



Regional perspectives on preventing alcohol-related road crashes involving vulnerable road users

Welcome from UNECE and ICAP

Dear Reader,

The United Nations Economic Commission for Europe (UNECE) and the International Center for Alcohol Policies (ICAP) are delighted to bring you this e-book. It is the key outcome of our collaboration on an international symposium “Regional perspectives on preventing alcohol-related road crashes involving vulnerable road users,” which was the opening event of the United Nations Global Road Safety Week in Geneva, Switzerland on 6 - 12 May 2013.

Launched by the Executive Secretary of the UNECE, Sven Alkalaj, and Permanent Representative of the Kingdom of the Netherlands to the United Nations, His Excellency Roderick van Schreven, the international symposium cast a spotlight on alcohol-related impacts on vulnerable road users such as pedestrians, cyclists, and motorcyclists.

This e-book, which is the first of its kind for the UNECE Transport Division and ICAP, comprises the complete findings presented in preliminary form at the international symposium by road safety experts from around the world.

The experts whose work follows are: Mr Eric Howard (global overview with Australian case studies), Mr Michael Cale (Israel and the Middle East), Ms Majda Zorec Karlovšek (Europe and Central Asia), Mr Wilson Odero (Sub-Saharan Africa), and Mr Shaw Voon Wong (Malaysia). We believe that their papers contain unique information and insights, and we hope that the policies and ideas contained here will lead to more enlightened and effective policies and practices in preventing drink driving and saving lives on the world's roads.

UNECE plays regional and global roles in reducing road fatalities and injuries through the promotion of UN legal instruments on traffic rules, vehicle regulations, infrastructure standards, and sharing of best practices. As part of this effort, UNECE is working in partnership with ICAP to draw greater attention to the importance of drink driving interventions in road safety efforts, particularly in low- and middle-income countries. ICAP works to foster dialogue and partnerships in the alcohol policy field and is committed to helping develop pragmatic and feasible solutions to reducing alcohol-related harm.

Thank you for taking the time to read this e-book. We hope that you will join us in our mission to combine local knowledge and global best practices in transforming the world's roads and making them safer for everyone, particularly the most vulnerable among us.

Sincerely,

Ms Eva Molnar



Director, UNECE
Transport Division

Mr Brett Bivans



Senior Vice President,
ICAP



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We DRIVE BY THE RULES

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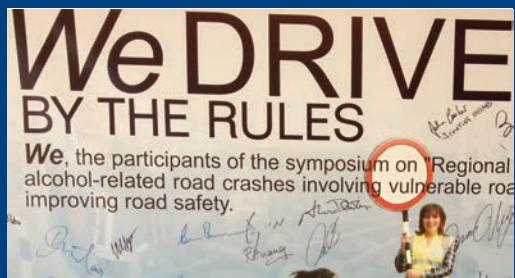
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Road safety message from the UN Secretary-General, Mr Ban Ki-Moon



This road safety message was given on the occasion of the United Nations Global Road Safety Week, 6-12 May 2013.

Decade of Action for Road Safety, 2011 – 2020



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Regional Perspectives on Preventing Alcohol-Related Road Crashes Involving Vulnerable Road Users: An Introduction



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Western Pacific

Alcohol is a significant part of the cultural fabric of many societies. There is of course considerable diversity of drinking patterns between countries, and changes in those patterns have occurred (and will continue to occur) over time. While alcohol has been consumed in a number of forms in several societies as part of traditional and cultural events, today alcohol is a regular part of a modern lifestyle in many societies.

Mobility and mobility patterns have changed dramatically over the past century. People are increasingly mobile and this has encouraged expanded social interactions and changed working opportunities and patterns. These changes in themselves have also affected patterns of alcohol consumption in many societies.

The motor vehicle is a part of the modern household in most societies. The ensuing challenges arising from this increased vehicle operation and use include an increased risk of alcohol-related road crashes.

How can society foster the development of a culture that does not tolerate or enable drinking and driving or riding, that discourages drink walking, and that implements measures (both voluntary and mandatory) to provide the opportunity for the public to consume alcohol in moderation, but not to drive or ride or walk on roads while impaired by alcohol?

Our authors will provide some regional and national perspectives on this issue in their papers. It is and will remain a major challenge for safe road use globally.

Fatalities and Serious Injuries for VRUs Globally

In introducing the topic of regional perspectives on preventing alcohol-related road crashes involving vulnerable road users, let us start by considering the road crash fatality and serious injury situation globally for vulnerable road users (VRUs) and the likely impacts of alcohol on those fatalities.

Globally, road crashes are the eighth leading cause of death for the entire population and the leading cause of death for 15–29 year-olds (WHO, 2013). More than a million people die each year on the world's roads, and the cost of dealing with the consequences of road traffic crashes runs to billions of dollars each year.

WHO (2013) estimates that by 2030 road traffic deaths will become the fifth leading cause of death unless urgent action is taken.

Half of the world's road traffic deaths occur among vulnerable road users, including motorcyclists (23 per cent), pedestrians (22 per cent), and cyclists (5 per cent).

The proportion of overall fatalities for each of these three categories of vulnerable road users vary substantially between regions and countries around the globe, including between high-income countries (HICs) and low- and middle-income countries (LMICs). For example, in selected regions of the world, road crash fatalities involving VRUs account for the following percentages of all road crash fatalities:¹

Region and Country	% Pedestrian Fatalities	% 2- and 3-Wheeler Fatalities	% Cyclist Fatalities	% Total VRUs
HIC , Victoria, Australia	17	17	2	36
LMICs , Africa	38	N/A	N/A	50+
LMICs , Southeast Asia and Western Pacific	N/A	36	N/A	50+
LMIC , East Java, Indonesia	24	50	N/A	74

We must identify and consider what factors in each country or region contribute to this high incidence globally of serious road crash casualties involving VRUs.

It is instructive to review the adequacy of policies and legislation that are in place to address VRU crash risks. Only 28 countries, representing 7 per cent of the world's population, have adequate laws addressing all five key road user behavior risk factors (speed, drink driving, helmets, seat belts, and child restraints). Less than 35 per cent of LMICs have policies in place to protect pedestrians and cyclists (WHO, 2013).

¹ From author's practitioner involvement and other contributors' papers.

Alcohol Involvement in VRU Crashes

Can the contribution of alcohol to serious crashes be determined?

The detail of this involvement will be complex, reflecting the varied nature of the particular alcohol issues affecting VRU crashes in each country, which in turn respond to the culture of alcohol use in each society.

To better understand alcohol involvement as a crash factor for vulnerable road users, it will be useful to categorize pedestrian, cyclist, and motorcyclist fatalities as follows:

- Drivers (for VRU-involved crashes where the driver was alcohol impaired);
- Riders (for single-motorcycle or other VRU-involved crashes where the rider was alcohol impaired); and
- Pedestrians or cyclists who were alcohol impaired

When an assessment of the incidence of the related fatal crashes by category of crash and number can be made, attention can turn to applying proven solutions to address the identified problems.

Understanding the Problem: A Focus on Alcohol-Impaired Pedestrian Crashes

Examining alcohol involvement in all VRU-related fatal and serious injury crashes is beyond the scope of this introductory paper. However, to give an indication of the approach necessary to determine the contributing factors to these alcohol-involved crashes for VRUs, the situation for pedestrians is summarized below.



What are the risk factors associated with alcohol-impaired serious pedestrian crashes and when and where are they occurring?

A two-part study of alcohol-impaired pedestrian crash involvement (consisting of an international literature review and a study of coronial records in Australia) conducted by Mr Cairney and colleagues (2004) provides interesting insights into the issue for HIC environments. According to the review, accident risk for intoxicated pedestrians appeared lower at traffic controls, even though intoxicated pedestrians did not

use them correctly. Further, high-blood alcohol content (BAC) crashes (i.e., where the pedestrian blood alcohol content was greater than 150 mg/100 ml) were associated with:

- Near-side crashes (67 per cent);
- Weekends (52 per cent);
- Hours between 6 p.m. and 6 a.m. (78 per cent);
- Close proximity (within 400 m) to licensed premises (70 per cent); and
- Inner suburban areas (56 per cent).

Foss et al. (1997) contended that rather than attempting to modify pedestrian behavior, it is likely to be more useful to aim countermeasures at drivers. This would require better information about situational factors characterizing impaired-pedestrian collisions. This could include time, lighting, visibility, road type and condition, location, pedestrian actions, and driver actions.

Mr Cairney et al. (2004) also found that the time of day is a prime predictor of the incidence of drinking pedestrians (in areas of high pedestrian flow) and that the relative fatal accident risk for male pedestrians with a BAC above 100 mg/100 ml (0.10) is significantly higher than for non-alcohol-affected male pedestrians.

It also reported that countermeasures to address alcohol-impaired pedestrian crash risk may be more successful by adopting a public health approach rather than focusing on road crashes only, and that this approach could be used to pilot initial solutions. It is recommended that if a jurisdiction has no data, the course of action should be a focus on addressing VRU fatal and serious-casualty crashes generally.

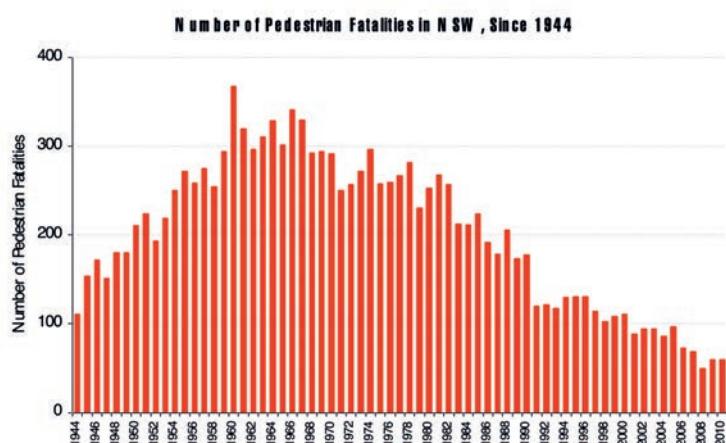
Importance of data - Case Study from New South Wales, Australia

Trend Data for Pedestrian Serious Casualties

Use of trend data is a highly important tool for practitioners and researchers. It enables changes over time in road trauma components to be monitored and understood and compared with measures applied over a certain time period (plus a certain lag period), often enabling impacts to be detected, even before scientific review can be carried out. Of course, full evaluation of interventions should be conducted as much as possible.

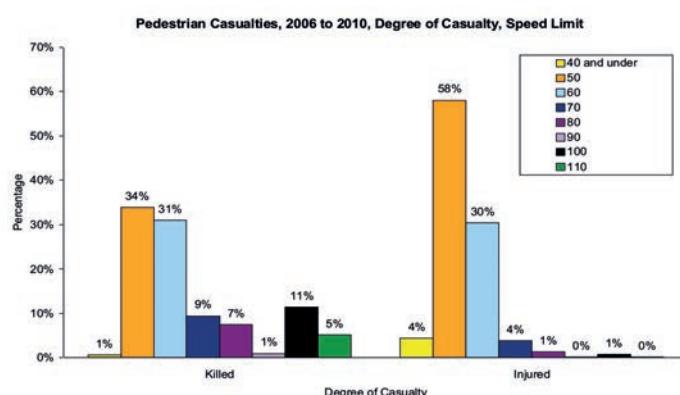
An example of the usefulness of trend data is evident in pedestrian fatality data drawn from the Centre for Road Safety in New South Wales (NSW), Australia. The data show that from a peak of 367 fatalities in 1960, pedestrian fatalities fell by 86 per cent. (There were 59 pedestrian fatalities on NSW roads in 2010, the equal second lowest annual total since records began in 1928).

Linking Pedestrian Casualties to Travel Speeds (As Determined by Speed Limits) in NSW



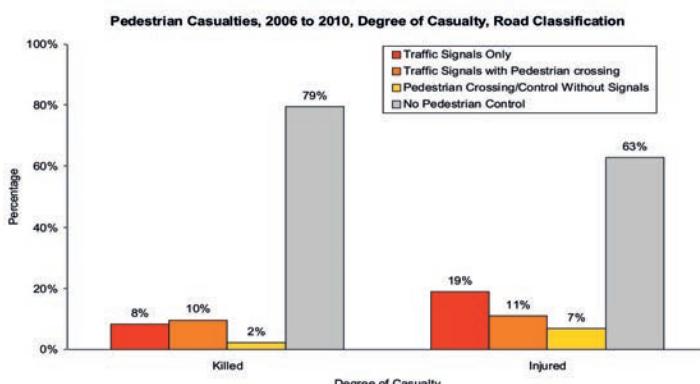
Travel speed of vehicles is a key determinant of risk for vulnerable road users. Data show that one-third of all pedestrian fatalities in NSW occur on roads with a posted speed limit in excess of 60 km/h, but nearly two-thirds of all injuries occur on roads with a posted speed of 50 km/h or less.

Understanding the Effects of Traffic Controls on Pedestrian Crash Involvement



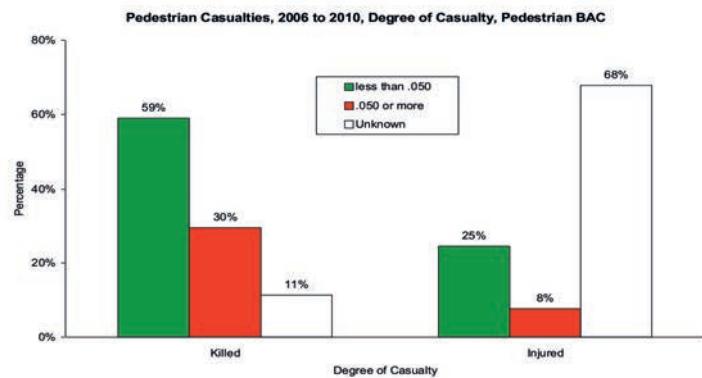
Traffic control measures assist safe road use. Most pedestrian casualties in NSW occur at locations without some form of pedestrian control present.

The Role of Alcohol Impairment in Pedestrian Casualties



In at least 30 per cent of pedestrian fatalities and 8 per cent of pedestrian injuries in NSW from 2006 to 2010, the victim had a BAC level of 50 mg/100 ml (0.05) or more. However, alcohol levels are unknown for around two-thirds of all pedestrian injuries. Where alcohol results are known, the pedestrian had a BAC level of 50 mg/100 ml (0.05) or higher in 33 per cent of pedestrian fatalities and 24 per cent of pedestrian injuries.

This sample of available data on pedestrian crashes from NSW represents good practice in data collection as the basis for analysis and understanding of pedestrian serious crash involvement and some of the various contributing factors to that outcome. It provides a basis for further review to determine other contributing factors. All jurisdictions need to develop (and enhance over time) crash data systems as soon as possible to support such an evidence-based approach.



Understanding Available Research and Commissioning Local Research

In considering pedestrian fatalities and pedestrian BAC levels, the Cairney et al. (2004) review of studies (mostly from HICs) provided the following outcomes:

- More than 25 per cent of fatally injured adult pedestrians have a BAC level exceeding 80-100 mg/100 ml.
- The distribution of impaired pedestrian BACs is skewed towards higher BACs.
- The victims are predominantly male.
- The incidence of alcohol-related pedestrian crashes is related to social deprivation, which is particularly evident among indigenous people.

In examining pedestrian crash involvement and BAC levels, Mr Struik and Mr Rogerson (1988) found that:

- Pedestrians with a BAC greater than 100 mg/100 ml had double the risk of being involved in a crash compared with those with a BAC less than 100 mg/100 ml.
- Those with a BAC greater than 150 mg/100 ml had 15 times the risk of being injured in a crash compared to those with a BAC less than 100 mg/100 ml.

These important findings are generally consistent with other international studies.

Summary: Understanding VRU Crash Risks and Alcohol Involvement

It is obviously crucial to establish data systems and to collect data about fatal and serious-injury crashes involving VRUs and the levels of alcohol impairment associated with the drivers, riders, pedestrians and cyclists in those crashes.

It will also be useful to know the locations and nature of these crashes and the circumstances, including travel speed, associated with each.

Achieving comprehensive and uniform testing for alcohol and drug impairment levels in the blood supply of all pedestrian, motorcyclist, and cyclist crash victims presenting at hospitals presents a substantial challenge for LMICs.

There are fundamental public-sector management and resourcing issues to be addressed here. To understand the contribution of alcohol impairment to these serious-casualty crashes, implementation of blood testing has to be a key medium-term goal for road safety agencies in these countries.

Identifying Potential Solutions to Reduce VRU Serious Casualties



All countries have opportunities to make gains in reducing VRU serious casualties generally, including those involving alcohol impairment of road users. In determining solutions it will be helpful to focus on the five safe system pillars of the UN Decade of Action: road safety management, safer roads and mobility (speed), safer vehicles, safer road user behavior, and postcrash emergency care.

Road Safety Management

This pillar emphasizes the importance of working across sectors to understand crash risks and safe system principles and to develop and deliver interventions. It applies to crash data analysts, infrastructure designers, footpath and roadside markets managers, bus services operators and public regulators, deterrence officers (legislation and enforcement), public education officers, emergency medical care and hospital treatment practitioners (plus BAC recording), and others. It requires that agencies work with the alcohol industry at a senior level to explore options for reduced alcohol-impaired fatal and serious-crash outcomes for all road users, including VRUs.

Safer Roads (Infrastructure) and Mobility (Speed)

Solutions within this pillar include road safety audit processes (for proposed roads) to detect safety shortcomings within road designs before they are constructed—ensuring that the process assesses safety for all road users, including all VRUs.

Applying higher-level safe system principles to existing roads through International Road Assessment Programme (iRAP) safety assessments (which provide star ratings for roads based on the assessed safety performance, using video recording and processing of road and road-environment data) is an important approach that has become available in the last five or so years. Options for treatments to lower injury crash risk are also generated. iRAP – which is a registered charity dedicated to preventing the more than 3,500 road deaths that occur every day worldwide - provides star ratings for vehicle occupants, motorcyclists, pedestrians—for a length of road—and identifies treatment options to improve these ratings.



Providing safer road crossings for pedestrians (such as traffic signals and raised speed-reducing platforms) is a key opportunity for all countries, especially on higher-volume vehicle routes where there is major pedestrian activity. Provision of footpaths along many stretches of roads and streets is another treatment that would improve safety outcomes.

Lowering speed limits in higher pedestrian traffic areas—30 km/h is always recommended—plus supportive infrastructure treatments (such as footpaths and median refuges for road crossings) will reduce pedestrian serious casualties. In many LMICs, pedestrians are often expected to cross six or more lanes of traffic without signals or speed tables and with poor vehicle operator compliance with pedestrian crossing rules (usually painted on the road surface with no signage).

Safe system principles indicate that a 40 km/h travel speed limit should apply for motorcycles—and for other vehicles sharing the road (if a separate motorcycle right of way is not provided) in areas of higher motorcycle activity. This is challenging for any government and to date there has been little preparedness to tackle this issue. However, safe system principles indicate the need for measures of this type to be considered.

Safer Vehicles (Longer Term)

Opportunities here include the adoption of the Euro NCAP (New Car Assessment Programme) standard for pedestrian safety features for new vehicles imported into a country or produced in the country, promotion of further innovative technologies (e.g., bonnet airbags and crash-avoidance systems) that offer the prospect of improved safety for VRUs, especially pedestrians, and, while still a somewhat aspirational objective for most LMICs, encouraging the fitting and use of integrated alcolocks in new vehicles to prevent driving while alcohol impaired. Euro NCAP is an international association under Belgian law which is independent of industry and political control. It makes available to consumers independent information about a car's comparative safety.

In this regard, the activities of the World Forum for Harmonization of Vehicle Regulations (WP.29) are also noteworthy. WP.29 is a UNECE body that, in the framework of United Nations legal instruments, develops harmonized vehicle regulations that can be applied worldwide. These regulations promote the design and construction of safer and more environmentally-friendly vehicles. To date, over 140 vehicle regulations have been developed in areas such as passive safety, pollution, and energy. The regulations are based on detailed research and subsequent adoption by WP.29 members. They are all annexed to and form an integral part of the 1958 and 1998 "Vehicle Regulations" Agreements.

Safer Road User Behavior: Legislation, Enforcement, and Public Education



Targeted efforts to change behaviors (through a combination of legislation, enforcement, and public education) could include improving compliance by drivers and riders with speed limits (requiring clear and frequent signage) and deterring driving while impaired with alcohol (such as by setting a BAC limit of zero for novice drivers and drivers of heavy vehicles or public transport, and a limit of 20–50 mg/100 ml for all other drivers).

While currently likely to be controversial, deterrence of walking on roads—by creating and enforcing an offense for road use as a pedestrian when having a BAC greater than 150 mg/100 ml—merits serious consideration to address the crash risk of alcohol-impaired pedestrians. This type of measure could also be extended to cyclists. A zero BAC limit could be considered for motorcyclists given the high degree of handling expertise required and the higher risk of a crash associated with motorcycling.

Other action jurisdictions could take to target unsafe behaviors should include efforts to deter driving while impaired with drugs, walking when impaired by drugs, and non-wearing of helmets by motorcycle riders and passengers.

It is essential for police to enforce vehicle speed limits at all times, BAC limits for drivers/riders, and, if legislated, BAC limits for pedestrians and cyclists, especially at times and locations where drinking is more likely to occur.



An example of awareness raising: i.e., encouraging local governments to stencil this logo on footpaths outside pubs and clubs in their regions. (Pedestrian Council of Australia, NSW, Australia)

Public campaign strategies should be developed and implemented to raise awareness of alcohol-impaired driving, riding, or walking and to promote how enforcement will contribute to changed behaviors (and attitudes in the longer term) and serve to ultimately make these behaviors socially unacceptable.

Partnership between government agencies and the alcohol industry is recommended to introduce and promote responsible serving of alcohol (see below) and associated regulations for licensed premises. Focused publicity campaigns for patrons of licensed premises are also strongly recommended.

Post-crash Emergency Care

It is necessary for the emergency medical system to work consistently to improve the timeliness of the retrieval of crash victims from the roadside and their prompt conveyance to hospital/trauma care facilities.

The development of competent paramedic care and its availability at the roadside for crash victims, the providing of high-quality trauma care, and the provision of improved rehabilitation care are all factors that will reduce fatalities and many of the most serious effects of some long-term injuries.

Any of the above (or other) actions that are proposed to reduce alcohol-involved VRU fatalities or serious injuries needs to be based on an understanding of the factors involved in those crash categories. This should be based on evidence and experience from other countries, an analysis of national data on VRU fatalities and serious injuries (overall and alcohol impaired), and comparisons with data from other countries.

Effective action will also require recognition of the particular challenges in this area that are present in your country and identification of what you can adapt and apply from the experience of others.

Potential Interventions to Reduce Alcohol-Impaired Pedestrian Fatalities

With an understanding of factors in crashes involving alcohol impaired pedestrians, what are some of the interventions that could be introduced?

The list is extensive and includes the following: lower speed limits; improved street lighting and low-height pedestrian fencing at curbs outside licensed premises and in bar precincts; all-red phases for traffic lights after hours at intersections in bar precincts; median refuges; and crosswalks with signals or speed platforms/tables for pedestrians, especially in urban areas.

Public information campaigns could be developed and delivered extensively to provide information about the nature and extent of the intoxicated-pedestrian problem



Innovative mass media campaigns can play an important part in changing behaviours. For example, the Pedestrian Council of Australia featured this poster in a public campaign about pedestrian crash risk and pedestrian distraction. While not specific to alcohol impairment, it reminds us of the impact of effective images and messages.

and seek to lessen binge drinking and excessive consumption. Programs of this type serve in the longer term to support establishment of a new social norm that is not supportive of excessive alcohol consumption.

Policies promoting the responsible serving of alcohol at licensed premises could be developed and adopted in association with the alcohol industry and should include the following:

- Adoption of house policies and staff training to ensure staff know how to refuse alcohol service to intoxicated patrons.
- Provision of free or inexpensive food when patrons call for drinks after work.
- Abandoning “happy hour” policies for cut-price drinks.
- Providing free nonalcoholic drinks for designated drivers, and displaying warning messages on premises about risks of pedestrian impairment.
- Arranging transport home for patrons.

Further countermeasures, as explored by Mr Bloomberg and Mr Fell (1979), include consideration of regulations prohibiting “walking whilst intoxicated” (as suggested earlier in this paper); the development of profiles of “at-risk” groups in order to guide appropriate action by enforcement agencies; lowering of alcohol content, especially of beer; engineering treatments, such as use of barriers or curbs tilted away from the street; good pre-hospital care and quick transportation to hospital; and well-trained healthcare providers and trauma-care systems.

Case Study: Infrastructure Treatments to Reduce Pedestrian Fatalities, Including Alcohol-Involved Pedestrian Fatalities

Attention is drawn to two studies (from Australia and the United Kingdom of Great Britain and Northern Ireland) that used infrastructure treatments—“rest on red” traffic signal phasing late at night at times of higher alcohol-impaired pedestrian crash risk and adjacent to licensed premises—to reduce crash risk.

The results of the trial conducted in Australia (Corben et al., 1996) included a reduction in mean vehicle speeds of 11 km/h (28 per cent) at the signals’ stop lines during the periods of each evening that the treatment applied. There was also a measured reduction of 52 per cent in vehicles traveling at threatening speeds (>30 km/h).

In the U.K., this infrastructure treatment (in combination with puffin crossings) resulted in 76 per cent fewer fatal and injury crashes and 75 per cent fewer fatal and injury crashes involving pedestrians (unpublished evaluation report of U.K. study, B. Turner, personal communication, April 2013).



Possible infrastructure treatments to reduce pedestrian serious-casualty crash risk (left to right): pedestrian fencing outside licensed premises and adjacent to pedestrian crossings; painted medians (providing some refuge for pedestrians) in busy pedestrian areas; painted crosswalks to more clearly identify pedestrian priority areas (Corben & Duarte, 2000).

Approach if Alcohol Consumption in a Country Is Currently Low

Where a culture of alcohol consumption is not in place (e.g., as in most Muslim countries), there is an opportunity to prevent the increase in road safety risks associated with more widespread alcohol impairment. It is useful to note, however, that alcohol impairment will probably exist to some extent in any society, and therefore measures to contain and if possible reduce the likelihood of an increase in impairment incidence should be devised and implemented.

In these lower-consumption countries, and indeed for all other societies, consideration should be given not only to what can be done to reduce pedestrian, cyclist, and motorcyclist deaths involving alcohol, but what can be done to create a safe system—at least for pedestrians and cyclists—in the early stages.

Actions devised should rely on evidence and focus on tackling drink driving/drink riding (and travel speed reductions in urban areas) as highly effective ways to reduce pedestrian and cyclist deaths related to alcohol consumption, rather than targeting intoxicated pedestrians.

Assessments of crash risks can be carried out. For example, a new app for iOS devices provides a ready means of assessing and rating pedestrian crossing locations for safety on a scale of 1 to 5. Called “Walk this Way,” it has been developed by the Monash University Accident Research Centre. The app acknowledges the significance of vehicle travel speeds as the key determinant of pedestrian safety when crossing roads (see Corben, 2013).

The planned interventions should then be delivered—meeting the challenges that the move from concept to delivery always entails.

Conclusions

There are many challenges associated with reducing the serious crash involvement of VRUs that relate to alcohol impairment of road users.

The overall nature of alcohol consumption, with the diversity of cultural issues and settings in each country, requires locally appropriate responses to be devised and implemented.

The problems need to be measured as precisely as is feasible, and any other available data must be used to guide intervention selection.

Many road traffic injuries are largely preventable. The evidence base for effective interventions to better protect VRUs from serious casualties involving alcohol impairment is extensive.

Observations from the Regions

The following papers provided by experts refer to the road safety challenges associated with alcohol impairment in their own countries and regions. This is an important opportunity to share information and understanding about existing conditions in these countries and to consider how good practice (as alluded to in this introductory paper and in those regions) might be disseminated or shared more widely.

How can further capacity—for research, analysis, development—as part of overall road safety performance improvement be fostered and developed in LMICs? How can the necessary resources be found and applied?

Matching solutions to problems in this area and being as innovative as the cultural environment permits requires knowledge, skill, courage, and support from local and international colleagues, the alcohol industry, and international injury-prevention organizations. This publication is an effort to support the necessary momentum for change.

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Click to download the full presentation
Mr Eric Howard provided for the 2013
United Nations Global Road Safety Week



Eric Howard signing the 'We DRIVE BY THE RULES', pledge

Alcohol-Related Road Crashes Involving Vulnerable Road Users in Malaysia: Issues and Challenges



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Driving under the influence of alcohol is one of the main and well-recognized risk factors for road traffic collisions. Many countries have set up a blood alcohol content (BAC) legal limit to prevent drinking and driving. However, the BAC limit varies by country. Developed countries have recognized the need to lower the BAC limit and have even considered bringing it down to zero, although many others still remain at the level of 0.08 per cent (0.08 g/dl).

Recently, further attention has been given not only to drinking and driving but also drinking and walking. The success of prioritizing drink driving in developed countries has successfully brought down the number of road traffic collisions, and thus led to recognition of the need to keep drinking and walking in control. This has also carried the interest of looking into the influence of alcohol consumption of vulnerable road users, including bicyclists and motorcyclists, on road traffic collisions. No doubt, drink driving is a very prominent risk factor for road traffic collisions, but drinking and riding has a much higher crash risk, especially at lower BAC levels (0.02 per cent–0.09 per cent), due to impairment in concentration, reasoning, peripheral vision, and glare recovery. Drinking and cycling or biking has a higher risk of severe injury than drink driving, even at low impact speed, because riders are

not protected by the vehicle structure. Furthermore, the risk exposure of drinking and riding, as well as the risk of severe injury, could also be higher than drinking and walking, in view of the fact that riding involves much higher speeds than walking.

It is very important to recognize such risks, especially in developing countries that have a high number of motorcycles on the road. In the Association of Southeast Asian Nations (ASEAN) region, motorcycles are one of the major modes of transportation. For instance, Malaysia has 9,985,308 registered motorcycles, which constituted about 47 per cent of all motorized vehicles on the road in 2011. Other ASEAN countries have a similarly high composition of motorcycles on their road, as shown in Table 1.



Table 1. Registered Vehicles in ASEAN Countries

Country, Year of Data	Total Registered Vehicles	Registered Motorized 2- and 3-Wheelers	Motorized 2- and 3- Wheelers as a Proportion of All Vehicles (%)
Brunei Darussalam, 2010	349,279	n/a	n/a
Cambodia, 2010	1,652,534	1,372,525	83
India, 2009	114,592,000	82,402,000	72
Indonesia, 2010	72,692,951	60,152,752	83
Malaysia, 2011	21,401,269	9,985,308	47
Myanmar, 2011	2,326,639	1,911,040	82
The Philippines, 2010	6,634,855	3,482,149	52
Singapore, 2010	945,829	n/a	n/a
Thailand, 2010	28,484,829	17,322,538	61
Viet Nam, 2010	33,166,411	31,452,503	95

Source: World Health Organization (WHO). (2013). Global status report on road safety 2013. Geneva: Author

It is crucial for an intervention to be based on reliable data and sound analysis. The fundamental issue is whether a country, especially one that is developing or underdeveloped, has enough data to support the implementation of a policy and program for vulnerable road users. Does it have a comprehensive data-collection system for alcohol-related fatalities, injuries, and crashes? Most countries rely on police-based data, which are often biased by underreporting for many reasons, including lack of capability and resources. Police data are linked directly to prosecution and carry legislative implications, and thus may be subject to integrity

issues as well as humanitarian considerations such as sympathy for the victim. The latter reason has a significant influence in the underreporting of alcohol-related crashes. This is particularly true in insurance claiming and prosecution, which would need considerable time to settle as compared to a typical road traffic collision. Hence, the data may not be sound enough to accurately represent the seriousness of alcohol-related crashes or support allocation and effort to prevent alcohol-related crashes, which may compromise overall efforts to reduce road traffic fatalities.

According to the Royal Police of Malaysia, alcohol impairment was involved in an average of 0.7 per cent of drivers and riders in fatal crashes between 2001 and 2011. Would this reflect the reality on the ground? Based on this figure, no decision makers would spend scarce resources to prevent alcohol-related crashes. In many countries it is a common practice by enforcement authorities to administer BAC tests only to drivers and riders involved in crashes who are suspected of alcohol impairment. The investigation officer in charge of the particular case has to exercise his or her discretion. Of 9,052 drivers and riders involved in fatal accidents in 2011, only 101 (1.1 per cent) were suspected of alcohol impairment and sent for testing (Table 2).

Table 2. Police Statistics on Alcohol Impairment among Drivers and Riders Involved in Road Crashes in Malaysia

	Crashes involving ≥1 fatality	Crashes involving ≥1 serious injury	Crashes involving ≥1 minor injury
Alcohol impairment	349,279	n/a	n/a
Not suspected	1,652,534	1,372,525	83
Tested positive	114,592,000	82,402,000	72
Tested negative	72,692,951	60,152,752	83
Total	9,052	7,559	14,853
			31,464

Source: Polis DiRaja Malaysia, 2011.

The Malaysian Institute of Road Safety Research conducted a study involving all fatally injured drivers, riders, and pedestrians admitted to the forensic medicine department of Hospital Kuala Lumpur from 2006 to 2009. Hospital Kuala Lumpur is the general hospital, one of the most established hospitals in Malaysia, serving the country's capital and its surrounding area. The study revealed alarming results: about 28.1 per cent of fatally injured drivers tested positive for alcohol, as well as 22.1 per cent of riders and 20.0 per cent of pedestrians.

The hospital-based study confirmed that alcohol-related crashes are significantly underreported by the police. This is not an isolated challenge, as many other countries face a similar problem. Furthermore, the WHO Global Status Report on Road Safety 2013 revealed that almost half of all countries lack data on alcohol-related crashes.

The underreporting or lack of data is the biggest challenge for any country to overcome in justifying the resources for any prevention initiative as well as monitoring trends in alcohol-related crashes. Hospital-based data seem to be a promising alternative to police-based data. It is well recognized that most countries have BAC limits for driving, but these range from zero tolerance to 0.08 per cent. With such differences, it would be very difficult for any policy-maker, especially in developing countries, to support a review of the present BAC limit in their respective country. The review becomes more complicated when there is disagreement about the appropriate limits for different road users, since certain communities have very different views on alcohol in society. Furthermore, there is little effort to establish the BAC limit for pedestrians, riders, and passengers. It is well recognized, in the UN Decade of Action, that addressing alcohol-related crashes is crucial.

Finding a universal approach in handling drinking and driving, drinking and walking, and drinking and riding may not be realistic. This is especially true for a multicultural country such as Malaysia, where the Muslim majority refrain from consuming alcohol while the other 40 per cent of the population have different religions and cultures and may view alcohol consumption as socially appropriate in certain contexts.

Recommendation

We recommend preparing a paper that will recognize the need for UN Member States to develop a more comprehensive and effective data-collection mechanism for alcohol-related crashes, and to produce a practical and common method to achieve such a mechanism. It is important to recognize the need to reduce alcohol impairment not only among drivers but among pedestrians, cyclists, and riders and their passengers. It is suggested that the paper encourages UN Member States to urgently adopt the WHO recommendation that BAC limits be set at 0.05 per cent for general drivers and 0.02 per cent for riders. Lastly, there is an immediate need to come out with a comprehensive review to address the gap so that BAC limits for specific vulnerable road users can then be proposed to address drinking and walking, drinking and riding, and drinking and cycling.



BAC limits be set at: 0.05 per cent for Drivers and 0.02 per cent for Riders.



Mr Shaw Voon Wong,
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Mr Shaw Voon Wong is Director-General of the Malaysian Institute of Road Safety Research. He is nationally and internationally known for his expertise in road safety.

Mr Wong has helped establish numerous national and international road safety initiatives and interventions including rear seatbelt law, national implementation framework of UN WP29 Regulations, in-depth crash and accident database, and others. He publishes extensively on road safety in scientific journals.

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Regional Perspectives on Preventing Alcohol-Related Road Crashes Involving Vulnerable Road Users: Sub-Saharan Africa



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Africa: Kenya

Introduction

The paper will discuss drink driving issues in the Sub-Saharan¹ countries on the African continent. Sub-Saharan Africa bears the greatest burden of road traffic crashes, with over 235,000 people killed annually (WHO AFRO, 2009). This constitutes almost 20 per cent of all road deaths worldwide, yet the region has only 2 per cent of the world's registered vehicles, while Europe, with 26 per cent of all motor vehicles, contributes only 8 per cent of the global road fatalities (Peden et al., 2004). For every death, there are many more injured and disabled, resulting in substantial medical, social, and national developmental costs, with an estimated economic cost ranging between 1 per cent and 5 per cent of a country's gross national product (Jacobs, Thomas, & Astrop, 2000). Sub-Saharan Africa has the highest road traffic fatality rates in the world, at 32.3

deaths per 100,000 population, far in excess of the average global rate of 18.8 per 100,000 (WHO AFRO, 2009). However, the range of fatality rates varies considerably between the countries, with Nigeria and South Africa having the highest, at 33.7 and 31.9 per 100,000 population, respectively. Seven countries—Democratic Republic of the Congo, Ethiopia, Kenya, Nigeria, South Africa, Tanzania, and Uganda—contribute 64 per cent of all road deaths that occur in the region (WHO AFRO, 2013).

Whereas road traffic injuries affect all age groups, the greatest burden is borne by young adults aged between 15 and 44 years, who account for 62 per cent of all road deaths in Sub-Saharan Africa, and young men are the most vulnerable (WHO AFRO, 2013). As highlighted in the Global Status Report on Road Safety (WHO, 2013a), vulnerable road users (VRUs), who include pedestrians and users of two- and three-wheeled vehicles, are at a greater risk of road crashes than vehicle occupants. The majority of road users involved in road crashes in Sub-Saharan Africa are VRUs, representing 52 per cent of road users killed, with pedestrians accounting for 38 per cent of all road traffic deaths (WHO, 2013a). The increased risk of road crashes by VRUs is largely attributed to the variety and intensity of traffic mix on the roads, inability to incorporate the needs and safety of VRUs in transport planning and road designs, low or lack of driver compliance at crossings and intersections, alcohol consumption, and inappropriate behavior of pedestrians such as non-use of pedestrian crossings and not obeying traffic lights (WHO, 2013a, b). Vulnerable road users

¹ In this paper, Sub-Saharan Africa is comprised of all countries on the African continent with the exception of Morocco, Libya, Tunisia, Egypt, Sudan and Somalia. In this paper, Sub-Saharan Africa includes Algeria.

therefore remain the weakest party in a road traffic crash, and pose the greatest challenge to today's road safety efforts in Sub-Saharan Africa.

This paper highlights the social and cultural dimensions of alcohol consumption, the extent of alcohol consumption among vulnerable road users, key challenges in preventing alcohol-related crashes, and suggests some strategies for reducing hazardous alcohol use among vulnerable road users.

Culture of Alcohol Consumption

Historically, traditional African brews made from a variety of plants, mainly sorghum, maize, wheat, millet, cassava, banana, and palm fruits, played an important role in various social and cultural activities, and were not meant for trade (Acuda, 1985). The coming of European rule in Africa saw many fermented drinks outlawed, while at the same time imported distilled liquor was introduced for the first time as commodities of trade, resulting in the use of these exotic drinks gradually becoming more common

(Pan, 1975, as cited in Acuda, 1985).

Subsequently, a gradual shift from the traditional brews to European drinks occurred, supported by extensive advertising, resulting in alcohol being produced largely for commercial rather than for social purposes. Despite this commercialization, numerous types of homemade drinks, some illicit, are being produced and made readily available at low cost in many African countries.

A variety of alcohol beverages, some known by various local names, exist in different countries. In Nigeria, for instance, the common alcohol beverages are palm wine (burukutu), beer, and spirits (Ebie, 1990). Likewise, in Cameroon, millet-based traditional brews, palm wine, beer, and spirits are widely consumed (Yguel et al., 1990). In Tanzania, homemade beer (pombe), palm wine (tembo), and illicit distilled spirits (gongo) continue to dominate the market and local drinking places (Maula, 1990). In Uganda, waragi, a distilled beverage made from cassava, bananas, millet, or sugarcane, is the most popular and widely drunk liquor, which contributes to the high rate of alcohol consumption per capita in the country (WHO, 2011). A similar situation is found in Kenya, where fermented local brews from cereals (busaa) or sugarcane and fruit (muratina), and locally distilled illicit spirits (chang'aa), are commonly consumed in rural areas and peri-urban slums (Silberschmidt, 1990). Chang'aa, with a high concentration of pure alcohol, is easily available and inexpensive.



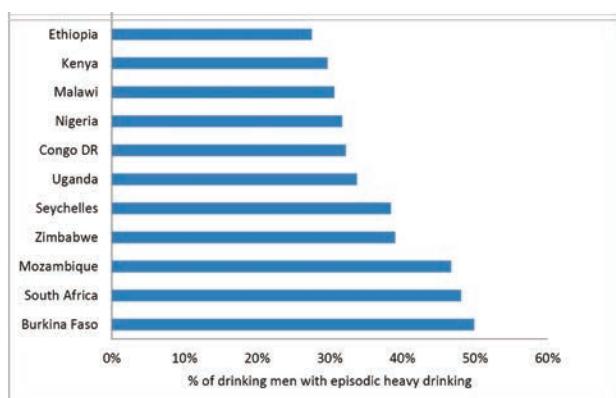
Drinking Patterns and Types of Alcohol Consumed

Anthropological studies show enormous diversity in the patterns of drinking and in how drinking is related to everyday life, rituals, special occasions, and other aspects of culture and social life. This diversity can be described in terms of two dimensions: regularity of drinking and frequency of intoxication or “being drunk” (Partanen, 1990). Regularity of drinking refers to the extent of acceptance or tolerance of drinking in a society. In general, drinking traditional brews is an acceptable customary pleasure during communal celebrations. The acceptable norms on drinking are not universal, but apply in different contexts and to specific groups such as by age, gender, religion, and status. For example, surveys in Nigeria and Zambia show that drinking by boys aged 16 years is not acceptable, while it is more acceptable for men aged 40 years and above (Room et al., 2002).

With regard to gender, in nearly all countries, a higher proportion of women than men do not drink alcohol. A survey in 20 African countries shows that 81 per cent of the African women are lifetime abstainers, with abstinence rates ranging from 56 per cent in Mauritius to 99 per cent in Comoros (Clausen et al., 2009). The extent of drinking is also strongly influenced by religion. Many religions regard drinking of alcohol beverages as incompatible with leading a holy life. In Islam, abstaining from alcohol is an obligation of all adherents, and as a result countries with predominantly Muslim population have a high prevalence of abstainers (Partanen, 1990). Similarly, many strands of Christianity also require their adherents to abstain from alcohol.

Consuming a large quantity of alcohol on a single occasion, also known as “binge” drinking, is common among male drinkers in Africa, with the prevalence ranging from 7 per cent to 77 per cent (Clausen et al., 2009). Data from WHO (2011) show that Sub-Saharan Africa has the highest rate of binge drinking of any region, at an average of 25 per cent, compared to the global rate of 11.5 per cent (WHO, 2011), with Burkina Faso, South Africa, and Mozambique having the highest rates (Figure 1).

Rates of Binge Drinking Among Men in Selected
(Figure 1.) Sub-Saharan African Countries (2003-2008)



Source : WHO, 2011

Demographic health surveys in South Africa also indicate that almost a third of current alcohol consumers drink heavily over the weekends, with the highest level of binge drinking being among males aged 35–44 and females aged 45–54 with low levels of education and living in non-urban settlements (Donson, 2009). These examples demonstrate that many Sub-Saharan African countries have a large proportion of lifetime abstainers and a subset of consumers who are heavy drinkers.

As illustrated in Table 1, the types of alcohol consumed in Sub-Saharan Africa varies between countries.

Beverages other than beer, spirits, and wine have the highest share in total recorded consumption. More than 80 per cent of alcohol consumed in East and West Africa are local brews and spirits, while in Central and Southern Africa the pattern is slightly different, as spirits and wine tend to be the preferred drinks. These data confirm that alcohol consumption is common in Sub-Saharan African society, but there is considerable variability in drinking patterns between countries. Cultural and socioeconomic differences as well as the extent of alcohol advertising may explain the differences. This implies that the magnitude of consequences of drinking alcohol and the associated effects will differ from country to country, and even within different regions in the same country.

Table 1. Types of Alcohol Consumed in Sub-Saharan African Countries (2003-2005)

Region/Country	% Adults (>15 Years) Who Drink	% Consumption by Type of Alcohol (in % of Pure Alcohol)			
		Beer	Spirits	Wine	Other
West Africa					
Burkina Faso	23.9	9	9	2	80
Benin	48.5	45	14	13	28
Cote d'Ivoire	23.7	14	1	7	78
Gambia (the)	n/a	8	2	2	88
Ghana	29.4	27	2	5	66
Liberia	n/a	9	91	<1	-
Mali	2.8	13	2	<1	85
Nigeria	38.3	6	<1	<1	94
Senegal	2	54	3	43	-
Sierra Leone	39.1	7	<1	<1	93
Togo	n/a	42	6	31	21
Central Africa					
Cameroon	45.3	44	<1	<1	55
Cape Verde	48.1	14	6	80	-
Central African Republic (the)	n/a	13	2	1	84
Chad	21.1	56	5	2	37
Congo (the)	88	5	<1	7	
Democratic Republic of the Congo	43.7	16	1	<1	83
Equatorial Guinea	n/a	10	<1	90	-
Gabon	68	22	10	-	
Guinea-Bissau	n/a	7	14	21	55
Eastern Africa					
Burundi	n/a	19	<1	<1	81
Eritrea	39.3	68	32	<1	-
Ethiopia	27.7	33	22	<1	43
Kenya	14.6	44	27	1	28
Rwanda	n/a	8	<1	<1	92
United Republic of Tanzania	21.2	11	3	<1	86
Uganda	43.8	4	2	1	94
Southern Africa					
Angola	38	24	29	9	
Botswana	30	57	<1	<1	42
Comoros (the)	1	64	27	9	-
Lesotho	34.2	64	<1	<1	36
Madagascar	29.7	44	43	13	-
Malawi	19.2	13	20	<1	67
Mauritius	46.4	73	15	12	-
Mozambique	43.6	36	55	6	3
Namibia	20.4	67	20	7	6
Seychelles	87.2	85	4	11	-
South Africa	27.1	56	16	17	11
Swaziland	25.8	33	3	4	60
Zambia	16.1	18	12	<1	70
Zimbabwe	14.4	25	2	5	68

Source: WHO, 2011

Magnitude of Alcohol-Related Road Crashes

Alcohol has been conclusively identified as a major risk factor for all types of fatal road traffic injuries (WHO, 2004). However, in Sub-Saharan Africa, such data are available for only a few countries. A review of studies conducted in low- and middle-income countries shows that alcohol affects all road users, but with considerable variation between countries (Odero & Zwi, 1995). In South Africa, tests for blood alcohol concentration (BAC) conducted on transport-related deaths between 2002 and 2008 show that pedestrians are the most likely to be BAC-positive (59 per cent-63 per cent), followed by drivers, passengers, and cyclists (Table 2). Pedestrians also had the highest mean BAC level (0.21 g/dl). This trend remained consistent over the years reviewed.

Table 2. Incidence of Alcohol-Related Fatal Injuries in South Africa, 2002-2008

	Pedestrians	Drivers	Passengers	Cyclists
2002	59	55	41	37
2004	60	51	40	39
2007	59	56	56	42
2008	63	58	45	43
Mean BAC, g/dl	0.21	0.17	0.13	0.16

Source: Donson, 2009

Evidence of presence of blood alcohol among non-fatally injured crash-involved road users has also been reported in a few studies conducted in South Africa and Kenya. A hospital-based study in Cape Town found that 61.2 per cent injured pedestrians were BAC positive (Peden et al., 1996), while in Kenya a similar study reported the presence of blood alcohol in 60 per cent of drivers, 33 per cent of pedestrians, and 8.3 per cent of pedal cyclists involved in road crashes (Odero, 1998). The study showed that males were twice as likely as females to have been drinking prior to the crash, and most of the intoxicated subjects were injured in crashes that occurred at night and during weekends. These data, though inconclusive, reflect the magnitude of alcohol use among different road users, irrespective of injury outcomes, and imply that measures for preventing alcohol-related crashes should target all road users.

Prevention of Alcohol-Related Crashes Involving Vulnerable Road Users

Effectiveness of introducing BAC limits for drivers has been shown to lead to reductions in impaired driving and alcohol-related crashes. The World Report on Road Traffic Injury Prevention (WHO and World Bank, 2004) recommends a BAC limit of 0.05 g/dl for the general driving population and 0.02 g/dl for young drivers and motorcycle riders. In Sub-Saharan Africa, although 42 countries have a national drink-driving law, there is wide variation in the maximum legal limits, ranging from 0.01 to 0.08 g/dl, and half of the countries have limits in excess of 0.05 g/dl (Jacobs, Thomas, & Astrop, 2000). Nine countries (Benin, Eritrea,

Democratic Republic of Congo, Liberia, Mali, Mauritius, Nigeria, South Africa, and Swaziland) have BAC limits for drivers consistent with the recommendations of the report, and only one country has an effective enforcement of drink-driving law.

Most Sub-Saharan African countries lack enforcement for several reasons, including:

- The traffic police lack equipment such as breathalyzers and booze buses to routinely monitor drivers' blood alcohol levels, even in countries where a legal BAC limit exists.
- The traffic police are not adequately trained to administer alcohol tests.
- There is no legal requirement for the police to do random breath tests of drivers and pedestrians who are not involved in a crash.
- There is a general lack of enforcement of laws to control the production, promotion, and sale of alcohol in most countries.

The lack of mechanisms for ascertaining the prevalence of impaired driving means that these countries cannot monitor progress in preventing alcohol-related crashes. It is imperative that all countries adopt and implement the recommended BAC limits of 0.05 g/dl for the general population and 0.02 g/dl for novice drivers.

Whereas setting and enforcing BAC limits for drivers is highly feasible, reducing alcohol consumption among pedestrians is more complex, and currently there are no effective practical solutions. Since walking is a normal life activity considered to be carrying no particular hazard, and alcohol is also widely used as a culturally accepted way of life in many societies, multifaceted context-specific strategies addressing both alcohol consumption and walking are needed. In addition to the range of interventions for specific risk

factors for road crashes involving vulnerable road users highlighted by Constant and Lagarde (2010) and those recommended in the recently released manual on pedestrian safety (WHO, 2013b), the following strategies focusing on alcohol consumption in the general population require serious consideration and testing.



Awareness and Behavior Change



Evidence from systematic reviews indicates that pedestrian safety education can change road-crossing behavior (Duperrex, Roberts, & Bunn, 2002). Yet awareness and prevention campaigns have remained relatively scarce among pedestrians and cyclists, so many are unaware of road hazards, while some consider that crash avoidance is up to motorists only. Pedestrians and cyclists should therefore be informed and encouraged to obey the same rules as drivers of

motor vehicles with regard to risky behaviors, including excessive alcohol consumption. Through advertisements in both print and electronic media, anti-alcohol campaigns giving clear messages to the general public, emphasizing that drinking is a risk not only for motor vehicle drivers but also for all road users, could be enhanced. The "Drive Alive" national road safety campaign in South Africa, which targets drivers, pedestrians, and passengers, is a good example of a comprehensive campaign containing messages on key safety areas: drinking and driving, speeding, jaywalking, visibility, and alighting and crossing are also increasingly being advocated in South Africa (Arrive Alive). Publicity materials on these issues are widely distributed to community level by the Department of Transport.

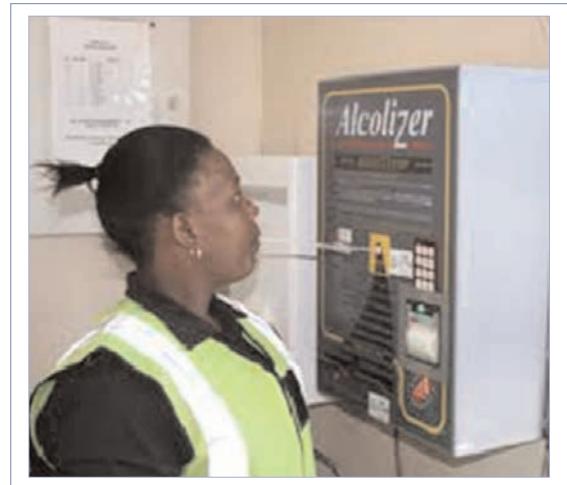
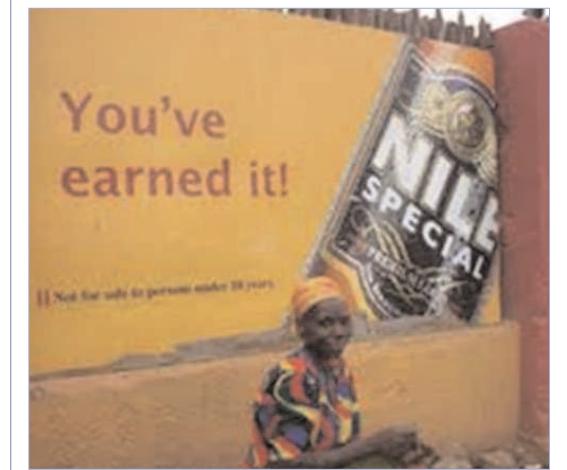
Workplace education of employees on the consequences of excessive drinking, introducing new codes of conduct emphasizing zero tolerance for alcohol, as well as setting higher standards of behavior could also help in changing behavior in specific working situations. Another approach could be the application of positive deviance theory, built on the premise that in every community there are certain individuals whose uncommon practices or behaviors enable them to find successful solutions to problems more often than others in the same community who have similar problems (Bradley et al., 2009). For example, using people in the community who previously drank heavily and have stopped drinking and are now leading a happier and more prosperous life as champions for change in alcohol consumption, can help to influence behavior change from alcohol misuse to moderate consumption or abstinence.

Engagement of Stakeholders

There is a need to encourage and engage multiple actors, including those in the alcohol industry, law enforcement, religious organizations, civil society, and local community, as well as legal and health professionals, to address the problem of alcohol-related crashes. In particular, involving religious leaders in informing and persuading their followers to adhere to prohibitions on alcohol is a potential but untested strategy that could be used to reduce hazardous alcohol consumption in the society.

Alcohol Controls

There is need to identify and build on certain aspects of alcohol controls, such as advertising restrictions, serving alcohol at sports venues, and having alcohol outlets near schools, that already have the backing of the general public. In most Sub-Saharan African countries, it is not the lack of laws to control alcohol—since many have laws on licensing, packaging, hours of sale, and a legal age for drinking—but the lack of enforcement of these laws that is the problem. Efforts to introduce such controls have been made in Kenya through an Act of Parliament (Government of Kenya, 2009) but some aspects faced stiff opposition from some parts of the alcohol industry. Strict enforcement of alcohol controls should be prioritized. Further, as the supply of alcohol is often beyond governmental control, and therefore many standard policy instruments will not be applicable or available to address the issues, it is important to keep abreast of best practices in alcohol controls and to consider their application within the relevant national context.



Legislation

Comprehensive legislation is a key element of safety of all road users, but legislation alone is not likely to facilitate behavior change in the absence of law enforcement and deterrent penalties. Compliance with laws is critical and should be accompanied by an effective law enforcement system. Establishing legislation setting a legal limit for pedestrians would pose a significant challenge to enforce, given that countries are already unable to enforce the existing drink-driving laws.

Conclusions

- Sub-Saharan Africa bears the greatest burden of road traffic crashes in the world and has the highest road fatality rate, but the rates vary between countries.
- Vulnerable road users are the most affected and account for more than half of all road users killed.
- Historically, homemade brews played an important role in cultural and social activities, and were an integral part of traditional African lifestyle.
- A gradual change in alcohol use from socialization to commercial purposes occurred following the introduction of European types of alcohol.
- The prevalence of alcohol consumption in the general population is low in most countries, and is mostly influenced by religion, gender, and advertising.
- The rate of binge drinking is higher in the region compared to the global rate.
- Pedestrians involved in fatal road crashes are more likely to have been drinking and have higher blood alcohol levels compared to drivers.

Recommendations

- Data on alcohol-related crashes should be collated and analyzed for planning and monitoring road safety interventions.
- Countries with BAC limits above the recommended level of 0.05 g/dl should change the BAC limit level to 0.05 g/dl.
- To make progress in reducing alcohol-related crashes, countries must improve their enforcement of drink-driving laws.
- Countries should introduce a range of sustainable multifaceted strategies for reducing alcohol consumption in the general population.
- Enhanced support for anti-drink driving campaigns and measures is warranted, particularly in countries with high rates of binge drinking such as Burkina Faso, South Africa, and Mozambique.

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Biography

**Mr Wilson Odero,
Africa, Presenter**



Mr Wilson Odero is an Associate Professor and Dean, School of Public Health, Moi University, Kenya. Mr Odero has worked extensively in collaboration with organizations such as WHO and DFID on various traffic injury research and training programs.

As a consultant to the WHO's Department of Violence and Injury Prevention he worked on various injury prevention and control projects including working on the preparation of the World Report on Traffic Injuries. Mr Wilson Odero currently serves as the Secretary General of the Injury Prevention Initiative for Africa.

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European Region - Perspectives on Preventing Alcohol-Related Road Crashes Involving Vulnerable Road Users



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Europe - Slovenia

This paper discusses drink driving issues in Europe and Central Asia. This is not a homogenous region. In addition to the wide variations in their economic development (which is often translated into different levels of motorization, availability, and quality of road infrastructure), historic, cultural, and religious differences shape their traffic safety situation and particularly the level of severity of drink driving.

European Region
53 countries



Table 1. Income Groups of Europe and Central Asia, 2004

World Bank Income group	Member States Vehicles	Number of States	Percentage of All States
High	Andorra, Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, United Kingdom	25	47.2
Upper middle	Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Russian Federation, Slovakia, Turkey	10	18.9
Lower middle	Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Former Yugoslav Republic of Macedonia, Georgia, Kazakhstan, Montenegro, Romania, Serbia, Turkmenistan, Ukraine	14	26.4
Low	Kyrgyzstan, Republic of Moldova, Tajikistan, Uzbekistan	4	7.5

Source: WHO, 2013

Road Crashes and Injuries

A total of 92,492 people died in 2010 from road traffic injuries in Europe and Central Asia, with 66 per cent of these deaths occurring in low- and middle-income countries (Mitis & Sethi, 2013). With 10.3 road deaths per 100,000 population, the region has the lowest rate in the world; however, it has the highest instance of inequalities in road traffic fatality rates (see Table 1).

The “safest countries” in Europe and Central Asia are high-income countries: Iceland (2.4 deaths per 100,000 population), Sweden (2.8), the United Kingdom (3.0), Malta (3.6), and the Netherlands (3.8). The countries with the highest numbers of road fatalities per 100,000 inhabitants are Kazakhstan (21.1), the Russian Federation (18.6), Kyrgyzstan (16.4), Georgia (15.4), and Montenegro (15.0) (WHO, 2013).

In Europe and Central Asia, car occupants comprise 50 per cent of road fatalities, pedestrians 27 per cent, motorcyclists 12 per cent, cyclists 4 per cent, and others 7 per cent, (WHO, 2013).

The percentage of pedestrian road fatalities is the lowest in Luxembourg (3 per cent), followed by the Netherlands (11 per cent), Belgium (11 per cent), Sweden (12 per cent), and Norway (12 per cent). The countries with the highest percentage of pedestrian traffic fatalities are Armenia (44 per cent), Slovakia (44 per cent), Tajikistan (42 per cent), Belarus (41 per cent), and Ukraine (38 per cent), (WHO, 2013).

The percentage of road fatalities among cyclists is in the range of 0–13 per cent, except in the Netherlands (25 per cent), where cycling is very popular (WHO, 2013). Andorra, Armenia, Iceland, and Malta report that cyclists account for less than 1 per cent of all road fatalities. In Azerbaijan, Georgia, Kyrgyzstan, Kazakhstan, Ireland, Montenegro, and Greece, the percentage of cyclist fatalities is about 1 per cent.

Fatalities among motorcyclists are a huge problem and often contribute a significant part to the national road fatality statistics, particularly in Mediterranean countries such as Cyprus (35 per cent), Greece (31 per cent), Italy (30 per cent), Malta (27 per cent), Portugal (24 per cent), and France (24 per cent). In Armenia, Azerbaijan, Georgia, and Tajikistan, motorcyclists account for less than 1 per cent of road traffic fatalities (WHO, 2013).

At the regional level, the rates of road crashes with injuries have marginally decreased over the past three decades, and the rates of accidents involving alcohol are decreasing across the entire region despite fluctuations at country level (Mitis & Sethi, 2013).

The reported involvement of alcohol in road fatalities in 2010 was on average 18.9 per cent, and ranged from 1 per cent in the Former Yugoslav Republic of Macedonia to 43 per cent in Cyprus and 59 per cent in Kyrgyzstan (WHO, 2013).

The prevalence of alcohol and other drug use among the driving population was assessed in 12 European countries (Belgium, the Czech Republic, Denmark, Spain, Italy, Lithuania, Hungary, the Netherlands, Poland, Portugal, Finland, and Norway) based on the results of roadside surveys carried out between January 2007 and July 2009 within the framework of the DRUID (Driving Under the Influence of Drugs, Alcohol and Medicines) project. Alcohol (BAC ≥ 0.01 per cent) was the psychoactive substance most frequently detected in the general driving population (in the range of 0.15–8.59 per cent of a country's drivers, with a mean across 12 countries of 3.5 per cent). Alcohol in concentration above the legal limit (≥ 0.05 per cent) was detected in 1.5 per cent of the driving population, ranging from 0.07 per cent to 5.23 per cent. The highest prevalence of alcohol was found in drivers in the southern countries of Europe (EMCDDA, 2012).

Drink driving is overrepresented in road traffic crashes, but only a few countries systematically test the blood alcohol levels of road users involved in crashes. Therefore, it is uncertain whether the reported data about alcohol-related road fatalities in many countries in the region is an accurate representation of the situation.

In Slovenia, alcohol testing for drivers and other traffic participants who have caused an accident resulting in injury or major vehicle damage is mandatory; more than 74 per cent of other fatally injured traffic participants are also tested (Zorec Karlovsek et al., 2002). From 2006 to 2010, drivers in Slovenia with a BAC above 0.05 per cent were involved in 10.1–12.6 per cent of all traffic accidents. However, in road crashes with fatalities, the percentage of alcohol-impaired drivers ranged from 30.3 per cent to 37.3 per cent (Republic of Slovenia Police).

It is not only drink driving, but also drink walking, drink cycling, and drink riding which can lead to road fatalities. A study in five European countries (Slovenia, Hungary, Estonia, Poland, and Slovakia) showed that in 2001, 43 per cent of pedestrians, 40 per cent of drivers, 38 per cent of motorcyclists, 47 per cent of cyclists, and 30 per cent of passengers killed in traffic accidents were under the influence of alcohol (Varga et al., 2002). The average level of alcohol intoxication among fatally injured pedestrians was higher than in other groups of traffic participants such as drivers, motorcyclists, cyclists, and passengers. Alcohol-impaired pedestrians killed in road crashes are predominantly young men, who have a higher level of risk of a road accident, greater incidence of injuries, and a shorter period of survival following a road accident (Prijon & Ermenc, 2008).

Alcohol Consumption, Types of Consumed Alcohol Beverages, and Trends in Drinking Patterns

Traffic injuries and deaths because of alcohol-related crashes are only one part of alcohol-related morbidity and mortality. The composition of social and health problems from drinking in any particular country or region is related to the drinking patterns and total amount consumed.

The countries in Europe and Central Asia have the highest alcohol consumption per capita (APC) in the world, at 12.2 liters per adult. Total APC listed in Table 2 includes recorded sales as well as legal and illegal unrecorded consumption (WHO, 2011). The lowest adult per capita consumption is in Israel (2.3 l), followed by countries with a majority Muslim population (Turkey, Tajikistan, Uzbekistan, Turkmenistan, and Kyrgyzstan), then Malta and some Nordic countries (Iceland, Norway). The Republic of Moldova (19.2 l) has the highest consumption, followed by the Czech Republic (16.5 l), Hungary (16.3 l), the Russian Federation (15.7 l), Estonia (15.6 l), and Ukraine (15.6 l).

In many countries of Europe and Central Asia, the APC in 2001–2005 was high but stable. Some countries (Norway, Finland, Cyprus, Estonia, Slovenia, the former Yugoslav Republic of Macedonia, Lithuania, Armenia, Azerbaijan, Uzbekistan, Poland, Albania, and Kazakhstan) show a trend of increasing APC.





Beer is the most preferred drink in Europe, followed by wine and spirits. Beer is traditionally the most popular drink in Central Europe (particularly Czech Republic, Germany, Poland, and Austria) and Northern Europe (Iceland, Netherlands, Norway, Finland, and Denmark). Its popularity is increasing in Azerbaijan and Turkey.

Wine is the most consumed alcohol beverage in Italy, Luxembourg, France, Portugal,

Switzerland, Greece, Croatia, and Slovenia. The distinction between wine/beer/spirits cultures has been based on male drinking (Mäkelä et al., 2006). European differences in beverage preference are diminishing. Furthermore, in countries with high wine production, young males under the age of 18 prefer drinking beer, whereas young females under the age of 18 prefer RTD (ready-to-drink) premixes (Hibell et al., 2012). Today in Spain the most consumed alcohol beverage in liters of pure alcohol is beer, but in Sweden the most consumed beverage in liters of pure alcohol is wine (Anderson & Baumberg, 2006).

Spirits still constitute the largest proportion of alcohol consumed in Kyrgyzstan, Tajikistan, Bosnia and Herzegovina, Kazakhstan, Uzbekistan, Russian Federation, Georgia, Ukraine, Estonia, Latvia, Turkmenistan, Israel, Slovakia, Albania, Bulgaria, and Belarus. Spirits remained fairly constant in consumption in these countries during the period from 1997 to 2010. Most of the increase in consumption in Eastern Europe appears to be in the form of beer consumption

Table 2. Alcohol Consumption Per Capita (APC) and Distribution of Alcohol Beverages Consumed, by Country

Country	APC (liters)	% of Each Beverage Type Consumed			
		Beer	Wine	Spirits	Other
Republic of Moldova (the)	19.2	31	36	33	-
Czech Republic (the)	16.5	57	16	24	3
Hungary	16.3	35	40	24	1
Russian Federation	15.7	33	1	63	3
Estonia	15.6	34	7	57	2
Ukraine	15.6	32	7	61	1
Andorra	15.5	31	44	25	-
Romania	15.3	39	22	39	-
Slovenia	15.2	29	45	13	-
Belarus	15.1	20	9	43	28
Croatia	15.1	37	47	15	1
Lithuania	15.0	45	14	36	5
Portugal	14.6	31	55	10	4
Ireland	14.4	53	20	19	8
France	13.7	17	62	20	1
Denmark	13.4	45	39	16	0
United Kingdom of Great Britain and Northern Ireland	13.4	43	30	21	6
Poland	13.3	56	12	31	-
Slovakia	13.3	36	15	49	-
Austria	13.2	53	32	13	2
Luxembourg	13.0	14	70	16	-
Germany	12.8	53	27	20	-
Finland	12.5	46	23	28	3
Latvia	12.5	33	10	56	1
Bulgaria	12.4	32	22	45	1
Spain	11.6	45	36	13	6
Armenia	11.4	9	3	6	82
Serbia	11.1	44	22	34	1
Kazakhstan	11.0	27	5	68	1
Switzerland	10.9	31	50	18	-
Belgium	10.8	57	37	6	1
Greece	10.8	24	49	26	1
Italy	10.7	22	73	5	-
Azerbaijan	10.6	87	12	1	-
Sweden	10.3	39	44	17	-
Netherlands (the)	10.1	50	34	16	-
Bosnia and Herzegovina	9.6	23	4	73	-
Cyprus	9.3	35	32	32	1
The Former Yugoslav Republic of Macedonia	8.5	36	28	36	-
Norway	7.8	47	31	20	2
Albania	6.7	33	19	47	1
Georgia	6.4	18	20	62	1
Iceland	6.3	52	28	19	1
Kyrgyzstan	5.1	16	4	80	1
Turkmenistan	4.6	9	39	52	-
Malta	4.3	34	28	33	5
Uzbekistan	3.5	20	14	66	-
Tajikistan	3.4	21	5	74	-
Turkey	3.4	60	5	35	-
Israel	2.9	39	7	52	2

Source: WHO, 2011

Drinking patterns, gender, and age differences in Europe and Central Asia have also been changing; however, men are still more likely to be drinkers and women more likely to be abstainers. Men are more likely to drink large quantities per occasion and drink more often than women. Young adults are more likely than older age groups to drink large quantities per occasion and drink more often.

The prevalence of abstainers in Europe and Central Asia ranges from 4.5 per cent of adults in Germany to 90.4 per cent in Turkey. The higher prevalence of abstainers is found in countries like Bosnia and Herzegovina (82.8 per cent), Georgia (51 per cent), Kyrgyzstan (50.9 per cent), Kazakhstan (48.9 per cent), and Israel (47.3 per cent) because of religious reasons.

The lowest prevalence of abstainers can be found in relatively traffic-safe countries such as Germany (4.3 per cent), Denmark (5.6 per cent), France (8.6 per cent), and Norway (10 per cent) (WHO, 2011). In the European Union, about 15 per cent of adults are abstainers. About 15 per cent of adults drink alcohol in a hazardous way: above 20 g (women) or 40 g (men) per day. About 5 per cent of men and 1 per cent of women are dependent on alcohol in any one year (Anderson & Baumberg, 2006).

Heavy drinking is a pattern of drinking that exceeds some standard of moderate drinking. Episodic heavy drinking is a drinking occasion that includes consumption of at least 60 g of alcohol or five or more “standard drinks.” In common terms this is frequently called binge drinking. There is a lack of data on the prevalence of heavy drinkers in many countries of the region.

It is not the type of alcohol beverage, but the annual amount of alcohol consumed, the frequency of drinking, the amount of alcohol consumed at one occasion, and the frequency of heavy drinking that increase the risk of alcohol-related harm, including deaths and injuries due to impaired driving or walking.

Patterns of drinking score (PDS) reflects how people drink instead of how much they drink. PDS is measured on a scale from one (least risky) to five (most risky). The higher the score, the higher the rate of road fatalities.

PDS data of the countries of Europe and Central Asia are shown in Table 3. At the bottom of the table, where the countries with higher road death rate are listed, there is also a higher frequency of higher PDS values. This points to a conclusion that a proper national alcohol policy is crucial for the improvement of traffic safety and the reduction of alcohol-related traffic injuries.

Concern is growing for underage drinking, binge drinking among young males and young females, and increased levels of drunkenness. In the European School Surveys on Alcohol and Other Drugs (ESPAD), consumption habits among pupils aged 15–16 have been compared. According to the 2011 ESPAD, nearly 60 per cent of students in 34 countries had consumed at least one glass of alcohol by the age of 13 and 12 per cent had been drunk at that age. In the 1995 survey, 29 per cent of young females reported heavy episodic drinking; in 2007 and 2011, this figure was 41 per cent and 38 per cent, respectively. Among young males, the figures were more constant across the ESPAD waves.

Safe Roads for All Traffic Participants

Efforts to prevent road crashes involving alcohol and VRUs should stem from the premise that road crashes are predictable and therefore preventable. A greater level of awareness, commitment, and informed decision-making should be created, and also an effective partnership between different sectors (public health, transport, law enforcement, finance). Measures to prevent injuries to pedestrians and other VRUs are presented below (Table 4).

International best practice measures to prevent alcohol related road crashes and injuries to pedestrians and other VRUs are presented in Table 4 below

Crash Phase	Type of Prevention	Description	Examples
Pre-crash phase	Primary prevention	Removal of circumstances that cause injury	<ul style="list-style-type: none"> • reducing alcohol use • reducing speed (50 km/h urban speed limit, 30 km/h in high pedestrian-activity areas, 10 km/h in shared zones); traffic-calming measures • road design: controlled crossing, pavements, safe and accessible roadways and pedestrian facilities, pedestrian bridges, pedestrian fencing • daytime running lights on all motor vehicles • increasing visibility: at night carrying flashlights, wearing retro-reflective clothing • proper street lighting • high technical standards for vehicles (ABS, ESP) • designing smart vehicles • improving transit facilities (public transport) • educating road users about rules, rights, and responsibilities • addressing distracted driving • enforcing proper behavior
Crash phase	Secondary prevention	Reducing the severity of injury when a crash occurs	<ul style="list-style-type: none"> • reduced speed at impact • vehicles designed with crashworthiness to protect the occupants and pedestrians • use of seat belts, helmets, child restraints
Post-crash phase	Tertiary prevention	Optimal treatment to reduce likelihood of fatality and long-term injury severity as well as rehabilitation	<ul style="list-style-type: none"> • effective first aid • quick transportation to hospital • appropriate treatment and rehabilitation

Main Challenges in Preventing Road Crashes Involving Alcohol and Vulnerable Road Users (VRUs) in the Region

Effective strategies and interventions can be introduced to prevent or minimize alcohol-related harm: pricing and taxation, regulating the physical availability of alcohol (limiting hours and days of sale and raising the minimum drinking or legal purchase age), modifying the drinking context, restrictions on marketing, education and persuasion strategies, brief interventions with at-risk drinkers, and the treatment of drinkers with alcohol dependence.



It is important to stress that drink driving countermeasures are an important part of the general strategies and interventions to reduce alcohol related harm. Evidence from experience in Europe shows that effective measures to prevent drink driving include random breath testing, sobriety checkpoints, low BAC limits (≤ 0.05 per cent), a zero BAC limit for young and novice drivers, graduated licensing for novice drivers, and administrative license suspension.

Improved laws, enhanced enforcement, and public awareness brought about by concerned citizens during the 1980s have led to the dramatic decline in drinking and driving

in high-income countries around the world (Sweedler et al., 2004). The declines were about 50 per cent in the United Kingdom of Great Britain and Northern Ireland, 28 per cent in the Netherlands, and 37 per cent in Germany. Tunbridge and Keigan (2002) examined BAC levels of drivers and pedestrians killed in traffic crashes in the United Kingdom of Great Britain and Northern Ireland during the period of 1979–1999 and noticed that decreased drink driving led to increased alcohol-related pedestrian accidents. The proportion of alcohol-affected pedestrians (BAC level over 0.08 per cent) had risen from 33 per cent to 39 per cent, whereas the proportion of alcohol-affected drivers had fallen from 30 per cent to around 20 per cent.

New trends in drinking patterns, especially the prevalence of episodic heavy drinking, can have an impact both on drink driving and drink walking. There is a need for greater public awareness due to the fact that drinking is a risk not only among users of motor vehicles but also among pedestrians. New road safety strategies must be developed for the effective reduction of impaired driving and impaired walking.

Table 3. Alcohol Consumption and Related Harm in 49 European and Central Asian Countries Alcohol Beverages Consumed, by Country

Country	Road Deaths per 100,000 Population	% Alcohol-Affected Road Fatalities	% Abstainers	PDS	APC (liters)
Iceland	2.4	20	17.6	3	6.3
Sweden	2.8	22	17.5	3	10.3
United Kingdom of Great Britain and Northern Ireland	3.0	19	14.4	3	13.4
Malta	3.6	-	-	1	4.3
Netherlands	3.8	20	27.3	1	10.1
Norway	4.2	15	10.0	3	7.8
Switzerland	4.2	17	13.4	1	10.9
Germany	4.4	11	4.3	1	12.8
Denmark	4.6	20	5.6	2	13.4
Ireland	4.7	11	25.5	3	14.4
Israel	4.7	10	47.3	2	2.9
Finland	5.1	24	11.8	3	12.5
Turkey	5.3	-	90.4	3	3.4
Cyprus	5.4	43	-	1	9.3
Spain	5.6	31	45.0	1	11.6
Estonia	5.8	15	29.1	3	15.6
France	6.3	31	8.0	1	13.7
Luxembourg	6.3	35	-	1	13.0
Tajikistan	6.4	2	-	3	3.4
Austria	6.6	6	15.1	1	13.2
Italy	6.9	-	18.0	1	10.7
Portugal	6.9	31	47.0	1	14.6
Serbia	6.9	5	-	3	11.1
Slovenia	6.9	36	15.3	3	15.2
Hungary	7.4	8.3	18.7	3	16.3
Czech Republic	7.6	14	17.0	3	16.5
The Former Yugoslav Republic of Macedonia	7.7	1	-	3	8.5
Belgium	7.8	25	15.8	1	10.8
Bosnia and Herzegovina	8.9	3.6	82.8	3	9.6
Lithuania	9.0	21	19.9	3	15.0
Slovakia	9.4	8	23.0	3	13.3
Armenia	9.5	6	38.7	2	11.4
Croatia	9.7	30	42.6	3	15.1
Latvia	9.7	10	24.2	3	12.5
Azerbaijan	10.1	31	-	3	10.6
Uzbekistan	10.1	-	-	3	3.5
Bulgaria	10.3	4	26.8	2	12.4
Ukraine	10.4	3	44.1	5	15.6
Poland	10.7	9	25.8	3	13.3
Albania	11.0	21	-	3	6.7
Romania	11.1	8	13.1	3	15.3
Belarus	12.4	17	21.0	4	15.1
Netherlands (the)	12.6	9	22.0	4	19.2
Greece	12.7	-	28.3	2	10.8
Montenegro	15.0	30	-	-	-
Georgia	15.4	39	51.0	2	6.4
Kyrgyzstan	16.4	59	50.9	3	5.1
Russian Federation (the)	18.6	8	41.0	5	15.7
Kazakhstan	21.1	2	48.9	4	11.0

Source: WHO, 2011, 2013

As part of the United Nations Decade of Action for Road Safety, the Global Plan of Action was developed in order to guide countries' stakeholders in taking concrete actions on a national and local level. The activities are based around five pillars: road safety management, safe roads and mobility, safe vehicles, safe road users, and post-crash response (Table 5). How to identify problems, identify experience-based solutions to the problems, implement the solutions, and identify the possible interventions are challenges that require dynamic thinking and an engaged approach tailored to the individual country.

Comprehensive data collection of traffic accidents, fatalities, and serious injuries allows regular monitoring of global, regional, and country trends and progress toward meeting targets. The investigation of all crashes with fatalities and serious injuries helps to identify the characteristics of road users, the mistakes they make, what can be incorporated into subsequent education, and measures to eliminate deficiencies of vehicles, roads, and infrastructure.

Vehicles produced in Europe and elsewhere have become much safer for car occupants, and also for pedestrians because of the harmonized vehicle regulations that have been developed and adopted by the World Forum for Harmonization of Vehicle Regulations (WP.29) which promote the design and construction of safer and more environmentally-friendly vehicles. To date, over 140 vehicle regulations have been developed in areas such as passive safety, pollution, and energy. The regulations are based on detailed research and subsequent adoption by WP.29 members. They are all annexed to and form an integral part of the 1958 and 1998 "Vehicle Regulations" Agreements.

The participation of all related sectors in road safety strategies is very important, not only because of the improved treatment of injured road users, but also because of its role in raising awareness of the general population about harmful drinking and in carrying out rehabilitation programs for alcohol-related traffic offenders.

Table 5. Examples of Good Practice or Effective Interventions According to the Five Pillars of the WHO Decade Action Plan

Pillar	Issue	Examples of Effective Interventions
Road safety management	Comprehensive data collection on serious injuries and fatalities	Sweden, Finland: investigation of all crashes with fatalities and serious injuries
Safe roads and mobility	Road design to reduce speed and increase safety for VRUs	Speed limits (50, 30, 10 km/h) in high pedestrian zones. (No more deaths or injured children near schools!)
Safe vehicles	Vehicle design, safe fronts for pedestrians	Implementation of Vehicle Regulations - World Forum of Vehicle Regulations of the Inland Transport Committee (UNECE) Periodic Technical Inspections in place
Safe road users	Night-time visibility	Pedestrian awareness campaigns: "Be visible"
Post-crash response	Rehabilitation for repeat offenders	Rehabilitation programs for repeat offenders, treatment for alcohol-dependent persons (pilot studies interlocks), active role of medical doctors in counseling drivers who committed a traffic offense

Conclusions

Countries in Europe and Central Asia have:

- significant differences within the region in road traffic injury rates;
- high levels of alcohol consumption;
- risky patterns of drinking;
- a growing problem of drink walking and a continued problem of drink driving, especially in Eastern Europe.

Despite the fact that all countries in the region have drink-drive legislation, there is a need for measures and interventions for successful enforcement and capacity building, with the goal being to reduce alcohol-related traffic fatalities and injuries, especially among VRUs. Governments and other stakeholders should:

- prioritize VRUs and establish and meet targets to reduce alcohol-impaired VRU fatalities;
- improve data collection and analysis on crashes involving VRUs (hospital, police);
- promote evidence-based solutions and evaluation of measures;
- encourage public awareness and discussion before mandatory controls.

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Biography

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Driving Under the Influence of Alcohol in Israel and the Middle East: Dangers, Problems, and (New) Solutions



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Middle East - Israel

Drinking and driving is dangerous; no reasonable person could entertain a serious argument against this assertion. Nevertheless, difficulties in assessing the exact degree of danger – e.g., measuring the number of people killed in Road Traffic Accidents (RTAs) when at least one of the drivers is under the influence of alcohol (DUI) – are evident even in highly developed countries. Laurell (2007), of the Swedish National Road Authority, formulated an impressive list of misunderstandings that can lead to such difficulties. These included the changing of BAC limits; inconsistencies such as accidents when not all involved drivers are tested; and cover-ups, such as when, for example, in Germany drivers who crash without involving another moving vehicle are not tested. In many other parts of the world, making a proper assessment of this problem is even more difficult.

In some Middle Eastern countries, a failure to document driving under the influence can be attributed to the fact that alcohol is, by and large, not permitted. In many Islamic countries in the Middle East, alcohol is prohibited for religious reasons. Consequently, driving under the influence does not appear in official police records in these countries. Despite such prohibition, estimates of alcohol consumption have been published for several of these countries. According to The Economist ('Islam and alcohol: Tipsy taboo,' August 2012; see also WHO [2004]), the average annual alcohol consumption level per adult is estimated to be 2.23 l in Lebanon, 2.0 l in Israel, 1.25 l in Turkey, 1.02 l in Iran, 0.37 l in Egypt, 0.25 l in Saudi Arabia, and 0.11 l in Libya. As mentioned above, there still is no reliable documentation that demonstrates how these numbers relate to levels of impaired driving.

Rare reports on impaired driving in the Middle East do exist, such as an article that appeared on the BBC website on June 19, 2012 (Pourparsa and Ahmadi [2012]):

"Another concern raised by health officials and the police is a rise in drink-driving. In 2011-2012, Iran's police withdrew the driving licences of 829 drivers, including 43 women, who had failed to pass alcohol and drug tests.

"Most recently, alcohol tests taken from drivers in Tehran in the period of 20 April-20 May showed that 26 per cent of them were drunk. . . .

"A further major concern of Iranian health officials is a general unwillingness among relevant authorities to admit to such problems.

"As the consumption of alcoholic drinks is haram [religiously forbidden], some officials are just trying to conceal the facts. . . . But the lack of data on alcohol consumption and consumers is itself a serious threat,' wrote a conservative news website on 15 May.

"Even the chief of police, Ahmadi-Moqaddam, has criticised the attempts to conceal data on alcohol abuse.

'There have always been attempts to conceal alcohol-related problems in the country, but alcohol consumption and an increase in alcoholism are facts'."

In a paper I had the honor of preparing for the United Nations Economic Commission for Europe (UNECE) two years ago (Cale' [in press]), a chapter is dedicated to "the Israeli experience", which I believe can, in many ways, be referenced as a good practice. In a small country of no more than 7 million citizens, you can find a significant number of homogeneous groups with divergent attitudes, belief systems, and cultural characteristics relevant to safe driving in general: Muslim and Christian Arabs; orthodox, ultra-orthodox, and secular Jews; and, since the late 1980s, a huge group of immigrants from the former Soviet Union (FSU). Reliably collecting and publishing data is considered vital, although political correctness frequently prevents authorities from reporting differences between ethnic groups. I shall begin with a general overview.

Legal restrictions and regulations in Israel are similar to those of many Western countries. Experienced drivers are allowed behind the wheel if they have BACs of less than 0.05 g/dl. For drivers with less than two years of experience or who are younger than 21, there is zero tolerance (i.e., a BAC limit of 0.00). Drivers caught driving under the influence of alcohol can expect to be fined, to have their licenses revoked for extensive periods of time, or to be referred for clinical evaluation. Young drivers who are caught will also have their (or more likely their parents') cars confiscated. In extreme



cases, drivers who cause serious accidents while DUI may even have to serve time in jail.

Is the law enforced? The number of breathalyser tests performed by Israeli police is on the rise. According to data published by the European Transport Safety Council (ETSC) an average of 4 out of every 1,000 citizens were subjected to the test in 2006. This number rose to 24 in 2007 and 69 in 2008, depicting a 17-fold rise in a three-year period, and this figure is yet to be considered sufficient. The trend of investing in sobriety tests at sensitive times (mainly over the weekend) is important, because as shown in the ETSC data there is a highly significant negative correlation ($r = .576$) between the likelihood that drivers will be randomly tested for alcohol and the proportion of drivers found DUI. In other words, the more routine testing for drunk driving becomes, the fewer drunk drivers there are.



To put the seriousness of DUI in Israel into perspective, police statistics for 2011 show that there were twice as many fatalities and five times as many injuries attributed to DUI than to driving above the legal speed limit. On the other hand, non-compliance with red traffic lights killed three times more and injured nine times more people than incidents involving those driving under the influence of alcohol. From this comparison we can learn that, in Israel, driving under the influence of alcohol is certainly a serious issue, but not the most serious one.

According to the Central Bureau of Statistics (2012), the number of alcohol-related accidents is in decline and has returned to 1999 levels – now accounting for 3 per cent of serious accidents. This might be an artifact because not all drivers who are involved in accidents are checked for alcohol; indeed, publications based

on medical emergency data indicate that between 8 per cent and 17 per cent of road fatalities are alcohol related (see Soffer et al. [2006]; Siman-Tov & Peleg [2010]; Tomer-Fishmann [2009]). The latter numbers appear more likely to be true given that the general level of alcohol consumption in Israel is definitely on the rise.

On the downside of the reality of DUI-related law enforcement, interlock technology is not applied in spite of sufficient available evidence of its efficacy (Elder et al.

[2011]). Judges do not have the option of referring offenders to serious, professional interventions – as is common, for instance, in German-speaking countries. This is especially frustrating in light of the fact that many DUI drivers are repeat offenders (Shinar [2007]; Factor, Mahalel and Yair [2008]) and are frequently caught performing one of a wider group of dangerous and illegal driving behaviors. In addition, free bus services from the pub and party areas to the residential suburbs are offered to young people on Friday and Saturday nights to encourage them to leave their cars at home. The Israeli Road Safety Authority (RSA) has, over the years, made many attempts to promote the “designated driver” model; its acceptance level is still far from satisfying (see Cale’ [in press] for a general discussion on the effectiveness of this model).



This information aside, how many Israelis actually do drink and drive? In 2012 the Israeli RSA published data from a survey showing that 30 per cent of the total driving population, including 41 per cent of drivers aged 20-29, admitted to having driven under the influence of alcohol at least once in the past year (Goldwag [2012]; Hili Zaig [2012]). One out of five drivers actually drank so much that they were over the legal limit and incapable of safe driving. This demonstrates that drivers are not able to assess how much they can actually drink and that either a zero BAC limit or tighter police surveillance is needed.

As shown in my original paper (Cale’ [in press]), looking at different group tendencies is justified: in Israel, Arab people constitute a mere 11 per cent of license holders but make up 26 per cent of road traffic accident fatalities. A number of reasons explaining these data were proposed in the original paper, including the tendency to disregard rules and regulations, especially when driving on one’s home ground. Passing a rigorous theory test is necessary for obtaining a driving license in Israel, so we may assume that traffic laws and regulations are equally familiar to all groups of drivers.

Studies like those by Jaffe et al. (2009), Soffer et al. (2006), and Siman-Tov and Peleg (2010) all clearly demonstrate that Arab drivers, young drivers, and men are especially at risk of being injured in alcohol-related traffic accidents. Soffer et al. (2006) showed that in Israel, Arab people are four times more likely to be hurt in alcohol-related crashes than Jewish people; in comparison, young drivers (age < 44) are eight times more likely than older ones, and men are nine times more likely than women to be hurt in alcohol-related accidents.

Few serious attempts have been made to explain differences in alcohol consumption and driving between groups, with the majority of studies not being recent ones. Most prominent are the publications



of Shoshana Weiss (1996, 2002, 2008; Weiss & Moore [1999]), and of Schiff, Rahav, and Teichmann (2005), who explain the differences in alcohol consumption (including in the context of driving) for Jewish, Arab, Druze, and FSU young people. According to Weiss (1996), young Arab and Druze drivers tended to be less knowledgeable of both the BAC limit and youth vulnerability. Young Arab people tended to exaggerate the legal amount of drinks that can be consumed before driving, to believe in common cultural myths more than Jewish people, and to also get lower scores in tests centred around the main effects that alcohol can have on driving skills. However, they tended to be more aware than young Jewish people about youth vulnerability.

The youths who participated in Weiss's initial survey can be considered to be secular. They remain dedicated to their ethnic group but mingle with Jewish groups and go out to party and have a good time with their Jewish peers. Other authors (e.g., Neumark et al. [2001]) have concluded that being religious – be it Muslim or Jewish – indeed protects people from the temptations and risks of DUI, but that the minute they leave the religious role and

compete for a place in secular society on other terms, they are easily drawn into the dangers of DUI.

As the data published by Soffer et al. (2006) and Hili Zaig (2012) clearly show, DUI in Israel is, indeed, mainly a problem related to younger, male drivers who also have less driving experience and are under extreme social pressures (see also Sela-Shayovitz [2008]). Drinking and driving can be interpreted to a great extent in terms of social pressures and expectancies, both in young Arab and Jewish groups in Israel, with young people being forced into negative behavior to survive socially.

DUI in Israel is much less of an issue for middle-aged and older drivers, ultra-orthodox Jews, traditional Muslim people, and women. Studies have shown that these groups are at a high risk for other offenses, however. For example, ultra-orthodox Jewish drivers and their children tend to be at a high risk of severe injury

because they refrain from using seat belts, and adult Muslim people tend to be at a high risk of disregarding traffic rules, of driving aimlessly, and of paying insufficient attention to traffic. There appear to be two exceptions to these rules: middle-aged, secular Jewish drivers, after celebrations such as weddings or bar mitzvahs, who refuse to let someone else be a designated driver; and drivers from FSU-related groups who tend to drink more frequently than members of other groups and are convinced they can function with large quantities of alcohol in their bloodstreams.

Interestingly, there are no data from Israel showing a rise in the prevalence of intoxicated pedestrians being hurt in accidents, as has been observed in Western countries (K. Elsig, personal communication [2013]).

At this point, it is important to remember that human behavior is not totally controllable through threats or punishment. We do what we do for a multitude of reasons, many of which are outside of conscious awareness (see Kahneman [2011]), as I have explained elsewhere (Cale', *in press*). For example, a young driver might be slightly deterred by the risk of being fined or punished; nevertheless, they might also fear social rejection, suffer from negative self-esteem, or experience public ridicule – all of which might increase insecurities even more than the threat of being fined. In such a case, the threat of punitive actions might actually backfire (*i.e.*, being caught by the police might allow them to appear like a hero in the eyes of their friends), and another angle that is tailored to a specific group might be more effective.

$$D = \Sigma [(P \text{ } \smiley * V \text{ } \smiley) - \Sigma (P \text{ } \frowny * V \text{ } \frowny)]$$

The decision (D) whether to drive under the influence of alcohol is the outcome of all likelihoods (P) that something (subjectively) positive will occur times the value (V) an individual attaches to this occurrence, minus the sum of negative outcomes an individual subjectively predicts, times the importance or value attached to this occurrence. In other words, decisions reflect what seems most worthwhile to the person. According to Kahneman (2011), this decision will be made spontaneously based on the ego-preserving assumption WYSIATI ('what you see is all there is'). The model might appear simplistic or obvious. The advantage of the model is that it is practical. Rare, negative occurrences (*e.g.*, being stopped by the police) can be made more likely, or their price can be made more relevant for the driver. Positive feedback for adaptive behaviors can increase the likelihood that young drivers will refrain from DUI. Such is the basis for the Guardian Angels project, which ran very successfully in Israel among the target group of young, secular drivers. We can easily manipulate tools according to which values are reassessed. In short, cultural and religious differences can be leveraged to reduce the number of people who will drink and drive.

According to this model, society should make the driver a quasi-personal offer so tempting that he or she will refrain from dangerous behaviors such as drinking and driving. To reach this goal, influence should not come from above but instead from relevant peers.

Based on the information presented above, I recommend the following:

- Increase the number of (random) sobriety checks at sensitive times and locations to a number at which drivers will feel it is likely they will be tested;
- Use black boxes that can detect dangerous driving behavior. Initially, these boxes can be connected to interlock and will provide real-time feedback about driving style and dangers. The data from these black boxes can serve as the basis for intervention and training procedures;
- Develop projects like the Guardian Angels project as a social tool to change social pressures and attitudes and make dangerous driving unacceptable;
- Increase police efforts along with a general zero-tolerance policy;
- Empower judges to refer problematic drivers to culturally and socially relevant interventions;
- Support different community and religious groups that can influence drivers who are at risk of driving under the influence of alcohol.

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Biography

Mr Michael Cale
Middle East, Presenter



Mr Michael Cale is an internationally recognized professional in the field of traffic psychology. His activities have included developing screening tools, via projects for young drivers, intervention programs for professional drivers to developing simulator technology for safety research and adapting tools to help accident victims.

Lately Mr Cale prepared a paper for UNECE in which he analyzed the effects of cultural differences on road crashes and the effectiveness of intervention programs.

Click to download the full presentation
Mr Michael Cale provided for the 2013
United Nations Global Road Safety Week



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Excerpts from the Symposium Discussion

The following excerpts reflect the verbatim unedited comments of the hosts, presenters, and participants of the symposium.

Comment from participant from Zambia's Permanent Mission to the UN

We lack a lot of data in Africa, even when we are giving you the high trends that's not even the whole picture; it's really the tip of the iceberg. It would be really key and very important not only for us to monitor trends in what's happening, but also to monitor how far we've moved toward getting to the targets that we've set in action.

If we want to have a law that prevents pedestrians from drinking and walking around, we need Parliament to enforce that law. Parliamentarians will look at the electorates and say... "Why? How many people have we lost because they are drunk?" The data will help us in many, many ways. It will help us monitor how we are moving toward the targets, and it will be a tool that we use to lobby governments to help us.

Response from Mr Wilson Odero, Associate Professor and Dean, School of Public Health, Moi University, Kenya:



I think this is a critical area where partners can support capacity building. There are systems that exist which have been used elsewhere; why are they not being used in our continent? In South Africa, we have established a system over the past 10 years. It is working, but we are not seeing the effect in terms of reductions. Data collection is critical to supporting enforcement and monitoring how we are doing. We also must remember that the collection is not just made by the police. It is by the researchers, by the local authorities, and by a large spectrum of people, but it cannot be done without an institution to collect it.

"Data collection is critical to supporting enforcement and monitoring how we are doing. We also must remember that the collection is not just made by the police. It is by the researchers, by the local authorities, and by a large spectrum of people, but it cannot be done without an institution to collect it." – Mr Wilson Odero



*Questions and responses have been edited for brevity.

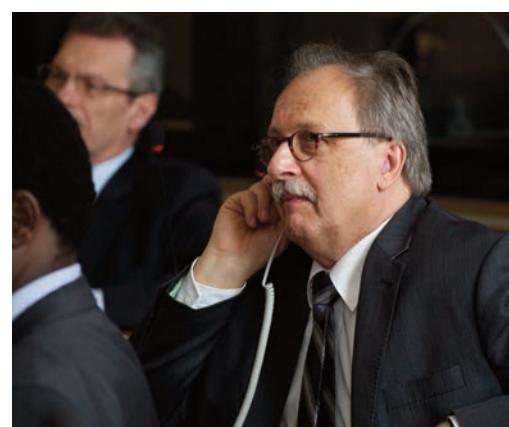
Response from Ms Eva Molnar, Director, UNECE Transport Division



I would like to point out that what is needed is a proper national statistics association with all of the proper functioning....You can have targets if you have data; if you know from where to where you would like to get. I am a bit disappointed that when we talk so much about road safety, we tend to move away from this base. We need reforms. We need economic reforms in all areas of society: reform of the national statistics system, reform of the transport system, and even more reform in the health system.

There are methodologies available. If there is a political will within a country and there is a well-designed strategy how the country wants to develop, then capacity building will help. If it is not there, capacity building is not helping. Also, we should bear in mind that what we need is not only good national statistics, but a good road safety data bank. The road safety data bank is not there to just monitor, but to help decide on future investments because we learn from the road safety data bank what are the most critical spots on our network, and what changes are needed.

"We need reforms. We need economic reforms in all areas of society: reform of the national statistics system, reform of the transport system, and even more reform in the health system." · – Ms Eva Molnar



Question raised by Ms Eva Molnar:



I would like to raise two questions. One is to a colleague from Slovenia, Majda Zorec Karlovšek. You had a slide that showed that there are a lot of fatal injuries in Slovakia due to the consumption of alcohol. I wonder do you have information why Slovakia is standing out from other European countries. Michael Cale, you had lots of interesting messages. One of your messages was about the black box. I wonder if you can speak more to that?

Response from Ms Majda Zorec Karlovšek, Forensic Toxicologist, Europe



I do not have detailed information on what has happened in Slovakia, but perhaps Slovakia is also one country that is a transition country. There are some problems also about too much alcohol consumption, but maybe, there is also some type of data collection. It is also possible that there are changes from year to year; even the year of data collection may have been in some way unique.

Response from Mr Michael Cale, Traffic Psychologist, Middle East:



I'd like to answer two questions. First, the question that the representative from Zambia asked. I research, I publish, I am in favor of data. I just want to warn you not to use data collection as a way not to make a real change because the people have the right to stay alive. I see in Israel every year, the studies show that in Arab villages more people are killed in road accidents, including things like running over children from the family, so there is a limit to how often you can publish it and make models and so on. The child in the Arab village has the same right to stay alive as my child. You must do research, but you must also go and make the changes. The child who has to cross this terrible road to get to his school has the right to stay alive. Now let's make sure that we ensure the right, and we have tools to do it.

The second answer deals with my experience in black boxes that come from two different areas. One is that I deal with a lot of young drivers who have ADHD, attention deficit disorder. They are involved between four and six times in serious car accidents compared to their age norms. It is an attention problem; it is not a psychological problem. One of the things we do with them to try to help them is give them a black box in the car. They come back in the evening and their parents get an SMS if they are driving erratically. There are a small group of people who have repeatedly been caught with alcohol in their blood who also are repeatedly caught speeding so maybe it is justified that Big Brother put an eye on them and protects the child crossing the road.

"You must do research, but you must also go and make the changes. The child who has to cross this terrible road to get to his school has the right to stay alive. Now let's make sure that we ensure the right, and we have tools to do it." – Mr. Michael Cale

*Questions and responses have been edited for brevity.

Question from participant from Italian Ministry of Transport:

I have two questions. The first one is for Mr. Bivans. I was very interested in the concept of beneficial drinking and negative drinking. Are there studies published or was it just a sort of societal analysis of a tool to curb drink driving? And the second one is for Eric. We were dealing with quite a novel concept, impaired pedestrians. In order to carry out alcohol tests on pedestrians, do you have a legal provision in the traffic code for drunk pedestrians or was it a trial test?

Response from Mr Brett Bivans, Senior Vice President, ICAP:



Thank you for the question in reference to my opening remarks, where I referred to drinking patterns. When we look at drinking patterns, we see a number of different factors, and many of those point to low risk of harm, whether it is drinking during a meal or drinking during a social environment where they are protective factors. Religion, family values, and positive social pressure from friends can lead to positive outcomes, and we think of these as beneficial outcomes from the drinking occasion. Negative outcomes where the risks are reinforced are where social behavior reinforces bad behavior, such as when young people are encouraging one another to drink more or trivialize riding with those who have already consumed alcohol can lead to increased negative outcomes.

Response from Mr Eric Howard:



Many countries have public intoxication provisions in their legislation. It is more about drunken behavior impacting others than the risk of being killed in a road crash. I think that putting that idea out there, like a number of the speakers have today, is worthy of consideration, particularly if the initial conversation is focused on very high-end BAC levels, where the research shows unequivocally that there is a 15 times greater risk of being killed than a pedestrian under 0.1 [mg/ml], if you are above 0.15 [mg/ml]. That is a staggering difference in risk. I think the starting point is to get the debate going in many societies about the issue; get the conversation going.

I am reminded, as a person who was involved in a lot of legislative change, that legislative change was so much easier when we put messages out to the public for a number of years about certain matters before we sought to make it mandatory. A good example is 120 hours of practice for young drivers. It was promoted for five or six years in Victoria and parents did end up giving supervised practice as part of their learning period before we suggested to the public that it could be made mandatory, and the reaction from the public was, "Yeah, that's a good idea." So, getting messages out such as intoxicated pedestrians being held accountable for their condition, I think we have to start with a conversation.

"I think the starting point is to get the debate going in many societies about the issue; get the conversation going....I am reminded, as a person who was involved in a lot of legislative change, that legislative change was so much easier when we put messages out to the public for a number of years about certain matters before we sought to make it mandatory.... getting messages out such as intoxicated pedestrians being held accountable for their condition, I think we have to start with a conversation." – Mr Eric Howard

Comment from participant representing the International Road Federation (IRF):

I would like to echo what was said by the representative from Zambia concerning data, its importance, and the difficulties....The other point I wanted to raise is about enforcement. I don't think anyone in this room can deny the importance of enforcement, and equally, of course, the importance of having very clear and sharp policy and legislation in place. I realize from listening to this forum today that when we speak about enforcement we only really tend to focus on controlling and punishment. I would like to discuss enforcement under another perspective. The community is at the heart of the road safety issue. I also think that in times when we are seeing shrinking resources to invest in programs, think about the impact that the community around you could have in trying to really address this problem of road safety.

Response from Mr Eric Howard:



I would like to make a comment about enforcement, and this is in a high-income country setting. In Victoria, the level is about 500 tests per 1,000 drivers each year. If you get a falling off around 350, 300, the number of drink driving fatalities goes up immediately. It is astonishing. The minute that a very small component of the community think that they can get away with drinking and driving, that will do it. And you are quite right, you have to have positive messages, the community saying the social norm is shifting, all of that. The underpinning of change is the strong commitment to broad scale, general deterrents and random breath testing.

I think in Africa, we talked about the need for enforcement. Wilson, you saw this as a priority. What can we do as a group? What can we push for to try to get enforcement, strategically targeted enforcement with research help beside it so it's not just a case of running around catching people drinking in an unlicensed premise? What could we recommend?

Response from Mr Wilson Odero:



I think there are other countries where there have been successful stories. One direction would be to target a particular country for a pilot phase and pair them up with a best practices area. They can take researchers, police officers, and other people in law enforcement to Victoria, for example, for a two, three-week session to see how it is done. Then they can come back and apply those practices and maybe they need more resources like a breathalyzer and train people how to use it. I think that's what's lacking.

We have legislation, but the legislation is quiet on how that legislation has been enforced. They don't have breathalyzers. They don't have the booze buses that they have in Victoria. I think you must start by partnering individuals and police forces of various countries with those in areas where advancement has been successful....Let's have some volunteers, some countries willing to support enforcement in certain countries so that we see a positive change in enforcing existing laws.

*Questions and responses have been edited for brevity.

Comment from participant organization that trains professional drivers, based in Brussels, Belgium:

In France there is a new legislation about alcohol for buses, and Belgium there is legislation for alcohol for criminals on the road. The justice has the possibility to give an obligation with an alcohol lock on the truck. It's very important to make this legislation.... alcohol is a very important problem on the road.

Response from Mr Michael Cale:



We must be careful that we are talking here about traffic safety and not alcohol scapegoating. For every one person who dies in a car accident about alcohol, two or three are killed because of fatigue, especially among professional drivers. So if we go to technological solutions only in the direction of alcohol, then we are missing the landing strip by a few miles.

My suggestion of using a combination of interlock and black box equipment can give very suitable and very controllable and measurable solutions. As for police enforcement, I'd say that data shows that alcohol is one of the things where more enforcement brings more profit....The number of people caught by speed cameras every year is more or less the same, which means it can't really be that effective in changing speeding behavior whereas the breathalyzer tests are very effective.

So what I do then is go to the other side of the equation and that's the community-based, the value-based that you talked about and it can be effective. I remember a project with a group of Arab men and we didn't come with a message that the police is waiting for you behind a corner. We came with a message that it is important to protect the people in your community, and did kind of a youth-based movement from there. I've done projects where we touch maybe 40 people. You touch 40 people and you can empirically show that you've affected something like 3,000. They change their behavior when you attack the problem from a positive situation.

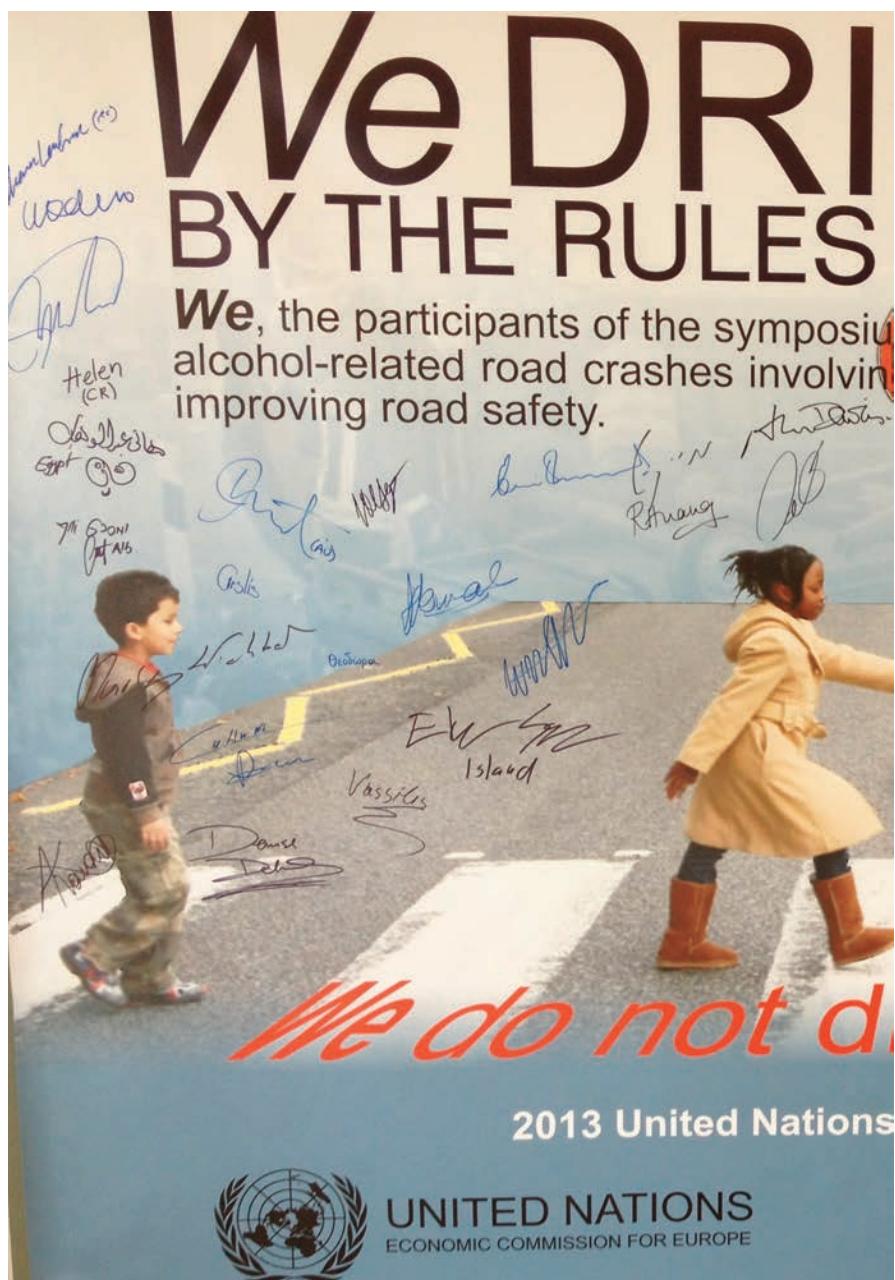
**We note that Mr Shaw Voon Wong of Malaysia was unable to travel to the symposium.
He offered prepared remarks in this video presentation, available here for viewing.*



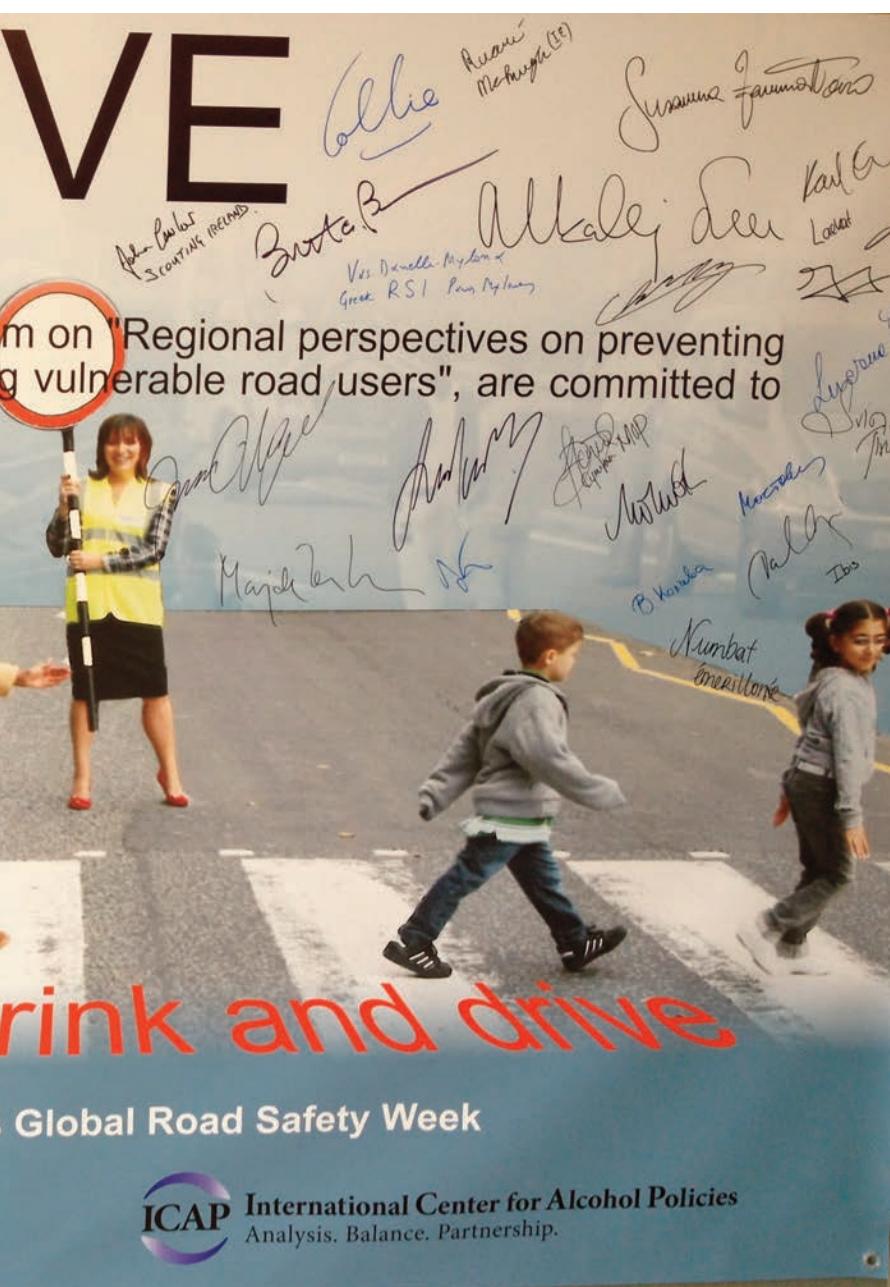
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Pledge

Our symposium culminated with all participants signing this road safety pledge, which we were proud to display on a wall-sized banner at the United Nations:



"We, the participants of the symposium, 'Regional perspectives on preventing alcohol-related road crashes involving vulnerable road users,' are committed to improving road safety."



Conclusion

We hope that this e-book has sown the seeds of some new ideas, as well as reaffirmed the value of many existing interventions to prevent alcohol-related road crashes involving vulnerable road users in your country or region.

However, there is still room for improvement and more work that can be pursued to improve road safety globally, as well as in the area of drinking and driving. We believe that there are many valuable findings and learnings shared in this e-book, including:

- The overall nature of alcohol consumption, with the diversity of cultural issues and settings in each country, requires locally appropriate responses to be devised and implemented. Political support is essential for the success of every initiative. The collection and monitoring of data on alcohol-related crashes is also very important.
- There needs to be better and stricter enforcement of vehicle speed limits and BAC limits for drivers and motorcyclists at all times. UN Member States should set BAC limits in their legislation taking into consideration national circumstances, including the option of implementing graduated licensing for novice drivers with zero tolerance for drink driving (WHO Global Strategy to Reduce Harmful Use of Alcohol, 2010). A lower BAC limit could also be considered for other vulnerable and high risk road users, such as motorcyclists, commercial drivers, and cyclists. In addition, the road safety challenge posed by drunk pedestrians, and the appropriate interventions, merits further consideration and discussion.
- Culturally and socially relevant projects and interventions involving, or overseen by, different community and religious groups to change social pressures and attitudes towards drinking and driving could be explored.
- Partnership between government agencies and the alcohol industry is also recommended to introduce and promote responsible serving of alcohol and associated regulations for licensed premises.

We DRIVE BY THE RULES



In conclusion, the UNECE-ICAP “Regional perspectives on preventing alcohol-related road crashes involving vulnerable road users” international symposium took place in the second year of the United Nations Decade of Action for Road Safety, 2011-2020, and was found to be timely and useful. We are thankful for the symposium participants from more than 20 countries and all regions of the world, representing local, state, and federal governments and non-governmental organizations as well as international agencies. The high level of engagement demonstrated by these individuals, groups, and their constituencies gives us hope for meaningful progress through international dialogue.

We are also grateful for the committed efforts of the authors who contributed to this e-book. Together, we will continue working to make a difference for all road users globally. Please join us in this effort!

Eva Molnar



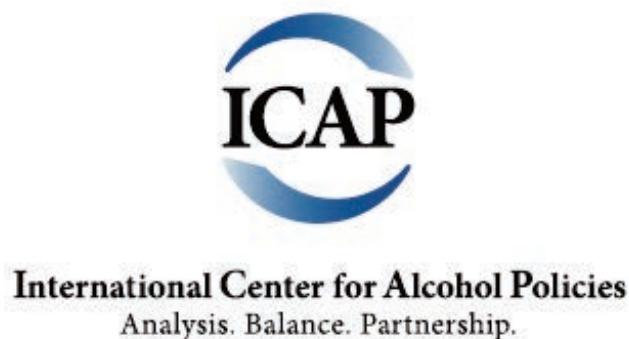
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Working together to make a difference





International Center for Alcohol Policies
Analysis. Balance. Partnership.

