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E-Survey of Road users' Attitudes

Moped drivers and motorcyclists

ESRA2 Thematic report Nr. 12

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Moped drivers and motorcyclists

ESRA2 Thematic report Nr. 12

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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
EU	European Union
OR	Odds Ratio
PTW	Powered Two Wheelers

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 moped drivers and motorcyclists describes the frequency of riding a moped or a motorcycle, the safety perception of using moped and motorcycle, the rates of self-declared drink and riding, riding faster than the speed limit outside built-up areas (but not on motorways/freeways), riding without a helmet and reading a text message/email or checking social media while riding among road users in 32 countries. It includes comparisons among the participating countries as well as results in relation to age and gender.

Key results

Below for each research question the major findings are presented.

What is the frequency of riding a PTW?

- The use of PTWs as a transport mode is more widespread in Africa and Asia-Oceania.
- The use of non-electric PTWs is more common than that of electric ones.

What is the safety perception of using a PTW?

- In all the examined countries, the safety perception scores for PTWs do not exceed 7 points. This fact indicates that road users do not consider these transport modes to be safe enough.

What is the prevalence of self-declared drink and riding by PTW riders? And what are the differences?

- The percentage of PTW riders who admitted drinking and riding in the past 30 days varies for the majority of the countries from 15% to 25%.
- Different age groups in the four world regions present different patterns for drink and riding.
- In Europe and North America, the self-declared drink and riding rates are higher for male PTW riders, while in Asia-Oceania and in Africa the respective rates are higher for female PTW riders.

What is the level of self-declared speeding outside built-up areas (but not on motorways/freeways) by PTW riders? And what are the differences?

- In most participating countries worldwide, almost half of the PTW riders admit speeding outside built-up areas (not on motorways/freeways) in the past 30 days.
- In Europe, North America and Asia-Oceania, the self-declared speeding is higher among the younger age groups. Surprisingly, in Africa the self-declared speeding is far higher for the oldest age group (65+).
- In Europe, Asia-Oceania and Africa, male PTW riders report higher speeding rates. On the contrary, in North America, slightly higher rates correspond to female PTW riders.

What is the level of self-declared riding without a helmet? And what are the differences?

- In most countries, the percentage of PTW riders who admit riding without a helmet in the past 30 days varies from 20% to 40%. African PTW riders have the highest rates.
- Worldwide, the self-declared behaviour of riding without a helmet is higher among younger aged PTW riders than among older age groups.
- In all world regions, male PTW riders report higher rates of riding without a helmet.

What is the level of self-declared reading a text message/email or checking social media while riding? And what are the differences?

- The percentage of PTW riders who admit reading a text message/email or checking social media while riding varies from 22% in Europe to 37% in Africa.
- Different age groups in the four world regions present different patterns for reading a text message/email or checking social media while riding.
- In all the examined regions with the exception of Asia-Oceania, the rates of male PTW riders admitting reading a text message/email or checking social media while riding are higher than the respective rates of female PTW riders.

What factors are related to self-declared drink and riding?

- Male PTW riders in Europe are 1.66 times more likely to report drink and riding than female.
- Respondents who believe that they have high self-efficacy are much more likely to report that they ride under the influence of alcohol.
- PTW riders who oppose to a legal obligation to install an alcohol "interlock" for drivers who have been caught drink driving are in almost 45% cases (in Europe) and 65% cases (in Africa) more likely to report drink and riding.
- For each time the PTW riders were involved in a crash in the past 12 months, they are 2.3 times more likely to engage in drink riding in Europe, 1.9 times in Asia-Oceania and 1.96 times in Africa.
- A significant association was found between the perceived behaviour control and the self-declared drink and riding.

What factors are related to self-declared speeding outside built-up areas (but not on motorways/freeways)?

- Male PTW riders are generally more likely to report fast riding with a significant gender difference in Europe and Africa.

- PTW riders who declared speeding because of the impression of losing time are 3.5 times more likely to do so in Europe and 3.57 times more likely to do so in Asia-Oceania.
- PTW riders who trust themselves when riding significantly faster than the speed limit are 1.57 times more likely to do so in Europe, 1.45 times in Asia-Oceania and 1.96 times in Africa.
- PTW riders who often drive faster than the speed limit are 3.8 times more likely to do so in Asia-Oceania and 1.75 times more likely to do so in Africa.
- A significant association was observed between the perceived behavioural control and the self-declared behaviour.

What factors are related to self-declared riding without a helmet?

- Males are more likely to report the behaviour of riding without a helmet with a significant gender difference. In European and African countries, these rates are 1.67 and 1.5 respectively.
- In all regions, people who support the legal obligations related to helmet use are less likely to ride without a helmet.
- For each time the PTW riders were involved in a crash in the past 12 months, they are 2.43 times more likely to engage in riding without a helmet in Europe and 2 times in Asia-Oceania.
- Results also indicated some significant association between the perceived behavioural control and the self-declared behaviour.

What factors are related to self-declared reading a text message/email or checking social media while riding?

- The odds of reading a text message/email or checking social media while riding decrease with the increase of the rider's age in Europe and Africa.
- The higher the agreement towards using a mobile phone while riding a PTW (such as using a phone while riding because always want to be available, to save time, and believing being able to talk on a phone while riding) is, the higher the odds of reading a text message/email or checking social media becomes.
- Riders who use a mobile phone because they want to be available are 5 times more likely to use their phone in Asia-Oceania and 1.9 times in Africa.
- In Europe and Africa, riders who are willing to save time are about 2 times more likely to use the phone while riding.
- Riders tending to trust themselves when checking the messages on the mobile phone while driving are 2.34 times more likely to use their phones in Asia-Oceania.

Key recommendations

- Motorcyclists and moped riders constitute one of the most vulnerable road user groups. This fact in combination with the high percentages of self-declared adoption of risky behaviours by PTW riders imposes targeted measures to improve their behaviour on the road.
- Given that risky behaviours are more common among male and young PTW, measures for the elimination of such behaviours should concern the general PTW population but also particularly target the male, young riders.
- Awareness raising campaigns should be organised at local level to explain the increased risk and vulnerability of PTW with the ultimate aim to develop a traffic safety culture promoting safety and mutual respect of all road users.

- PTW safety enforcement should be well-structured, systematic and visible. The respective results should be recorded and communicated to the public in order to increase trust to and impact of enforcement actions.
- Road infrastructure should be adapted to particular PTW characteristics and needs (e.g. installation of PTW friendly barriers), creating a self-explaining and forgiving road environment.

The ESRA initiative has demonstrated the feasibility and the added value of joint data collection on road safety performance by partner organizations all over the world. The intention is to repeat this initiative on a triennial basis, retaining a core set of questions in every wave. In this way, ESRA produces consistent and comparable road safety performance indicators that can serve as an input for national road safety policies and for international monitoring systems on road safety performance.

1 Introduction

Mopeds and motorcycles, so forth called Powered Two Wheelers (PTW), form an important component of the transport system as they offer increased mobility at a reduced cost as well as a special sense of pleasure. Therefore, they serve different purposes in different areas of the world. In low and middle income countries PTW are more commonly used for the transport of goods and people and as an income source (e.g. taxis or delivery vehicles). In high-income countries they are commonly used as a transport means suitable for urban traffic congestion but also for recreation (European Commission, 2018; WHO, 2017).

Riding a PTW is much more dangerous than using any other motor vehicle. PTW riders face a higher risk of fatal or serious injury than most other road users compared by mileage or number of trips, as well as a higher accident risk (2BeSafe, 2012). PTW accounted for 18% of the total number of road deaths in the EU countries in 2017 (CARE, 2020). Among them, 15.5% concerned motorcycles and 2.5% mopeds fatal crashes. Specifically, in 2017, about 3,850 riders (drivers and passengers) of motorcycles and about 600 riders of mopeds were killed in EU countries in traffic crashes. This corresponds to 11 motorcyclist deaths per 100,000 registered motorcycles, compared to 4 car occupant deaths per 100,000 registered cars (European Commission, 2019).

Globally, users of motorised two- and three-wheelers represent 28% of all deaths. In South-East Asia and the Western Pacific, riders of motorized two- and three-wheelers comprise 43% and 36% of all deaths respectively (WHO, 2018). These alarming numbers of potentially avoidable deaths highlight the need for increased attention to motorcycles and mopeds (WHO, 2017). Moreover, moped drivers and motorcyclists have not benefited from safety improvements at the same pace as car occupants over recent decades (ITF, 2015).

A number of studies have been published in the literature for PTWs regarding the correlation of injury severity with external variables such as speeding, drink-driving, road geometry and weather conditions among others. When the interactions between behaviour, crash rates and severity are co-investigated with other contributory factors, the crash causes and the related solutions are better identified (Theofilatos and Yannis, 2014). Results show that a large number of these variables influence PTWs road accident severity considerably. Examples include negative influence for accidents while speeding and at junctions, while in darkness, and for specific accident types. Overcompensation effects for adverse weather conditions have also been identified resulting in more conservative driving. Vehicle age and lack of helmet use have been found to have an impact on increased accident severity as well (Ziakopoulos et al, 2018).

When looking at accident circumstances, it is found that the highest amount of PTW accidents are recorded in residential and commercial areas, during daylight conditions, in good weather and dry surface conditions and in local or collector roads. This is explained via exposure, as these conditions are the more favourable ones for two-wheeler trips. The majority of accidents happen within areas with a speed limit of a 50km/h followed by 30 km/h, again indicating that two-wheelers are favoured for more urban routes (Ziakopoulos et al, 2018).

Behavioural issues are major moderating factors to PTW crashes. Moped and motorcycle drivers present a great variability in their attitudes towards safety. Risk taking and sensation seeking are typical riders' behaviours which are usually expressed through speeding, disobeying traffic signals and signs, ignoring overtaking restrictions or pedestrian crossings, maintaining short gaps with the following vehicles etc (Vlahogianni et al, 2012).

PTWs behaviour is related to age and riding exposure. PTW drivers that speed seem to be more often younger and male. This might be attributed to the needs of younger people for speed, manoeuvrability and sensation seeking. Overconfidence is a primary cause for risky riding behaviour of young PTW drivers (Vlahogianni et al, 2012). A literature review paper pointed out that robust investigations of risk factors among children using motorcycles are relatively scarce (Brown et al, 2018).

On the other hand, elder people might seek slower travelling speeds or the comfort of a private car, switch to a bicycle or on foot travelling, or limit their exposure by travelling less (Ziakopoulos et al, 2018). Older motorcyclists are more likely to be admitted to hospital, have more severe injuries,

require intensive care, have a longer length of stay and suffer more complications. Head and thoracic injuries are more common and injuries at all sites are more severe in older adults. Comorbidities and reduced physiologic reserve predispose older motorcyclists to higher mortality and more severe injuries (Fitzpatrick and O'Neill, 2016). A period of absence from riding might lead to a decline in safety related motorcycle skills, whereas high exposure appears to moderate crash risk (Vlahogianni et al, 2012). An increasing proportion of older motorcyclists are returning riders whose riding skill has likely depreciated over time but are riding on powerful machines (Fitzpatrick and O'Neill, 2016).

The interaction of PTW with car drivers seems to be an important safety factor. Specifically, the lack of separation between the rider and the environment is the main factor for the high severity accident rates (2BeSafe, 2012). In a survey in Norway, motorcyclists were found not against median crash barriers but they wanted them to be designed and installed from a motorcyclist' perspective (Nordqvist and Gregersen, 2010).

As for the usage of protective equipment, most two-wheeler riders recognise the essentiality of helmet use while riding. The same cannot be said for reflective clothing. Headlights are also used by many PTWs in order to increase conspicuity, meaning to be detected by other users (Ziakopoulos et al, 2018). Back protectors may be an effective measure for spine injuries in PTW riders. However, a systematic review on the effectiveness of back protectors for motorcyclists highlighted lack of appropriate evidence on efficacy of back protectors and the need for further research into this topic (Ekmejian et al, 2016).

Motorcyclists have a better attitude to sobriety compared with car drivers. When it comes to speed, motorcyclists have a worse attitude than car drivers to speed limits. The type of motorcycle is also relevant for attitudes to speed. Motorcyclists do not see lower speed limits as an important measure for improving safety (Nordqvist and Gregersen, 2010).

Measures for the safety of PTWs focus on either accident prevention or increased protection from injuries. It should however be noted that, even if these measures were used to their full potential, injury rates of PTW riders will still be much higher than for car occupants (European Commission, 2018).

What new trends in PTW safety suggest is that while attempts are being made to improve motorcycle rider perception in traffic environments, motorcyclists are still failing to be conspicuous enough for other vehicles. It is clear that the system for conspicuity needs to be improved upon. Thus, motorcyclists should appear larger to the other drivers and they should be discernible enough so that their riding behaviour can be better understood by other vehicles operating the same roadways (Villareal, 2018).

Research suggests that some interventions might be indicated, particularly in terms of reducing speed as a contributory/causal factor in PTW accidents. However, from a technology perspective, it is difficult to imagine what might work effectively (SaferWheels, 2018). Active safety systems, such as antilock braking are going to play an important role to improve PTW safety. A systematic review shows that multiple active safety systems for PTWs have been considered but the levels of development are diverse. A few systems are available in the series production, whereas other systems are still at the level of early stage prototypes. So far, safety benefit assessments have been conducted only at single system level (Savino et al, 2019).

More tangible benefits might be derived through rider education, campaigns and more aggressive enforcement of speed limits. For non-speed related PTW accidents, particularly junction accidents (which is the most common accident scenario), technology might be more effective – particularly Intelligent Transport System-related functions which can inform vehicle drivers of the presence of the PTW (SaferWheels, 2018).

It will never be free of risk to ride a motorcycle. This fact does not mean that motorcyclists are not conscious about their safety. A previous study showed that motorcyclists are well aware and concerned about their own safety. However, they have different opinions to other road users. They do not make the same priorities of actions that authorities do (Nordqvist and Gregersen, 2010). The PTW safety situation, risk factors and underlying socio-demographic conditions will vary across regions, countries and within states, territories and provinces, and it is not possible to provide (in a single document) suggestions that will be equally useful across all settings and locales (WHO, 2017).

The ESRA2 survey asks questions on frequency of riding a PTW, safety perception of using a PTW and PTW riders' self-declared behaviour. In terms of self-declared behaviour, it was explored how road users in different regions, countries, age and gender groups, differ in self-declared drink and riding, speeding outside built-up areas (but not on motorways/freeways), riding without a helmet and reading a text message/email or checking social media while riding.

The ESRA2 findings are exploited to answer the following research questions:

- What is the frequency of riding a PTW?
- What is the safety perception of using a PTW?
- What is the prevalence of self-declared drink and riding by PTW riders?
- What are the differences in self-declared drink and riding between countries, gender and age groups?
- What is the level of self-declared speeding outside built-up areas (but not on motorways/freeways) by PTW riders?
- What are the differences in self-declared speeding outside built-up areas (but not on motorways/freeways) by PTW riders between countries, gender and age groups?
- What is the level of self-declared riding without a helmet?
- What are the differences in self-declared riding without a helmet between countries, gender and age groups?
- What is the level of self-declared reading a text message/email or checking social media while riding?
- What are the differences in self-declared reading a text message/email or checking social media while riding between countries, gender and age groups?
- Which factors are related to PTW riders' self-declared behaviour (drink and riding, speeding outside built-up areas (but not on motorways/freeways), riding without a helmet and reading a text message/email or checking social media while riding)?

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 large set of road safety indicators. These provide scientific evidence for policy making 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 (ESRA2_2018). In total this survey collected data from more than 35,000 road users across 32 countries.

The participating countries in ESRA2_2018 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.

Vias institute in Brussels (Belgium) initiated and coordinates 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 common results of the ESRA2_2018 survey will be published in a Main Report, a Methodology Report and at least fifteen Thematic Reports (Table 1). 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

Table 1: ESRA2 Thematic Reports

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 summarizes the ESRA2_2018 results with respect to moped drivers and motorcyclists. An overview of the data collection method and the sample per country can be found in (Meesmann & Torfs, 2019. ESRA2 methodology).

Note that a weighting of the data was applied to the descriptive analyses. This 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+; 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 total set of countries from this region. SPSS 25.0 and R 3.6.0 was used for the descriptive results of this report. In the advanced analyses, SPSS 25.0 was used for the logistic regression models.

3 Results

3.1 Descriptive analysis

This section presents the results of ESRA2 questions on riding a PTW. These questions cover the following topics:

- frequency of riding a PTW in the past 12 months (Section 3.1.1),
- safety perception of using a moped or a motorcycle (electric or not) (Section 3.1.2),
- self-declared behaviour of riding when you may have been over the legal limit for drink-driving in the past 30 days (Section 3.1.3),
- self-declared behaviour of riding faster than speed limit outside built-up areas (but not on motorways/freeways) in the past 30 days (Section 3.1.4),
- self-declared behaviour of riding without a helmet in the past 30 days (Section 3.1.5), and
- self-declared behaviour of reading a text message/email or checking social media (e.g. Facebook, twitter etc.) while riding in the past 30 days (Section 3.1.6).

In each ESRA country about 1000 road users participated in the survey, about 100-200 of which rode a PTW at least a few days per month (precise sample sizes are presented in Appendix 3). Please note that in the African countries a lower percentage of people has access to and uses the internet (in Kenya and Nigeria less than 30%), thus was possible to participate to the survey. Within the African countries, the numbers of 65+ respondents who answered the ESRA2 survey were quite low (with the exception of South Africa), so that the answers of this particular age group in African countries cannot be considered to be representative.

For each topic of self-declared behaviour, the results are presented in a similar way: first the basic results per country, then the results further split out in various graphs, first by world region (and country), then by rider's age and gender.

Statistical tests of differences between regions, gender and age groups have been performed and are reported in Appendix 4. Given the rather large sample sizes of the region, gender and age groups, nearly all regional, gender and age group differences described in this chapter were statistically significant at $p < 0.01$. Besides statistical significance, also the effect sizes of the tested differences were reported in Appendix 4. Nearly all effect sizes ranged from “small” to “medium”.

3.1.1 Frequency of riding a PTW (in the past 12 months)

In the ESRA2-survey, road users were asked to answer the question "During the past 12 months, how often did you use each of the following transport modes?" About twenty modes of transport were listed, including moped (≤ 50 cc or ≤ 4 kW; non-electric), motorcycle (> 50 cc and > 4 kW non-electric), electric moped (≤ 4 kW) and electric motorcycle (> 4kW). Tables 2 to 5 present the respective frequency of riding each PTW by country and region.

Table 2: Self-declared frequency of riding a moped (≤ 50 cc or ≤ 4 kW; non-electric) among all road users by country and region ("During the past 12 months, how often did you drive a moped (≤ 50 cc or ≤ 4 kW; non-electric?")

Country	at least 4 days a week	1 to 3 days a week	a few days a month	a few days a year	never
Australia	0.9%	0.7%	1.7%	1.5%	95.1%
Austria	0.7%	1.6%	2.8%	7.0%	88.0%
Belgium	1.8%	1.7%	2.2%	3.2%	91.2%
Canada	1.3%	2.0%	1.8%	2.1%	92.7%
Czech Republic	1.7%	1.3%	3.3%	10.1%	83.5%
Denmark	1.4%	2.0%	1.8%	6.6%	88.1%
Egypt	4.7%	8.2%	8.4%	12.4%	66.2%
Finland	0.6%	1.1%	2.2%	11.2%	84.9%
France	0.6%	1.4%	2.5%	3.2%	92.3%
Germany	1.2%	1.6%	2.3%	3.4%	91.6%
Greece	4.4%	3.4%	3.6%	11.3%	77.2%
Hungary	1.7%	1.9%	4.1%	11.7%	80.6%
India	10.0%	10.1%	9.9%	9.1%	60.9%
Ireland	1.2%	1.7%	1.6%	4.0%	91.5%
Israel	0.7%	0.3%	0.6%	3.0%	95.3%
Italy	3.2%	5.1%	6.5%	6.0%	79.2%
Japan	2.1%	3.2%	2.0%	1.9%	90.7%
Kenya	3.0%	4.0%	4.6%	7.4%	81.0%
Morocco	6.8%	7.5%	9.4%	14.0%	62.2%
Netherlands	2.6%	2.9%	2.6%	5.1%	86.8%
Nigeria	5.8%	5.8%	7.6%	9.2%	71.6%
Poland	0.5%	1.8%	3.8%	14.7%	79.2%
Portugal	2.5%	1.7%	2.7%	5.8%	87.3%
Republic of Korea	0.5%	2.2%	3.2%	3.7%	90.4%
Serbia	1.7%	3.4%	4.0%	12.4%	78.5%
Slovenia	2.3%	2.0%	4.8%	16.6%	74.2%
South Africa	1.5%	1.7%	3.2%	7.7%	86.0%
Spain	1.5%	3.7%	4.7%	5.6%	84.5%
Sweden	1.0%	2.1%	3.2%	7.5%	86.1%
Switzerland	1.2%	1.5%	2.4%	4.7%	90.2%
United Kingdom	0.8%	2.2%	1.8%	1.3%	93.9%
United States	1.2%	0.7%	1.9%	2.9%	93.3%
Region	**at least 4 days a week**	**1 to 3 days a week**	**a few days a month**	**a few days a year**	**never**
Europe20	1.5%	2.5%	3.3%	5.7%	87.1%
AsiaOceania5	8.5%	8.7%	8.4%	7.9%	66.5%
NorthAmerica2	1.2%	0.8%	1.8%	2.8%	93.3%
Africa5	4.8%	6.4%	7.5%	11.5%	69.8%

Based on Table 2, the three countries with the highest proportions of respondents that reported riding a non-electric moped at least a few days a year are Slovenia, Poland and Morocco. However, the countries with the most frequent use of non-electic mopeds (at least 4 days a week) are India, Morocco, Nigeria and Egypt. Findings for Indiaimply that the use of non-electric mopeds is very high in the country. It is also clear that the use of non-electric mopeds is more common in Africa and Asia-Oceania among the four examined world regions.

Table 3: Self-declared frequency of riding a motorcycle (> 50 cc or > 4 kW; non-electric) among all road users by country and region ("During the past 12 months, how often did you drive a motorcycle (> 50 cc or > 4 kW; non-electric?")

Country	at least 4 days a week	1 to 3 days a week	a few days a month	a few days a year	never
Australia	1.2%	1.8%	2.8%	2.4%	91.8%
Austria	1.5%	3.2%	3.9%	5.8%	85.7%
Belgium	0.8%	1.4%	1.6%	3.0%	93.2%
Canada	1.5%	2.7%	3.2%	3.7%	89.0%
Czech Republic	1.3%	0.9%	3.4%	11.0%	83.3%
Denmark	0.5%	1.5%	1.7%	4.5%	91.8%
Egypt	7.5%	7.2%	10.2%	10.9%	64.1%
Finland	0.7%	1.1%	2.9%	8.3%	87.0%
France	1.1%	2.2%	2.1%	3.5%	91.0%
Germany	1.4%	2.8%	2.3%	2.9%	90.6%
Greece	9.8%	3.4%	4.5%	10.0%	72.4%
Hungary	3.1%	2.6%	4.7%	15.1%	74.5%
India	31.8%	17.2%	11.3%	7.2%	32.5%
Ireland	1.7%	1.7%	1.8%	5.7%	88.9%
Israel	1.8%	0.9%	0.1%	2.8%	94.3%
Italy	4.2%	4.7%	6.7%	4.8%	79.6%
Japan	1.8%	2.2%	2.0%	1.4%	92.4%
Kenya	7.3%	9.3%	15.9%	13.0%	54.5%
Morocco	5.4%	5.2%	8.9%	12.0%	68.6%
Netherlands	1.9%	1.7%	1.9%	1.8%	92.6%
Nigeria	14.3%	12.2%	11.1%	10.2%	52.2%
Poland	0.8%	1.6%	4.5%	12.9%	80.2%
Portugal	2.6%	1.9%	3.6%	6.0%	85.9%
Republic of Korea	0.9%	2.4%	2.7%	4.8%	89.3%
Serbia	1.7%	1.6%	4.1%	16.0%	76.5%
Slovenia	2.6%	2.0%	5.0%	15.3%	75.1%
South Africa	3.0%	3.2%	4.9%	9.3%	79.7%
Spain	2.6%	5.3%	4.9%	6.5%	80.7%
Sweden	1.1%	3.2%	3.0%	5.5%	87.1%
Switzerland	1.8%	3.2%	4.3%	5.7%	85.0%
United Kingdom	1.7%	1.0%	2.2%	1.5%	93.7%
United States	1.3%	2.4%	3.0%	3.8%	89.5%
Region	**at least 4 days a week**	**1 to 3 days a week**	**a few days a month**	**a few days a year**	**never**
Europe20	2.1%	2.7%	3.5%	5.3%	86.3%
AsiaOceania5	26.2%	14.4%	9.6%	6.4%	43.4%
NorthAmerica2	1.3%	2.4%	3.0%	3.8%	89.5%
Africa5	6.5%	6.3%	9.2%	11.0%	67.0%

Regarding the use of non-electric motorcycles, high percentages of respondents in India, Nigeria and Greece answered that they used a motorcycle at least 4 days a week which indicates that non-electric motorcycles are very widespread mode of transport in these countries. On the other hand, more than the 93% of respondents in Belgium, the United Kingdom and Israel stated that they have never ridden a non-electric motorcycle in the past year. Similarly to the use of non-electric mopeds, the use of non-electric motorcycles as a transport mode is more popular in Africa and Asia-Oceania.

Table 4: Self-declared frequency of riding an electric moped (≤ 4 kW) among all road users by country and region ("During the past 12 months, how often did you drive an electric moped (≤ 4 kW) ?")

Country	at least 4 days a week	1 to 3 days a week	a few days a month	a few days a year	never
Australia	0.3%	1.0%	1.3%	1.5%	95.8%
Austria	0.5%	0.8%	1.0%	3.1%	94.7%
Belgium	1.4%	1.2%	1.1%	1.8%	94.5%
Canada	1.3%	1.8%	1.2%	3.1%	92.6%
Czech Republic	0.4%	0.5%	1.4%	4.5%	93.2%
Denmark	0.6%	1.0%	1.2%	2.6%	94.5%
Egypt	3.4%	5.9%	8.7%	9.2%	72.7%
Finland	0.0%	0.4%	1.0%	2.5%	96.1%
France	0.5%	1.1%	1.6%	2.0%	94.8%
Germany	0.7%	0.7%	1.3%	1.5%	96.0%
Greece	0.5%	0.8%	1.2%	3.8%	93.7%
Hungary	1.0%	0.7%	2.2%	6.9%	89.3%
India	4.2%	6.9%	7.7%	8.0%	73.2%
Ireland	0.9%	1.3%	1.6%	3.2%	93.1%
Israel	0.6%	0.3%	0.4%	1.0%	97.7%
Italy	1.3%	1.7%	3.8%	4.0%	89.2%
Japan	0.7%	1.2%	1.2%	0.3%	96.5%
Kenya	1.0%	1.6%	2.1%	5.6%	89.7%
Morocco	3.9%	4.8%	4.4%	6.3%	80.6%
Netherlands	1.0%	1.5%	1.6%	0.5%	95.3%
Nigeria	2.3%	2.3%	6.6%	6.1%	82.7%
Poland	0.1%	1.4%	2.9%	9.4%	86.2%
Portugal	0.7%	0.2%	1.4%	3.7%	94.0%
Republic of Korea	0.4%	1.5%	2.6%	2.0%	93.5%
Serbia	0.4%	0.5%	1.2%	5.3%	92.7%
Slovenia	0.4%	0.3%	1.3%	5.8%	92.3%
South Africa	0.8%	1.6%	2.0%	4.2%	91.5%
Spain	0.9%	3.3%	2.0%	4.2%	89.6%
Sweden	1.1%	1.5%	1.4%	3.3%	92.6%
Switzerland	0.7%	1.3%	0.8%	2.5%	94.7%
United Kingdom	0.4%	1.5%	1.7%	1.0%	95.4%
United States	0.5%	0.9%	2.0%	2.6%	94.1%
Region	**at least 4 days a week**	**1 to 3 days a week**	**a few days a month**	**a few days a year**	**never**
Europe20	0.7%	1.3%	1.9%	3.2%	92.9%
AsiaOceania5	3.5%	5.8%	6.6%	6.7%	77.4%
NorthAmerica2	0.6%	0.9%	1.9%	2.6%	94.1%
Africa5	2.9%	4.2%	5.5%	6.9%	80.5%

Based on the percentages presented in Table 4, it is observed that the use of electric mopeds is less widespread compared to non-electric ones. However, the countries with the highest rates of electric mopeds use (at least 4 days a week) are the same for both electric and non-electric (i.e. India, Morocco, Egypt and Nigeria). When considering the frequency of respondents riding an electric moped by region, respondents from Africa and Asia-Oceania display the highest share.

Table 5: Self-declared frequency of riding an electric motorcycle (> 4 kW) among all road users by country and region ("During the past 12 months, how often did you drive an electric motorcycle (> 4 kW) ?")

Country	at least 4 days a week	1 to 3 days a week	a few days a month	a few days a year	never
Australia	1.1%	0.7%	1.9%	1.2%	95.0%
Austria	0.4%	0.8%	1.0%	2.5%	95.3%
Belgium	0.9%	0.9%	1.6%	2.7%	94.1%
Canada	0.8%	1.7%	2.1%	2.1%	93.2%
Czech Republic	0.4%	0.5%	1.4%	4.3%	93.3%
Denmark	0.0%	0.7%	0.8%	2.5%	95.9%
Egypt	3.8%	6.6%	8.6%	9.9%	71.0%
Finland	0.1%	0.5%	0.6%	1.5%	97.3%
France	0.5%	1.7%	0.9%	2.1%	94.8%
Germany	0.5%	0.8%	1.3%	1.0%	96.4%
Greece	1.1%	1.3%	1.2%	3.5%	92.9%
Hungary	1.0%	0.9%	2.9%	6.6%	88.7%
India	6.1%	8.2%	8.7%	7.9%	69.1%
Ireland	0.4%	1.5%	1.5%	3.0%	93.7%
Israel	0.7%	0.2%	0.3%	1.2%	97.6%
Italy	0.9%	1.4%	2.7%	2.0%	93.0%
Japan	0.8%	1.0%	0.7%	0.5%	96.9%
Kenya	1.4%	2.8%	4.1%	7.1%	84.6%
Morocco	2.4%	4.4%	5.1%	6.7%	81.5%
Netherlands	0.4%	1.2%	1.9%	2.2%	94.2%
Nigeria	6.9%	5.1%	6.9%	5.8%	75.3%
Poland	0.2%	0.7%	2.8%	9.6%	86.7%
Portugal	0.5%	0.6%	1.4%	3.9%	93.6%
Republic of Korea	0.3%	1.7%	2.0%	1.8%	94.2%
Serbia	0.6%	0.2%	1.7%	4.9%	92.6%
Slovenia	0.2%	0.4%	1.4%	6.5%	91.5%
South Africa	1.4%	0.9%	2.7%	4.2%	90.8%
Spain	1.6%	2.8%	3.3%	3.6%	88.8%
Sweden	0.9%	1.3%	1.7%	2.1%	93.9%
Switzerland	1.0%	0.5%	1.3%	2.4%	94.9%
United Kingdom	0.7%	1.6%	0.9%	0.9%	95.8%
United States	0.7%	0.9%	0.8%	1.5%	96.2%
Region	**at least 4 days a week**	**1 to 3 days a week**	**a few days a month**	**a few days a year**	**never**
Europe20	0.7%	1.3%	1.8%	2.8%	93.4%
AsiaOceania5	5.1%	6.9%	7.3%	6.7%	73.9%
NorthAmerica2	0.7%	1.0%	0.9%	1.6%	95.8%
Africa5	3.0%	4.5%	6.0%	7.3%	79.2%

Finally, regarding the use of electric motorcyles, it is observed that they are not used to the same extent as non-electric ones, as the percentages of respondents who have never used an electric motorcycle in the past 12 months are quite higher. The highest rates of using electric motorcycles correspond to the respondents from Nigeria, India and Egypt. It is also obvious among the four examined world regions that the highest rates are recorded in Africa and Asia-Oceania.

3.1.2 Safety perception of using a PTW

All respondents who used moped and motorcycle in the past 12 months were asked how safe they had felt using these transport modes. They could answer on a scale from 0 to 10, where 0 is "very unsafe" and 10 is "very safe". The mean results per country are presented in Table 6.

Table 6: Average safety perception of using moped and motorcycle by country (11-point scale from 0= very unsafe to 10= very safe)

Country	Moped (≤50cc or ≤4kW; non-electric)	Motorcycle (>50cc or >4kW; non-electric)	Moped (electric ≤4kW)	Motorcycle (electric >4kW)
Australia	5.7	5.8	5.8	5.8
Austria	6.0	6.1	4.9	5.2
Belgium	5.6	5.7	5.3	5.6
Canada	5.8	6.1	5.9	6.7
Czech Republic	5.6	5.6	5.3	5.6
Denmark	6.6	5.8	6.2	5.6
Egypt	5.6	5.4	5.3	5.4
Finland	6.5	6.4	6.2	6.7
France	5.5	5.3	5.1	5.6
Germany	6.5	6.5	5.3	5.8
Greece	4.8	4.7	4.8	4.8
Hungary	5.5	5.1	5.1	4.9
India	6.7	6.6	6.6	6.7
Ireland	5.3	5.6	5.8	5.6
Israel	4.0	4.0	3.9	3.9
Italy	5.5	5.8	5.1	5.2
Japan	5.5	5.4	5.1	5.4
Kenya	5.2	5.4	5.2	5.6
Morocco	5.6	5.2	5.5	5.1
Netherlands	6.5	6.4	6.4	5.9
Nigeria	5.0	5.1	4.6	4.7
Poland	6.1	6.2	6.0	6.0
Portugal	5.7	5.9	5.8	6.2
Republic of Korea	4.0	4.2	4.1	4.0
Serbia	5.4	5.2	5.0	4.7
Slovenia	6.0	5.7	5.9	5.8
South Africa	4.7	4.6	4.8	5.0
Spain	5.3	5.6	5.3	5.6
Sweden	5.7	5.8	5.7	5.0
Switzerland	6.4	6.8	5.6	6.2
United Kingdom	5.5	5.7	5.6	5.3
United States	5.2	5.6	5.4	5.4

Based on Table 6, in all the examined countries the safety perception scores for PTWs do not exceed 7 points. This fact indicates that road users do not consider these transport modes to be safe enough. The country with the lowest scores for both moped and motorcycles is Israel. Very similar scores correspond to the Republic of Korea. Among European countries, the lowest safety perception scores for PTWs correspond to Greece. With regard to non-electric motorcycles, Switzerland is at the top of the safety perception ranking (6.8) followed by India (6.6). India is also the country with the highest safety perception scores for mopeds, electric mopeds and electric motorcycles (6.7, 6.6 and 6.7 respectively).

3.1.3 Self-declared drink and riding

Table 7 presents the results on self-declared drink and riding of PTW riders.

Table 7: Self-declared drink and riding by PTW riders ("Over the last 30 days, how often did you as a moped driver or motorcyclist ride when you may have been over the legal limit for drinking and driving?")

Country	Never (1)	At least once (2-5)
Australia	69.3%	30.7%
Austria	78.2%	21.8%
Belgium	78.7%	21.3%
Canada	47.3%	52.7%
Czech Republic	90.6%	9.4%
Denmark	72.0%	28.0%
Egypt	77.6%	22.4%
Finland	94.6%	5.4%
France	66.3%	33.7%
Germany	81.9%	18.1%
Greece	83.6%	16.4%
Hungary	91.3%	8.7%
India	82.0%	18.0%
Ireland	77.9%	22.1%
Israel	95.8%	4.2%
Italy	83.9%	16.1%
Japan	89.8%	10.2%
Kenya	87.8%	12.2%
Morocco	76.9%	23.1%
Netherlands	81.6%	18.4%
Nigeria	86.5%	13.5%
Poland	86.2%	13.8%
Portugal	89.6%	10.4%
Republic of Korea	83.9%	16.1%
Serbia	89.4%	10.6%
Slovenia	80.1%	19.9%
South Africa	79.0%	21.0%
Spain	79.8%	20.2%
Sweden	81.8%	18.2%
Switzerland	84.8%	15.2%
United Kingdom	61.1%	38.9%
United States	78.6%	21.4%

As can be seen in Table 7, the percentage of PTW riders who admit drinking and riding in the past 30 days varies for the majority of the countries from 15% to 25%. The highest rate corresponds to Canada (almost 53%), followed by the United Kingdom, France and Australia (rates varying approximately from 30% to 40%). The lowest rates are found in Israel, Finland and Hungary (rates varying from 4% to 9%).

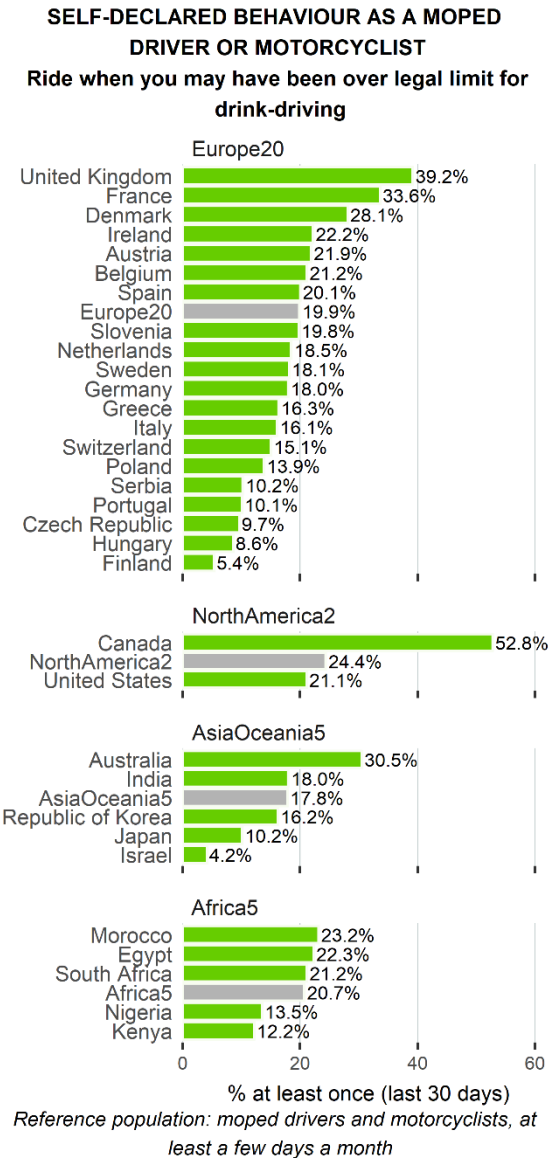
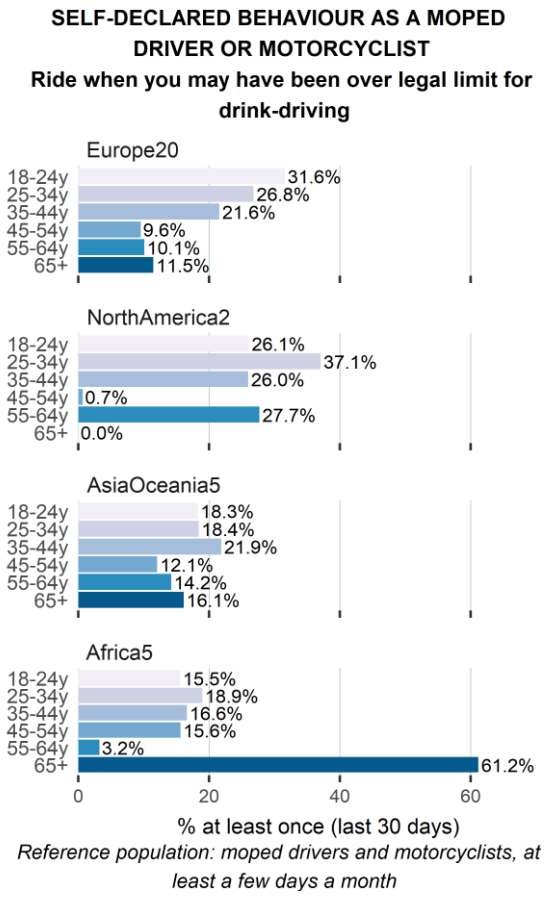


Figure 1 presents the results of PTW riders for self-declared drink and riding in the past 30 days per world region and country. Self-declared drink and riding in the past 30 days varies from 18% in Asia-Oceania to 24% in North America. The rates of self-declared drink and riding are in between for Europe (20%) and Africa (21%). Regarding the two North American countries, a significant difference can be observed between Canada (53%) and the United States (21%).

In Europe, PTW riders from the United Kingdom (39%) and France (34%) report the highest rates of drink and riding, whereas PTW riders in Hungary (9%) and Finland (5%) report the lowest rates. In Asia-Oceania, PTW riders in Australia report drink and riding most frequently (31%) and PTW riders in Israel least frequently (4%). In Africa, PTW riders in Morocco report drink and riding more frequently (23%) and riders in and Kenya less frequently (12%).

Figure 1: Self-declared drink and riding by PTW riders per region and country (% of PTW riders that did it at least once in the past 30 days).

In Figure 2, the self-declared drink and riding rates by PTW riders are presented for different age groups in the four world regions.



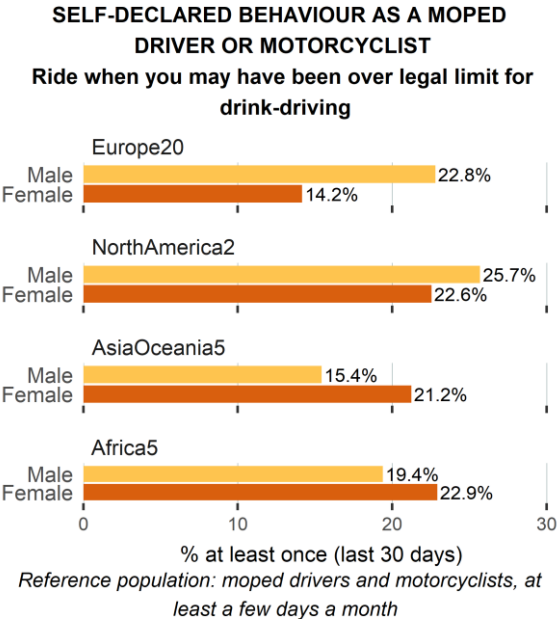
A comparable pattern cannot be observed for drink and riding among the different age groups in the four world regions. In Europe, the highest rates are found among the youngest PTW riders, aged 18 to 24 (32%) and the lowest rates are found among the age group 45 to 54 (10%).

In North America, the highest rates correspond to PTW riders aged 25 to 34 (37%), while the lowest rates are observed for the 65+ age group (0%). A significant difference is observed concerning the rates for age groups 45-54 and 65+ compared to the others, as for these age groups the respective rates are almost equal to zero.

In Asia-Oceania, rates are not much different between age groups. The highest rates are found among the age group 35-44 (22%), while the lowest rates correspond to PTW riders aged 45 to 54 (12%). Surprisingly in Africa, the highest rates are found for the oldest age group (61%). However, as mentioned in section 3.1, the answers of 65+ Africans are not considered as being representative due to low number of respondents.

Figure 2: Self-declared drink and riding by PTW riders per region and age group (% of PTW riders that did it at least once in the past 30 days).

Figure 3 presents self-declared drink and riding rates by PTW riders for region and gender.



As can be seen in Figure 3, in Europe and North America, self-declared drink and riding rates are higher for male PTW riders (23% to 26%) than for female PTW riders (14% to 23%). In Europe, the difference between males and females is more substantial.

On the contrary, in Asia-Oceania and Africa, the self-declared drink and riding rates are higher for female PTW riders (21% to 23%) than for male PTW riders (15% to 19%).

Figure 3: Self-declared drink and riding by PTW riders per region and gender (% of PTW riders that did it at least once in the past 30 days).

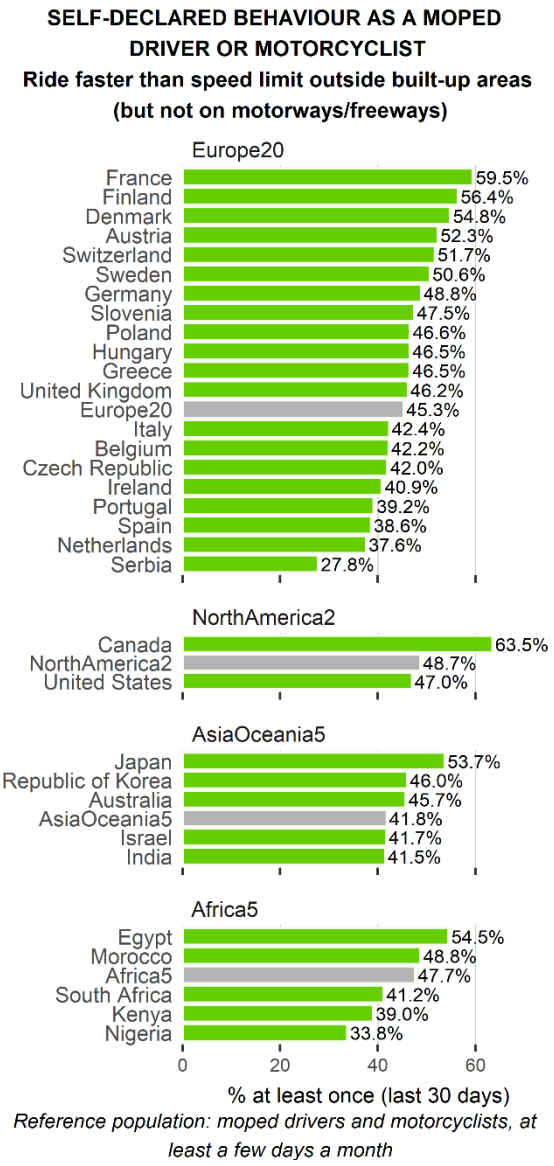
3.1.4 Self-declared speeding outside built-up areas (but not on motorways/freeways)

Table 8 presents the results on self-declared riding faster than the speed limit outside built-up areas, but not on motorways/freeways. The results in this table show that in the majority of the countries, the proportion of PTW riders who admit speeding in the past 30 days is between 40% and 50%. The highest rates of speeding are reported in Canada (63%), France (60%) and Finland (57%).

Table 8: Self-declared speeding outside built-up areas (but not on motorways/freeways) by PTW riders ("Over the last 30 days, how often did you as a moped driver or motorcyclist ride faster than the speed limit outside built-up areas (but not on motorways/freeways)?")

Country	Never (1)	At least once (2-5)
Australia	54.1%	45.9%
Austria	47.7%	52.3%
Belgium	57.6%	42.4%
Canada	36.6%	63.4%
Czech Republic	58.1%	41.9%
Denmark	45.1%	54.9%
Egypt	45.5%	54.5%
Finland	43.2%	56.8%
France	40.4%	59.6%
Germany	51.0%	49.0%
Greece	53.6%	46.4%
Hungary	53.4%	46.6%
India	58.5%	41.5%
Ireland	58.9%	41.1%
Israel	58.3%	41.7%
Italy	57.6%	42.4%
Japan	46.3%	53.7%
Kenya	60.9%	39.1%
Morocco	51.3%	48.7%
Netherlands	62.4%	37.6%
Nigeria	66.3%	33.7%
Poland	53.4%	46.6%
Portugal	60.9%	39.1%
Republic of Korea	54.0%	46.0%
Serbia	72.3%	27.7%
Slovenia	52.6%	47.4%
South Africa	58.6%	41.4%
Spain	61.2%	38.8%
Sweden	49.6%	50.4%
Switzerland	48.2%	51.8%
United Kingdom	54.2%	45.8%
United States	53.1%	46.9%

The region and country results concerning self-declared speeding by PTW riders are presented in Figure 4.



As can be seen in Figure 4, the rates of PTW riders who admit speeding vary from 42% in Asia-Oceania to 49% in North America. The respective rates are 45% in Europe and 48% in Africa.

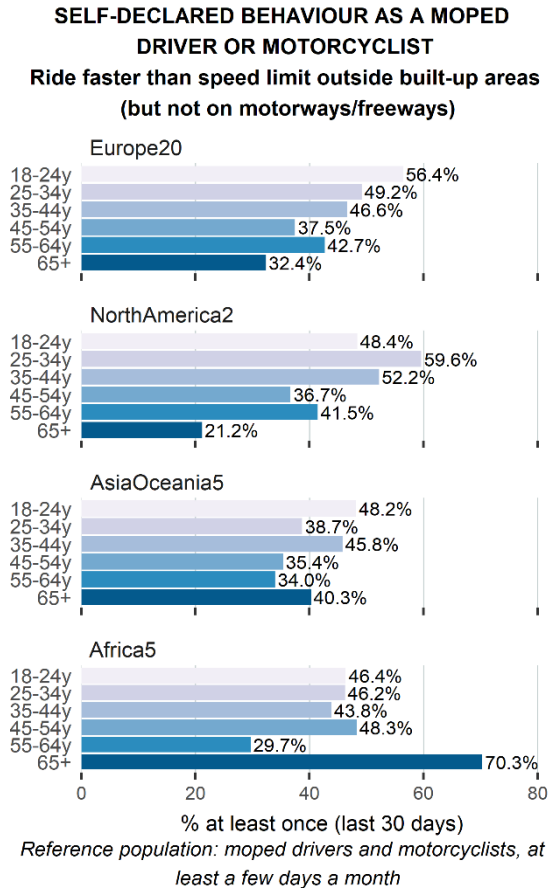
Among European countries, the highest self-declared speeding rates are found in France (60%), Finland (56%) and Denmark (55%), whereas PTW riders in Spain (39%), Netherlands (38%) and Serbia (28%) report the lowest rates.

In North America, the self-declared speeding rate in Canada (64%) is significantly higher than the respective rate in the United States (47%).

In Asia-Oceania, Japanese PTW riders report speeding most frequently (54%) and Indian PTW riders least frequently (42%). In Africa, the highest rate is observed in Egypt (55%) while the lowest in Nigeria (34%).

Figure 4: Self-declared speeding outside built-up areas (but not on motorways/freeways) by PTW riders per region and country (% of PTW riders that did it at least once in the past 30 days).

Self-declared speeding outside built-up areas, but not on motorways/freeways, is further split out by region and age group in Figure 5.

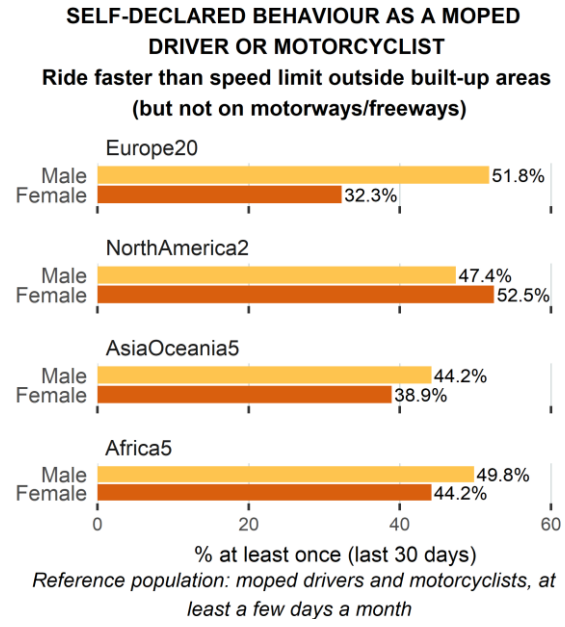


As can be seen in Figure 5, in Europe and North America, the self-declared speeding by PTW riders is higher among the younger aged PTW riders than among older age groups. In Europe, the highest rates are found in the age group 18-24 (56%) and in North America in the age group 25-34 (60%). In Asia-Oceania the highest rate corresponds to PTW riders aged 18 to 24 (48%). However, the self-declared speeding rate of PTW riders aged 65+ is also quite high (40%).

In contrast to these findings, in Africa, surprisingly, the self-declared speeding is far higher (70%) for the oldest PTW riders' age group (65+) than for the younger age groups. However, the answers of 65+ group cannot be regarded as representative.

Figure 5: Self-declared speeding outside built-up areas (but not on motorways/freeways) by PTW riders per region and age group (% of PTW riders that did it at least once in the past 30 days).

In Figure 6 self-declared speeding outside built-up areas, but not on motorways/freeways, is split out by region and gender.



As can be seen in Figure 6, in three of the examined world regions and more specifically in Europe, Asia-Oceania and Africa, self-declared speeding rates are higher for male PTW riders (44% to 52%). In North America, slightly higher rates correspond to female PTW riders (53%) in comparison with the respective rates for male PTW riders (47%).

Figure 6: Self-declared speeding outside built-up areas (but not on motorways/freeways) by PTW riders per region and gender (% of PTW riders that did it at least once in the past 30 days).

3.1.5 Self-declared behaviour of riding without a helmet

The country results regarding self-declared behaviour of riding without a helmet are presented in Table 9. In most countries, the percentage of PTW riders who admit riding without a helmet in the past 30 days varies from 20% to 40%. PTW riders in African countries have the highest rates (Egypt: 58% and Kenya: 53%). In contrast, PTW riders in Portugal (14%) and Israel (8%) present the lowest rates.

Table 9: Self-declared behaviour of riding without a helmet ("Over the last 30 days, how often did you as a moped driver or motorcyclist ride a moped or motorcycle without a helmet?")

Country	Never (1)	At least once (2-5)
Australia	70.7%	29.3%
Austria	80.2%	19.8%
Belgium	76.7%	23.3%
Canada	50.5%	40.5%
Czech Republic	78.3%	21.7%
Denmark	62.2%	37.8%
Egypt	42.0%	58.0%
Finland	78.4%	21.6%
France	68.5%	31.5%
Germany	77.3%	22.7%
Greece	57.6%	42.4%
Hungary	69.4%	30.6%
India	53.0%	47.0%
Ireland	67.4%	32.6%
Israel	91.7%	8.3%
Italy	83.0%	17.0%
Japan	84.3%	15.7%
Kenya	47.4%	52.6%
Morocco	55.8%	44.2%
Netherlands	63.8%	36.2%
Nigeria	54.3%	45.7%
Poland	66.4%	33.6%
Portugal	86.5%	13.5%
Republic of Korea	69.0%	31.0%
Serbia	62.7%	37.3%
Slovenia	74.2%	25.8%
South Africa	74.1%	25.9%
Spain	78.7%	21.3%
Sweden	72.7%	27.3%
Switzerland	82.6%	17.4%
United Kingdom	59.7%	40.3%
United States	62.2%	37.8%

Figure 7 presents region and country results of the question on self-declared behaviour of riding without a helmet.

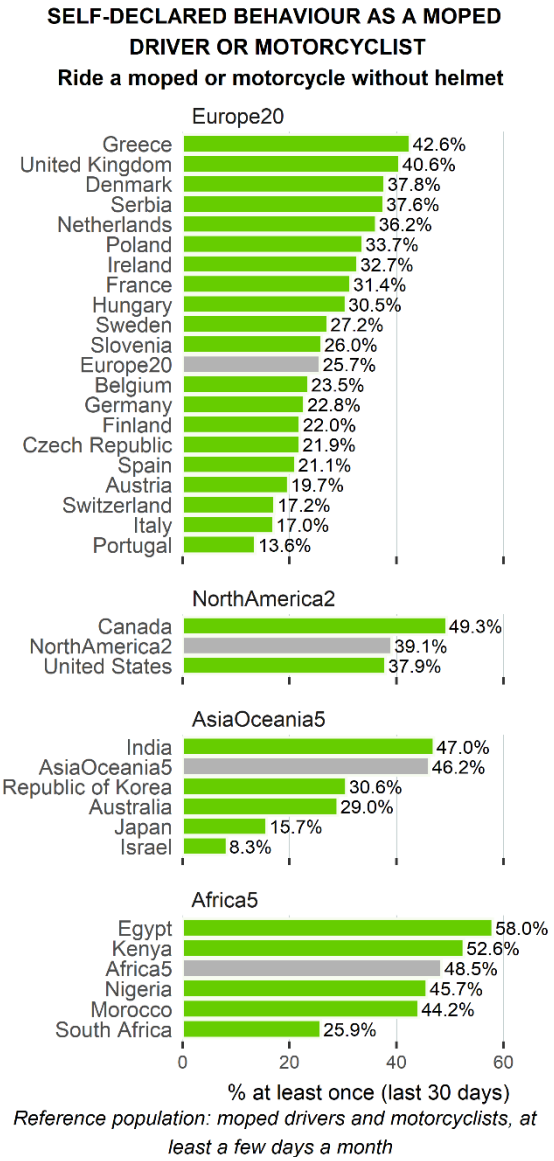


Figure 7 shows that the results of PTW riders for self-declared behaviour of riding without a helmet vary from 26% in Europe to 49% in Africa. The respective rates are in between for North America (39%) and Asia-Oceania (46%).

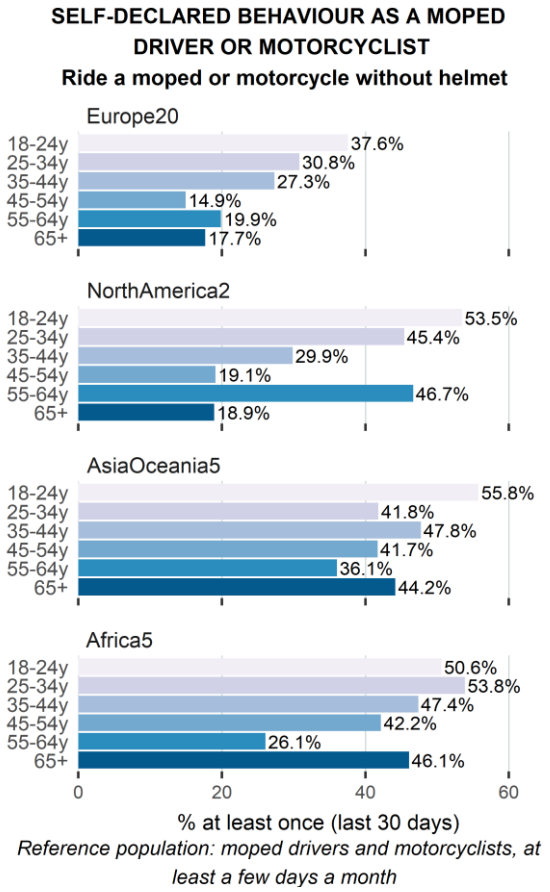
Among European countries, the highest rates of self-declared behaviour of riding without a helmet are found in Greece (43%) and the United Kingdom (41%). On the contrary, PTW riders in Italy (17%) and Portugal (14%) report the lowest rates.

In North America, nearly half of Canadian PTW riders (49%) admit riding without a helmet, whereas the respective rate of PTW riders in the United States is 38%.

In Asia-Oceania, significant differences are observed between the countries. The highest rates are found in India (47%), while the lowest rates in Israel (8%).

The rates of African PTW riders who admit riding without helmet are quite higher compared to the respective rates in the other regions. More specifically, the highest rates are found in Egypt (58%) and Kenya (53%), whereas South African PTW riders report the lowest rates (26%).

Figure 7: Self-declared behaviour of riding without a helmet by PTW riders per region and country (% of PTW riders that did it at least once in the past 30 days).



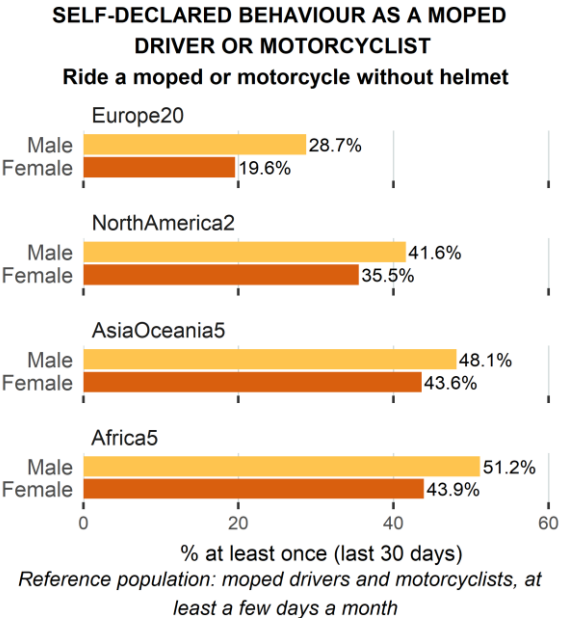
The results concerning the self-declared behaviour of riding without a helmet are further split out by region and age group in Figure 8.

As can be seen in Figure 8, the self-declared behaviour of riding without a helmet by PTW riders is higher among the younger aged PTW riders than among older age groups. In Europe (38%), North America (54%) and Asia-Oceania (56%) the highest rates are found among the youngest PTW riders, aged 18 to 24. However, among African PTW riders, the highest rates are found in the age group 25-34 (54%).

In Asia-Oceania and Africa, the differences between age groups are small and it can be observed that the rates for each age group are generally higher than the rates of the respective age groups in Europe and North America.

Figure 8: Self-declared behaviour of riding without a helmet by PTW riders per region and age group (% of PTW riders that did it at least once in the past 30 days).

Figure 9 presents results on self-declared behaviour of riding without a helmet by PTW riders per world region and gender.



As can be seen clearly in Figure 9, with respect to self-declared behaviour of riding without a helmet, in all world regions, the rates of male PTW riders are higher than the respective rates of female PTW riders.

Figure 9: Self-declared behaviour of riding without a helmet by PTW riders per region and gender (% of PTW riders that did it at least once in the past 30 days).

3.1.6 Self-declared behaviour of reading a text message/email or checking social media while riding

Table 10 presents the country results regarding self-declared behaviour of reading a text message/email or checking social media while riding. PTW riders in Canada have the highest rates (51%) followed by Egypt (47%) and the United Kingdom (42%). In contrast, PTW riders in Hungary (11%) and the Czech Republic (8%) present the lowest rates.

Table 10: Self-declared behaviour of reading a text message/email or checking social media while riding ("Over the last 30 days, how often did you as a moped driver or motorcyclist read a text message/email or check social media (e.g. Facebook, twitter etc.) while riding a moped or motorcycle?")

Country	Never (1)	At least once (2-5)
Australia	70.3%	29.7%
Austria	81.5%	18.5%
Belgium	78.2%	21.8%
Canada	49.5%	50.5%
Czech Republic	92.4%	7.6%
Denmark	74.4%	25.6%
Egypt	53.5%	46.5%
Finland	89.2%	10.8%
France	58.4%	41.6%
Germany	82.4%	17.6%
Greece	83.9%	16.1%
Hungary	89.4%	10.6%
India	70.5%	29.5%
Ireland	72.3%	27.7%
Israel	87.5%	12.5%
Italy	82.6%	17.4%
Japan	85.2%	14.8%
Kenya	70.1%	29.9%
Morocco	63.6%	36.4%
Netherlands	79.4%	20.6%
Nigeria	76.2%	23.8%
Poland	79.3%	20.7%
Portugal	83.6%	16.4%
Republic of Korea	73.5%	26.5%
Serbia	88.0%	12.0%
Slovenia	87.2%	12.8%
South Africa	73.9%	26.1%
Spain	79.8%	20.2%
Sweden	77.7%	22.3%
Switzerland	85.4%	14.6%
United Kingdom	58.3%	41.7%
United States	69.4%	30.6%

Figure 10 presents region and country results of the question on self-declared behaviour of reading a text message/email or checking social media while riding.

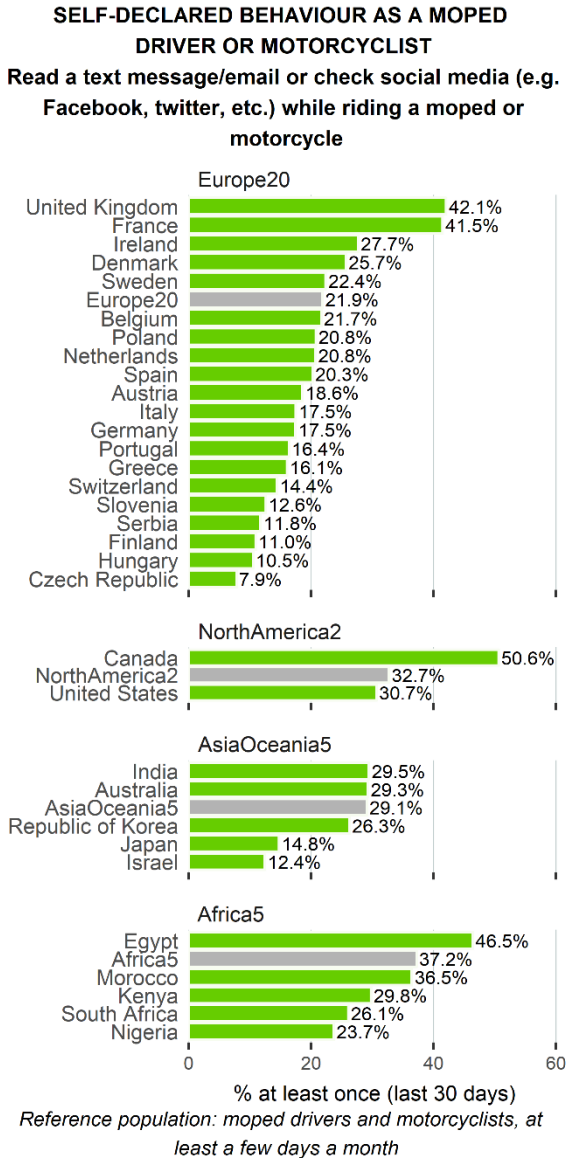


Figure 10 demonstrates that the results of PTW riders for self-declared behaviour of reading a text message/email or check social media while riding vary from 22% in Europe to 37% in Africa. The rates for Asia-Oceania and North America are 29% and 33% respectively.

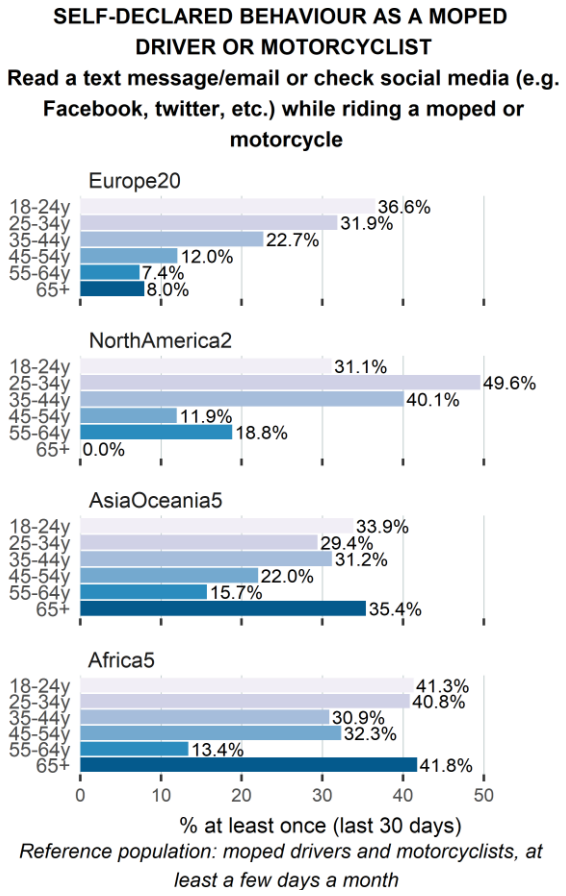
In Europe, the highest rates of self-declared behaviour of reading a text message/email or checking social media while riding are found in the United Kingdom and France (both 42%). On the other hand, PTW riders in Finland (11%), Hungary (11%) and the Czech Republic (8%) report the lowest rates.

Among the two countries of North America, half of Canadian PTW riders (51%) admit reading a text message/email or checking social media while riding, whereas the rate of PTW riders in the United States is lower (31%).

In Asia-Oceania, the highest rates are found in India (30%), while the lowest rates in Israel (12%).

Regarding the rates of African PTW riders, the highest rates are found in Egypt (47%) and Morocco (37%), while Nigerian PTW riders report the lowest rates (24%).

Figure 10: Self-declared behaviour of reading a text message/email or checking social media while riding per region and country (% of PTW riders that did it at least once in the past 30 days).



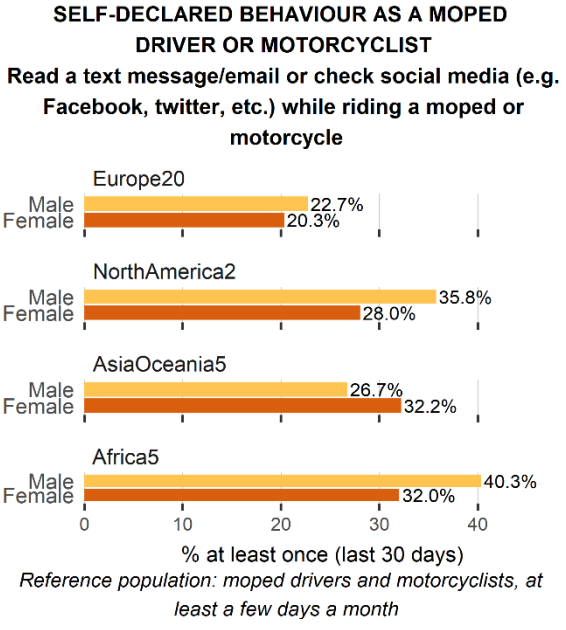
The results are further split out by region and age group in Figure 11. As can be seen in this figure, the self-declared behaviour of reading a text message/email or checking social media while riding by European PTW riders is higher among the younger aged PTW riders than among older age groups. The highest rates are found among the youngest PTW riders, aged 18 to 24 (37%).

In North America, the highest rates are found among the age group 25-34 (50%). It is remarkable that the respective rate reported by North American PTW riders aged 65+ is equal to zero (0%).

In Asia-Oceania and Africa, the self-declared rates are not much different between young and older age groups. Surprisingly, in these two regions, the respective rates are the highest for PTW riders aged 65+ (Asia-Oceania: 35% and Africa: 42%).

Figure 11: Self-declared behaviour of reading a text message/email or checking social media while riding per region and age group (% of PTW riders that did it at least once in the past 30 days).

Figure 12 presents results on self-declared behaviour of reading a text message/email or checking social media while riding per world region and gender.



As can be seen clearly in Figure 12, with respect to self-declared behaviour of reading a text message/email or checking social media while riding, in all the examined regions with the exception of Asia-Oceania, the rates of male PTW riders are higher than the respective rates of female PTW riders.

Figure 12: Self-declared behaviour of reading a text message/email or checking social media while riding per region and gender (% of PTW riders that did it at least once in the past 30 days).

3.2 Advanced analyses

In this section, totally twelve binary logistic regression models were developed for 4 risk factors: drink riding, riding faster than the speed limit, reading a text message/email or check social media (e.g. Facebook, Twitter, etc.) while riding a PTW and riding without a helmet. In each model, the outcome is a binary variable indicating the absence (0 = never) or presence (1 = at least once) of self-reported behaviour over the last 30 days.

Only motorcycle and moped riders riding at least a few days per month were considered in this analysis. Categories in which very few people had been questioned were either assembled with other categories (such as 'no education' or 'primary education' which were grouped with 'secondary education') or excluded from the analysis (such as gender=other, which corresponds to 116 motorcycle and moped drivers). Finally, 34,920 respondents were included in the models.

Personal characteristics such as gender, age or level of education were included as explanatory factors for each world region. The results at the region level, controlled for other factors, are presented in the following four Tables. In these binary logistic regression models, measures of association in terms of odds ratios (OR) and 99% confidence intervals (CI) were obtained. If $p<0.05$, the association is considered significant and marked with "*", if $p<0.01$ – the mark is "**".

3.2.1 Factors associated with self-declared drink and riding

Possible factors affecting self-declared drink and riding are presented in Table 11.

Table 11 Logistic regression model for drink and riding in the last 30 days

Independent variable (reference categories)	Dependent variable: self-declared behaviour (past 30 days) – **being over the legal limit for drinking and driving** (0=never; 1= at least once)							
	Europe20		NorthAmerica2		AsiaOceania5		Africa5	
	Odds Ratio	CI99%	Odds Ratio	CI99%	Odds Ratio	CI99%	Odds Ratio	CI99%
BLOCK 1 – Sociodemographic								
Gender (female)	**1.665****	1.162-2.386	1.025	0.273-3.843	0.77	0.464-1.279	1.112	0.734-1.683
BLOCK 2 - Risk perception								
I trust myself to drive after having a glass of alcohol (disagree)	**1.53****	1.041-2.248	3.606	0.804-16.169	2.062	0.884-4.812	0.792	0.426-1.474
I have the ability to drive when I am a little drunk after a party. (disagree)	**2.779****	1.712-4.511	1.894	0.244-14.678	2.132	0.909-4.997	**2.44****	1.307-4.556
I am able to drive after drinking a large amount of alcohol (e.g. half a liter of wine). (disagree)	**1.793****	1.057-3.041	12.111	0.306-479.39	1.526	0.505-4.614	**2.82****	1.392-5.713
I often drive after drinking alcohol. (disagree)	**3.894****	2.108-7.192	3.228	0.351-29.71	2.089	0.698-6.251	1.122	0.513-2.454
Even when I am a little drunk after a party, I drive. (disagree)	**2.082****	1.217-3.56	**6.604****	1.051-41.513	**4.075****	1.524-10.9	**2.317****	1.216-4.417
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). (disagree)	**2.330****	1.273-4.267	2.796	0.173-45.173	**5.002****	1.674-14.943	1.650	0.802-3.395
I will do my best not to drive after drinking alcohol in the next 30 days. (disagree)	**0.449****	0.327-0.616	0.692	0.204-2.348	**0.5****	0.297-0.837	0.743	0.493-1.121
BLOCK 3 - Support to road safety policies affecting specific behaviours								

Do you support or oppose a legal obligation to install an alcohol "interlock" for drivers who have been caught drunk driving on more than one occasion? (disagree)	**0.551****	0.4-0.758	1.903	0.486-7.451	0.622	0.348-1.111	**0.35****	0.223-0.549
BLOCK 4 - Previous accident involvement								
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?	**2.293****	1.443-3.646	2.070	0.318-13.472	1.270	0.694-2.323	**1.968****	1.243-3.117
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?	**1.982****	1.236-3.18	3.132	0.552-17.774	**1.917****	1.057-3.478	1.303	0.83-2.046
BLOCK 5 - Perceived behavioural control								
I always respect the highway code even if the risk of getting caught is very low. (untrue)	**1.372***	1.0-1.918	0.946	0.209-4.272	1.387	0.737-2.612	**1.793****	1.108-2.9
I am always confident of how to react in traffic situations. (untrue)	**1.563****	1.123-2.176	**4.071****	1.044-15.869	1.232	0.666-2.279	1.233	0.752-2.022

According to the odds for self-declared drink and riding of male PTW riders compared with female PTW riders, males in Europe region are 1.66 times more likely to report that they drink and ride than female.

Sociodemographic characteristics such as age, education and driving frequency did not show any significant p value, therefore we cannot state any differences in the behaviour of groups.

Respondents who believe that they have high self-efficacy (i.e. they trust themselves to drive after having a glass of alcohol, are confident that they have the ability to drive when a little drunk after a party or driving even if being little drunk after a party, etc.) are much more likely to report that they ride under the influence of alcohol.

Reporting drink and riding is more likely if PTW riders admit driving after drinking alcohol often, even if they are little drunk or after consuming large amount of alcohol. This is the case especially for the North America region (6 times compared to those declaring to drive while being little drunk after a party). This result is not surprising, as such habits are strongly associated with the question if they have driven under the influence of alcohol over the last 30 days.

As for the support to road safety policies affecting specific behaviours block, riders who oppose a legal obligation to install an alcohol "interlock" for drivers who have been caught drink driving are in almost 45% cases (in Europe, OR=0.551, $p<0.01$) and 65% cases (in Africa, OR=0.35, $p<0.01$) more likely to report drink and riding.

With every time the riders were involved in a crash in the past 12 months, they are 2.3 times more likely to engage in drink riding in Europe, 1.9 times in Asia-Oceania and 1.96 times in Africa.

Results also show a significant association between the perceived behaviour control and the self-declared drink and riding: PTW riders who respect the highway code and are always confident how to react in traffic situations are 1.3-1.5 times more likely to report drink and riding in Europe. Riders respecting the highway code are 1.79 times more likely to report their drink riding behaviour in Africa and 4 times in North America.

3.2.2 Factors associated with self-declared speeding outside built-up areas (but not on motorways/freeways)

As presented in Table 12, males are generally more likely to report the fast riding behaviour with a significant gender difference in European and African countries (p-value < 0.01). The analysis by age group shows that in European countries the percentages of self-declaration depend on the age group (p-value < 0.01). In this region, respondents between 45 and 54 y.o. tend to report their behaviour less frequently than the 18-24 y.o. age group (p-value < 0.01).

The agreement rate for all questions dealing with risk perception significantly depends on the region (p-value < 0.01 and small effect sizes in all cases).

In Europe and Asia-Oceania regions, attitudes towards riding faster than the speed limit were the factors with the strongest influence on the self-declared behaviour. Thus, riders who declared speed driving because of the impression of losing time are 3.5 times more likely to do it in Europe and 3.57 times more likely to do it in Asia Oceania. Riders who trust themselves when riding significantly faster than the speed limit are 1.57 times more likely to do it in Europe, 1.45 time in Asia-Oceania and 1.96 times in Africa. Those riders who often drive faster than the speed limit are 3.8 times more likely to do it in Asia-Oceania (p-value < 0.01) and 1.75 times more likely to do it in Africa (p-value < 0.05). In addition, riders who promise to respect speed limits in the future are 25% less likely to have exceeded the speed limit in the past 30 days.

Blocks dedicated to previous accident involvement and support to road safety policies affecting specific behaviours seem not to be associated with speeding since there are no significant results obtained.

Results also show a significant association between the perceived behavioural control and the self-declared behaviour: PTW riders who would still respect speed limits at all times even if there were no police checks are 1.76 times more likely to report the behaviour in Asia-Oceania and 2 times in Africa. In North American countries, there is a significant result for riders who stated confidence of how to react in traffic situations. They are 4.7 times more likely to report their behaviour. The rate for Europe is OR=1.61 which means that riders who are respecting speed limits are 1.61 times more likely to report fast riding behaviour.

Table 12 Logistic regression model for speeding outside built-up areas (but not on motorways/freeways) in the last 30 days

Independent variable (reference categories)	Dependent variable: self-declared behaviour (past 30 days) – **ride faster than the speed limit outside built-up areas (but not on motorways/freeways)** (0=never; 1= at least once)							
	Europe20		NorthAmerica2		AsiaOceania5		Africa5	
	Odds Ratio	CI99%	Odds Ratio	CI99%	Odds Ratio	CI99%	Odds Ratio	CI99%
BLOCK 1 - Sociodemographic								
Gender(ref. female)	**1.634****	1.179-2.264	0.643	0.206-2.005	1.284	0.889-1.855	**1.629****	1.22-2.173
Age group (ref. 18-24)								
25-34	1.011	0.68-1.503	2.014	0.482-8.422	0.753	0.454-1.246	1.155	0.828-1.612
35-44	0.772	0.508-1.171	3.073	0.604-15.639	1.058	0.627-1.786	1.009	0.691-1.473
45-54	**0.484****	0.299-0.784	0.573	0.096-3.422	0.764	0.428-1.365	1.008	0.602-1.688
55-64	**0.482****	0.28-0.831	2.935	0.433-19.882	0.811	0.393-1.675	0.622	0.226-1.71

65+	**0.514****	0.266-0.995	0.385	0.023-6.545	0.488	0.201-1.185	1.148	0.45-2.93
BLOCK 2 - Risk perception								
I have to drive fast; otherwise. I have the impression of losing time. (disagree)	**3.494****	2.322-5.259	2.210	0.297-16.447	**3.571***	1.605-7.946	1.490	0.946-2.347
I trust myself when I drive significantly faster than the speed limit. (disagree)	**1.569****	1.067-2.308	1.430	0.244-8.386	**1.455***	2.016-7.255	**1.957***	1.276-3.0
I often drive faster than the speed limit. (disagree)	1.385	0.972-1.974	2.210	0.297-16.447	**3.824***	2.016-7.255	**1.753***	1.105-2.78
I will do my best to respect speed limits in the next 30 days. (disagree)	**0.751****	0.595-0.946	0.658	0.222-1.949	0.846	0.566-1.265	0.988	0.708-1.377
BLOCK 5 - Perceived behavioural control								
I would still respect speed limits at all times. even if there were no police checks. (untrue)	1	0.705-1.388	1.504	0.345-6.568	**1.762***	1.024-3.03	**2.084***	1.368-3.175
I am always confident of how to react in traffic situations. (untrue)	**1.61****	1.191-2.177	**4.724****	0.345-6.568	1.762	1.024-3.03	2.084	1.368-3.175

3.2.3 Factors associated with self-declared riding without a helmet

As presented in Table 13, males are more likely to report the behaviour of riding without a helmet with a significant gender difference. In European and African countries, these rates are 1.67 and 1.5 respectively (p-value < 0.01). The analysis by age group shows a significant result only in Africa region. In this region, respondents between 25 and 34 y.o. tend to report their behaviour 1.4 times more frequently than the 18-24 y.o. age group (p-value < 0.01).

Users of both moped and motorcycle are 1.6 times more likely to have reported their behaviour in Europe, while only motorcycle riders are less likely to report riding without helmet.

Another topic of interest is the opinion of road users about traffic rules and penalties regarding usage of helmets. Users were asked for their opinion about support of a legal obligation to require all moped drivers and motorcyclists to wear a helmet. The rates of agreement depend significantly on the region (p-value < 0.01). For all the regions, people who support the legal obligations are less likely to ride without a helmet.

With every time the PTW riders were involved in a crash in the past 12 months, they are 2.43 times more likely to engage in riding without a helmet in Europe and 2 times in Asia-Oceania.

Results also show some significant association between the perceived behavioural control and the self-declared behaviour: PTW riders who would still respect the highway code are 1.38 times more likely to report the behaviour in Europe, 1.7 times in Asia-Oceania and 1.55 times in Africa. Moreover, in Europe the riders who stated to be always confident of how to react in traffic situations are 1.39 times more likely to ride without a helmet.

Table 13 Logistic regression model for riding without a helmet in the last 30 days

Independent variable (reference categories)	Dependent variable: self-declared behaviour (past 30 days) – **riding without a helmet** (0=never; 1= at least once)							
	Europe20		**NorthAmerica2**		**AsiaOceania5**		**Africa5**	
	Odds Ratio	CI99%	**Odds Ratio**	CI99%	**Odds Ratio**	CI99%	**Odds Ratio**	CI99%

BLOCK 1 - Sociodemographic								
Gender(ref. female)	**1.667****	1.277-2.177	0.846	0.271-2.64	1.061	0.744-1.513	**1.449****	1.095-1.916
Age group (ref. 18-24)								
25-34	1.059	0.732-1.531	1.527	0.382-6.114	0.654	0.405-1.056	**1.405****	1.014-1.945
35-44	0.993	0.681-1.448	1.381	0.274-6.955	0.910	0.552-1.499	0.957	0.663-1.381
45-54	0.801	0.533-1.205	0.559	0.081-3.842	0.585	0.332-1.031	0.808	0.488-1.338
55-64	0.946	0.61-1.466	1.237	0.165-9.308	0.518	0.247-1.088	0.380	0.133-1.09
65+	0.618	0.361-1.06	0.299	0.01-8.708	0.602	0.257-1.408	0.451	0.173-1.176
Driving frequency (ref. moped)								
motorcycle	**0.694****	0.51-0.945	1.166	0.288-4.719	1.409	0.835-2.378	1.194	0.824-1.73
Moped+motorcycle	**1.628****	1.222-2.17	4.179	0.941-18.564	1.348	0.794-2.288	1.152	0.79-1.682
BLOCK 3 - Support to road safety policies affecting specific behaviours								
Do you support a legal obligation to require all moped drivers and motorcyclists to wear a helmet? (disagree)	**0.397****	0.301-0.524	**0.238****	0.08-0.713	**0.46****	0.278-0.759	**0.65****	0.446-0.946
BLOCK 4 - Previous accident involvement								
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?	**2.431****	1.642-3.598	2.643	0.449-15.557	1.282	0.83-1.979	1.402	0.989-1.987
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?	1.322	0.875-1.997	5.085	0.871-29.694	**2.005****	1.304-3.084	1.125	0.819-1.545
BLOCK 5 - Perceived behavioural control								
I always respect the highway code even if the risk of getting caught is very low. (untrue)	**1.378****	1.062-1.786	1.598	0.402-6.357	**1.702****	1.054-2.746	**1.55****	1.07-2.238
I am always confident of how to react in traffic situations. (untrue)	**1.385****	1.074-1.787	2.323	0.677-7.974	0.999	0.645-1.548	1.049	0.735-1.495

3.2.4 Factors associated with self-declared behaviour such as reading a text message/email or check social media while riding

Table 14 shows the results of the four logistic regression models for reading a text message/email or checking social media while riding a PTW – one model for each region.

The odds of reading a text message/email or checking social media while riding a PTW for men, in comparison with women, increase by 68.9% (OR = 1.689, p-value < 0.01) in Africa.

Overall, the odds of reading a text message/email or checking social media while riding decrease with the increase of the rider age in Europe and Africa. In other words, in these regions, the older the driver, the lower the probability of reading a text message/email or checking social media while riding. This trend is not observed in North America and Asia-Oceania.

Users of both moped and motorcycle are 1.93 times more likely to have reported their behaviour in Europe, 13.12 times in North America and 1.97 times in Asia-Oceania compared to only moped users.

Concerning the risk perception, results show that the higher the agreement towards using a hand-held mobile phone while riding a motorcycle (such as using a phone while riding because always want to be available, to save time, and the belief of being able to talk on a phone while riding), the higher the odds of doing it. Riders who use a mobile phone while driving in order to save time are almost 2 times more likely to use it in Europe and Africa. On the other hand, riders who declared to "do their best not to use my mobile phone while driving in the next 30 days" are less likely to read a text message/email or check social media while riding. These results were observed in all regions except North America with the OR from 0.57 to 0.67 and p-value<0.01.

In Asia-Oceania, personal acceptability and perceived behaviour control were the ones with the strongest effect on the self-declared behaviour of reading a text message/email or checking social media while riding. In fact, riders who use a mobile phone because they want to be available are 5 times more likely to use their phone in Asia-Oceania and 1.9 times in Africa region. In Europe and Africa, riders who are willing to save time are about 2 times more likely to use the phone while riding (OR=1.99 in Europe and OR=1.9 in Africa). Riders tending to trust themselves when checking the messages on the mobile phone while driving are 2.34 times more likely to use their phones in Asia-Oceania.

Table 14 Factors that influence the self-declared behaviour of reading a text message/email or check social media (e.g. Facebook, twitter, etc.) while riding a PTW

Independent variable (reference categories)	Dependent variable: self-declared behaviour (past 30 days) – **reading a text message/email or check social media (e.g. Facebook. twitter. etc.) while riding a moped or motorcycle** (0=never; 1= at least once)							
	Europe20		**NorthAmerica2**		**AsiaOceania5**		**Africa5**	
	Odds Ratio	CI99%	**Odds Ratio**	CI99%	**Odds Ratio**	CI99%	**Odds Ratio**	CI99%
BLOCK 1 - Sociodemographic								
Gender (ref. female)	1.220	0.881-1.688	0.804	0.217-2.975	1.016	0.658-1.571	**1.689****	1.222-2.334
Age group (ref. 18-24)								
25-34	0.878	0.585-1.315	1.980	0.411-9.545	0.940	0.529-1.668	1.249	0.872-1.788
35-44	0.680	0.443-1.044	2.901	0.441-19.09	1.047	0.576-1.904	0.884	0.584-1.338
45-54	**0.433****	0.261-0.719	0.340	0.028-4.12	0.605	0.294-1.244	0.823	0.463-1.465
55-64*(for the NorthAmerica2 region this age group is assigned as 55+)*	**0.287****	0.15-0.55	1.203	0.112-12.96	0.468	0.168-1.304	**0.152****	0.027-0.856
65+*(for the NorthAmerica2 region this age group is included in the previous)*	**0.287****	0.127-0.649			0.525	0.162-1.705	0.507	0.176-1.462
Driving frequency (ref. moped)								
motorcycle	0.931	0.624-1.389	5.190	0.65-41.44	1.147	0.576-2.285	0.752	0.491-1.151
Moped+motorcycle	**1.933****	1.341-2.786	**13.12****	1.508-114.2	**1.967****	1.005-3.85	1.217	0.8-1.849
BLOCK 2 - Risk perception								
I use a mobile phone while driving. because I always want to be available. (disagree)	1.465	0.889-2.415	0.988	0.089-10.98	**5.020****	1.969-12.8	**1.828****	1.102-3.032
To save time. I often use a mobile phone while driving.	**1.991****	1.209-3.279	7.172	0.697-73.82	2.094	0.929-4.721	**1.904****	1.075-3.371

I trust myself when I check my messages on the mobile phone while driving. (disagree)	1.450	0.899-2.338	2.716	0.255-28.96	**2.546****	1.234-5.257	1.351	0.769-2.375
It happens sometimes that I write a message on the mobile phone while driving. (disagree)	**1.479***	1.617-4.54	1.113	0.082-15.19	**3.221****	1.261-8.226	**1.683***	1.0-2.903
I often talk on a hand-held mobile phone while driving. (disagree)	**2.427****	0.425-0.768	1.808	0.151-21.67	1.172	0.451-3.049	**1.918****	1.148-3.206
I often check my messages on the mobile phone while driving. (disagree)	2.709	0.889-2.415	1.529	0.058-40.08	1.097	0.428-2.815	1.418	0.843-2.386
I will do my best not to use my mobile phone while driving in the next 30 days. (disagree)	**0.572****	1.209-3.279	0.211	0.06-0.74	**0.623****	0.4-0.97	**0.664****	0.483-0.913
BLOCK 4 - Previous accident involvement								
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?	**1.972****	1.265-3.075	4.723	0.583-38.25	1.238	0.743-2.064	**1.672****	1.158-2.414
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?	1.292	0.819-2.039	0.739	0.108-5.078	**1.942****	1.174-3.213	1.302	0.923-1.837
BLOCK 5 - Perceived behavioural control								
I always respect the highway code. even if the risk of getting caught is very low. (untrue)	**1.416****	1.026-1.954	1.749	0.344-8.881	1.549	0.88-2.728	1.284	0.863-1.91
I always remain calm and rational in traffic. (untrue)	1.014	0.734-1.401	1.215	0.246-6.005	**1.786****	1.028-3.104	1.078	0.717-1.619
I am always confident of how to react in traffic situations. (untrue)	**1.682****	1.231-2.297	**6.639****	1.486-29.67	0.846	0.49-1.46	1.334	0.906-1.966

For each time riders are personally involved in road crashes in which somebody had to be taken to the hospital they are 2 times in Europe and 1.67 times in Africa more likely to use their phone while riding and for Asia-Oceania the rate reached 1.94 times for riders who were involved in the crash with only minor injuries.

Moreover, PTW riders who declare that they always respect the highway code even if the risk of getting caught is very low are more likely to report the behaviour, thus in Europe the OR=1.42 with p-value<0.01. Some significant results were stated for riders who always remain calm and rational in traffic (OR=1.786 for Asia-Oceania) and for riders who declare their confidence on how to react in traffic situations with rate 1.68 for Europe and 6.64 for North America.

3.3 Comparison with other findings

In the ESRA2 survey four questions concern self-declared behaviour of PTW riders. As explained below, only one of these four questions was asked in a quite similar format in ESRA1 (see Table 15).

In the ESRA1 study, the self-declared behaviour of PTW riders was studied by asking respondents the following question: "In the past 12 months, as a road user, how often did you not wear a helmet on a moped or motorcycle?".

For the ESRA2 study, it was decided to use a new question as indicator for riding without a helmet: "Over the last 30 days, how often did you as a moped driver or motorcyclist ride a moped or motorcycle without a helmet?". The new question focuses on behaviour in the past 30 days (instead of past 12 months) since it can be expected that memory effects or bias plays a lesser role when a shorter, more recent time period is asked to be brought back to memory. This change in question makes it impossible to reliably and soundly compare ESRA-findings over time.

The results in Table 15 from the two editions of ESRA surveys on PTW riders' self-declared behaviour indicate the following:

- Irrespective of whether the time frame is 30 days or 1 year, there is about one quarter (26-27%) of European PTW riders who admit having ridden without wearing a helmet.

Table 15: Comparison of ESRA1 and ESRA2 results on self-declared riding without a helmet

Subject	ESRA1	ESRA2
Participating countries	EU 17: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, Netherlands, United Kingdom	EU 20: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Serbia, Slovenia, Spain, Sweden, Switzerland, United Kingdom
Question related to self-declared riding without a helmet Mean	"In the past 12 months, as a road user, how often did you not wear a helmet on a moped or motorcycle?" Europe17: 27.2%	"Over the last 30 days, how often did you as a moped driver or motorcyclist ride a moped or motorcycle without a helmet?" Europe20: 25.7%.

3.4 Limitations of the data

This report is based on self-reported behaviours on road safety issues, which have known limitations regarding their accuracy and lack of direct observation capabilities (Kelley et al., 2003). In general, self-report data are vulnerable to a number of biases. Common biases are (Choi & Pak, 2005; Krosnick and Presser, 2010):

- desirability bias – the tendency of respondents to provide answers which present a favourable image of themselves, e.g. individuals may over-report good behaviour or under-report bad, or undesirable behaviour. In other words, subjects may make the more socially acceptable answer rather than being truthful.

- bias through misunderstanding of questions - the wording of the questions may be confusing or have different meanings to different subjects.

- recall error - unintentional faulty answers due to memory errors.

In the ESRA2 survey the four main questions about PTW riders' self-declared behaviour (drink and riding, speeding outside built-up areas but not on motorways/freeways, riding without a helmet and reading a text message/email or check social media) provide a clear behavioural criterion and refer to a recent time period. In view of this, it is expected that problems with understanding the question and recall errors may be very modest. Given the fact that a rather large percentage of respondents had no problems indicating that they had experienced the afore-mentioned behaviours in the past 30 days, we also think that social desirability bias may have played a minor role.

Lastly, despite the advantages of online surveys, the representativeness of the populations may be a problem especially for countries with low rates of internet use. In the African countries, a lower percentage of people has access to and uses the internet (in Kenya and Nigeria less than 30%). Within the African countries, the numbers of 65+ respondents who answered the ESRA2 survey were quite low, so that the answers of this particular age group in African countries cannot be considered to be representative.

4 Summary and discussion

Major findings

Below for each research question the major findings are described.

What is the frequency of riding a PTW?

- The use of PTWs as a transport mode is more widespread in Africa and Asia-Oceania.
- The use of non-electric PTWs is more common than electric ones.

What is the safety perception of using a PTW?

- In all the examined countries, the safety perception scores for PTWs do not exceed 7 points. This fact indicates that road users do not consider these transport modes to be safe enough.

What is the prevalence of self-declared drink and riding by PTW riders? And what are the differences?

- The percentage of PTW riders who admit drinking and riding in the past 30 days varies for the majority of the countries from 15% to 25%.
- A comparable pattern is not observed for drink and riding among the different age groups in the four world regions.
- In Europe and North America, the self-declared drink and riding rates are higher for male PTW riders, while in Asia-Oceania and in Africa the respective rates are higher for female PTW riders.

What is the level of self-declared speeding outside built-up areas (but not on motorways/freeways) by PTW riders? And what are the differences?

- In most participating countries worldwide, almost half of the PTW riders admit speeding outside built-up areas (not on motorways/freeways) in the past 30 days.
- In Europe, North America and Asia-Oceania, the self-declared speeding is higher among the younger age groups. Surprisingly, in Africa the self-declared speeding is far higher for the oldest age group (65+).
- In Europe, Asia-Oceania and Africa, male PTW riders report higher speeding rates. On the contrary, in North America, slightly higher rates correspond to female PTW riders.

What is the level of self-declared riding without a helmet? And what are the differences?

- In most countries, the percentage of PTW riders who admit riding without a helmet in the past 30 days varies from 20% to 40%. African PTW riders have the highest rates.
- Worldwide, the self-declared behaviour of riding without a helmet is higher among younger aged PTW riders than among older age groups.
- In all world regions, male PTW riders report higher rates of riding without a helmet.

What is the level of self-declared reading a text message/email or checking social media while riding? And what are the differences?

- The percentage of PTW riders who admit reading a text message/email or checking social media while riding varies from 22% in Europe to 37% in Africa.

- A comparable pattern is not found for reading a text message/email or checking social media while riding among the different age groups in the four world regions.
- In all the examined regions with the exception of Asia-Oceania, the rates of male PTW riders are higher than the respective rates of female PTW riders.

What factors are related to self-declared drink and riding?

- Male PTW riders in Europe are 1.66 times more likely to report drink and riding than female.
- Respondents who believe that they have high self-efficacy are much more likely to report that they ride under the influence of alcohol.
- PTW riders who oppose a legal obligation to install an alcohol "interlock" for drivers who have been caught drink driving are in almost 45% cases (in Europe) and 65% cases (in Africa) more likely to report drink and riding.
- With every time the PTW riders were involved in a crash in the past 12 months, they are 2.3 times more likely to engage in drink riding in Europe, 1.9 times in Asia-Oceania and 1.96 times in Africa.
- A significant association was found between the perceived behaviour control and the self-declared drink and riding.

What factors are related to self-declared speeding outside built-up areas (but not on motorways/freeways)?

- Male PTW riders are generally more likely to report fast riding with a significant gender difference in Europe and Africa.
- PTW riders who declared speed driving because of the impression of losing time are 3.5 times more likely to do it in Europe and 3.57 times more likely to do it in Asia-Oceania.
- PTW riders who trust themselves when riding significantly faster than the speed limit are 1.57 times more likely to do it in Europe, 1.45 time in Asia-Oceania and 1.96 times in Africa.
- PTW riders who often drive faster than the speed limit are 3.8 times more likely to do it in Asia-Oceania and 1.75 times more likely to do it in Africa.
- A significant association was observed between the perceived behavioural control and the self-declared behaviour.

What factors are related to self-declared riding without a helmet?

- Males are more likely to report the behaviour of riding without a helmet with a significant gender difference. In European and African countries, these rates are 1.67 and 1.5 respectively.
- For all the regions, people who support the legal obligations related to helmet use are less likely to ride without a helmet.
- For each time the PTW riders were involved in a crash in the past 12 months, they are 2.43 times more likely to engage in riding without a helmet in Europe and 2 times in Asia-Oceania.
- Results also indicated some significant association between the perceived behavioural control and the self-declared behaviour.

What factors are related to self-declared reading a text message/email or checking social media while riding)?

- The odds of reading a text message/email or checking social media while riding decrease with the increase of the rider age in Europe and Africa.
- The higher the agreement towards using a mobile phone while riding a PTW (such as using a phone while riding because always want to be available, to save time, and the belief of being able to talk on a phone while riding), the higher the odds of reading a text message/email or checking social media.
- Riders who use a mobile phone because they want to be available are 5 times more likely to use their phone in Asia-Oceania and 1.9 times in Africa.
- In Europe and Africa, riders who are willing to save time are about 2 times more likely to use the phone while riding.
- Riders tending to trust themselves when checking the messages on the mobile phone while driving are 2.34 times more likely to use their phones in Asia-Oceania.

Discussion

Power-two-wheelers are a common means of transport, especially in Asia-Oceania and in Africa. However, in all the examined countries road users do not consider them to be safe enough. This result is in accordance with the previous study of SARTRE4 (2012).

Despite recognising the more dangerous nature of driving a PTW, a significant percentage of PTW drivers admit having adopted risky behaviours while riding in the past 30 days. This is the case for all the examined risky behaviours namely drinking and riding, speeding outside built-up areas (but not on motorways/freeways), riding without a helmet and reading a text message/email or checking social media while riding and for all world regions. The selection of a just 30 days period of reference ensures increased accuracy of the responses as it is a relatively recent period to recall.

The above results may indicate that PTW riders attribute the increased risk not to their own behaviour but rather to their interaction with other road users, road infrastructure and the environment. Similar perceptions have been recorded in previous works (2BeSafe, 2012; Nordqvist and Gregersen, 2010).

Age and gender are well-known factors affecting the behaviour of road users with younger, male users being more prone to adopting risky behaviours. Concerning age, this was also the case for the ESRA2 results on speeding and riding without a helmet in the four world regions. However, concerning drink-riding and reading a text message/email or checking social media while riding no common pattern was observed among the different age groups in the four world regions. This could be possibly explained due to regional special characteristics and actions such as differences in alcohol consumption due to religious and social habits or the dispersion of technology in different areas and age groups as well as of targeted enforcement and awareness raising measures related to the specific risky behaviours. A more uniform situation was recorded concerning the gender of PTW riders adopting risky behaviours with males prevailing in most cases and world regions. A few deviations where more female riders adopt a risky behaviour in certain world regions may be again explained based on local particularities related to social and safety culture.

Advanced analysis of the willingness to report adopting risky behaviours also confirmed that this is higher among male PTW riders. This may be related to the increased experience and higher confidence that usually male riders have. On the other hand, female riders may be more reluctant to admit breaking the law. No matter of rider's gender, higher confidence of driving self-efficacy has specifically been associated with the acceptance and adoption of risky behaviours such as drinking and riding, speeding and reading a text message/email or checking social media while riding.

Speeding and reading a text message/email or checking social media while riding are often acceptable by PTW riders who associate them with time management or limitations (i.e. because of the impression of losing time or because they want to be available or to save time). This is a particular characteristic of the fast pace way of living nowadays, especially in the more developed areas of the world.

The strong association of perceived behavioural control with most of the examined risky behaviours can also be an indication that enforcement measures may be markedly effective in eliminating such behaviours. In any case, motorcyclists and moped riders constitute one of the most vulnerable road user groups. Thus, targeted measures to improve their behaviour on the road are necessary especially in these world regions where PTW is a prevailing means of transport used by people with different socio-demographic characteristics and serve several different purposes.

Closing remarks

The initial aim of ESRA 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 even been 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 ESRA project has also demonstrated the feasibility and the added value of joint data collection on road safety attitudes and performance by partner organizations in a large number of countries. The intention is 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.

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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 best describes your current situation? I am … a student - unemployed, looking for a job – retired - not fit to 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.

Appendix 3: Sample sizes

Sample size (weighted sample)
Road users who use Powered Two Wheelers at least a few days per month

COUNTRY	PTW riders	TOTAL
Australia	74	968
Austria	243	1999
Belgium	210	1985
Canada	93	980
Czech Republic	106	989
Denmark	82	984
Egypt	344	996
Finland	74	994
France	89	994
Germany	204	1989
Greece	224	1015
Hungary	160	1014
India	740	1035
Ireland	95	1031
Israel	48	984
Italy	224	980
Japan	108	980
Kenya	384	1000
Morocco	342	1047
Netherlands	141	983
Nigeria	484	1000
Poland	116	993
Portugal	133	998
Republic of Korea	113	1043
Serbia	142	1041
Slovenia	155	1035
South Africa	157	1013
Spain	183	980
Sweden	121	987
Switzerland	137	1020
United Kingdom	72	963
United States	98	1016
TOTAL	5896	35036

Appendix 4: Statistical significance results

Chi-Square tests of independence were used to test the statistical association of each binary variable with region, gender and age group.

Further column proportions tests, i.e. pairwise comparisons between pairs of groups (region, gender, age groups), were performed to test for differences between specific regions, or age groups. Significant differences are indicated in the cross-tabulation table with APA-style formatting using subscript letters and are calculated at the 0.01 significance level.

Effect size measure were expressed as Cramer's V. Cramer's V indicates the strength of the association between each binary variable and region, gender and age group. The values of Cramer's V can be interpreted as follows (Cohen, 1988)

df=1 (small=.10, medium=.30, large=.50)

df=2 (small=.07, medium=.21, large=.35)

df=3 (small=.06, medium=.17, large=.29)

df=4 (small=.05, medium=.15, large=.25)

df=5 (small=.05, medium=.13, large=.22)

For example, the table A next page indicates the following:

- there is a significant difference in the prevalence of self-declared behaviour of drink and riding between the four regions (Chi-square= 9,93, p = 0,019);

- Cramer's V (0.037 < 1) indicates the effect or difference is quite small

In subsequent tables A to L, statistical tests were performed on region, gender and age group differences:

- Table A Statistical test region differences – self-declared drink and riding
- Table B Statistical test gender differences – self-declared drink and riding
- Table C Statistical test age group differences – self-declared drink and riding
- Table D Statistical test region differences – self declared speeding outside built-up areas (but not on motorways/freeways)
- Table E Statistical test gender differences – self declared speeding outside built-up areas (but not on motorways/freeways)
- Table F Statistical test age group differences – self declared speeding outside built-up areas (but not on motorways/freeways)
- Table G Statistical test region differences – self declared riding without a helmet
- Table H Statistical test gender differences – self declared riding without a helmet
- Table I Statistical test age group differences – self declared riding without a helmet
- Table J Statistical test region differences – self declared behaviour of reading a text message/email or checking social media while riding
- Table K Statistical test gender differences – self declared behaviour of reading a text message/email or checking social media while riding
- Table L Statistical test age group differences – self declared behaviour of reading a text message/email or checking social media while riding

Table A. Statistical test region differences – self-declared drink and riding

	Europe20	AsiaOceania5	NorthAmerica2	Africa5
never (1)	80.1%a	82.2%a	75.6%a	79.3%a
at least once (2-5)	19.9%a	17.8%a	24.4%a	20.7%a
	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*	
Pearson Chi-Square	9,93	3	0,019	
Cramer's V	0,037			

Each subscript letter denotes a region whose column proportions do not differ significantly from each other at the 0.01 level.

Table B. Statistical test gender differences – self-declared drink and riding

Europe20	**male**	**female**	
never (1)	77.2%a	85.8%b	
at least once (2-5)	22.8%a	14.2%b	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	27,27	1	0,000
Cramer's V	0,102		
AsiaOceania5	**male**	**female**	
never (1)	84.6%a	78.8%b	
at least once (2-5)	15.4%a	21.2%b	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	16,92	1	0,000
Cramer's V	0,075		
NorthAmerica2	**male**	**female**	
never (1)	74.3%a	77.4%a	
at least once (2-5)	25.7%a	22.6%a	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	0,27	1	0,601
Cramer's V	0,038		
Africa5	**male**	**female**	
never (1)	80.6%a	77.1%a	
at least once (2-5)	19.4%a	22.9%a	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	2,77	1	0,096
Cramer's V	0,042		

Each subscript letter denotes a subset of gender / age categories whose column proportions do not differ significantly from each other at the 0.01 level.

Table C. Statistical test age group differences - self-declared drink and riding

Europe20	18-24	25-34	35-44	45-54	55-64	65+
never (1)	68.4%a	73.2%a.b	78.4%b	90.4%c	89.9%c	88.5%c
at least once (2-5)	31.6%a	26.8%a.b	21.6%b	9.6%c	10.1%c	11.5%c
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	119,05	5	0,000			
Cramer's V	0,214					
AsiaOceania5	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	81.7%a	81.6%a	78.1%a	87.9%b	85.8%a.b	83.9%a.b
at least once (2-5)	18.3%a	18.4%a	21.9%a	12.1%b	14.2%a.b	16.1%a.b
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	19,60	5	0,001			
Cramer's V	0,081					
NorthAmerica2	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	73.9%a	62.9%a	74.0%a	99.3%b	72.3%a	100.0%1
at least once (2-5)	26.1%a	37.1%a	26.0%a	0.7%b	27.7%a	0.0%1
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	18,14	5	0,003			
Cramer's V	0,307					
Africa5	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	84.5%a	81.1%a	83.4%a	84.4%a	96.8%b	38.8%c
at least once (2-5)	15.5%a	18.9%a	16.6%a	15.6%a	3.2%b	61.2%c
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	189,36	5	0,000			
Cramer's V	0,345					

Each subscript letter denotes a subset of gender / age categories whose column proportions do not differ significantly from each other at the 0.01 level.

Table D. Statistical test region differences – self declared speeding outside built-up areas (but not on motorways/freeways)

	Europe20	AsiaOceania5	NorthAmerica2	Africa5
never (1)	54.7%a	58.2%b	51.3%a.b	52.3%a
at least once (2-5)	45.3%a	41.8%b	48.7%a.b	47.7%a
	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*	
Pearson Chi-Square	17,35	3	0,001	
Cramer's V	0,048			

Each subscript letter denotes a region whose column proportions do not differ significantly from each other at the 0.01 level.

Table E. Statistical test gender differences - self declared speeding outside built-up areas (but not on motorways/freeways)

Europe20	**male**	**female**	
never (1)	48.2%a	67.7%b	
at least once (2-5)	51.8%a	32.3%b	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	88,40	1	0,000
Cramer's V	0,184		
AsiaOceania5	**male**	**female**	
never (1)	55.8%a	61.1%b	
at least once (2-5)	44.2%a	38.9%b	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	8,33	1	0,004
Cramer's V	0,053		
NorthAmerica2	**male**	**female**	
never (1)	52.6%a	47.5%a	
at least once (2-5)	47.4%a	52.5%a	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	0,38	1	0,539
Cramer's V	0,044		
Africa5	**male**	**female**	
never (1)	50.2%a	55.8%a	
at least once (2-5)	49.8%a	44.2%a	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	4,83	1	0,028
Cramer's V	0,055		

Each subscript letter denotes a subset of gender / age categories whose column proportions do not differ significantly from each other at the 0.01 level.

Table F. Statistical test age group differences - self declared speeding outside built-up areas (but not on motorways/freeways)

Europe20	18-24	25-34	35-44	45-54	55-64	65+
never (1)	43.6%a	50.8%a.b	53.4%b	62.5%c	57.3%b.c.d	67.6%c
at least once (2-5)	56.4%a	49.2%a.b	46.6%b	37.5%c	42.7%b.c.d	32.4%c
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	56,79	5	0,000			
Cramer's V	0,147					
AsiaOceania5	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	51.8%a	61.3%b	54.2%a	64.6%b	66.0%b	59.7%a.b
at least once (2-5)	48.2%a	38.7%b	45.8%a	35.4%b	34.0%b	40.3%a.b
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	32,54	5	0,000			
Cramer's V	0,104					
NorthAmerica2	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	51.6%a	40.4%a	47.8%a	63.3%a	58.5%a	78.8%a
at least once (2-5)	48.4%a	59.6%a	52.2%a	36.7%a	41.5%a	21.2%a
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	7,36	5	0,195			
Cramer's V	0,195					
Africa5	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	53.6%a	53.8%a	56.2%a.b	51.7%a	70.3%b	29.7%c
at least once (2-5)	46.4%a	46.2%a	43.8%a.b	48.3%a	29.7%b	70.3%c
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	46,31	5	0,000			
Cramer's V	0,171					

Each subscript letter denotes a subset of gender / age categories whose column proportions do not differ significantly from each other at the 0.01 level.

Table G. Statistical test regional differences - self declared riding without a helmet

	Europe20	AsiaOceania5	NorthAmerica2	Africa5
never (1)	74.3%a	53.8%b	60.9%b	51.5%b
at least once (2-5)	25.7%a	46.2%b	39.1%b	48.5%b
	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*	
Pearson Chi-Square	316,77	3	0,000	
Cramer's V	0,207			

Each subscript letter denotes a region whose column proportions do not differ significantly from each other at the 0.01 level.

Table H. Statistical test gender differences - self declared riding without a helmet

Europe20	**male**	**female**	
never (1)	71.3%a	80.4%b	
at least once (2-5)	28.7%a	19.6%b	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	25,44	1	0,000
Cramer's V	0,099		
AsiaOceania5	**male**	**female**	
never (1)	51.9%a	56.4%a	
at least once (2-5)	48.1%a	43.6%a	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	5,96	1	0,015
Cramer's V	0,045		
NorthAmerica2	**male**	**female**	
never (1)	58.4%a	64.5%a	
at least once (2-5)	41.6%a	35.5%a	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	0,68	1	0,410
Cramer's V	0,060		
Africa5	**male**	**female**	
never (1)	48.8%a	56.1%b	
at least once (2-5)	51.2%a	43.9%b	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	7,76	1	0,005
Cramer's V	0,070		

Each subscript letter denotes a subset of gender / age categories whose column proportions do not differ significantly from each other at the 0.01 level.

Table I. Statistical test age group differences – self declared riding without a helmet

Europe20	18-24	25-34	35-44	45-54	55-64	65+
never (1)	62.4%a	69.2%a.b	72.7%b.d	85.1%c	80.1%c.d	82.3%c
at least once (2-5)	37.6%a	30.8%a.b	27.3%b.d	14.9%c	19.9%c.d	17.7%c
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	84,48	5	0,000			
Cramer's V	0,180					
AsiaOceania5	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	44.2%a	58.2%b.c	52.2%b	58.3%b.c	63.9%c	55.8%a.b.c
at least once (2-5)	55.8%a	41.8%b.c	47.8%b	41.7%b.c	36.1%c	44.2%a.b.c
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	46,85	5	0,000			
Cramer's V	0,125					
NorthAmerica2	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	46.5%a	54.6%a.b	70.1%a.b	80.9%b	53.3%a.b	81.1%a.b
at least once (2-5)	53.5%a	45.4%a.b	29.9%a.b	19.1%b	46.7%a.b	18.9%a.b
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	12,56	5	0,028			
Cramer's V	0,255					
Africa5	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	49.4%a	46.2%a	52.6%a	57.8%a.b	73.9%b	53.9%a
at least once (2-5)	50.6%a	53.8%a	47.4%a	42.2%a.b	26.1%b	46.1%a
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	25,55	5	0,000			
Cramer's V	0,127					

Each subscript letter denotes a subset of gender / age categories whose column proportions do not differ significantly from each other at the 0.01 level.

Table J. Statistical test regional differences - self declared behaviour of reading a text message/email or checking social media while riding

	Europe20	AsiaOceania5	NorthAmerica2	Africa5
never (1)	78.1%a	70.9%b	67.3%b.c	62.8%c
at least once (2-5)	21.9%a	29.1%b	32.7%b.c	37.2%c
	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*	
Pearson Chi-Square	117,70	3	0,000	
Cramer's V	0,126			

Each subscript letter denotes a region whose column proportions do not differ significantly from each other at the 0.01 level.

Table K. Statistical test gender differences - self declared behaviour of reading a text message/email or checking social media while riding

Europe20	**male**	**female**	
never (1)	77.3%a	79.7%a	
at least once (2-5)	22.7%a	20.3%a	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	2,00	1	0,157
Cramer's V	0,028		
AsiaOceania5	**male**	**female**	
never (1)	73.3%a	67.8%b	
at least once (2-5)	26.7%a	32.2%b	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	10,54	1	0,001
Cramer's V	0,060		
NorthAmerica2	**male**	**female**	
never (1)	64.2%a	72.0%a	
at least once (2-5)	35.8%a	28.0%a	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	1,00	1	0,318
Cramer's V	0,072		
Africa5	**male**	**female**	
never (1)	59.7%a	68.0%b	
at least once (2-5)	40.3%a	32.0%b	
	100,0%	100,0%	
Tests	*Value*	*df*	*p-value*
Pearson Chi-Square	11,17	1	0,001
Cramer's V	0,084		

Each subscript letter denotes a subset of gender / age categories whose column proportions do not differ significantly from each other at the 0.01 level.

Table J. Statistical test age group differences - self declared behaviour of reading a text message/email or checking social media while riding

Europe20	18-24	25-34	35-44	45-54	55-64	65+
never (1)	63.4%a	68.1%a	77.3%b	88.0%c	92.6%c	92.0%c
at least once (2-5)	36.6%a	31.9%a	22.7%b	12.0%c	7.4%c	8.0%c
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	183,76	5	0,000			
Cramer's V	0,265					
AsiaOceania5	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	66.1%a	70.6%a	68.8%a	78.0%b	84.3%b	64.6%a
at least once (2-5)	33.9%a	29.4%a	31.2%a	22.0%b	15.7%b	35.4%a
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	40,71	5	0,000			
Cramer's V	0,116					
NorthAmerica2	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	68.9%a.b	50.4%a	59.9%a.b	88.1%b	81.2%a.b	100.0%1
at least once (2-5)	31.1%a.b	49.6%a	40.1%a.b	11.9%b	18.8%a.b	0.0%1
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	19,66	5	0,001			
Cramer's V	0,319					
Africa5	**18-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65+**
never (1)	58.7%a	59.2%a	69.1%b	67.7%a.b	86.6%c	58.2%a.b
at least once (2-5)	41.3%a	40.8%a	30.9%b	32.3%a.b	13.4%c	41.8%a.b
	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Tests	*Value*	*df*	*p-value*			
Pearson Chi-Square	32,48	5	0,000			
Cramer's V	0,143					

Each subscript letter denotes a subset of gender / age categories whose column proportions do not differ significantly from each other at the 0.01 level.

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