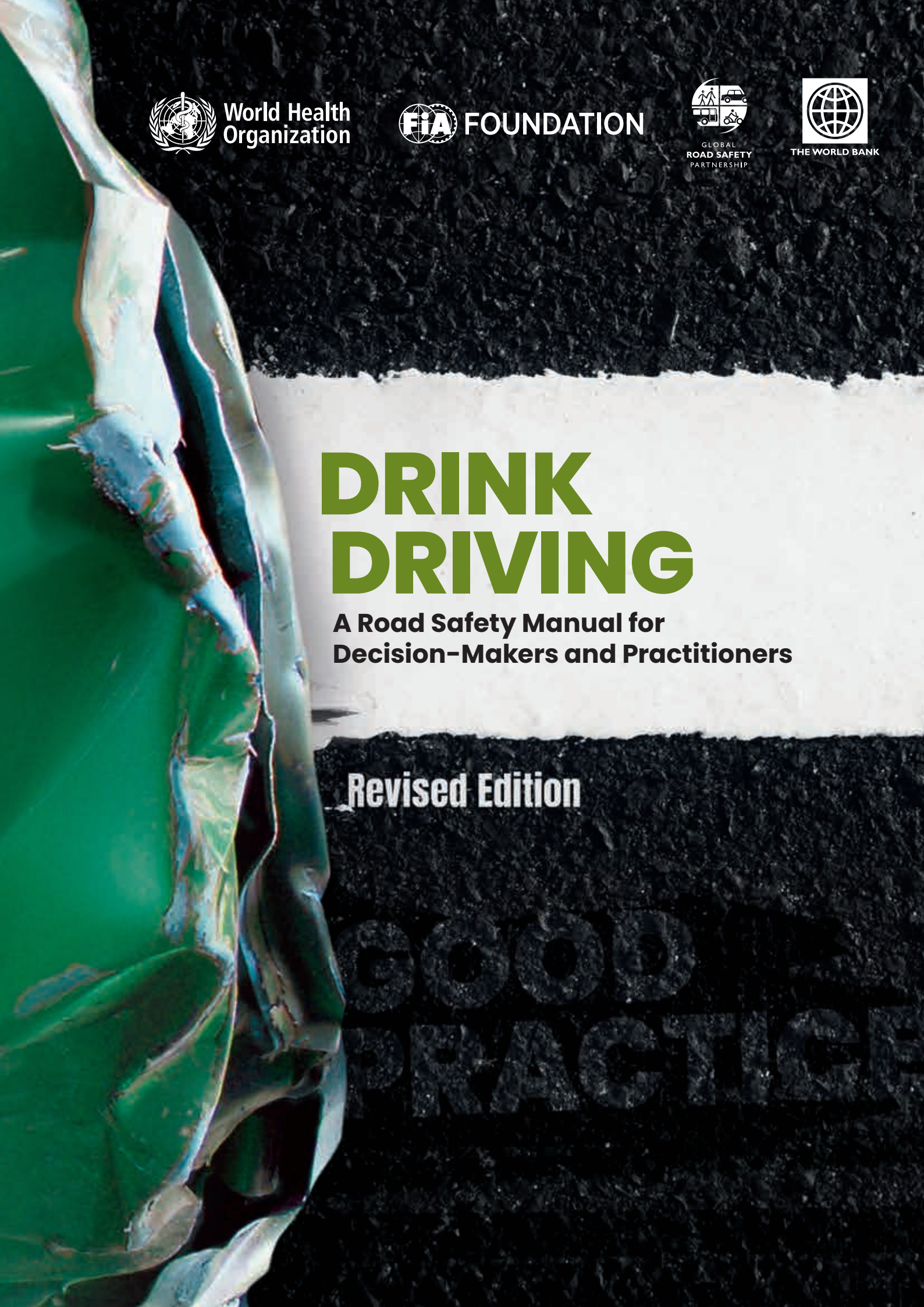
World Health Organization
FIA FOUNDATION
GLOBAL ROAD SAFETY PARTNERSHIP
THE WORLD BANK
DRINK DRIVING
A Road Safety Manual for Decision-Makers and Practitioners
Revised Edition

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CONTENTS

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Preface

Road traffic injuries are a major public health problem and a leading cause of death and injury around the world. Each year approximately 1.3 million people die and millions more are injured or disabled as a result of road crashes, mostly in low- and middle-income countries. As well as creating enormous social costs for individuals, families and communities, road traffic injuries place a heavy burden on health services and economies. The cost to countries, many of which already struggle with economic development, may be as much as 5% of their gross national product. As motorization increases, preventing road traffic crashes and the injuries they inflict will become an increasing social and economic challenge, particularly in low-and middle-income countries. If the present trend continues, road traffic injuries will increase dramatically in most parts of the world over the next two decades, with the greatest impact falling on the most vulnerable citizens.

Appropriate and targeted action is urgently needed. The *World report on road traffic injury prevention*, launched jointly in 2004 by the World Health Organization and the World Bank, identified improvements in road safety management and specific actions that have led to dramatic decreases in road traffic deaths and injuries in industrialized countries active in road safety. The use of seat-belts, helmets and child restraints, the report showed, has saved thousands of lives. The introduction of speed limits, the creation of safer infrastructure, the enforcement of limits on blood alcohol concentration while driving, and improvements in vehicle safety are all interventions that have been tested and repeatedly shown to be effective.

The international community must continue to take the lead to encourage good practice in road safety management and the implementation of the interventions identified in the previous paragraph in other countries, in ways that are culturally appropriate. To speed up such efforts, the United Nations General Assembly has passed a number of resolutions urging that greater attention and resources be directed towards the global road safety crisis. These resolutions stress the importance of international collaboration in the field of road safety. These resolutions also reaffirm the United Nations' commitment to this issue, encouraging Member States to implement the recommendations of the *World report on road traffic injury prevention* and commending collaborative road safety initiatives so far. In particular, they encourage Member States to focus on addressing key risk factors and to establish lead agencies and coordination mechanisms for road safety. These were further encouraged through the Moscow Declaration (2009), Brasilia Declaration (2015) and the Stockholm Declaration (2020).

To contribute to the implementation of these resolutions, the World Health Organization, the Global Road Safety Partnership, the FIA Foundation, and the World Bank have collaborated to produce a series of manuals aimed at policy-makers and practitioners. This manual on drink driving is one of them. Initially published in 2007, it has been updated to include new evidence and case studies. Each manual provides guidance to countries wishing to improve road safety and to implement the specific road safety interventions outlined in the *World report on road traffic injury prevention*.

They propose simple, cost-effective solutions that can save many lives and reduce the shocking burden of road traffic crashes around the world. We encourage all to use these manuals.

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Executive summary

Alcohol plays a cultural and social role in many societies. However, the harmful effects of alcohol that are experienced in many aspects of daily life are undeniable. In the context of improving road safety outcomes, the need to manage harmful levels of alcohol use remains a paramount challenge. Effective campaigns to reverse the level of community acceptance of drink driving behaviour, coupled with sustained and well-resourced enforcement of strong anti-drink driving laws, has seen significant reductions in alcohol-related road crashes in many jurisdictions. However, more must be done.

This manual provides advice and examples that, if implemented accordingly, will reduce the prevalence of drink driving and associated road trauma. The manual is aimed at policy-makers and road safety practitioners and draws on experience from countries that have succeeded in achieving and sustaining reductions in alcohol-related road trauma. It includes recommendations for developing and implementing drink driving legislation and advice on how to monitor and evaluate progress. A particular focus is the design and implementation of interventions that include legislation, enforcement and public education/advocacy measures. Importantly, these interventions must work in concert to achieve optimal results.

In developing the material for this manual, the writers have drawn on case studies from around the world to illustrate examples of "good practice". This 2nd edition of the manual was produced in 2022 to reflect changes in road safety data, evidence and good practices, particularly evidence from low- and middle-income countries. Strategies that work in one country may not necessarily transfer effectively to another. The manual attempts to reflect a range of international experiences but does not offer prescriptive solutions. Rather, it is hoped that the manual acts as a catalyst for local initiatives and actions to improve road safety. It provides information and evidence that stakeholders can use to generate their own solutions and develop advocacy and awareness-raising tools and legislation to reduce alcohol-related road trauma.

Introduction

Why were these manuals developed?

The World Health Organization (WHO), the World Bank, the FIA Foundation and the Global Road Safety Partnership (GRSP) produced a series of good practice manuals, following the publication of the *World report on road traffic injury prevention* in 2004, which provide guidance on implementation of interventions to address specific risk factors in road safety. The topics covered in the initial series of manuals are: helmets (2006), drinking and driving (2007), speed management (2008), seat-belts and child restraints (2009), data systems (2010), pedestrian safety (2013), road safety legislation (2013), powered two- and three-wheeler safety (2017) and bicyclist safety (2020). In addition, WHO produced a road safety technical package, *Save LIVES* (2017), which presents evidence on 22 evidence-based interventions related to speed management, leadership, infrastructure, vehicles, enforcement and post-crash care. These documents are available in multiple languages on the World Health Organization website at https://www.who.int/violence_injury_prevention/publications/road_traffic/en/.

Why were these manuals revised?

Since the series of manuals was first published, the scientific evidence base relating to various risk factors and the effectiveness of interventions has continued expanding. Contemporary research has refined our knowledge about specific risk factors, such as distracted driving, and vehicle impact speed and risk of death for pedestrians. New issues and practices have arisen, such as a tropical helmet standard and anti-lock braking system (ABS) for motorcycles. New and existing interventions have been implemented and evaluated, with increasing application in low- and middle-income countries. Research attention and policy response has also increasingly been applied to emerging road safety issues including e-bikes, drugs other than alcohol, fleet safety, urban mobility, micro mobility options, air and noise pollution, public transport, and technological advances.

As a result of these developments, the good practice manuals required revision so that they can continue to be key references for road safety policy implementation and research. This is particularly important, given the emphasis placed on road safety within the framework of the 2030 Agenda for Sustainable Development and because of the global impetus to reduce road deaths and injuries resulting from the declaration of the two United Nations' Decades of Action for Road Safety (2011–2020 and 2021–2030). The manuals have been revised to reflect these developments as they continue to be valuable resources providing evidence-based and cost-effective solutions to save lives and reduce injuries. An extensive literature review has informed the revision and updating of all the manuals, and additional information has been collated to allow more contemporary case studies to be showcased. In addition, there was an identified need to broaden the topics covered in the manuals to include aspects such as qualitative research methods, and participatory approaches to designing and evaluating interventions. An emphasis on shifting traditional thinking away from blaming road users towards more contemporary frameworks, such as the Safe System Approach is key in the revised manuals. An area requiring ongoing consideration is decolonising knowledge and practice within the road safety field.

Safe System Approach

The Safe System approach recognizes that road transport is a complex system and places safety at its core (*1*). It also recognizes that humans, vehicles and the road infrastructure must interact in a way that ensures a high level of safety (Figure 1). A Safe System, therefore:

- anticipates and accommodates human errors;
- incorporates road and vehicle designs that limit crash forces to levels that are within human tolerance to prevent death or serious injury;
- motivates those who design and maintain the roads, manufacture vehicles, and administer safety programmes to share responsibility for safety with road users, so that when a crash occurs, remedies are sought throughout the system, rather than solely blaming the driver or other road users;
- pursues a commitment to proactive and continuous improvement of roads and vehicles so that the entire system is made safe rather than just locations or situations where crashes last occurred; and
- adheres to the underlying premise that the transport system should produce zero deaths or serious injuries and that safety should not be compromised for the sake of other factors such as cost or the desire for faster transport times (*1*).

Figure 1. Safe System Approach

Source: *(2)*

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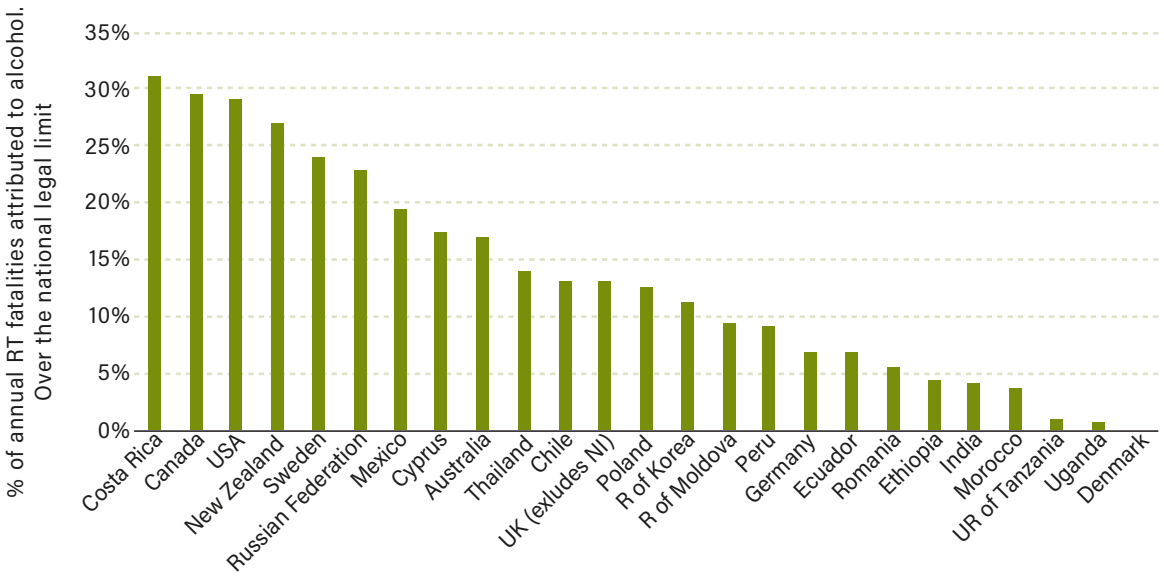
Chapter 1. Why must we address drink driving?

Alcohol has many functions in society and represents cultural, religious and symbolic meanings in most countries. However, it is also a drug with many toxic effects and other dangers such as intoxication and dependence. It is not the only substance that can impair driving performance. Impaired driving can result from various things including alcohol consumption, use of licit and illicit drugs, and being unable to function at optimal capacity because of fatigue. While all aspects of impaired driving deserve appropriate attention, the focus of this manual is on drink driving. This chapter provides information on the global problem and risks associated with drinking and driving. The information and recommendations in this Chapter can be useful in persuading political leaders and the public to support interventions that reduce the prevalence of drink driving and associated harms.

1.1 The context and magnitude of the drink driving problem worldwide

An extensive body of literature identifies that driving after drinking alcohol significantly increases the risk of a crash and the severity of that crash, resulting in deaths and serious injuries. In its latest reports, the WHO estimates that between 5% and 35% of global road deaths are alcohol related *(1, 2).* In most high-income countries about 20% of fatally injured drivers have blood alcohol concentration (BAC) levels above the legal limit *(1).* Studies in low- and middle-income countries have shown that between 33% and 69% of fatally injured drivers and between 8% and 29% of non-fatally injured drivers had consumed alcohol before their crash *(1).* Figure 2 depicts the attribution of road traffic deaths to alcohol from a range of countries.

Figure 2. Attribution to road traffic deaths to alcohol [2013, 2014 data]



Note: Data on legislation and policies represent the country situation in 2014 while data on fatalities and vehicle registrations are for 2013, or the most recent year for which these data were available. For method of estimation please refer to https://www.who.int/data/gho/indicator-metadata-registry/imr-details/208.

Source: *(3)* with author's elaboration.

1.2 How is alcohol measured?

Although it can be difficult to attribute a crash to a particular cause or causes, decisions about whether a crash was alcohol-related are often based on how much, if any, alcohol was present in the bloodstream or breath of the road users involved. **To quantify the extent of the drink driving risk in a jurisdiction, the most reliable measurement is the number of drivers fatally injured and found to have a blood alcohol concentration (BAC) over the legal limit**. The amount of alcohol contained within the bloodstream or breath can be measured by testing a small sample of blood, urine, or through analysis of exhaled breath. The results of a breath analysis may be expressed in terms of blood alcohol concentration (BAC). For example:

- mg/100ml: – milligrams of alcohol per 100 millilitres of blood
- g/dl: – grams of alcohol per decilitre of blood.

The results of a breath analysis may also be expressed directly in terms of breath alcohol concentration (BrAC) as below:

- mg/L: – milligrams of alcohol per litre of breath
- mcg/L: – micrograms of alcohol per litre of breath.

Table 1 shows the relationship between these various terms.

Table 1. Relationship between various blood and breath alcohol concentration levels

BAC		BrAC	
mg/100ml	g/dl	mg/L	mcg/L
20	0.02	0.10	100
50	0.05	0.24	240
80	0.08	0.38	380

Complete data showing the involvement of alcohol in all crashes are not always available. However, this can be assisted by thorough investigation of crashes, the collection of evidence to identify risk factors, and a system to analyse data and facilitate the development of road safety interventions.

Furthermore, the available data from different countries may not be comparable because of differences in the legal definitions of drink driving and in alcohol testing requirements for crash-involved drivers. Despite these issues, data from various countries clearly demonstrate the major role that alcohol plays in driver, passenger, and other road user deaths and serious injuries:

- 26% – 31% of non-fatally injured drivers in South Africa have BAC levels exceeding the country's limit of 0.08 g/100 ml *(4)*;
- in Thailand, nearly 44% of traffic injury victims in public hospitals had BAC levels of 0.10g/100ml or more *(5);*
- in Colombia, 34% of driver fatalities and 23% of motorcycle fatalities are associated with speed and/or alcohol *(6);*
- in the United States of America, half a million people are injured and 17,000 killed every year in drink driving-related traffic crashes, and almost 40% of all youth road fatalities are directly related to alcohol consumption *(7)*;
- in Sweden, the Netherlands and the United Kingdom, the proportion of fatally injured drivers with excess alcohol levels is around 20%, although the legal limits in these countries differ considerably, being 0.02 g/100 ml, 0.05 g/100 ml and 0.08 g/100 ml, respectively *(8)*;
- in Mexican municipalities, 19.5% of car occupant deaths due to road traffic injuries were attributable to alcohol consumption *(9)*;
- in Peru and the Dominican Republic, self-reported data from road users treated for road traffic injuries in emergency departments indicated that approximately 15% had consumed alcohol in the six hours prior to their injury *(10).*

1.3 Effects of alcohol

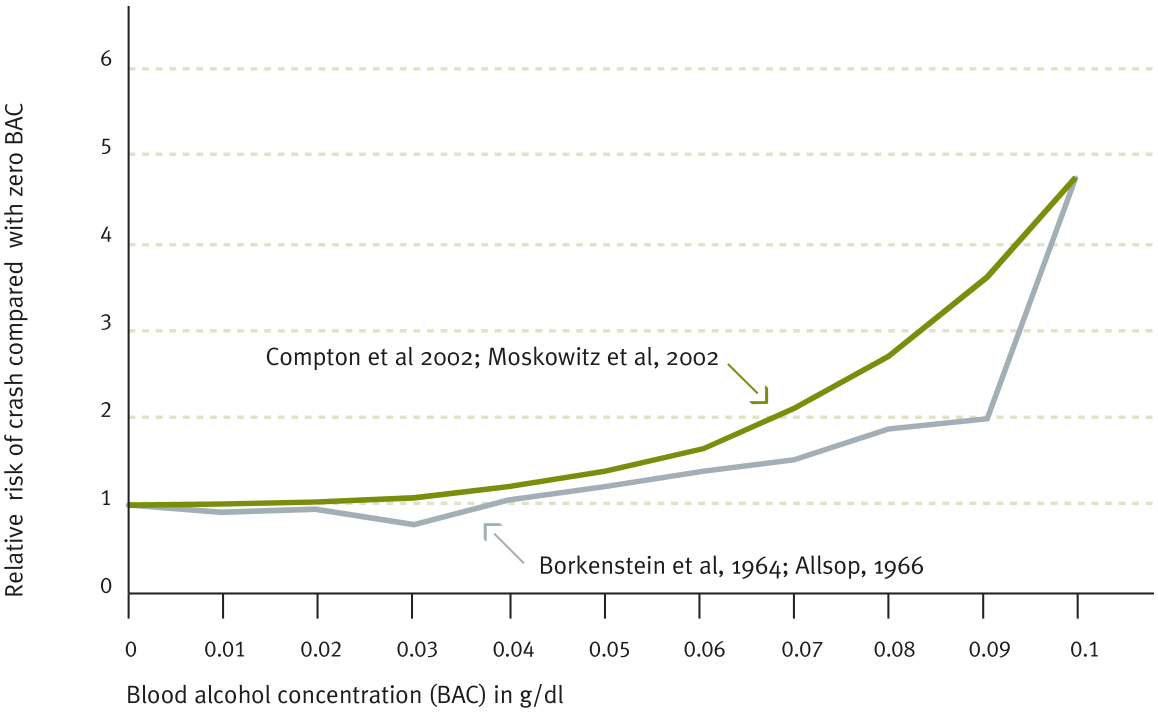
The immediate effects of alcohol on the brain can be depressing or stimulating in nature, depending on the quantity consumed, which causes degradation of driving performance directly related to BAC levels. Alcohol results in impairment which increases the likelihood of a crash because it produces poor judgement, increased reaction time, lower vigilance and decreased visual acuity. Physiologically, alcohol also lowers blood pressure and depresses consciousness and respiration. It can take two to three hours for the body to metabolise alcohol from one to two drinks, and up to 24 hours to process the alcohol from eight to ten drinks.

A common issue in all jurisdictions is the lack of awareness of how much alcohol is required to adversely impact a person's coordination and concentration. As a result, some jurisdictions have used the concept of a 'standard drink' to help inform the public about how much of what types of alcohol can reasonably be expected to be consumed by a person before they reach the legal BAC limit. **Importantly, it takes very little alcohol to result in a person being over the legal limit. Because of this, the message from all road safety partners needs to be clear – '*don't drink and drive*'.**

Alcohol can impair judgement and increase crash risk, even at relatively low BAC levels and the effects become progressively worse as the BAC increases. In 1964, a case-control study was carried out in Michigan in the United States, known as the Grand Rapids study *(11).* It showed that drivers who had consumed alcohol had a much higher risk of involvement in crashes than those with a zero BAC, and that this risk increased rapidly with increasing blood alcohol levels. These results were corroborated and improved upon by studies over subsequent decades *(12, 13, 14, 15).* Many of these studies provided the basis for setting legal blood alcohol limits and breath content limits in many countries around the world.

An extensive body of research demonstrates that the higher the blood alcohol level, the more rapidly the risk of being involved in a casualty crash increases. The relative risk of crash involvement starts to increase significantly at a BAC level of 0.04 g/dl (see Figure 3).

Figure 3. Relationship between driver's BAC and relative risk of involvement in a casualty crash



Source: (*original sources 11, 14, 17, 18. Combined graphic source 16)*

Due partly to its tendency to reduce inhibition, the consumption of alcohol is often associated with other risk behaviours such as non-use of seat-belts or helmets, unsafe speed choice, and the use of other drugs which can further impact upon driving performance *(19).* In addition, the presence of alcohol in the body adversely affects the diagnosis, management, and treatment of and recovery from injuries

because alcohol intoxication can complicate patient assessment and management (e.g., alcohol effects can mimic head injury symptoms), and can exacerbate underlying medical conditions.

1.4 Prevalence and economic impact

Despite the well-known risks, drink driving remains prevalent around the world. A report from 32 countries indicated that the proportion of car drivers who report driving after drinking alcohol ranges from 5% in Hungary to 34% in Portugal, from 4% in Japan to 24% in Australia, below 15% in Morocco and Egypt to 32% in South Africa *(20).* Additionally, self-report data from road users treated for road traffic injuries in emergency departments in Peru and the Dominican Republic indicated that approximately 15% had consumed alcohol in the six hours prior to their injury *(10)*. The estimated economic costs of drinking and driving are also significant. In the United States, the total economic cost of motor vehicle crashes in 2000 was estimated at US$ 230.6 billion, with drink driving-related crashes accounting for US$51.1 billion, or 22% of all economic costs *(7).*

In the low- and middle-income country context, applying recent data on the incidence of drink driving crashes to estimates of the total cost of road crashes in such countries (as outlined in *the World report on road traffic injury prevention*) established robust estimates *(21).* For example, in South Africa, applying the estimate that alcohol is a factor in 31% of non-fatal crashes to the estimated hospital costs of US$ 46.4 million attributed to road crashes, crashes involving drink driving cost the health system around US$14 million. Using the same application in Thailand, where at least 30% of crashes are linked to alcohol and the total cost of road crashes is estimated at $US3 billion *(22),* crashes involving drink driving cost approximately $US 1 billion.

1.5 Risk factors for drink driving crash involvement

Drink driving offenders are commonly classified as first-time offenders or repeat offenders. Research (largely from high-income countries) indicates that drink drivers are commonly characterised as *(10, 23, 24):*

- male
- 18–44 years old
- from a low socio-economic grouping
- single or divorced
- in a blue-collar occupation
- of low education and limited literacy
- of low self-esteem and
- having started drinking at an early age (at age 14 or younger) *(24).*

Drink driving crashes commonly exhibit a number of characteristics:

Single vehicle crashes and high speed – drink driving crashes often involve high speed and a single vehicle running off the road. Many of these crashes also result in the vehicle hitting a fixed roadside object. In urban areas these can be signs or electricity poles, while in rural areas it is usually trees, culverts, bridge ends and fence posts.

Night and/or weekend crashes – drink driving crashes occur more often at night (when more alcohol is consumed) and generally on weekends or periods of high leisure activity.

Increased severity of injury – this is partly because once a crash and the injury-causing impact has occurred, the existence of alcohol in the body of the injured works to limit the extent and level of recovery from injury.

A study from India highlights the issue of severity of injuries: the National Institute of Mental Health and Neurosciences, Bangalore [NIM-HANS] estimated that 21% of people who sustained brain injuries during a crash were under the influence of alcohol (physician confirmed diagnosis) at the time, and that 90% had consumed alcohol within three hours prior to the crash. *(25)*

Although much of the research on alcohol-related crashes has focused on car crashes, many of the characteristics of alcohol-related motorcycle crashes are the same. A study in Thailand *(26)* indicated that compared to non-drinking riders, drinking riders tended to crash at night, to have more non-intersection crashes and more crashes on curves, were more likely to lose control, run off the road, violate a red signal, be inattentive, and for rider error to be a contributing cause of the crash. Drinking riders were five times more likely to be killed than non-drinking riders. It is also important to recognise that alcohol consumption by drivers of four-wheelers puts pedestrians, cyclists, and riders of motorised two- and three-wheelers at risk.

In parts of the world where the incidence of drink driving-related crashes is considered to be relatively low (for example, where motorisation levels are low or where alcohol use is forbidden) countries should be proactive in monitoring the situation so that it can be managed and prevented from escalating. The magnitude of the drink driving problem, and its harmful consequences in terms of deaths and serious injuries, highlights the critical need to invest in countermeasures to reduce this risky behaviour. Effective interventions are presented in the next chapter.

Chapter Summary

- Drink driving is a major road safety problem in many countries.
- Even in quite modest amounts, alcohol impairs the functioning of several processes required for safe road use, and drink driving can result in severe crashes involving deaths and serious injuries.
- Alcohol consumption is associated with other risk behaviours such as non-use of seat-belts or helmets, unsafe speed choice, and the use of other drugs which can further impact upon driving performance.
- Research indicates that crashes involving drink driving and those who are more likely to drink and drive display common characteristics, which may inform intervention targets.

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Chapter 2. Evidence-based interventions

This Chapter provides guidance on a range of interventions that can be included in drink driving prevention programmes including laws, setting blood alcohol concentration (BAC) limits, enforcement of these laws, public awareness and advocacy campaigns, and use of technology and rehabilitation and treatment to help people separate drinking from driving.

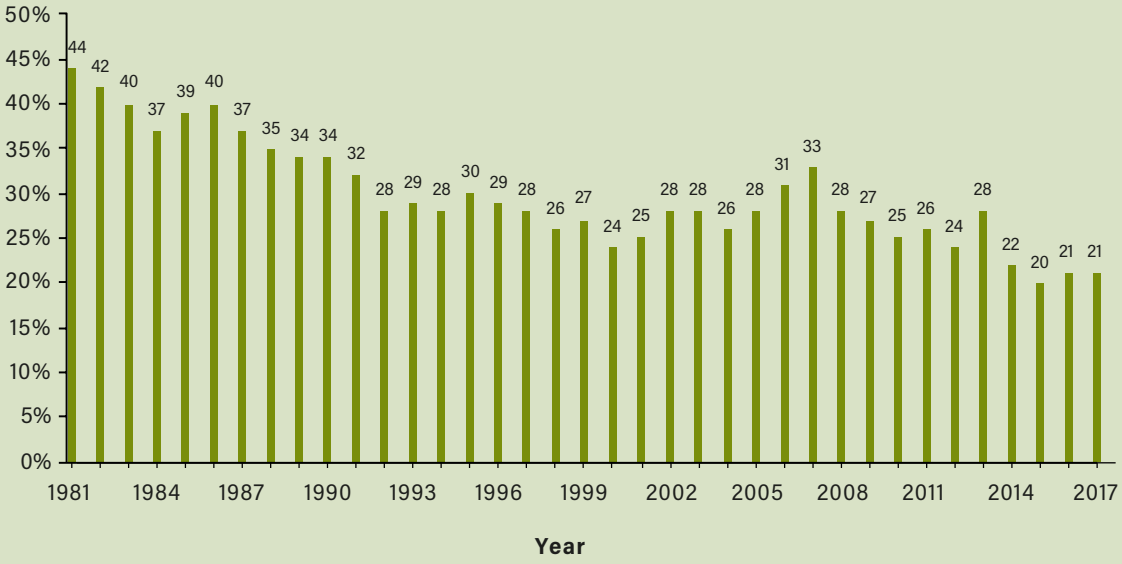
Over recent decades, many countries have been successful in reducing the number of drink driving-related crashes (for an example, see Box 1). While some adaptation may be required to suit different contexts, experiences from countries that have succeeded in reducing drink driving-related deaths and injuries (generally high-income countries) can be used to guide programmes in low- and middle-income countries where alcohol plays a significant role in road crashes.

Box 1. Changes in prevalence of and community attitudes towards drink driving – Australia

Australia embarked on a sustained programme to tackle drink driving-related crashes from the mid-1970s onwards. Substantial research information on the impairment effects of alcohol was collected, leading to support for legislation setting out a maximum BAC level for drivers.

Following the adoption of legal BAC limits, large-scale police enforcement of these limits was undertaken in the 1980s, through widespread and highly visible Random Breath Testing (RBT). This was supported by a range of other interventions, including publicity, community announcements, community activity programmes, and variations in licensing and distribution arrangements for alcohol (for a case study summary, refer to this publication *(1)*. There was also ongoing monitoring of performance involving blood tests on drivers involved in crashes. Over this 30-year period, alcohol as a factor in crashes was almost halved in Australia (see Figure 4), and community attitudes towards drink driving changed substantially, such that there is a strong community view that the behaviour is socially irresponsible and unacceptable.

Figure 4. Percentage of drivers and riders killed with BAC of 0.05 or more in Australia: 1980–2017 (where BAC is known *)



*Excludes Victoria and Western Australia; excludes drivers with a special licence (Provisional, Learner, Heavy Vehicle) that exceeded their special range limit but were below 0.05; some data cleaning applied to two jurisdictions.

Data sources: ATSB (undated). *Alcohol and road fatalities*. Monograph 5. Canberra: Australian Transport Safety Bureau; BITRE. Data provided by Bureau of Infrastructure, Transport & Regional Economics. Canberra: Department of Infrastructure & Transport. Source: *(2)*

Success in addressing drink driving requires:

- strong political commitment;
- legislation that clearly defines illegal (for driving) BAC levels and a tiered suite of supporting penalties for drink driving offences;
- strong, well-publicised, highly visible and sustained enforcement through high visibility random or compulsory breath testing (RBT/CBT) resulting in swiftly applied penalties when caught breaking the law;

- targeted social marketing campaigns to change attitudes and behaviours – the public must:
  - know why drink driving is both unsafe and anti-social;
  - be aware that there are laws in place;
  - perceive a high risk of being caught if they break the law; and
  - know that if they are caught, there will be a heavy price to pay that cannot be avoided.

Table 2 provides an overview of existing interventions and a rating of their effectiveness: *effective, promising, insufficient evidence, and ineffective*. It is strongly recommended that programmes aimed at reducing drink driving include "effective" or at least "promising" interventions.

Table 2. Evidence status of drink driving interventions

Interventions	Effective	Promising	Insufficient evidence	Ineffective
Legislation (Section 2.1)				
Setting BAC limits – e.g. BAC limit for the general population not exceeding 0.05g/dl; BAC limits for other driving groups (young/novice drivers, professional/ commercial drivers not exceeding 0.02g/dl).	✓			
Penalties that reflect the seriousness of offence (higher penalties for higher BAC levels), and that are graduated for recidivists	✓			
Enforcement of BAC levels (Section 2.1.2)				
Random breath testing (preferred)	✓			
Sobriety checkpoints	✓			
Restrictions on young/inexperienced drivers: (Section 2.2)				
Licensing restrictions – e.g. graduated driver licensing (GDL), including lower/zero BAC for young drivers	✓			
Offender management: (Section 2.3)				
Offender programmes		✓		
Alcohol ignition interlocks	✓			
Alcohol rehabilitation and/or treatment programmes	✓			
Public education: (Section 2.4)				
Designated driver programmes			✓	
Public awareness campaigns (alone)				✓

2.1 Legislation

Drink driving legislation that is evidence-driven, context relevant, consistently enforced, and well understood by enforcement officials and the public has been effective in saving lives in many jurisdictions. The 2018 WHO Global Status Report on Road Safety *(3)* identified that only 45 countries had drink driving laws that align with best practice. More information about best practice legislation

is contained in various WHO documents, including this one: Strengthening road safety legislation: A practice and resource manual for countries *(4).*

Various steps need to be taken when designing effective drink driving legislation. The first step in this process is undertaking an assessment of relevant legislation already in place. If you identify that laws need reforming, or that new laws are required, consider the following:

– address the absence of legislation and ensure that best practice recommendations are included;

– strengthen or complement an existing law using evidence and best practice recommendations;

– provide greater legitimacy for the law and provide appropriate implementation and penalty mechanisms so that laws can be effectively enforced and serve as a deterrent to drink driving.

It is important to remember that road safety is a dynamic field and that best practice continually evolves. Therefore, countries must constantly review their legislation, revising and updating it to meet the latest evidence *(5).* Consider the following elements when formulating or improving drink driving laws or regulations.

The WHO requires that three **minimum** aspects are met to enable a country to be assessed as meeting best practice drink driving legislative requirements:

1. presence of a national drink driving law
2. BAC limit for the general driving population not exceeding 0.05 g/dl and
3. BAC limit for young and novice drivers not exceeding 0.02 g/dl.

Appendix A contains sample wording to assist in drafting drink driving legislation.

Box 2 describes how the legislative situation in the state of Jalisco, Mexico evolved to help reduce drink driving.

Box 2. Reforming drink driving legislation in Jalisco, Mexico

In 2008, as part of the Bloomberg Philanthropies Global Road Safety Programme, a new road safety initiative was piloted in four locations in Mexico, including the state of Jalisco. One focus of the initiative was to help the government identify gaps in legislation relating to key risk factors and provide support to facilitate improvements to these laws. To this end, a review of road safety laws in Jalisco identified the need to strengthen the law on drink riving, including reducing the existing BAC limit, which was above recommended best practice.

Strong relationships were established with different stakeholders, including federal and state authorities, local legislators and civil society in order to advocate for legislative change. These efforts included: open forums with civil society and media; expert meetings and informative sessions; and sessions with local authorities and legislators from the main political parties.

After extensive consultation among local, national and international stakeholders, legislative recommendations were drafted. In November 2010 the new state law, locally known as the "Ley Salvavidas" ("Lifeguard/life-saving law"), was amended to incorporate these provisions, which included lowering the blood alcohol concentration limit from 0.15 g/dl to 0.05 g/dl (in line with international best practice) and stiffer penalties for transgressing this law. Continued monitoring of the law's implementation resulted in findings that it was not having the intended impact because of enforcement challenges. Notably the 2010 law specifically did not provide for the establishment of random alcohol checkpoints, shown to be effective at reducing drink–driving. Between 2010 and 2012, civil society and international road safety organizations engaged with policy-makers to advocate for regulations that would allow for random breath testing, a process which culminated in 2013, when the Jalisco state government adopted an amendment to the 2010 law that formally provided for the establishment of random alcohol checkpoints and a protocol for their implementation. The occasion of amending the law was also used to further increase penalties related to drink–driving.

The law amendment was accompanied by a hard-hitting social marketing campaign that supported dissemination of the new regulations and penalties, and communicated the risk of drink driving (see https://www.youtube.com/watch?v=boxRNvH5WEo&list=PL9S6xGsoqIBWAhPnNtIDoxP3OcRYqaQa0&index=30).

Alongside this legislative reform process and its dissemination, major capacity building efforts also took place to train and support police in effectively running random alcohol checkpoints.

The effects of the initiative are being monitored. Short-term results have shown significant changes in the proportion of alcohol-related deaths and collision rates in Jalisco following the implementation of the Global Road Safety Programme.

Source: *(3, 6)*

2.1.1 BAC Limits (Effective)

Globally, legal BAC levels vary significantly. For instance, for the general driving population, BAC levels range from 0.00 g/dl (e.g., Hungary, Paraguay) to 0.12 g/dl (e.g., Sao Tome and Principe). Specific details of drink driving laws, BAC levels, enforcement, and the number of road traffic deaths attributed to alcohol, by country/area, can be found in Table A5 of the 2018 Global Status Report on Road Safety *(3).* The table provides legal BAC levels for three driving groups: the General driving population, Young/Novice drivers, and Professional/Commercial drivers.

In law enforcement investigations, BAC is estimated from breath alcohol concentration (BrAC) measured with a machine commonly referred to as a breathalyser (note that different machines may have different conversion factors applied to relate BrAC to BAC). Breath alcohol concentration (BrAC) is expressed as the weight of alcohol, measured in grams, in 210 litres of breath, or, measured in milligrams, in 210 millilitres of breath. There is accurate correspondence between blood alcohol and breath alcohol

levels *(7).* Because of the ease of administration, breath alcohol is more commonly measured in the road safety context. As described in section 1.3, the presence of any amount of alcohol can impair driving behaviour and there is a rapid, exponential increase in risk for BAC levels that exceed 0.05g/dl. Therefore, international evidence and experience demonstrates a critical need to legislate lower maximum BAC rates in order to reach, at least, the WHO recommended minimum requirements to limit the harm caused by alcohol consumption and driving.

Screening for Alcohol – Breath testing at the roadside (Effective)

In general, there are two roadside breath testing approaches:

1. *Random breath testing* (RBT) (recommended) – the statutory authority for an enforcement officer to stop a vehicle and test the driver at random, anywhere at any time, without the need to establish that the driver committed another offence, nor that the driver showed any signs of impairment prior to being stopped. **This is primary enforcement of a drink driving law**, is common in some European countries, and throughout Australia and New Zealand, and is an efficient use of resources because it allows for a greater number of drivers to be tested (high volume testing), per hour of enforcement activity (as compared to a sobriety checkpoint), and if challenged, can be justified on civil and human rights grounds, through a *greater good, public interest* argument. Note that RBT can be conducted at a roadside checkpoint where every vehicle is stopped and every driver tested. However, if vehicle volume through a checkpoint becomes such that it is no longer practical or safe for staff or road users to stop every vehicle, the testing can be continued by stopping a random number of vehicles that allows for overall volume of traffic to be managed. This process ensures randomness and equity in relation to who is stopped and tested. RBT can also be conducted away from a checkpoint operation, where enforcement officers can intercept a vehicle and test the driver.
2. *Sobriety checkpoints* – enforcement officer is required to form a suspicion of alcohol impairment before a driver can be intercepted and tested. This is also referred to as *Selective breath testing* (SBT). This testing strategy, used in the United States of America, is generally less efficient because of lower testing volumes for each hour of enforcement activity.

Overall, while both types of roadside breath testing approaches have shown positive road safety impacts *(8),* RBT has produced superior results and is recognised as the more efficient way to allocate enforcement resources and to deter drink driving, especially because it can expose every driver stopped at the RBT site to a breath test *(9, 10)*. Another approach to detect and apprehend drink drivers is to conduct targeted enforcement based on intelligence. This can involve targeting vehicles as they depart from known drinking venues (e.g., bars, nightclubs, restaurants). This approach may lead to detection of some drink driving offenders but is less effective at creating a general deterrent effect (for the whole driving population) because it is generally not highly visible, nor publicised *(11)*.

2.1.3 Additional legislative considerations

Refusal to submit to a breath test: Legislation must address the consequences of a driver refusing to submit to a breath test. In some jurisdictions, the penalty for failing to submit a breath sample is equivalent to the penalty associated with the highest range drink driving offence. It is highly recommended that the penalty for refusing to submit to a breath test are substantial and unavoidable. An additional consideration is what mechanism/s can be used to dispute a test result.

Requirement for mandatory alcohol testing for road crashes. This is an important strategy to help determine crash causation as well as provide valuable information on level of intoxication of drivers, passengers, and any other road users involved in a crash (e.g., pedestrians, cyclists) so that appropriate intervention strategies can be developed.

Penalties: A range of penalties are used to deter drink driving, including monetary fines, demerit points, licence suspension, licence loss, vehicle impoundment, and the requirement to fit and use an interlock device for a specified time. It is critical that penalty severity reflects the severity of the offence. In other words, it is important that riskier behaviours (i.e., driving with higher BAC levels, or repeat offending) incur harsher penalties, to communicate the seriousness of the offence or reoffending to the broader community. It is also important to ensure that penalties for drink driving offences are appropriate when compared to other traffic offences. More severe penalties are often used for recidivist (repeat) offenders. Additional information on the use of penalties to improve road safety can be found in the guide produced by the Global Road Safety Partnership (GRSP) (A Guide to the Use of Penalties to Improve Road Safety) *(12)*.

Per se or impairment provisions: Consideration should be given to whether the legal framework of a country is based on a per se law or an impairment law. 'Per se' is a Latin phrase meaning 'by itself.' In relation to drink driving, **a per se law means that a person is breaking the law by having a BAC above the legal limit, irrespective of whether there is any sign of impairment or any other evidence**. This issue is of particular importance for enforcement actions as well as to create a legislative system that actively deters drink driving. Because of the wealth of evidence that shows increasing levels of impairment with increasing BAC, it is common in many jurisdictions for graduated penalties to apply, with penalties increasing in severity as driver BAC levels increase.

Identification of relevant enforcement agency: Specifically identifying the enforcement authority/ies that will be responsible for enforcing the law, as well as their specific responsibilities, is necessary.

Restrict availability and affordability of alcohol: Approaches such as increasing taxes on alcohol, regulation on point of sale, density of locations of sale, and minimum age for purchase and consumption of alcohol can assist to reduce the level of harm created by alcohol consumption and drink driving *(13)*. Additionally, consideration should be given to making it an offence to sell or supply alcohol to an intoxicated person. More details about these issues as well as topics such as national control of production and sale of alcoholic beverages, restrictions on drinking in public, restrictions on alcohol advertising, regulations on alcohol product placement and alcohol sales promotions, labelling, and responsible beverage service training can be found in the Global status report on alcohol and health *(14).*

Testing and calibrating breath alcohol testing equipment considerations: It is recommended that legislation covers: a) the approval of breath alcohol testing instruments for enforcement purposes, resourcing mechanism necessary to procure relevant testing equipment and train relevant people how to use and calibrate it, and b) testing and calibration protocols – to preserve evidence and mitigate risk of litigation – this may include technical specifications for testing and calibrating devices and testing facility protocols to ensure that all tests are administered properly and in a timely manner by fully competent, trained personnel.

Employer provisions: It is recommended that legislation contains information that allows employers to be held accountable for the safe operation of the work vehicle fleet, which could include monitoring driver compliance with drink driving laws through workplace breath-testing and protocols. This might include the necessity for vehicles to be fitted with interlock devices or random testing programmes.

2.2 Licence Restrictions (Effective)

Novice drivers generally lack experience in regard to safe driving/riding skills when they enter the licensing system. To help manage their exposure to risk, a range of programmes have been developed and refined that consist of various restrictions which can ease over time, as more experience is gained. These schemes are commonly known as Graduated Driver Licensing (GDL) or Graduated Licensing Schemes (GLS) *(15)*.

Specific components of GDL systems vary across jurisdictions. Common components include measures such as: a reduced (or zero) BAC level *(8)*, a minimum learner age and learner period, a minimum supervised practice hours requirement, a minimum provisional period, peer passenger restrictions, night driving restrictions, phone/other technology restrictions, and vehicle power restriction *(16, 17).*

The impact of various components on GDL systems have been examined. Significant reductions have been found for the zero BAC component. For example, a 9–23% reduction in alcohol-related fatal crashes among 15–19 year olds; a 4–17% reduction in fatal and injury crashes among 15–19 year olds, and a 22% reduction in night-time single vehicle fatalities have been associated with zero BAC limits that form part of GDL systems (for a comprehensive summary refer to *(18)*.

2.3 Offender Management

Greater understanding of the factors that contribute to drink driving, together with access to in-vehicle technology, has changed the way offenders (especially recidivists) are managed. Historically, penalties for drink driving offences have commonly included jail sentences, monetary fines, demerit point sanctions, and licence bans (suspension or revocation). However, a licence sanction (e.g. suspension) does not necessarily mean that an offender will cease driving. Additionally, traditional types of penalties did little to support offenders with alcohol dependence issues. As a result, countermeasures such as interlocks, offender programmes, and rehabilitation/treatment programmes have been implemented in various high-income countries in recent decades.

2.3.1 Offender programmes (Promising)

Programmes to educate and deter reoffending differ considerably and can range from an education-only programme to more tailored treatments that include components such as behaviour change training, the use of case management to monitor progress, and referral to specialist help to deal with alcohol dependency (see section 2.3.3 for more detail about alcohol rehabilitation programmes). Some jurisdictions have programmes only for first offenders, others mandate programme completion for all drink driving offenders; while some are only for offenders with mid- or high-range BAC threshold offences or for recidivists. A summary of the wide range of offender programmes used across Australian jurisdictions, for example, can be found in Table 8.1 of an Austroads publication from 2020 *(19).* Despite the intuitive appeal of many of these programmes, robust evidence about which type of programme offers greatest impact requires further research.

2.3.2 Alcohol ignition interlocks (Effective)

An alcohol ignition interlock (also commonly known as an alcohol interlock device or an alcolock) is an electronic breath-testing device which prevents a vehicle from starting if alcohol (above a designated threshold) is detected in the breath of the driver and then requires breath samples to be provided randomly while the vehicle is being driven. An interlock device generally consists of two parts which: 1) measure breath alcohol concentration, and 2) immobilise the vehicle engine if a pre-programmed BAC limit is exceeded. Interlocks have generally been used as a punitive, rather than a preventative measure, and have aimed to reduce drink driving among two key groups: 1) repeat offenders, and 2) high-range BAC first time offenders. However, in Victoria, Australia, interlocks were introduced in 2018 as a mandatory penalty for anyone apprehended with a BAC level of 0.05 or higher, irrespective of whether they were a first-time or repeat offender. An evaluation of the effectiveness of this sanction in reducing offending and alcohol-related crashes was not available at the time of writing. In some jurisdictions, interlocks are also used as a preventative measure in some occupational settings (e.g., heavy vehicle and bus fleets).

The interlock device can store data (e.g., number of attempts to start the vehicle and associated BAC levels during such attempts, as well as attempts to tamper with the device) which can be used by authorities to monitor compliance levels and rehabilitation outcomes. This kind of information is particularly useful in jurisdictions where a violation-free period is needed in order for an offender to be relicensed. Various additional features to help ensure integrity of a device while it is installed in a vehicle are in use or in development and include: face recognition, biometric (fingerprint) recognition, real-time reporting of violations, GPS tracking, and the use of PIN so that multiple users can use a single device. Advances in technology continue to enhance capacity and functionality of interlock devices. For instance, less obtrusive measurement mechanisms include passive options such as skin sensors, transdermal perspiration measurements and alcohol 'sniffer' systems (sensors in a vehicle that measure alcohol in the breath at a distance, rather than from a direct breath sample, also known as PAS – passive alcohol sensor technology) that are integrated into the cabin of a vehicle and do not require a driver to provide a direct sample of breath. More information about the various interlock capabilities and programmes throughout Europe and Australasia can be found in a range of publications *(20, 21)*. Additional information about aspects of interlock programmes, including cost, installation, programme duration, and removal requirements, can be found in Tables 2.1 and 2.2 of a 2015 Austroads publication *(22).*

Interlock evaluation research across many jurisdictions consistently demonstrates that the devices are **highly effective** in reducing drink driving episodes (and re-arrest rates for alcohol-impaired driving) **while installed in the vehicle**, but that this positive effect diminishes when the device is removed *(23, 24).* Information is available on the use and effectiveness of interlocks in Europe *(22),* the United States of America *(25)*, and Australia *(19)*. It is important to note that interlock programmes can create financial hardship for some offenders because in some jurisdictions, offenders are responsible for paying costs associated with installation and monitoring of interlock devices. A range of financial, judicial and logistical issues should be explored and resolved by relevant authorities before launching a new interlock programme.

2.3.3 Alcohol Rehabilitation Programmes (Effective)

As noted above, interlocks are effective at reducing drink driving while installed in a vehicle. The return to offending, once the device is removed, indicates that for some people, problematic alcohol

use is likely to play a large role in reoffending and may not be addressed at all by the installation of an interlock *(26)*. As such, therapeutic (treatment) and educational rehabilitation programmes have been implemented in some jurisdictions to address problematic alcohol use. These programmes vary widely in content, length, cost, and quality, making evaluation difficult. Providers of these programmes need to be accountable for delivery of their services and assessed by qualified agencies to ensure that programmes are delivered to a high standard and are evidence-based.

They also vary in intent. For instance, some treatment or rehabilitation programmes focus specifically on managing alcohol dependency and abuse, while others focus on separating drinking from driving. In some jurisdictions, courts can impose alcohol treatment programmes as part of the sentencing process. Medical consultations or alcohol assessments are undertaken in some jurisdictions, including Great Britain, Sweden, Canada and New Zealand, to determine whether treatment for alcohol rehabilitation is needed.

A summary of different types of rehabilitation programmes can be found in Tables 2.1 and 2.2 of a 2015 Austroads report *(22)* and examples from Europe can be found in the 2016 Best Practice guide *(27)*. Overall, effectiveness is difficult to assess because of the wide range of programmes and their aims. However, the evidence indicates that a combination of education and treatment programmes can reduce drink driving recidivism.

2.4 Public Education

2.4.1 Designated Driver programmes (Insufficient evidence)

These programmes generally aim to separate drinking and driving and change attitudes and societal norms associated with drinking alcohol and driving by providing the opportunity for a sober person to transport others who have consumed alcohol to a level that would mean they are not able to legally drive. The programmes take many forms. For instance, some licensed premises offer courtesy vehicles to return their patrons home; others invoke the desire for friends to look after each other when out drinking in a group by deciding, in advance, that one person will remain sober and carry the responsibility of transporting all others in the group safely home. Various incentives have been associated with these kinds of programmes, including free entry to licensed venues or free non-alcoholic drinks for the designated driver.

Generally, these programmes aim to reduce alcohol-related crashes by:

1. providing an alternative to driving under the influence of alcohol
2. promoting a non-drink driving norm, and
3. encouraging responsible travel planning *(28)*

Various names are associated with designated driver programmes that have been conducted in various countries such as the Netherlands, Canada, Italy, the United States of America, France, Greece, Belgium, and Australia, and include 'Euro Bob', 'DES', 'Sober Bob', and 'The Skipper'. Evaluations have shown positive changes, in some cases, in the proportion of people willing to use or actually using a designated driver, though not necessarily an increase in people willing to be a designated driver. Overall, evaluation data

is limited and inconclusive, with findings generally indicating no impact on drink driving rates or on involvement in alcohol-related crashes *(29, 30, 31, 32).*

2.4.2 Public awareness campaigns (alone) (Ineffective)

A substantial body of evidence indicates that public education and awareness campaigns are important tools to:

- inform the community about the risks of unsafe road use
- inform the community about road safety laws and the consequences (penalties) of not complying with them,
- promote the general deterrent effect of enforcement activities by informing the community that laws are actively being enforced, and in doing so, raising the 'perceived risk of being detected' among the community.

However, education, alone, is not effective in changing drink driving behaviour and must work in tandem with effective enforcement of robust legislation to reduce the incidence of drink driving. As highlighted in the Save LIVES Road Safety Technical Package published by WHO *(5)*

> *"Strong and sustained enforcement of road safety laws, accompanied by public education, has positive effects on road user behaviour and thus has the potential to save millions of lives".*

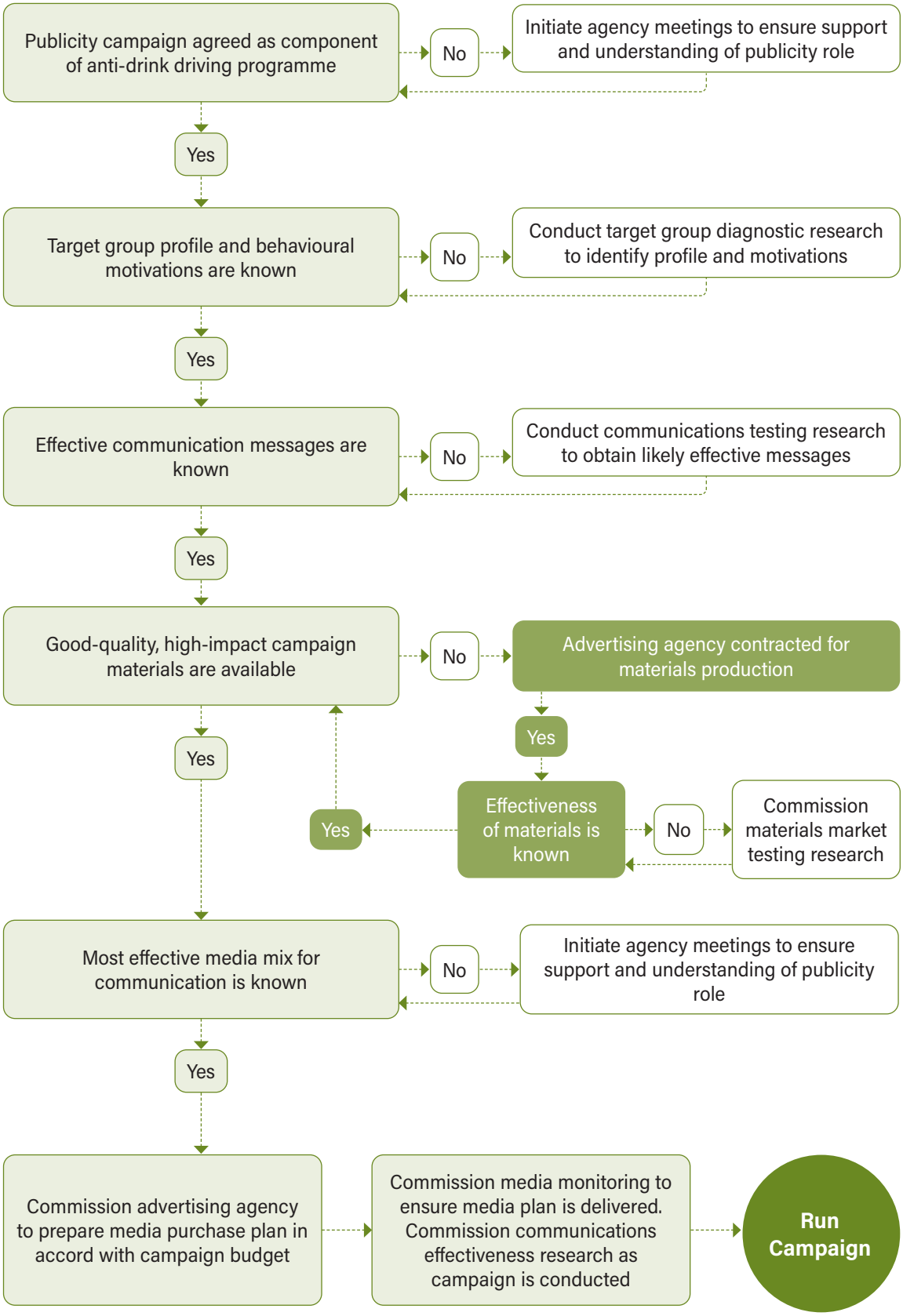
Public awareness or social marketing/advocacy campaigns may require the services of a public relations, advertising agency, or production company and a research agency, unless a government agency has the expertise to provide these services. Overall control of the campaign should, however, stay with the responsible government agency. It is important to specify the campaign objective/s from the outset so that the campaign can be properly planned, conducted and monitored, and an appropriate evaluation can be planned and implemented. Drink driving campaign objectives may include:

- informing the public of new drink driving legislation, regulations, or penalties;
- notifying the public about increased drink driving enforcement;
- advising the public not to take the risk of drink driving, while highlighting a variety of different consequences of doing so;
- educating road users about the crash risk associated with consuming any alcohol;
- quantifying the personal risks and legal consequences of driving while over the legal BAC limit;
- warning people about social consequences of their drink driving to other ("innocent") parties;
- emphasising the risk of detection;
- emphasising the social unacceptability of drink driving;
- sharing personal stories related to adverse impacts of drink driving, while advocating for behavioural change; and
- warning drivers about the wide-ranging consequences of being detected and prosecuted for drink driving.

Figure 5 depicts a simplified version of the process that should be undertaken in developing a social marketing/behaviour change campaign to reduce drinking and driving. No campaign will be effective unless it identifies and develops appropriate, well-targeted messages. There is no easy formula for determining the correct message, however there are some key steps that may assist in achieving this. Working with skilled and experienced professionals is critical for campaign success. Market research is used to determine peoples' knowledge of legislation as well as the opinions, beliefs, fears, and motivations of high-risk groups that are known to be involved in drink driving crashes.

A first step in this process is to identify the target groups involved and collect information from them that is relevant for the campaign (diagnostic tone and message testing). On the basis of the information you receive from testing with the target group, a range of messages and campaign materials are developed to encourage a change in thinking and behaviour in relation to drinking and driving (e.g. don't drink and drive – your family is waiting for you at home). The draft campaign messages and materials should then be tested with small groups who represent the target group before the final campaign message/s is determined and the campaign is launched. It is important to consider and strategically chose relevant channels (e.g., television, radio, social media) and times (e.g., immediately before public holidays) through which the target audience can best be reached.

Figure 5. Steps involved in a drinking and driving publicity campaign



Source: *(33)* with author elaboration.

Additional information about road safety public awareness programmes and social marketing campaigns can be found in the 2016 manual produced by WHO – Road Safety Mass Media Campaigns: A Toolkit and on the WHO website. https://www.who.int/publications/i/item/road-safety-mass-media-campaigns-a-toolkit *(34)*

2.5 Other effective legal measures

Licensing laws

The licensing laws of a country regulate the general availability and promotion of alcohol. A series of measures can be employed to control criteria for granting licences for the sale of alcohol; places and hours during which business may be conducted; the number of licensed premises within a local area, the setting of a minimum drinking age, and restrictions relating to marketing of alcohol in the media (e.g., restrictions on advertising alcohol products in prime time or in media accessible to children/adolescents). Additional information on alcohol marketing regulation can be found in numerous publications, including a special issue of the academic journal, Addiction, published in 2017 *(35).*

These laws, typically carried out by a "licensing board" (or similar entity), should require that stringent requirements are met before a licence to sell alcohol is granted. Licensing laws aim to:

- prevent crime and disorder;
- maintain public safety;
- prevent public nuisance;
- protect children/vulnerable people.

Minimum legal drinking age

Legislation specifying BAC limits is central to addressing drink driving but other laws regulating access to and consumption of alcohol also indirectly influence drinking and driving. In some countries, minimum legal drinking age (MLDA) laws specify an age below which people cannot purchase or publicly consume alcohol and there is strong evidence to suggest that MLDA laws are effective in preventing crashes involving drinking and driving *(36)*, while reducing the risk of developing harmful consumption of alcohol at a later stage *(37).*

The Global Status Report on Alcohol and Health 2018, states that increasing the national legal minimum age for purchase of alcohol can reduce alcohol consumption and related harms among young people and particularly drink driving crashes *(14)*. Age restrictions can apply to the consumption of alcohol on-premises or off-premises. One hundred and fifty-two countries (93%) reported a national or subnational minimum legal purchase age for on-premise beer and wine sales and 151 countries (92%) reported a minimum legal age for purchase of spirits. By far, the most common age limit is 18 years: 108 countries have an on-premise and off-premise 18-years legal purchase age for beer and wine, while three further countries have an 18-years legal purchase age for either on-premise or off-premise spirits *(14).*

Restrictions on drinking in public

Some countries also have restrictions on alcohol consumption in public places. Such restrictions are most commonly applied to educational buildings (146 countries), followed by health-care establishments (139 countries). Restrictions were least common at leisure events (73 countries) and in parks (71 countries) *(14)*.

Alcohol sales points

Restricting physical access to alcohol is effective, feasible and cost-effective in low- and middle-income countries. Some regions have implemented laws limiting the hours during which alcohol can be sold, or the density of outlets selling beverage alcohol. Recent evidence confirms associations between alcohol outlet density, hours during which alcohol can be sold, and alcohol-related harms. *(38, 39, 40).* In addition, research has shown that the chances of binge drinking/heavy episodic drinking (i.e., the excessive consumption of alcohol within a short period of time) increases by 5% for every additional off-licence liquor outlet that exists within easy walking distance of home [1km] *(38)*.

The WHO's global strategy recommends *(3)*:

- implementing licensing systems to monitor the production, wholesaling and serving of alcoholic beverages;
- regulating the number and location of retail alcohol outlets;
- regulating the hours and days during which alcohol may be sold;
- establishing a national legal minimum age for purchase and consumption of alcohol; and
- restricting drinking in public places; and
- regulating or banning alcohol advertising and publicity.

Measures may be most effective when they impact upon large geographic areas to minimise opportunities for circumvention.

Responsible beverage service and sales legislation generally aims to reduce sales of alcohol to minors and to intoxicated people. This can also include making retailers liable for injuries caused by intoxicated adults or by minors (e.g., those under 18 years of age) to whom they sold alcohol. In some cases, this liability extends to injuries caused by the intoxicated person to themselves. Responsible beverage service and sales legislation can apply to premises which sell alcohol to be consumed on-site or off-site and should include policies that promote:

- outlet staff awareness of legal responsibility;
- staff awareness of outlet policies and of consequences for violating these;
- the checking of age of all patrons under a certain age (e.g., to meet minimum age requirements);
- guidelines and training as to what constitutes acceptable serving practice;
- retailer-initiated compliance checks and enforcement *(41)*.

2.6 Engineering countermeasures

Road engineering treatments may also help reduce drink driving crashes and the severity of their outcomes. A high proportion of drink driving crashes are "run-off road" crashes and may be more severe if they result in a collision with fixed roadside objects such as trees or electricity poles. As such, action to relocate, guard, or remove fixed roadside objects where drink driving crashes are likely to occur may reduce crash severity. Visual, perceptual, and cognitive skills are adversely affected by alcohol. Therefore, providing information in a clear, easy to understand manner will be important in minimising the crash risk of people who are impaired by alcohol. Some elements that may assist include improved guidance around curves and audio-tactile edge lining. Drink driving crashes may also involve pedestrians who are particularly vulnerable in a crash. Engineering solutions including lower speed limits, traffic calming measures, pedestrian fencing, refuge islands and medians where pedestrians are likely to cross the roadway, and good street lighting for better pedestrian visibility, may all help to minimise crash outcomes for pedestrians.

2.7 Post-crash response

Appropriate post-crash response can also help to minimise death and long-term debilitating injury from drink driving crashes. Medical treatment of people involved in crashes is made more difficult if they are alcohol impaired. Below are some key points to consider in the post-crash phase:

Scene management

- Alcohol-impaired patients tend to be more aggressive, non-compliant and difficult to communicate with and manage.
- Where they are mobile, they may get in the way of rescue personnel trying to assist other injured patients in the vehicles.
- In extreme circumstances, it may be necessary for medical staff to withdraw from the immediate scene and allow police to regain control of the situation.

Patient assessment/treatment diagnosis

- Alcohol can reduce the response to pain which is critical for determining spinal injuries and suspected head injuries.
- As alcohol intoxication produces a neurological impairment, it is often impossible to clinically exclude a significant head or spinal injury, resulting in otherwise unnecessary investigations or prolonged hospital assessments.
- Alcohol can affect accurate history and assessment (e.g., reporting of high blood pressure, allergies, medication, drug taking and diabetes may also affect the physiological signs).
- Alcohol may inhibit the patient response to medications.

Injury aggravation

- There is the increased possibility of further self-injury where alcohol-impaired patients do not have full control of their actions. Serious injuries may be made worse. This includes risk of spinal injury in the context of unstable vertebral fractures, where intoxicated patients may not comply with instructions to remain still.
- There is a tendency not to remain still or calm during normal treatment.
- There is potential for the patient to vomit.

It is important to appreciate the problems which can be confronted by health professionals and rescue workers. Policies and procedures must clearly describe the processes and authorisations necessary to ensure the delivery of effective, timely medical treatment and safe transportation. Training for dealing with alcohol-impaired patients can be included in regular training for dealing with aggressive or violent individuals. For countries where compulsory blood tests are not taken in hospital, both law enforcement officers and medical staff must be aware that some drink drivers will exaggerate or fake injury from a collision to seek the refuge of a hospital or medical services to avoid arrest or prosecution.

Several WHO publications provide technical details of on how to improve trauma care: Guidelines for essential trauma care (*42*) and Pre-hospital trauma care systems *(43)*.

Chapter Summary

- Successful reduction of drink driving requires strong political commitment, clear legislation, and strong, well-publicised, highly visible and sustained enforcement through highly visible breath testing operations (random breath testing is most effective) that results in swiftly applied and appropriate penalties.
- Interventions proven to be effective at reducing drink driving include; setting BAC limits according to best practice guidelines; using penalties that reflect the seriousness of the offence (higher penalties for higher BAC levels); random breath testing and sobriety checkpoints to enforce BAC levels; using licence restrictions for young/inexperienced drivers; use of alcohol ignition interlocks; and use of alcohol rehabilitation/treatment programmes.
- Interventions that are considered promising include: offender programmes.
- Interventions that have insufficient evidence to support their use include designated driver programmes.
- Interventions that are ineffective at reducing drink driving include public education and social marketing campaigns – when used alone. However, such campaigns are critically important to support enforcement of BAC limits and must work in tandem with enforcement operations so that the public are aware that the risk of them being detected while drink driving is high.
- Other legal measures that should be used to combat drink driving include: licensing laws, a minimum legal drinking age, restrictions on drinking in public, limiting alcohol sales points, legislation covering responsible beverage service and sales.
- A range of engineering treatments and considerations for post-crash care are also important considerations in reducing the harm caused by drink driving.

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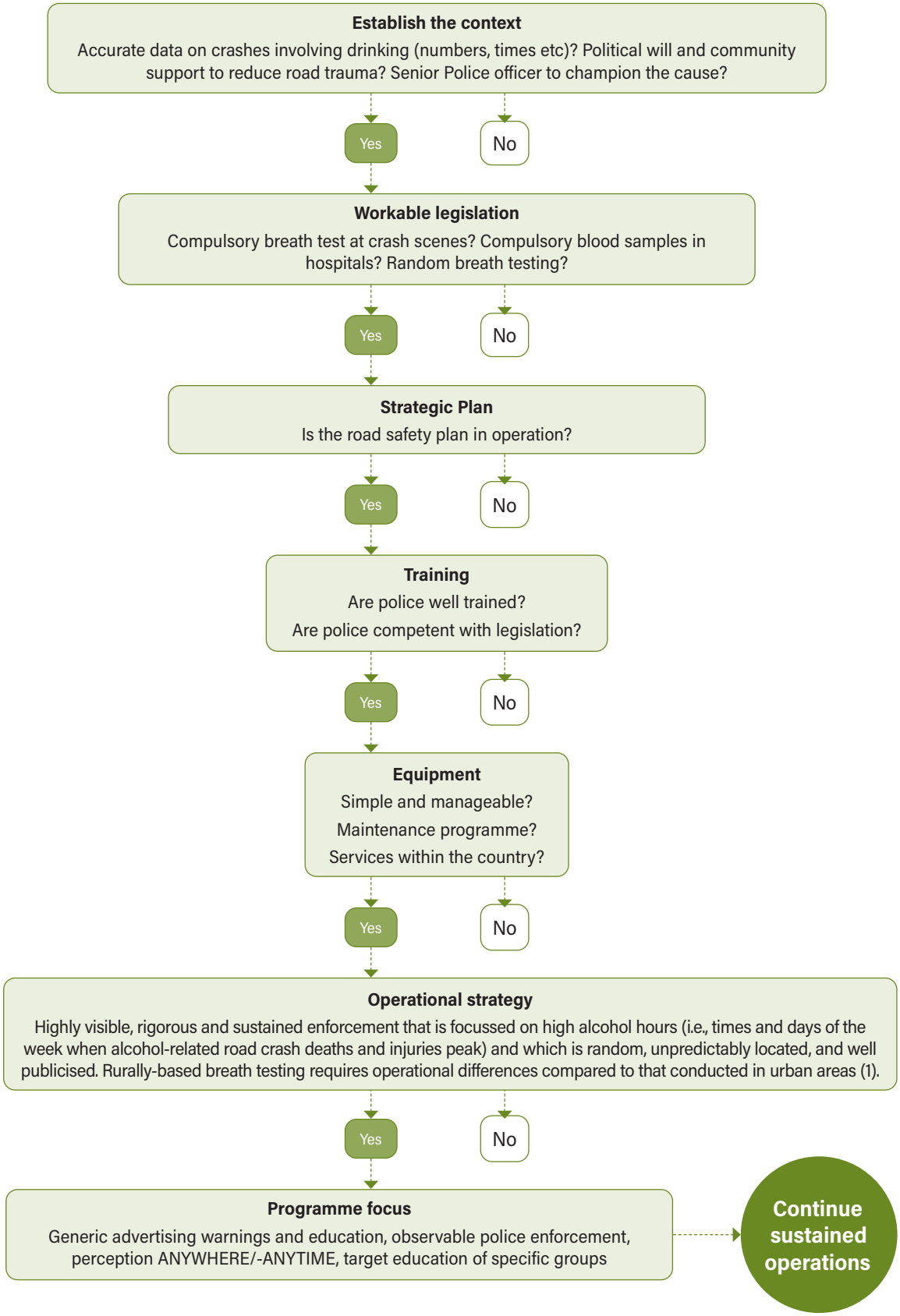
Chapter 3. Enforcing drink driving laws

For a drink driving law to be effective, the community must understand and believe that if they drink and drive, there is a strong likelihood of detection, prosecution and receipt of penalty. The principal objective of police intervention is to save lives and reduce drink driving-related road trauma. Apprehending offenders is a by-product of the intervention, not the main objective. Figure 6 provides an outline of the steps required for strategic enforcement of drink driving laws.

Figure 6. Flow chart showing the strategic enforcement of drinking and driving regulations



Source: *(2) with authors' elaboration.*

3.1 Enforcement methods

Enforcement methods that have been used successfully to change driver behaviour include alcohol screening of drivers (random and based on "good cause to suspect"), and targeted enforcement based on intelligence. These enforcement methods are not mutually exclusive and should ideally be employed in combination to achieve maximum effect. Ranked from *most to least effective* are the following enforcement actions:

- Random breath testing (RBT): based on the principle of 'anywhere at any time'; RBT can occur when there is the statutory authority for an enforcement officer to stop a vehicle and test the driver at random, without need to establish that the driver committed another offence, nor that the driver showed any signs of impairment prior to being stopped;
- Sobriety checkpoints: where police are required to form a suspicion of alcohol impairment before they can administer a breath test (less objective and less efficient than RBT);
- Targeted programmes: for example, waiting for drivers to leave bars and then testing them. This approach is least effective because it impacts on a very small number of drivers and should be a lesser focus than an RBT programme

Highly visible, high volume random breath testing reminds drivers of the possibility of being detected if they have been drinking and provides an effective deterrent to motorists who are not stopped. Roadside testing can take place at designated testing stations (checkpoints or roadblocks) or during normal police interceptions (see Box 3). The Global Status Report on Road Safety 2018, recognises that enforcement that incorporates random breath testing (RBT) is effective in increasing both the perceived and actual probability of being caught. It is estimated that **RBT can reduce fatal drink driving crashes by approximately 20% if it is publicised, highly visible and frequently used** *(3).* Roadside drug testing also occurs in some jurisdictions. Details of an evaluation of both alcohol and drug testing and enforcement protocols in Victoria, Australia have been described in an evaluation report published by the Monash University Accident Research Centre *(4).*

This image depicts checkpoint operations in the metropolitan areas of São Paolo, Brazil. The highly visible checkpoints help to promote the general deterrent effect of enforcement operations.

Photograph: Checkpoint operations in São Paolo, Brazil. Municipio de Guarujá-SP. January 21, 2022. *Programa "Operação Direção Segura Integrada – ODSI".* Decreto nº 58.881/2013. DETRAN-SP. Retrieved: 14.04.2022.

Box 3. Random breath testing in Australia

In Victoria, the use of special-purpose "booze buses" – clearly identified as random alcohol- screening vehicles and immediately recognisable by the public – have been highly successful in reducing drink driving. These vehicles contain all the equipment needed to operate as a mobile police station for the efficient testing of drivers and offender processing. The enforcement process is complemented by a highly professional and intense public advertising campaign using television, radio, print media and billboards (*1*). Key components of this enforcement strategy include large volume testing, random and unpredictable test sites, and a focus on high alcohol hours. Once random drug testing was introduced in Victoria, these vehicles were also used for roadside screening of drivers.

Photograph: Victoria Police Roadside Testing Bus

The effect of drink driving checkpoints can be maximised by *(5)*:

a. Making them highly visible:

- operating at random and unpredictable locations with a focus on high alcohol hours
- working in teams and following a standard protocol in safe operational environments
- using flashing warning lights to draw attention to the programme and enhance safety for all involved

– displaying signage at the checkpoint indicating the reasons for the enforcement activity (for example, "drink-driving enforcement") – this will provide a clear deterrent message to all drivers going through the site or driving near the checkpoint.

– deploying many police officers and police vehicles – to this end it is important to have mobile units with the capacity to provide evidential testing and processing of offenders at the site of interception. This gives the public the impression of a higher level of enforcement activity than is actually being delivered as the police should move their enforcement or checkpoint zone to different locations during a single shift so that drivers cannot predict where enforcement will be operating. Having evidential testing equipment at the point of interceptions also avoids the drain on resources and wasted time in having to transport suspected offenders to a police station for an evidential breath test.

b. Rigorously enforcing drink driving laws to ensure credibility:

– If the law is not enforced, drivers will generally not comply. They must be informed about the legitimacy of the intervention and believe that this will improve their safety.

– Everyone is equal – no exemptions, no bargaining, no special circumstances (i.e., no corrupt practices). Everyone stopped should be breath tested (in line with RBT principles).

– In keeping with the principles of procedural justice and procedural fairness in policing, enforcement officers must always be polite, fair, respectful and firm when processing offenders *(6).*

c. Setting up checkpoints as often as possible, over a long period of time:

– Drivers must consistently see enforcement activities and consistently hear about them, to gain the understanding that they can occur anywhere, any time.

– The same enforcement strategy and protocol must be repeated often in multiple locations.

– Conduct night-time blitzes involving teams of police officers working in well-lit, safe areas.

– Where the law permits, conduct continual random testing – that is, every driver intercepted for any offence is tested for alcohol.

The points listed above form the basis of an intervention strategy that can be highly successful in bringing about a general perception that drivers or riders can be tested **anywhere, any time**. Accurate measuring of alcohol in the bloodstream is also a vital component of effective enforcement. It is critical to have sufficient screening devices which are practical, reliable, and easy to use, and that are fully maintained and calibrated on a regular (six-monthly) basis to ensure accuracy and support enforcement legitimacy.

A **minimum annual target** of alcohol screening tests should be set and maintained. The minimum targets set should relate to the percentage of the driving population tested during the year. A solid strategy aims to test 1:3 drivers annually, although the more progressive enforcement bodies in some high-income countries aim at 1:1 – on average every driver would expect to be tested once per year.

Targeted enforcement based on intelligence (see Box 4 for additional information) involves detection of drink drivers at specific locations, times, and under specific circumstances. This kind of enforcement activity represents a 'specific deterrent' strategy aimed at offenders, rather than a 'general deterrent' strategy aimed at the general driving population) and involves:

- stopping drivers as they leave selected alcohol distribution premises such as hotels, entertainment venues/locations, night clubs, sporting and gaming venues that should be the subject of police attention on account of the high possibility that drinking and driving may take place;
- at collision zones or high-risk areas;
- breath testing all drivers intercepted by police, regardless of the reason for interception, if legislation permits random breath testing;
- breath testing all drivers involved in road traffic collisions;
- breath testing individual drivers who are known to continue to drink and drive after initial detection (i.e., repeat drink-drivers);
- as a principal enforcement measure, covert operations should support the major operational strategies but never take precedence; the main focus must be on high visibility enforcement for the whole driving population; and
- during high-risk alcohol times or days of the week; (see example below).

Box 4. Drink Driving Enforcement – High Alcohol Hours (2008 to 2012) *

Number of Alcohol-related fatal/injury crashes					Greater than average (91)		
Time of Day	MON	TUE	WED	THU	FRI	SAT	SUN
00.00 – 1.59 am	64	48	80	124	161	319	327
2.00 – 3.59 am	31	32	54	68	130	256	295
4.00 – 5.59 am	22	15	34	48	62	180	215
6.00 – 7.59 am	19	15	22	35	45	104	132
8.00 – 9.59 am	15	17	12	22	26	45	51
10.00 – 11.59 am	10	12	22	23	20	41	37
12.00 – 1.59 pm	21	19	25	28	30	50	55
2.00 – 3.59 pm	33	47	43	46	57	80	66
4.00 – 5.59 pm	38	76	84	94	104	108	103
6.00 – 7.59 pm	73	86	108	101	182	183	135
8.00 – 9.59 pm	69	103	134	161	229	256	131
10.00 – 11.59 pm	65	121	158	200	291	299	96
TOTAL	460	591	776	950	1337	1921	1643

*This table demonstrates how 'high alcohol' hours are identified using data from New Zealand. The data records the number of alcohol-related fatal and injury collisions by time period, shown in two-hour blocks across a week using five years of data between 2008 and 2012. The yellow shaded areas show days of the week and times of day when alcohol-related crash trauma peaks. These yellow shaded areas show that the most high-risk periods are between 10pm to 2am on Friday/Saturday and Saturday/Sunday nights. This method allows police to identify the highest risk time periods and to target breath testing to these periods.

Source *(7)*

NOTE. Data that can guide intelligence-led enforcement

- Accurate statistics on fatalities, serious injuries, injuries and crashes, and the role alcohol plays as a causal factor.
- Crash data as it relates to times of the day, days of the week and particularly critical locations. If presented in an appropriate format, this data will provide the profile on high alcohol times, days of the week and locations upon which to focus police resources for maximum effect.
- Accurate statistics on the amount of alcohol consumed by offending drivers.
- Locations where drivers consumed the alcohol – this information can assist with targeted enforcement (including holding liquor licence holders accountable for supplying alcohol to those who are intoxicated, where relevant) and educational intervention campaigns.
- Blood alcohol readings of drivers admitted to hospital.
- BAC readings obtained from apprehended offenders.
- Toxicology reports from a Coroner's court for all deceased drivers.
- Identification of high-risk user groups by age or social standing, thereby assisting strategies for targeted enforcement and specific education.
- Data must be accurate and analysed for trends to determine enforcement strategies and, most importantly, must be maintained for assessing performance outcomes.

3.2 Safely intercepting vehicles

Intercepting moving vehicles in the flow of traffic for random or targeted enforcement requires the utmost attention to planning and risk assessment. The safety of enforcement officers, all road users, and offenders/suspects is vital when setting up a checkpoint or roadblock. No site should be in operation without a designated safety officer who has the responsibility of ensuring overall safety. Even where only two or three officers are operating, one officer should be the designated safety officer. These mobile checkpoints (intercepts) can achieve the same results as conventional checkpoints, but with fewer people. They are mobile and typically will not last as long as full-scale checkpoints. Managing these kinds of checkpoints includes:

3.2.1 Choosing a safe location:

Consider:

- locating the site where approaching drivers have sufficient time and visibility to adjust their driving in order to safely negotiate and stop at the checkpoint -if in doubt, choose another location;
- safety factors for officers when setting up and dismantling the site –persistent bad weather or poor visibility (e.g., from heavy fog) can render a site impractical or unsafe;
- moving the site to multiple locations during the course of the work period to maximise the visible police presence;
- sun glare for drivers approaching the site (the sun will change position during the course of the day);
- visibility for motorists, which is of particular concern at dusk and dawn, so extra precautions should be taken if the operation is taking place over that period;
- locating night-time operations where there is effective illumination and providing additional lighting for high visibility;
- control of vehicles moving into the site as well as those vehicles passing it;
- the avoidance of unnecessary traffic congestion – judgement as to what constitutes unreasonable congestion is subjective, but as a general rule, if you cannot see the end of the traffic in the distance, it is time to suspend testing operations and allow it to flow until you can; and
- the use of natural barriers where traffic calming is achieved (e.g., toll gates).

For an example of good alcohol checkpoint practices, please refer to the Global Road Policing Network (GRPN) site which hosts a video from New Zealand Police https://www.youtube.com/watch?v=xVkDOiLfMdk *(8)*. Documents produced by the Federal Ministry of Health in Mexico *(9)* and by the municipal government of Fortaleza, Brazil *(10)* also contain useful information. (https://www.gob.mx/cms/uploads/attachment/file/249279/Protocolo_2a_edici_n.pdf). (https://diariooficial.fortaleza.ce.gov.br/download-diario?objectId=workspace://SpacesStore/1a1c4cc9-f89c-4c34-a440-3b418eeb19d8;1.1&numero=15884.)

3.2.2 Choosing the right method to select vehicles

Methods include random and specific selection:

- Random selection can include directing the following vehicles into the site:
  - cars (at random), or
  - every tenth vehicle (depending upon traffic flow), or
  - five cars, then let the traffic continue to flow.
- Specific selection will depend upon intelligence gained about drinking patterns and collision data or prior history of alcohol consumption among sub-groups in the community and can include:
  - all vehicles
  - all taxi drivers or professional drivers
  - all vehicles of a particular type
  - all heavy vehicles.

3.2.3 Using equipment to ensure safety

Safety is paramount. The right equipment must be used properly to ensure the safety of enforcement officers and road users at all times.

- All those on site must wear reflective vests or jackets, both day and night.
- All enforcement agents must be in the relevant uniform.
- Use police vehicles as traffic protection.
- Use marked police vehicles with lights flashing to maximise visibility (be conscious of the battery life with lights flashing and engine off).
- If there are any "official" observers, they must not be permitted on site without reflective vests, should maintain an appropriate safety distance, and carry appropriate credentials/identification.
- Equipment should include illuminated torches fitted with a red cone to provide a contrasting colour.
- Delineation of the site should be with strobe lighting and/or red safety cones.
- Consider if any of the surrounding equipment could be used as a safety barrier.
- Consider natural barriers or natural interception points (e.g., toll gates, service stations, parking centres, entry/exits) or the use of portable speed humps for the roadway approaching the checkpoint.
- Ensure there are sufficient police numbers for a safe, effective, and efficient operations.
- Ensure the Operations Command Centre is aware of the site location.
- Consider photographic and/or video evidence (following local protocols and respective permits as required).

3.2.4 Contingency planning

As part of any planned enforcement activity there will inevitably be detections of offences that may not necessarily be the focus of the operation. These other offences can include uncooperative drivers needing to be dealt with for aggressive behaviour and non-compliance of legislated requirements; persons wanted on warrants and arrests on criminal matters.

Large scale checkpoints will always detect a range of offences. This must be taken into account in the planning stages by ensuring there is a process in place to deal with:

- warrants to arrest,
- unlicensed or disqualified drivers,
- unregistered vehicles (this contributes to the functioning of automated enforcement),
- fake and obscured number plates, driving licences or permits,
- stolen vehicles,
- drug possession or drug dealing offences,
- possession of offensive weapons (anything that is carried to cause injury),
- drivers who fail to stop for or fail to remain at the checkpoint.

These offences need to be dealt with in an environment that is safe for both staff and other road users. The evidence obtained during this process must be entered into a secure chain of custody system for subsequent prosecution, by ensuring that a process for dealing with offences is written into any Standard Operating Procedure (SOP) and operation orders.

3.2.5 Getting the message across

The most important aspect of this method of policing is to provide a deterrent to those being checked for alcohol (specific deterrent effect) and to drivers who pass by but are not checked (general deterrent effect). Drivers passing the site should be made aware of the purpose of the checkpoint by means of either a "variable message sign" or large fixed sign advising "Drink and driving enforcement". If this is not done, other drivers may assume it is an ordinary police security check or other traffic checkpoint, and no change to their attitude will likely occur.

3.2.6 Processing offenders quickly

Drivers should be processed with minimum delay. Testing should be compliant with any statutory requirements, as should access to legal advice for the driver. Observations should be clearly stated to the driver and corroboration from fellow officers sought if there is denial by the driver. Evidence should be recorded without argument or bargaining. It must also be secured to ensure the chain of evidence is maintained to support subsequent prosecution. Police must always be courteous, respectful, and polite, and maintain a high degree of skill and professionalism.

3.2.7 Meeting statistical requirements

The following information should be recorded:

- number of breath tests conducted;
- number of offenders processed and over the BAC limit;
- date/time and location data;
- number and details of other incidents, if any.

3.3 A dedicated alcohol intervention unit

Many countries that have succeeded in reducing the prevalence of drink driving have dedicated alcohol intervention units within the police. These units are responsible for the coordination of policing efforts and countermeasures relating to drink driving. A dedicated unit provides the benefits of centralised coordination and ability for expertise to be established. It should be responsible for:

- integration with other road safety strategies for road trauma reduction;
- facilitating education, awareness and social marketing campaigns directly supporting enforcement;
- facilitating training for general police personnel;
- gathering statistical data and intelligence to improve enforcement and detection methods;
- working with private and public sector organisations in the provision of education, seminars and workshops on the effects of drink driving. The dedicated unit can provide comprehensive advice and education to assist in reducing drink driving in these organisations and their employees;
- developing partnerships with government, semi-government agencies and large representative groups such as those within the transport industry and professional drivers. Drink driving is a community problem needing community-based solutions. Police cannot and should not be expected to achieve the results without a cooperative and consultative approach.
- maintaining direct links to research organisations. This will enable police to seek independent evaluation and research before, during and after implementing any programmes.

3.4 Penalties for drink driving offences

Operating a vehicle when over the legal BAC limit should be represented in legislation as one of the most serious driving offences possible and the punishment should reflect that while remaining reasonable and proportionate to the level of offending in order to maintain legitimacy and the support of the community. Punishment must also be culturally and economically appropriate. Commonly applied penalties include:

- **Monetary fines**, which may rise with multiple convictions, as BAC levels increase, or with the offender's income. Fines must take account of local economic circumstances and be seen as appropriate relative to fines for other offences in the traffic law;
- **Suspension or withdrawal of driving licence**, which, in theory, prevents the person from driving until the end of the suspension/disqualification period. In practice, many disqualified drivers may continue

to drive illegally, and the effectiveness of this sanction will depend on the chances of the driver being stopped in any subsequent police check and their willingness to risk driving illegally;

- For crashes which result in a fatality or injury, a drunk driver may be **jailed** for several years and/or have their driving licence permanently revoked;
- **Vehicle impoundment** (sometimes also referred to as vehicle immobilisation or forfeiture) has been used in some jurisdictions (e.g. Canada, the United States of America, New Zealand, Australia) for repeat drink driving offenders as a mechanism to separate the driver from their vehicle for an extended period of time (e.g. 30 days to up to six months). Impoundment of the vehicle is often at the expense of the offender, and has been found to be effective at reducing the incidence of drink driving and alcohol-related crashes *(11, 12),*
- **Vehicle licence plate seizure** has been found to be effective when it can be undertaken by police at the time of the arrest. Fees are typically charged to obtain plates so this activity can be revenue neutral *(11).*
- **Vehicle registration cancellation** – cancelling vehicle registration is likely to have limited applicability in low- and middle-income countries unless registration rates are high. Even where this is the case, vehicle registration cancellation is typically only applied in cases where the drink driving offender is the sole driver of the vehicle.
- **Alcohol interlocks** – see discussion in section 2.3.2.

Additional information about penalties can be found in the guide produced by the Global Road Safety Partnership *(13)*.

Chapter Summary

- It is essential to adopt a multifaceted approach, combining legislation, enforcement, and public awareness and social marketing campaigns, to combat drink driving.
- Appropriate and enforceable laws must be in place – mandating use of roadside testing equipment and the use of their results as evidence.
- Laws on a maximum BAC limit for drivers/riders is essential. Legislation must specify how BAC levels are to be enforced and what powers are to be given to the police in their enforcement efforts.
- Legal BAC limits generally range from 0.00 to 0.05 g/100ml. Many countries have lower BAC limits for specific driver groups, such as young drivers, drivers of commercial vehicles, which have proven effective in reducing crashes involving drinking and driving.
- Several devices which permit roadside testing of breath alcohol levels are available to facilitate the enforcement of drink driving laws, and results are admissible in court in a number of countries.
- Legislation should state the type of offence and realistic penalties for those offences.
- Enforcement activities should be combined with public awareness and social marketing campaigns to gain community understanding and acceptance.
- Enforcement objectives should be casualty reductions, not apprehensions.
- Enforcement efforts should be intelligence-led and aimed at promoting the perception among the driving public that they can be tested anywhere and at any time.
- Enforcement should prioritise highly visible, random, high alcohol hour alcohol screening which provides a general deterrent effect for the wider population. Targeted enforcement should be a lesser

focus as it serves to facilitate prosecution of drivers who refuse to stop drink driving. Both enforcement methods should be employed in combination for better results, but a clear priority should be placed on enforcement that promotes general deterrence.

- Public awareness and social marketing campaigns are an important tool but in isolation, will not change behaviour. They must be used in conjunction and coordination with the implementation of effective enforcement. All campaign messages and materials should be market-tested.
- Long timeframes must be allowed for changing public perceptions and behaviour. The lessons learned through the monitoring and evaluation of the campaign impact on drink driving should be used to improve the quality and impact of future campaigns.

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Chapter 4. Implementing evidence-based drink driving interventions

Programmes aimed at reducing the number of road crashes involving alcohol must have a long-term commitment. They will have a long-term objective, such as reducing the number of road crashes involving drink driving by a certain percentage within a specific time period. They will also contain a number of specific components that will help "deliver" the programme objective. Long-term and sustainable changes in public perception and driver behaviour are not achieved easily or quickly. Depending on the existing situation of the country/jurisdiction, the timeframe from implementation of the law to full enforcement and issuing of penalties for non-compliance can range from a couple of months to several years.

This Chapter provides guidance on the following issues:

- **Cycle of improvement –** a continuous examination of programme implementation and outcomes.
- **Pathways to change –** a systematic approach to understanding the pathway to change in order to reach a long-term goal.
- **How to assess the situation –** numerous types of assessments can provide the information needed to design, deploy and maintain an effective programme.
- **Opportunities and challenges in implementing drink driving interventions –** implementation **s**uccess can be maximised by understanding the challenges and seizing opportunities.
- **Evaluation of progress and using results for improvement –** evaluating results is vital in effective decision-making and modifying a course of action.

4.1 Cycle of improvement

Improving the road safety situation in a country by reducing the incidence of drink driving requires continued efforts in planning, executing and evaluating programmes. It is not a one-off undertaking and should be seen as a continuous cycle of improvement. There are opportunities as well as unexpected challenges that need to be managed as this cycle continues. Implementing a continuous cycle of drink driving prevention improvement begins with an assessment of the existing system, followed by the development, execution, evaluation, and refinement of a national or a local plan of action. A plan of action will not yield improvements unless it is translated into practical solutions in a country. In addition to identifying and prioritising actions that should be taken, there are key ingredients that need to be considered and made available or developed: human and financial resources, sharing responsibility among different agencies, and political commitment, as specified in the Global Plan of Action (2021). *(1, 2, 3, 4).*

4.2 Pathways to change

Applying the Safe System Approach to road safety results in a complex set of interacting interventions which make them quite difficult or sometimes even unethical to implement and evaluate using traditional research methods such as a randomised controlled trial. For this reason, some researchers have proposed that "understanding the public health intervention's underlying theory of change and its related uncertainties may improve the evaluation of complex health interventions" *(2)*.

A Theory of Change is therefore basically the pathway(s) that will be followed to achieve the objective of a programme. It "explains how activities are understood to produce a series of results that contribute to achieving the final intended impacts. It can be developed for any level of **intervention implementation** – an event, a project, a programme, a policy, a strategy or an organization" *(3)* or the **evaluation** of such interventions or set of interventions (impact evaluation). It encourages "systems thinking" through the understanding of the complex social change processes, different perspectives, assumptions and the contexts needed to optimise success.

A Theory of Change is a **systematic approach** to understanding the pathway to change in order to reach a long-term goal. It should always begin with a good *situational assessment* in order to understand the causes, risk factors, opportunities and challenges in the local situation where an intervention is to be implemented. It should then be guided by a **participatory approach** – bringing together multiple key stakeholders, through a workshop for example, to discuss the proposed approaches or interventions that need to be implemented to optimise impact. Although developing a Theory of Change is an *iterative* process, and there are many ways it can be developed, it should include the following basic steps *(4)*:

1. Identify the long-term outcome
2. Develop a pathway of change
3. Operationalise outcomes
4. Develop interventions
5. Articulate assumptions
6. Monitor and evaluate the process

As a final output of stakeholder discussions, a visual map of the change being explored should be developed to show the relationships between proposed actions/interventions and outcomes and how these interact in order to achieve the goal.

The benefits of developing a *realistic* and implementable Theory of Change are articulated in Box 5. In general, this process challenges the status and gets stakeholders to "think outside the box" so that mistakes are not made when interventions are implemented. It also forces stakeholders to think about resources and how these will be best utilised to bring about the required change. Finally, the process develops a shared understanding of the actions to be taken and expected outcomes on one hand, and accountability on the other.

Box 5. How a Theory of Change would benefit your programme

It will provide:

- A clear and testable hypothesis about how change will occur that not only allows you to be **accountable for results**, but also makes your results **more credible** because they were predicted to occur in a certain way;
- A **visual representation** of the change you want to see in your community and how you expect it to come about;
- A **blueprint for evaluation** with measurable indicators of success identified
- An **agreement among stakeholders** about what defines success and what it takes to get there
- A powerful **communication tool** to capture the complexity of your initiative

Source: (*3*)

The following sections outline some of the steps you would need to undertake in order to assess, implement and evaluate and effective drink driving intervention in your country.

4.3 Assessing the situation

It is vital to understand the current situation (e.g., prevalence and locations of drink driving, offender demographics) before launching an intervention. Assessment of the existing situation in your country or region helps you design and implement a programme that is relevant and successful. This 'baseline data' will enable you to accurately evaluate the effects of any multi-sectoral road safety interventions that are implemented. There are four key assessments:

- health and crash investigation data on incidents involving alcohol to assess the extent of the problem in your community and identify main target groups. It is important to note that a prerequisite for this first step is **accurate alcohol-related crash data**, and the first step to gaining this information is ensuring that **police are breath/blood testing after every crash and accurately recording the results in crash investigation reports**;
- existing laws on or relevant to drink driving to understand the current legal framework and what changes are needed;
- stakeholders to identify the interest groups, their positions and how to effectively involve them in the programme;
- community perceptions to assess the level of community understanding of the problem, trust in the police, and support for interventions and to determine possible ways to address the gaps.

Since the first Global Status Report on Road Safety was published in 2009 *(5)*, much has been advanced to assemble road crash data. Data on the incidence, severity, types and causes of crashes provide insights into drink driving patterns and how to target interventions on those at greatest risk. For instance, it may turn out that busy urban roads are a high-risk area; or that young males may be the group found to be at greatest risk of drink driving (see this example of use of monthly monitoring of BAC limits from Mexico *(6)*. Key data which can be used to assess the situation include the following.

- **Percentage of drivers and riders killed with a BAC over the legal limit –** In some countries, this information is routinely available, although coverage is rarely complete. Even if there is a legal

requirement that blood samples are taken on admission to hospital, the pressure of work in emergency departments often means that this is not done.

- **Number of alcohol offences detected –** This measure can give reasonably complete numbers of driving offences involving alcohol impairment over time, but it is dependent on the extent of police effort put into alcohol enforcement. Therefore, caution is required on whether it provides a true reflection of the actual situation.
- **Percentage of drivers stopped with a BAC over the legal limit –** This can be a useful measure, particularly where random breath testing checkpoints are used and large numbers of drivers are tested during high alcohol hours. However, the proportion of drivers with a BAC over the legal limit can be expected to fluctuate, depending on where and when enforcement operations are conducted. This measure should therefore be treated with caution when assessing individual operations, or operations over a short period. If the intensity, timing and type of location for operations are stable over the long term, then it can be a useful measure.
- **Driver surveys –** Levels of drink driving and trends can be assessed via independent surveys where researchers stop vehicles, or, in a controlled environment, approach vehicles stopped at lights, and request breath samples. Care must be taken in deciding which times of day and which locations to use to ensure that the breath sample is representative of driving over the time period and road network for which the information is required (see examples from the Netherlands *(7)* and from three South American countries *(8)*. Another effective measure is to work closely with police and ask them to conduct breath tests on all drivers involved in crashes (if they have ready access to breathalysers). In some countries this is required by law.

Analyses of the types of data above by age, sex, times, and location help to prioritise activities, and to plan and focus interventions where they are most needed. The following entities generally collect and maintain road crash and road crash injury data that could be helpful in gauging the extent and understanding the nature of the problem.

- **Police authorities:** In most jurisdictions, investigating crashes is the responsibility of police. Since police are responsible for detecting breaches of traffic law, it is probable that police crash records would include details of any involved road user being affected by alcohol. In countries where breath or blood tests may not be regularly collected, the presence and role of alcohol can be subjective rather than objective.
- **Road authorities:** Crash records may also be maintained by the road authority. However, these records may not include comprehensive information about crashes. The primary interest of the road authorities is to identify shortcomings in the road system for which they have responsibility, so it is probable that alcohol involvement may well not be covered in their records.
- **Health system:** In some countries, the health system is the only comprehensive source of data on road crash injuries. For most countries, this is likely to be confined to admissions to the hospital system and, therefore, to consider only the more serious injuries. Since the primary responsibility of the hospital is the care of injured people, details of the location of the crash, the events associated with it and the blood alcohol content (BAC) of the injured person may not be part of the records. For instance, frequently, those admitted to Trauma and Emergency departments are simply recorded as having been involved in a road crash, without being identified as a driver, passenger or pedestrian.

Other potential information sources about alcohol involvement in crashes include employee and insurance records. Even if comprehensive crash records can be assembled from one or more of the

sources described above, the *extent* of alcohol involvement in crashes needs to be determined in order to make an overall assessment of the true scope of the problem. Ideally, alcohol involvement in crashes should be based on *objective* breath or, where appropriate, blood testing of drivers at the roadside and/or of those injured at the hospital. If the record of alcohol involvement is based on *subjective* reports such as "alcohol consumed" or "drunk", there is likely to be considerable underestimation of the problem because an investigating police officer or a medical practitioner is unlikely to consider a driver impaired until a relatively high BAC is reached.

If available crash data includes reliable information on BAC for a reasonable proportion of the drivers and riders involved in crashes, then assessing overall alcohol involvement is a relatively straightforward process. Should information on BAC levels not be available, another alternative is to conduct cross tabulations using existing crash data. Cross-tabulations that include location, month, day of week, time of day, speed limit and road class can be used to build a picture of where and when crashes occur. Cross-tabulating alcohol involvement by age, gender and type of vehicle can be expected to give guidance about which drivers to target in publicity and social marketing campaigns. Table 3 provides a guide to assessing road traffic data.

Table 3. A guide to assessing road traffic data

Question		YES	NO	DATA/EXAMPLE
1.	How many injuries and deaths occur as a result of road traffic crashes in the project region? (Note that it is important for the working group to predefine the project unit or region of assessment. For example, this may be the entire country, or it may be a particular province/state, town or community)			e.g. from police records, hospital records
2.	Is data available on road crashes involving alcohol that can be analysed?			e.g. from police test records, hospital blood tests
3.	What is the scale of the problem of alcohol related crashes in terms of the number of crashes and the number of fatalities? What proportion of all road traffic crashes does this comprise?			e.g. from police records, hospital records
4.	Does the data provide detailed information on where and when the crashes occur and who is involved?			e.g. police records of crash locations
5.	Who are those most likely to be involved in crashes involving alcohol?			e.g. police crash records, hospital records, surveys of alcohol users
6.	Are the primary risk factors known? (Example risk factors may include age, gender, time of day, prior history of drinking and driving.)			e.g. studies on drinking patterns within society
7.	Are hospitals equipped and legally allowed to take blood samples?			e.g. does legislation support medical practitioners taking blood samples on request from police?
8.	Are police trained and equipped for on-road enforcement of drinking and driving laws?			e.g. are officers certified to use devices, and are passive and evidential breath test devices available?

Understanding what laws exist in your country and whether they are adequately enforced is a critical part of understanding the situation and identifying priority actions. It is therefore useful to begin by reviewing the current state of the laws, as in Table 4.

Table 4. Checklist for assessing the comprehensiveness of drink driving legislation

	YES	NO
1. Blood alcohol concentration limits		
▪ Imposes limits that are consistent with evidence and recommendations on drink driving (0.05 g/dl or below)		
▪ Sets limits for novice or young drivers (BAC, 0.02 g/dl or below)		
▪ Sets a zero limit for commercial drivers (i.e., trucks, taxis, public transport vehicles)		
2. Restrictions on availability of alcohol		
▪ Specifies a minimum legal drinking age		
▪ Imposes restrictions on sale and supply of alcohol to underage people		
▪ Restricts or bans alcohol advertisement/marketing		
3. Enforcement		
▪ Provides for enforcement by random breath testing and/or sobriety checkpoints (noting that for reasons explained earlier, sobriety checkpoints are less efficient and hence less effective)		
▪ Requires alcohol testing of everyone involved in a crash (in hospital or at crash scene)		
▪ Establishes who has authority for enforcement		
▪ Device used to provide evidential BAC readings (i.e. can be used as evidence in a court of law)		
▪ Regular maintenance and calibration of testing devices		
▪ Conducting according to established Standard Operating Procedure and relevant protocols		
▪ Authority for the use of alcohol ignition interlock programmes, including criteria for offenders		
▪ Provides notice requirements for certain enforcement activity, if applicable		
4. Penalties		
▪ Provides a mechanism to monitor sale or supply of alcohol to underage people in certain facilities		
▪ Defines penalty based on degree of severity of infraction above established BAC limit		
▪ Provides specific financial penalties proportionate to average income, or based on individual means testing		
▪ Includes provision for driver remediation		
▪ Provides for licence suspension based on degree of severity of infraction above established limit		
▪ Includes provisions pertaining to vehicle impoundment		
5. Other drink-driving measures		
▪ Specifies whether the penalty includes criminal punishment, with reference to the penal code if applicable		

Source *(10)* with authors' elaboration

A stakeholder assessment can shed light on the social environment in which a drink driving programme will be developed and implemented. Experience has shown that it is important to involve members of a wide variety of groups, representing diverse interests. Such an approach can often overcome initial concerns and opposition before reaching the public sphere. It is important to identify supporters and opponents and, moreover, to appreciate the reasons for their respective positions, to be able to develop a marketable package that satisfies all concerned parties. Experiences from countries including Brazil, Colombia, Australia, and France show that concerted efforts to implement effective interventions can have substantial impact on the level of injuries sustained in drink driving-related crashes. Different stakeholders can play different but complementary roles to maximise the success of a drink driving programme (See Table 5).

Table 5. Potential roles and responsibilities for stakeholders involved in anti-drinking and driving programmes

Authority	Major role and responsibility
Road safety authority	Legislation Funding Programme coordination, strategy, monitoring and reporting Major publicity/social marketing campaigns
Police	Enforcement of drink driving laws Collection of quality data from crash investigations to inform road safety interventions Public commentary Participant in community education activities
Hospitals/Health Authorities	Political lobbying in support of interventions Community leadership in discussion and debates Highlighting health benefits from effective programmes Data collection of injured patients (including BAC)
Insurance companies	Provision of important funding for interventions (and in some countries, funding for national road safety agencies) *(11)* Risk-based premiums policy Data sharing
Education department	Include information about alcohol and its influences in school programmes Monitor to ensure there are no alcohol points of sale or advertisements close to school premises
Community road safety groups	Community education activity Localisation of major social marketing campaigns Citizen advisors/observers at alcohol checkpoints to help improve social acceptance and ensure their integrity (relevant in jurisdictions where trust and confidence in police is low)
Citizen advocacy groups	Promoting community-driven initiatives (see Box 7)
Producers, distributors and retailers	Responsible marketing in the context of road safety server training and programme sponsorship On-premises education, awareness and social marketing campaigns
Road safety research authority	Problem identification Programme evaluation Generation and publication of evidence
Road authority	Road engineering treatments and maintenance Vehicle speed and traffic management policies
Employer	Company policies regarding drink driving Employee education regarding drink driving Promotion and enforcement of fleet safety management policies
Media	Communicating to the public about the drink driving situation in the country, and risks of consuming alcohol and driving Communicating about a national programme or campaign to reduce drink driving
Beverage alcohol licensing authority	Licensed premises supervision Responsible alcohol-serving policies and training Restricting and/or banning alcohol advertisement/publicity

Source: *(9)*

As noted in Table 5, the alcohol industry – producers, distributors, and retailers – has a role to play. The industry has funded and/or conducted initiatives that are claimed to reduce drink driving. However, the research evidence does not support such claims *(13)*. Additional information can be found in the Fact Sheet produced by the Global Road Safety Partnership that provides a summary of research evidence *(13)*.

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Conclusion

A review of the literature reveals that there is significant investment by the alcohol industry in activities that are claimed to be part of the industry's corporate social responsibility initiatives. However, the majority of initiatives supported by the alcohol industry are not evidence-based and do not reduce alcohol-related harm. Most initiatives claimed under the banner of corporate social responsibility serve as marketing opportunities for the alcohol industry in order to maximise profit. Effective investment by the industry should focus on supporting evidence-based interventions that demonstrably reduce alcohol-related harm; for example, through commitments to a minimum alcohol pricing structure, and commitments to support reductions in illegally traded alcohol (Anderson et al., 2009) rather than through alcohol marketing, ineffective drink driving control measures, and/or influencing policy to maximise profit.

The driving population's knowledge of laws can be assessed through focus group discussions, interviews (face-to-face, telephone, online) or surveys. When assessing community knowledge of drink driving legislation and enforcement and the risks associated with drink driving, it is important to find out:

- how well people understand the basis of the law, e.g. the BAC limit (where one applies), or the definition of impaired driving where there is no set limit;
- how well people understand how alcohol impairs judgement and the ability to drive a motor vehicle safely;
- how well people understand the relationship between drinking and the BAC limit, or the definition of impaired driving, as appropriate;
- people's estimate of the probability of being detected if driving while impaired by alcohol;
- how well people understand the punishments if convicted for drink driving, including fines and disqualification, and the likely impact on their livelihood and social life;
- perception of police and enforcement activities such as random alcohol checkpoints.

Information gathered through a survey, such as that outlined in Table 6, combined with information on the respondent (e.g. age group, gender), can help identify target groups who may drink and drive. This is useful information to plan and evaluate a drink driving intervention.

Table 6. Sample community survey on drinking and driving

Questions		Possible responses
1.	Do you know the BAC limit in your country? (If yes, check BAC value is correct) Alternatively, if there is no BAC limit, the question could be: "Do you know the legal definition for impaired driving in your country?"	1 yes (with correct or incorrect value) 2 no 3 don't know what BAC is
2.	In your opinion, is operating a motor vehicle after consuming alcohol dangerous?	1 yes 2 no 3 don't know/unsure
3.	In your opinion, does the consumption of alcohol before operating a motor vehicle increase the risk of causing a road crash?	1 yes 2 no 3 don't know/unsure
4.	Have you consumed alcohol before operating a motor vehicle?	1 regularly 2 occasionally 3 no 4 don't know/unsure
5.	Have you travelled as a passenger in a motor vehicle with someone who has consumed alcohol before driving?	1 regularly 2 occasionally 3 no 4 don't know/unsure
6.	In your opinion, what is the likelihood of being stopped by the police on suspicion of drink driving?	1 high 2 moderate 3 low 4 don't know/unsure

Source: *(9)*

Additional issues which may be explored as part of the general assessment include:

Operational issues

- Are there agencies that are enthusiastic about the intervention and could act as "champions"?
- Can the intervention be mounted with some agencies not involved initially?
- Does the intervention require special training or equipment? Are these items available? What training needs are there?
- Does an intervention rely on new laws? If so, what lead times are required to prepare?
- Do police have the capacity to enforce a new law?
- Are key agencies prepared to coordinate their efforts?

Financial issues

- What are the costs involved in financing an initiative?
- What sources of funds are available for financing an initiative?
- Is the scale of funding required for the intervention likely to be available? If not, is there potential for a prior activity designed to generate funding?
- Can a pilot scheme be established with available funds to show effectiveness?

Political issues

- Are politicians aware of the problem?
- Is there a need to sensitise them to the issues?
- Will the intervention create community opposition? If so, how can this be addressed?
- Are there political benefits which can be provided through the programme?

4.4 Opportunities and challenges in implementing drink driving interventions

For maximum effectiveness, drink driving legislation needs strong support from politicians and high-level community decision-makers, sending a clear message to society that tackling drink driving and reducing road trauma are vital national issues (see Box 6 for examples from Brazil and France).

Box 6. Political commitment assisted in reducing the number of crashes

FORTALEZA, BRAZIL:

As a participating city in the Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS 2015–2019), the offices of the Mayor and the Municipal Department of Conservation and Public Services (SCSP) strongly committed to expanding enforcement operations in the city of Fortaleza, in the State of Ceará, Brazil. They ensured that coordination between municipal and state level enforcement agencies became a priority. Following Article 25 of the National Traffic Code, the SCSP and the Municipal Traffic and Citizenship Authority (AMC) established agreements with the State Highway Police (PRE), the Municipal Civil Guard (GCM), and the State Military Police (PEM) to deliver joint drink driving enforcement operations as well as for other key behavioural risk factors.

Several barriers were identified including: lack of coordination between enforcement bodies; traffic officers mainly focused on traffic flow (generally unaware of their role in saving lives); activities were not data-oriented and did not follow standard operational procedures; and the general public did not recognise enforcement as an instrument to prevent road trauma.

Records from Fortaleza show that an impressive 47.5% reduction in deaths attributable to road traffic injuries was achieved between 2014 and 2019 *(14, 15)*, noting that the BIGRS 2015–2019 cross-cutting policies were a major contributing factor to this success. From the perspective of traffic law enforcement, three elements related to road policing efforts were fundamental to achieving this outcome and changing the enforcement paradigm:

I. Political commitment from, and the eagerness of, the managerial level of the AMC to professionalise the workforce, using evidence-based policing principles and deterrence strategies was crucial. The Global Road Safety Partnership (GRSP) worked with local agencies to deliver capacity building support. This saw the adoption of an internal training scheme and continuous roadside coaching and support. In the span of five years, GRSP provided training to 1,700 officers from the AMC, and its main enforcement partners – PRE and GCM – across key behavioural risk factors and other areas of need *(14).* The programme was delivered to selected members of the Federal Highway Police, the Criminal Police, and the Drink Driving Dry law (Lei Seca) squad at the State Transport Department in Ceará (DETRAN Ceará). In addition, GRSP further supported the AMC municipal police by providing breathalysers (active and passive), mouthpieces, traffic cones, and safety fences to ensure safe conduct of highly visible enforcement checkpoints.

II. A data-led, sustained operation to reduce drink driving, by a dedicated road safety squad was put in place. The city of Fortaleza developed Standard Operating Procedures for Drink Driving enforcement and other primary risk factors, which were published in the Official Gazette in 2016 (reviewed in 2018) *(16).*

In 2017, the AMC municipal police started using the 'Enforcement reporting tool' to record essential information when conducting enforcement operations (time/place of operations; number of drivers tested, refused to be tested, fined; and number of officers and testing devices deployed per operation). These developments allowed officers to follow guidelines for strategic and safe operations, and to understand their role in producing data and how it can be used to guide effective enforcement to save lives. This tool was also allowed the local enforcement coordinator to track enhanced enforcement campaigns and bring other agencies on board.

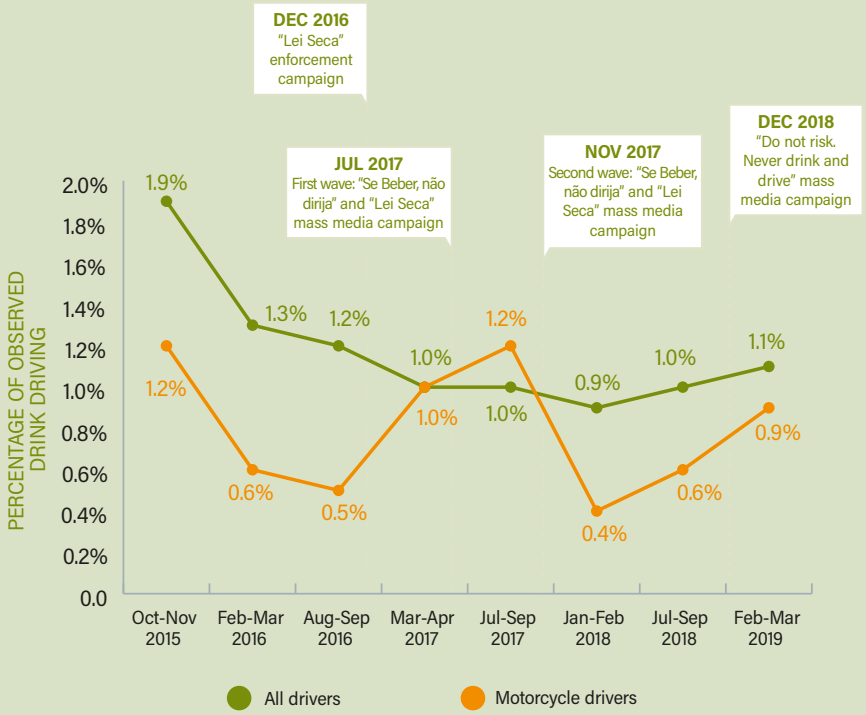
III. The most important achievement in the Fortaleza road policing programme was the constitution of a dedicated squad with abilities to continue performing enforcement operations through a multi-agency approach to drink driving checkpoints. Led by AMC Traffic Police, this collaborative effort included five municipal, state and national level agencies: the AMC Traffic Police, State Highway Police, Federal Highway Police, Fortaleza Municipal Guard, and DETRAN *Ceará*. Together, the agencies planned and ran large-scale Drink Driving enforcement operations at night on the main arterial roads in Fortaleza, displaying a strong deterrent effect at entry points, and on secondary streets and surrounding local roads. The media activities (mass[+] and earned media) were an essential supportive measure to increase the perceived risk of detection and change the enforcement operation's image among the public.

[+]Mass media campaign: https://www.youtube.com/watch?v=Wlmf_3oJbOg

This multi-agency approach was the culmination of four years of inter-agency planning efforts which included: inter-sectorial committees to share data and experiences; agreement established between AMC and each of the four involved agencies; social marketing campaigns with a focus on enforcement; and a rigorous training scheme of refresher training sessions and in-situ coaching practice with police. These inter-agency collaborative efforts saw checkpoints and alcohol tests increase dramatically: from 20,568 drivers invited to undertake a breath test in 2017, to 106,366 in 2019 (or 103 per 1,000 drivers). The primary outcome was a reduction from 4.5% to 1.7% in the number of drivers who tested positive or refused to test between 2015 and 2019 (15). In Brazil, the traffic authority can legally fine drivers who refuse to submit to a breath test and can apply other administrative penalties (such as driver license retention). The graph below contains information pertaining only to drivers who tested positive during roadside observational studies.

Photograph: Inter-agency drink driving enforcement checkpoint planning, Fortaleza, Brazil.

Figure 7. Percentage of drivers and motorcyclists who tested positive (2015–2019) during observational data collections, Fortaleza, Brazil – excludes percentage of drivers refusing to provide breath sample



Source: *(17)*

Author elaboration with sources (14, 15, 16, 17).

FRANCE:

In 2002, French President Jacques Chirac publicly declared that road safety would be one of the three major priorities of his presidential mandate. This type of political leadership is essential if difficulties with new, harsher, legislation are to be overcome. Penalties for driving under the influence of alcohol were increased and new laws were introduced.

France's road safety performance over the period 2002–2004 was spectacular – road deaths decreased by 32%. This is attributed to a combination of measures, but focused particularly on speeding and alcohol-impaired driving *(18)*. With respect to alcohol-related crashes, measures included reducing the BAC level from 0.08 (set in 1978) to 0.05, and to 0.02 for bus drivers. Enforcement was increased; for example breath tests were increased by 15%. Stricter sanctions were introduced, increasing penalty points from 3 to 6 for a BAC between 0.05 and 0.08 (12 points lead to disqualification). As a result, alcohol-impaired driving decreased dramatically – almost 40% fewer incidents in 2004 compared with 2003. One researcher attributed 38% of the lives saved between 2003 and 2004 to improved behaviour in terms of alcohol-impaired driving *(19)*.

Source: *(9)*

It is likely that any significant new drink driving intervention will generate a national debate. Such debate should be supported (and amplified), since it will allow the arguments to be aired and the public to be informed. Such promotions can be initiated by ministerial statements at conferences (political or otherwise) or workshops to which the media can be invited. If the person championing the programme is a high-profile celebrity, s/he could also be involved in the promotion as this can help to personalise

and de-politicise the campaign. Promotion is especially important at the start of any programme and should be maintained. In many countries, ongoing promotion can be tied to local holidays or festivals. Box 7 provides an example of how civil society can help legitimise and champion enforcement efforts.

Box 7. Forging an innovative partnership to increase effectiveness of Alcohol Checkpoints in Guanajuato, Mexico – GRSP/ IFRC/ Mexican Red Cross

The Challenge

In 2014, the Guanajuato State legislature approved the establishment of random alcohol checkpoints for drivers. However, in areas like Guanajuato, where widespread distrust of the police exists, gaining public support can be a challenge. In Guanajuato State, the proposed checkpoints in the city of León were initially unpopular due to perceptions of road police operations. Given the public's negative perceptions of police, it was important that the police and the alcohol checkpoints be seen as legitimate and working to advance public health. The Mexican Red Cross Society (MRCS) believed that, given their strong reputation in Mexico, they could forge a partnership with the police that would encourage public acceptance, improve enforcement, and save lives.

The Tactic

To aid in enforcement of the legislation, the MRCS's Guanjuato State branch decided to offer their expertise and volunteers to support police checkpoints. Working with the local police in León, the MRCS set up a schedule that would begin in May 2014 and continue for a year, every weekend. Each checkpoint would be "staffed" by a team of MRCS volunteers working alongside police. The volunteers received introductory training about drink driving and how the law was being implemented and enforced. To increase visibility, an ambulance was stationed at checkpoints. The partnership was formally launched at a press conference to "kick-off" the campaign, educate the public about drink driving statistics, and bring visibility to the initiative. Speakers included representatives from government, police and traffic agencies, as well as the Mexican Red Cross. This diversity of voices confirmed to the public and the media that the effort was a united partnership between government and civil society. Over the next year, the volunteer-staffed checkpoints helped to increase public support for the checkpoints. Other unexpected benefits included several cases in which volunteers were able to provide first aid to police and drivers.

Summary

Strong enforcement of road legislation requires public and political support, and civil society can help to build and maintain that support. In this case, Mexican Red Cross volunteers increased legitimacy of an enforcement campaign and helped gain public support through a creative partnership with the government to save lives.

Source: *(20)*

4.5 How to evaluate progress and use results for improvement

In general, monitoring the programme against the baseline data established prior to any road safety intervention being put in place, involves keeping a close check on all measurement indicators, to ensure the programme is on track towards the goals, to help refine programme delivery, and to provide evidence for continuing support. Successfully sustaining a programme also requires that each component is evaluated against the objectives to determine what worked and what did not. Evaluation will not only provide feedback on programme effectiveness, but will also help to determine whether it is appropriate for the target population, whether there are any problems with its implementation and support, and whether there are any ongoing concerns that need to be resolved during implementation. The results of this evaluation should be fed back into the design and implementation of future drink driving enforcement activities.

The programme objectives are developed by examining the baseline data collected in the situational assessment and may include:

- reduction in alcohol-related crashes;
- reduction in fatal injuries resulting from crashes involving drink driving;
- reduction in the incidence of drink driving;
- increase in level of community concern about drink driving;
- increase in community support for initiatives to reduce drink driving;
- increase in drivers and riders acting to change their drink driving behaviour;
- increase in driver perception of stronger enforcement of drink driving laws.

Once the main problems are clear and the general objectives have been set, specific targets can be set. The objective to decrease the incidence of drink driving, for instance, might be stated as "decreasing the number of crashes caused by a driver impaired by alcohol by a specified amount, over a given time period". It is generally preferable to set measurable, time-limited objectives; these can be expressed in terms of a target, for example, percentage reduction (or improvement) to be achieved by a certain date.

Having targets generally results in more realistic road safety programmes, a better use of public funds and other resources, and greater credibility of those operating the programmes *(21).* A range of targets for different objectives is outlined in Table 7 (the best range for a particular country will depend on what information is available, or collectable). Performance targets should be developed in close consultation with partner agencies that may be responsible for initiating action to achieve the targets. Joint acceptance of targets is a critical requirement and is a key part of the coordination role required of agency with primary responsibility for reductions in drink driving.

Table 7. Possible targets for drink driving programme objectives

Programme objective	Example performance targets
Reduction in the number of crashes involving drink driving	• Reduction in the number of fatal crashes involving at least one driver/rider with an illegal BAC • Reduction in the number of fatal crashes per registered vehicle involving at least one driver/rider with an illegal BAC
Reduction in fatalities and serious injuries resulting from crashes involving drink driving	• Reduction in the number of killed riders and drivers with a recorded illegal BAC • Reduction in the number of serious injuries occurring in crashes where an illegal BAC has been recorded for at least one rider or driver
Reduction in the incidence of drink driving	• Reduction in the proportion of drivers with an illegal BAC recorded at (standard) random road checks • Reduction in the proportion of drivers with an illegal BAC identified at police random breath testing stations
Increase in level of community concern about drink driving	• Proportion of population sample survey who identify drink driving as a crime or a major community problem
Increase in community support for drink driving initiatives	• Level of community support, measured in survey, for strong (or stronger) enforcement and penalties for drink driving
Increase in drivers and riders acting to change their drink driving behaviour	• Number of drivers/riders agreeing not to drink and drive in self-reported surveys • Number of drivers/riders using breath-alcohol testers prior to driving after drinking • Proportion of population prepared to not drive if planning to drink in a social setting
Increase in driver perception of stronger enforcement of illegal alcohol laws	• Number of drivers/riders believing enforcement activity is more extensive than previously through survey • Number of drivers/riders charged with drink driving offences

Source: *(22).*

Once targets are set, performance indicators that will measure progress towards the target must be agreed upon. Performance indicators are measures that indicate changes and improvements in areas including:

- legislation in place;
- legislation being enforced – e.g. number of breath tests carried out;
- number of convictions for illegal BAC levels;
- proportion of drivers/riders above legal limit – from roadside surveys;
- percentage of road crash victims admitted to hospital with illegal BAC levels;
- numbers of police trained to use BAC equipment and the number of breath tests conducted;
- public attitudes to drink driving – from surveys.

In order to show changes and improvements over time, these data need to be compared to the baseline data, which need to be collected before the drink driving intervention is implemented. Comparing changes in absolute numbers in injury and death outcomes, or in riders/drivers at a certain BAC level, before and after a programme is of limited value, as absolute numbers may change because of an increase or decrease in the number of riders and drivers, registered or otherwise, and the numbers of breath or blood tests carried out. Therefore, it is important that rates be calculated. Denominators may include number of drivers, registered vehicles, or kilometres travelled. For example, for injury outcomes, a rate may be the number of drink driving injuries per licenced vehicle or licenced driver/rider, or number of drink driving injuries per 100,000 km travelled. For alcohol intoxication rates, the appropriate rate would be the proportion of drunk drivers/riders over the total number for which alcohol was measured.

Chapter Summary

- It is critical to have a comprehensive understanding of the drink driving problem in your country or region in order to design a relevant and effective programme.
- To develop an understanding of the problem, a situation analysis should be undertaken that examines:
  - crash and health data on road traffic incidents involving alcohol;
  - laws pertaining to drink driving such as maximum BAC/BrAC levels for motorists, how these laws are enforced, and why compliance with laws may be low;
  - relevant stakeholders and their potential role in a programme aimed at deterring drink driving;
  - drinking patterns and community perceptions of drink driving.
- Interventions chosen should be relevant to the country's specific drinking and driving situation.
- Key factors that are essential for successful drink driving interventions:
  - Assess available data to identify target groups
  - Ensure drink driving laws are clear and enforceable
  - Enforce laws fairly and firmly, with appropriate punishments
  - Ensure that public information supports the law and its enforcement.
  - Monitor and evaluate the intervention.

- Drink driving interventions require high-level support which must be garnered from many different agencies.
- Evaluation should be seen as an integral component of any intervention; an evaluation plan needs to be determined at the beginning so that a plan for data collection for this purpose is built into project implementation.
- It is important that evaluation results are shared with appropriate parties, and that they are used in planning future interventions.

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Appendix A. Suggested wording for draft drink driving legislation

Section 1: Who must undergo a breath screening test

1. An enforcement officer may require any of the following persons to undergo a breath screening test without delay –

   (a) a driver of, or a person attempting to drive, a motor vehicle on a road;

   (b) a person whom the officer has good cause to suspect has recently committed an offence against this Act that involves the driving of a motor vehicle;

   (c) if a crash has occurred involving a motor vehicle (i) the driver of the vehicle at the time of the crash, or if the enforcement officer is unable to ascertain who the driver was at the time of the crash, a person whom the officer has good cause to suspect was in the motor vehicle at the time of the crash.

Section 2: Adult drink driving

Breath

1A. A person commits and offence if the person drives or attempts to drive a motor vehicle on a road while the proportion of alcohol in the person's breath, as ascertained by an evidential breath test, exceeds 250 micrograms of alcohol per litre of breath.

Blood

1B. A person commits an offence if the person drives or attempts to drive a motor vehicle on a road while the proportion of alcohol in the person's blood, as ascertained from an analysis of a blood specimen taken from the person, exceeds 50 milligrams of alcohol per 100 millilitres of blood.

Failing to remain or accompany

2A. A person commits an offence if they fail or refuse to remain at the place where the person underwent a breath screening test until after the result of the test is ascertained or fails or refuses to accompany without delay an enforcement officer to a place or places when required to do so for an evidential breath test, blood test or both.

Failing to provide blood sample

2B. A person commits an offence if the person fails to permit a blood specimen to be taken without delay after having been required to do so by an enforcement officer, medical officer or health practitioner.

2C. It is a defence to proceedings for an offence against subsection 2B if the Court is satisfied, on the evidence of a health practitioner, that the taking of a blood specimen from the defendant would have been prejudicial to the defendant's health.

Penalty

3. If a person is convicted of an offence against subsection 1 or 2 –

   (a) the maximum penalty is imprisonment for a term not exceeding 3 months or a fine not exceeding *$ (dependent on local average earnings);* **and**

   (b) the Court must order the person to be disqualified from holding or obtaining a driver licence for 6 months or more.

Section 3: Zero alcohol for under 20 / novice drivers

Breath

1A. A person younger than 20 commits an offence if the person drives or attempts to drive a motor vehicle on a road while the person's breath, as ascertained by an evidential breath test, contains alcohol.

Blood

1B. A person younger than 20 commits an offence if the person drives or attempts to drive a motor vehicle on a road while the person's blood, as ascertained from an analysis of a blood specimen taken from the person, contains alcohol.

Penalty

2. If a person is convicted of an offence against subsection 1 –

   (a) the maximum penalty is imprisonment for a term not exceeding 3 months or a fine not exceeding *$ (dependent on local average earnings);* **and**

   (b) the Court must order the person to be disqualified from holding or obtaining a driver licence for 3 months or more.

Section 4: Drink or drug driving causing injury or death

1. A person commits an offence if the person drives a motor vehicle and causes injury to or the death of a person while –

   (a) the proportion of alcohol in the breath of the person, as ascertained by an evidential breath test exceeds 250 micrograms of alcohol per litre of breath; or

   (b) the proportion of alcohol in the blood of the person, as ascertained from an analysis of a blood specimen, exceeds 50 milligrams of alcohol per 100 millilitres of blood; or

   (c) the blood of the person, as ascertained from an analysis of a blood specimen, contains evidence of the use of a qualifying drug specified in Schedule 1 of *(could be this Act or a specific piece of legislation addressing drug offences).*

Penalty

2. If a person is convicted of an offence against subsection 1, –

   (a) the maximum penalty is imprisonment for a term not exceeding 5 years or a fine not exceeding *$ (dependent on local average earnings);* **and**

   (b) the Court must order the person to be disqualified from holding or obtaining a driver licence for 1 year.

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