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E-Survey of Road users' Attitudes

Road Safety culture in Africa

Results from the ESRA2 survey in 12 African countries

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Road Safety culture in Africa

Results from the ESRA2 survey in 12 African countries

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ESRA2 supporting partners

- AAAFTS - AAA Foundation for Traffic Safety, USA
- Australian Government - Department of Infrastructure, Regional Development and Cities, Australia
- AVP - Slovenian Traffic Safety Agency, Slovenia
- CDV - Transport Research Centre, Czech Republic
- Department for Transport, United Kingdom
- DGT - Traffic General Directorate, Ministry of Interior, Spain
- Group Renault, France
- IIT Kharagpur - Indian Institute of Technology Kharagpur; Civil Engineering Department, India
- KOTI - The Korea Transport Institute, Republic of Korea
- KTI - KTI Institute for Transport Sciences Non-Profit Ltd., Hungary
- Liikenneturva - Finnish Road Safety Council, Finland
- NRSA - Israel National Road Safety Authority, Israel
- RSA - Road Safety Authority, Ireland
- RTSA - Road Traffic Safety Agency, Serbia
- DRSC - Danish Road Safety Council, Denmark
- VTI - Swedish National Road and Transport Research Institute, Sweden
- The World Bank Group, Kenya
- State Agency for Road Safety, Bulgaria
- Automovil Clud de Colombia, Colombia
- The Icelandic Transport Authority, Iceland
- National Road Safety council, Lebanon
- Ministry of Mobility and Public Works, Luxemburg
- Malaysian Institute of Road Safety Research, Malaysia
- The Norwegian Public Roads Administration, Norway
- ATRANS - Asian Transportation Research Society, Thailand
- Vietnam National Traffic Safety Committee, Vietnam
- Road Transport and Safety Agency, Zambia

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List of Abbreviations

Country codes (ISO-alpha2)

BJ	Benin
CI	Ivory Coast
CM	Cameroon
EG	Egypt
GH	Ghana
KE	Kenya
MA	Morocco
NG	Nigeria
TN	Tunisia
UG	Uganda
ZA	South Africa
ZM	Zambia

Other abbreviations

ESRA	E-Survey of Road Users' Attitudes
EU20	20 European countries from the ESRA2_2018 survey
AFRICA12	12 African countries from the ESRA2_2018 and ESRA2_2019 survey
LOI	Length of the interview
Q	Question
y	Years of age

ESRA weights

Individual country weight	Individual country weight based on gender and age (interlaced)
European weight	European weight based on all European countries participating in ESRA2_2018 (N=20), considered individual country weight and population size of the country
African weight	African weight based on all 12 African countries participating in ESRA2_2018 and ESRA2_2019, considered individual country weight and population size of the country

Executive Summary

Objective and methodology

The ESRA project (E-Survey of Road users' Attitudes) is a joint initiative of research organisations and road safety institutes across 60 countries aiming at collecting comparable (inter)national data on road users' opinions, attitudes and behaviour with respect to road traffic risks. The project was funded by the partners' own resources or from sponsoring.

ESRA results are based on a very large international survey, using a representative sample of the national adult populations in each participating country, based on online panels. A common questionnaire was developed and translated into national language versions. The themes covered are among others: 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 all types of road users.

The first edition of the ESRA survey (ESRA1) was carried out in three waves between 2015-2017. Although gathering data from almost 40 000 road users in 38 countries across 4 continents, this first edition did not include countries from the African continent. The present report is based on the second edition of this global survey (ESRA2). It was conducted in 48 countries between 2018-2020. In total the ESRA2 survey collected data from about 45 000 road users. Amongst those 48 countries, data were collected in 12 countries on the African continent. More than 7 500 road users were surveyed in these countries. The integration of these African countries represents an important step forward for the ESRA project and a real opportunity for these countries where comprehensive safety data are rarely available (UNECA, 2015)[1].

Hence, the ESRA database is a very rich dataset, which enable a wide range of analyses which are useful for understanding road safety risks and the effectiveness of measures. An overview of the project and the results are available on: www.esranet.eu.

This ESRA2 African Report focuses specifically on data and results from the 12 African countries. Issues such as speeding, driving under the influence, seat belt use and distracted driving are addressed through participants' self-reported behaviours, attitudes, and social norms. Support for policy measures, unsafety feeling, enforcement are also examined. For each of these areas, key results are presented by country, allowing to make comparisons between African countries as well as with other continents' average.

Key results

Exposure

Overall, the top 3 of most used transport modes during the last 12 months in the participating African countries are (1) pedestrian (94%), (2) car passenger (87%) and (3) taking a taxi (86%). The lower prevalence of car driving in the majority of African countries is related to the fact that car ownership is not as widespread as in Europe.

Speeding

Overall, the self-reported prevalence of speeding of African car drivers is lower than in Europe. An opposite pattern is found for motorcyclists: African motorcyclists report more often than the European riders to have exceeded speed limits outside built-up areas (42% vs. 20%). Proper speed management (including infrastructure and enforcement) is required to reduce the number and severity of road crashes.

[1] https://www.uneca.org/sites/default/files/uploaded-documents/RITD/2015/3AfricanRoadSafetyConference/concept-note_third_african_road_safety_conference_9-10july2015_en.pdf

Driving under the influence (DUI) of alcohol and drugs

Figures on drink driving in Africa are similar to those in Europe. Moreover, men more often than women report drinking and driving. The results also shows that twice as many African respondents reported that their friends would drive after drinking alcohol compared to European respondents (13% vs. 7%). The consumption of alcohol and/or drugs leads to increased reaction time, lower vigilance, poor judgement and can impair visual functions. Still 11% of African respondents report to trust themselves when driving after drinking alcohol.

Seatbelt

Almost three out of four African respondents reported that they did not wear a seatbelt as a passenger on the back seat, even though the African respondents indicate that they do not find such a behaviour acceptable (only 9% of the car drivers finds it acceptable). Three issues might explain this finding: (1) lack of regulation in many countries; (2) limited technical inspection of cars; and (3) imported cars (outdated fleet).

Distracted driving

About half of car drivers reported having made a hand-held phone call while driving in the past 30 days, and about one third of the motorcyclists used their mobile phone while riding in the past 30 days. Drivers talking on a hand-held mobile phone are about four times more likely to have an accident while driving (WHO, 2015).

Vulnerable road users

- Pedestrians – Distracted participation in traffic by listening to music through headphones or using a mobile phone while walking are often reported (>57%). However, compared to European pedestrians, African pedestrians report more respect for red traffic lights.
- Cyclists – Half of the African cyclists reported to listen to music through headphones, and 30% using a mobile phone while cycling.
- Motorcyclists – Almost half of the African motorcyclists did not use a helmet in the past 30 days.

Conclusion

These results provide an overview of opinions, attitudes and behaviour regarding speeding, DUI, and distraction impaired driving on the African continent and can be used to think about new preventive measures also considering the view of the road user himself.

Overall, the ESRA project has demonstrated the feasibility and the added value of joint data collection on road safety attitudes and performance by partner organizations in many countries across the world. ESRA data helps to assess the national road safety situation, and enables benchmarking in comparison to other countries or regions. The aim is to become a solid foundation for a joint international monitoring system on road safety attitudes and behaviour.

1 Introduction

1.1 Context setting

Trends in road safety performance and the success of policy measures can be monitored using road safety performance indicators, based on accident statistics, roadside observations, or (questionnaire) surveys. There is a broad consensus amongst road safety experts that roadside observations are the golden standard to produce road safety performance indicators since they are based on observed behaviour in traffic. But observation-based studies also have limitations. The number and nature of variables that are observable are limited. Moreover, roadside observations require a sophisticated study design and protocol. They are very time intensive and cost consuming. At present, moreover, due to methodological differences, results of such studies are often not comparable across countries.

An alternative is to use questionnaire surveys. Such surveys, when properly designed and with an adequate sampling approach, can yield very useful information on road safety performance and road safety culture as well. Moreover, when online panels are used, such surveys appear to be a relatively inexpensive way for obtaining indicators on safety practice and road users' behaviour. A further advantage of such surveys is that they allow to collect data on many additional factors as well and hence can provide insights into socio-cognitive determinants of behaviour: attitudes, perceived social norm, risk perception, or existing habits. Socio-cognitive factors can help to understand the underlying motivations of certain behaviour (e.g. Ajzen, 1991; Rosenstock, 1974; Rogers, 1975; Vanlaar and Yannis, 2006). In the current literature those factors are often closely linked with assessing road safety culture (e.g. Ward et al., 2019).

Hence, it is tempting to use road safety indicators based on surveys for benchmarking purposes. However, the results of national surveys are seldom comparable across countries because of differences in aims, scope, methodology, questions used, or sample population being surveyed.

Therefore, in 1991 the European Commission initiated the European project SARTRE (Social Attitudes to Road Traffic Risk in Europe; homepage: www.attitudes-roadsafety.eu/). A common questionnaire and study design were developed, and face-to-face interviews were conducted among a representative sample of the national adult population. Four editions of the SARTRE survey were completed (1991, 1996, 2002, 2010). In the first three editions of the SARTE project, surveys were directed only to car drivers. In the fourth edition, the target group was extended to powered two-wheelers, pedestrians, cyclists, and users of public transport (Cestac and Delhomme, 2012). SARTRE4 involved 19 European countries. It was the last of the SARTRE series that was funded by the European Commission.

In 2015, Vias institute (formerly the Belgian Road Safety Institute) launched the ESRA (E-Survey of Road users' Attitudes) initiative to build on the SARTRE experience and extend scope and coverage, initially with partners from a number of EU countries. In a few years, the project evolved into a global initiative. As of the moment of the publication of this report (September 2020), the ESRA survey has already been conducted in 60 countries across six continents. The number of countries is still growing. Figure 1 gives an overview of the geographical coverage of the different ESRA surveys (2015-2020).

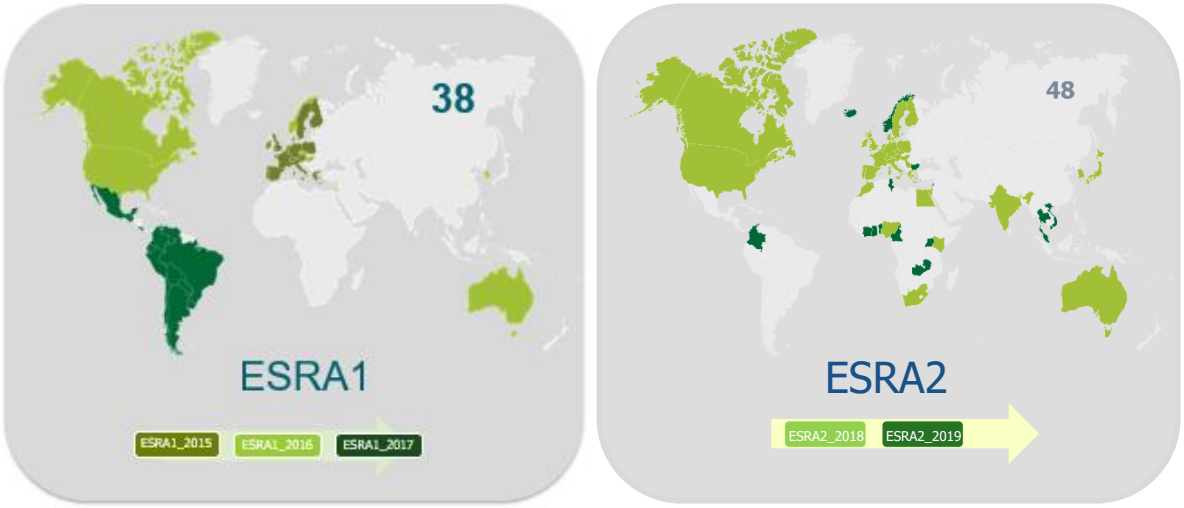


Figure 1. Evolution of the geographic coverage of the different ESRA surveys (2015-2020).

1.2 Purpose

ESRA 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.

The main objectives of the ESRA initiative can be summarized as follows:

1. to provide scientific support for road safety policy at national and international levels;
2. to make internationally comparable data available on the current road safety situation in countries all over the world;
3. to develop a series of reliable, cost-effective, and comparable road safety performance indicators;
4. to develop time series on road safety performance.

The intention is to repeat this survey every three years and extend it to an increasing number of countries.

1.3 Methodology

A full description of the methodology used can be found in a separate report, available on the ESRA website (https://www.esranet.eu/en/publications/)

> Meesmann, U., Torfs, K., Wardenier, N. & Van den Berghe, W. (2021) ESRA2 methodology. ESRA2 report Nr. 1 (updated version). ESRA project (E-Survey of Road users' Attitudes). Brussels, Belgium: Vias institute.

1.3.1 Data collection

ESRA data is derived from an extensive online survey amongst a representative sample of the national adult populations in each participating country. More specifically, ESRA2 is based on a web-based survey using internet panels.

This approach has some advantages compared to other survey modes, especially given the international context of the study.

These advantages are:

- Self-administered web surveys are less prone to social desirability in responses compared to interviewer-administered surveys (De Leeuw, et al., 2008; Baker, Blumberg, et al. 2010; Goldenbeld and de Craen, 2013).
- The common study design provides better comparability across countries (i.e. identical criteria in sampling procedure, identical programming of questionnaire; one project management across all countries as the ESRA survey is actually 'one' survey which is only linked to different national translations).
- Reduction of time (fieldwork in most countries ca. 2 weeks; efficient data processing), workload (e.g. less time for fieldwork and data processing) and costs (national survey costs typically between €5 000 – €10,000 (excl. VAT)

It should be recognized, however, that internet penetration and computer skills vary between countries. Consequently, coverage and sampling may have been sub-optimal in some areas. For these reasons, the minimum sample size (at least N = 1,000) had to be revised in some countries[2].

In Benin it was not feasible to obtain a sufficiently large sample using the same procedure as in the other countries. Therefore it was decided to allow also face-to-face recruitment of respondents in Benin. However, the questionnaire itself was always administered online without an interviewer present. In the present report, the data collected using both methods (online panels and face-to-face recruitment) have been included for Benin (total sample of 272 respondents). Some caution is therefore needed when comparing the results for Benin with those of other African countries.

Besides, due to the Covid-19 pandemic, a few questions referring to *the past 30 days* were rephrased to *in a typical month* as travel behaviour changed during the outbreak (details described in Appendix 1).

1.3.2 Scope of the questionnaire

The ESRA2 survey addresses several types of road users, i.e.:

- car drivers
- powered-two-wheelers
- cyclists
- pedestrians.

The main themes covered in the questionnaire are:

- transport modes
- road crash involvement
- self-declared behaviour in traffic
- acceptability of safe and unsafe traffic behaviour

[2] At least N = 500 for Zambia; At least N = 400 for Ghana, Ivory Coast, Tunisia, and Uganda; At least N = 300 for Benin; At least N = 200 Cameroon

- attitudes towards safe and unsafe traffic behaviour
- subjective safety and risk perception
- support for policy measures
- enforcement of traffic laws
- vehicle automation
- socio-demographic information

In addition, there are two bonus questions which were chosen freely by each national partner.

The survey addresses different road safety topics:

- speeding
- driving under the influence of alcohol, drugs, and medicines
- protective systems (e.g. seat belt use, helmet use)
- distraction and fatigue.

Furthermore, for the interpretation of the results additional contextual information on country level were gathered via external data sources (e.g. WHO, IRTAD, CARE) and a dedicated ESRA2 expert survey (e.g. questions on current national legal regulations). Figure 2 gives an overview of the scope of the ESRA2 survey.

The average length of the interview in the 12 African countries was 58 minutes. The questionnaire was first developed in English by the ESRA core group, based on the experience with ESRA1 and subsequently translated into 62 national language versions.

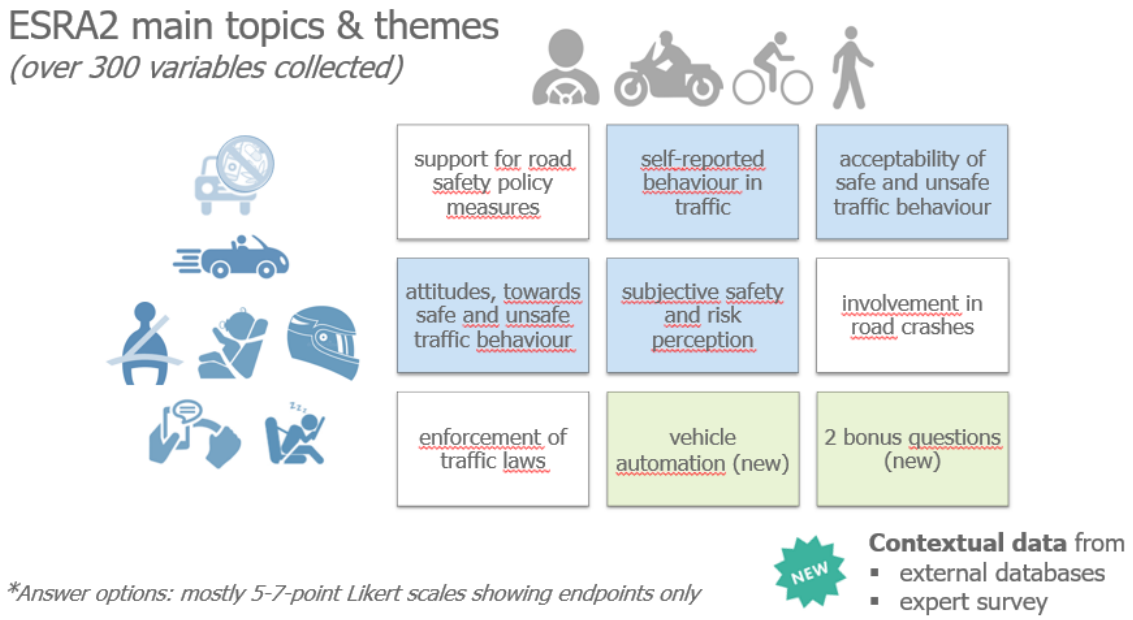


Figure 2. Scope of ESRA2 questionnaire. Blue boxes indicate the concepts of the Theory of Planned Behaviour (Ajzen, 1991). Green boxes indicate novelties compared to ESRA1.

1.3.3 Sample description

The survey targets all types of road users. The aim is to cover a representative sample of the national adult population of at least 1000 respondents in each country. Hard quotas were used for gender and age[3] distribution during the sampling procedure (United Nations Statistics Division, 2019). The geographical spread of the sample across the country was monitored (soft quota). Five market research agencies (INFAS, Ipsos (formerly GfK), Punto de Fuga, Dynata (formally RN SSI), and TNS Ilres) organised the fieldwork under the supervision of Vias institute. The fieldwork was conducted simultaneously in all 32 participating countries in December 2018[4]. The second wave, involving the 16 additional countries, was launched in November 2019[5].

In total the ESRA2 survey collected data from more than 45 000 road users across 48 countries. The participating countries in the first wave of ESRA2 (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 Afrika.

For the second wave, the participating countries in ESRA2 (ESRA2_2019) were:

Europe: Bulgaria, Iceland, Luxemburg, Norway;
South America: Colombia;
Asia and Oceania: Lebanon, Malaysia, Thailand, Vietnam;
Africa: Benin, Cameroon, Ghana, Ivory Coast, Tunisia, Uganda, Zambia.

The samples (after data cleaning and after applying corrective weighting factors) are representative for the national adult population based on interlaced quota of gender and six age groups (United Nations Statistics Division, 2019). The survey addresses several types of road users (e.g. car drivers, powered-two-wheelers, cyclists, pedestrians). Distribution of the African national samples according to transport mode, gender, age groups, internet use and education level are presented in this report.

On the African continent, data from 7,528 participants were collected during the two waves of ESRA2. The number of participants per African country is shown in Figure 3. It is essential to note the difference in participation in the different countries involved. Each country is presented in this report, but data from the countries with the fewest participants should be considered with caution.

[3] 6 age groups: 18-24y, 25-34y, 35-44y, 45-54y, 55-64y, 65y+
[4] Only in Switzerland the fieldwork extended to January 2019.
[5] Due to the covid-19 pandemic, the fieldwork for the second wave had to be extended until May 2020 for some countries.

Countries	ESRA2 wave	Sample (N)
Egypt	1	996
Kenya	1	1000
Nigeria	1	1000
Morocco	1	1047
South Africa	1	1013
Cameroon	2	204
Ghana	2	378
Ivory Coast	2	379
Tunisia	2	383
Uganda	2	378
Zambia	2	478
Benin	2	272

Figure 3. Geographical coverage and distribution of respondents in the participating countries.
** Sample size of Benin is very small, especially when reporting data from subsamples (e.g. motorcyclists) caution is needed with interpretation of (and drawing conclusions from) the results. However, for completeness's sake the data of Benin are presented in all figures of the report.*

Gender & Age

Gender and age distributions among the African countries are presented in Table 1. Overall, they show a slightly higher proportionality of male respondents (52%). Participation of male participants was higher in Benin (75% ♂), Ivory Coast (56% ♂) Nigeria (55% ♂), Morocco (55% ♂), Egypt (54% ♂) and Tunisia (51% ♂). Female participants were proportionally more present in the sample in Uganda (56% ♀), South Africa (54% ♀), Cameroon (54% ♀), Zambia (54% ♀) and Ghana (52% ♀).

Overall, 59% of respondents in the African sample is between 18 and 34 years old. Respondents older than 55 years were scarce (5.4%). Younger participants were particularly overrepresented in Benin (84%; +27% compared to the UN quota). South Africa was the country with the most homogenous age distribution (46% between 18-34, 37% between 35-54 and 16% 55+).

The interlaced distributions of age and gender show that the representation of younger age groups was higher among female participants than among male participants. Very few of the women in the sample (4%) were 55 year or older.

Educational level

The educational level of the African and European respondents of ESRA is shown in Figure 4. The majority of African respondents (62,2%) had a bachelor's degree (or similar). 13.0% had a master's degree (or higher), and 22.5% obtained a high school degree. This distribution is very different from that of European countries where participants reported mostly secondary education (51%) and then bachelor's degree (26%) and master's degree (16.7%).

As this African distribution might differ from the actual distribution of educational levels in the national populations, this variable should be considered in further analysis and the interpretation of the results.

Table 1: Specifications of the sample by country (unweighted sample)

	Gender		Age		
Country	**Male**	**Female**	**18-34y**	**35-54y**	**>55y**
Egypt	54%	46%	53%	43%	5%
Kenya	50%	50%	63%	34%	4%
Nigeria	55%	45%	65%	31%	5%
Morocco	55%	45%	62%	34%	4%
South Africa	46%	54%	46%	37%	16%
Cameroon	46%	54%	55%	42%	2%
Ghana	48%	52%	60%	38%	3%
Ivory Coast	56%	44%	61%	37%	2%
Tunisia	51%	49%	44%	49%	7%
Uganda	44%	56%	64%	34%	2%
Zambia	46%	54%	65%	33%	2%
Benin	75%	25%	84%	15%	0%
AFRICA12	51.9%	48.1%	59%	35.6%	5.4%

Note. In Benin different sampling procedures were applied (online panel & F2F), but only online panel responses are considered here.

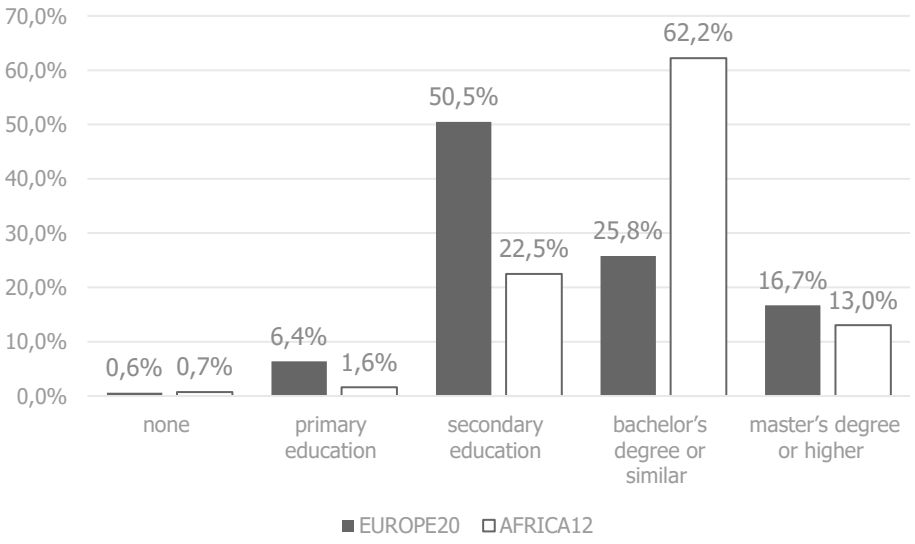


Figure 4. Level of education among respondents from European countries (EU20) and from African countries (AF12) (unweighted data).

Driver's license holders

Figure 5 presents the share of respondents holding a driver's license. Figure 5a shows that about two thirds of the African respondents is holder of a driver's license, while this is almost 90% in European countries. Moreover, more men than women in African countries are holder of a car driver's license. Possession of a driver's license varies from 41% in Ghana and Uganda to 89% in South Africa (Figure 5b).

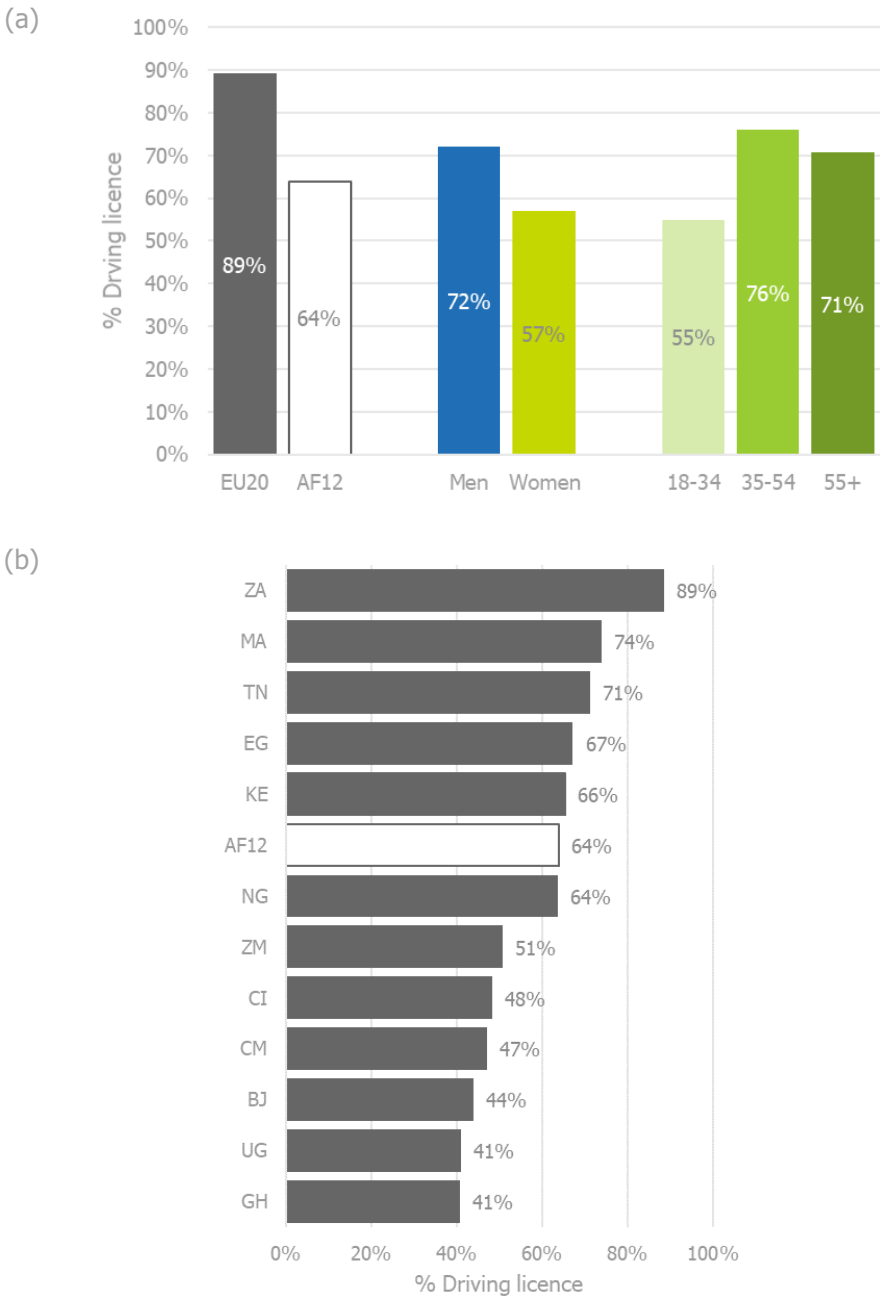


Figure 5. Percentage of driver's license holders in the (weighted) sample. (a) Gender and age differences in driver's license possession in African countries (AF12). (b) Possession of car driver's license at the country level.

(1) Note: AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (2) The national percentages are based on the individual country weight. (3) Benin: N=53.

ESRA2 methodology in African context

The common study design (i.e. identical criteria in sampling procedure and identical programming of the questionnaire) used in ESRA allows comparability across countries. It should be recognized, however, that internet penetration varies between countries. Consequently, coverage and sampling may have been sub-optimal in some areas. Therefore, it should be recognized that the samples for the African continent are less representative for the total population than it is in other ESRA2 regions. The African sample appears to consist of younger, higher educated and the more wealthy part of the population. However, we know from analyses on other countries that for many ESRA2 variables the effect of income and educational level is not very high. And as will be illustrated later on, in this report, age is not an important differentiating factor for several variables that are examined.

Sample size of Benin is very small, therefore caution is needed with interpretation of (and drawing conclusions from) the results. However, for completeness's sake the data of Benin are presented in all figures of the report.

2 Transport modes and subjective safety

Road crashes are mostly unintentional events; they occur on transport networks because of the interactions between road users, infrastructure, and technical problems. To understand the self-declared attitudes and behaviour of the respondents, their transport usage pattern must be explored first. The participants of the survey were asked: '*During the past 12 months, how often did you use each of the following transport modes…*' The answers to this question not only indicate the modes most frequently used; they also provide an indicator of the modes most likely affected by road crashes. Note that in the remainder of the chapters the results always refer to the weighted sample.

2.1 Exposure – use of transport modes

2.1.1 Results at African level

Figure 6 shows the most frequently used modes of transport in the last 12 months. The grey bars represent the African mean, which represents the results of the 12 participating African countries. The blue bars represent the European mean, which represents the results of the 20 participating European countries in ESRA2_2018. The green line represents the percentage of African respondents estimating a particular transport mode as 'unsafe'.

The top 5 consists of walking (94%), being a car passenger (87%), taking a taxi (86%), taking a bus (80%), and drive a car (non-electric) (57%). The least used transport modes are having driven a bus (9%), a truck (14%) or an electric moped (18%) during the past 12 months.

Compared to Europeans, African respondents were more likely to take the taxi (86% vs 48%) or the bus (80% vs 75%), to drive a powered-two-wheel (27% vs 17%), a taxi (21% vs 7%), an electric car (27% vs 11%)[6] or a powered personal transport (21% vs 11%). On the opposite, European respondents were more likely to take the train (71% vs 51%) or the subway (52% vs 38%) and to drive a car (79% vs 57%).

Only the participants who indicated using the transport mode at least a few days per year could give this estimation. Powered personal transports (such as e-scooters, monowheels, etc.) were considered unsafe by 47% of their African users. E-bikes (43%), e-mopeds (44%), e-motorcycles (44%), motorcycles (42%) and mopeds (39%) were also considered as unsafe by a large part of their drivers. Only a few respondents considered the aeroplane (15%), the car as a passenger (18%), the bus (19%) or the taxi (19%) as unsafe.

[6] The electric/hybrid car rates for AF12 is a surprising result. Europe occupies the third position on the market shares: https://www.iea.org/data-and-statistics/charts/global-electric-car-sales-by-key-markets-2010-2020).

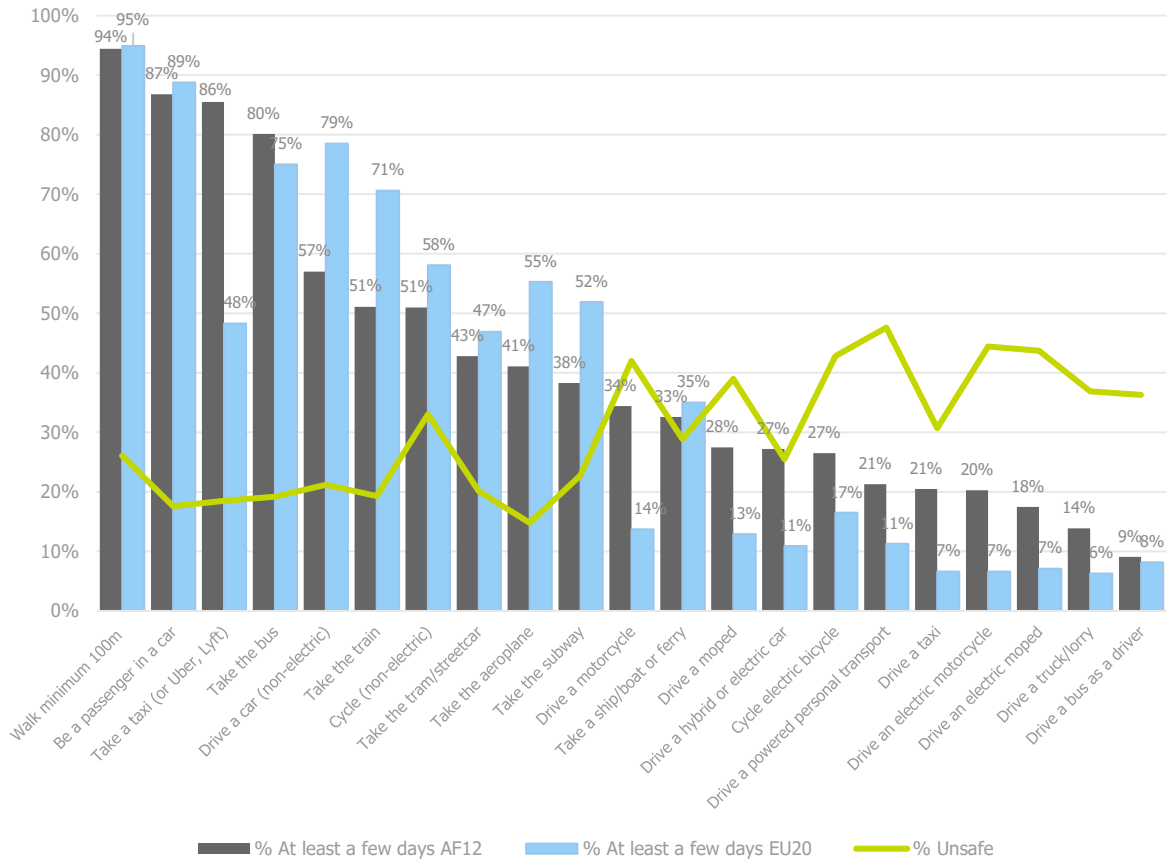


Figure 6. Frequency of transport mode use for AF12 and EU20 and perceived related unsafety.
Note: AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

Gender and Age

Figure 7 and 8 present the use of transport modes per gender and age category. Walking (a), the use of public transport (c), and being a car passenger (g) are widely used (almost all respondents have used this modes at least a few days during the past 12 months) by men and women, and by road users of all ages. However, cycling (b) and powered two wheelers (e) are more used by men and younger road users (18-34). More men than women drove a car in the past 12 months, and mainly respondents aged between 35-54y.

(a)

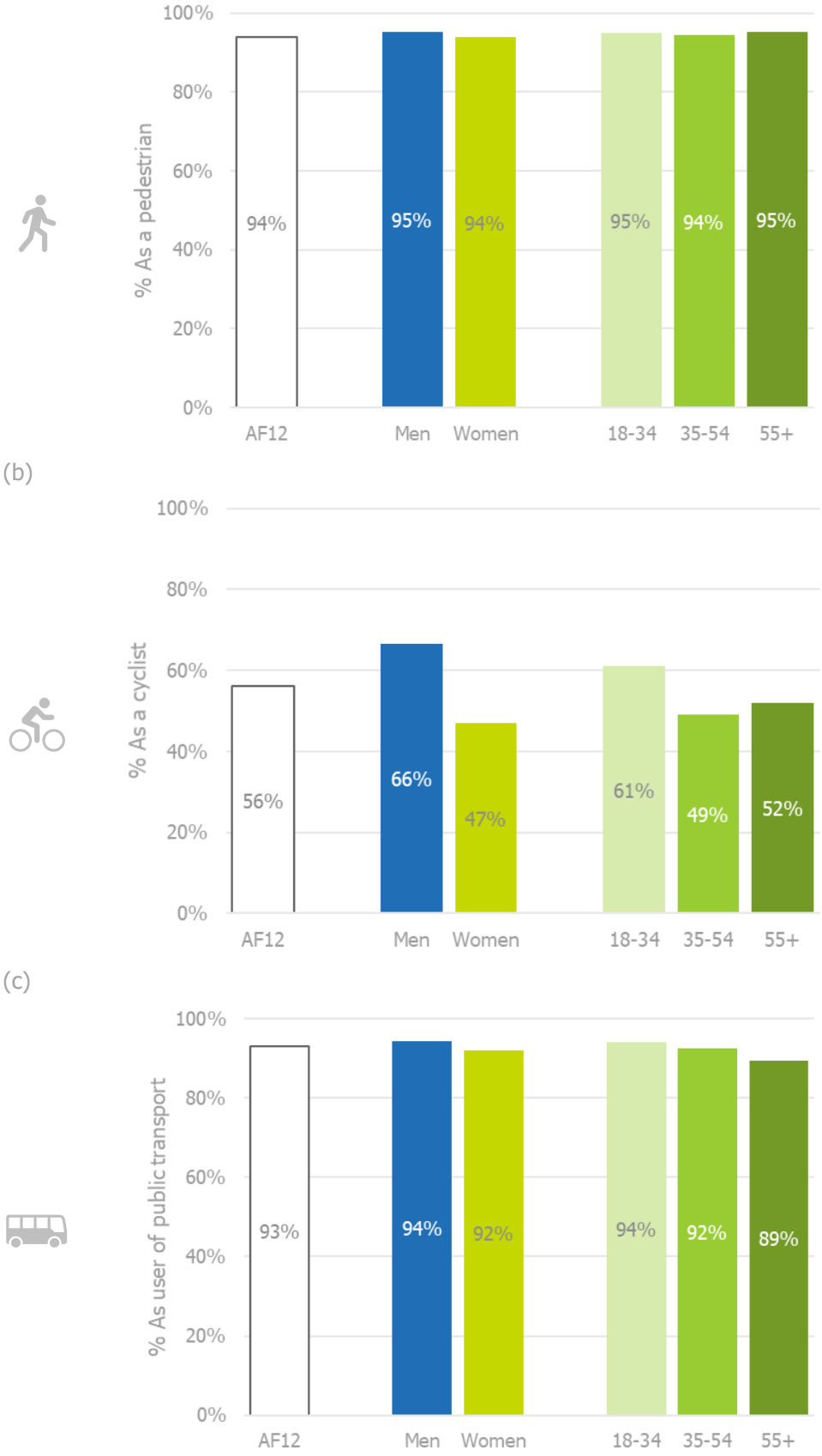


Figure 7. Frequency of transport mode use for (a) pedestrians, (b) cyclists, and (c) public transport for AF12 by gender and age groups.

Note: AF12 mean is based on African group weight ESRA2.

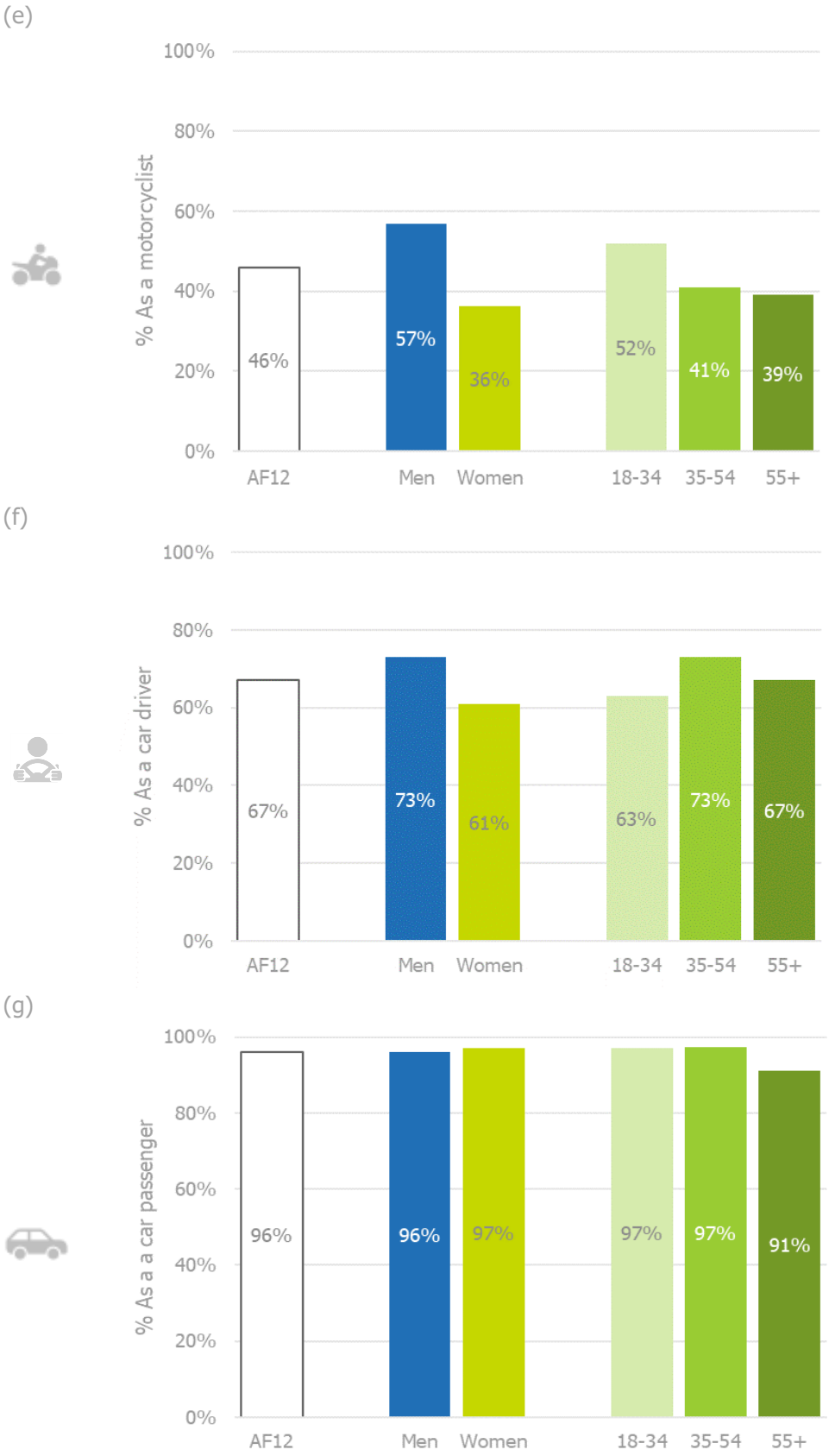


Figure 8. Frequency of transport mode use for (e) motorcyclists/moped drivers, (f) car drivers and (g) car passengers for AF12 by gender and age groups.

Note: AF12 mean is based on African group weight ESRA2.

2.1.2 National results

Figures 9 and 10 show the frequency of transport modes used in the past 12 months at the country level. The green line represents the African average (AF12). Walking (Figure 9a), the use of public transport (Figure 9c), and being a car passenger (Figure 10c) are widely used in all participating countries (almost all respondents have used these modes at least a few days during the past 12 months). Cycling (Figure 9b) is also a popular transport mode amongst the participating African countries, ranging from 41% in Ivory Coast to 64% in Kenya.

On the other hand, the use of motorcycles (Figure 10a) differs greatly amongst the different countries. Almost three fourth[7] of respondents in Benin used this way of transportation in the past 12 months, but also more than 65% of the respondents in Cameroon. On the other hand, in Zambia and South Africa the use of motorcycles is much less widespread (resp. 34% and 27%). Overall driving a car is less common than in Europe (see Figure 6). However, great differences exist between the African countries, ranging from 42% in Ivory Coast to 75% in Nigeria and 88% in South Africa (Figure 10b).

These results are consistent with each other: the high rate of car driving in South Africa is in line with the lower numbers in taking a taxi (66%) or public transport (e.g. taking a bus: 51%). For its parts, Ivory Coast has the lowest rate of 'car (non-electric) as driver', which could explain the very high rate on 'walking', 'car as passenger' and 'taxi'.

[7] Sample in Benin N=272

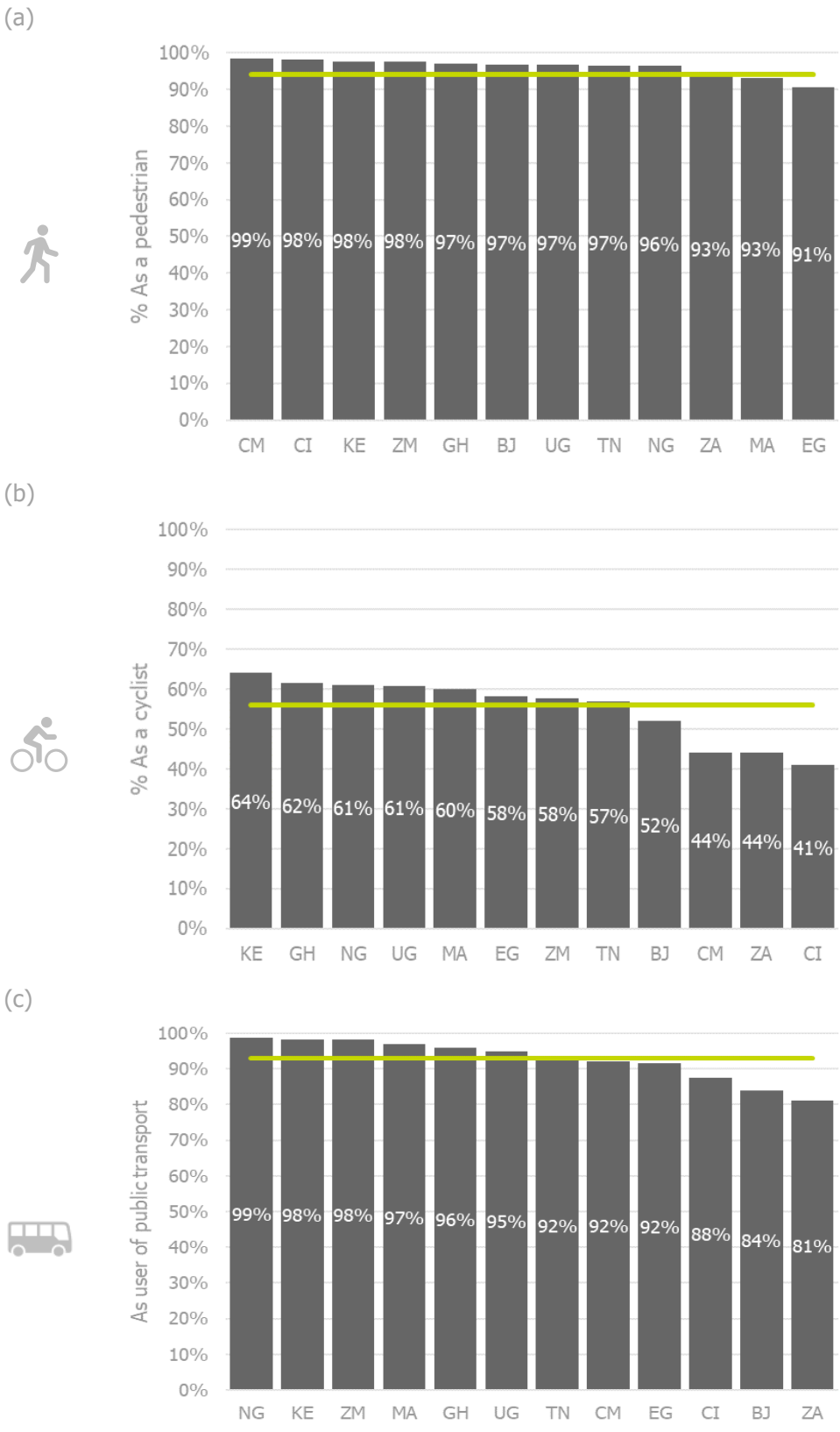


Figure 9. Frequency of transport mode use for (a) pedestrians, (b) cyclists, and (c) public transport for AF12 at the country level.

Note: (1) AF12 mean is based on African group weight ESRA2. The national percentages are based on the individual country weight. (2) Benin: N≤53.

(a)

Figure 10. Frequency of transport mode use for (a) motorcyclists/moped drivers, (b) car drivers and (c) car passengers for AF12 the country level.

Note: (1) AF12 mean is based on African group weight ESRA2. The national percentages are based on the individual country weight; (2) Benin: N≤53.

2.2 Subjective safety of road users

Respondents had to rate the different modes of transportation they used in the past year on an 11-point scale, whereas 0 represents 'very unsafe' and 10 'very safe'. Due to the differences in sample sizes for different transport modes, only results at the African level are presented in this report (see also Figure 6). No national results were explored as not all countries have sufficient sample sizes for all transport modes. Results comparing AF12 and EU20 are presented in Figure 11 for a selection of transport modes.

There is in general a trend towards feeling safe in most of the analysed transport modes. However, it is also clear that African respondents fell slightly less safe compared to the European respondents. Cyclists and powered two-wheelers (motorcyclists/moped drivers) feel least safe compared to other transport modes.

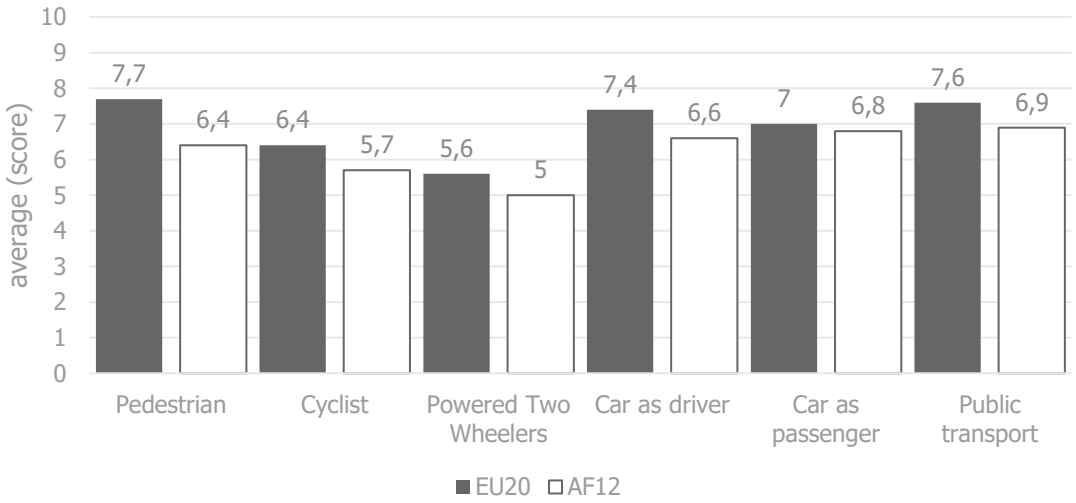


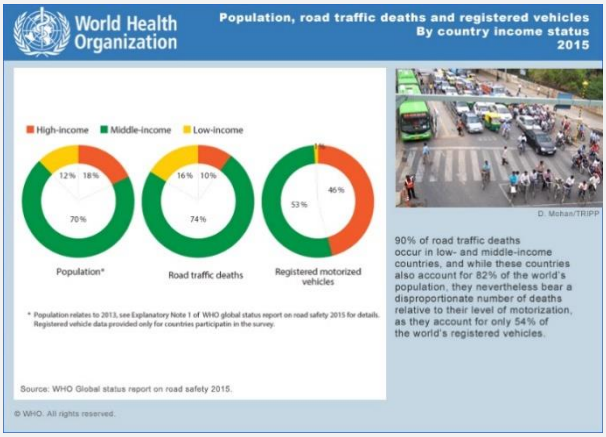
Figure 11. Safety feeling of transport modes for AF12 and EU20.

Note: AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

The results on the use of different traffic modes are consistent with each other. For instance, the higher prevalence of car driving in South Africa is in line with the lower numbers in taking a taxi or public transport. Also, Ivory Coast has the lowest rate for car driving, which could explain the very high rates for pedestrians, car passengers or taxi passengers.

The low prevalence of car driving in the majority of African countries included in the survey is related to the fact that car ownership is not as widespread as in Europe (WHO, Registered vehicles Data by country[8]) and to the poor road infrastructure in some countries (i.e.: Ivory Coast[9]).

In many middle- and low-income countries, the rapid pace of motorization has taken place in the absence of measures to ensure that all road users, notably pedestrians and cyclists, remain safe. This is reflected in the results presented here on subjective safety of different type of road users.



[8] https://apps.who.int/gho/data/node.main.A995
[9] https://www.voaafrique.com/a/les-infrastructures-routieres-a-l-abandon-en-cote-d-ivoire/4092199.html

3 Speeding

Speeding is associated with both, the number of crashes as well as the severity of crashes (Elvik et al. 2004; OECD/ITF, 2018; SWOV, 2012). The WHO published 10 facts on Global Road Safety in 2018 in which it stated that a pedestrian hit by a car with a speed of 65km/h compared to of 50km/h faces more than 4 times the risk of dying following the crash. As stated by SWOV (2016), speeding is not just driving faster than the speed limit, but it also covers not adapting the speed of the vehicle to the local conditions such as weather or traffic volumes

Proper speed management offers a promising approach to reduce the number and severity of road crashes. The OECD/ITF (2018) indicates that if high speed limits are planned, either stricter enforcement or an upgrade of the infrastructure is recommended to compensate for the increased risk resulting from higher average speed. Considering this, a comparison between different countries could provide further insights about the effects of implementing different preventive measures that contribute to a reduction of speed on different road types.

This chapter on speeding describes the attitudes and opinions on speeding of road users in 12 African countries. It includes comparisons among the participating countries as well as descriptive results in relation to age and gender. The speeding aspects analysed in this chapter cover the self-reported speeding behaviour, the personal acceptability of speeding (individual norm) and, the acceptability of others (injunctive norm), attitudes and beliefs towards speeding, support for road safety policy measures and reported police checks and perceived likelihood of getting caught for speeding offences.

The introduction of this chapter is inspired by the ESRA2 thematic report on this topic, we refer the reader to Holocher & Holte, 2019 (available on www.esranet.eu/publications)

3.1 Self-reported behaviour

To estimate the declared prevalence of speeding among car drivers in Africa, the following questions were asked involving different speed regimes:

Q12_1b) Over the last 30 days, how often did you as a CAR DRIVER...

- exceeded the speed limit in built-up areas?
- exceeded the speed limit outside built-up areas (but not on motorways/freeways)?
- exceeded speed limit on motorways/freeways?

Similarly, the declared prevalence of speeding amongst motorcyclists was studied using the following question:

Q12_3) Over the last 30 days, how often did you as A MOPED DRIVER OR MOTORCYCLIST... exceeded the speed limit outside built-up areas (but not on motorways/freeways)?'

The frequency was estimated on a scale of 1 to 5, where 1 = never and 5 = (almost) always. The results presented here (Figure 12) refer to the dichotomisation of scores 2-5 ('at least once'); they show the percentage of respondents who reported that they have shown a certain behaviour at least once in the last 30 days. For this question, only respondents who reported having driven a car (rode a motorcycle/moped) at least a few days a month were analysed.

3.1.1 Results at African level

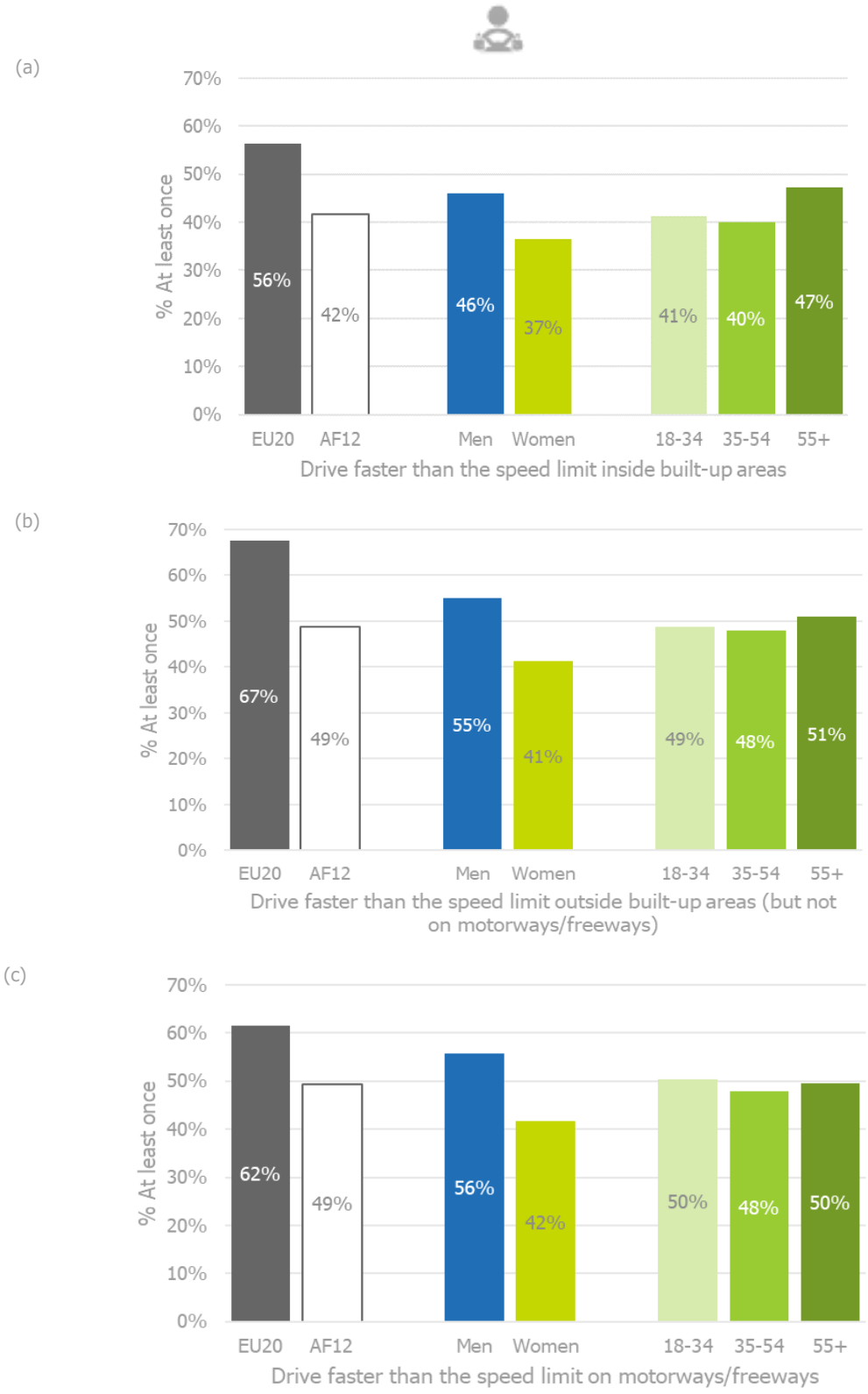


Figure 12. Self-reported speeding (last 30 days) by car drivers (a-c) for EU20, AF12 and by gender and age groups.

Note: (1) Reference population car drivers, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

Speeding infractions reported by African car drivers are similar across the different speed regimes, ranging from 42% inside built-up areas to 49% outside built-up areas (Figure 12). These self-reported speeding rates are lower compared to those reported by the European respondents. The reverse pattern is true for motorcyclists: African motorcyclists report more often than the European riders having exceeded the speed limits outside built-up areas (42% and 20% resp.; Figure 13).

Generally, men tend to report more that they have exceeded the speed limits, regardless of the speed regime. The prevalence between men and women is relatively similar for the different speed regime: in built-up areas (46% against 37%; Figure 12a), outside built-up areas (55% against 41%; Figure 12b), on motorways/freeways (56% against 42%; Figure 12c). The same pattern is true for motorcyclists: speeding is more often reported by male riders (46% vs. 36%; Figure 13).

In terms of age, car drivers, aged 35-54 years (40% - 48%) are the less likely to exceed speed limits regardless of the speed regime (Figure 12). Regarding motorcyclists: the 55+ (54%) are more likely to exceed the speed than the 18-34 (41%) and 35-54 (41%; Figure 13).

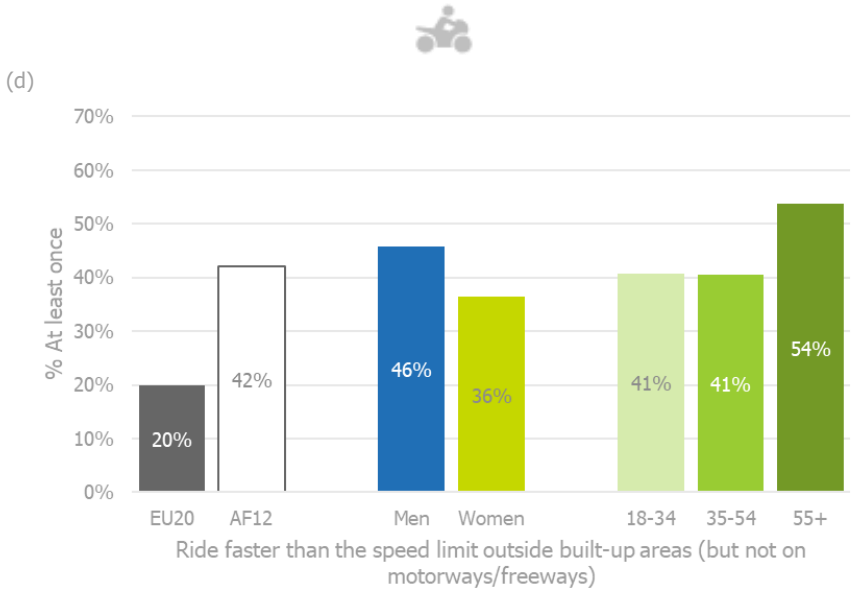


Figure 13. Self-reported speeding by motorcyclists for EU20, AF12 and by gender and age groups.
Note: (1) Reference population motorcyclists, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

3.1.2 National results

Figure 14 presents the results on self-reported speeding behaviour on the national level. Results reveal that South African car drivers have the highest rates for the three self-reported unsafe behaviours (respectively 62% for 'outside built-up areas', 62% for 'on motorways' and 53% for 'inside built-up areas'), followed by Tunisia (56%, 54% and 47%) and Kenya (55%, 53% and 44%).

Moreover, country comparisons show that speeding outside built-up areas (not on motorways) is more frequently reported by motorcyclists in the Arabic countries: Egypt (55%), Tunisia (52%) and Morocco (49%; Figure 14d).

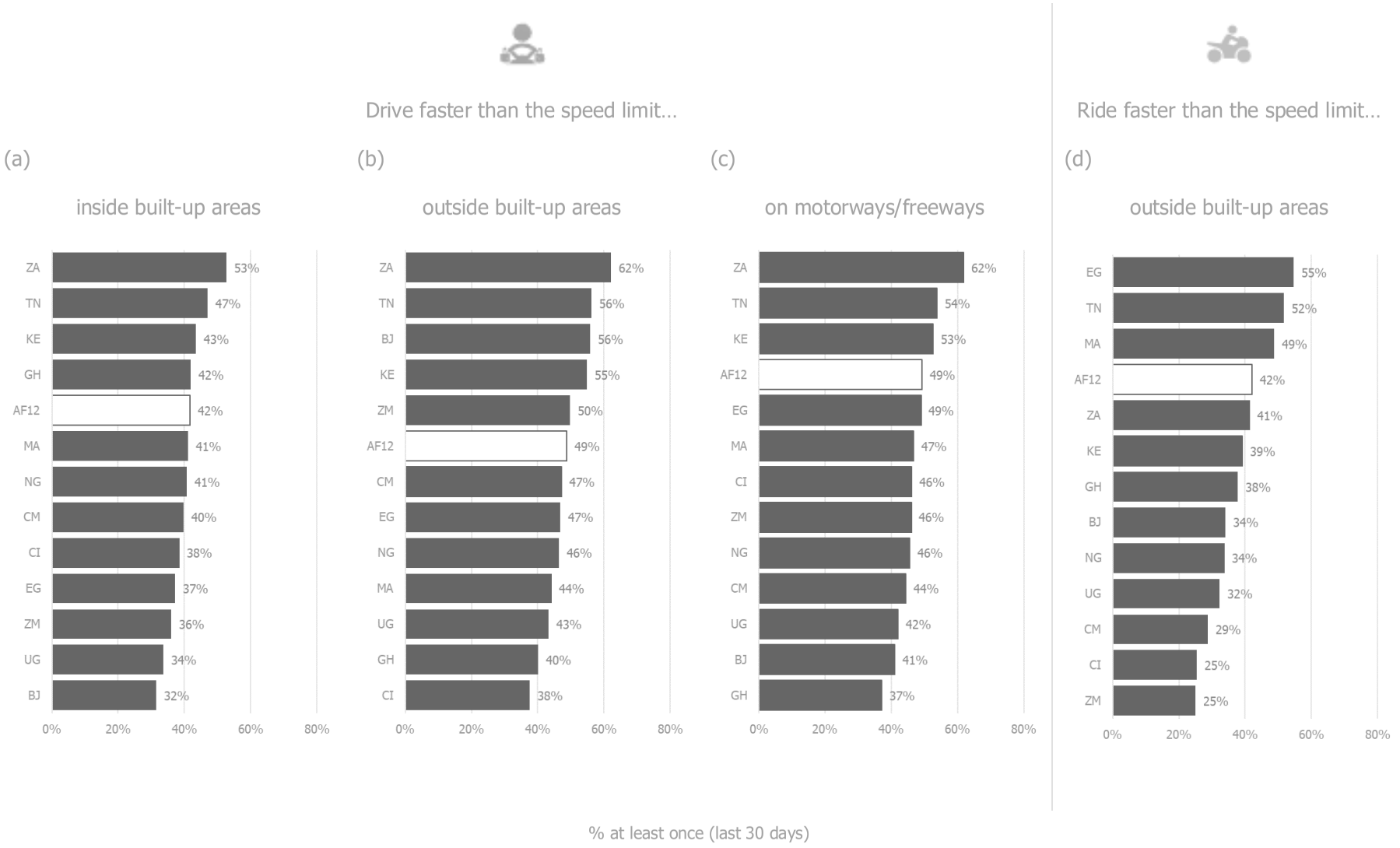


Figure 14. Self-reported speeding by car drivers (a-c) and by motorcyclists/moped drivers (d) for AF12 at the country level.

Notes: (1) Reference population (a-c) car drivers, at least a few days a month; (d) motorcyclists, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight; (3) Benin: N≤53. (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

3.2 Attitudes and norms

This section discusses the attitudes and norms regarding speed, and more precisely, the respect of speed limits. According to theory of planned behaviour (Ajzen, 1991), the behaviour is, inter alia, influenced by attitudes and norms[10].

For a better understanding of why road users exceed speed limits, the acceptability of this behaviour was assessed through different statements asking about how much the respondents accept speeding behaviour and how much, they think, other people do. This perceived acceptability by other people refers to the injunctive norm, which describes people's beliefs about what most others approve or disapprove (Cialdini, Reno, & Kallren, 1990). The perceived descriptive norm describes what a person thinks to be typical or normal and what most people would do (Cialdini et al., 1990). The personal acceptability, on the other hand, can be interpreted as an individual norm.

3.2.1 Individual norm

The following questions were asked to find out the level of acceptability of the behaviour 'driving faster than the speed limit' in different road areas:

Q14_1) How acceptable do you, personally, feel it is for a CAR DRIVER to…?

- 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

The answering scale for the acceptability of speeding ranged from 1 (unacceptable) to 5 (acceptable). For the analyses, the answers were split into acceptable (4-5) and unacceptable/neutral (1-3). Since these questions refer to perceptions by road users, the answers of all respondents were analysed, not just the car drivers.

Results at African level

Figure 15 shows that the prevalence of personal acceptability for exceeding speed limits depends on the areas where these limits must be respected. Only 5% of African respondents point out that they find it acceptable to drive faster than the speed limit inside built-up areas, compared to the 8% outside built-up areas and the 11% on motorways. Those rates are lower (except for speed limit inside built-up area, which is equal) than those of European respondents, where we can observe a higher personally acceptable to drive faster than the speed limits (especially on motorways, with 14%) than in the African region.

Generally, men more than women state that it is personally acceptable to exceed the speed limits, regardless of the speed regime. In terms of ages, young drivers (18-34y) are more likely to exceed speed limits regardless of speed regime compared to older drivers.

[10] The constructs of the TpB model are present in the following chapters as well (Chapters 4-7). Note that to avoid repetition, the terminology is explained in this chapter only.

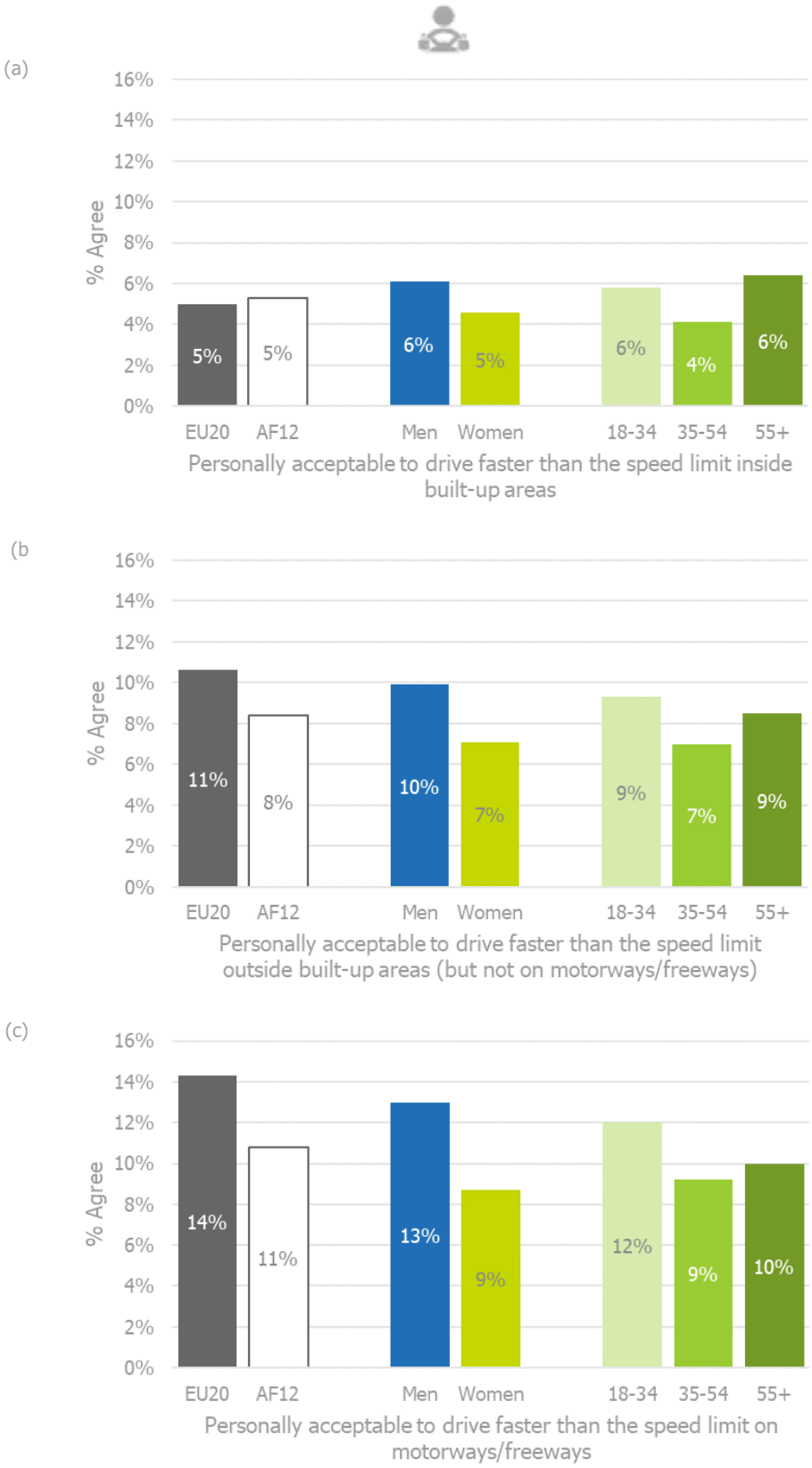


Figure 15. Personal acceptability of speeding by car drivers for AF12 by gender and age.

Note: (1) Reference population all respondents. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

National results

A country comparison (Figure 16) shows that speeding is a quite acceptable unsafe behaviour for the Egyptian respondents, in particular outside the built-up areas (15% on motorways/freeways and 14% not on motorways). It is noteworthy to indicate that Zambia has the lowest acceptability rates regarding this 'personal' unsafe behaviour outside built-up areas, with a rate of 4%.

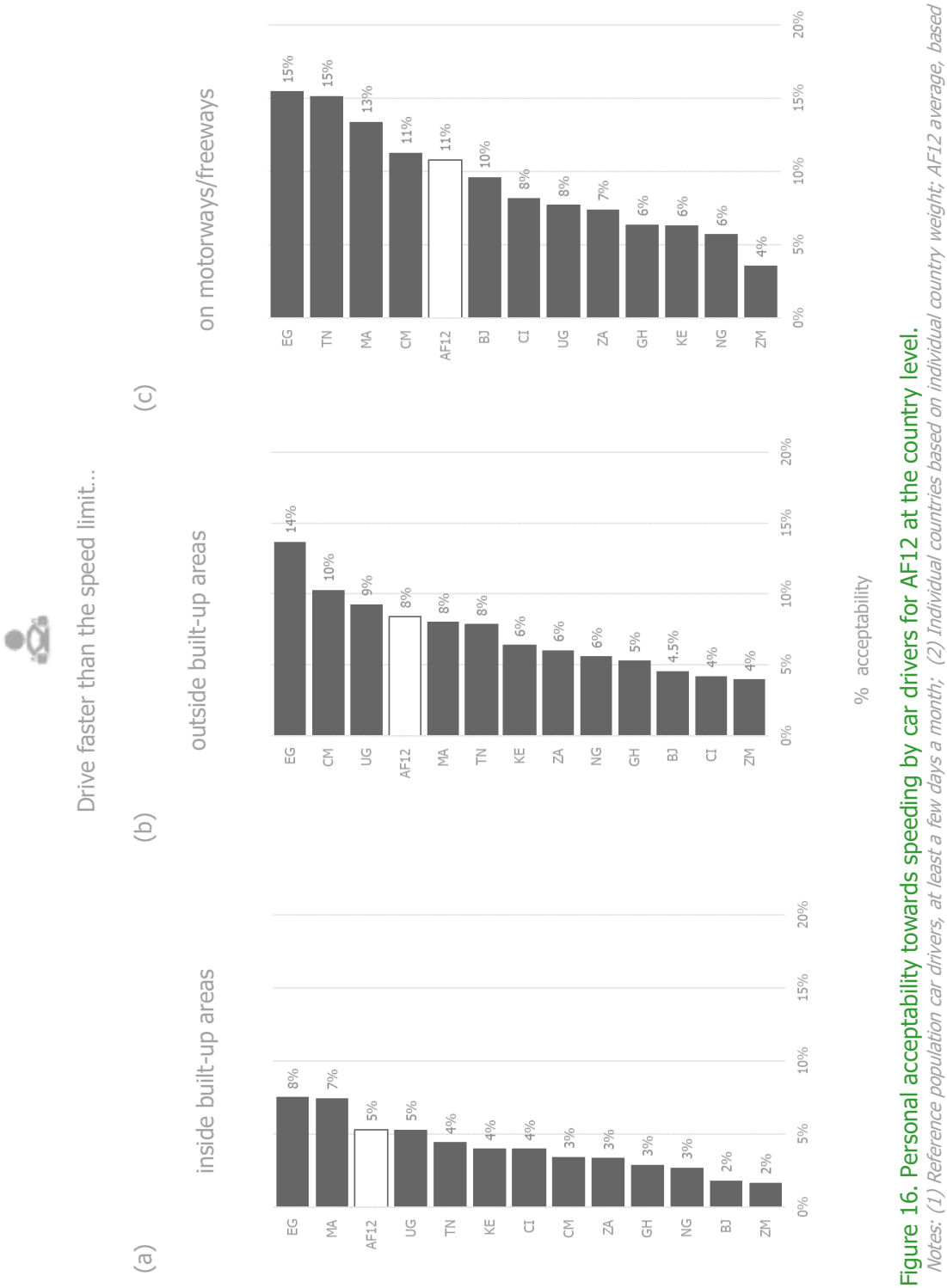


Figure 16. Personal acceptability towards speeding by car drivers for AF12 at the country level.

Notes: (1) Reference population car drivers, at least a few days a month; (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) % acceptability: scores 4 and 5 on a 5-point scale from 1 – unacceptable to 5 – acceptable; (4) Benin: N≤53.

3.2.2 Injunctive norm and perceived descriptive norm

The following question was asked to find out the level of acceptability of the behaviour 'driving faster than the speed limit' (injunctive norm):

Q13_1) Where you live, how acceptable would most other people say it is for a CAR DRIVER …

- to drive faster than the speed limit outside built-up areas (but not on motorways/freeways)?

The answering scale ranged from 1 (unacceptable) to 5 (acceptable). For the analyses, the answers were split into acceptable (4-5) and unacceptable/neutral (1-3).

The perceived descriptive norm describes the perception of how other people would normally behave in a certain situation. The following question was asked to capture this norm:

Q15) To what extent do you agree with each of the following statements?

- Most of my friends would drive 20 km/h over the speed limit in residential area.

The answering scale ranged from 1 (disagree) to 5 (agree) and were split into agree (4-5) and disagree/neutral (1-3) for analyzing. Since these questions refer to perceptions by road users, the answers of all respondents were analysed.

Results at African level

The results presented in Figure 17b show that 17% of respondents reported that their friends would drive 20 km/h over the speed limit in a residential area (while in Europe 14%). The age distribution shows that this is higher for the 18-34 (18%) than the 35-54 (17%) and the 55+ (13%). No gender effects were present in the data.

But concerning the perceived acceptability for driving faster than the speed limit outside built-up areas (not on motorways), rates are quite similar between AF12 (16%) and EU20 (15%), and also between men (16%) and women (15%), while the 55+ show more acceptability on this statement (19%; Figure 17a).

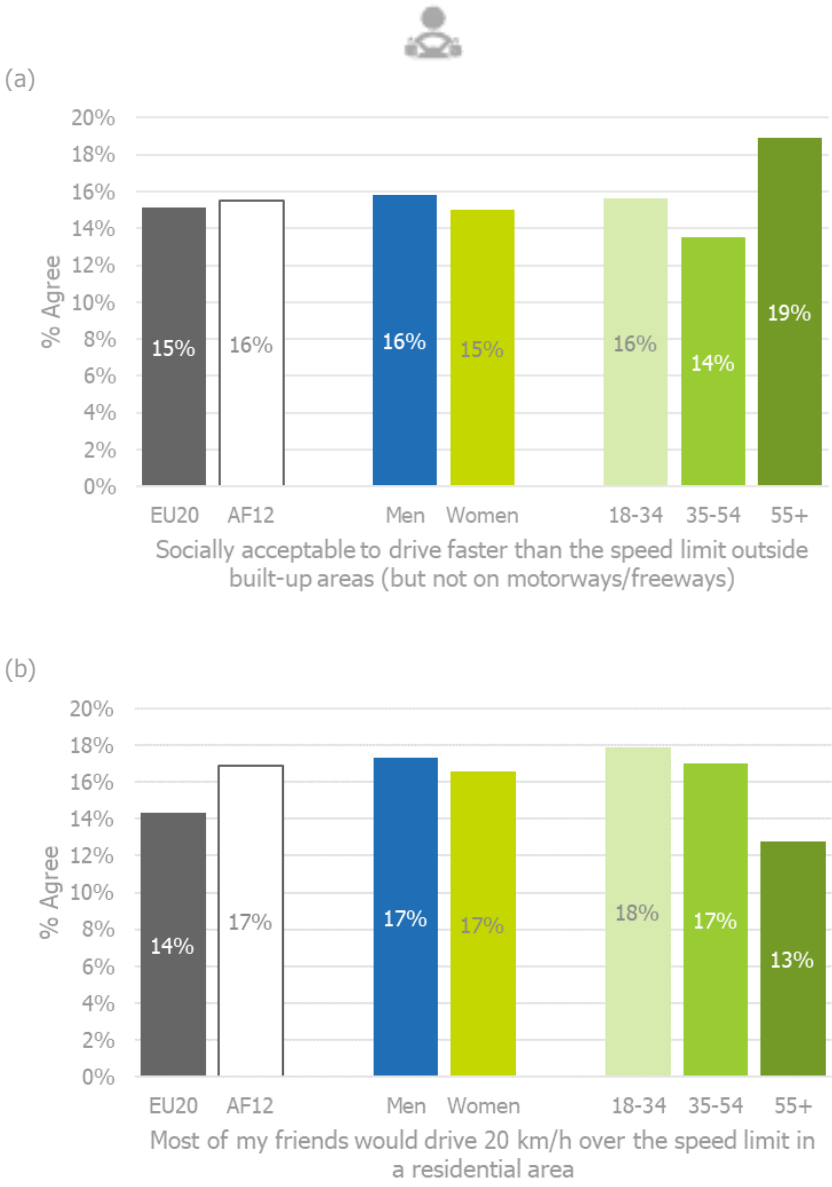


Figure 17. Perceived acceptability of speeding by car drivers and perceived descriptive norms for AF12 by gender and age.

Note: (1) Reference population all respondents. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

National results

Results at the country level are presented in Figure 18. The most noteworthy elements are the differences between the perceived descriptive norm ('Most of my friends would drive 20km/h over the speed limit in residential area') for which the variation between the top three (Kenya with 26%, Zambia with 24% and Uganda with 24%) and the bottom three (Benin 11%, Egypt 12% and Ivory Coast 13%) is noticeable.

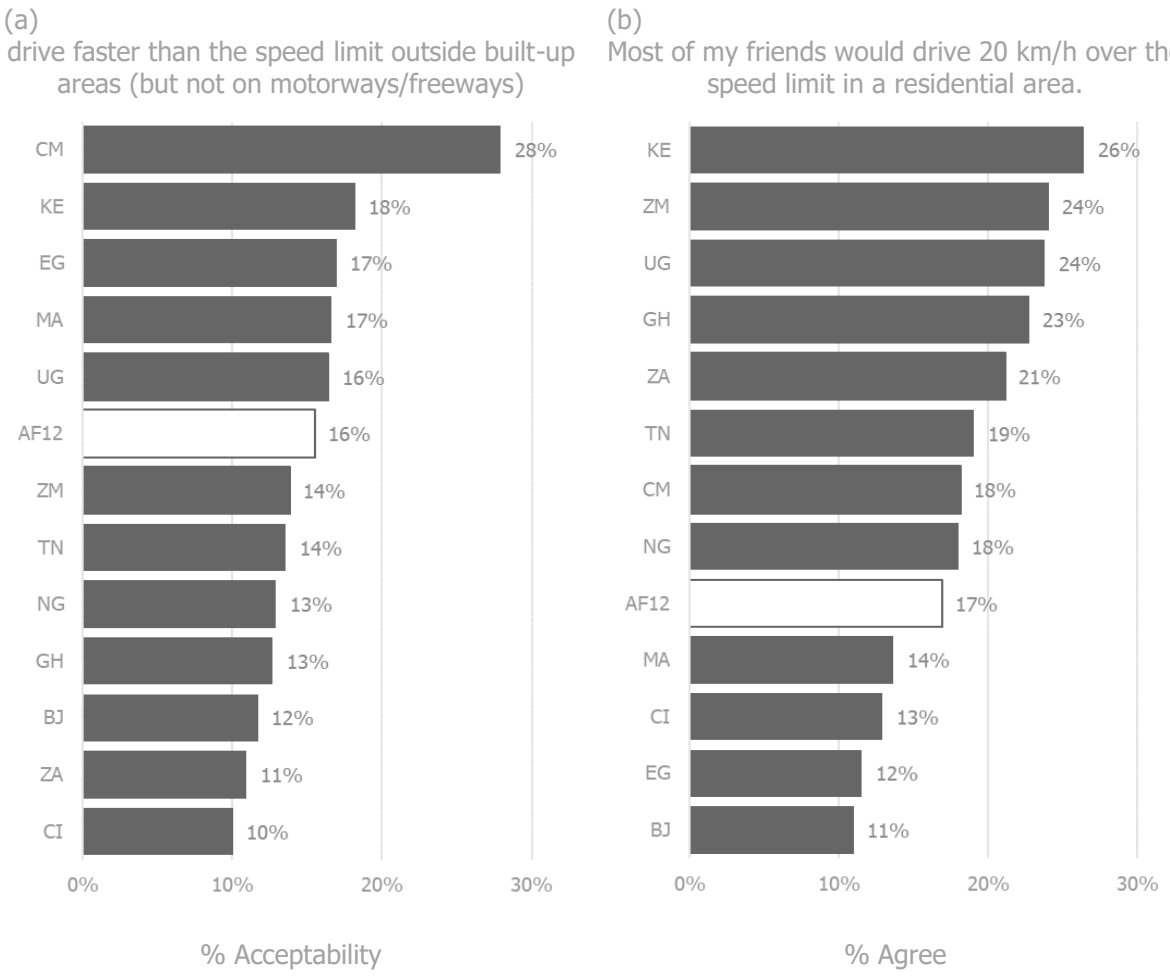


Figure 18. Social acceptability of speeding by car drivers for AF12 at the country level.

Notes: (1) Reference population all respondents. (2) Individual countries based on individual country weight; AF12 average, based on regional weight; (2) Benin: N≤53. (3) % acceptability: scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable'. (4) % Agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'.

3.2.3 Attitudes towards speeding

The attitudes of all road users in the sample were assessed to investigate the cognitive aspects of speeding behaviour. Therefore, two different psychological constructs related to speeding are analysed and described.

- *Behaviour beliefs and attitudes*: What do road user think about driving faster than the speed limit? What is the reason for them speeding?
- *Self-efficacy*: People's beliefs about their own capabilities to do a task or activity (Bandura, 1977)

The answering scale for these constructs ranged from 1 (disagree) to 5 (agree) and were split into agree (4-5) and disagree/neutral (1-3) for analysing.

Results at African level

Figure 19a shows that in terms of attitudes, 9% of the respondents agreed on 'I have to drive fast, otherwise I have the impression of losing my time', with a larger prevalence of men (10%). Also, young respondents (18-34 with 10%) together with the 55+ (with 11%) were mainly represented. For comparison, this statement is supported by only 6% of the European respondents.

In contrast, only 8% of AF12 agreed on 'respecting the limits is boring or dull', compared to 12% for EU20 (Figure 19b). Men (11%) prevail again on women (7%). But here, the 55+ prevails on the two other age categories.

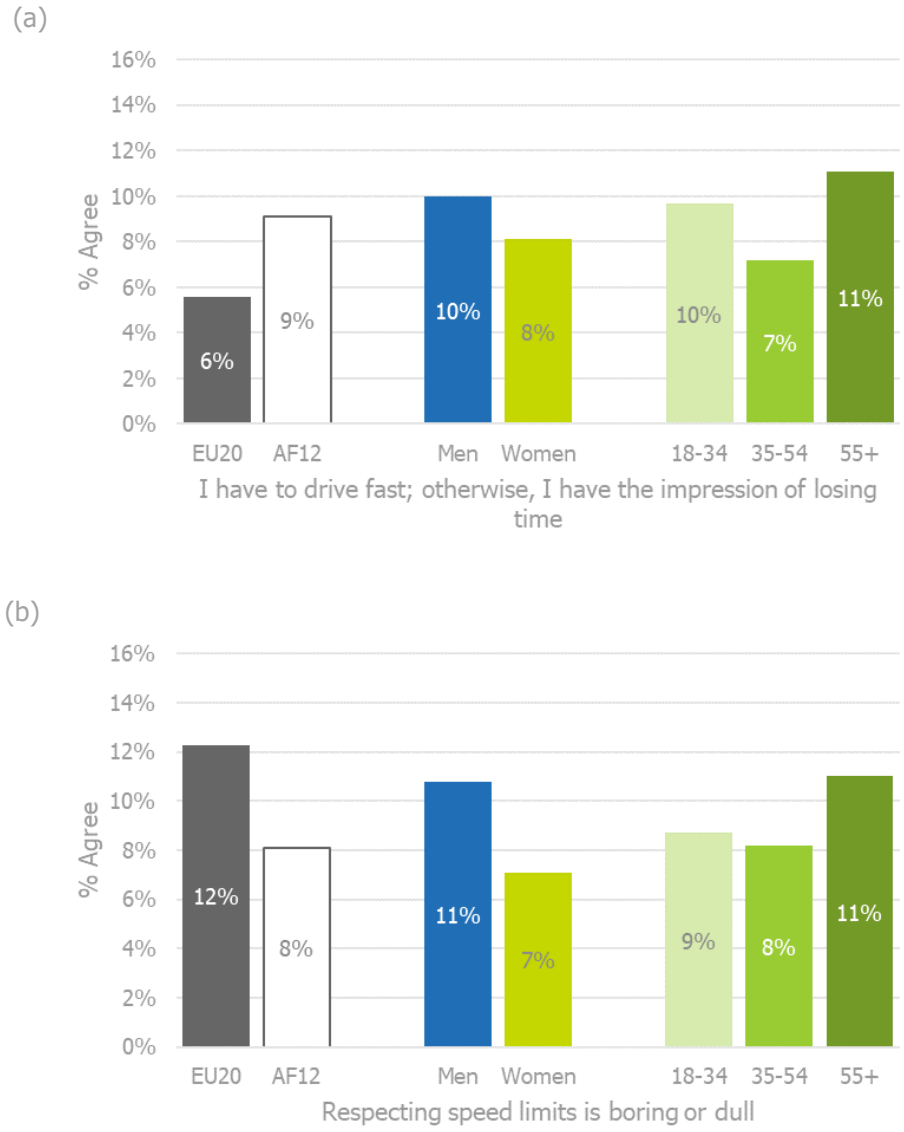


Figure 19. Attitudes towards speeding by car drivers for AF12 by gender and age.
Note: (1) Reference population: all respondents. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

National results

Figure 20 provides on the extent that respondents agree with 'speeding for not losing time' and 'respecting the speed limits is boring or dull'. A country comparison indicates again Egypt has very high rates compared to other countries, preceded by Tunisia on the second statement (13% vs 11%).

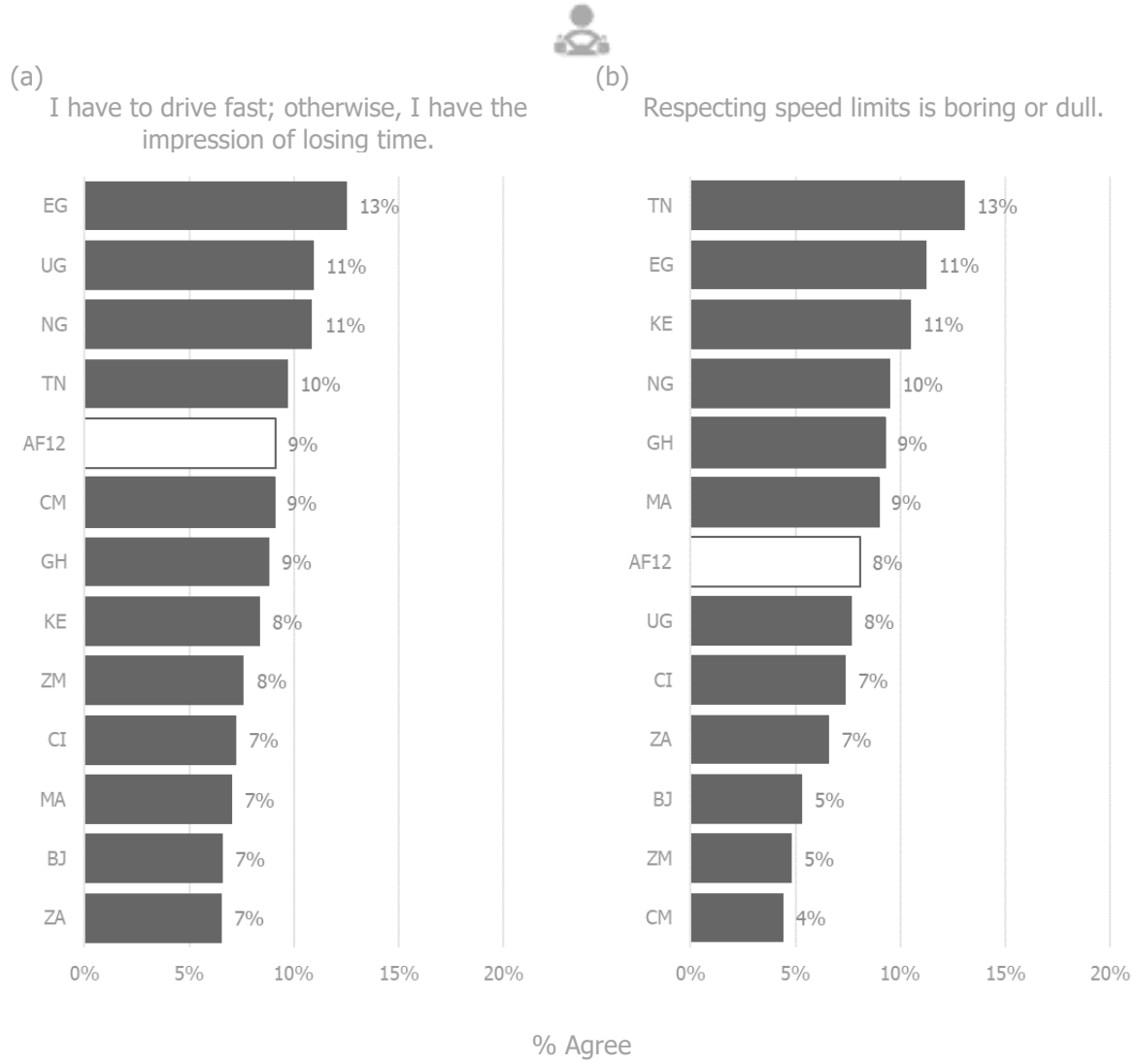


Figure 20. Attitudes towards speeding by car drivers for AF12 at the country level.

Notes: (1) Reference population car drivers, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53; (4) % agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree'.

3.2.4 Perceived behavioural control / self-efficacy

Results at African level

12% of respondents in Africa12 report trust in themselves when driving faster than the speed limit (Figure 21a). This is less frequent than respondents in Europe20 (16%) do. Men (13%) prevail on women (10%) concerning this statement, as slightly do the younger over the older (18-34 with 12%, 35-54 and 55+ with respectively 11%).

Concerning the ability to drive fast in a sharp curve (Figure 21b), only 7% the African respondents report to trust themselves (in Europ20, it was 11%). The prevalence is higher for men (9%) than for women (5%). The 55+ (10%) prevail on the two other age categories (both 7%).

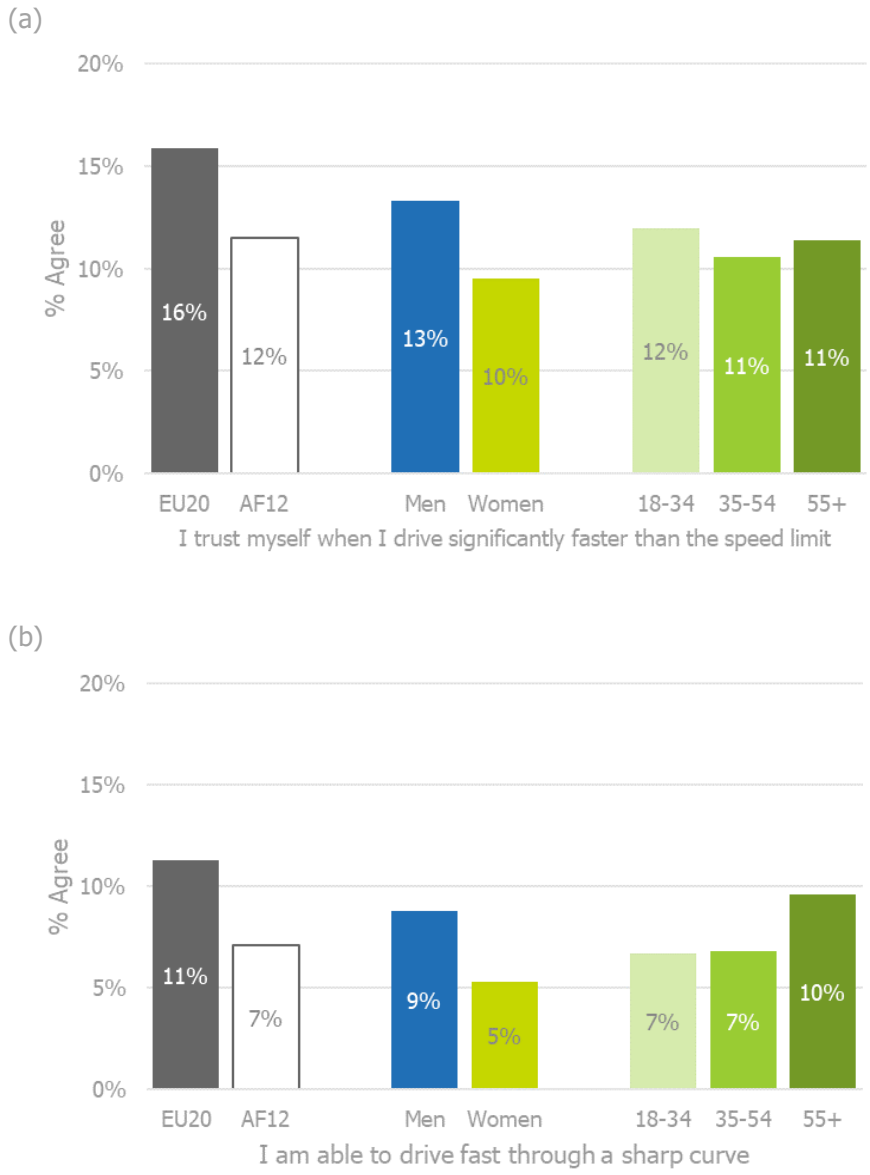


Figure 21. PBC of speeding by car drivers for AF12 by age and gender.

Note: (1) Reference population: car drivers at least a few times a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

National results

Figure 22 presents the results on perceived behavioural control at the country level. South African respondents report more frequently to trust themselves to drive faster than the speed limit (24%) and to drive fast in a sharp curve (11%). Only 6% of the respondents from Benin report to trust themselves when speeding, and only 4% when driving fast in a sharp curve.

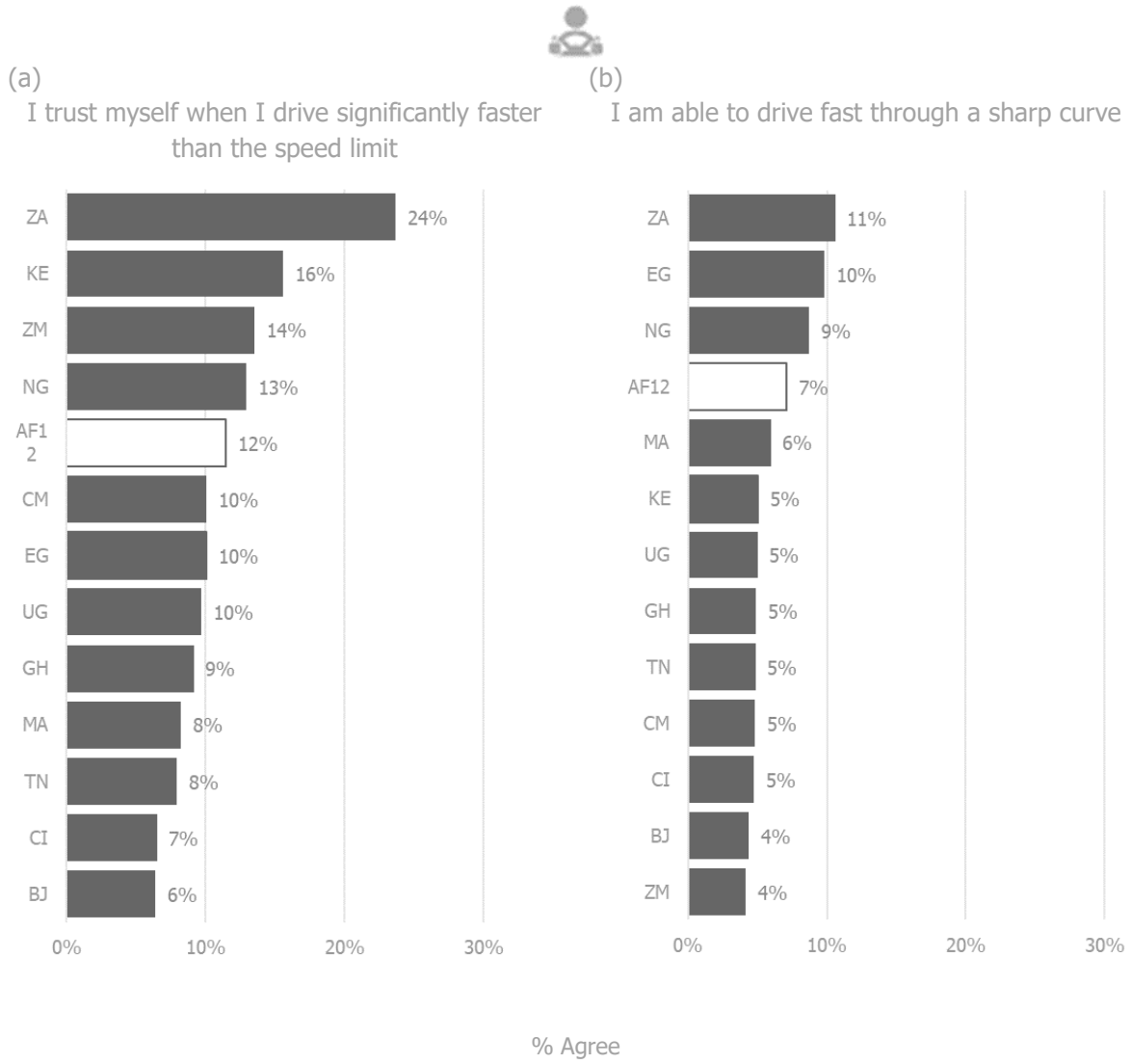


Figure 22. PBC (self-efficacy towards speeding by car drivers for AF12 at the country level.

Notes: (1) Reference population car drivers, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53 (4) % agreement: scores 4 and 5 on a 5-point scale from 1 'disagree' to 5 'agree.

3.3 Enforcement and policy measures

3.3.1 Enforcement

To keep drivers from speeding, police checks on a regular basis are essential. Therefore, the subjective risk of being checked for respecting the speed limits was assessed by rating the perceived likelihood of being checked by the police for speeding on a 7-points scale (1= very unlikely to 7 = very likely). The scale was divided into 'likely' (5-7) and 'unlikely/neutral' (1-4).

Q20_1) On a typical journey, how likely is it that you (as a CAR DRIVER) will be checked by the police for respecting the speed limits (including checks by a police car with a camera, fixed cameras, mobile cameras, and section control systems)?

Overall, 46% of the AF12 respondents pointed out this probability (while it is 37% for EU20; Figure 23). No significant differences regarding gender or age were observed. Country results show that Zambian respondents (73%) reported the highest 'risk' of being checked for speed, followed by Kenya (54%) and Ghana (54%).

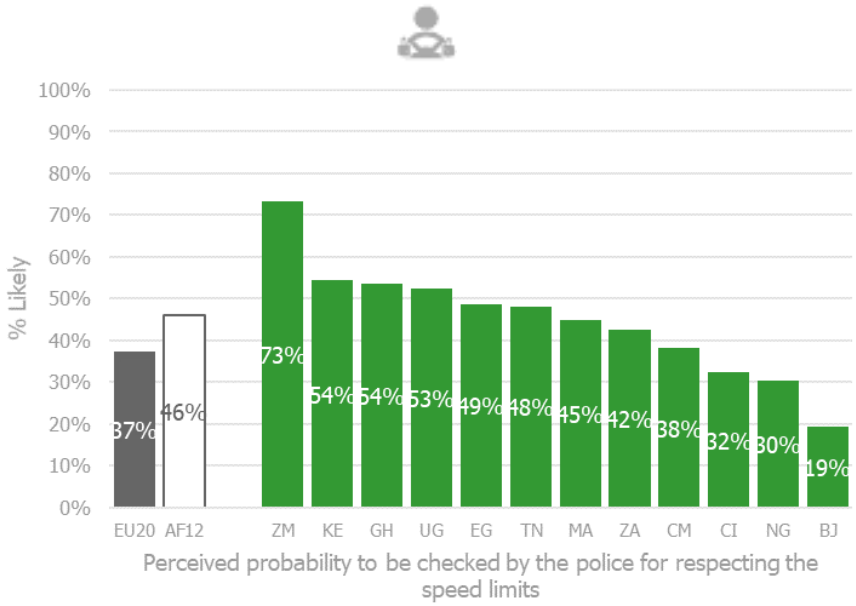


Figure 23. Perceived probability of being checked for speed by car drivers for AF12 at the country level.
Notes: (1) Reference population car drivers, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53 (4) % likely: scores 5 and 7 on a 7-point scale from 1 ''very unlikely' to 7 ''very likely'.

3.3.2 Support for policy measures

Another topic of interest is the support for two specific measures which should reduce the number of road users exceeding the speed limit was measured with a 5-points scale with the endpoints 'oppose' and 'support'. For the analyses a binary variable was used with the two values oppose/neutral (1-3) and support (4-5). Responses of all road users were analyzed.

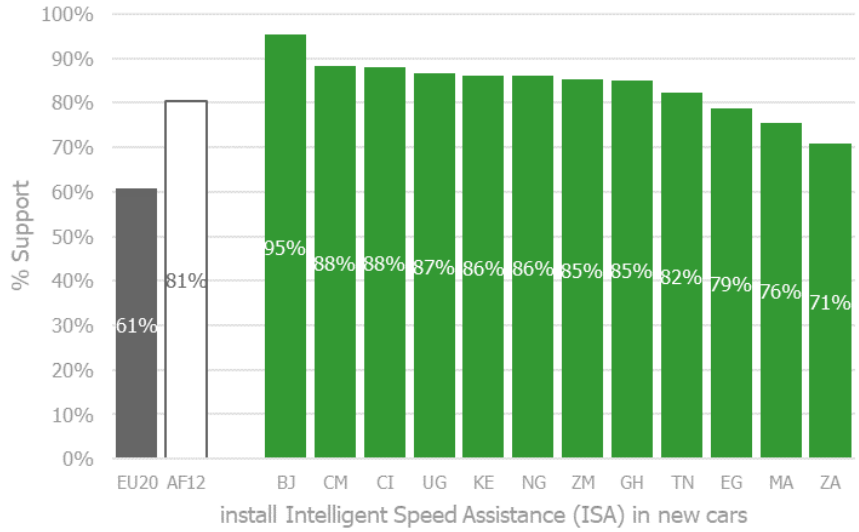
Q18) Do you oppose or support a legal obligation to…?

- 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)

Figure 24 illustrates the level of support for two possible legal measures in relation to speeding: Intelligent Speed Assistance (ISA; Figure 24a) and Dynamic Speed Warning (DSW; Figure 24b). These two measures are widely supported by AF12 respondents (respectively 81% and 87%), especially when compare to EU20 rates (61% and 68%). There are no noticeable difference by gender and age.

A comparison of country results show that South African and Moroccan respondents are ones who support these policy measures the least, while Benin and Cameroon are the most supportive.

(a)



(b)

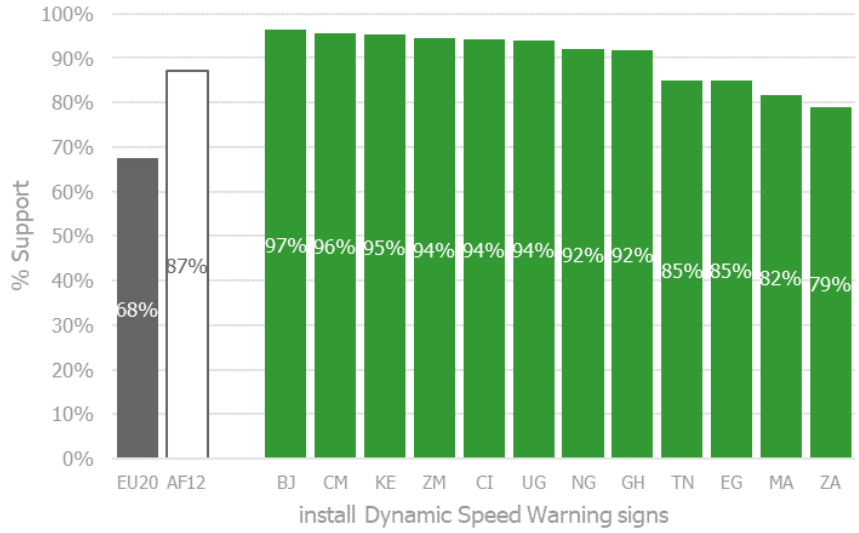


Figure 24. Level of support for legal measures concerning speed by car drivers for AF12 at the country level.

Notes: (1) Reference population all road users. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53 (4) % support: scores 4 and 5 on a 5-point scale from 1 'oppose' to 5 'support'.

Speeding

Overall, the self-reported prevalence of speeding of African car drivers is lower than in Europe. An opposite pattern is found for motorcyclists: African motorcyclists report more often than the European riders to have exceeded speed limits outside built-up areas. Generally, male car drivers tend to report more that they have exceeded the speed limits, regardless of the speed regime. Speeding is one of the major risks in road safety taking into account the exposure (Chapter 2).

Proper speed management (including upgrade of the infrastructure, setting appropriate speed limits and adequate enforcement) is required to reduce the number and severity of road crashes. It is encouraging to note that the support for speed reducing policy measures among African respondents is very high.

4 Driving under the influence of alcohol and drugs

The consumption of alcohol and/or drugs leads to increased reaction time, lower vigilance, poor judgement and can impair visual functions. Driving under the influence (DUI) of alcohol and/or drugs represents an important cause of road casualties. The WHO estimates that between 5% and 35% of all road deaths are alcohol related (WHO, 2018a, WHO, 2018b).

The ESRA2 data make it possible to study and compare different countries in order to better understand the magnitude of the problem of driving under the influence of alcohol or drugs, and to monitor the impact of prevention measures. For the convenience of the reader, a table is provided in Appendix 2 informing about the alcohol consumption per capita in the participating African countries.

This chapter on driving under the influence of alcohol describes the attitudes and opinions on DUI alcohol of road users in 12 African countries. It includes comparisons among the participating countries as well as descriptive results in relation to age and gender. The DUI aspects analysed in this chapter cover the self-reported DUI behaviour, the personal acceptability of DUI (individual norm) and, the acceptability by others (injunctive norm), attitudes and beliefs towards DUI, support for road safety policy measures and reported police checks and perceived likelihood of getting caught for DUI offences.

The introduction of this chapter is inspired by the ESRA2 thematic report on this topic: Achermann Stürmer, Meesmann & Berbatovci, 2019 (available on www.esranet.eu/publications)

4.1 Self-reported behaviour

Car drivers were asked four questions on self-reported impaired driving in the last 30 days (two about alcohol, one about drugs and one about medication). Motorcyclists were only asked about self-reported driving under the influence of alcohol above the legal limit in their country. The answers make it possible to evaluate the proportion of people reporting to drive under the influence of these substances. Respondents had to answer on a five-point scale ranging from 1 'never' to 5 '(almost) always'. For the purpose of the analysis, the value of 1 was coded as never, and values 2 to 5 were coded as 'at least once'.

Considering all the unsafe behaviours self-declared for driving under the influence by African respondents during the survey, a distinction was made between the car drivers and the motorcyclists. The results are presented in this chapter.

4.1.1 Car drivers

To estimate the declared prevalence of DUI among car drivers in Africa, the following questions were asked:

Q12_1b) Over the last 30 days, how often did you as a CAR DRIVER …

- 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

The frequency was estimated on a scale of 1 to 5, where 1 = never and 5 = (almost) always. The results presented here (Figure 25 and 26) refer to the dichotomisation of scores 2-5 ('at least once').

Results at African level

Overall, 15% of African car drivers reported to have exceeded the legal limit allowed for drinking and driving at least once over the last 30 days. Regarding drink driving the overall African rates are similar to those of European car drivers (Figure 25). Regarding DUI of drugs and medication, African car drivers more often report to have driven after taking medication or drugs (19% AF12 vs. 5% EU20; Figure 26).

Women are significantly less likely to report having driven under the influence of the different substances (Figure 25 & 26). In terms of age distribution, there is no significant difference between the 18-34 and 35-54 regarding the legal limit of drinking and driving, or medicated driving. However, the 55+ largely prevail on the other age categories (Figure 25 & 26).

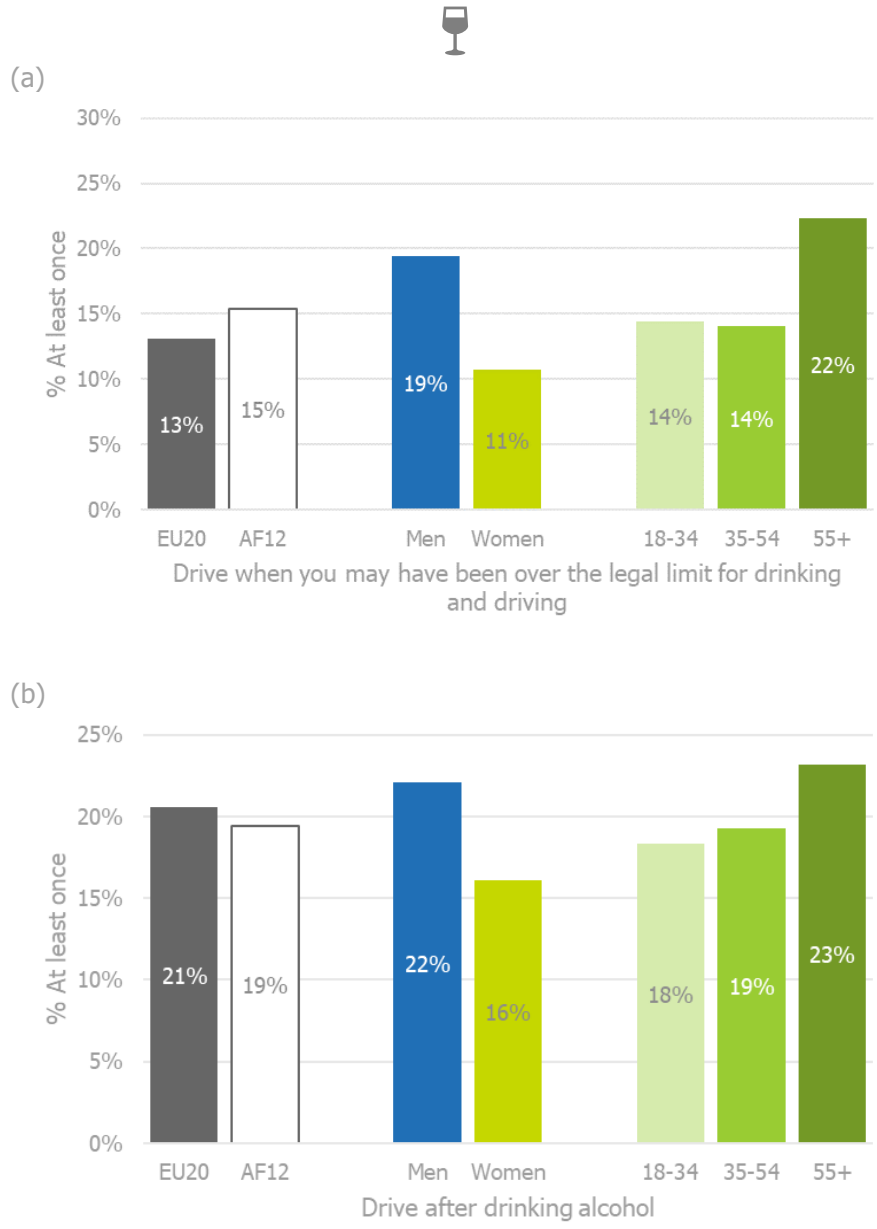


Figure 25. Self-reported unsafe behaviours concerning driving under the influence of alcohol for AF12 by gender and age groups.

Note: (1) Reference population car drivers, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

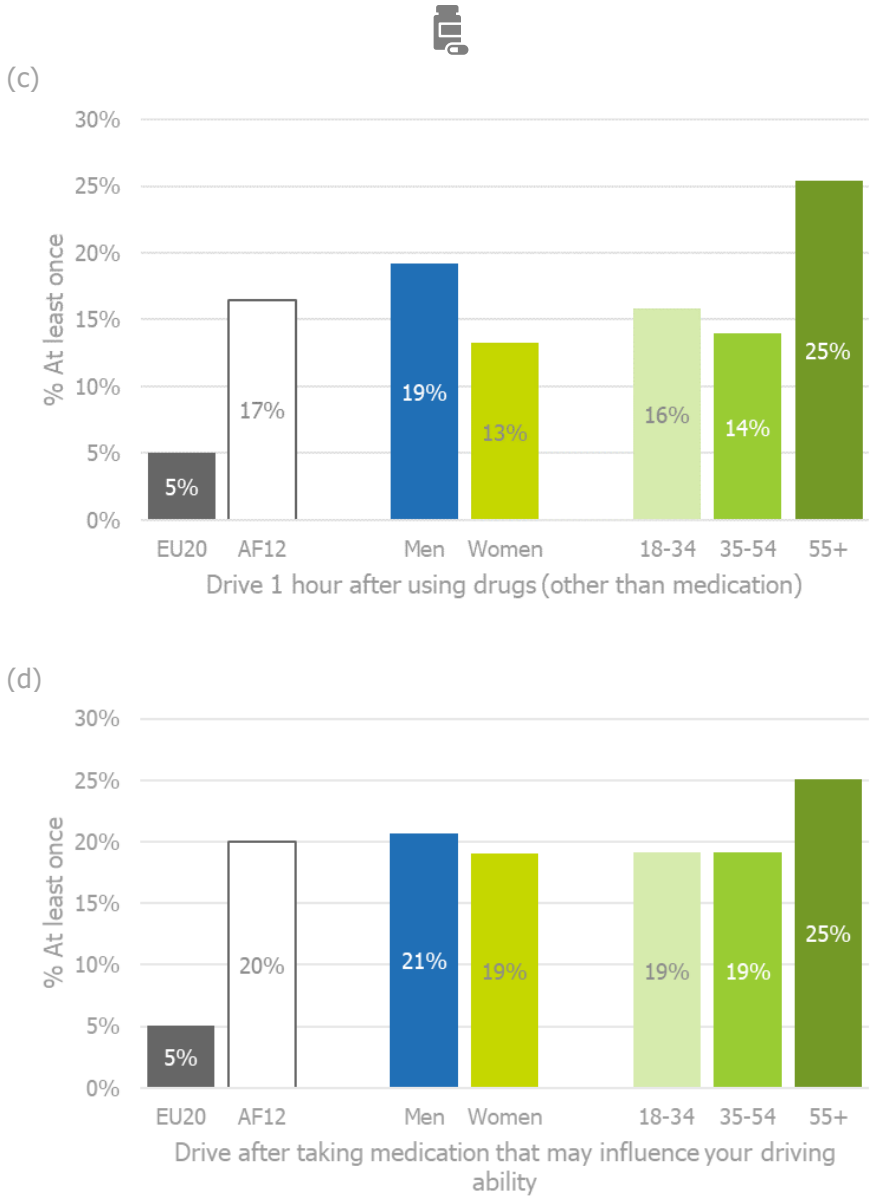


Figure 26. Self-reported unsafe behaviours concerning driving under the influence of drugs (c) and medication (d) for AF12 by gender and age groups.

Note: (1) Reference population car drivers, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

National results

Country comparisons show that overall, respondents in Benin report most often DUI. Also car drivers from Cameroon, South Africa and Ivory coast report more than average to have driven after drinking in the last 30 days (Figure 27a-b). On the other hand, Cameroon car drivers report lowest of all African countries on DUI of drugs, and the country is also one of the bottom three on medicated driving (Figure 27c-d).

Figure 27. Self-declared unsafe behaviours concerning driving under the influence of alcohol (a-b), drugs (c) and medication (d) for AF12 at the country level.

Notes: (1) Reference population car drivers, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53. (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

4.1.2 Self-reported DUI alcohol by motorcyclist/moped driver

To estimate the declared prevalence of DUI among motorcyclists in Africa, the following questions were asked:

Q12_3) Over the last 30 days, how often did you as A MOPED DRIVER OR MOTORCYCLIST drive when you may have been over the legal limit for drinking and driving

The frequency was measured on a scale of 1 to 5, where 1 = never and 5 = (almost) always. The results presented here (Figure 28) refer to the dichotomisation of scores 2-5 ('at least once').

As for the car drivers, the consumption of impairing substances while riding leads to increase reaction time, lower vigilance, poor judgement and can impair visual functions. Considering gender distribution, men are slightly more prone to report riding their motorcycle (19% vs 17%) under the influence of alcohol than women. Regarding age, significant differences can be observed between the 55+ (34%) and the youngest age categories. Indeed, the 55+ appears to be more likely to ride while being over the legal limit of alcohol consumption.

Figure 28b presents information on unsafe behaviours as a motorcyclist/moped driver for each country. For the motorcyclist/moped driver, Moroccan (23%) and Egyptian (22%) respondents are more likely to ride while being over the legal limit of alcohol consumption. The bottom three countries being: Zambia (7%), Ivory Coast (11%) and Kenya (12%).

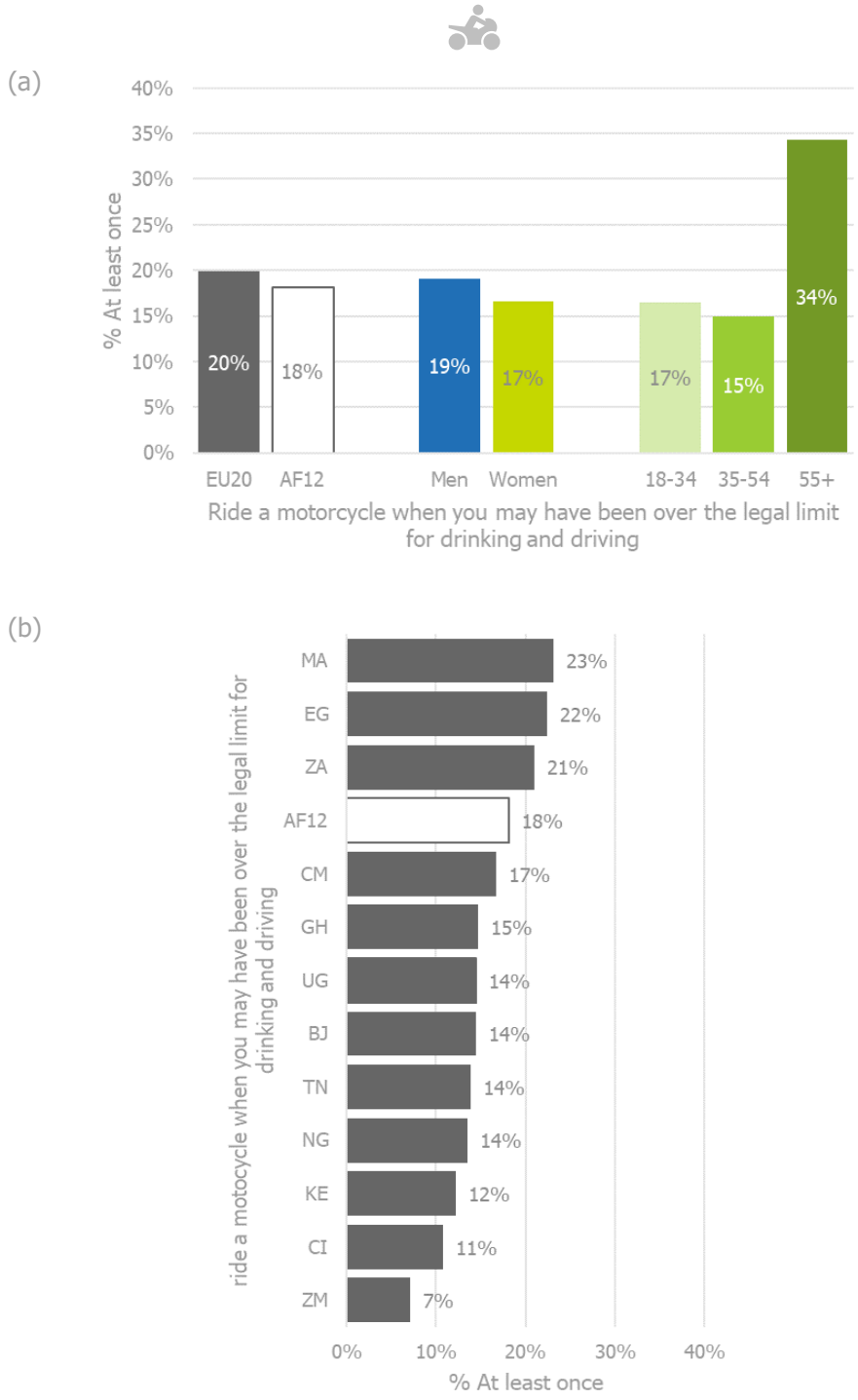


Figure 28. Self-declared (unsafe) behaviours of motorcyclists for AF12 (a) by gender and age groups and (b) at the country level.

Notes: (1) Reference population motorcyclists, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) Individual countries based on individual country weight. (4) Benin: N≤53 (5) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

4.2 Attitudes and norms

This section is dedicated to the attitudes and norms regarding DUI (cf.Theory of Planned Behaviour ; Ajzen, 1991). To better understand why road users DUI of alcohol, drugs or medication, the acceptability of this behaviour was assessed through the answers on questions on acceptance of speeding behaviour by the respondent and what he/she thought about the acceptance by others.

4.2.1 Individual norm

The following questions were asked to find out the level of acceptability of the behaviour 'driving under the influence' of different substances:

Q14_1) How acceptable do you, personally, feel it is for a CAR DRIVER to…

- 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

The answering scale for the acceptability of speeding ranged from 1 (unacceptable) to 5 (acceptable). For the analyses, the answers were split into acceptable (4-5) and unacceptable/neutral (1-3). Since these questions refer to perceptions by road users, the answers of all respondents were analysed.

Results at African level

Figure 29 and 30 shows that the prevalence of personal acceptability regarding DUI is similar for each of the type of impairing substances (alcohol, drugs or medication). It can be observed that only about 5% of African respondents point out that they find it acceptable to drive under the influence of impairing substances. Those rates are comparable to those of European respondents (the small differences are not significant). No gender or age effects were observed regarding DUI of drugs, and medicated driving.

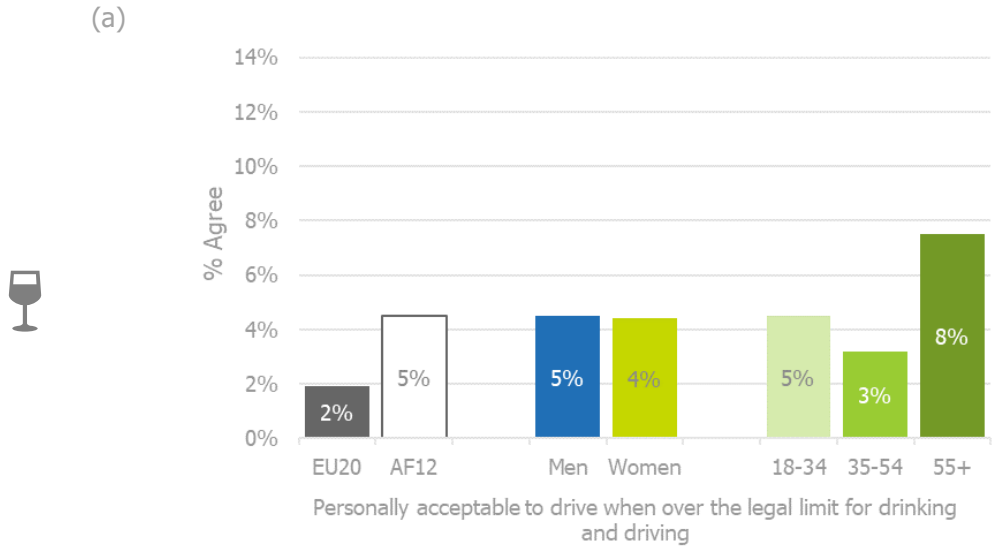


Figure 29. Personal acceptability of driving under the influence of alcohol, by gender and age groups for AF12 (% acceptability; scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable')

Notes: (1) Reference population: all road users. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

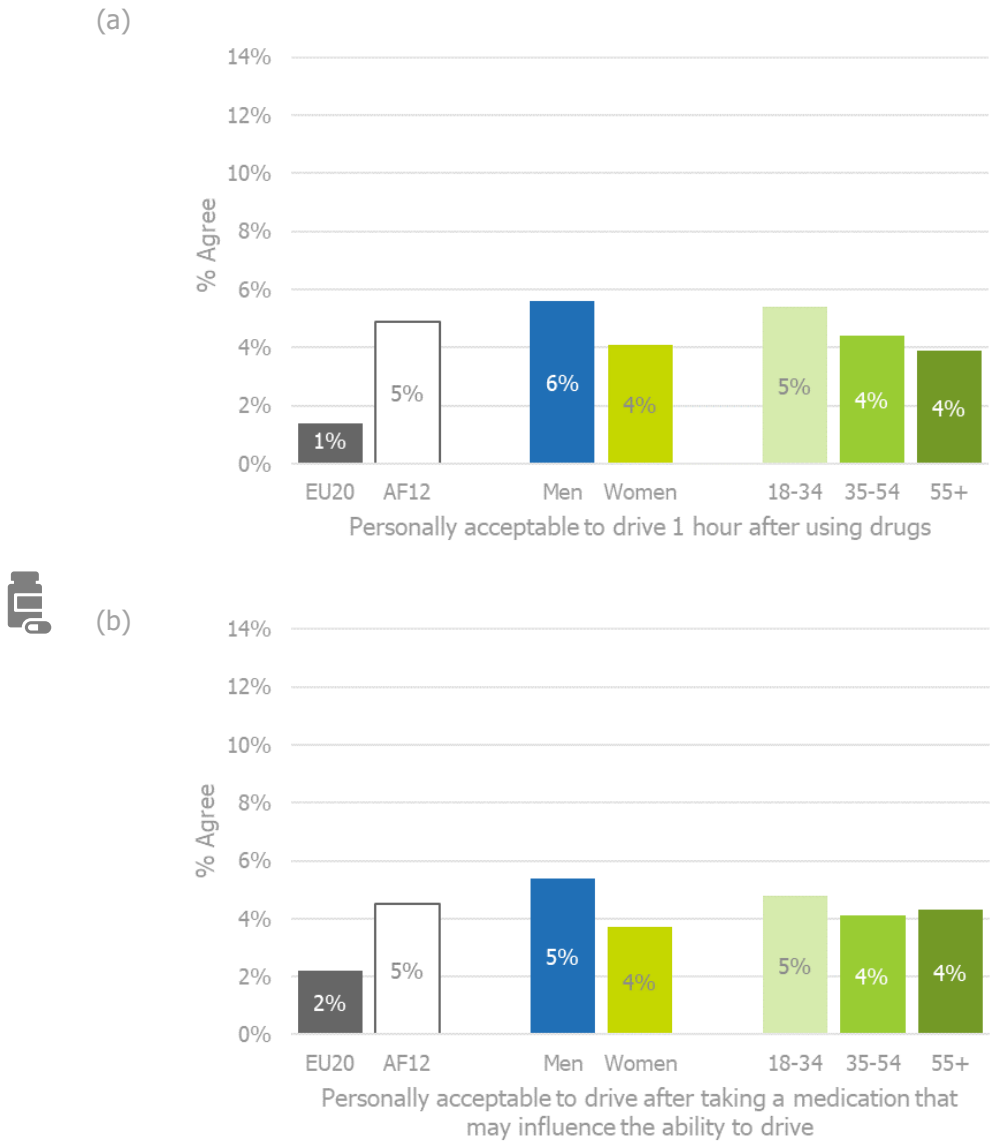


Figure 30. Personal acceptability of driving under the influence of drugs and medication, by gender and age groups for AF12 (% acceptability; scores 4 and 5 on a 5-point scale from 1 'unacceptable' to 5 'acceptable').

Notes: (1) Reference population: all road users. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

National results

Country comparison (Figure 31) shows that overall the acceptability of DUI is low in all countries (largest differences observed for drug driving ranging between 1-9%; Figure 31b).

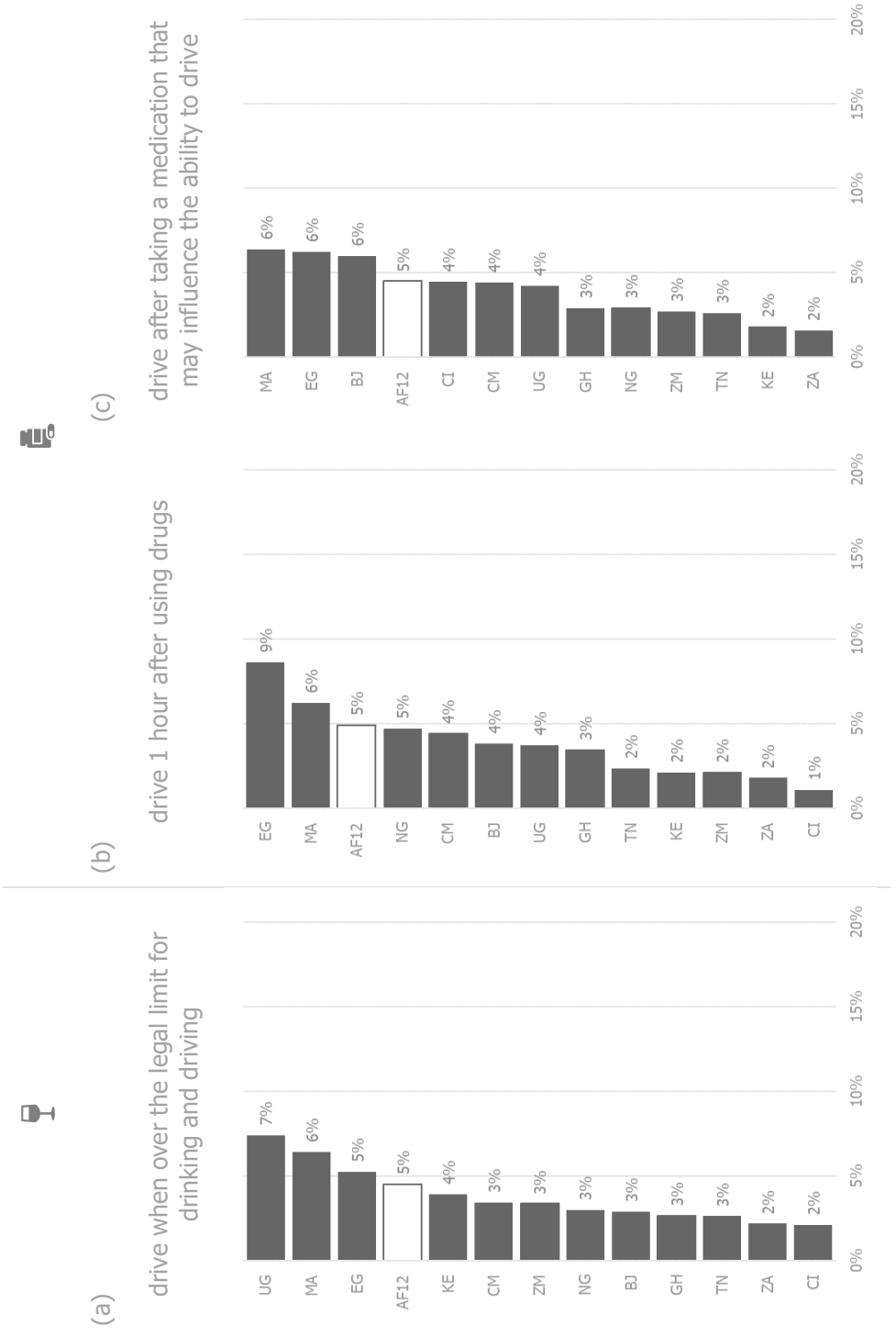


Figure 31. Personal acceptability of impaired driving per type of impairing substances for AF12, at the country level (% at least once).

Notes: (1) Reference population: all road users. (2) AF12 mean is based on African group weight ESRA2. (3) Individual countries based on individual country weight; AF12 average, based on regional weight. (4) Benin: N≤272

4.2.2 Injunctive norm and perceived descriptive norm

The following question was asked to find out the level of acceptability of 'driving under the influence' (injunctive norm):

Q13_1) Where you live, how acceptable would most other people say it is for a car driver to….?

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

The answering scale ranged from 1 (unacceptable) to 5 (acceptable). For the analyses, the answers were split into acceptable (4-5) and unacceptable/neutral (1-3).

The perceived descriptive norm describes the perception of how other people would normally behave in a certain situation. The following question was asked to capture this norm:

Q15) To what extent do you agree with each of the following statements?

- Most of my friends would drive after having drunk alcohol.

The answering scale ranged from 1 (disagree) to 5 (agree) and were split into agree (4-5) and disagree/neutral (1-3) for analyzing. Since these questions refer to perceptions by road users, the answers of all respondents were analysed.

Results at African level

The results presented in Figure 32 show that 13% of AF12 respondents reported that their friends would drive after drinking alcohol (while in Europe the average is 7%). A similar pattern can be observed regarding the perceived acceptability of DUI alcohol and drugs: these behaviours are perceived by AF12 respondents as more acceptable than by the European respondents. No significant gender effects were present in the data. The age distribution shows that older respondents perceive a higher acceptability of drinking and driving than younger respondents (Figure 32a).

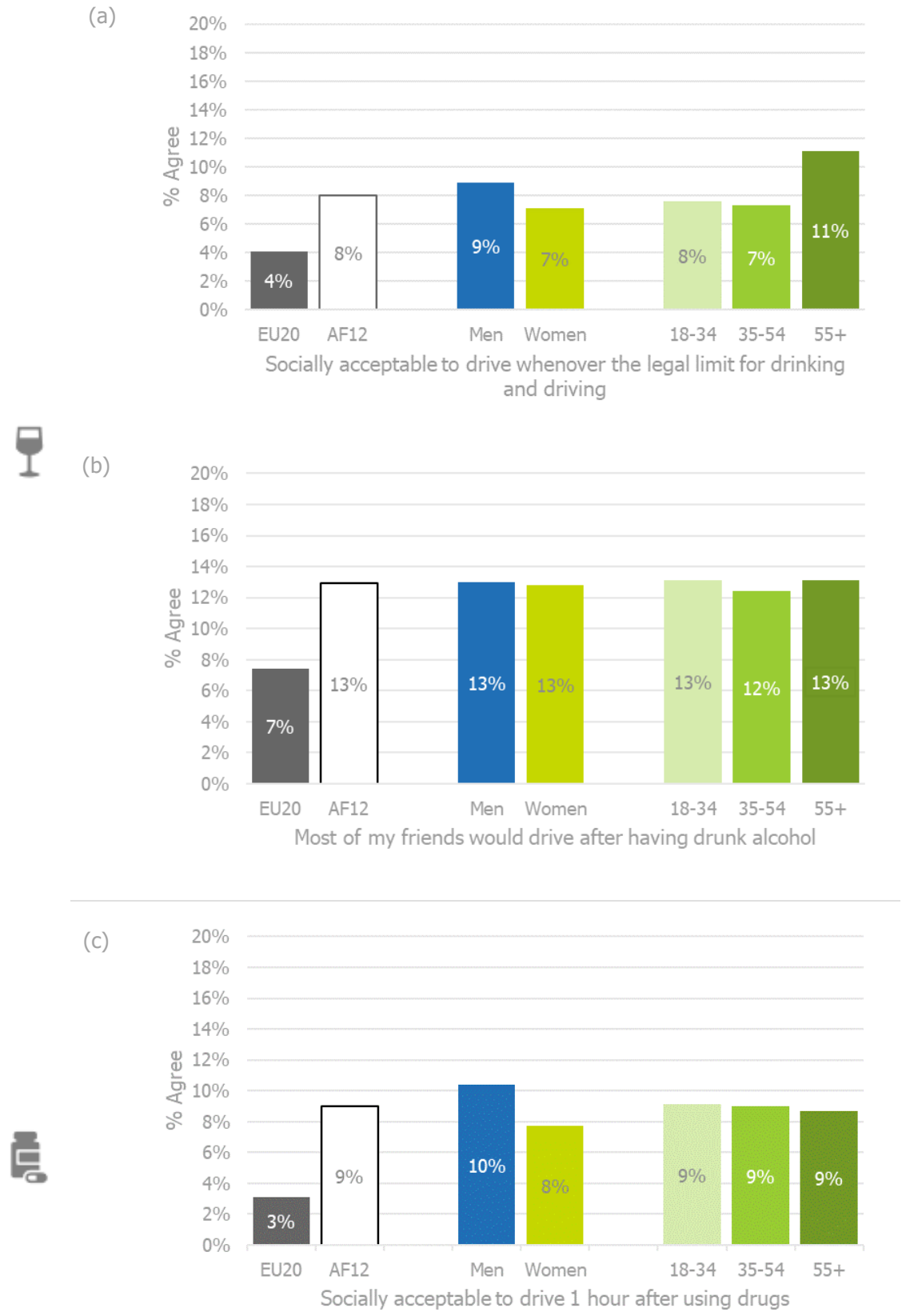


Figure 32. Social acceptability of impaired driving per type of impairing substances for AF12 per gender and age groups.

Note: (1) Reference population all respondents. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

National Results

Results at the country level are presented in Figure 33. The most noteworthy elements are (1) that in Cameroon drinking and driving is reported to be more socially accepted than in other African countries (17%), and (2) the delta between rates on the perceived descriptive norm ('Most of my friends would drive after drinking alcohol') for which the variation between the top three (Zambia, 32%, Kenya 26%, and South Africa 25%) and the bottom three (Morocco 4%, Egypt 6% and Tunisia 8%) is noticeable.

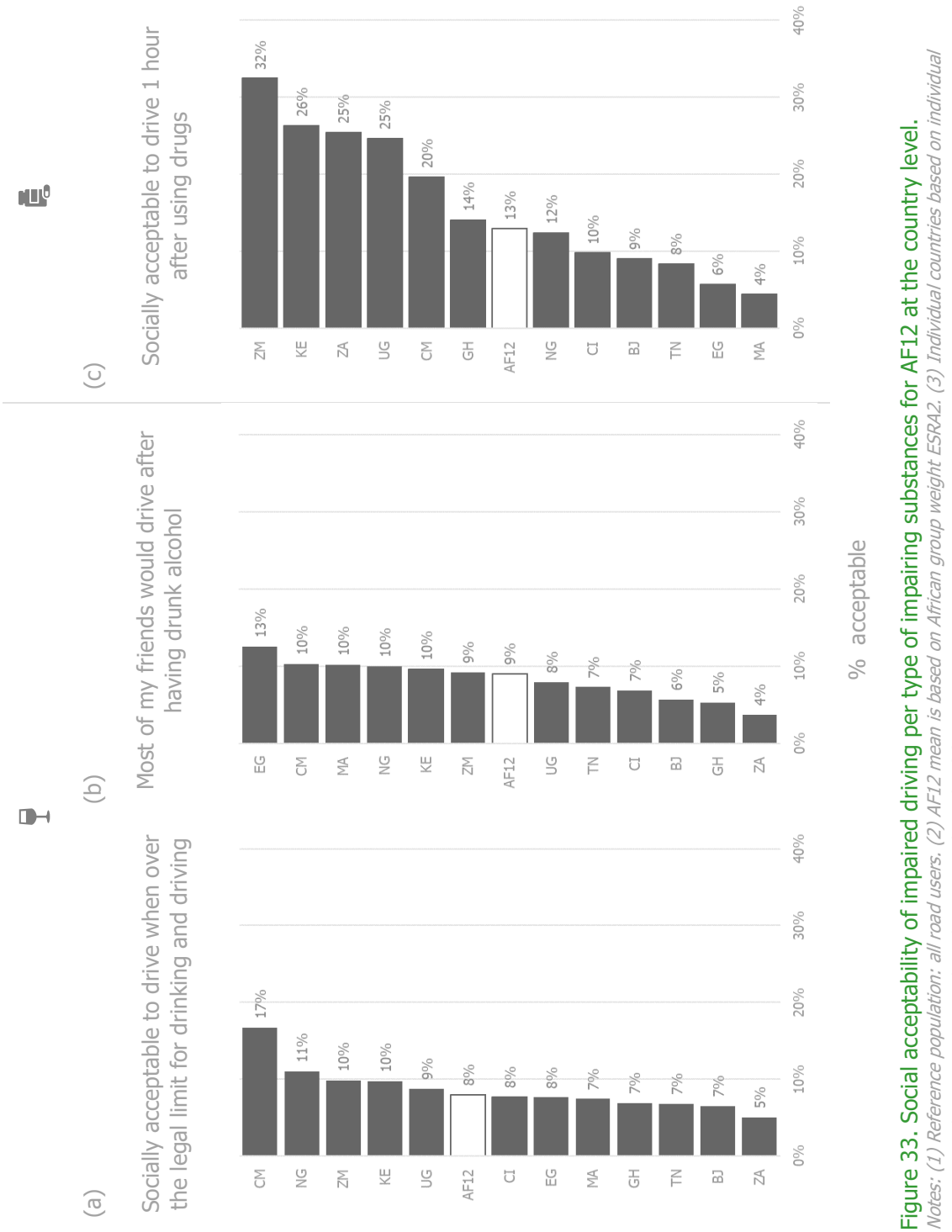


Figure 33. Social acceptability of impaired driving per type of impairing substances for AF12 at the country level.
Notes: (1) Reference population: all road users. (2) AF12 mean is based on African group weight ESRA2. (3) Individual countries based on individual country weight; AF12 average, based on regional weight. (4) Benin: N≤53

4.2.3 Attitudes towards drink driving

The attitude of all road users in the sample was analysed to investigate the cognitive aspects of drink driving behaviour. Therefore, two different psychological constructs related to drink driving are analysed and described.

- *Behaviour beliefs and attitudes*: What do road user think about drinking and driving? What is the reason for them drinking and driving?
- *Self-efficacy*: People's beliefs about their own capabilities to do a task or activity (Bandura, 1977)

The answering scale for these constructs ranged from 1 (disagree) to 5 (agree) and were split into agree (4-5) and disagree/neutral (1-3) for analysing.

Behaviour beliefs and attitudes

Figure 34a shows that 7% of the respondents agreed with 'one can risk driving under the influence of alcohol for short trips'. This statement is supported by only 3% of the European respondents. No significant gender or age effects were observed.

Country comparison (Figure 34b) indicates only very small differences (not significant) in terms of attitudes towards drink driving.

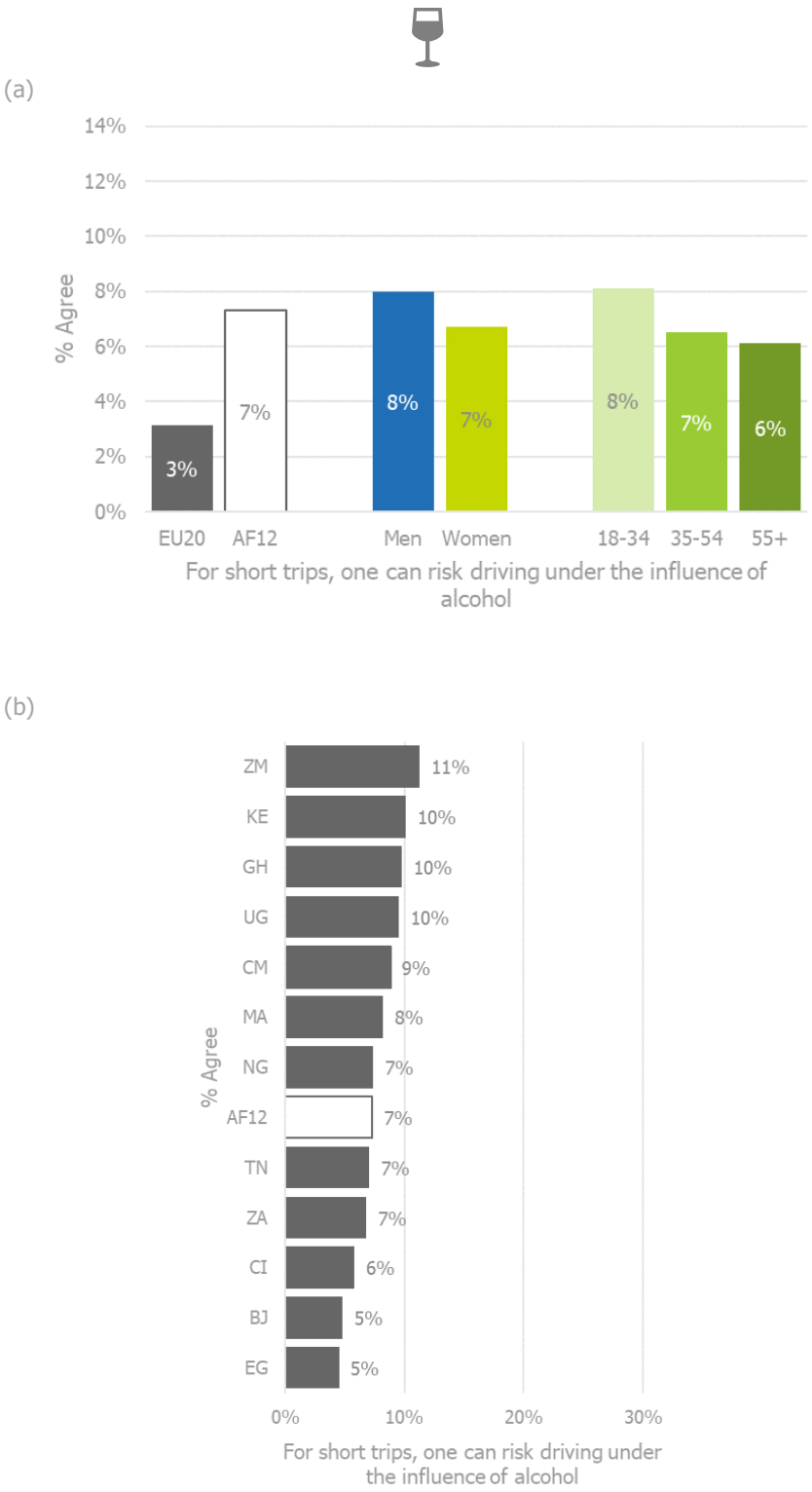


Figure 34. Behaviour belief on impaired driving by car drivers for AF12 (a) by gender and age and (b) at the country level.

Note: (1) Reference population car drivers, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) Individual countries based on individual country weight; AF12 average, based on regional weight. (4) Benin: N≤53

Perceived behavioural control

11% of respondents in Africa12 report to have trust in themselves when driving after a glass of alcohol (Figure 35a). This is very comparable to respondents in Europe20 (13%) do. Men (13%) prevail on women (9%) concerning this statement. However, no age effects were observed.

Concerning the ability to drive after a little bit of alcohol or a large amount of it (Figure 35b-c), only 7% and 4% of the African respondents report to find themselves capable. There is no difference in terms of age but men prevail on women.

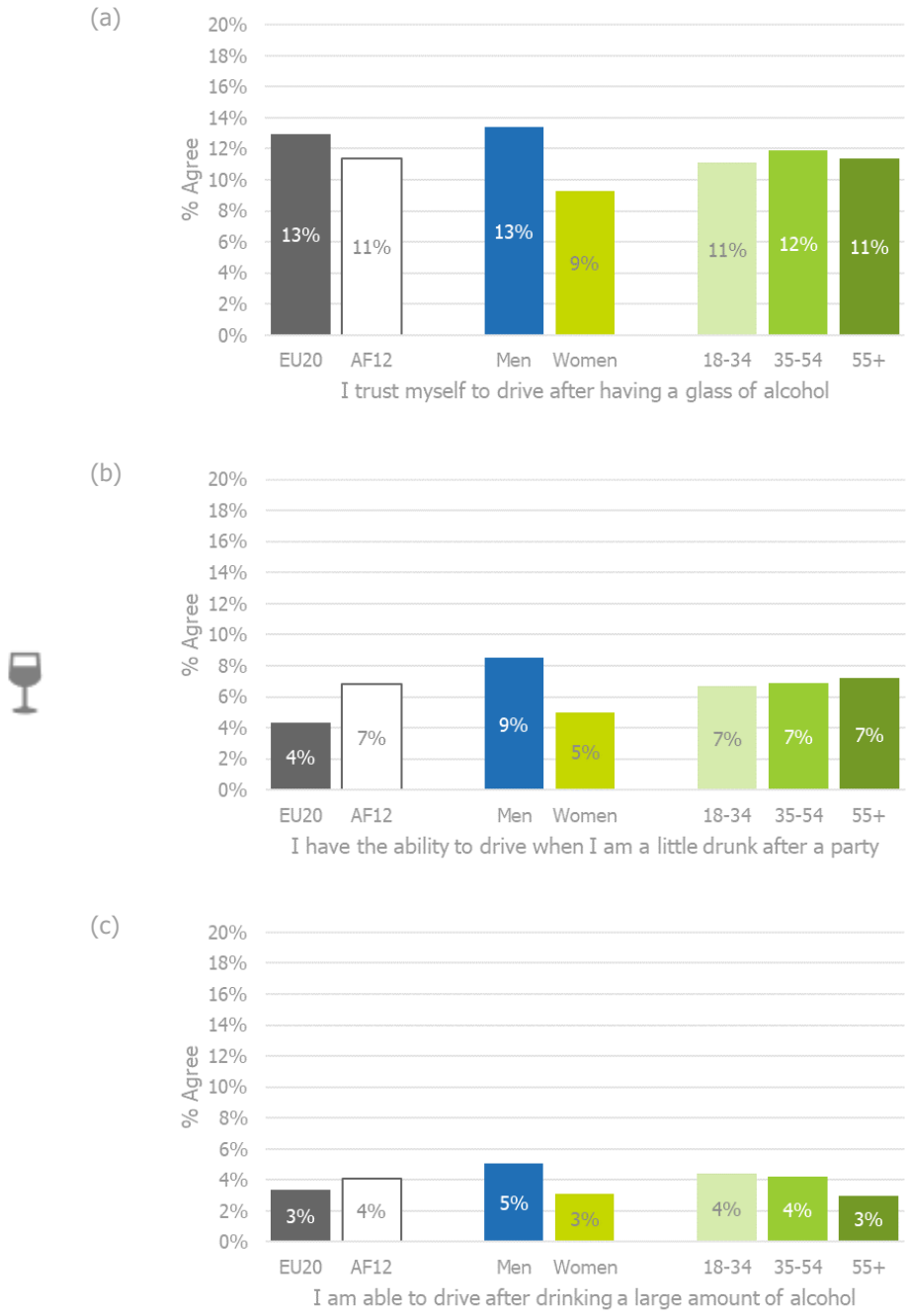


Figure 35. Perceived behavioural control in relation to drink-driving for AF12 (a-c) per gender and age groups.

Note: (1) Reference population car drivers, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) Individual countries based on individual country weight; AF12 average, based on regional weight.

National Results

Figure 36 presents the results on perceived behavioural control at the country level.

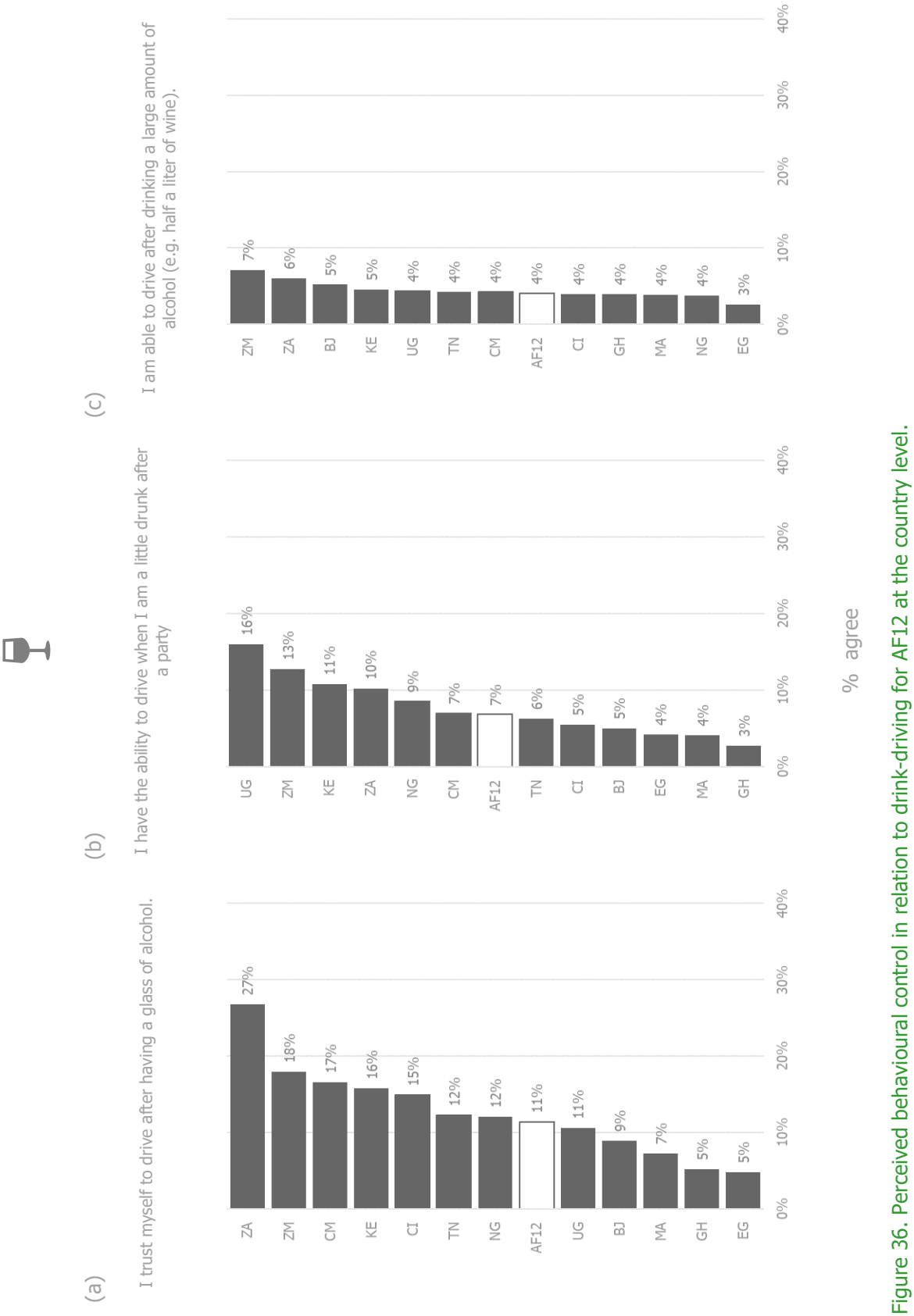


Figure 36. Perceived behavioural control in relation to drink-driving for AF12 at the country level.

Note: (1) Reference population car drivers, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) Individual countries based on individual country weight; AF12 average, based on regional weight. (4) Benin: N≤53

No significant country differences were observed regarding the perceived driving ability after a large amount of alcohol (range 3-7%). However, on the question on the ability to drive after being a little bit drunk, 16% of respondents in Uganda and 13% of respondents in Zambia responded affirmative. Largest country-differences were observed regarding car drivers trusting themselves behind the wheel after a glass of alcohol. Only 5% of respondents in Egypt and Ghana have trust in themselves, while 27% of South African drivers have.

4.3 Enforcement and policy measures

4.3.1 Enforcement

To keep drivers from DUI, police checks on a regular basis are essential. Therefore, the subjective risk of being checked for drink driving and drug-driving was assessed by rating the perceived likelihood of being checked by the police on a 7-points scale (1= very unlikely to 7 = very likely). The scale was divided into 'likely' (5-7) and 'unlikely/neutral' (1-4).

Q20_1) On a typical journey, how likely is it that you (as a CAR DRIVER) will be checked by the police for…

- alcohol, in other words, being subjected to a Breathalyzer test
- the use of illegal drugs

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)?
- the use of drugs (other than medication) while DRIVING A CAR?

Moreover, also the objective risk of being checked for drink driving and drug-driving was assessed by the times that one was being checked by the police in the past 12 months. The answers were recoded into a binary variable: 'none' (0) and 'at least once' (1+).

Overall, AF12 respondents indicate a higher chance of being checked for DUI alcohol and DUI drugs compared to European respondents (Figure 37a). African respondents were also more likely to have actually been checked for driving under the influence of drugs over the last 12 months (10% vs 4% in Europe; Figure 38b). There was however no difference in the percentage of African (18%) and European (17%) respondents having been checked for driving under the influence of alcohol over the last 12 months. There is no specific difference regarding the gender and age distribution.

In terms of perceived probability of being checked by the police, the situation is as follows: Kenyans (41%), Ugandans (38%) and Ghanaians (36%) perceive a high probability to be checked by the police for alcohol. Ghanaians (39%), Egyptians (29%) and Zambians (27%) feel the most at risk to be checked for driving under the influence of illegal drugs. In terms of effective checks; respondents from Kenya (40%) and Uganda (27%) with respondents from Cameroon (28%) were the most checked by the police. The respondents from Ghana were also actually the most effectively checked by the police (17%), together with the respondents from Kenya (17%) and Uganda (14%).

Figure 37. Perceived probability (a) and likelihood (b) of being checked for using alcohol while driving for AF12 at the country level.

Notes: (1) Reference population car drivers, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) % likely: scores 5 and 7 on a 7-point scale from 1 'very unlikely' to 7 'very likely'. (4) % of car drivers at least once in the last 12 months. (5) Benin: N≤53

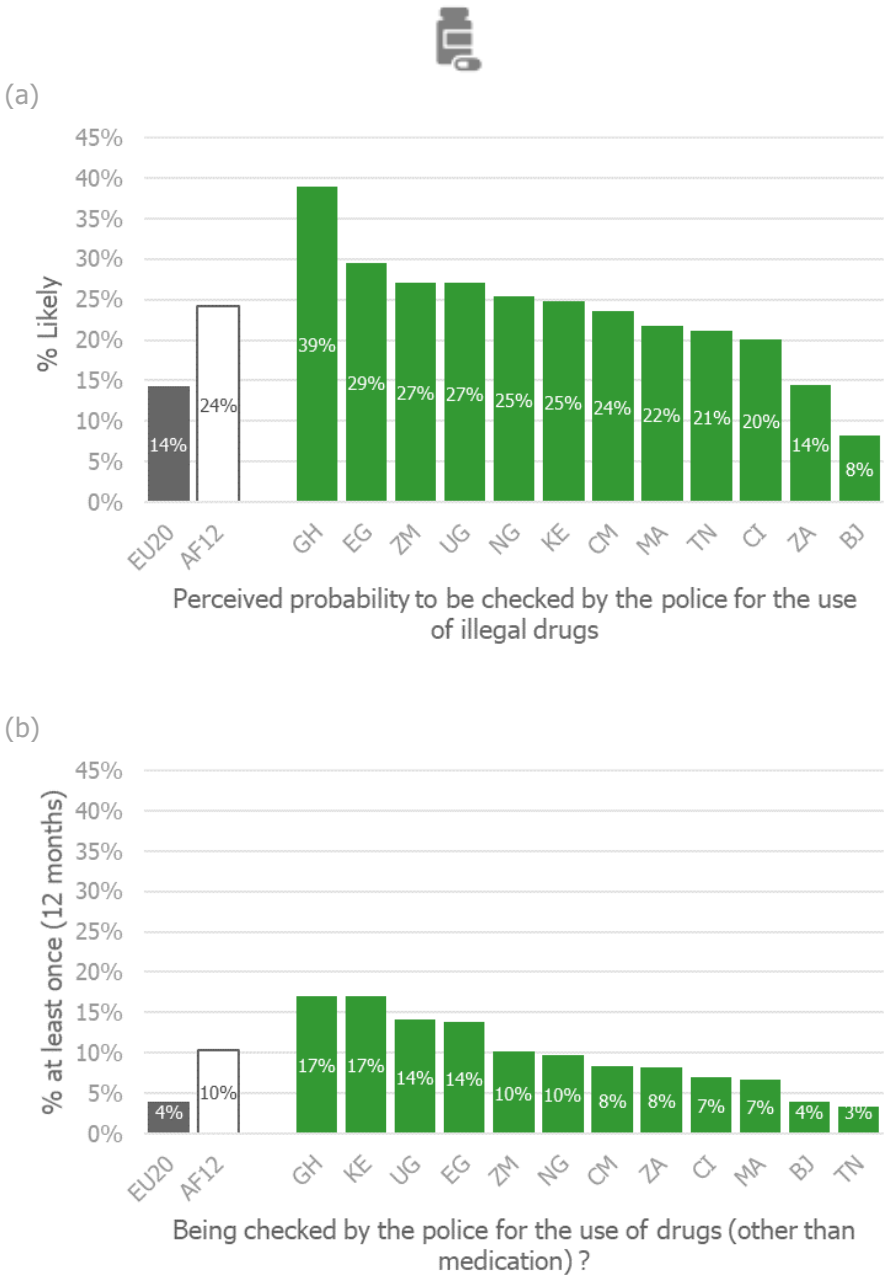


Figure 38. Perceived probability (a) and likelihood (b) of being checked for using drugs (other than medication) while driving for AF12 at the country level.

Notes: (1) Reference population car drivers, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) % likely: scores 5 and 7 on a 7-point scale from 1 ''very unlikely' to 7 ''very likely'. (4) % of car drivers at least once in the last 12 months. (5) Benin: N≤53

4.3.2 Support for policy measures

Policy measures are used to improve road safety. For driving under the influence of alcohol, three specific measures have been studied. The respondents were asked to indicate on a scale from 1 to 5, where 1 is "oppose" and 5 is "support" if "do you oppose or support a legal obligation to (…)":

Q18) Do you oppose or support a legal obligation to

- install an alcohol "interlock" for drivers who have been caught drunk driving on more than one occasion
- 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

For the analyses a binary variable was used with the two values: oppose/neutral (1-3) and support (4-5). Responses of all road users were analyzed.

Figure 39 illustrates the level of support for three possible policy measures on drink driving. In general, African respondents are more supportive of these measures than European respondents. Regarding national results, there were only slight variations between African countries and they all showed a prevalence of support of at least 74% for all three measures. Moroccan respondents are among the least supportive of such measures, but still the support is quite high. In details, Moroccan (80%) and Tunisian (86%) respondents are the least supportive of the interlock device – to be compared with Kenya with 94% and Uganda with 93%. Regarding the zero tolerance for alcohol for novice drivers, Moroccan (78%) with South African (79%) respondents are the least supportive. Concerning the zero tolerance for alcohol for all drivers, the rates are a bit lower and the least supportive countries are Cameroon (74%) and South Africa (75%) while the highest support is found in Nigeria and in Benin with both 91%.

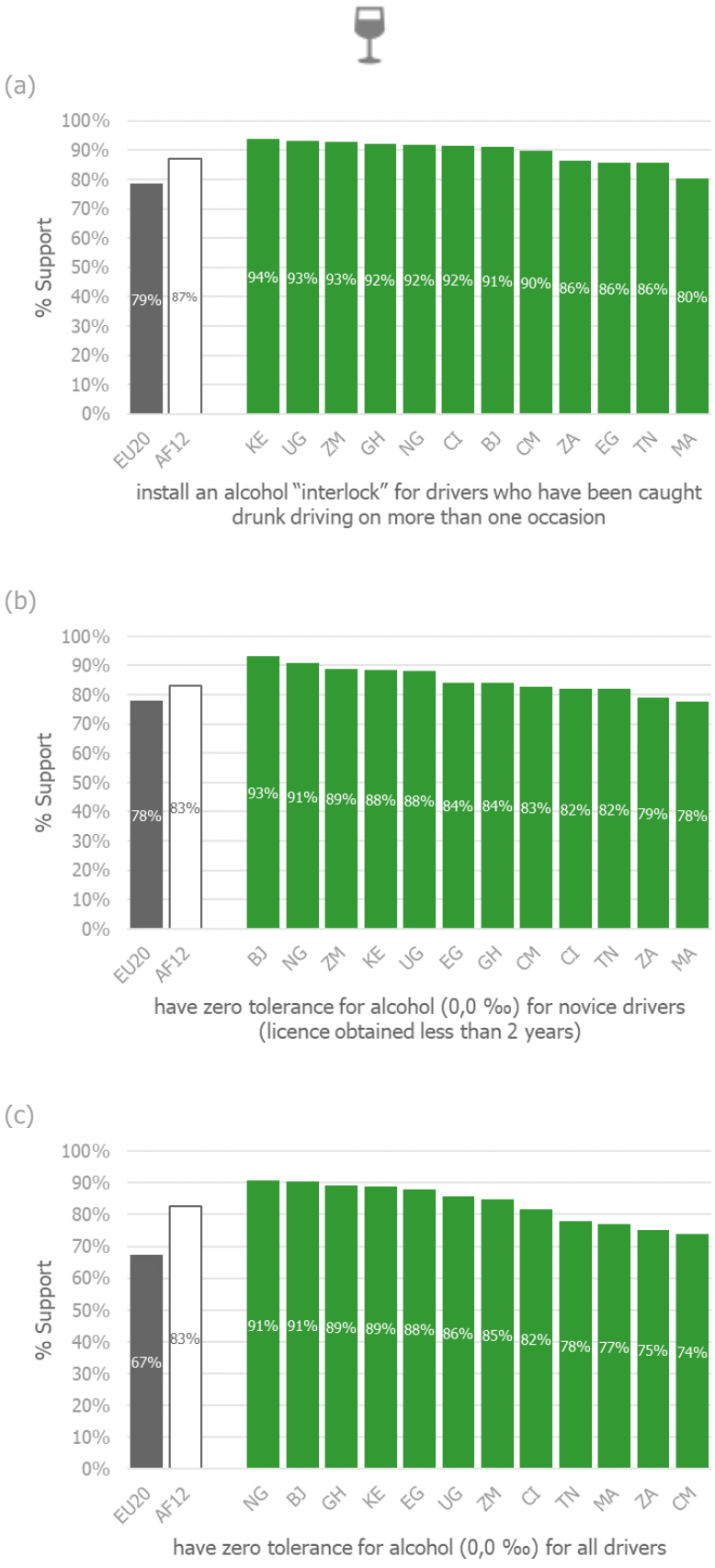


Figure 39. Level of support for legal measures concerning impaired driving for AF12 at the country level.
Notes: (1) Reference population all road users. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53 (4) % support: scores 4 and 5 on a 5-point scale from 1 'oppose' to 5 'support'.

Impaired driving – Driving under the influence (DUI) of alcohol and drugs.

Driving under the influence (DUI) of alcohol and/or drugs represents an important cause of road casualties. Figures on drink driving in Africa are similar to those in Europe. Moreover, men more often than women report drinking and driving. The results also show that that twice as many African respondents reported that their friends would drive after drinking alcohol compared to European respondents.

The consumption of alcohol and/or drugs leads to increased reaction time, lower vigilance, poor judgement and can impair visual functions. Still 11% of African respondents report to trust themselves when driving after drinking alcohol. Again, men prevail on women on this statement. These results are consistent with research that has shown that men are more likely to have a 'superiority to average' bias than women and tend to believe more that their driving skills are better than those of most other drivers (Harré, Foster, & O'neill, 2005; Harré & Sibley, 2007; Sibley & Harré, 2009).

5 Use of protective equipment

Protective equipment is a subject of passive safety. The more (passive) safety mechanisms are applied, the more the occupant is protected in case of impact. Examples of protective equipment are the seatbelt, the airbag, the headrest in cars, or the helmet for motorcyclists. The effectiveness in preventing and reducing fatal or serious injuries of each of these safety systems has been scientifically demonstrated. For example, estimations of the European transport safety council (ETSC) show that across the EU, 8 600 car occupants survived serious collisions in 2012 because they wore a seatbelt (ETSC, 2014). Moreover, the risk of a fatal accident drops by 40% for adult passengers in front of the vehicle, by 30 to 45% for adult passengers in the back and by about 40 to 50% for children seated in an appropriate child restraint system (CRS) (Glassbrenner & Starnes, 2009; SWOV, 2012). However, the effectiveness of these passive safety systems decreases, or even completely fades, in case of incorrect use.

Different regulations apply for the obligation to wear a seatbelt or use a child restraint system (CRS) worldwide. For instance, in the EU, wearing a seatbelt became mandatory for all car occupants in 1991 (Directive 91/ 671/EEC). However, the date of initiation of this law varies from one European country to another. In the African region, on the other hand, regulation is not so strict. For instance, Morocco and Egypt have a law requiring seatbelt use for front seats only. Moreover, this law is not applicable for all types of road in Morocco. (ITF, 2018). While in South-Africa, Kenia and Nigeria all occupants are required to use a seat belt, but only since 2014 for Nigeria (WHO, 2018).

This chapter on protective equipment will focus on seatbelt use by car occupants, the use of CRS, and helmet use by motorcyclists. It includes comparisons among the participating countries as well as descriptive results in relation to age and gender. The aspects of seatbelt use and helmet use analysed in this chapter cover the self-reported behaviour, the personal acceptability (individual norm) and, the acceptability of others (injunctive norm), attitudes and beliefs towards protective equipment, support for road safety policy measures.

This short introduction was inspired by the following sources: Tant & Schoeters (2019); Nakamura, Alhajyaseen, Kako, & Kakinuma (2020); Trotta et al. (2017) (available on www.esranet.eu/publications).

5.1 Seatbelt and Child Restraint System (CRS)

5.1.1 Self-reported behaviour

To estimate the declared prevalence of not wearing a seatbelt among car occupants in Africa, the following questions were asked:

Q12_1) Over the past 30 days, how often did you as a CAR DRIVER drive without wearing your seatbelt?

Q12_2) Over the past 30 days, how often did you as a CAR PASSENGER travel without wearing your seatbelt in the back seat?

Moreover, the declared prevalence of not using a CRS in Africa, was assessed using the following questions:

Q11) Over the last 30 days, have you transported a child (<18 years of age) in a car…

- transport children (<150cm) without using CRS?
- transport children (>150cm) without using their seatbelt?

The frequency was estimated on a scale of 1 to 5, where 1 = never and 5 = (almost) always. The results presented here (Figure 40 and 41) refer to the dichotomisation of scores 2-5 ('at least once'); they show the percentage of respondents who reported that they did not wear a seatbelt as a car occupant (or used a CRS) at least once in the last 30 days. For these questions, only respondents who reported having driven a car at least a few days a month were analysed. Regarding the CRS items, the reference population was car drivers who transported children (>18y).

Results at African level

Results show that the prevalence of not wearing a seatbelt as car occupant is much higher in Africa than in Europe. 45% of AF12 respondents (vs 17% for EU20) indicate not wearing their seatbelt while driving (Figure 40a) and 71% not wearing the seatbelt while sitting at the back seat (while it is only 37% for EU20; Figure 40b). Neither gender nor age effects were observed.

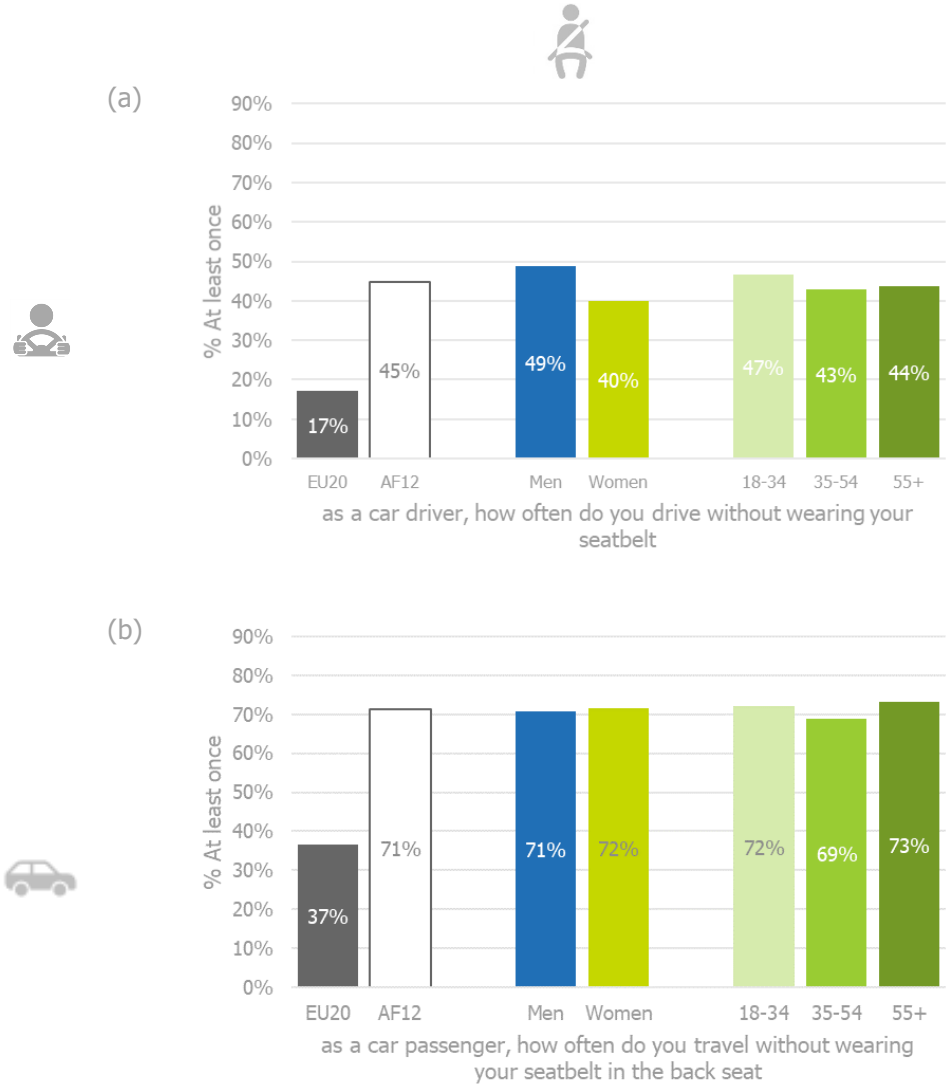


Figure 40. Self-reported unsafe behaviour of seatbelt use for (a) the car drivers and (b) car passengers for AF12 by gender and age groups.

Note: (1) Reference population (a) car drivers, at least a few days a month; (b) car passengers, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

In terms of properly securing children, the reported percentages for 'secure children (<150cm) without appropriate restraint' and 'secure children (>150cm) without seatbelt' are of 15% and 6%, respectively, in Europe. The prevalence for the participating African countries is much higher (Figure 41). The percentages are considerably higher with 47% for transporting children under and over 150 cm. It seems that respondents from Africa are less likely to use CRS than the overall Europe. Gender distribution shows that men are more likely to transport a child without the adequate CRS, particularly for children under 150cm. and it appears that the prevalence increases with age, at least while transporting children under 150 cm.

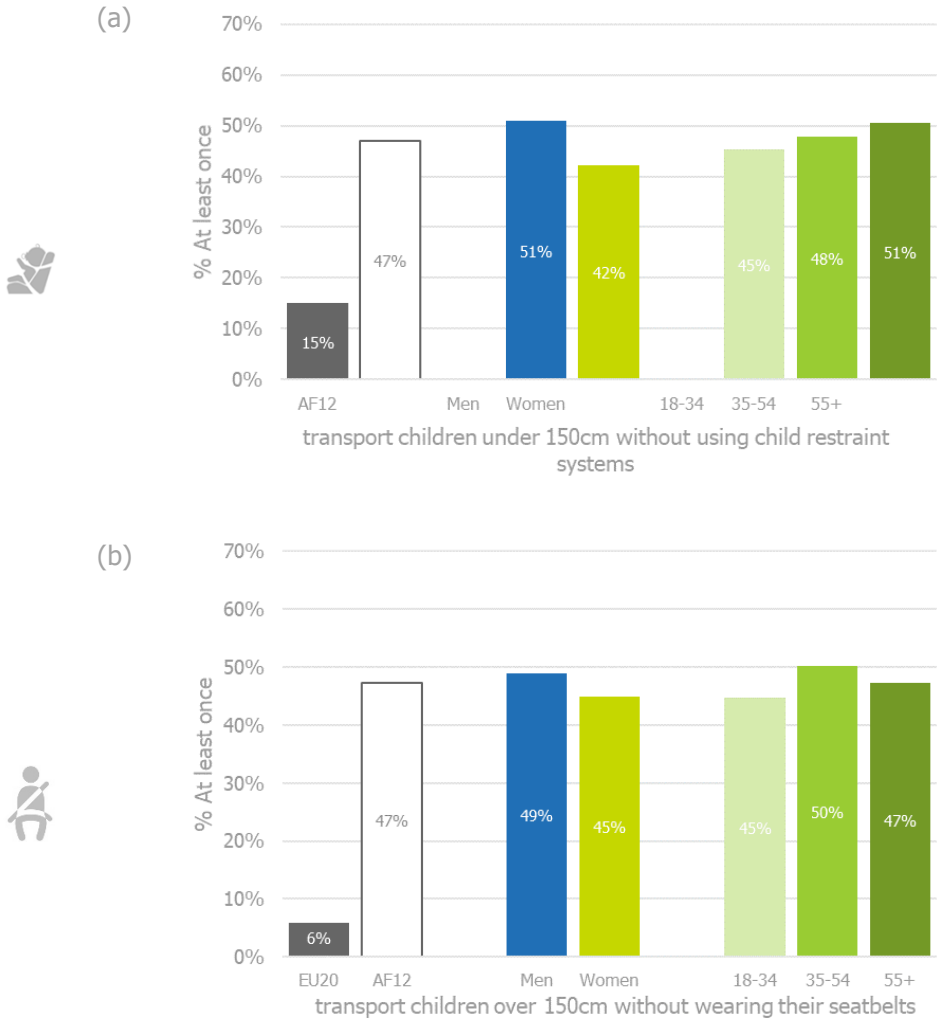


Figure 41. Self-declared unsafe behaviour concerning the use of a CRS or the seatbelt for children (c) under 150cm and (d) over 150cm for AF12 by gender and age groups.

Note: (1) Reference population car drivers, who have transported children (<18y) at least once in the last 30 days. The specification "under or above 150cm" was adapted according to the national regulations. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

National results

The self-reported use of seatbelts and CRS is presented in Figure 42 and 43. Results show that car drivers in Cameroon (61%), in Egypt (61%) and in Kenya (51%) reported most often to drive without using their seatbelt. Morocco (29%), Benin (36%) and South Africa (38%) have the lowest rates. Not using a seatbelt as a car passenger is reported most in Ivory Coast (87%), Cameroon (87%) and Uganda (79%). Morocco (59%) and South Africa (64%) have the lowest rates of not using the seatbelt in the back of the car.

With an average of 39% on 'transporting children under 150 cm without (…) systems' and an average of 36% on 'transport a child over 150 cm without wearing their seatbelts', South Africa (34% - 34%), Ghana (38% - 34%) and Zambia (44% - 41%) are the countries presenting the lowest rates.

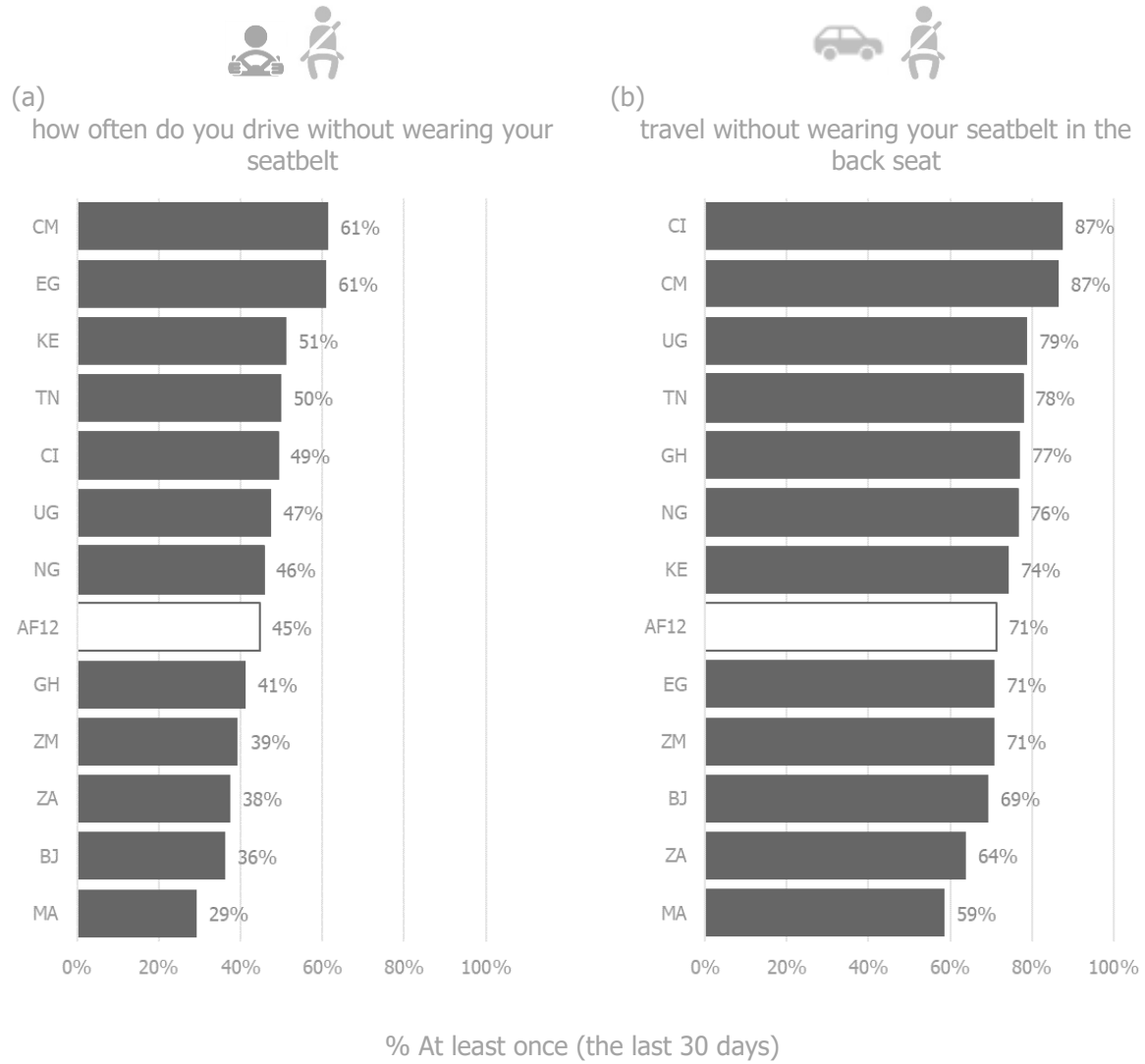


Figure 42. Self-declared unsafe behaviour of seatbelt use for (a) the car drivers, (b) car passenger for AF12 at the country level.

Notes: (1) Reference population (a) car drivers, at least a few days a month; (b) car passengers, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

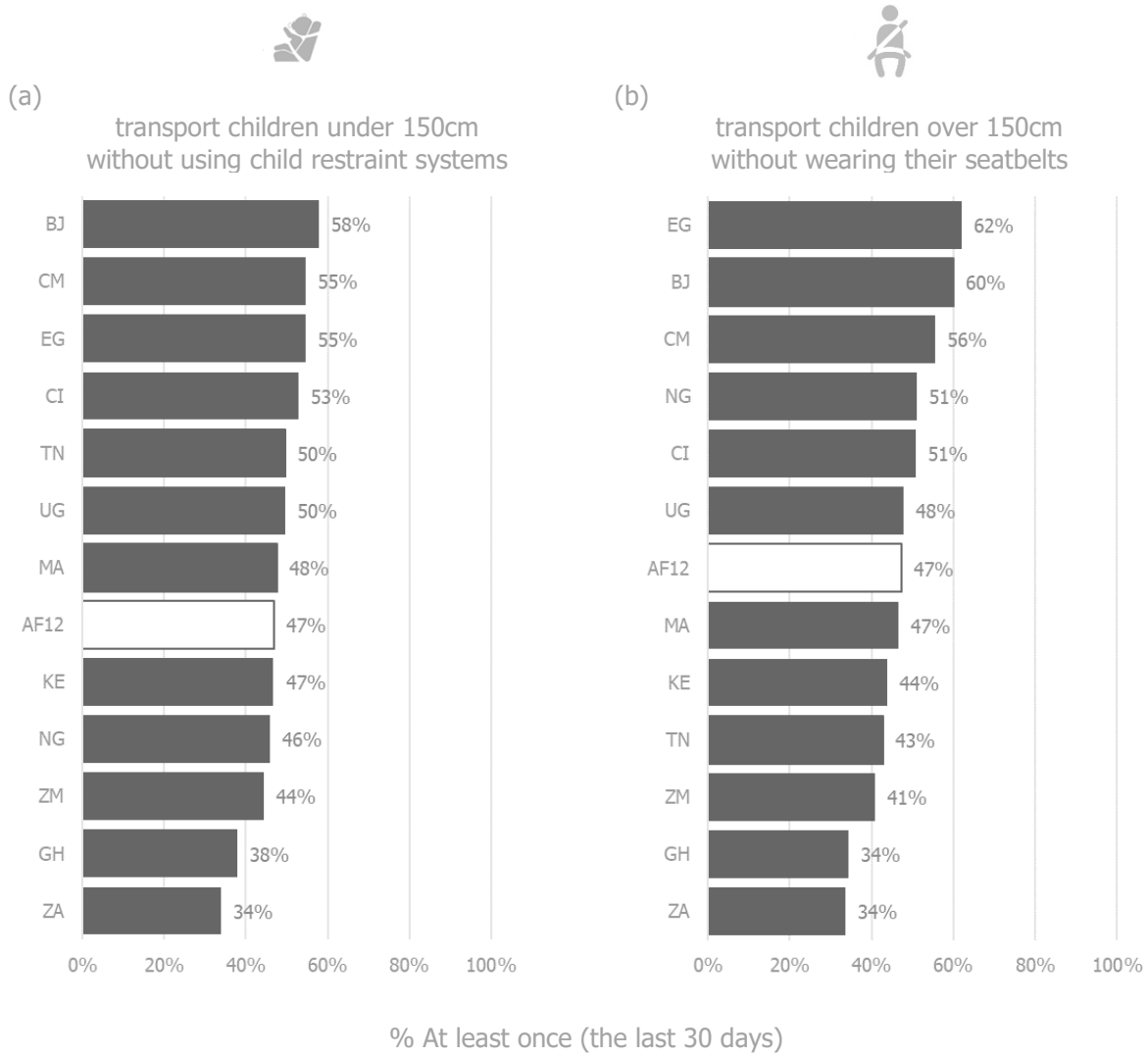


Figure 43. Self-declared unsafe behaviour of (a) the use of CRS for children under 150cm and (b) the use of the seatbelt for children above 150cm for AF12 at the country level.

Notes: (1) Reference population car drivers, who have transported children (<18y) at least once in the last 30 days. The specification "under or above 150cm" was adapted according to the national regulations. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

5.1.2 Attitudes and norms

This section is dedicated to the attitudes and norms regarding seatbelt and CRS use. According to theory of planned behaviour (Ajzen, 1991), wearing a seatbelt (or using a CRS) is, inter alia, influenced by attitudes and norms regarding the use of protective equipment.

To better understand why car occupants choose not to wear their seatbelt or use a CRS, the acceptability of these behaviours was assessed through different statements asking about how much the respondents accept not wearing a seatbelt and how much other people do. Moreover, the attitude (beliefs) regarding the use of CRS of all road users in the sample were assessed to study what road users think about transporting children without a CRS.

Individual norm

The following question was asked to find out the level of personal acceptability of the behaviour 'not wearing a seatbelt':

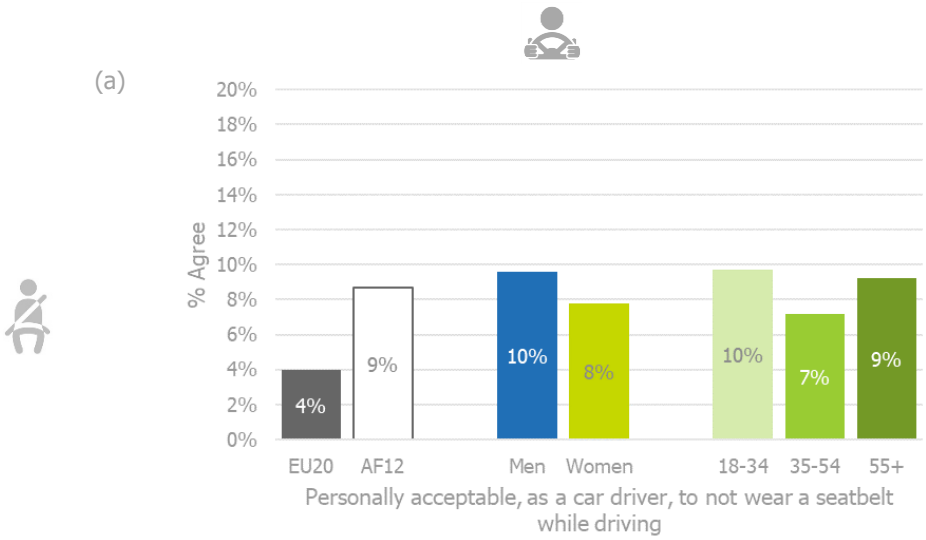
Q14_1) How acceptable do you, personally, feel it is for a CAR DRIVER...

- to not wear a seat belt while driving?
- to transport children in the car without securing them (child's car seat, seat belt, etc.)?

The answering scale for the acceptability of not wearing a seatbelt ranged from 1 (unacceptable) to 5 (acceptable). For the analyses, the answers were split into acceptable (4-5) and unacceptable/neutral (1-3). Since these questions refer to perceptions by road users, the answers of all respondents were analyzed. Results are presented in Figure 44 and 45.

As for EU20 (4%), the percentage in AF12 is quite low (9% only). There is no significant difference in terms of gender and age group. National comparisons show that Egyptian respondents (16%) and Cameroonian respondents (14%) found it more personally acceptable to drive without wearing the seatbelt. It is in Zambia (4%), Kenya (4%) and South Africa (4%) that this behaviour appears to be the least personally acceptable.

Concerning the transport of children without securing them, this attitude is less personally acceptable (6%) with the African respondents, but still a bit more than in Europe (1%). For this behaviour, it is the 18-34 year old who indicate to find this personally acceptable (7%). Regarding national differences, the prevalence between the top three countries and the bottom three is quite high. The top three is formed by Cameroon (10%), Egypt (10%) and Benin (8%). The bottom three is with Zambia (2%), South Africa (2%) and Ghana (3%).



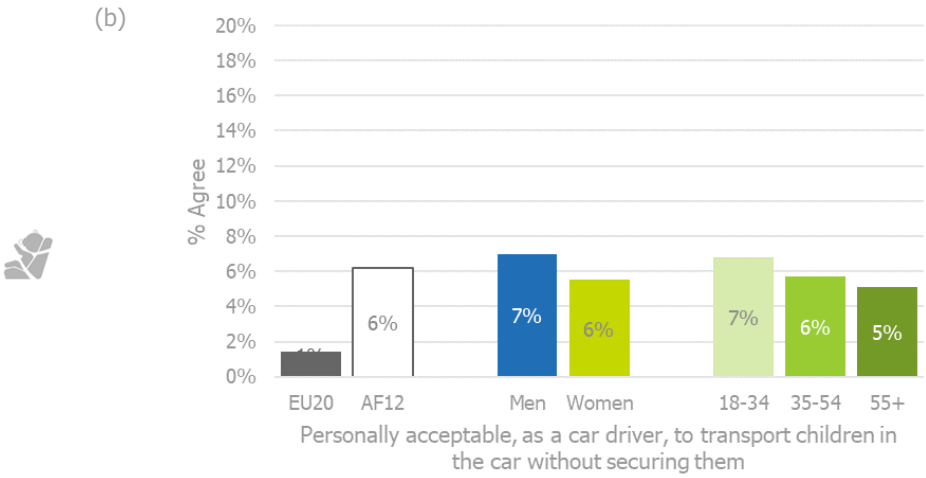


Figure 44. Personal acceptability towards not using the seatbelt as car occupant (a), and not using a CRS to transport children (b) for AF12 by gender and age groups.

Note: (1) Reference population: all respondents. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

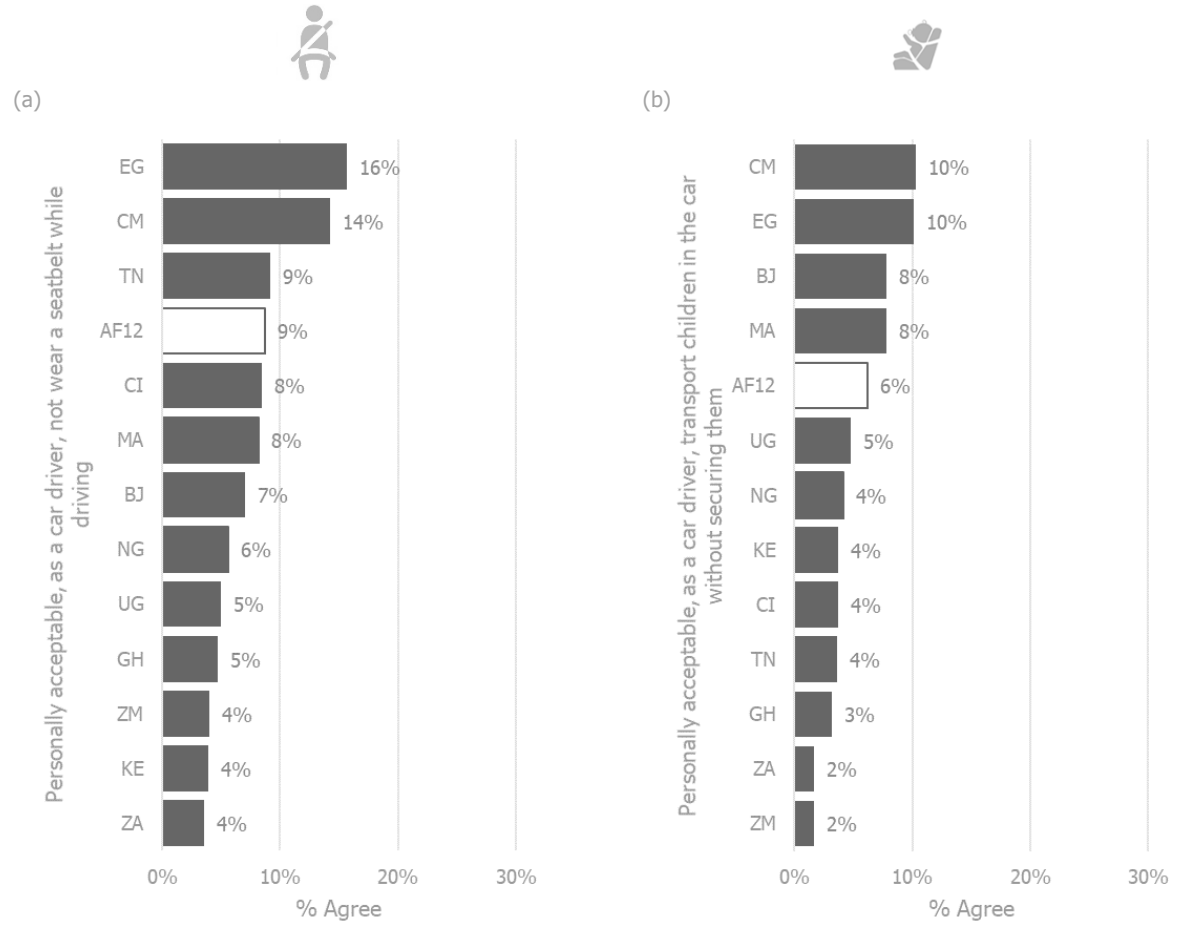


Figure 45. Personal acceptability towards not using the seatbelt as car occupant (a), and not using a CRS to transport children (b) for AF12 at the country level.

Note: (1) Reference population: all respondents. (2) AF12 mean is based on African group weight ESRA2; Individual countries based on individual country weight. (3) Benin: N≤53

Injunctive norm

The following question was asked to find out the level of perceived social acceptability of the behaviour 'not wearing a seatbelt':

Q13_1) Where you live, how acceptable would most other people say it is for a CAR DRIVER to not wear a seatbelt while driving?

The answering scale for the acceptability of not wearing a seatbelt ranged from 1 (unacceptable) to 5 (acceptable). For the analyses, the answers were split into acceptable (4-5) and unacceptable/neutral (1-3). Since these questions refer to perceptions by road users, the answers of all respondents were analyzed. Results are presented in Figure 46.

Overall, for the African countries participating to the survey, it appears quite socially acceptable for car drivers to not wear their seatbelt while driving. The percentage is up to 20% while in Europe it is 8%. There are no specific differences by gender and ages (Figure 46a).

It is in Cameroon (45%) that it is the most socially acceptable to not wear the seatbelt while driving (Figure 46b), followed by Ivory Coast (27%) and Egypt (25%) with much lower rates. South African respondents find it the least socially acceptable (as it was the case in terms of personal acceptability, see Figure 46b), with Morocco (14%) and Nigeria (14%).

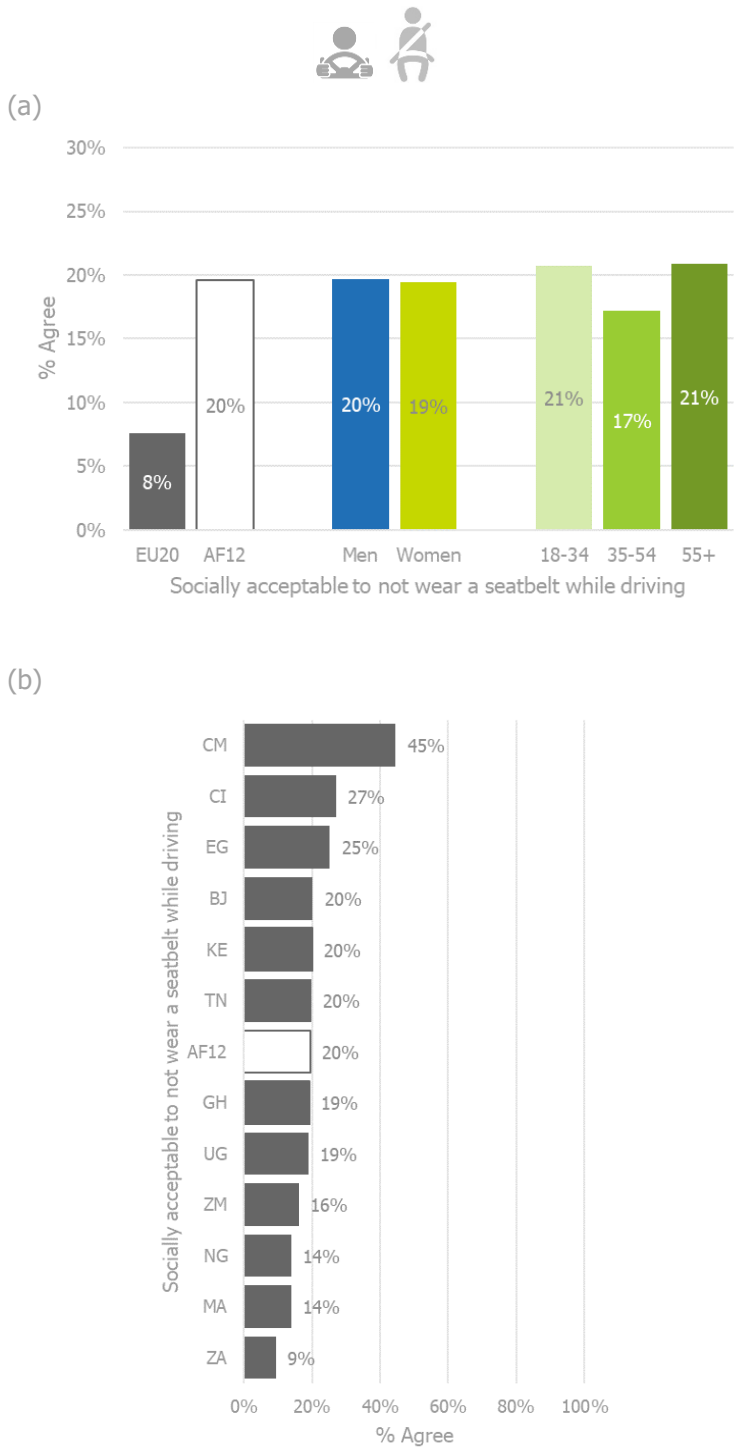


Figure 46. Perceived social acceptability towards not using the seatbelt as car driver for AF12 (a) by gender and age, and (b) at the country level.

Note: (1) Reference population: all respondents. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53

5.1.3 Attitudes towards the use of CRS

Attitudes were studies using the following item:

Q15) To what extent do you agree with each of the following statement: For short trips, it is not really necessary to use the appropriate child restraint?

The answering scale for these constructs ranged from 1 (disagree) to 5 (agree) and were split into agree (4-5) and disagree/neutral (1-3) for analysing. Results are presented in Figure 47.

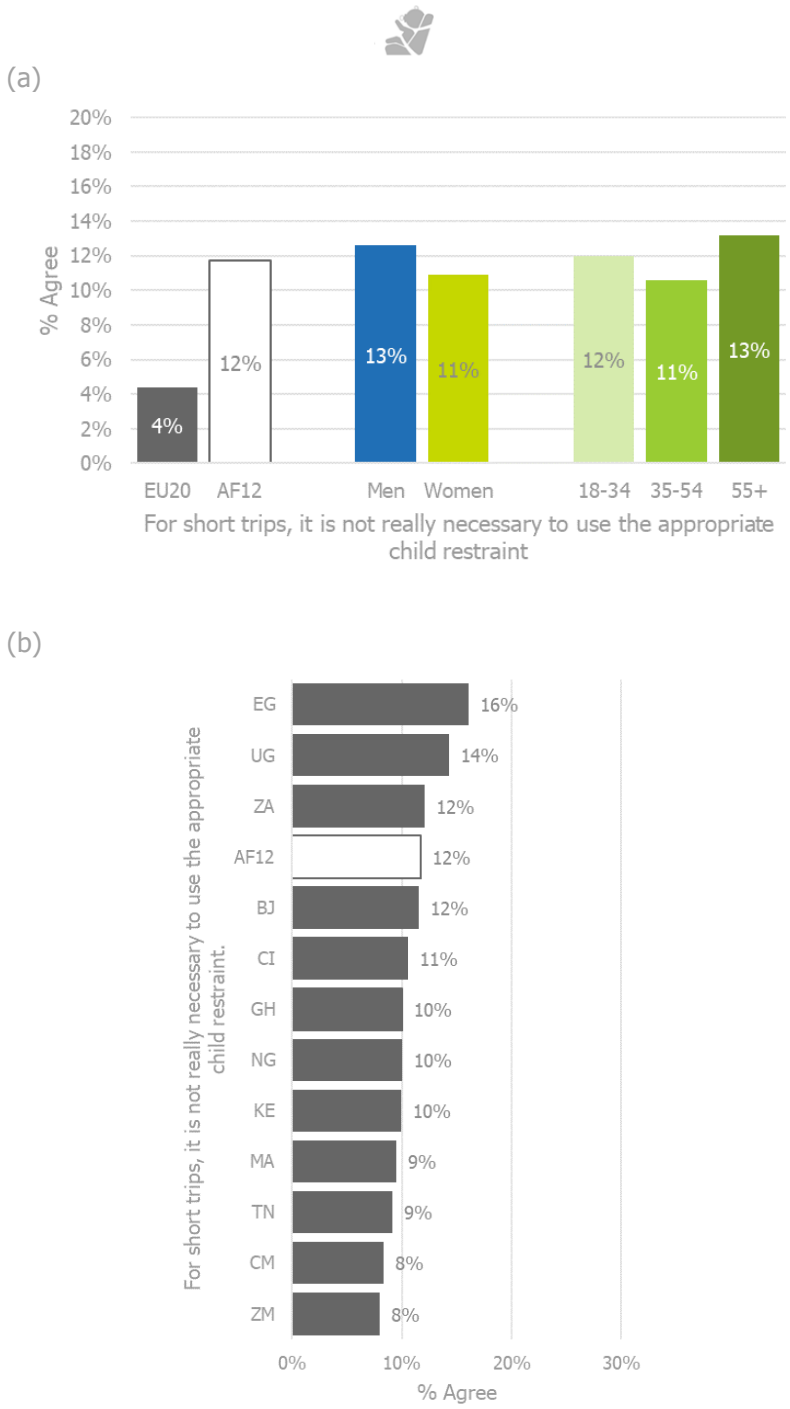


Figure 47. Personal acceptability towards the transport of children without securing and for short trips for AF12 (a) per gender and ages groups and (b) at the country level.

Note: (1) Reference population: all respondents. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53

12% of the respondents admitted that it is personally acceptable to not use an appropriate child restraint system (while it is 4% for EU20). The percentage goes to 13% for men (11% for women) and 13% for the 55+ and 12% for the 18-34.

For the short trips and the child restraint system, Zambia (8%) is again in the bottom three countries, with Cameroon (8%) and Tunisia (9%). The top three consists of Egypt (16%), Uganda (14%) and South Africa (12%).

5.1.4 Enforcement and policy measures

Enforcement

The subjective risk for a car driver of being checked for wearing the seatbelt was analysed on the basis of the perceived likelihood of being checked by the police for the use of the seatbelt on a 7-points scale (1= very unlikely to 7 = very likely). The scale was divided into 'likely' (5-7) and 'unlikely/neutral' (1-4).

Q20_1) On a typical journey, how likely is it that you (as a CAR DRIVER) will be checked by the police for wearing your seatbelt?

Results are shown in Figure 48. Overall it is obvious that police checks for seatbelt use are more reported in African countries than in Europe. National results show that Zambian car drivers indicated to be the most likely of being checked by the police for their use of the seatbelt (66%). They are followed by the Ghanaian (63%) and the Kenyan (61%) car drivers. It is recalled that among Zambian drivers not using the seatbelt as car driver is also seen as very unacceptable (see Figure 46a).

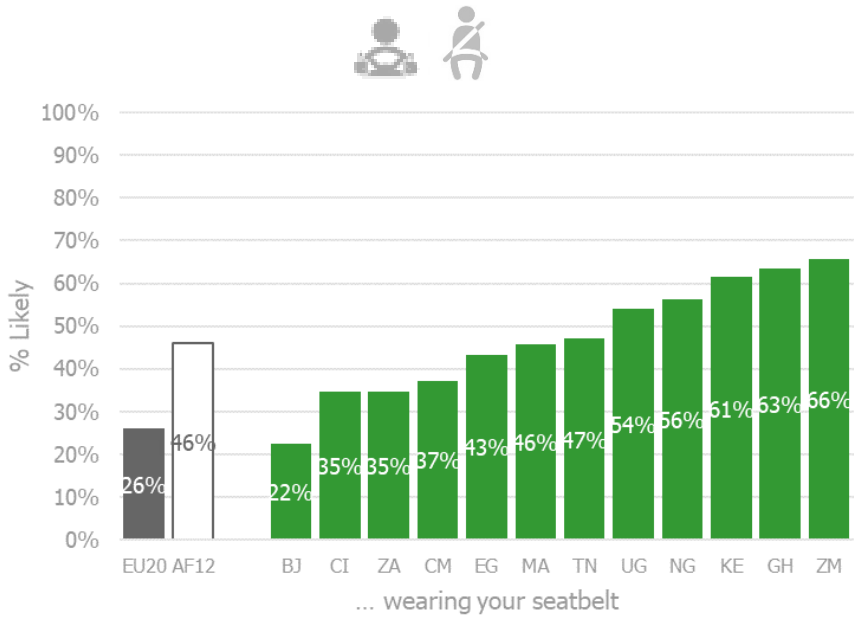


Figure 48. Perceived probability of being checked for use of the seatbelt by car drivers for AF12 at the country level.

Notes: (1) Reference population car drivers, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight; EU20 mean is based on European group weight ESRA2_2018. (3) Benin: N≤53 (4) % likely: scores 5 and 7 on a 7-point scale from 1 'very unlikely' to 7 'very likely'.

Policy measures

The support for a specific measure which should reduce the number of car occupants not wearing their seatbelt was measured with a 5-points scale with the endpoints 'oppose' and 'support'. For the analyses a binary variable was used with the two values oppose/neutral (1-3) and support (4-5). Responses of all road users were analyzed. Results are presented in Figure 49.

Q18) Do you oppose or support a legal obligation to have a seatbelt reminder system for front and back seats?

Regarding the support to the use of a seatbelt reminder system for front and back seats, with an average of 87%, the African respondents are very supportive of this measure (while it is 79% in Europe). Benin (97%), Cameroon (97%), Kenya (95%) appear to be the most supportive countries.

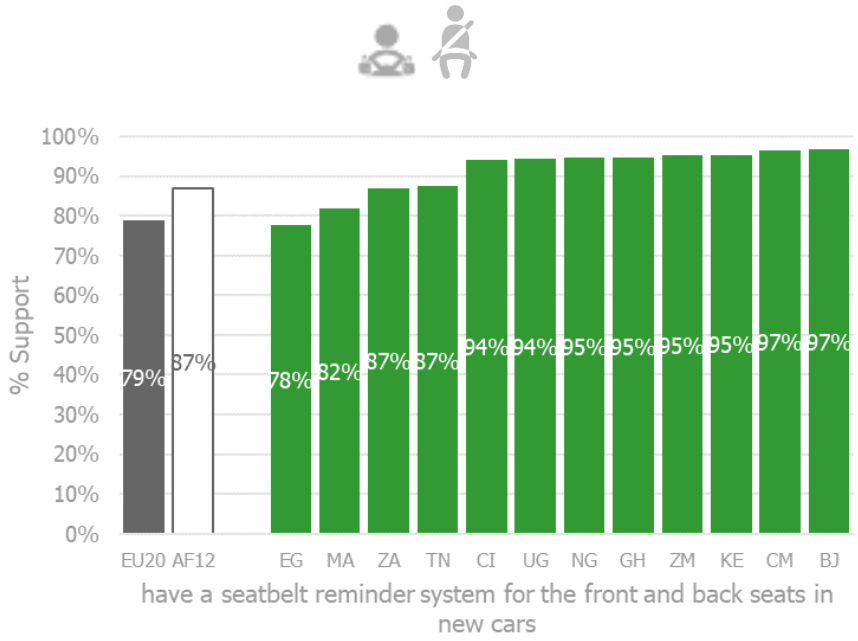


Figure 49.
Support to legal measure for the use of the seatbelt while driving for AF12 at the country level.
Notes: (1) Reference population car drivers, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight; EU20 mean is based on European group weight ESRA2_2018. (3) Benin: N≤53 (4) % support: scores 4 and 5 on a 5-point scale from 1 "oppose" to 5 "support".

5.2 Helmet use and other protective equipment

5.2.1 Self-reported behaviour

To estimate the declared prevalence of not wearing a helmet among motorcyclists and cyclists in Africa, the following questions were asked:

Q12_3) Over the last 30 days, how often did you as
- a moped driver or motorcyclist ride a moped or motorcycle without a helmet?
- a cyclist cycle without a helmet?

The frequency was estimated on a scale of 1 to 5, where 1 = never and 5 = (almost) always. The results presented here (Figure 50 and 51) refer to the dichotomisation of scores 2-5 ('at least once'); they show

the percentage of respondents who reported that they did not wear a helmet at least once in the last 30 days. For these questions, only respondents who reported having ridden a motorcycle or bicycle at least a few days a month were analysed.

Results at African level

Results seem to indicate that African respondents (58%) report to be more respectful of safe behaviour while cycling, compared to European rates (69%). On the other hand, European respondents are more likely to use the helmet when riding a motorcycle: 25.7% of European respondents and 46.3% of African respondent do not use a helmet all the time. Moreover, the prevalence of not using helmet while riding or cycling tend to decrease with age; men appear more prone to adopt these unsafe behaviours compared to women.

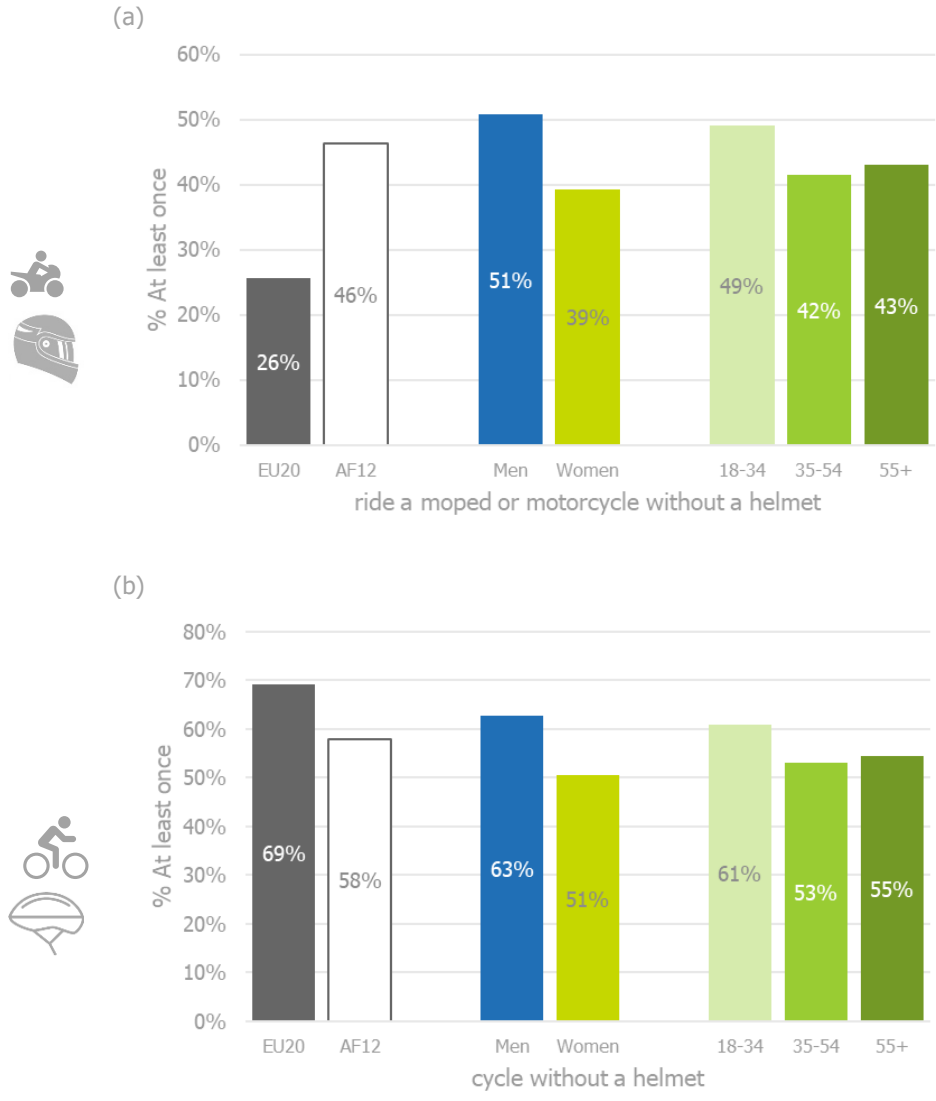


Figure 50. Self-declared unsafe behaviour towards the use of helmet while (a) riding and (b) cycling for AF12 by gender and age groups.

Note: (1) Reference population: (a) moped driver or motorcyclist, at least a few days a month; (b) cyclists at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

National results

The national results show a clear distinction between the top three and the bottom three of self-declared behaviour regarding the non-use of helmet while riding. With a percentage over 50%, Kenya, Egypt and Tunisia have the highest rates, while with a percentage under 31%, Benin, South Africa and Zambia have the lowest rates.

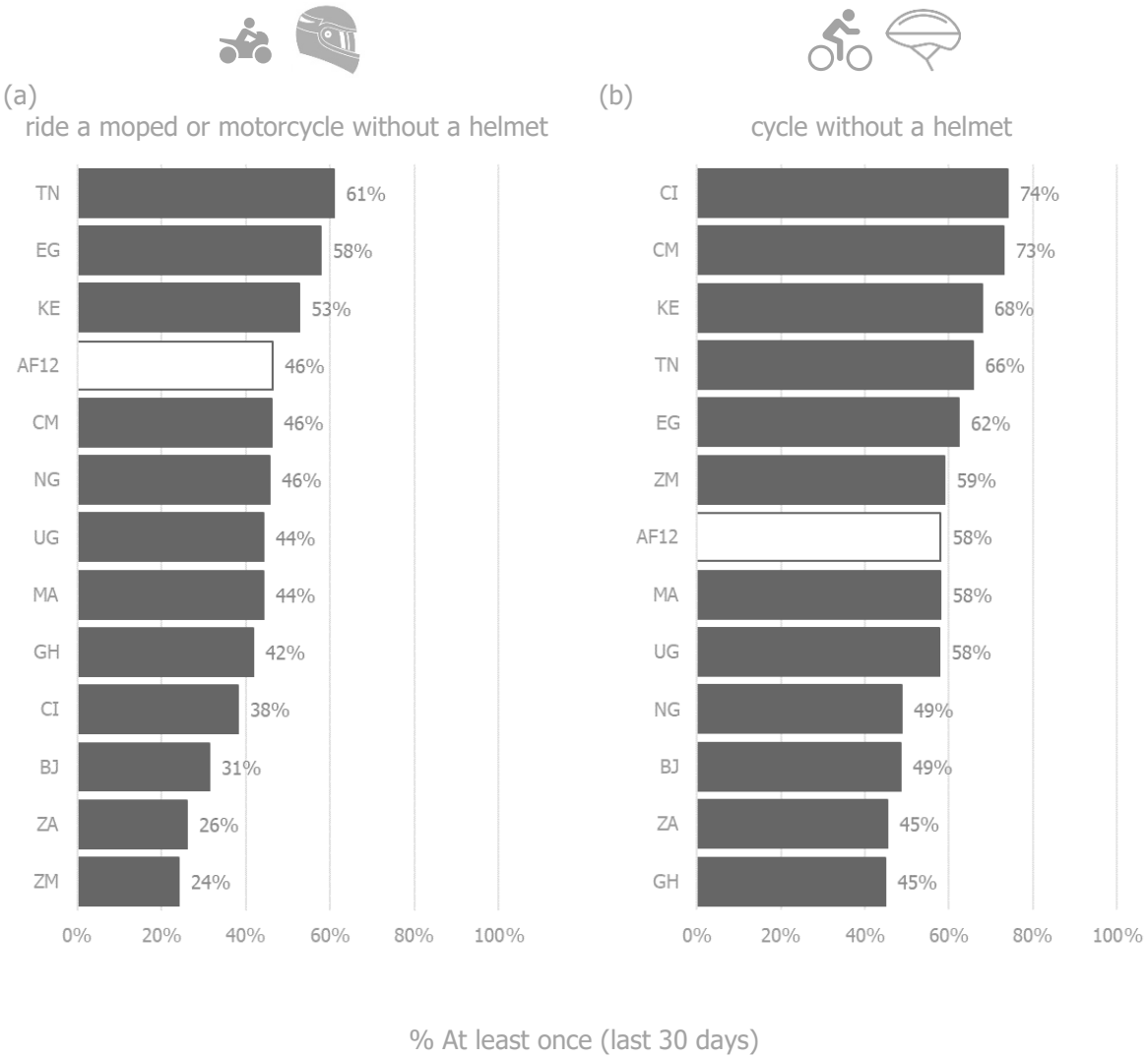


Figure 51. Self-declared unsafe behaviour towards the use of helmet while (a) riding and (b) cycling for AF12 at the country level.

Notes: (1) Reference population: (a) moped driver or motorcyclist, at least a few days a month; (b) cyclists at least a few days a month. (2) AF12 mean is based on African group weight ESRA2. (3) The national percentages are based on the individual country weight. (4) Benin: N≤53

5.2.2 Policy measures

Different policy measures to reduce the number of motorcyclists and cyclist not wearing protective equipment were measured with a 5-points scale with the endpoints 'oppose' and 'support'. For the analyses a binary variable was used with the two values oppose/neutral (1-3) and support (4-5). Responses of all road users were analyzed. Results are presented in Figure 52.

Q18) Do you oppose or support a legal obligation to …

- require all moped drivers and motorcyclists to wear a helmet
- require moped drivers and motorcyclists to wear reflective material when driving in the dark
- require all cyclists to wear a helmet
- require cyclists under the age of 12 to wear a helmet
- require cyclists to wear reflective material when cycling in the dark

On a scale from 1 ('oppose') to 5 ('support'), the respondents had to indicate their support or opposition to legal measures regarding protective equipment for cyclists and motorcyclists.

Overall, the national results in Africa show that the respondents are highly supportive of the different statements. While the level of support varies from a statement to another. Regarding the 3 proposals for the cyclists, Morocco and Egypt appear to be the less supportive countries (presenting a delta up to 13% on 'require all cyclists to wear an helmet'). The top three of most supportive countries varies clearly from one policy measure to another.

Between EU20 and AF12, the prevalence is similar in terms of supporting the statement 'require all moped drivers and motorcyclists to wear a helmet' as it is also for the use of reflective material for motorcyclists.

The national results show that the proposal regarding obligatory helmet use for motorcyclists is widely supported by Cameroon (96%), Benin (96%) and Kenya (95%). The (b) 'reflective material' statement is most supported by Kenya (97%), Zambia (94%) and Uganda (92%).

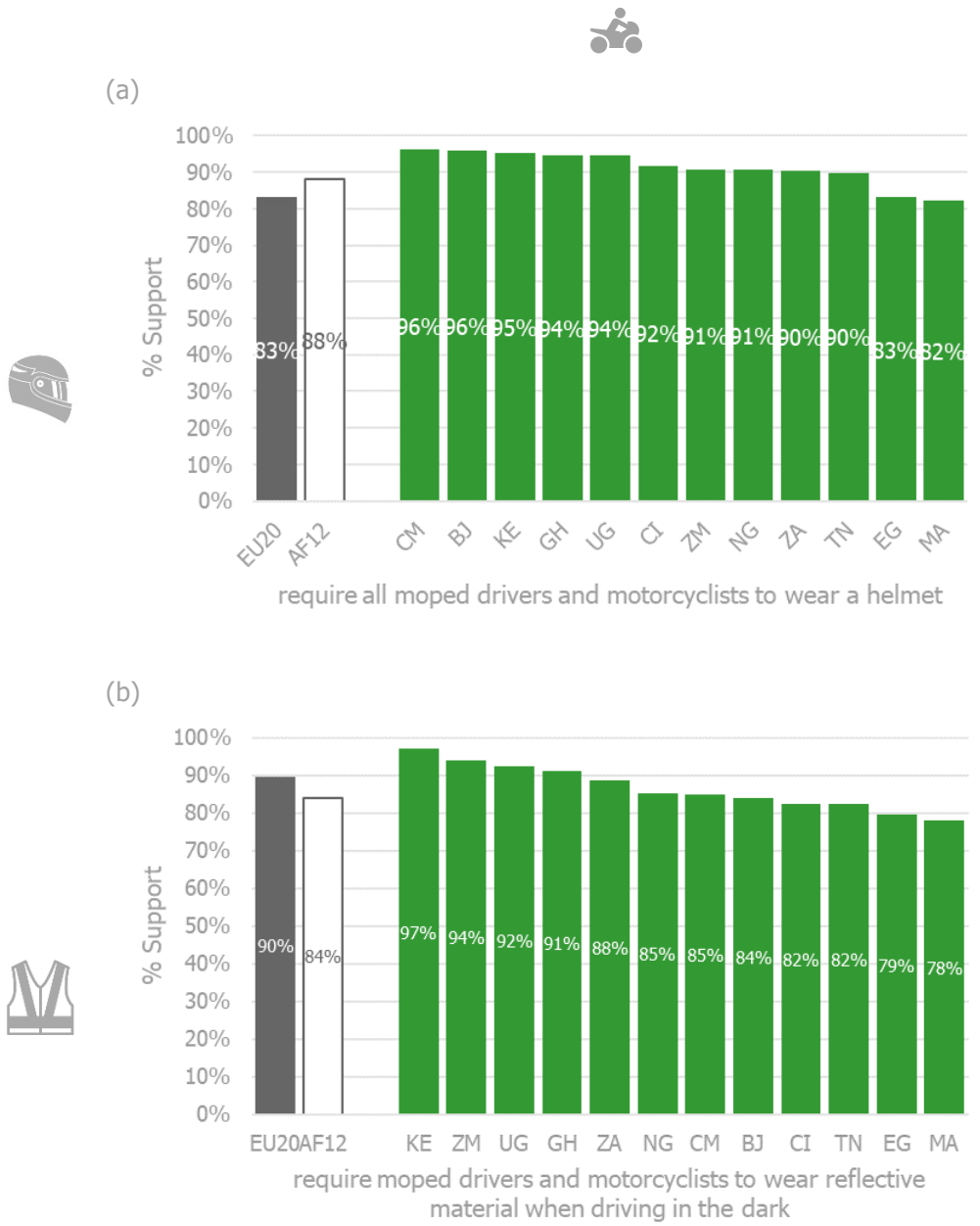


Figure 52. Level of support for policy measures concerning (a) the use of helmet for motorcyclists/ moped drivers and (b) the use of reflective material while riding in the dark for AF12 at the country level.

Notes: (1) Reference population moped driver or motorcyclist, at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53 (4) % support: scores 4 and 5 on a 5-point scale from 1 'oppose' to 5 'support'.

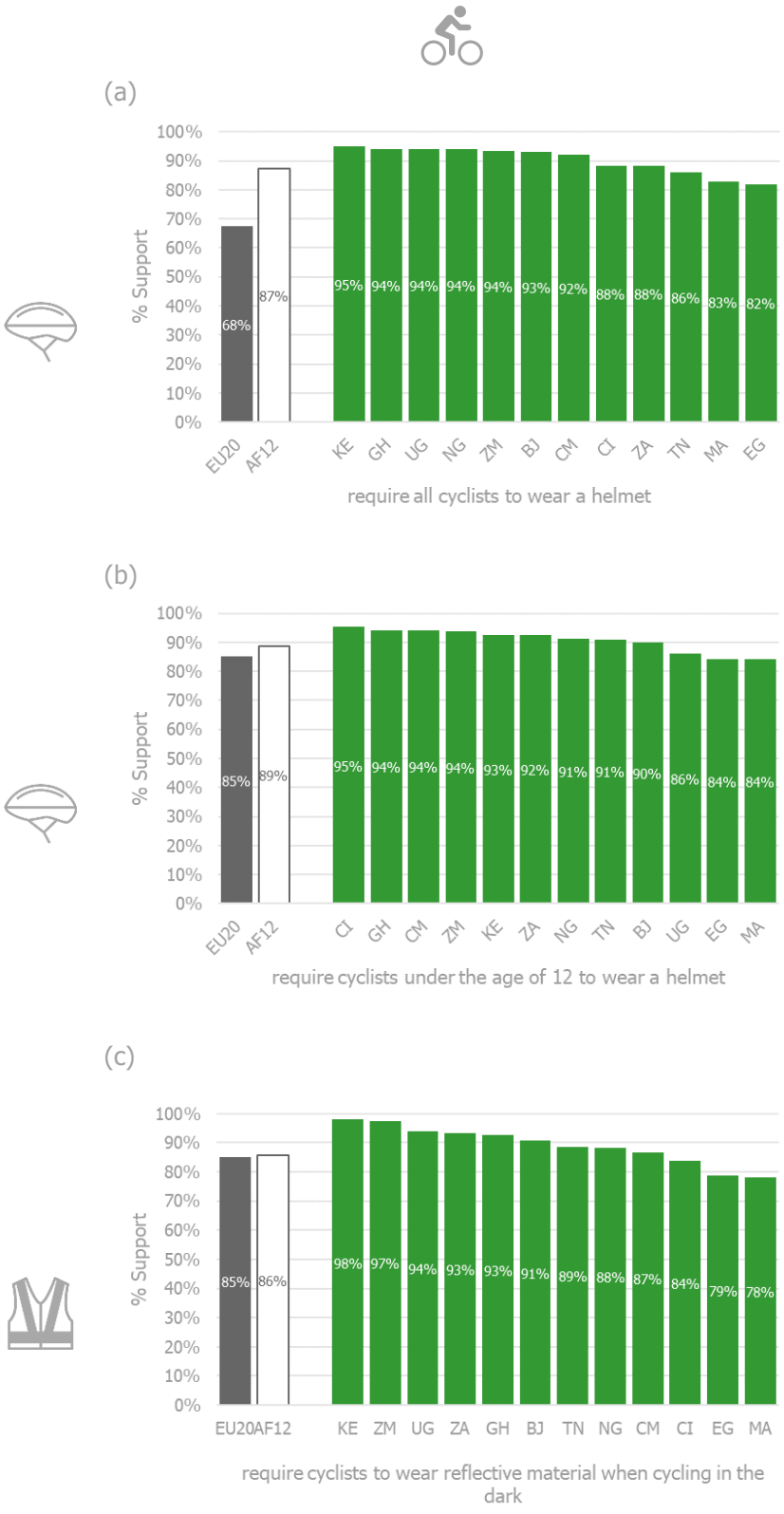


Figure 53. Level of support for policy measures concerning the use of helmet for (a) all cyclists and (b) cyclist under the age of 12 and (c) the use of reflective material while cycling in the dark for AF12 at the country level.

Notes: (1) Reference population all respondents. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53 (4) % support: scores 4 and 5 on a 5-point scale from 1 'oppose' to 5 'support'.

Protective equipment – Seatbelts and helmets

Seatbelt – The results show that almost three out of four African respondents reported that they did not wear a seatbelt as a passenger on the back seat (in Europe it is about one out of three) - even though the African respondents indicate that they do not find such a behaviour acceptable (only 7% find it acceptable). Three issues might explain this finding: (1) lack of regulation in many countries; (2) limited technical inspection of cars; and (3) imported cars (outdated fleet).

Helmet use – The analysis reveals that almost half of the African motorcyclists did not use a helmet in the past 30 days.

The effectiveness of seatbelts and helmets in preventing and reducing fatal or serious injuries has been scientifically demonstrated. However, different regulations apply for the obligation to wear a seatbelt or use a child restraint system (CRS) worldwide; the African region appears to have less strict regulations than in Europe (see also introduction of this chapter p.67). Moreover, the ESRA2 results indicate that the road users are keen to see stricter regulations and enforcement being implemented in their country.

it is underlined that the effectiveness of these passive safety systems decreases, or even completely fades, in case of incorrect use. Therefore, attention must be paid to the correct use of seatbelts and helmets when planning and implementing awareness raising campaigns or educative measures.

6 Distraction by mobile phone

Driver distraction can be defined as a diversion of attention away from activities critical for safe driving towards a competing activity (Lee et al., 2008). Activities like talking on the mobile phone, reading/typing messages, eating, and drinking are all potentially distracting activities while driving. Using a hand-held mobile phone while driving involves four types of distraction: (1) visual (looking at something other than the road), (2) auditory (hearing something not related to driving), (3) manual (manipulating something other than the steering wheel) and (4) cognitive (when drivers focus their attention away from the driving task).

Distracted drivers swerve more, indicating weakened control over the vehicle; have longer reaction times; miss information from the road environment; and make more errors while driving (SWOV, 2018). Drivers talking on a hand-held mobile phone are about four times more likely to have an accident while driving (WHO, 2015).

This chapter on driver distraction by mobile phone use describes the attitudes and opinions on mobile phone use of road users in 12 African countries. It includes comparisons among the participating countries as well as descriptive results in relation to age and gender. The aspects analysed in this chapter cover the self-reported mobile phone use, the personal acceptability of mobile phone use in traffic (individual norm) and, the acceptability by others (injunctive norm), attitudes and beliefs towards mobile phone use in traffic, support for road safety policy measures and reported police checks and perceived likelihood of getting caught for distracted driving offences.

This short introduction was inspired by the ESRA2 thematic report on this topic: Pires, Areal & Trigoso, 2019 (available on www.esranet.eu/publications)

6.1 Self-reported mobile phone use while driving (last 30 days)

To estimate the declared prevalence of mobile phone use among car drivers in Africa, the following questions were asked:

Q12_1b) Over the last 30 days, how often did you as a CAR DRIVER
- 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?

Similarly, the declared prevalence of mobile phone use amongst motorcyclists was studied using the following question:

Q12_3) Over the last 30 days, how often did you as a moped driver or motorcyclist (c) did you read a text message/email or check social media (e.g. Facebook, twitter, etc.) while riding a moped or motorcycle?

The frequency was estimated on a scale of 1 to 5, where 1 = never and 5 = (almost) always. The results presented here (Figures 54-56) refer to the dichotomisation of scores 2-5 ('at least once'); they show the percentage of respondents who reported that they have shown a certain behaviour at least once in the last 30 days. For this question, only respondents who reported having driven a car (rode a motorcycle/moped) at least a few days a month were analysed.

6.1.1 Results at African level

Overall, the self-reported mobile phone use while driving or riding is higher in AF12 than with European respondents. About half of the African car drivers (52%) reported to have talked on a hand-held mobile phone while driving in the last 30 days (Figure 54a).

The reported prevalence of these distracted driving behaviours decrease gradually with age. 53% of the 18-34y 'talking on a hand-held phone while driving' and 49% of them reading a text message while driving, compared to 45% and 35% of 55+y. In terms of gender, men are more prone to women to adopt an unsafe behaviour while driving or riding.

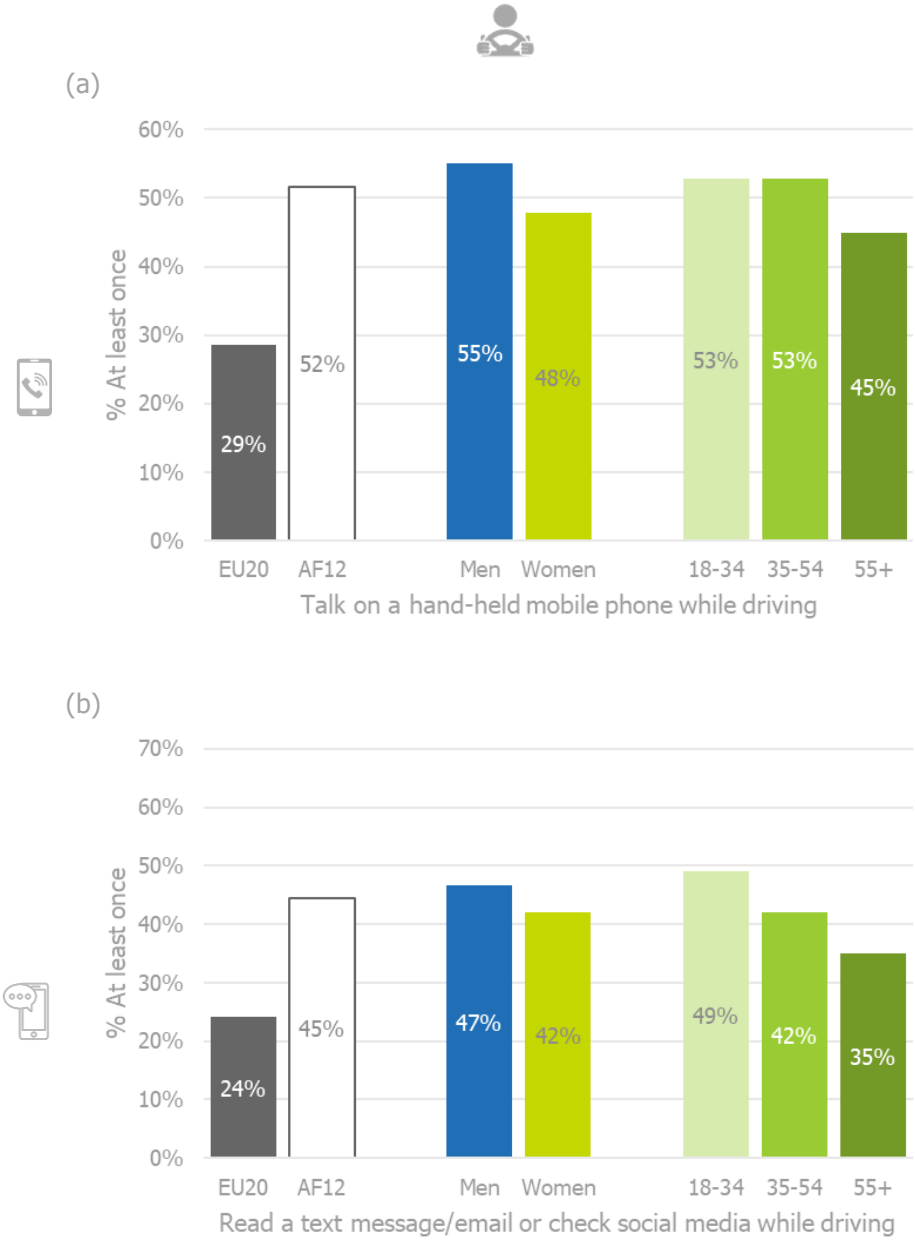


Figure 54. Self-reported distraction by car drivers for AF12 by gender and age groups.

Note: (1) Reference population car drivers, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

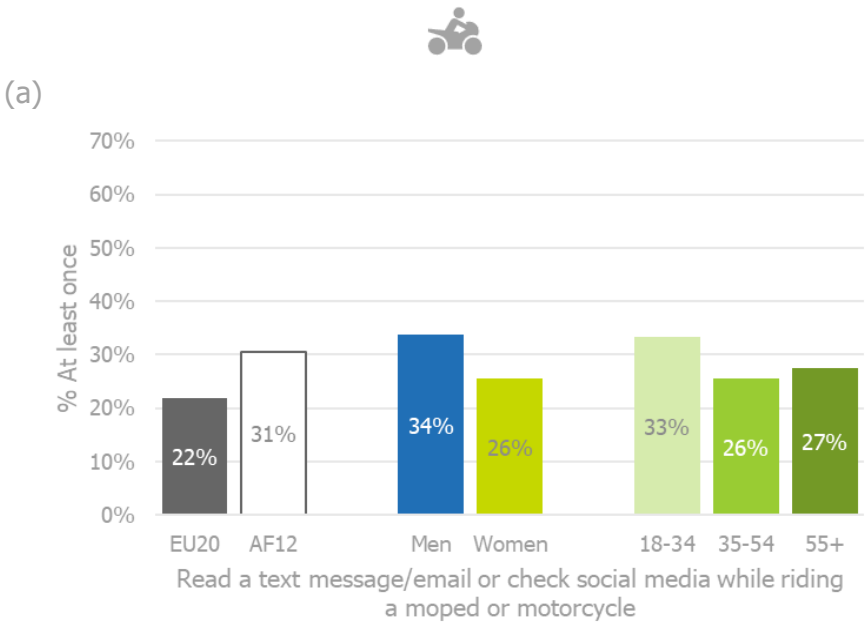


Figure 55. Self-reported distraction by motorcyclists for AF12 by gender and age groups.
Note: (1) Reference population motorcyclists, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018. (3) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

6.1.2 National results

The national results, presented in Figure 56, show that respondents in Egypt and Kenya report most often using a mobile phone while driving or riding. About half of the respondents of those countries reported having talked on a hand-held mobile phone while driving in the last 30 days. Car drivers from Cameroon and Benin reported least often to use a mobile phone behind the wheel (e.g. Cameroon about one third of respondents reported having read a text or checked social media while driving in the last 30 days).

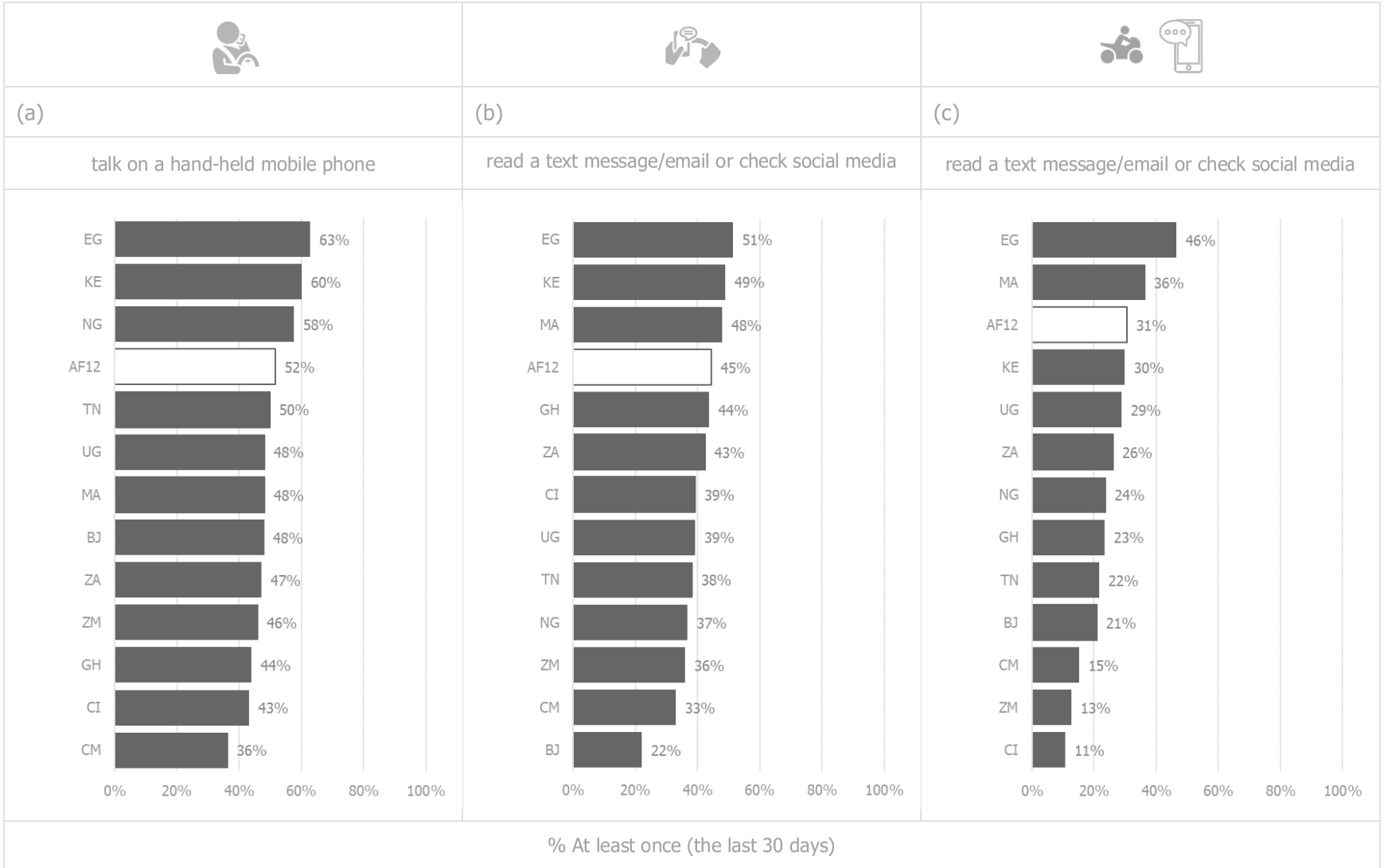


Figure 56. Self-reported distraction by car driver (a-b) and motorcyclist (c) for AF12 at the country level.

Note: (1) Reference population: (a-b) car driver at least a few days a month; (c) moped driver or motorcyclist at least a few days a month. (2) The national percentages are based on the individual country weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

6.2 Attitudes and norms

This section is dedicated to the attitudes and norms regarding mobile phone use behind the wheel. According to Theory of Planned Behaviour (Ajzen, 1991), using a mobile phone while driving is, inter alia, influenced by attitudes and norms regarding the use of a mobile phone.

To better understand why car drivers choose to use their mobile phone while driving, the acceptability of this behaviour was assessed through different statements asking about to what extent the respondents consider it to be acceptable making a call using a hand-held mobile phone or reading a text/social media while driving and how much other people do. Moreover, the attitude (beliefs) regarding the use of mobile phones behind the wheel were assessed to study the what road users think about using a mobile phone when driving.

6.2.1 Individual and injunctive norms

The following questions were asked to find out the level of acceptability of mobile phone use in traffic:

Q14_1) How acceptable do you, personally, feel it is for a CAR DRIVER to
- 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

Q13_1) Where you live, how acceptable would most other people say it is for a CAR DRIVER to…
- 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

The answering scale for the acceptability of speeding ranged from 1 (unacceptable) to 5 (acceptable). For the analyses, the answers were split into acceptable (4-5) and unacceptable/neutral (1-3). Since these questions refer to perceptions by road users, the answers of all respondents were analyzed. Results are presented in Figure 57.

Results show clearly that overall, the perceived acceptability by others of using a mobile phone while driving is higher that the personal acceptability. Moreover, national results show that the perceived acceptability of using a hand-held mobile phone while driving ranges from 20% in Tunisia to 8% in South Africa, and the personal acceptability ranges from 12% Egypt down to 2% in Ivory Coast (Figure 57a). Similarly, the perceived acceptability of texting / reading social media while driving ranges from 16% in Benin and Uganda to 6% in South Africa, and the personal acceptability ranges from 10% Egypt down to 2% in South Africa (Figure 57b).

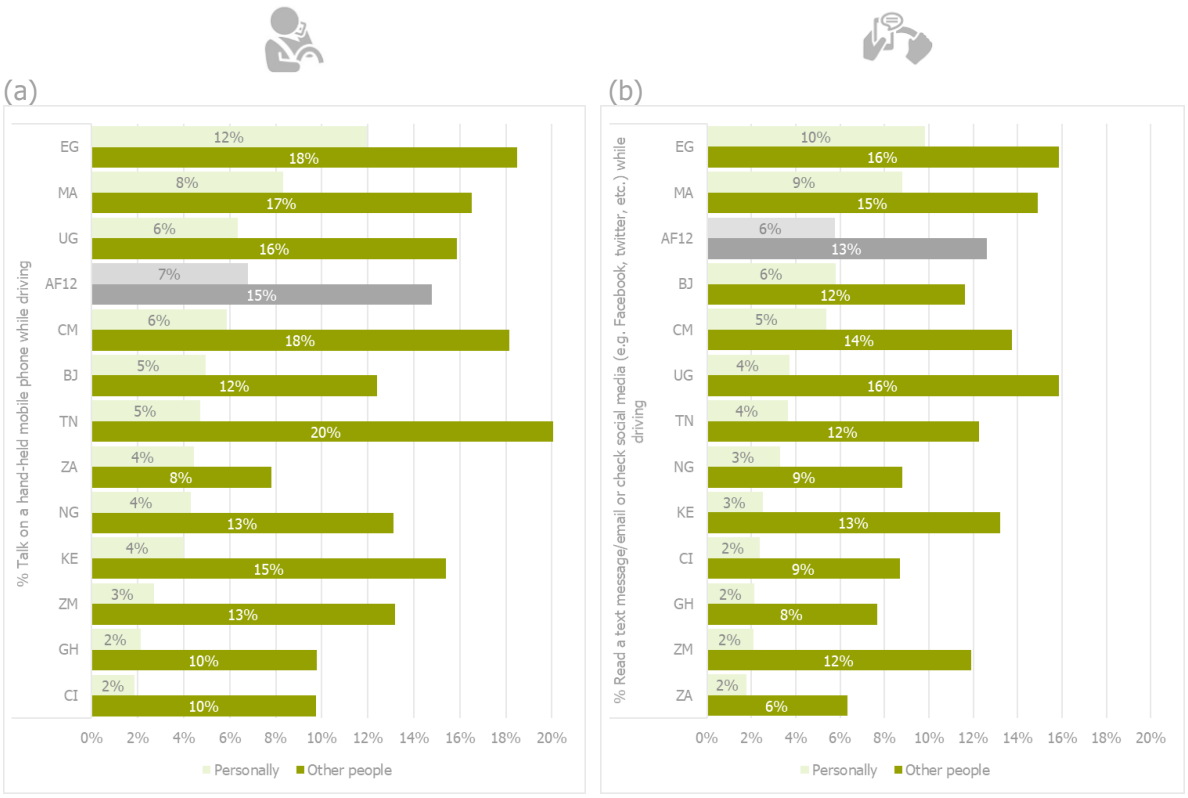


Figure 57. Personal acceptability and perceived social acceptability of (a) use of a hands-held mobile phone and (b) reading a text message/email while driving for AF12 at the country level.
Note: (1) Reference population: all road users. (2) The national percentages are based on the individual country weight; AF12 mean is based on African group weight ESRA2. (3) Benin: N≤53

6.2.2 Attitudes towards mobile phone use while driving

The attitudes of all road users in the sample were assessed to investigate the cognitive aspects of distracted driving behaviour. Therefore, two different psychological constructs related to mobile phone use behind the wheel are analysed and described.

- *Behaviour beliefs and attitudes*: What do road user think about using a mobile phone while driving? What is the reason for doing so?
- *Self-efficacy*: People's beliefs about their own capabilities to do a task or activity (Bandura, 1977)

The answering scale for these constructs ranged from 1 (disagree) to 5 (agree) and were split into agree (4-5) and disagree/neutral (1-3) for analysing.

Behaviour beliefs

Figure 58a shows that in terms of attitudes, 11% of the AF12 respondents agreed on 'I use a mobile phone while driving, because I always want to be available', with a larger prevalence of young respondents (18-34y with 10%). For comparison, this statement is supported by only 5% of the European respondents. Moreover, 8% of AF12 agreed with 'to save time, I often use a mobile phone while driving', compared to 4% for EU20 (Figure 58b). No gender or age effects were observed.

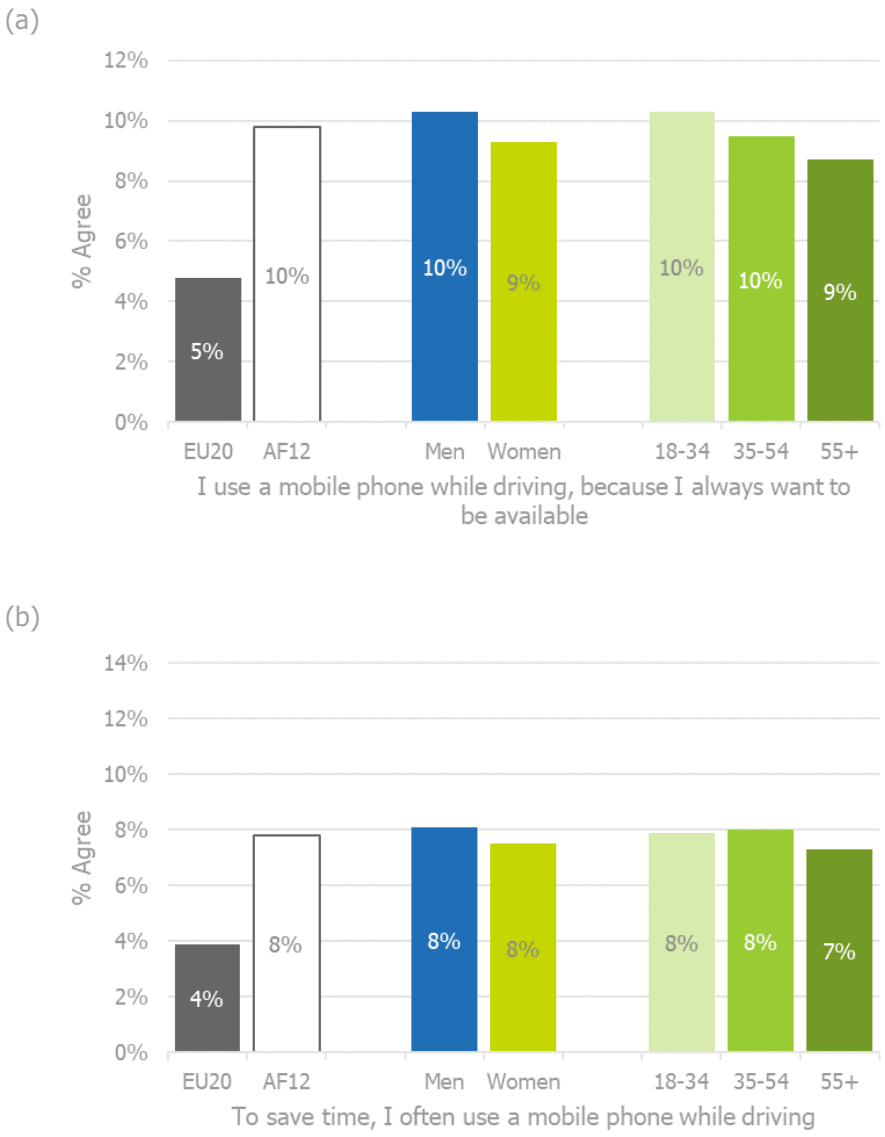


Figure 58. Attitudes towards phone use while driving for AF12 by gender and age groups.

Note: (1) Reference population: car drivers, at least a few days a month. (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018.

The distribution of results across African countries (Figure 59) shows that the agreement with 'I use a mobile phone while driving, because I always want to be available' ranges from 6% in Zambia to 14% in Egypt; and with 'to save time, I often use a mobile phone while driving' the agreement ranges from 5% in Zambia, Benin, Ivory Coast and Ghana to 11% in Egypt.

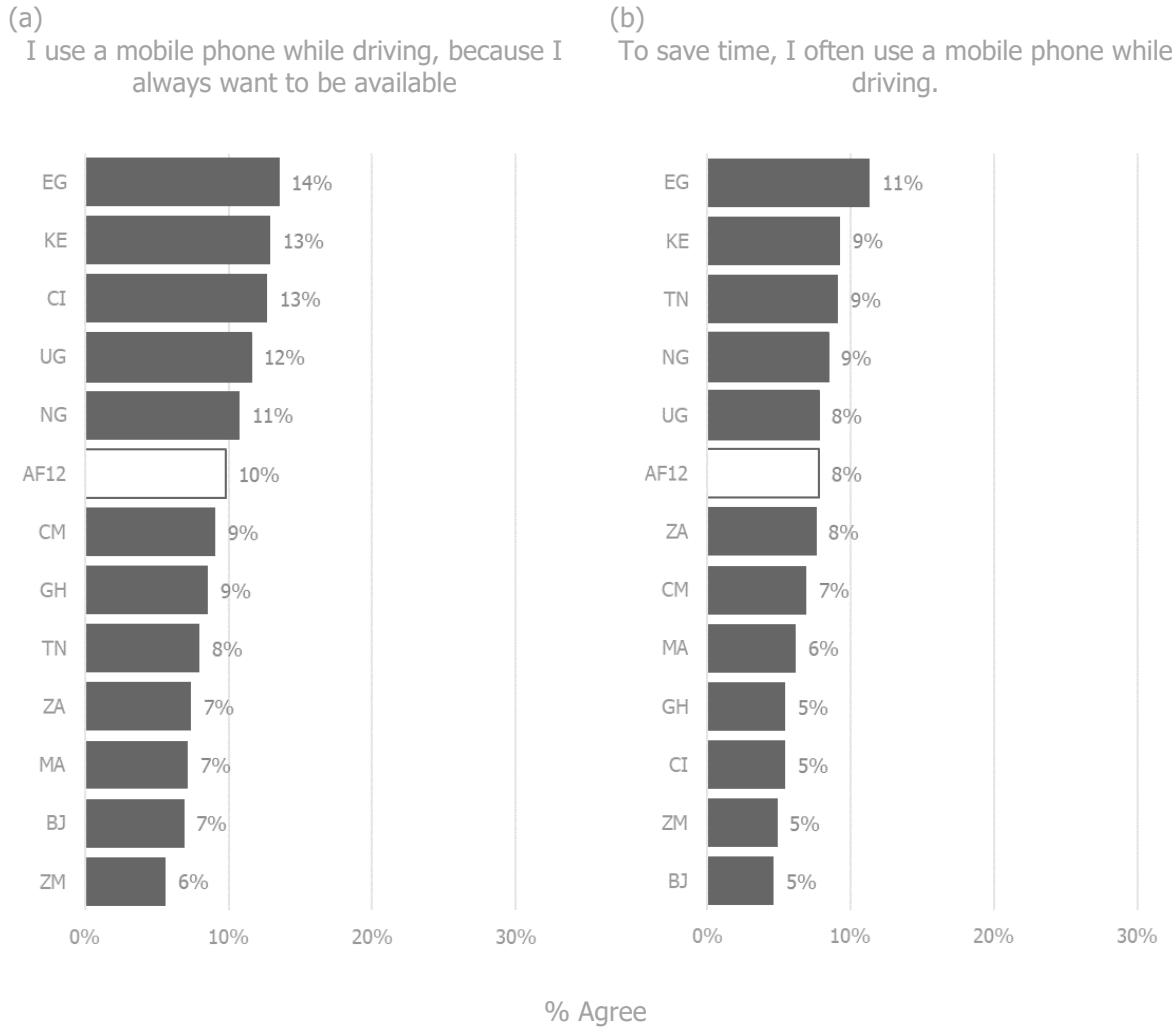


Figure 59. Attitudes towards phone use while driving for AF12 at the country level.

Notes: (1) Reference population: car drivers at least a few days a month. (2) AF12 mean is based on African group weight ESRA2. (3) The national percentages are based on the individual country weight. (3) Benin: N≤53

Perceived behavioural control

Results are presented in Figure 60. African respondents tend to find themselves more able to use a mobile phone behind the wheel compared to their European counterparts (though the differences are rather small and not all significant). No gender or age effects were found

Figure 61 presents the results on perceived behavioural control at the country level. Only small differences between countries can be observed. Overall, AF12 respondents do not report feeling confident in their driving ability when handling a mobile phone while driving (range 7-12% over the different items).

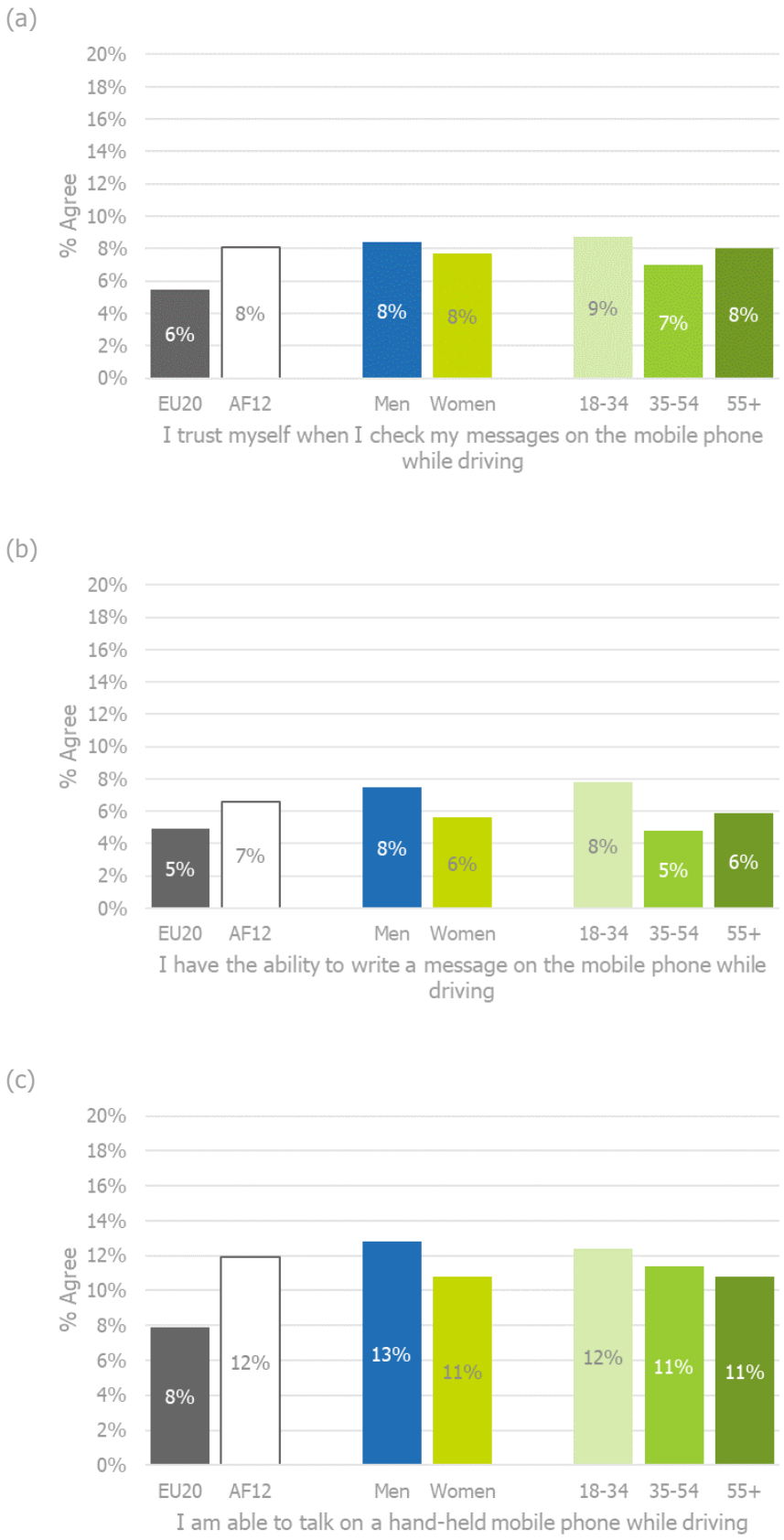


Figure 60. Perceived control while using the mobile phone and driving for AF12 by gender and ages groups.

Notes: (1) Reference population: car drivers at least a few days a month. (2) AF12 mean is based on African group weight ESRA2. (3) The national percentages are based on the individual country weight.

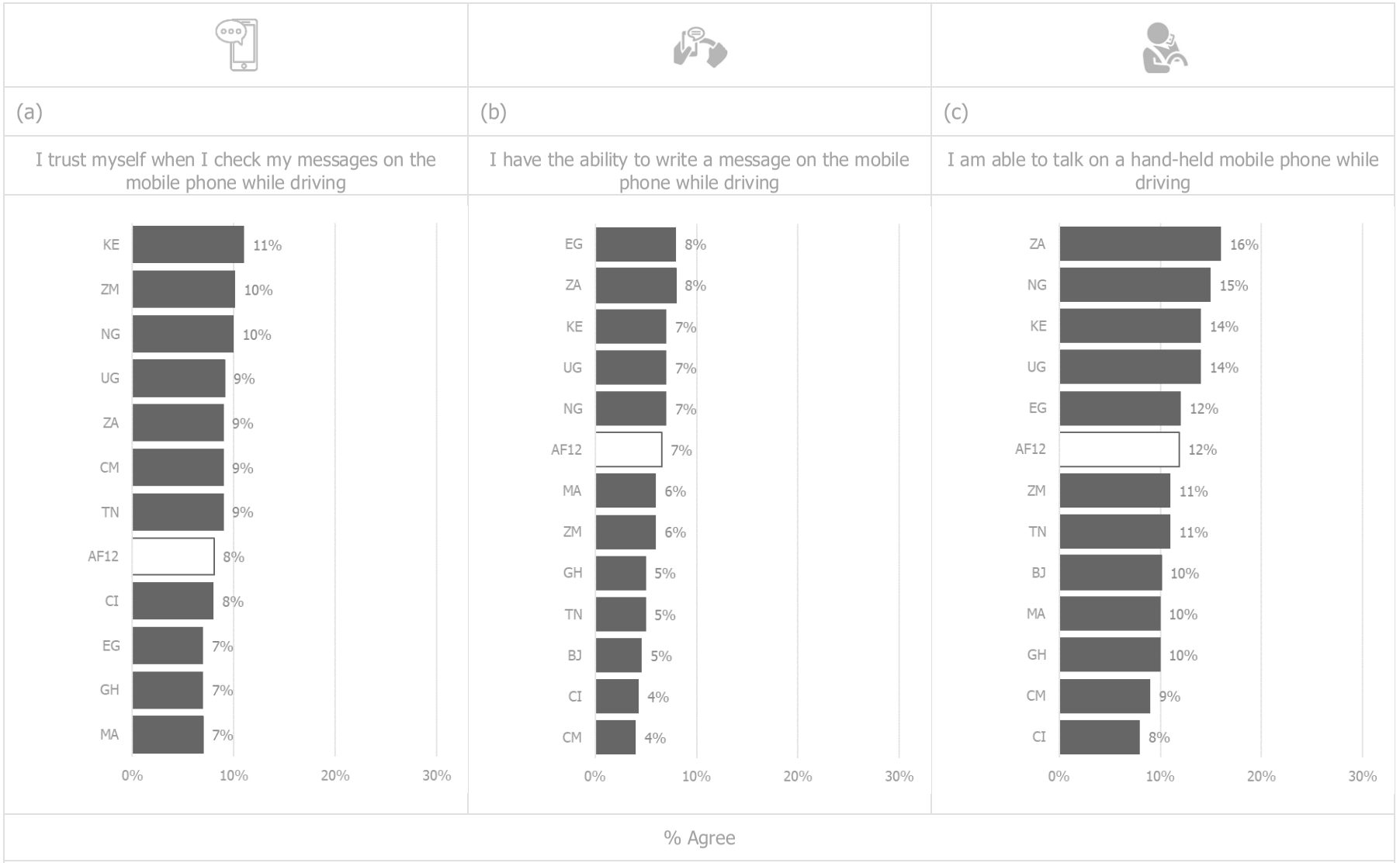


Figure 61. Perceived control (a) ' I trust myself when I check my messages on my mobile phone while driving' , (b) ' I have the ability to write a message while driving' and (c) ' I am able to talk on a hand-held mobile phone while driving' AF12 at the country level.

Notes: (1) Reference population: car drivers at least a few days a month. (2) AF12 mean is based on African group weight ESRA2. (3) The national percentages are based on the individual

6.3 Enforcement and policy measures

6.3.1 Perceived probability of being checked

To keep drivers from using their mobile phone while driving, police check on a regular basis are essential. The African respondents were asked to indicate the perceived likelihood of being checked by the police for the use of mobile phone on a 7-points scale (1= very unlikely to 7 = very likely). The scale was divided into 'likely' (5-7) and 'unlikely/neutral' (1-4).

Q20_1) On a typical journey, how likely is it that you (as a CAR DRIVER) will be checked by the police for… the use of a hand-held mobile phone to talk or text while driving?

The perceived probability of being checked by the police for the use of a hand-held mobile phone is higher in AF12 (32%) than it is for EU20 (19%; Figure 62). It is in Zambia (41%), in Morocco (38%) and in Nigeria (35%) that the probability is the highest, while in Benin (17%), in South Africa (18%) and in Cameroon (24%) it is the lowest.

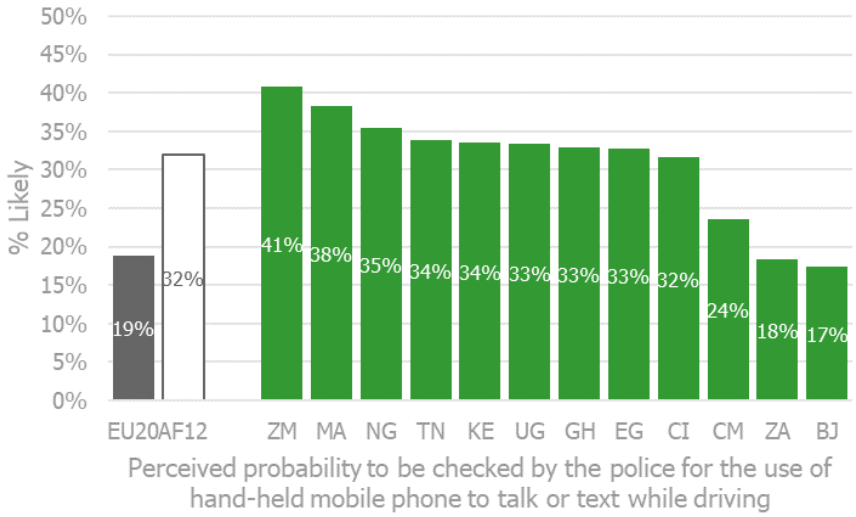


Figure 62. Perceived probability of being checked for the use of the mobile phone while driving for AF12 at the country level.

Notes: (1) Reference population: car drivers at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53 (4) % likely: scores 5 and 7 on a 7-point scale from 1 'very unlikely' to 7 'very likely'.

6.3.2 Support for policy measures

The support for a measure forbidding the use of mobile phone while driving was measured with a 5-points scale with the endpoints 'oppose' and 'support'. For the analyses a binary variable was used with the two values oppose/neutral (1-3) and support (4-5). Responses of all road users were analyzed.

Q18_13) Do you oppose or support a legal obligation to have a zero tolerance for using any type of mobile phone while driving for all drivers?

Figure 62 illustrates the level of support for a legal measure forbidding mobile phone use. This measure is more supported by AF12 respondents (60%), than by European respondents (54%). Men appear less supportive than women about this legal measure.

A comparison of countries shows that about half of the respondents in Morocco (51%), Tunisia (52%) and Egypt (53%) support this measure of zero tolerance for mobile phone use while driving. About 3 out of 4 respondents in Kenya and Ghana do support this measure.

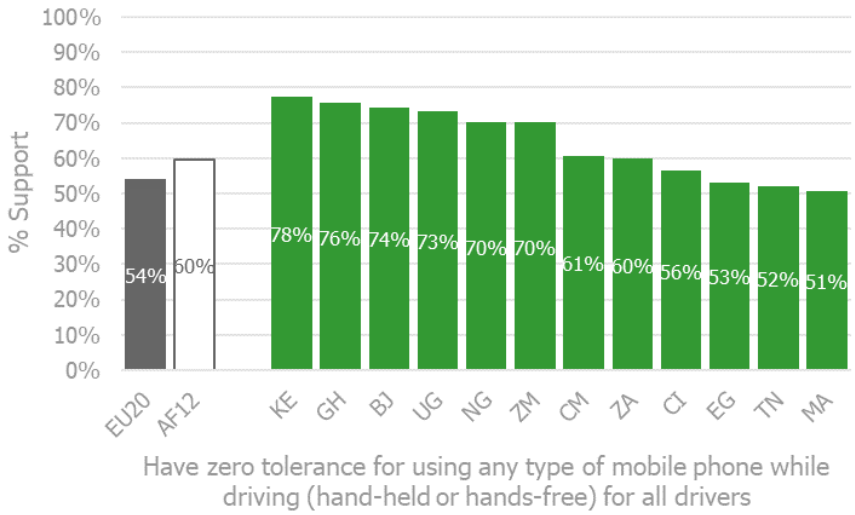


Figure 63. Level of support for policy measures concerning the use of mobile phone for car drivers while driving for AF12 at the country level.

Notes: (1) Reference population: car drivers at least a few days a month. (2) Individual countries based on individual country weight; AF12 average, based on regional weight. (3) Benin: N≤53 (4) % support: scores 4 and 5 on a 5-point scale from 1 ''oppose' to 5 ''support'.

Distracted driving – mobile phone use

Results of the ESRA2 survey show that distracted driving is a large problem in African countries. About half of car drivers reported having made a hand-held phone call while driving in the past 30 days, and about one third of the motorcyclists used their mobile phone while riding in the past 30 days.

This issue should become a priority for policy makers in Africa, given the fact that distracted drivers swerve more; have longer reaction times; miss information from the road environment; and make more errors while driving (SWOV, 2018). Drivers talking on a hand-held mobile phone are about four times more likely to have an accident while driving (WHO, 2015). It is also clear from the ESRA2 data in African countries that road users are willing to accept stricter regulations and enforcement regarding distracted driving.

7 Vulnerable road users - Walking and cycling on public roads

Different definitions of vulnerable road users exist, often using categorizations by transport mode and/or age group. A vital criterion in all definitions is the lack of external protection (OCDE/OECD, 1998). Furthermore, definitions often also refer to a lack of task capability such as the inexperience of children (SWOV, 2012). In this report, we refer to vulnerable road users by transport mode, based on respondents' self-reported individual traffic exposure. The groups of vulnerable road users studied here are pedestrians, cyclists, and motorcyclists.

Road users such as pedestrians, cyclists and motorcyclists suffer the most severe consequences in collisions with other road users, because they cannot protect themselves against the speed and mass of the other party (Van Kampen, 2000). Worldwide, vulnerable road users contribute to almost half of the total road traffic deaths (WHO, 2009). According to the European Transport Safety Council, the death risk travelled varies between 5.4 and 13.8 deaths per 100 million person kilometers for vulnerable road users compared to 0.7 for car drivers in Europe (ETSC, 2003). Hence, these types of road users should be given special attention in road safety policy as recommended in 2010 by the U.N. General Assembly.

This chapter dedicated to pedestrians and cyclists describes self-reported unsafe traffic behaviours by cyclists and pedestrians and their support for road safety policy measures in 12 African countries. It includes comparisons among the participating countries as well as descriptive results in relation to age and gender. Motorcyclists (incl. moped drivers) are road users of special interest, especially given the incidence rate of this transport mode in African countries (cf. taxi-moto). However, the results on motorcyclists have been addressed in all other chapters next to those of the car drivers.

The introduction of this chapter is highly inspired by Torfs & Meesmann (2019), a paper focusing on vulnerable road users using ESRA1 data.

7.1 Cycling on public road

7.1.1 Self-reported unsafe cycling behaviour

In this section, different types of unsafe cycling behaviour are studied. Cyclist respondents had to indicate on a scale of 1 to 5 (1 = Never and 5 = (Almost) always), the frequency with which they engaged in certain risk behaviours in the last 30 days. Dichotomized variables were used here, 'at least once' (score 2-5). Only respondents who indicated having cycled at least a few days a month are considered in the analyses.

Cycling next to the cycle lane

Figure 64 presents the results regarding the self-reported level of cycling next to the cycle lane. 51% of cyclist respondents report that they cycled at least once on the road next to the cycle lane. This rate is higher than for Europe (39%). Men report this behaviour more than women (54% vs. 46%). No significant age effects were observed, except that the 35-54 (46%) appear less prone to adopt such a unsafe behaviour. National results (Figure 64b) indicate that large differences between countries exist. Cyclists in Kenya (58%), Morocco (56%) and Egypt (55%) report most often to engage in such behaviour.

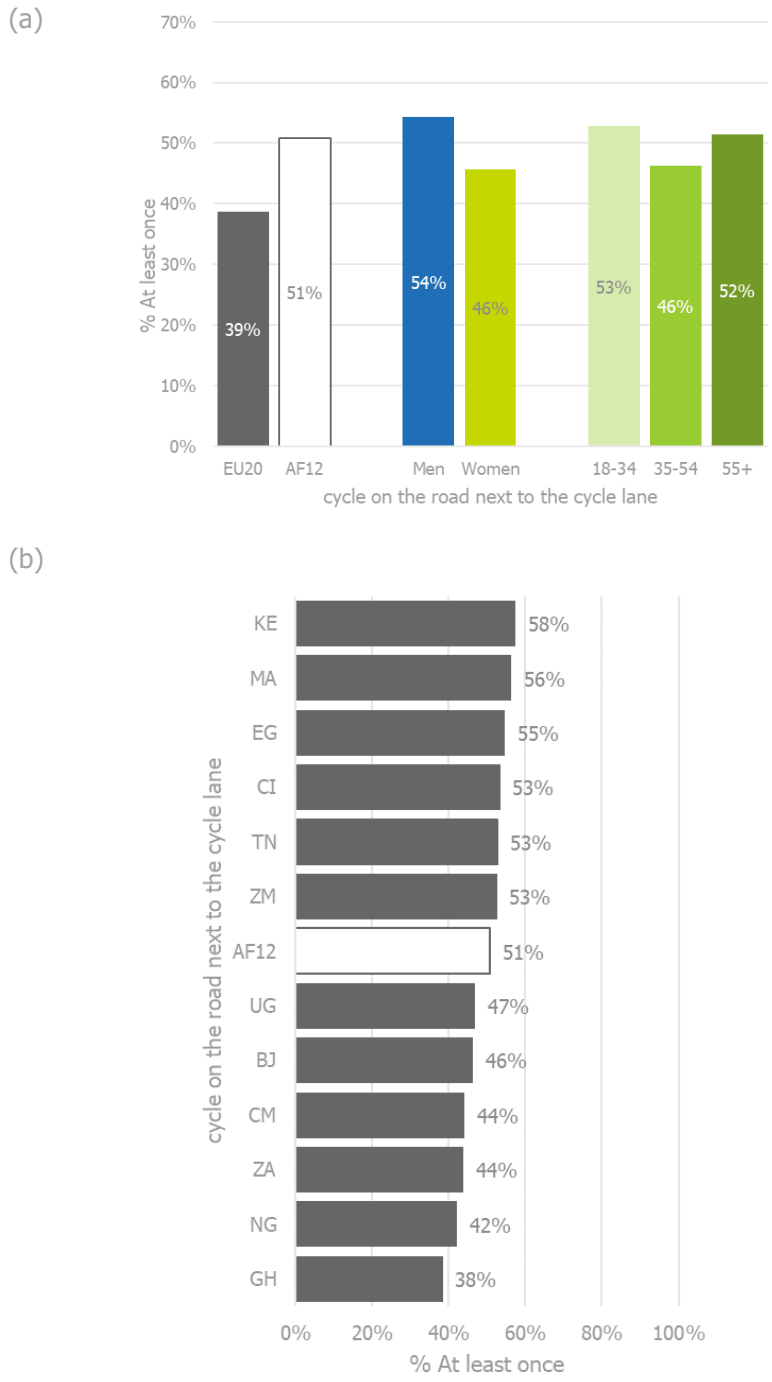


Figure 64. Self-declared unsafe behaviour concerning cycling next to the cycle lane for AF12 by gender and ages groups.

Note: (1) Reference population: cyclists at least a few days a month (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

Distracted cycling

Cyclists can engage in activities that diverse their attention away from activities critical for safe participation in traffic (Lee et al., 2008). Making phone calls or listening to music when cycling can be hazardous. Possible consequences are: longer reaction times, weakened control over the bicycle, less awareness of the situation resulting in noticing changes in the traffic less quickly, or taking more risks (SWOV, 2018).

Respondents had to answer two questions on the distraction while riding:

Q12_4_3) "Over the last 30 days, how often did you as a cyclist…"

- Cycle while listening to music through headphones?
- Read a text message/email or check social media while cycling?

Results are presented in Figure 65 and 66. 48% of the African cyclists report to listen to music while riding (compare to the 29% for EU20). Women (41%) appear less likely to listen to music while riding than men (51%). The prevalence decreased with age (Figure 65a). National results (Figure 65b) indicate that the reported prevalence of listening to music while cycling in the last 30 days, ranges from 1 out of 3 in Ghana to 2 out of 3 in Egypt.

As regards prevalence of using a mobile phone to read a text message/email or check social media, the reported rates in AF12 (30%) is higher than for EU20 (19%); the rates for men (32%) are slightly higher than for women (27%); the 35-54y seems to read/check social media while cycling less often that the two other age groups (Figure 66c). National results (Figure 66d) indicate that the reported prevalence of using a mobile phone while cycling in the last 30 days, ranges from 15% in Nigeria to 41% in Morocco.

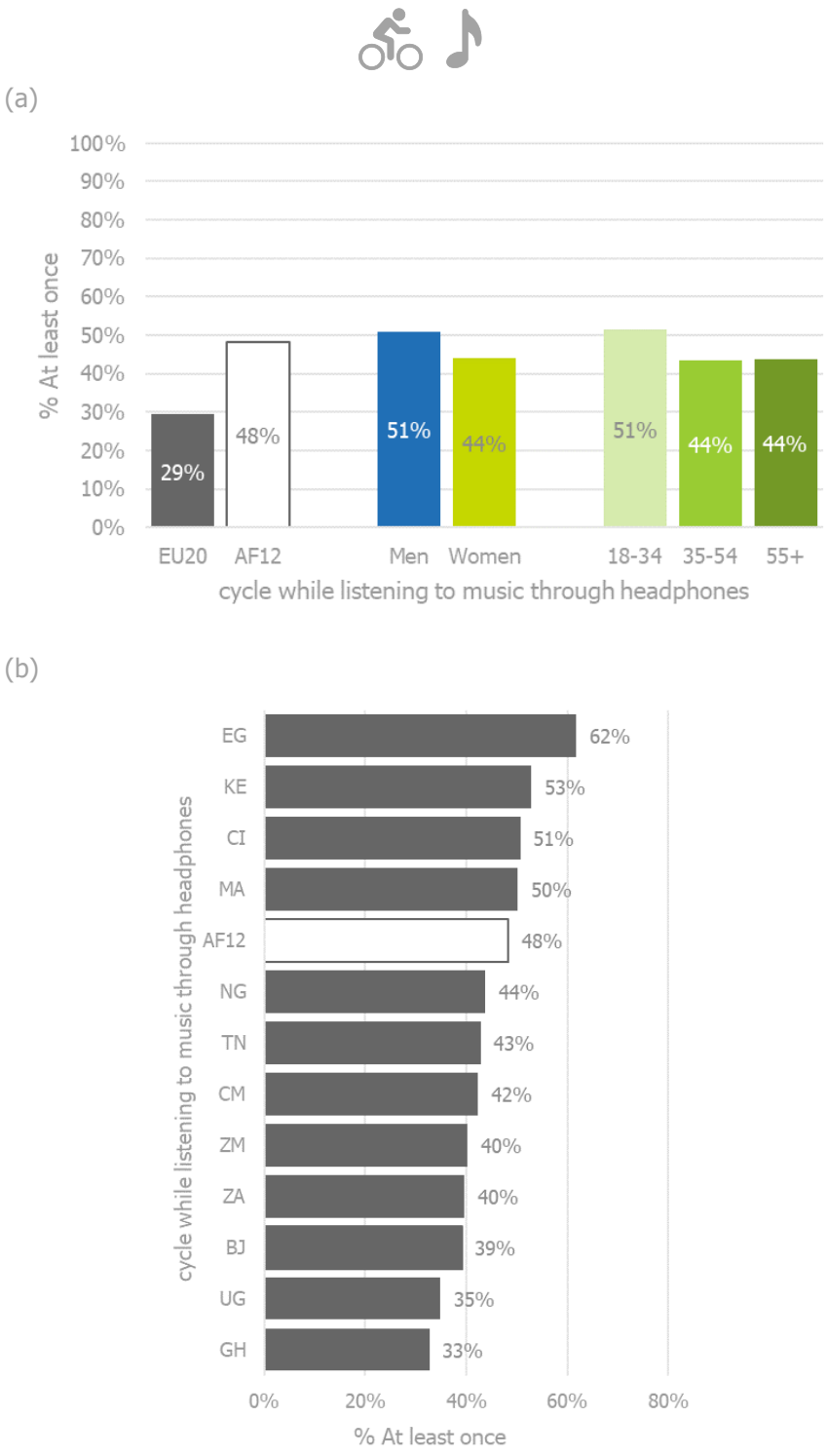
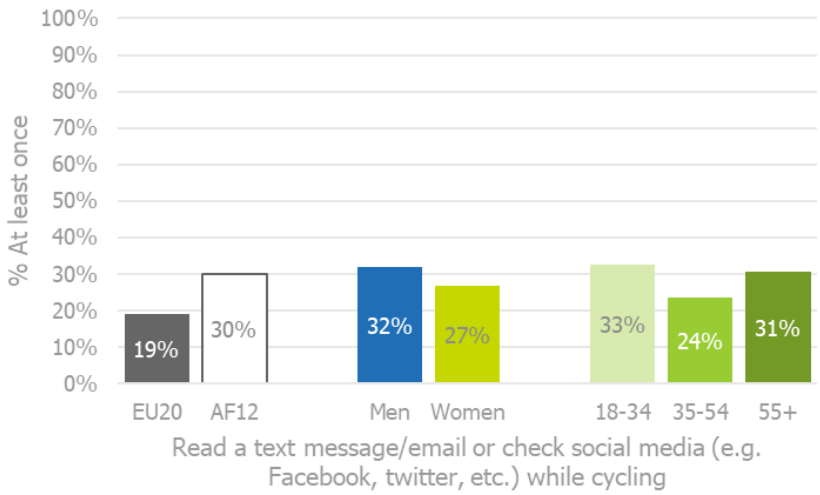


Figure 65. Distraction with music listening while cycling for AF12 (a) by gender and age groups and (b) at the country level.

Note: (1) Reference population: cyclists at least a few days a month (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) alw

(c)



(d)

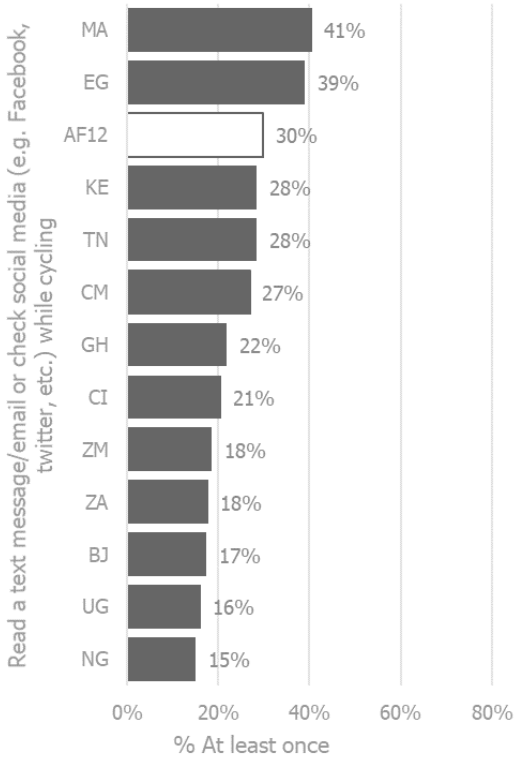


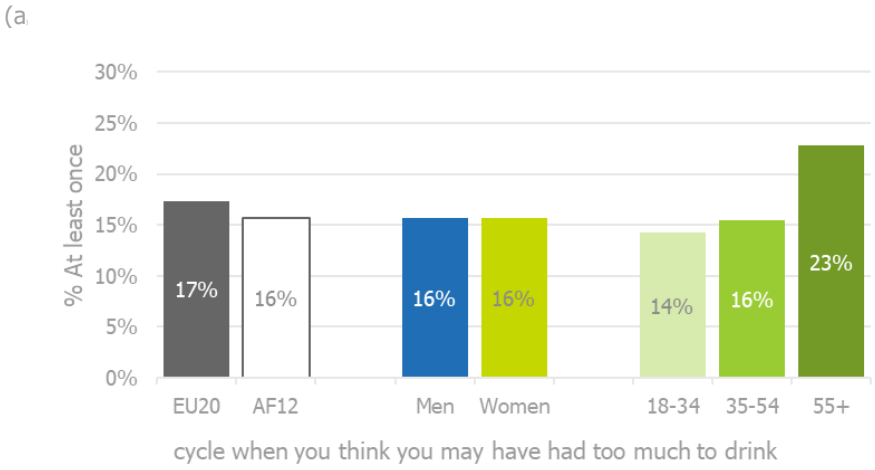
Figure 66. Distraction with use of a mobile phone while cycling for AF12 (c) by gender and age groups and (d) at the country level.

Note: (1) Reference population: cyclists at least a few days a month (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

Cycling under the influence of alcohol

As for other road users, the consumption of impairing substances while cycling leads to longer reaction times, lower vigilance, poor judgement and can also impair visual functions.

Self-reported drinking and cycling indicates that the prevalence is similar in AF12 and European cyclists (16% and 17%; Figure 67a). No gender effects were found in the data. Regarding age, it seems that the oldest (23%) tend to drink and cycle more than the 18-34y and 35-54y (14% and 16%, respectively). National results (Figure 67b) indicate the prevalence ranging from only 6% in Zambia to 22% in Egypt.



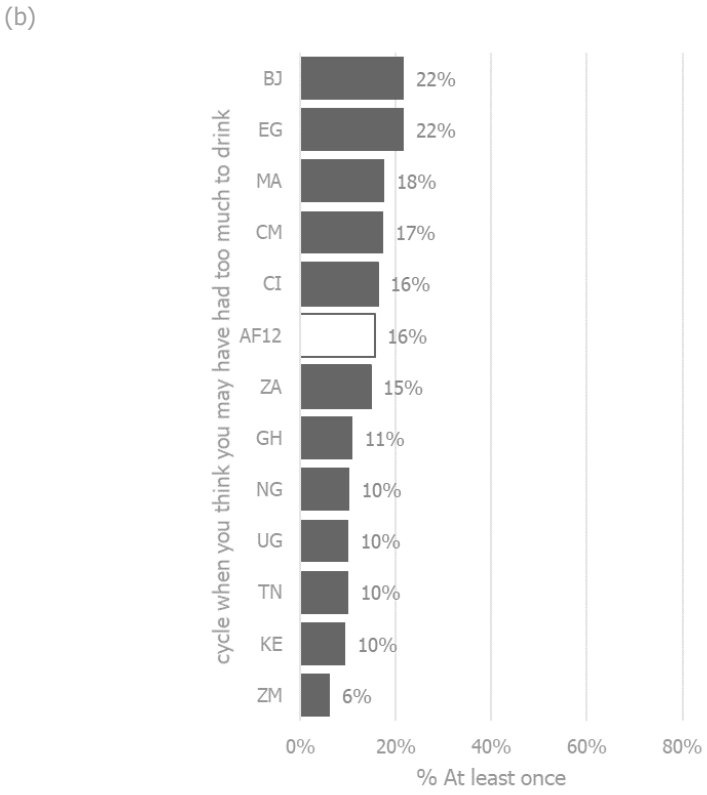


Figure 67. Self-declared (unsafe) behaviour of cycling under influence for AF12 (a) by gender and age groups and (b) at the country level.

Note: (1) Reference population: cyclists at least a few days a month (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

7.1.2 Policy measures for cyclists

Another topic of interest is the support for a legal measure forbidding cyclists using headphones or earbuds to listen to music while cycling. This was measured with a 5-points scale with the endpoints 'oppose' and 'support'. For the analyses a binary variable was used with the two values oppose/neutral (1-3) and support (4-5). Responses of all road users were analyzed. Results are presented in Figure 68.

V018_15) Do you oppose or support a legal obligation to…? Have a zero tolerance for using headphones or earbuds while riding a bicycle?

Results show that 2 out of 3 AF12 respondents support this type of measure, which is similar to the support in Europe. In Uganda and Kenya 84% of the respondents support this measure, while only 59% in Morocco and 56% in Egypt.

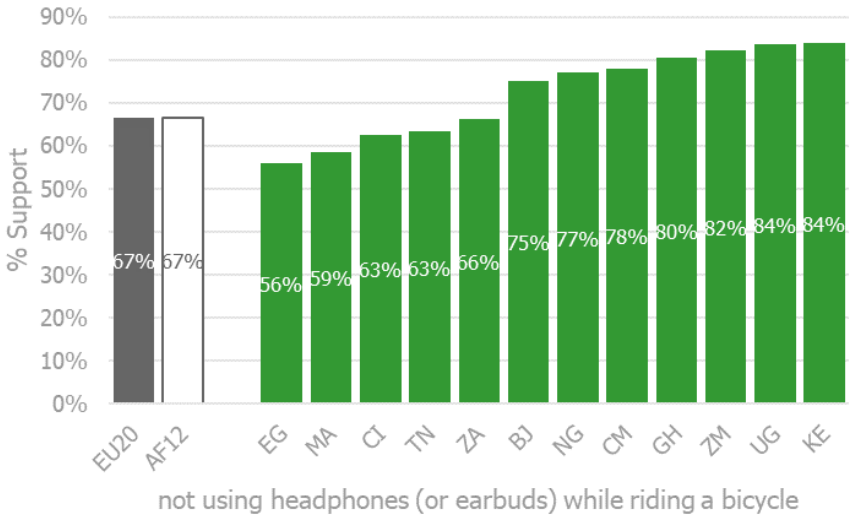


Figure 68. Level of support for legal measures forbidding the use of mobile phone and music listening by cyclist for AF12 at the country level.

Note: (1) Reference population: cyclists at least a few days a month (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53

7.2 Pedestrians

Walking is the most widely used transport mode (95% of AF12 respondents used this transport mode in the past 12 months; Figure 6).

7.2.1 Walking on public roads

In this section, different types of unsafe walking behaviour is discussed. Pedestrians had to indicate on a scale of 1 to 5 (1 = Never and 5 = (Almost) always), the frequency with which they engaged in certain risk behaviours in the last 30 days. Dichotomized variables were used here, 'at least once' (score2-5). Only respondents who indicated having walked at least a few days a month are considered in the analyses.

Respecting traffic lights and zebra crossings

Two unsafe behaviours were assessed concerning the pedestrians:

Q12_5_3 et 4) "Over the last 30 days, how often did you as a pedestrian…"

- Cross the road at the places other than a nearby (distance less than 30m) pedestrian crossing?
- Cross the road when a pedestrian light is red?

Results are presented in Figures 69 and 70. 74% respondents (in AF12 and EU20) reported to have crossed the street at another place than the nearby pedestrian crossing (Figure 69a). Besides, 47% reported to have crossed the street while the traffic light was red (52% in Europe; Figure 70a). The prevalence for both statements is quite similar for men and for women but it decreases with age.

The prevalence of crossing the road other than a nearby pedestrian crossing ranges from 62% in Benin to 82% in Zambia (Figure 69b). Moreover, the prevalence of ignoring a red light as pedestrian ranges from 37% in Benin to 54% in South Africa (Figure 67b).

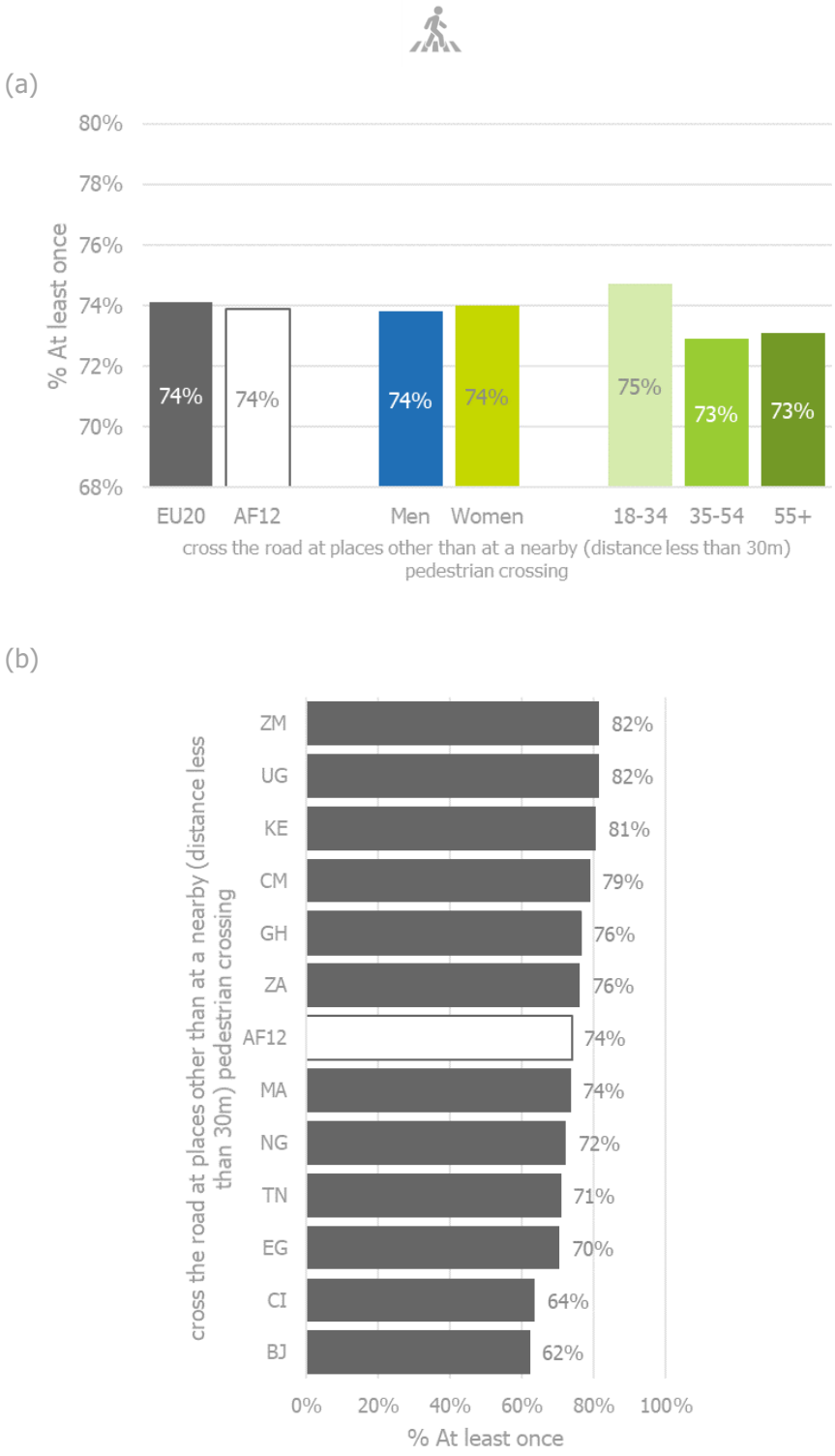
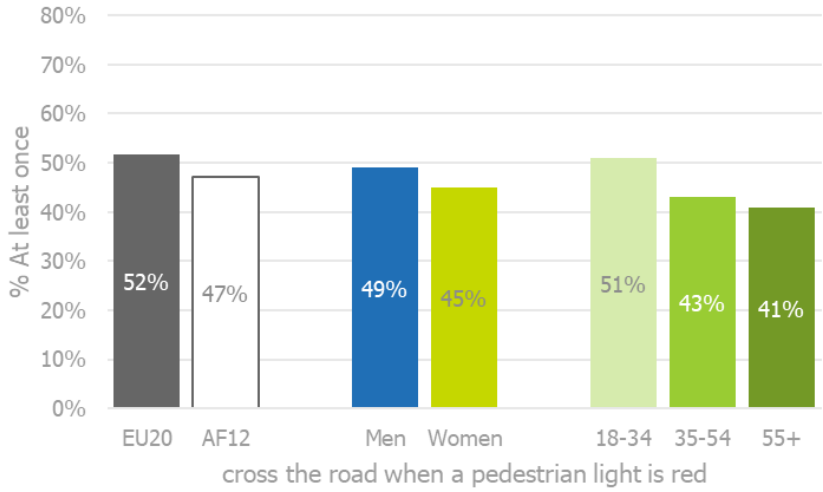


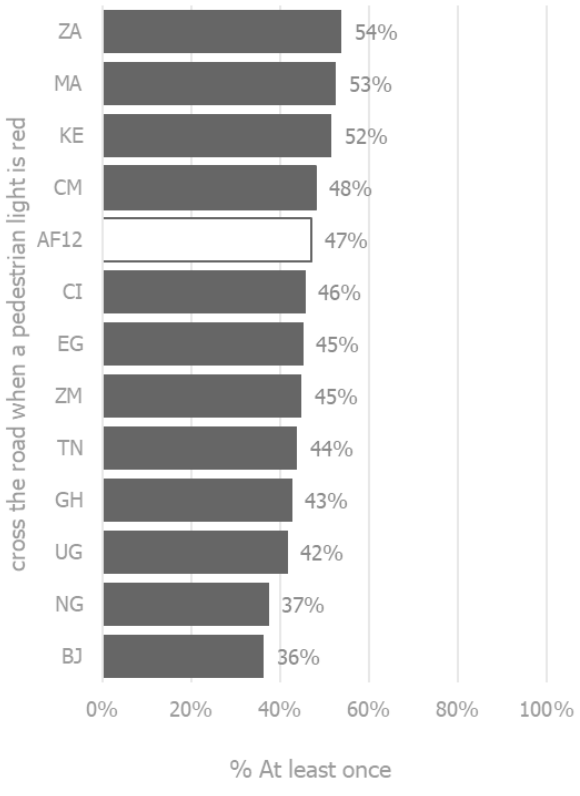
Figure 69. Self-declared (unsafe) behaviour of pedestrians for AF12 by gender and age groups.

Note: (1) Reference population: pedestrians at least a few days a month (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

(a)



(b)



% at least once (last 30 days)

Figure 70. Self-declared (unsafe) behaviour of pedestrians for AF12 by gender and age groups.

Note: (1) Reference population: pedestrians at least a few days a month (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

Distraction while walking

Pedestrians who spend time on the phone while walking on public roads take more risks when crossing the road. They also walk more slowly, which means it takes them longer to cross the road and makes them more inclined not to see objects and obstacles that they otherwise would. Listening to music through headphones will lead to auditory distractions.

The pedestrians had to assess two items in order to estimate the prevalence of self-declared behaviours of distraction:

Q12_5_1 & 2) "Over the past 30 days, how often as a pedestrian:

- 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

While only a third of the EU20 respondents reported to listen to music while walking, more than half of the AF12 respondents reported to do so (Figure 71a). Women (55%) appear to be somewhat less prone to listen to music while walking compared to men (59%); the prevalence decreases with age.

The reported prevalence on 'using a mobile phone while walking' is higher among African respondents (70%) than in EU20 (59%; Figure 72b). There is no difference between men and women and the prevalence decreases with age.

The national results (Figure 71b and 72b) point out that prevalence of listening to music as a pedestrian ranges from 41% in South Africa to 70% in Ivory Coast, while they range from 63% in South Africa to 81% in Cameroon regarding reading a text message or checking social media as a pedestrian.

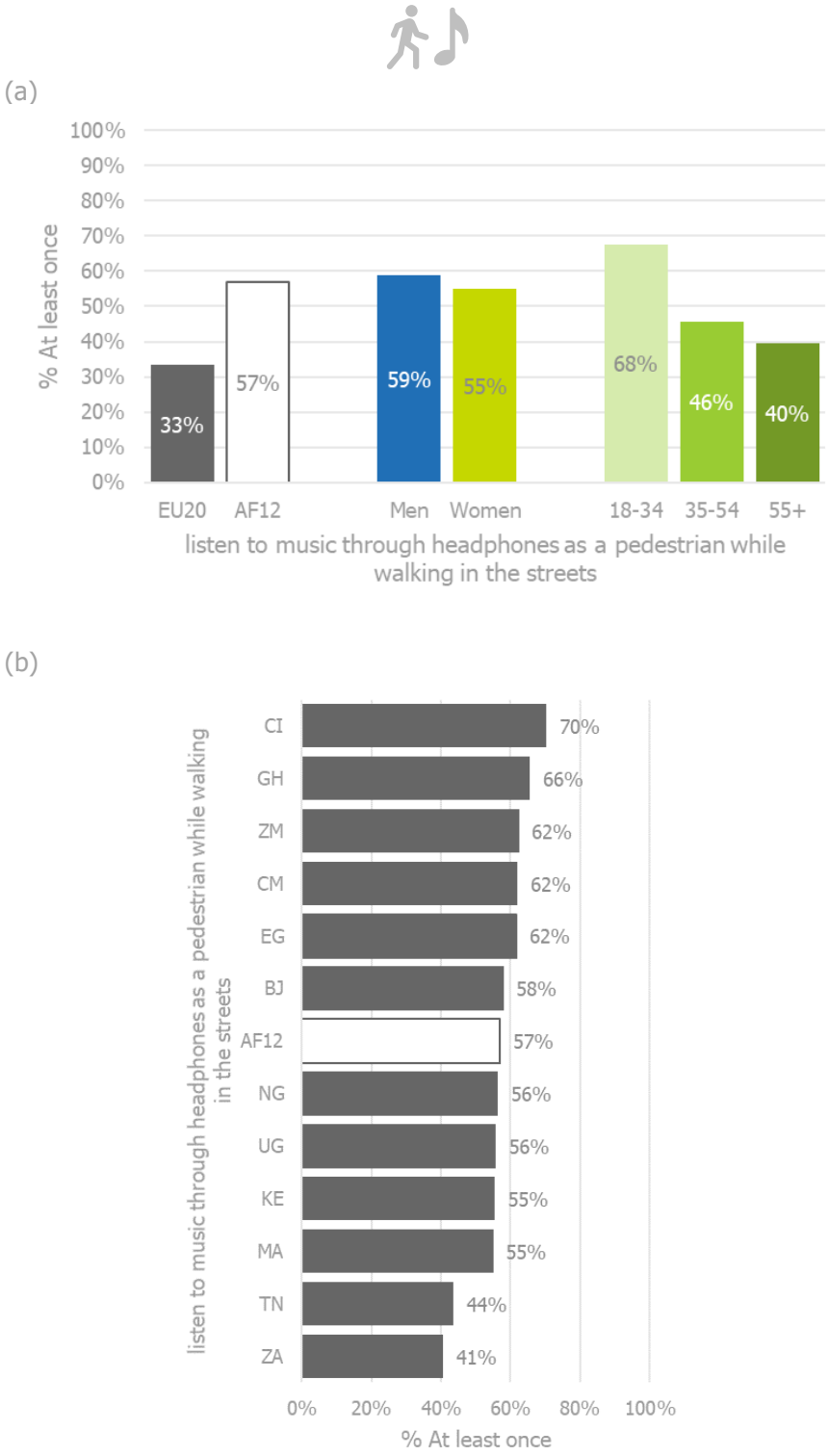


Figure 71. Distraction with music listening while walking for AF12 (a) by gender and age groups and (b) at the country level.

Note: (1) Reference population: pedestrians at least a few days a month (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

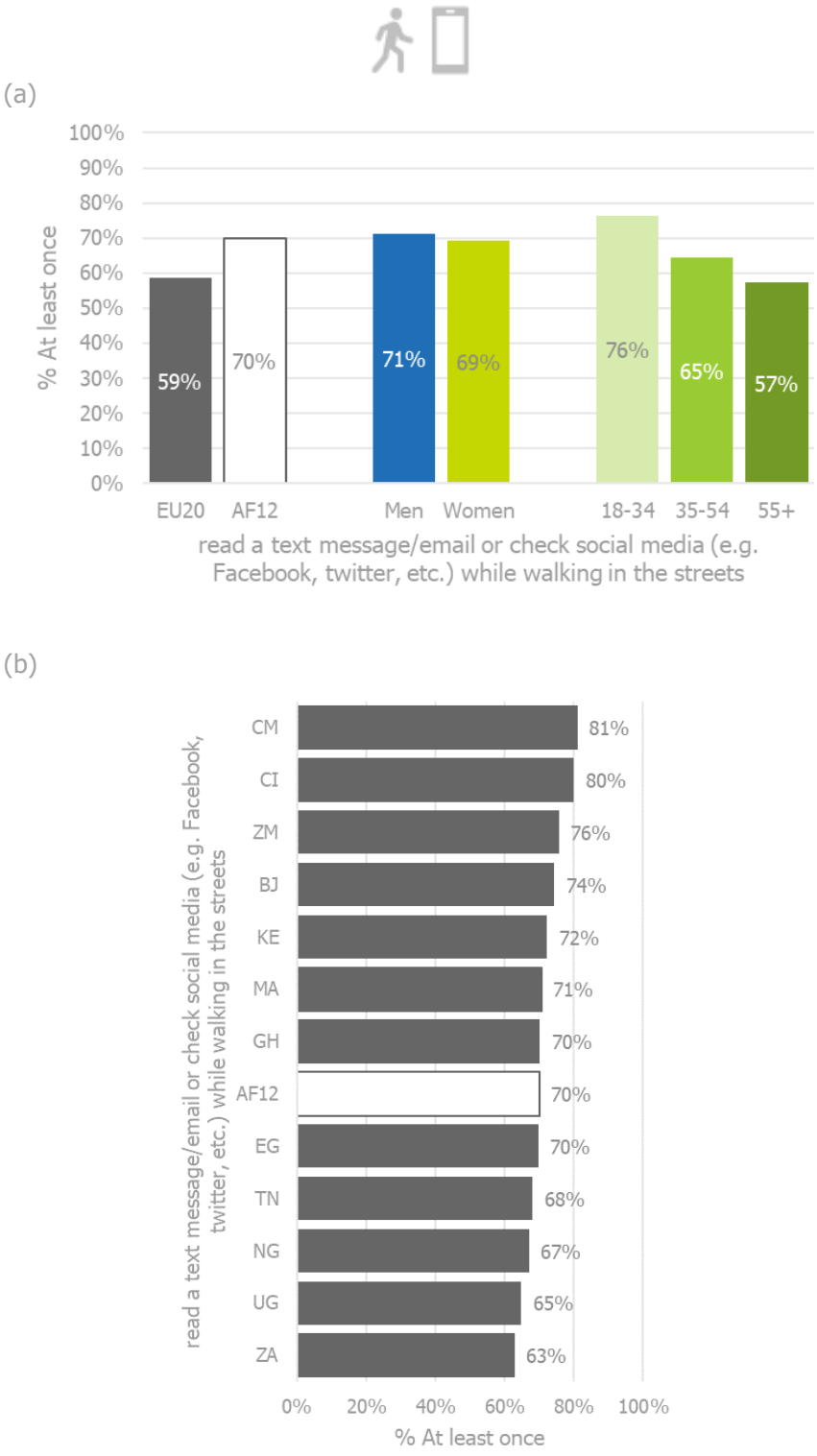


Figure 72. Distraction with use of a mobile phone while walking for AF12 (a) by gender and age groups and (b) at the country level.

Note: (1) Reference population: pedestrians at least a few days a month (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53 (4) % at least once in the last 30 days, score 2-5 on a 5-points scale from 1=never to 5=(almost) always.

7.2.2 Policy measures for pedestrians

The support for a legal measure forbidding pedestrians using headphones or earbuds to listen to music while walking on the streets was measured with a 5-points scale with the endpoints 'oppose' and 'support'. For the analyses a binary variable was used with the two values oppose/neutral (1-3) and support (4-5). Responses of all road users were analyzed. Results are presented in Figure 73.

Q18_14) Do you oppose or support a legal obligation to…? Have a zero tolerance for using headphones or earbuds as a pedestrian?

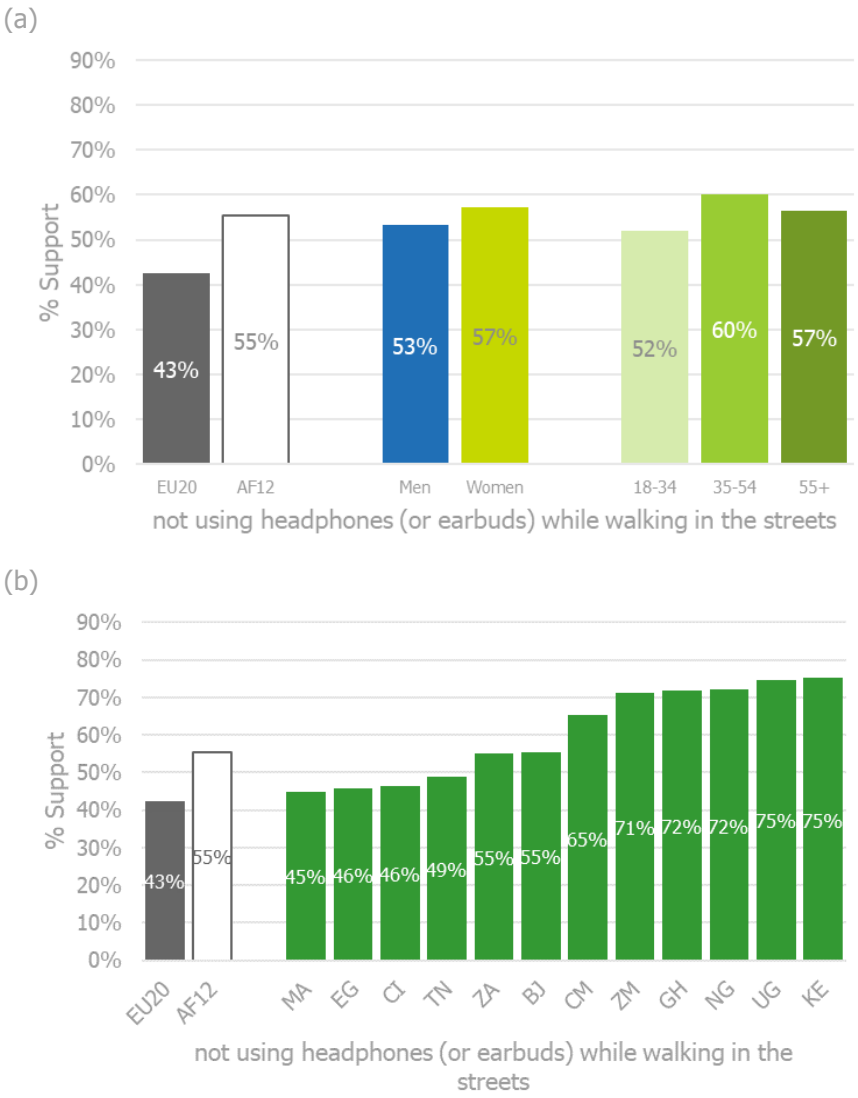


Figure 73. Support regarding legal measure of not allowing the use of headphones while walking for AF12 (a) per gender and age groups and (b) at the country level.

Note: (1) Reference population: pedestrians at least a few days a month (2) AF12 mean is based on African group weight ESRA2; EU20 mean is based on European group weight ESRA2_2018; Individual countries based on individual country weight. (3) Benin: N≤53

African respondents appear more supportive of forbidding the use of headphones (or earbuds) while walking with an average of 55% compared to Europe (43%; Figure 73a). Overall, men (53%) appear to be slightly less supportive than women (57%) about this legal measure. No significant age effects were observed in the data.

Regarding the prohibition of not using headphones while walking in African countries (Figure 73b), the highest support is found in Kenya (75%), Uganda (75%) and Nigeria (72%). Respondents from Morocco (45%), Egypt (46%) and Ivory Coast (46%) are the less supportive to this proposal.

Vulnerable road users

Pedestrians are an important group of road users; walking is the most common transport mode in Africa. Pedestrians suffer the most severe consequences in road crashes with other road users, because they cannot protect themselves against the speed and mass of the other party (Van Kampen, 2000).

- Distracted participation in traffic by listening to music through headphones or using a mobile phone while walking are often reported (>57%). However, compared to European pedestrians, African pedestrians report more respect for red traffic lights.
- Half of the African cyclists reported to listen to music through headphones, and 30% using a mobile phone while cycling.
- Almost half of the African motorcyclists did not use a helmet in the past 30 days.

A large part of African road users can be categorized as vulnerable road users. Hence, these types of road users should be given special attention in road safety policy as recommended in 2010 by the U.N. General Assembly.

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References

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Appendix 1: ESRA2 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[11], 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 …?[12]
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 …?[13] 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 …?[14] 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 …?[15] 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)

[11] For data collection in Benin, due to the covid-19 situation, some wordings of questions needed to be addressed. During this period, this sentence was phrased as follow: "*During a typical month, do you transport a child (<18 years of age) in your* car at least one day of the month?"
[12] For data collection in Benin, during covid-19 lockdown : *"During a typical month, how often do you as a CAR DRIVER…?"*
[13] For data collection in Benin, during covid-19 lockdown: *"During a typical month, how often do you as a CAR PASSENGER …?"*
[14] For data collection in Benin, during covid-19 lockdown: *"During a typical month, how often do you as a MOPED DRIVER OR MOTORCYCLIST …?"*
[15] For data collection in Benin, during covid-19 lockdown: *"During a typical month, how often do you as a CYCLIST …?"*

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: Supplementary data

Table 2: Specifications of the Alcohol consumption per capita in African countries

Country	**Alcohol, total per capita (15+) consumption** (in litres of pure alcohol) [95%CI] (3y average: 2016-2018)
Zambia	6.5 [5.2-7.9]
South Africa	9.5 [8.1-11]
Kenya	2.8 [2.1-3.6]
Uganda	15.1 [12.3-17.9]
Ghana	2.8 [2-3.7]
Cameroon	5.7 [4.6-6.7]
Benin	2.8 [1.9-3.8]
Ivory Coast	2.7 [1.9-3.6]
Nigeria	10.8 [8.8-12.9]
Egypt	0.4 [0.2-0.8]
Tunisia	2.1 [1.8-3.2]
Morocco	0.7 [0.5-1.3]

Source : WHO; https://apps.who.int/gho/data/node.main.A1036

Appendix 3: Summary of ESRA2 fieldwork per country

ESRA2_2018

Country	Panel provider	National subcontractor	National langue versions	Sample size	Median LOI (minutes)	Start date field (yyyy-mm-dd)	End date field (yyyy-mm-dd)
Australia	RN SSI	RN SSI	English_AU	968	18.44	2018-12-14	2018-12-29
Austria	Punto de Fuga	CINT	German_AT	1999	18.57	2018-12-04	2018-12-18
Belgium	RN SSI	RN SSI	Dutch_BE; French_BE	1985	18.90	2018-12-14	2018-12-31
Canada	RN SSI	RN SSI	English_CA; French_CA	980	19.50	2018-12-19	2018-12-31
Czech Republic	RN SSI	RN SSI	Tscheck_CR	989	20.81	2018-12-14	2018-12-30
Denmark	RN SSI	RN SSI	Denish_DK	984	20.31	2018-12-14	2018-12-31
Egypt	Punto de Fuga	CINT	Arabic_EG: English_EG*	996	21.92	2018-12-04	2018-12-24
Finland	RN SSI	RN SSI	Finish_FI	994	20.04	2018-12-14	2018-12-27
France	RN SSI	RN SSI	French_FR	994	19.02	2018-12-14	2018-12-30
Germany	RN SSI	RN SSI	German_DE	1989	18.67	2018-12-14	2018-12-29
Greece	Ipsos (GfK)	Toluna	Greece_EL	1015	23.52	2018-12-05	2018-12-19
Hungary	Punto de Fuga	CINT	Hungarian_HU	1014	21.89	2018-12-04	2018-12-12
India	Punto de Fuga	CINT	Hindi_IN; English_IN	1035	24.12	2018-12-04	2018-12-12
Ireland	Ipsos (GfK)	Toluna	English_IE	1031	21.00	2018-12-05	2018-12-24
Israel	RN SSI	Panel4All	Hebrew_IL. English_IL	984	20.02	2018-12-17	2018-12-29
Italy	RN SSI	RN SSI	Italien_IT	980	20.04	2018-12-14	2018-12-24
Japan	RN SSI	RN SSI	Japanese_JP	980	17.37	2018-12-14	2018-12-25
Kenya	Punto de Fuga	CINT	Swahili_KE; English_KE*	1000	30.55	2018-12-04	2018-12-13
Morocco	Punto de Fuga	CINT	Arabic_MA; French_MA*	1047	27.05	2018-12-05	2018-12-23
Netherlands	RN SSI	RN SSI	Dutch_NL	983	19.19	2018-12-17	2018-12-27
Nigeria	Punto de Fuga	CINT	English_NG*	1000	34.08	2018-12-04	2018-12-21
Poland	RN SSI	RN SSI	Polisch_PL	993	22.04	2018-12-17	2018-12-31
Portugal	Punto de Fuga	CINT	Portugese_PT	998	21.34	2018-12-04	2018-12-17
Republic of Korea	Ipsos (GfK)	Toluna	Serbian_RS	1043	18.62	2018-12-05	2018-12-18
Serbia	Ipsos (GfK)	CINT	Slovenian_SI	1041	24.00	2018-12-05	2018-12-18
Slovenia	Ipsos (GfK)	CINT	Afrikaans_ZA; English_ZA*	1035	23.58	2018-12-05	2018-12-15
South Africa	Ipsos (GfK)	Toluna	Korean_KR	1013	28.28	2018-12-05	2018-12-19
Spain	RN SSI	RN SSI	Spanich_ES	980	20.61	2018-12-14	2018-12-28
Sweden	RN SSI	RN SSI	Swedisch_SE	987	19.53	2018-12-17	2018-12-30
Switzerland	INFAS	Lightspeed	German_CH. French_CH. Italien_CH	1020	19.79	2019-01-04	2019-01-22
United Kingdom	RN SSI	RN SSI	English_UK	963	16.91	2018-12-14	2018-12-26
USA	Punto de Fuga	CINT	English_US	1016	16.93	2018-12-04	2018-12-11
32	**4**	**5**	**42**	**35036**	**20.82**	**2018-12-04**	**2019-01-22**

ESRA2_2019

Country	Panel provider	National subcontractor	National langue versions	Sample size	Median LOI (minutes)	Start date field (yyyy-mm-dd)	End date field (yyyy-mm-dd)
Benin	Ipsos (GfK)	Toluna	French_BJ	272			
Bulgaria	Punto de Fuga	CINT	Bulgarian	1005	25	2019-12-10	2020-01-08
Cameroon	Punto de Fuga	CINT	French_CM; English_CM	213	33	2019-11-19	2020-01-08
Colombia	Punto de Fuga	CINT	Spanish_CO	1015	28	2020-04-17	2020-04-20
Ghana	Punto de Fuga	CINT	English_GH	401	31	2019-11-19	2020-01-15
Iceland	Ipsos (GfK)	Toluna	Icelandic				
Ivory Coast	Punto de Fuga	CINT	French_CI	400	33	2019-11-19	2020-02-20
Lebanon	Ipsos (GfK)	Toluna	Arab_LB				
Luxemburg	TNS		French_L; German_L; Luxembourgian				
Malaysia	Dynata		English_MY; Malay				
Norway	Dynata		Norwegian				
Thailand	Dynata		Thai				
Tunisia	Punto de Fuga	CINT	Arab_TN	401	26	2019-11-19	2020-01-23
Uganda	Punto de Fuga	CINT	English_UG	401	31	2019-11-19	2020-01-08
Vietnam	Ipsos (GfK)	Toluna	Vietnamees				
Zambia	Punto de Fuga	CINT	English_ZM	500	33	2019-11-19	2020-01-08
16	**4**		**20**			**2019-11-19**	

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