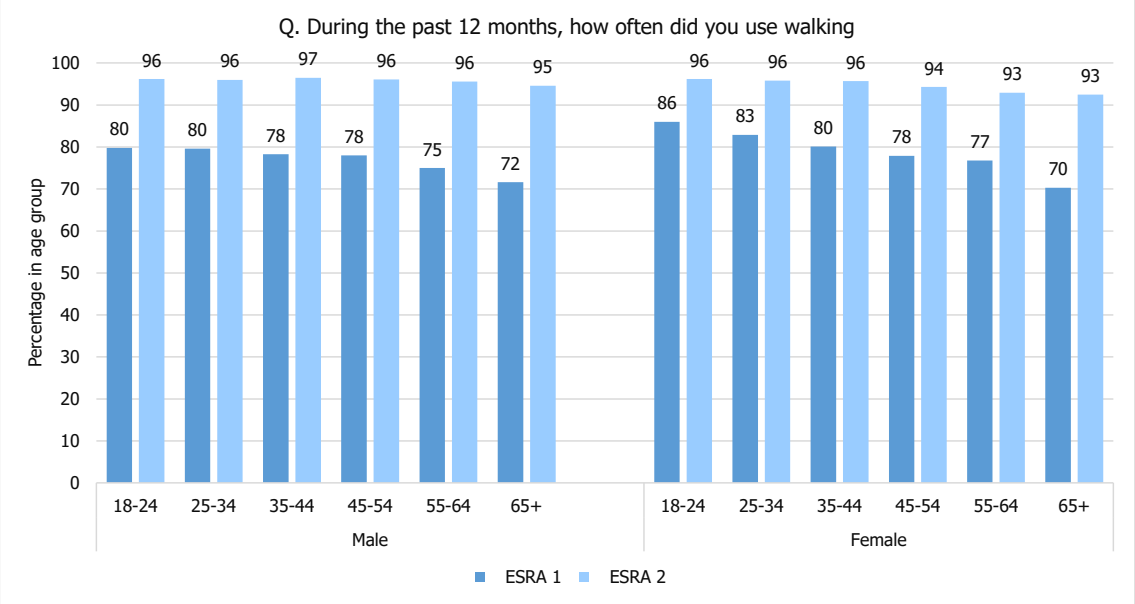
Table 17: Changes in self-declared frequency of walking among all road users by country.

Q. During the past 12 months, how often did you use of the following transport modes in [country]?			
	Change	ESRA2	ESRA1
Slovenia	63.3%	98.1%	34.8%
Austria	28.8%	99.3%	70.5%
Switzerland	24.5%	98.1%	73.5%
Netherlands	23.8%	93.1%	69.3%
Greece	22.3%	96.3%	74.0%
United States *	20.8%	84.6%	63.8%
Germany	20.6%	95.9%	75.3%
France	19.6%	92.6%	72.9%
Australia *	19.6%	93.8%	74.2%
Italy	17.5%	95.4%	77.9%
Ireland	17.1%	93.3%	76.1%
Belgium	17.0%	94.2%	77.1%
United Kingdom	16.6%	90.9%	74.3%
Poland	13.3%	96.1%	82.7%
Spaun	12.7%	96.4%	83.7%
Portugal	12.6%	94.9%	82.3%
Hungary *	12.2%	98.7%	86.5%
Izrael *	11.0%	94.9%	83.9%
Denmark	9.6%	96.7%	87.0%
Canada *	7.2%	89.6%	82.4%
Sweden	7.0%	97.3%	90.2%
Czech Republic *	3.5%	97.4%	93.9%
Republic of Korea *	3.2%	90.4%	87.2%
Finland	2.2%	98.4%	96.2%
ESRA mean	**16.9%**	**94.9%**	**77.9%**
ESRA mean (3y)	19.3%	95.7%	76.4%
ESRA mean (2y)	11.1%	92.8%	81.7%

Weighting: Individual country weight used in ESRA1 and ESRA2. Reference population: all respondents. Answer: "A few days a year".

The number of respondents who declared to walk had increased in all ESRA participating countries. The magnitude of the changes between ESRA1 and ESRA2 should be interpreted with caution and should be verified with other studies. The differences between countries are large in terms of changes over the last 2-3 years. The biggest change was recorded in Slovenia (+63.3%), Austria (+28.8%), Switzerland (+24.5%), the Netherlands (+23.8%), and Greece (+22.3%). Undoubtedly, the change in Slovenia is noticeable, but without a more detailed analysis, it is difficult to determine what the causes of this situation were. The smallest changes in walking frequencies were recorded in Finland (+2.2%) Republic of Korea (+3.2%) and Czech Republic (+3,5%). However, it is worth noting that already during the ESRA1 study, the inhabitants of these countries declared relatively frequent use of walking as a mean of transport. Overall, it can be said that the data presented in the table 16 show an increase in walking frequencies in the countries participating in ESRA1 and ESRA2 surveys. This conclusion should be treated with great caution due to the very liberal definition of walking in ESRA2 survey.

Figure 15 shows the percentage of people declaring to use walking as a mean of transport in the last 2-3 years in particular age groups. The results are presented separately for women and men.



Weighting: Individual country weight used in ESRA1 and ESRA2. Reference population: all respondents. Answer: "A few days a year"

Figure 15: Changes in self-declared frequency of walking among all road users by gender and age.

As it can be seen in Figure 15, there is an increase in the frequency of walking in all age and gender groups when comparing results from ESRA1 and ESRA2 studies. In 2015 in all age groups, female walked more frequently than male. Within 2-3 years, the differences between the gender and age groups practically disappeared. It is worth noting the growing share of older people as pedestrians in road traffic. It is likely that in the next few years, it will become necessary to develop precisely targeted policies and introduce some infrastructural solutions which will meet the needs of older pedestrians.

3.6.2 Changes in self-declared feeling safe when walking

The results of many studies show that pedestrians feeling of safety remain an essential barrier to increased walking. In the ESRA survey, all respondents who walk at least once a year were asked how safe or unsafe they had felt when walking. The corresponding two questions in ESRA1 and ESRA2 surveys are presented below:

Survey	Question	"Walking" definition	Answers
ESRA1	(Q17) How (un)safe do you feel when using the following transport modes?	walking (pedestrian; including jogging, in-line skate, skateboard,..)	a scale from 0 to 10, where 0 is 'very unsafe" and 10 is "very safe".
ESRA2	(Q16) How safe or unsafe do you feel when using the following transport modes in [country]?	walk **minimum 100m** (pedestrian; including jogging, inline skate, skateboard, ...)	a scale from 0 to 10, where 0 is very unsafe" and 10 is "very safe".

Table 18 presents the results of the self-declared feeling of safety while walking in countries participating in both ESRA surveys. For further analysis, only "very safe" answers were selected (points 9 and 10 on the 11-points response scale). The countries were ranked according to the size of the change.

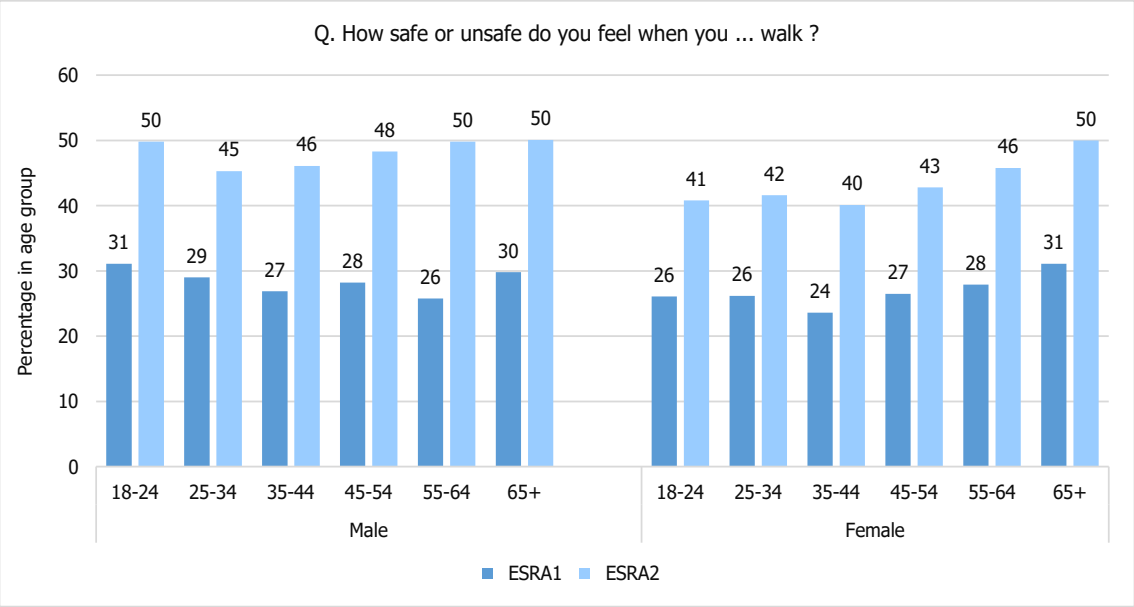
Table 18: Changes in self-declared safe feeling while walking among pedestrians by country.

Q. How safe or unsafe do you feel when using the following transport modes in [country]?			
Country	Change	ESRA2	ESRA1
Switzerland	39.4%	71.3%	31.8%
Israel *	30.9%	54.6%	23.7%
Canada *	26.2%	49.5%	23.4%
France	25.2%	40.6%	15.3%
Australia *	25.0%	52.4%	27.4%
Slovenia	23.7%	43.3%	19.6%
Austria	23.0%	62.2%	39.2%
Portugal	22.6%	39.5%	16.9%
Sweden	21.7%	60.3%	38.5%
Czech Republic *	21.4%	42.1%	20.7%
Spain	18.4%	47.0%	28.6%
Germany	17.3%	59.3%	41.1%
United Kingdom	17.1%	45.2%	28.1%
Ireland	16.4%	38.7%	22.3%
Poland	15.8%	38.6%	22.8%
Republic of Korea *	14.6%	27.6%	12.9%
Belgium	13.7%	22.3%	8.6%
Finland	12.3%	54.9%	42.6%
Hungary *	12.0%	37.4%	25.4%
United States *	9.1%	34.2%	25.0%
Italy	8.3%	39.1%	30.8%
Denmark	7.4%	65.2%	57.8%
Greece	6.3%	34.5%	28.2%
Netherlands	5.0%	24.2%	19.2%
ESRA mean	18.0%	45.1%	27.1%
ESRA mean (3y)	17.3%	46.2%	28.9%
ESRA mean (2y)	19.9%	42.5%	22.6%

Weighting: Individual country weight used in ESRA1 and ESRA2. Reference population: all respondents. Answer 9 and 10 from the 11-point scale from 0=very unsafe to 10=very safe.

The most significant changes in feeling of safety in the group of pedestrians in the last 3-4 years have taken place in Switzerland (39.4% increase), Israel (+30.9%), Canada (+26.2%), France (+25.2%) and Australia (+25.0%). A relatively small change is recorded in the Netherlands (+5.0%), Greece (+6.3%), Denmark (+7.4%), Italy (+8.3%) and the USA (+9.1%). In recent years, the problem of creating safe conditions for pedestrians has been one of the most discussed topics. ESRA survey results show that the feeling of safety in road traffic among pedestrians has increased in the last 2-3 years, but there are still many pedestrians who feel insecure in traffic. Therefore, there is a need for more detailed research to determine what factors contribute to the relatively low feeling of safety among pedestrians in individual countries. Without eliminating these factors, it will not be possible to convince people to make a change in the choices of transport modes in general.

Figure 16 presents the percentage of pedestrians who declared that they had felt safe while walking in the last 2-3 years by age groups. The results are presented separately for women and men.



Weighting: Individual country weight used in ESRA1 and ESRA2. Reference population: all respondents. Answer 9 and 10 from the 11-point scale from 0=very unsafe to 10=very safe.

Figure 16: Changes in self-declared feeling safe while walking among all road users by gender and age.

Results collected during ESRA survey suggest that the differences in feeling safe between women and men have only changed in certain age groups. Undoubtedly, the decline in the feeling safe in the 25-34 age group among men and the 25-34 and 55-64 age group among women are worth closer attention. On the other hand, the results collected in two consecutive ESRA surveys indicate an apparent increase in the feeling safe in the oldest groups of pedestrians, both men and women. If these tendencies are confirmed in other studies, then more research would be required to explain the reasons for these inconsistencies.

3.7 Advanced analysis

Analysis was carried out using univariate and multivariate weighted logistic regression model. which is a method of choice in situation when variables of interest are binomial and factors are both categorical and continuous variables. Logistic regression model has the form

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 \cdot X_1 + \ldots + \beta_n \cdot X_n$$

where:

P – probability that respondent supports analyzed regulations or statements

$X_1..X_n$ – descriptive variables taken into account

β_0 – intercept

$\beta_1,..,\ \beta_n$ – regression coefficients

Results derived using logistic regression method are expressed as odds ratios (OR) and respective 95% confidence intervals. Odds ratio value above/below one denotes, that increase in descriptive variable taken into account by one unit (for continuous variables) or associated with its some in relation to

reference category (for categorical variables) is associated with increase/decrease of odds for supporting analyzed regulation or statement by value of $(OR - 1) \cdot 100\%$. To avoid bias of the results associated with socio-demographic structure of dataset individual country weights were used. P-values for likelihood ratio test and Wald test are also presented. Likelihood ratio test verifies hypothesis of significance potential factor in model, Wald test of significance of the differences between levels of risk factor of interest. In all analyses significance level was set to 0.05.

Computations were performed using R 3.6.1 statistical software (R Core Team (2019). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/)

3.7.1 Factors associated with self-declared behaviours when walking

In order to explore the relationships between different explanatory variables and four self-reported pedestrians' behaviours, we have developed four logistic regression models. We focussed on the following unsafe behaviours of pedestrians who:

- crossed the road when a pedestrian light was red,
- crossed the road at places other than at a nearby pedestrian crossing,
- read a text message/email or check social media (e.g. Facebook, Twitter, etc.) while walking,
- listened to music through headphones.

In each model, the outcome is a binary variable indicating the absence (0 = never) or presence (1 = at least once) of one of the mentioned self-reported behaviours as a pedestrian. Only persons walking at least a few days per year were considered in this analysis (33 137 pedestrians out of the 35 036 ESRA2 respondents). Categories in which very few people had been questioned were excluded from the analysis (such as gender=other, which corresponds to 116 persons walking at least a few days per year). Finally, the models comprised of 33 027 respondents.

The models took into account the following variables:

- gender (male vs. female; reference category: male),
- 6 age groups (18-24, 25-34, 35-44, 45-54, 55-64, 65+; reference category: 18-24 years),
- licence to drive (Yes or No; reference category: No),
- frequency of walking (Few days a month, At least 1-3 days a week, At least 4 days a week; reference category: Few days a month),
- level of urbanisation (Urban=1, Semi-urban or rural=2; reference category: Semi-urban),
- feeling of safety (Very safe=answer 9-10, Rather unsafe=answer 6-8, rather safe=answer 3-5, unsafe=answer 0-2; reference category: Very safe),
- personal involvement in road crashes in which respondent or someone had to be taken to hospital (0=never, 1=at least once; reference category: Never),
- personal involvement in road crashes with minor injuries (0=never, 1=at least once; reference category: Never),
- Social desirable responding score (mean).

Tables below present odds ratios (OR) both from univariate and multivariate models. Value of odds ratio associated with the level of particular variable above 1.00 means that odds of risky behaviour or support for legal obligation increases concerning reference category (in case of categorical variables) and with the increase of the level of factor by 1 unit (in case of numerical variables).

Table 19: Factors that have impact on pedestrians' risky behaviour: crossing the road at places other than at a nearby pedestrian crossing.

Variable	Univariate OR (95%C.I.)	Mulitvariate OR (95%C.I.)	PWald	PLR
Gender: Female vs Male	0.87 (0.83,0.92)	0.93 (0.89,0.98)	0.008	0.002
Age group (ref.=18-24 years)				< 0.001
25-34 years	0.83 (0.75,0.91)	0.83 (0.75,0.91)	< 0.001	
35-44 years	0.71 (0.65,0.78)	0.72 (0.65,0.79)	< 0.001	
45-54 years	0.67 (0.61,0.74)	0.68 (0.61,0.75)	< 0.001	
55-64 years	0.6 (0.55,0.67)	0.65 (0.59,0.72)	< 0.001	
65+ years	0.65 (0.59,0.71)	0.73 (0.66,0.8)	< 0.001	
Driving licence : Yes vs No	1.04 (0.97,1.12)	1.05 (0.97,1.13)	0.212	0.168
Frequency of walking (ref.=Few days a month)				< 0.001
At least 1-3 days a week	1.17 (1.07,1.27)	1.14 (1.04,1.25)	0.005	
at least 4 days a week	1.35 (1.25,1.46)	1.28 (1.18,1.39)	< 0.001	
Urbanisation: Semi-urban, rural vs urban	0.79 (0.75,0.83)	0.8 (0.76,0.85)	< 0.001	< 0.001
Feel safe (ref.=Very unsafe)				< 0.001
Rather unsafe	1.48 (1.34,1.65)	1.43 (1.29,1.59)	< 0.001	
Safe	1.62 (1.46,1.79)	1.6 (1.45,1.78)	< 0.001	
Accident (hospital): At least once vs Never	1.17 (1.06,1.29)	1.06 (0.94,1.19)	0.352	0.641
Accident (No hospital): At least once vs Never	1.15 (1.06,1.26)	1.08 (0.97,1.2)	0.147	0.164
SDR (cont. var.)	0.92 (0.91,0.92)	0.92 (0.91,0.92)	< 0.001	< 0.001

Table 20: Factors that have impact on pedestrians' risky behaviour: crossing the road when a pedestrian light was red.

Variable	Univariate OR (95%C.I.)	Mulitvariate OR (95%C.I.)	PWald	PLR
Gender: Male vs Female	0.72 (0.69,0.75)	0.77 (0.74,0.81)	< 0.001	< 0.001
Age group (ref.=18-24 years)				< 0.001
25-34 years	0.79 (0.73,0.86)	0.79 (0.72,0.86)	< 0.001	
35-44 years	0.64 (0.59,0.69)	0.63 (0.58,0.69)	< 0.001	
45-54 years	0.58 (0.53,0.63)	0.57 (0.52,0.62)	< 0.001	
55-64 years	0.48 (0.44,0.53)	0.52 (0.47,0.57)	< 0.001	
65+ years	0.42 (0.39,0.46)	0.47 (0.43,0.51)	< 0.001	
Driving licence : Yes vs No	1.1 (1.03,1.17)	1.16 (1.09,1.25)	< 0.001	< 0.001
Frequency of walking (ref.=Few days a month)				< 0.001
At least 1-3 days a week	1.15 (1.06,1.25)	1.13 (1.03,1.23)	0.007	
at least 4 days a week	1.4 (1.3,1.51)	1.32 (1.22,1.43)	< 0.001	
Urbanisation: Semi-urban, rural vs urban	0.63 (0.6,0.66)	0.62 (0.59,0.65)	< 0.001	< 0.001
Feel safe (ref.=Very unsafe)				< 0.001
Rather unsafe	1.43 (1.29,1.58)	1.4 (1.26,1.56)	< 0.001	
Safe	1.44 (1.31,1.59)	1.47 (1.32,1.63)	< 0.001	
Accident (hospital): At least once vs Never	1.43 (1.31,1.56)	1.14 (1.02,1.26)	0.018	0.042
Accident (No hospital): At least once vs Never	1.4 (1.29,1.51)	1.19 (1.09,1.31)	< 0.001	< 0.001
SDR (cont. var.)	0.9 (0.9,0.91)	0.91 (0.9,0.91)	< 0.001	< 0.001

Factors increasing probability of crossing the road at places other than at a nearby pedestrian crossing (Tab. 19) and crossing the road when a pedestrian light was red (Tab. 20) were walking frequency, feeling safe while walking and personal involvement in road crash, possessing of driving license (not in case of crossing the road outside pedestrian crossings). Factors decreasing this probability were female gender, older age, living outside urban area and social desirable responding score (SDR).

Table 21: Factors that have impact on pedestrians' risky behaviour: read a text message/email or check social media (e.g. Facebook, Twitter, etc.) while walking.

Variable	Univariate OR (95%C.I.)	Mulitvariate OR (95%C.I.)	PWald	PLR
Gender: Male vs Female	0.79 (0.75,0.82)	0.81 (0.77,0.85)	< 0.001	< 0.001
Age group (ref.=18-24 years)				< 0.001
25-34 years	0.48 (0.44,0.53)	0.52 (0.47,0.56)	< 0.001	
35-44 years	0.28 (0.26,0.3)	0.31 (0.28,0.33)	< 0.001	
45-54 years	0.16 (0.14,0.17)	0.18 (0.16,0.19)	< 0.001	
55-64 years	0.09 (0.08,0.1)	0.1 (0.09,0.11)	< 0.001	
65+ years	0.05 (0.05,0.06)	0.06 (0.06,0.07)	< 0.001	
Driving licence : Yes vs No	0.64 (0.6,0.69)	0.83 (0.78,0.9)	< 0.001	< 0.001
Frequency of walking (ref.=Few days a month)				< 0.001
At least 1-3 days a week	1.13 (1.04,1.23)	1.2 (1.09,1.32)	< 0.001	
at least 4 days a week	1.19 (1.11,1.29)	1.26 (1.16,1.37)	< 0.001	
Urbanisation: Semi-urban, rural vs urban	0.8 (0.76,0.84)	0.78 (0.74,0.82)	< 0.001	< 0.001
Feel safe (ref.=Very unsafe)				0.006
Rather unsafe	1.11 (1,1.23)	1.15 (1.03,1.3)	0.014	
Safe	1.03 (0.93,1.13)	1.19 (1.06,1.33)	0.002	
Accident (hospital): At least once vs Never	3.14 (2.87,3.43)	1.71 (1.53,1.91)	< 0.001	< 0.001
Accident (No hospital): At least once vs Never	2.87 (2.66,3.11)	1.57 (1.43,1.74)	< 0.001	< 0.001
SDR (cont. var.)	0.96 (0.96,0.96)	0.97 (0.97,0.98)	< 0.001	<0.001

Table 20: Factors that have impact on pedestrians' risky behaviour: listened to music through headphones.

Variable	Univariate OR (95%C.I.)	Mulitvariate OR (95%C.I.)	PWald	PLR
Gender: Male vs Female	0.79 (0.75,0.82)	0.81 (0.77,0.85)	<0.001	<0.001
Age group (ref.=18-24 years)				< 0.001
25-34 years	0.48 (0.44,0.53)	0.52 (0.47,0.56)	< 0.001	
35-44 years	0.28 (0.26,0.3)	0.31 (0.28,0.33)	< 0.001	
45-54 years	0.16 (0.14,0.17)	0.18 (0.16,0.19)	< 0.001	
55-64 years	0.09 (0.08,0.1)	0.1 (0.09,0.11)	< 0.001	
65+ years	0.05 (0.05,0.08)	0.06 (0.06,0.07)	< 0.001	
Driving licence : Yes vs No	0.64 (0.6,0.69)	0.83 (0.78,0.9)	<0.001	<0.001
Frequency of walking (ref.=Few days a month)				<0.001
At least 1-3 days a week	1.13 (1.04,1.23)	1.2 (1.09,1.32)	<0.001	
at least 4 days a week	1.19 (1.11,1.29)	1.26 (1.16,1.37)	<0.001	
Urbanisation: Semi-urban, rural vs urban	0.8 (0.76,0.84)	0.78 (0.74,0.82)	<0.001	<0.001
Feel safe (ref.=Very unsafe)				0.006
Rather unsafe	1.11 (1,1.23)	1.15 (1.03,1.3)	0.014	
Safe	1.03 (0.93,1.13)	1.19 (1.06,1.33)	0.002	
Accident (hospital): At least once vs Never	3.14 (2.87,3.43)	1.71 (1.53,1.91)	<0.001	<0.001
Accident (No hospital): At least once vs Never	2.87 (2.66,3.11)	1.57 (1.43,1.74)	< 0.001	< 0.001
SDR (cont. var.)	0.96 (0.96,0.96)	0.97 (0.97,0.98)	< 0.001	< 0.001

Factors increasing probability of reading a text message/email or checking social media while walking (Tab. 21) and listening to music through headphones (Tab. 22) were: walking frequency, feeling safe while walking and personal involvement in road crashes. Factors decreasing this probability were: female gender, older age, possessing of driving license, living outside urban area and social desirable responding score (SDR).

3.7.2 Factors associated with support for policy measures

In order to explore the relationships between different explanatory variables and two policy measures for pedestrians, we have developed three logistic regression models. We focussed on the following policy measures evaluated by respondents who:

- support legal obligation to require pedestrians to wear reflective material when walking in the streets in the dark,
- support legal obligation not using headphones when walking in the streets.

In each model, the outcome is a binary variable indicating the support (0 = answer 4-5) or oppose/neutral opinion (1 = answer 1-3) for one of the mentioned policy measures for pedestrians. Only persons walking at least a few days per year were considered in this analysis (33 137 pedestrians out of the 35 036 ESRA2 respondents). Categories in which very few people had been questioned were excluded from the analysis (such as gender=other, which corresponds to 116 persons walking at least a few days per year). Finally, the models comprised of 33 027 respondents.

The models took into account the following variables:

- gender (male vs. female; reference category: male),

- 6 age groups (18-24, 25-34, 35-44, 45-54, 55-64, 65+; reference category: 18-24 years),
- licence to drive (Yes or No; reference category: No),
- frequency of walking (Few days a month, At least 1-3 days a week, At least 4 days a week; reference category: Few days a month),
- level of urbanisation (Urban=1, Semi-urban or rural=2; reference category: Semi-urban),
- feeling of safety (Very safe=answer 9-10, Rather unsafe=answer 6-8, rather safe=answer 3-5, unsafe=answer 0-2; reference category: Very safe),
- crossed the road when a pedestrian light was red (0=never, 1=at least once; reference category: Never),
- crossed the road at places other than at a nearby pedestrian crossing (0=never, 1=at least once; reference category: Never),
- read a text message/email or check social media (e.g. Facebook, Twitter, etc.) while walking (0=never, 1=at least once; reference category: Never),
- listened to music through headphones (0=never, 1=at least once; reference category: Never),
- personal involvement in road crashes in which respondent or someone had to be taken to hospital (0=never, 1=at least once; reference category: Never),
- personal involvement in road crashes with minor injuries (0=never, 1=at least once; reference category: Never),
- social desirable responding score SDR (mean).

Tables below present odds ratios (OR) both from univariate and multivariate models. Value of odds ratio associated with the level of particular variable above 1.00 means, that odds of risky behaviour or support for legal obligation increases concerning reference category (in case of categorical variables) and with the increase of the level of factor by 1 unit (in case of numerical variables).

Table 21: Factors that have impact on supporting legal obligation to require pedestrians to wear reflective material when walking in the streets in the dark.

Variable	Univariate OR (95%C.I.)	Mulitvariate OR (95%C.I.)	PWald	PLR
Gender: Male vs Female	1.48 (1.41,1.55)	1.43 (1.36,1.5)	< 0.001	< 0.001
Age group (ref.=18-24 years)				< 0.001
25-34 years	1.28 (1.18,1.38)	1.17 (1.08,1.27)	< 0.001	
35-44 years	1.49 (1.37,1.61)	1.29 (1.18,1.4)	< 0.001	
45-54 years	1.8 (1.66,1.95)	1.5 (1.38,1.64)	< 0.001	
55-64 years	2.27 (2.08,2.47)	1.77 (1.61,1.94)	< 0.001	
65+ years	2.55 (2.35,2.76)	1.87 (1.71,2.05)	< 0.00	
Driving licence : Yes vs No	1.4 (1.31,1.49)	1.39 (1.3,1.49)	< 0.001	< 0.001
Frequency of walking (ref.=Few days a month)				0.004
At least 1-3 days a week	0.99 (0.91,1.07)	1.02 (0.94,1.12)	0.589	
at least 4 days a week	0.83 (0.77,0.9)	0.93 (0.87,1.01)	0.087	
Urbanisation: Semi-urban, rural vs urban	1.45 (1.38,1.52)	1.36 (1.3,1.43)	< 0.001	< 0.001
Listening to music: Yes vs No	0.59 (0.56,0.62)	0.87 (0.82,0.92)	< 0.001	< 0.001
Read a text message: Yes vs No	0.59 (0.57,0.62)	0.86 (0.81,0.91)	< 0.001	< 0.001
Cross when a light is red: Yes vs No	0.57 (0.54,0.6)	0.75 (0.71,0.79)	< 0.001	< 0.001
Cross outside crossing: Yes vs No	0.69 (0.65,0.72)	0.95 (0.89,1)	0.066	0.05
Feel safe (ref.=Very unsafe)				< 0.001
Rather unsafe	0.93 (0.84,1.03)	0.99 (0.89,1.09)	0.786	
Safe	0.82 (0.74,0.9)	0.85 (0.77,0.94)	0.002	
Accident (hospital): At least once vs Never	0.84 (0.77,0.92)	1.08 (0.98,1.2)	0.127	0.112
Accident (No hospital): At least once vs Never	0.8 (0.74,0.86)	0.95 (0.86,1.04)	0.242	0.281
SDR (cont. var.)	1.06 (1.05,1.06)	1.04 (1.04,1.05)	< 0.001	< 0.001

Factors which statistically significantly increased the probability of supporting legal obligation to require pedestrians to wear reflective material when walking in the streets in the dark were: gender, age, possessing of driving license, living in semi-urban or urban localization, safe feeling while walking and social desirable responding score (SDR). All risky behaviours were factors decreasing odds of supporting this obligation.

Table 22: Factors that have impact on supporting legal obligation of not using headphones (or earbuds) while walking in the streets.

Variable	Univariate OR (95%C.I.)	Mulitvariate OR (95%C.I.)	PWald	PLR
Gender: Male vs Female	1.18 (1.13,1.24)	1.07 (1.02,1.12)	0.007	0.006
Age group (ref.=18-24 years)				< 0.001
25-34 years	1.35 (1.24,1.47)	1.23 (1.12,1.34)	< 0.001	
35-44 years	1.59 (1.47,1.74)	1.29 (1.18,1.42)	< 0.001	
45-54 years	2.17 (2,2.37)	1.59 (1.45,1.75)	< 0.001	
55-64 years	2.85 (2.61,3.12)	1.8 (1.63,1.99)	< 0.001	
65+ years	3.28 (3.01,3.56)	1.85 (1.68,2.03)	< 0.001	
Driving licence : Yes vs No	1.09 (1.02,1.16)	1.00 (0.93,1.07)	0.97	0.911
Frequency of walking (ref.=Few days a month)				0.136
at least 1-3 days a week	1.14 (1.08,1.2)	1.05 (0.99,1.11)	0.137	
at least 4 days a week	1.2 (1.12,1.29)	1.05 (0.97,1.13)	0.227	
Urbanisation: Semi-urban, rural vs urban	1.18 (1.13,1.24)	1.08 (1.03,1.13)	0.002	0.001
Listening to music: Yes vs No	0.31 (0.3,0.33)	0.41 (0.39,0.44)	< 0.001	< 0.001
Read a text message: Yes vs No	0.43 (0.41,0.45)	0.74 (0.7,0.78)	< 0.001	< 0.001
Cross when a light is red: Yes vs No	0.54 (0.51,0.56)	0.8 (0.76,0.84)	< 0.001	< 0.001
Cross outside crossing: Yes vs No	0.65 (0.62,0.68)	1.04 (0.98,1.1)	0.228	0.189
Feel safe (ref.=Very unsafe)				< 0.001
Rather unsafe	0.72 (0.65,0.79)	0.78 (0.7,0.87)	< 0.001	
Safe	0.56 (0.51,0.62)	0.58 (0.52,0.64)	< 0.001	
Accident (hospital): At least once vs Never	1.17 (1.07,1.27)	1.41 (1.27,1.57)	< 0.001	< 0.001
Accident (No hospital): At least once vs Never	1.19 (1.1,1.29)	1.55 (1.4,1.7)	< 0.001	< 0.001
SDR (cont. var.)	1.07 (1.06,1.07)	1.05 (1.05,1.06)	< 0.001	< 0.001

Factors which statistically significantly increased the probability of supporting legal obligation of not using headphones (or earbuds) while walking in the streets were: gender, age, living in semi-urban or urban localization, safe feeling in transport modes, participation in road accidents and social desirable responding score (SDR). All risky behaviours (except crossing the street outside of pedestrian crossing) were factors decreasing odds of supporting this obligation.

4 Summary and conclusions

The initial aim of ESRA study was to develop a system for gathering reliable and comparable information about people's attitudes towards road safety in a number of European countries. This objective has been achieved and the initial expectations have been even exceeded. ESRA has become a global initiative which already conducted surveys in 46 countries across six continents. The outputs of the ESRA project have become building blocks of national and international road safety monitoring systems.

The present report is based on the second edition of this global survey, which was conducted in 2018 (ESRA2_2018). In total, this survey collected data from more than 35 000 road users across 32 countries. An overview of the ESRA initiative and the project results is available on www.esranet.eu.

This thematic ESRA report on pedestrians describes the attitudes and opinions of this group of road users in 32 countries. It includes comparisons amongst the participating countries as well as results concerning age and gender. The pedestrians' aspects analysed in this thematic report cover: the frequency of walking, feeling of safety, the self-declared risky behaviours in traffic, self-declared accident involvement, and support for road safety policy measures. Since the ESRA survey covers pedestrians in just few questions, the conclusions presented below should be seen as a starting point

to more detailed research rather than a diagnosis of the current situation. The relationships established in this report should also be subject to more detailed analysis. However, at the end of this report, it is worth to highlight the following problems:

- **Walking is an important form of mobility**. Walking offers essential health benefits, it is inexpensive, emission-free, equally accessible for all regardless of income, and for many citizens it is a source of great pleasure (ITF, 2012; WHO, 2013). In ESRA2 survey 92.1% of the respondents declared that they had walked at least a few days a year, 87.6% - a few days a month, 77.5% - 1-3 days week, and 57.8% - at least four days a week. An important finding from ESRA2 and some national mobility surveys is that the number of walking trips has been increasing in recent years. However, this progress is probably far from being expected.

- **Important factor – feeling of safety.** Feeling safe has a significant impact on the decision to walk and on the behaviour of pedestrians in road traffic. For a pedestrian feeling of (un)safety can be related to a fear of being involved in an accident (safety-related risk perception) as well as to a fear of the risk of being a victim of criminal offence, violence or threat (security-related risk perception). ESRA2 survey participants felt very safe in public transport (tram, subway and tram/streetcar). Walking was ranked fourth in this classification (first place among private means of transport), which, given the widespread opinions about the high risk of pedestrians in road traffic, seems a bit unexpected. It is also worth noting that, contrary to expectations, the feeling of safety when walking does not decrease significantly with age. Thus, if one of the objectives of mobility policy is to increase the proportion of active forms of transport, more attention should be paid to not only the introduction of solutions to reduce the risks to pedestrians in road traffic but to the skilful provision of information on real risks associated with road traffic to this group of people.

- **The most common risky pedestrians behaviours.** The most common pedestrian traffic offence is crossing the road outside the pedestrian crossing. 70% of respondents stated they had behaved this way at least once in the last 30 days, 56% declared they had read a text message on the phone or checked social media while walking in the street, and 44% said they had crossed the road when a pedestrian light was red. Relatively least frequently, the surveyed respondents declared that they had listened to music through headphones. Undoubtedly, particular attention should be paid to crossing the roads. This type of pedestrians behaviours constitutes a minor part of total walking but presents the highest risk because of potential interaction with motor vehicles. The ESRA2 results indicates not only the need to modify the enforcement of the pedestrians' behaviours at these places but also the need to reconsider road infrastructure planning rules. More attention should also be paid to the possibilities and needs of pedestrians.

- **The new research problem - distraction.** In recent years, there have been many reports discussing the problem of distraction in the group of drivers. Less is known about the impact of distraction on pedestrians behaviour or accident risk. Research results indicate that talking on a mobile phone, listening to music, playing games while walking or crossing the road may result in unsafe pedestrians behaviours. It turned out that the highest frequency of reading a text message/email or checking social media was observed in the pedestrians group (56%). In other groups, these rates were lower: moped drivers (36%), car drivers (34%), motorcyclists (30%), and cyclists (27%). The results of ESRA2 indicate that the impact of reading a text message/email or checking social media on pedestrians traffic behaviour needs to be studied more thoroughly.

- **Weak support for pedestrians' policy measures.** Policy measures for pedestrians enjoyed the least support among respondents of ESRA2 survey. Only 56% of them supported the ban on using headphones (earbuds) when walking on the streets, and 57% supported the obligation for pedestrians to wear reflective materials when walking on the streets. Interestingly enough, respondents supported very similar solutions designed for cyclists or for PTW drivers more willingly.

Reducing the dangers to pedestrians in road traffic and designing the road infrastructure in such a way as to provide safe and comfortable walking possibilities for pedestrians are undoubtedly significant challenges of modern times. Despite these views, pedestrians surveys, including public opinion surveys, are relatively scarce. The ESRA2 study provides, for the first time, an opportunity to analyse opinions and self-declared pedestrians behaviours more closely. Due to the formal limitations of the survey (number of questions in the questionnaire, the duration of the survey), the number of questions concerning pedestrians was limited. From this point of view, ESRA2 in this area should rather be seen as a pilot study. The ESRA project has demonstrated the feasibility and the added value of joint data collection on road safety attitudes and performance by partner organisations in a large number of countries. Also, ESRA consortium intends to repeat this initiative on a triennial basis, retaining a core set of questions in every wave allowing the development of time series of road safety performance indicators. It is therefore hoped that the issues of pedestrians and walking will become more critical in the next wave of ESRA survey.

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Appendix 1: ESRA2_2018 Questionnaire

Introduction

In this questionnaire, we ask you some questions about your experience with, and your attitudes towards traffic and road safety. When responding to a question, please answer in relation to the traffic and road safety situation in [COUNTRY]. There are no right or wrong answers; what matters is your own experience and perception. Thank you for your contribution!

Socio-demographic information

Q1) In which country do you live? _____

Q2) Are you ... male – female – other (only in country who officially recognizes another gender)

Q3a) In which year were you born? Dropdown menu

Q3b) In which month were you born? Dropdown menu

Q4_1) What is the highest qualification or educational certificate that you have obtained? none - primary education - secondary education - bachelor's degree or similar - master's degree or higher

Q4_2) What is the highest qualification or educational certificate that your mother has obtained? none - primary education - secondary education - bachelor's degree or similar - master's degree or higher - I don't know

Q5a) Which of the following terms best describes your current professional occupation? white collar or office worker (excluding executive)/employee (public or private sector) →Q5b - blue collar or manual worker/worker →Q5b - executive →Q5b - self-employed/independent professional →Q5b - currently no professional occupation →Q5c

Q5b) Do you have to drive or ride a vehicle for work? (Please indicate the job category that is most appropriate for you) yes, I work as a taxi, bus, truck driver, … - yes, I work as a courier, mailman, visiting patients, food delivery, salesperson, … - no

Q5c) You stated that you currently have no professional occupation. Which of the following terms work - a stay-at-home spouse or parent - other

Q6) What is the postal code of the municipality in which you live? _____

Q7) In which region do you live? Drop down menu

Q8a) How far do you live from the nearest bus stop, light rail stop, or metro/underground station? less than 500 metres → Q8b - between 500 metres and 1 kilometre → Q8b - more than 1 kilometre → skip Q8b

Q8b) What is the frequency of your nearest bus stop, light rail stop, or metro/underground station? at least 3 times per hour - 1 or 2 times per hour - less than 1 time per hour

Mobility & exposure

Q9) Do you have a car driving licence or permit (including learner's permit)? yes - no

Q10) During the past 12 months, how often did you use each of the following transport modes in [country]? How often did you …? at least 4 days a week - 1 to 3 days a week - a few days a month - a few days a year - never
Items (random): walk minimum 100m (pedestrian; including jogging, inline skate, skateboard, …) - cycle (non-electric) - cycle on an electric bicycle/e-bike/pedelec - drive a moped (≤ 50 cc or ≤ 4 kW; non-electric - drive a motorcycle (> 50 cc and > 4 kW non-electric) - drive an electric moped (≤ 4 kW) - drive an electric motorcycle (> 4 kW) - drive a powered personal transport device such as an electric step, hoverboard, solowheel,… - drive a car (non-electric or non-hybrid) - drive a taxi - drive a bus as a driver - drive a truck/lorry - drive a hybrid or electric car - take a taxi or use a ride-hail service (e.g. Uber, Lyft) - take the train - take the bus - take the tram/streetcar - take the subway - take the aeroplane - take a ship/boat or ferry - be a passenger in a car - use another transport mode

Q11) Over the last 30 days, have you transported a child (<18 years of age) in a car? yes - no
Items: below 150cm - above 150cm

Self-declared safe and unsafe behaviour in traffic

Q12_1a) Over the last 12 months, how often did you as a CAR DRIVER …?
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.
Binary variable for all items: at least once (2-5) - never (1)
Items (random):

- drive after drinking alcohol
- drive faster than the speed limit outside built-up areas (but not on motorways/freeways)
- read a text message or email while driving

Q12_1b) Over the last 30 days, how often did you as a CAR DRIVER …?
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.
Binary variable for all items: at least once (2-5) - never (1)
Items (random):

- drive when you may have been over the legal limit for drinking and driving
- drive after drinking alcohol
- drive 1 hour after using drugs (other than medication)
- drive after taking medication that carries a warning that it may influence your driving ability
- drive faster than the speed limit inside built-up areas
- drive faster than the speed limit outside built-up areas (but not on motorways/freeways)
- drive faster than the speed limit on motorways/freeways
- drive without wearing your seatbelt
- transport children under 150cm without using child restraint systems (e.g. child safety seat, cushion)
- transport children over 150cm without wearing their seatbelts
- talk on a hand-held mobile phone while driving
- talk on a hands-free mobile phone while driving
- read a text message/email or check social media (e.g. Facebook, twitter, etc.) while driving
- drive when you were so sleepy that you had trouble keeping your eyes open

Q12_2) Over the last 30 days, how often did you as a CAR PASSENGER …? 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.
Binary variable for all items: at least once (2-5) - never (1)
Item:

- travel without wearing your seatbelt in the back seat

Q12_3) Over the last 30 days, how often did you as a MOPED DRIVER OR MOTORCYCLIST ...? 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.
Binary variable for all items: at least once (2-5) - never (1)
Items (random):

- ride when you may have been over the legal limit for drinking and driving
- ride faster than the speed limit outside built-up areas (but not on motorways/freeways)
- ride a moped or motorcycle without a helmet
- read a text message/email or check social media (e.g. Facebook, twitter, etc.) while riding a moped or motorcycle

Q12_4) Over the last 30 days, how often did you as a CYCLIST ...? 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.
Binary variable for all items: at least once (2-5) - never (1)
Items (random):

- cycle when you think you may have had too much to drink
- cycle without a helmet
- cycle while listening to music through headphones
- read a text message/email or check social media (e.g. Facebook, twitter, etc.) while cycling
- cycle on the road next to the cycle lane

Q12_5) Over the last 30 days, how often did you as a PEDESTRIAN ...? 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.
Binary variable for all items: at least once (2-5) - never (1)
Items (random):

- listen to music through headphones as a pedestrian while walking in the streets
- read a text message/email or check social media (e.g. Facebook, twitter, etc.) while walking in the streets
- cross the road when a pedestrian light is red
- cross the road at places other than at a nearby (distance less than 30m) pedestrian crossing

Acceptability of safe and unsafe traffic behaviour

Q13_1) Where you live, how acceptable would most other people say it is for a CAR 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/neutral (1-3)
Items (random):

- drive when he/she may be over the legal limit for drinking and driving
- drive 1 hour after using drugs (other than medication)
- drive faster than the speed limit outside built-up areas (but not on motorways/freeways)
- not wear a seatbelt while driving
- transport children in the car without securing them (child's car seat, seatbelt, etc.)
- talk on a hand-held mobile phone while driving
- read a text message/email or check social media (e.g. Facebook, twitter, etc.) while driving

Q14_1) How acceptable do you, personally, feel it is for a CAR 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/neutral (1-3)
Items (random)

- drive when he/she may be over the legal limit for drinking and driving
- drive 1 hour after using drugs (other than medication)

- drive after taking a medication that may influence the ability to drive
- drive faster than the speed limit inside built-up areas
- drive faster than the speed limit outside built-up areas (but not on motorways/freeways)
- drive faster than the speed limit on motorways/freeways
- not wear a seatbelt while driving
- transport children in the car without securing them (child's car seat, seatbelt, etc.)
- talk on a hand-held mobile phone while driving
- talk on a hand-free mobile phone while driving
- read a text message/email or check social media (e.g. Facebook, twitter, etc.) while driving
- drive when they're so sleepy that they have trouble keeping their eyes open

Attitudes towards safe and unsafe behaviour in traffic

Q15) 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/neutral (1-3)
Items (random):
Normative believes & subjective norms (including injunctive norms from Q13)

- Most of my friends would drive after having drunk alcohol.
- Most of my friends would drive 20 km/h over the speed limit in a residential area.

Behaviour believe & attitudes

- For short trips, one can risk driving under the influence of alcohol.
- I have to drive fast; otherwise, I have the impression of losing time.
- Respecting speed limits is boring or dull.
- For short trips, it is not really necessary to use the appropriate child restraint.
- I use a mobile phone while driving, because I always want to be available.
- To save time, I often use a mobile phone while driving.

Perceived behaviour control (here: self-efficacy)

- I trust myself to drive after having a glass of alcohol.
- I have the ability to drive when I am a little drunk after a party
- I am able to drive after drinking a large amount of alcohol (e.g. half a liter of wine).
- I trust myself when I drive significantly faster than the speed limit.
- I am able to drive fast through a sharp curve.
- I trust myself when I check my messages on the mobile phone while driving.
- I have the ability to write a message on the mobile phone while driving.
- I am able to talk on a hand-held mobile phone while driving.

Habits

- I often drive after drinking alcohol.
- Even when I am a little drunk after a party, I drive.
- It sometimes happens that I drive after consuming a large amount of alcohol (e.g. a liter of beer or half a liter of wine).
- I often drive faster than the speed limit.
- I like to drive in a sporty fast manner through a sharp curve.
- It happens sometimes that I write a message on the mobile phone while driving.
- I often talk on a hand-held mobile phone while driving.
- I often check my messages on the mobile phone while driving.

Intentions

- I will do my best not to drive after drinking alcohol in the next 30 days.
- I will do my best to respect speed limits in the next 30 days.
- I will do my best not to use my mobile phone while driving in the next 30 days.

Quality control items

- Indicate number 1 on the answering scale.
- Indicate number 4 on the answering scale.

Subjective safety & risk perception

Q16) How safe or unsafe 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) = Items indicated by the respondent in Q10 are displayed.

Q17) How often do you think each of the following factors is the cause of a road crash involving a car? You can indicate your answer on a scale from 1 to 6, where 1 is "never" and 6 is "(almost) always". The numbers in between can be used to refine your response.
Binary variable: often/frequently (4-6) - not that often/not frequently (1-3)
Items (random)

- driving after drinking alcohol
- driving after taking drugs (other than medication)
- driving faster than the speed limit
- using a hand-held mobile phone while driving
- using a hands-free mobile phone while driving
- inattentiveness or day-dreaming while driving
- driving while tired

Support for policy measures

Q18) Do you oppose or support a legal obligation to …? You can indicate your answer on a scale from 1 to 5, where 1 is "oppose" and 5 is "support". The numbers in between can be used to refine your response.
Binary variable: support (4-5) – oppose/neutral (1-3)
Items (random)

- install an alcohol "interlock" for drivers who have been caught drunk driving on more than one occasion (technology that won't let the car start if the driver's alcohol level is over the legal limit)
- have zero tolerance for alcohol (0,0 ‰) for novice drivers (licence obtained less than 2 years)
- have zero tolerance for alcohol (0,0 ‰) for all drivers
- install Intelligent Speed Assistance (ISA) in new cars (which automatically limits the maximum speed of the vehicle and can be turned off manually)
- install Dynamic Speed Warning signs (traffic control devices that are programmed to provide a message to drivers exceeding a certain speed threshold)
- have a seatbelt reminder system for the front and back seats in new cars
- require all cyclists to wear a helmet
- require cyclists under the age of 12 to wear a helmet
- require all moped drivers and motorcyclists to wear a helmet
- require pedestrians to wear reflective material when walking in the streets in the dark
- require cyclists to wear reflective material when cycling in the dark
- require moped drivers and motorcyclists to wear reflective material when driving in the dark
- have zero tolerance for using any type of mobile phone while driving (hand-held or hands-free) for all drivers
- not using headphones (or earbuds) while walking in the streets
- not using headphones (or earbuds) while riding a bicycle

Q19_1) What do you think about the current traffic rules and penalties in your country for driving or riding under the influence of alcohol? agree – disagree
Items:

- The traffic rules should be stricter.
- The traffic rules are not being checked sufficiently.
- The penalties are too severe.

Q19_2) What do you think about the current traffic rules and penalties in your country for driving or riding faster than the speed limit? agree – disagree

Items: Q19_1

Q19_3) What do you think about the current traffic rules and penalties in your country for using a mobile phone while driving or riding? agree – disagree
Items: Q19_1

Enforcement

Q20_1) On a typical journey, how likely is it that you (as a CAR DRIVER) will be checked by the police for… You can indicate your answer on a scale from 1 to 7, where 1 is "very unlikely" and 7 is "very likely". The numbers in between can be used to refine your response.
Binary variable: likely (5-7) – unlikely/neutral (1-4)
Items (random)

- … alcohol, in other words, being subjected to a Breathalyser test
- … the use of illegal drugs
- … respecting the speed limits (including checks by a police car with a camera, fixed cameras, mobile cameras, and section control systems)
- … wearing your seatbelt
- … the use of hand-held mobile phone to talk or text while driving

Q21_1) In the past 12 months, how many times have you been checked by the police for using alcohol while DRIVING A CAR (i.e., being subjected to a Breathalyser test)? never – 1 time – at least 2 times - I prefer not to respond to this question
Binary variable: at least once - never (removing "I prefer not to respond to this Q)

Q22_1) In the past 12 months, how many times have you been checked by the police for the use of drugs (other than medication) while DRIVING A CAR? never – 1 time – at least 2 times - I prefer not to respond to this question
Binary variable: at least once - never (removing "I prefer not to respond to this Q)

Involvement in road crashes

Introduction: The following questions focus on road crashes. With road crashes, we mean any collision involving at least one road vehicle (e.g., car, motorcycle, or bicycle) in motion on a public or private road to which the public has right of access. Furthermore, these crashes result in material damage, injury, or death. Collisions include those between road vehicles, road vehicles and pedestrians, road vehicles and animals or fixed obstacles, road and rail vehicles, and one road vehicle alone.

Q23_1a) In the past 12 months, how many times have you personally been involved in road crashes in which you or somebody else had to be taken to the hospital? ___ times (number; max. 10) if 0 → Q23_2a; if >0 → Q23_1b → Q23_2a
Binary variable: at least once - never

Q23_1b) Please indicate the transport modes you were using at the time of these crashes.
Items indicated by the respondent in Q10 are displayed; Threshold = 'at least a few days a year'.
Number to be indicated after each transport mode; note the sum should be equal to the number indicated in Q23_1a

Q23_2a) In the past 12 months, how many times have you personally been involved in road crashes with only minor injuries (no need for hospitalisation) for you or other people? ___ times (number; max. 10) if 0 → Q23_3a; if >0 → Q23_2b → Q23_3a
Binary variable: at least once - never

Q23_2b) = Q23_1b

Q23_3a) In the past 12 months, how many times have you personally been involved in road crashes with only material damage?
___ times (number; max. number 10) if 0 → skip Q23_3b; if >0 → Q23_3b → next Q
Binary variable: at least once - never

Q23_3b) = Q23_1b

Vehicle automation

I2) Introduction: The following questions focus on your opinion about automated passenger cars. We talk about two different levels of vehicle automation:
Semi-automated passenger cars: Drivers can choose to have the vehicle control all critical driving functions, including monitoring the road, steering, and accelerating or braking in certain traffic and environmental conditions. These vehicles will monitor roadways and prompt drivers when they need to resume control of the vehicle.
Fully-automated passenger cars: The vehicle controls all critical driving functions and monitoring all traffic situations. Drivers do not take control of the vehicle at any time.

Q24) How interested would you be in using the following types of automated passenger car? You can indicate your answer on a scale from 1 to 7, where 1 is "not at all interested" and 7 is "very interested". The numbers in between can be used to refine your response.
Binary variable: interested (5-7) - not interested/neutral (1-4)
Items:

- semi-automated passenger car
- fully-automated passenger car

Q25_1) How likely do you think it is that the following benefits will occur if everyone would use a semi-automated passenger car? You can indicate your answer on a scale from 1 to 7, where 1 is "very unlikely" and 7 is "very likely". The numbers in between can be used to refine your response.
Binary variable: likely (5-7) – unlikely/neutral (1-4)
Items (random):

- fewer crashes
- reduced severity of crash
- less traffic congestion
- shorter travel time
- lower vehicle emissions
- better fuel economy
- time for functional activities, not related to driving (e.g. working)
- time for recreative activities, not related to driving (e.g. reading, sleeping, eating)

Q25_2) How likely do you think it is that the following benefits will occur if everyone would use a fully-automated passenger car? You can indicate your answer on a scale from 1 to 7, where 1 is "very unlikely" and 7 is "very likely". The numbers in between can be used to refine your response.
Items (random) = Q25_1

Bonus question to be filled in by national partner

Q26) .....? You can indicate your answer on a scale from 1 to 5, where 1 is "…." and 5 is "….". The numbers in between can be used to refine your response.
Items (random; 4 items)

Q27) .....? You can indicate your answer on a scale from 1 to 5, where 1 is "…." and 5 is "….". The numbers in between can be used to refine your response.
Items (random; 4 items)

Social desirability scale

Introduction: The survey is almost finished. The following questions have nothing to do with road safety, but they are important background information. There are no good or bad answers.

Q28) To what extent are the following statements true? You can indicate your answer on a scale from 1 to 5, where 1 is "very untrue" and 5 is "very true". The numbers in between can be used to refine your response.
Items (random):

- I always respect the highway code, even if the risk of getting caught is very low.
- I would still respect speed limits at all times, even if there were no police checks.
- I have never driven through a traffic light that had just turned red.
- I do not care what other drivers think about me.
- I always remain calm and rational in traffic. (if needed pop-up: rational = non-emotional)
- I am always confident of how to react in traffic situations.

Appendix 2: ESRA2 weights

The following weights are used to calculate representative means on national and regional level. They are based on UN population statistics (United Nations Statistics Division, 2019). The weighting took into account small corrections with respect to national representativeness of the sample based on gender and six age groups (18-24y, 25-34y, 35-44y, 45-54y, 55-64y, 65y+). For the regions, the weighting also took into account the population size of each country in the total set of countries from this region.

Individual country weight	Individual country weight is a weighting factor based on the gender*6 age groups (18-24y, 25-34y, 35-44y, 45-54y, 55-64y, 65y) distribution in a country as retrieved from the UN population statistics.
Europe20 weight	European weighting factor based on all 20 European countries participating in ESRA2_2018, considering individual country weight and population size of the country as retrieved from the UN population statistics.
NorthAmerica2 weight	North American weighting factor based on all 2 North American countries participating in ESRA2_2018, considering individual country weight and population size of the country as retrieved from the UN population statistics.
AsiaOceania5 weight	Asian and Oceanian weighting factor based on all 5 Asian and Oceanian countries participating in ESRA2_2018, considering individual country weight and population size of the country as retrieved from the UN population statistics.
Africa5 weight	African weighting factor based on all 5 African countries participating in ESRA2_2018, considering individual country weight and population size of the country as retrieved from the UN population statistics.
ESRA32 weight	ESRA32 weighting factor based on all 32 countries participating in ESRA2_2018, considered individual country weight and population size of the country as retrieved from the UN population statistics.
ESRA32_sample weight	ESRA32-sample weighting factor based on all 32 countries participating in ESRA2_2018, considered individual country weight with N=1000 in all countries.

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