

alcohol

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on alcohol and health  
2014





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# FOREWORD

I am pleased to present the World Health Organization's Global status report on alcohol and health 2014. WHO has published several reports in the past on this topic with the last one being published in 2011, but this report of 2014 has some unique features.

First, it describes some progress made in alcohol policy development in WHO Member States after endorsement of the Global strategy to reduce the harmful use of alcohol in 2010. Second, this report provides a wealth of information on alcohol-related indicators for the comprehensive global monitoring framework for the prevention and control of non-communicable diseases (NCDs) adopted by the 66th World Health Assembly. The global monitoring framework was developed to fulfil the mandate given by the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases (NCDs) and includes the voluntary target of a 10% relative reduction in harmful use of alcohol by 2025 measured against a 2010 baseline. Thirdly, this report presents an overview of some of the mechanisms and pathways which underlie the impact of the harmful use of alcohol on public health.

The report highlights some progress achieved in WHO Member States in the development and implementation of alcohol policies according to the ten areas of action at the national level recommended by the Global strategy. This progress is uneven and there is no room for complacency given the enormous public health burden attributable to alcohol consumption. Globally, harmful use of alcohol causes approximately 3.3 million deaths every year (or 5.9% of all deaths), and 5.1% of the global burden of disease is attributable to alcohol consumption. We now have an extended knowledge of the causal relationship between alcohol consumption and more than 200 health conditions, including the new data on causal relationships between the harmful use of alcohol and the incidence and clinical outcomes of infectious diseases such as tuberculosis, HIV/AIDS and pneumonia. Considering that beyond health consequences, the harmful use of alcohol inflicts significant social and economic losses on individuals and society at large, the harmful use of alcohol continues to be a factor that has to be addressed to ensure sustained social and economic development throughout the world. In the light of a growing population worldwide and the predicted increase in alcohol consumption in the world, the alcohol-attributable disease burden as well as the social and economic burden may increase further unless effective prevention policies and measures based on the best available evidence are implemented worldwide. And, importantly, we know that in countries with lower economic wealth the morbidity and mortality risks are higher per litre of pure alcohol consumed than in the higher income countries.

Following the endorsement of the Global strategy to reduce the harmful use of alcohol WHO has strengthened its actions and activities to prevent and reduce alcohol-related harm at all levels. Several regions have developed and adopted regional strategies focusing on the target areas recommended in the global strategy. At the global level the WHO Secretariat has facilitated establishment of a global network of WHO national counterparts as well as a coordinating council to ensure effective collaboration with and between Member States. At the same time all the efforts and resources available at all levels are clearly not adequate to confront the enormous public health burden caused by the harmful use of alcohol, and further progress is needed at all levels and by all relevant actors to

achieve the objectives of the Global alcohol strategy and the voluntary global target of at least a 10% relative reduction in the harmful use of alcohol by 2025. WHO is prepared and committed to continue to monitor, report and disseminate the best available knowledge on alcohol consumption, alcohol-related harm and policy responses at all levels, which is key to monitoring progress in implementing the Global strategy and regional action plans. Accurate and up-to-date information is vital for alcohol policy development, and I hope that you will find this report, which is largely based on the information submitted from Member States, useful in contributing to the public health objectives articulated in the Global strategy to reduce the harmful use of alcohol.

Oleg Chestnov  
Assistant Director-General  
Noncommunicable Diseases and Mental Health



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# ABBREVIATIONS

<b>15+</b>	population of those aged 15 years and older
<b>AAF</b>	alcohol-attributable fraction
<b>AD</b>	alcohol dependence
<b>AFR</b>	WHO African Region
<b>AIDS</b>	acquired immunodeficiency syndrome
<b>AMR</b>	WHO Region of the Americas
<b>APC</b>	alcohol per capita consumption
<b>ASDR</b>	age-standardized death rate
<b>AUD</b>	alcohol use disorder
<b>BAC</b>	blood alcohol concentration
<b>CI</b>	confidence interval
<b>CVD</b>	cardiovascular disease
<b>DALY</b>	disability-adjusted life year
<b>EMR</b>	WHO Eastern Mediterranean Region
<b>EUR</b>	WHO European Region
<b>ESPAD</b>	European School Survey Project on Alcohol and Other Drugs
<b>FAOSTAT</b>	Food and Agriculture Organization of the United Nations (FAO) statistical database
<b>FAS</b>	fetal alcohol syndrome
<b>GDP</b>	gross domestic product
<b>GENACIS</b>	Gender, alcohol, and culture: an international study
<b>GISAH</b>	WHO Global Information System on Alcohol and Health
<b>GSHS</b>	Global School-based Student Health Surveys
<b>HED</b>	heavy episodic drinking
<b>HIV</b>	human immunodeficiency virus
<b>HU</b>	harmful use of alcohol
<b>ICD</b>	International Classification of Diseases
<b>MA</b>	moving average
<b>mhGAP</b>	WHO Mental Health Gap Action Programme
<b>MLPA</b>	minimum legal purchase age

<b>NCD</b>	noncommunicable disease
<b>NICE</b>	National Institute for Health and Care Excellence
<b>NIS</b>	Newly Independent States
<b>OIV</b>	Organisation Internationale de la Vigne et du Vin
<b>PPP</b>	purchasing power parity
<b>RBS</b>	responsible beverage service
<b>SBIRT</b>	screening, brief intervention and referral to treatment
<b>SEAR</b>	WHO South-East Asia Region
<b>SES</b>	Socioeconomic status
<b>STEPS</b>	STEPwise approach to surveillance
<b>UN</b>	United Nations
<b>WHA</b>	World Health Assembly
<b>WHO</b>	World Health Organization
<b>WPR</b>	WHO Western Pacific Region
<b>YLL</b>	years of life lost

# EXECUTIVE SUMMARY

This report provides a global overview of alcohol consumption in relation to public health (Chapter 1) as well as information on: the consumption of alcohol in populations (Chapter 2); the health consequences of alcohol consumption (Chapter 3); and policy responses at national level (Chapter 4). The main messages of these chapters can be summarized as follows:

## CHAPTER 1: ALCOHOL AND PUBLIC HEALTH

Alcohol is a psychoactive substance with dependence-producing properties that has been widely used in many cultures for centuries. The harmful use of alcohol causes a large disease, social and economic burden in societies.

- Environmental factors such as economic development, culture, availability of alcohol and the level and effectiveness of alcohol policies are relevant factors in explaining differences and historical trends in alcohol consumption and related harm.
- Alcohol-related harm is determined by the volume of alcohol consumed, the pattern of drinking, and, on rare occasions, the quality of alcohol consumed.
- The harmful use of alcohol is a component cause of more than 200 disease and injury conditions in individuals, most notably alcohol dependence, liver cirrhosis, cancers and injuries.
- The latest causal relationships suggested by research are those between harmful use of alcohol and infectious diseases such as tuberculosis and HIV/AIDS.
- A wide range of global, regional and national policies and actions are in place to reduce the harmful use of alcohol.

## CHAPTER 2: ALCOHOL CONSUMPTION

- Worldwide consumption in 2010 was equal to 6.2 litres of pure alcohol consumed per person aged 15 years or older, which translates into 13.5 grams of pure alcohol per day.
- A quarter of this consumption (24.8%) was unrecorded, i.e., homemade alcohol, illegally produced or sold outside normal government controls. Of total recorded alcohol consumed worldwide, 50.1% was consumed in the form of spirits.
- Worldwide 61.7% of the population aged 15 years or older (15+) had not drunk alcohol in the past 12 months. In all WHO regions, females are more often lifetime abstainers than males. There is a considerable variation in prevalence of abstention across WHO regions.

- Worldwide about 16.0% of drinkers aged 15 years or older engage in heavy episodic drinking.
- In general, the greater the economic wealth of a country, the more alcohol is consumed and the smaller the number of abstainers. As a rule, high-income countries have the highest alcohol per capita consumption (APC) and the highest prevalence of heavy episodic drinking among drinkers.

### CHAPTER 3: HEALTH CONSEQUENCES

- In 2012, about 3.3 million deaths, or 5.9% of all global deaths, were attributable to alcohol consumption.
- There are significant sex differences in the proportion of global deaths attributable to alcohol, for example, in 2012 7.6% of deaths among males and 4.0% of deaths among females were attributable to alcohol.
- In 2012 139 million DALYs (disability-adjusted life years), or 5.1% of the global burden of disease and injury, were attributable to alcohol consumption.
- There is also wide geographical variation in the proportion of alcohol-attributable deaths and DALYs, with the highest alcohol-attributable fractions reported in the WHO European Region.

### CHAPTER 4: ALCOHOL POLICY AND INTERVENTIONS

- Alcohol policies are developed with the aim of reducing harmful use of alcohol and the alcohol-attributable health and social burden in a population and in society. Such policies can be formulated at the global, regional, multinational, national and subnational level.
- Many WHO Member States have demonstrated increased leadership and commitment to reducing harmful use of alcohol in recent years. A higher percentage of the reporting countries indicated having written national alcohol policies and imposing stricter blood alcohol concentration limits in 2012 than in 2008.

The report also contains country profiles for all 194 WHO Member States as well as data tables to support information provided in chapters 2–4 (Appendices I–III) and a section explaining data sources and methods used in this report (Appendix IV).



# global status report on alcohol and health

1. Alcohol and  
public health

# 1. ALCOHOL AND PUBLIC HEALTH

The protection of the health of populations by preventing and reducing the harmful use of alcohol is a public health priority, and one of the objectives of the World Health Organization (WHO) is to reduce the health and social burden caused by the harmful use of alcohol. The Global strategy to reduce the harmful use of alcohol defines “harmful use” as drinking that causes detrimental health and social consequences for the drinker, the people around the drinker and society at large, as well as the patterns of drinking that are associated with increased risk of adverse health outcomes.<sup>1</sup> The vision of this strategy is to improve the health and social outcomes of individuals, families and communities, considerably reducing morbidity and mortality due to harmful use of alcohol and their ensuing social consequences (WHO, 2010a).

Alcohol is a psychoactive substance with dependence-producing properties. As described in this report, consumption of alcohol and problems related to alcohol vary widely around the world, but the burden of disease and death remains significant in most countries. The harmful use of alcohol ranks among the top five risk factors for disease, disability and death throughout the world (WHO, 2011a; Lim et al., 2012). It is a causal factor in more than 200 disease and injury conditions (as described in Statistical Classification of Diseases and Related Health Problems (ICD) 10th revision, WHO, 1992). Drinking alcohol is associated with a risk of developing such health problems as alcohol dependence, liver cirrhosis, cancers and injuries (WHO, 2004a; Baan et al., 2007; Shield, Parry & Rehm, 2013). The latest causal relationships suggested by research findings are those between alcohol consumption and incidence of infectious diseases such as tuberculosis and HIV/AIDS (Lönnroth et al., 2008; Rehm et al., 2009b; Baliunas et al., 2010) as well as between the harmful use of alcohol and the course of HIV/AIDS (Hendershot et al., 2009; Azar et al., 2010). As described in chapter 3 of this report, the net effect of harmful use of alcohol is approximately 3.3 million deaths each year, even when the beneficial impact of low-risk patterns of alcohol use on some diseases is taken into account. Thus, harmful use of alcohol accounts for 5.9% of all deaths worldwide.

As described in section 1.6 of this chapter, harmful use of alcohol can also have serious social and economic consequences for individuals other than the drinker and for society at large (e.g. Anderson et al., 2006; Sacks et al., 2013).

Despite the large health, social and economic burden associated with harmful use of alcohol, it has remained a relatively low priority in public policy, including in public health policy (see section 1.7). However, recent international policy frameworks and action plans, such as the WHO Global strategy to reduce the harmful use of alcohol and the WHO Global action plan for the prevention and control of noncommunicable diseases (NCDs) 2013–2020 (see section 1.7.2) are expected to shift the political compass towards

<sup>1</sup> The word “harmful” in the strategy refers only to public-health effects of alcohol consumption, without prejudice to religious beliefs and cultural norms in any way. The concept of “harmful use of alcohol” in this context is different from “harmful use of alcohol” as a diagnostic category in the ICD-10 Classification of Mental and Behavioural Disorders (WHO, 1992)



an increased focus on the harmful use of alcohol. In fact, since 2008 WHO Member States have already made improvements in several areas of action recommended by the Global strategy to reduce the harmful use of alcohol. In particular, an increased number of Member States reported having written national alcohol policies and taking action to reduce the prevalence of drink-driving, to limit availability of alcohol and to implement restrictions on alcohol marketing. This positive trend is expected to continue as society's ability and willingness to tackle NCDs and their risk factors, including the harmful use of alcohol, is "a precondition for, an outcome of and an indicator of all three dimensions of sustainable development: economic development, environmental sustainability, and social inclusion" (Global NCD Action Plan 2013–2020; WHO, 2013a).

## 1.1 ALCOHOL CONSUMPTION IN ITS HISTORICAL CONTEXT

The use of alcoholic beverages has been an integral part of many cultures for thousands of years (McGovern, 2009). Prior to the modern era, fermented alcoholic beverages were known in all tribal and village societies except in Australia, Oceania and North America. In societies where there was no aboriginal alcohol consumption, the encounter with alcoholic beverages was often abrupt and highly problematic. Where alcohol was traditionally consumed, production of alcoholic beverages commonly occurred on a small scale as a household or artisanal activity, particularly when and where agricultural surpluses were available. Drinking alcohol was thus often an occasional and communal activity, associated with particular communal festivals (Gumede, 1995; Parry & Bennets, 1998; Room et al., 2002). There are many places in the world today where versions of these traditional patterns originating from tribal and village societies persist (Obot, 2000; Room et al., 2002; Willis, 2006).

Superimposed upon, and often replacing the aforementioned traditional patterns of drinking, are patterns of production and consumption which developed in European empires and during early modern industrialization. These involved new beverages, new modes of production, distribution and promotion, and new drinking customs and institutions (Jernigan, 2000). As distilled spirits became available and transportation improved, alcoholic beverages became a market commodity which was available in all seasons of the year, and at any time during the week. This increased supply and availability often proved disastrous for indigenous economies (Colson & Scudder, 1988) and public health (e.g. Coffey, 1966). The consequences were also often catastrophic elsewhere in the world (Room et al., 2002). By the nineteenth century, leaders of industry were viewing alcohol as a major impediment to industrial livelihoods, which demanded a sober and attentive workforce. Eventually, and with great difficulty, industrializing societies in Europe and elsewhere came to see the flood of alcohol as a substantial social and health problem. In a number of countries, popular social movements to limit drinking and even to prohibit it gained broad membership and eventually political strength. In most of these countries, after a century or more of popular movements and political activity, a new and fairly stable alcohol control structure was put in place (Aaron & Musto, 1981; Room et al., 2002; WHO, 2011a).

## 1.2 PATHWAYS OF ALCOHOL-RELATED HARM

Alcohol consumption can have an impact not only on the incidence of diseases, injuries and other health conditions, but also on the course of disorders and their outcomes in individuals. Alcohol-related harm is determined, apart from environmental factors, by three related dimensions of drinking: the volume of alcohol consumed, the pattern of drinking and, on rare occasions, also the quality of alcohol consumed (Rehm et al., 2003a; Rehm, Kanteres & Lachenmeier, 2010; WHO, 2010a).

### 1.2.1 VOLUME OF ALCOHOL CONSUMED

Alcohol consumption has been identified as a component cause for more than 200 diseases, injuries and other health conditions with ICD-10 codes (see section 1.6.1; WHO, 1992; Rehm et al., 2009a). A component cause may be one among a number of components, none of which alone is sufficient to cause the disease. When all the components are present, the sufficient cause is formed (Rothman, 1976; Rothman & Greenland, 2005; Rothman, Greenland & Lash, 2008). For most diseases and injuries causally impacted by alcohol, there is a dose–response relationship. For example, for all alcohol-attributable cancers, the higher the consumption of alcohol, the larger the risk for these cancers (IARC, 2010; Shield et al., 2013).

### 1.2.2 PATTERN OF DRINKING

Not only the volume of alcohol consumed, but also the pattern of drinking over time affects the risks of harm (Rehm et al., 2003a). For example, a pattern of drinking while eating seems to be associated with less harm from chronic diseases than the same pattern of drinking at other times (Trevisan et al., 2001; Stranges, 2004). In particular, pattern of drinking has been linked to injuries (both unintentional and intentional; Macdonald et al., 2013) and risk of cardiovascular diseases (mainly ischaemic heart disease and ischaemic stroke; Roerecke & Rehm, 2010a). The latter is linked to the fact that the cardioprotective effect of low-risk patterns of alcohol consumption disappears completely in the presence of heavy episodic drinking (HED) (see Box 1; Roerecke & Rehm, 2010; 2013).

#### **Box 1. Heavy episodic drinking (HED)**

In the context of population-level data presented in this report, HED is defined as consumption of 60 or more grams of pure alcohol (6+ standard drinks in most countries) on at least one single occasion at least monthly. The volume of alcohol consumed on a single occasion is important for many acute consequences of drinking such as alcohol poisoning, injury and violence, and is also important wherever intoxication is socially disapproved of. HED is associated with detrimental consequences even if the average level of alcohol consumption of the person concerned is relatively low.

### 1.2.3 QUALITY OF ALCOHOL CONSUMED

The quality of alcoholic beverages may impact on health and mortality (Preedy & Watson, 2005), for instance when home-made or illegally produced alcoholic beverages are contaminated with methanol or other very toxic substances, such as disinfectants (Rehm, Kanteres & Lachenmeier, 2010). Other ingredients in alcoholic beverages, especially in beverages produced informally or illegally, have been analysed as potential causes of health problems (Kanteres et al., 2009; Lachenmeier et al., 2009; Leitz et al., 2009). However, the most comprehensive recent reviews of the research found no evidence that consumption of unrecorded alcohol is markedly linked at population level to morbidity or mortality over and above the effects of ethanol (Rehm, Kanteres & Lachenmeier, 2010; Rehm et al., 2014).

Notable exceptions were outbreaks of methanol poisoning and the use of surrogate alcohol, which refers to liquids usually containing ethanol, but not intended for consumption as beverages. Even though consumption of these products can lead to tragic events, they accounted for considerably less than 1% of all alcohol-attributable deaths.

Consumption of beverages produced illegally or informally is relevant for estimation of alcohol-attributable burden of disease. As unrecorded products are often available outside the regulated market (resulting e.g. in cheaper prices, different controls, or no controls on availability), they may increase overall consumption and have also been linked to more heavy drinking occasions (Rehm et al., 2014).

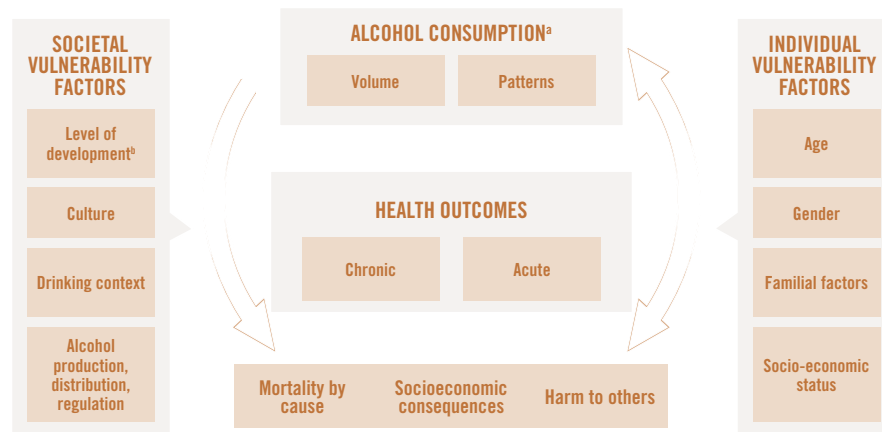
## 1.3 MECHANISMS OF HARM IN AN INDIVIDUAL

There are three main direct mechanisms of harm caused by alcohol consumption in an individual (Babor et al., 2003; WHO, 2004b; WHO, 2007; see also Figure 1). These three mechanisms are:

- toxic effects on organs and tissues;
- intoxication, leading to impairment of physical coordination, consciousness, cognition, perception, affect or behaviour;
- dependence, whereby the drinker's self-control over his or her drinking behaviour is impaired.

The conceptual model in Figure 1 shows how interrelated factors, some of which are not alcohol-related, result in alcohol-related death and disability. Differential vulnerability and socioeconomic consequences as well as health outcomes are discussed further in sections 1.5 and 1.6, respectively. Alcohol not only impacts on the incidence of disease and injury, but can also affect the course of diseases such as liver cirrhosis (see Box 2), stroke or ischaemic heart disease (for an overview see Shield et al., 2013).

**Figure 1.** Conceptual causal model of alcohol consumption and health outcomes



<sup>a</sup> Quality of the alcohol consumed can also be a factor  
<sup>b</sup> Development of health and welfare system, and economy as a whole  
 Source: Based on Rehm et al., 2010 and Blas et al., 2010.

**Box 2. The impact of alcohol on the course of liver cirrhosis**

The risk curve for incidence of liver cirrhosis is much flatter than the risk curve for mortality from liver cirrhosis (Rehm et al., 2010b). This indicates that relatively low or moderate levels of alcohol consumption are not associated with marked increases for the risk of developing liver cirrhosis (but this risk increases exponentially with heavier drinking). However, if a person has developed liver cirrhosis, no matter whether this is due to alcohol consumption or to other factors, the risk of mortality from liver cirrhosis becomes quite pronounced even at relatively moderate levels of drinking.

## 1.4 ABSTENTION

The previous section has exclusively discussed the factors affecting alcohol-related harm to an individual and the mechanisms for this. However, it is important to note that when discussing alcohol-related harm at the population level, abstention from drinking alcoholic beverages in the population (see section 2.2.1) is an important mediating factor determining the level of alcohol-attributable harm in a population. Because abstention is highly prevalent throughout the world, any diminution in abstention levels could have a significant impact on the global burden of disease caused by the harmful use of alcohol.

## 1.5 FACTORS AFFECTING ALCOHOL CONSUMPTION AND ALCOHOL-RELATED HARM

A variety of factors have been identified at the individual and the societal levels, which affect the magnitude and patterns of consumption and can increase the risk of alcohol use disorders and other alcohol-related problems in drinkers and others (Shi & Stevens, 2005; Babor et al., 2010). Environmental factors such as economic development, culture, availability of alcohol and the level and effectiveness of alcohol policies are relevant factors in explaining differences in vulnerability between societies, historical trends in alcohol consumption and alcohol-related harm (WHO, 2007; Babor et al., 2010; Nelson et al., 2013).

For a given level or pattern of drinking, vulnerabilities within a society are likely to have many of the same differential effects as those for differences between societies. Many of these differences are mitigated, but not entirely removed, by the universal availability of health care within the society. Where there is unequal access to treatment or other resources, the health and social consequences of a given level or pattern of drinking are also likely to be more severe for those with less resources (Shi & Stevens, 2005; WHO, 2007; Blas & Kurup, 2010).

Although there is no single risk factor that is dominant, the literature suggests that the more vulnerabilities a person has, the more likely the person is to develop alcohol problems (Schmidt et al., 2010). From a public health perspective, vulnerability denotes susceptibility to poor health or illness, which can be manifested through physical, mental and social outcomes, including alcohol-related problems. It has been shown that vulnerable individuals are often at greater risk of having more than one individual risk factor, e.g., unhealthy diet, lack of physical activity and tobacco use (Blas & Kurup, 2010).

### 1.5.1 AGE

Children, adolescents and elderly people are typically more vulnerable to alcohol-related harm from a given volume of alcohol than other age groups (Hilton, 1987; Midanik & Clark, 1995; Mäkelä & Mustonen, 2000). Also, early initiation of alcohol use (before 14 years of age) is a predictor of impaired health status because it is associated with increased risk for alcohol dependence and abuse at later ages (Grant & Dawson, 1997; Grant, 1998;

DeWit et al., 2000; Kraus et al., 2000, Sartor et al., 2007), alcohol-related motor vehicle crashes (Hingson et al., 2001; Hingson, Edwards & Zha, 2009), and other unintentional injuries (Hingson et al., 2000; Cherpitel, 2013). At least part of the excess risk among young people is related to the fact that, typically, a greater proportion of the total alcohol consumed by young people is consumed during heavy drinking episodes (US Surgeon General, 2007). Also, young people appear to be less risk-averse and may engage in more reckless behaviour while drunk.

Alcohol-related harm among elderly people is due to somewhat different factors than alcohol-related harm among young people. While alcohol consumption generally declines with age, older drinkers typically consume alcohol more frequently than other age groups. Also, as people grow older, their bodies are typically less able to handle the same levels and patterns of alcohol consumption as in previous life years, leading to a high burden from unintentional injuries, such as alcohol-related falls (Sorock et al., 2006; Grundstrom et al., 2012). The alcohol-related burden of disease among older age groups is an increasing public health concern because of the rapidly ageing population in many countries worldwide (WHO, 2012).

Age-related vulnerability is the basis for age-specific monitoring of alcohol consumption (see section 2.1) and policy responses. Alcohol policies that are based on age-related vulnerability include partial or total advertising bans, restrictions on access to alcohol through minimum ages at which it is legal to purchase alcohol, and laws aimed to prevent any alcohol consumption by young people when driving vehicles (see Chapter 4).

### 1.5.2 GENDER<sup>2</sup>

Harmful use of alcohol is the leading risk factor for death in males aged 15–59 years, yet there is evidence that women may be more vulnerable to alcohol-related harm from a given level of alcohol use or a particular drinking pattern. The vulnerability of females to alcohol-related harm is a major public health concern because alcohol use among women has been increasing steadily in line with economic development and changing gender roles (Grucza et al., 2008; Wilsnack, 2013) and because it can have severe health and social consequences for newborns (Abel & Sokol, 1987; Lupton et al., 2004; Popova et al., 2013).

As discussed in chapter 3, 7.6% of all male deaths in 2012 were attributable to alcohol, compared to 4.0% of female deaths. Men also have a far greater rate of total burden of disease expressed in disability-adjusted life years (DALYs) attributable to alcohol than women – 7.4% for men compared to 2.3% for women (see chapter 3). The increased burden of disease among men is largely explained by the fact that compared to women, men are less often abstainers, drink more frequently and in larger quantities. When the number of health and social consequences is considered for a given level of alcohol use or drinking pattern, sex differences for social outcomes reduce significantly or even reverse. One explanation is the higher prevalence of injuries among men (Midanik & Clark, 1995; Bongers et al., 1998; Mäkelä & Mustonen, 2000; Hoeksema, 2004); however, for health outcomes such as cancers, gastrointestinal diseases or cardiovascular diseases, the same level of consumption leads to more pronounced outcomes for women (Rehm et al., 2010a).

<sup>2</sup> "Sex" refers to the biological and physiological characteristics and "gender" refers to the socially constructed roles, behaviours etc. In the remainder of this report, "sex" will be used when reporting alcohol-related data for females, males and both sexes in line with the reporting standards of Global Information System on Alcohol and Health (GISAH) (see Box 12).

The vulnerability of women may be explained by a wide range of factors (Wilsnack et al., 2013). For example, women typically have lower body weight, smaller liver capacity to metabolize alcohol, and a higher proportion of body fat, which together contribute to women achieving higher blood alcohol concentrations than men for the same amount of alcohol intake. Women are also affected by interpersonal violence and risky sexual behaviour as a result of the drinking problems and drinking behaviour of male partners (Morojele et al., 2006; Kalichman et al., 2007). Moreover, alcohol use has been shown to be a risk factor for breast cancer (Allen et al., 2009; Boyle & Boffetta, 2009; Seitz et al., 2012). Also many societies hold more negative attitudes towards women's drinking alcohol than men's drinking, and especially towards their harmful drinking (Otto, 1981; Gomber, 1988; Pretorius et al., 2009), which, depending on the cultural context, may increase women's vulnerability to social harm. Finally, women who drink during pregnancy may increase the risk of fetal alcohol spectrum disorder (FASD), and other preventable health conditions in their newborns (Barr & Steihs Guth, 2001; Viljoen et al., 2005). This is part of the evidence supporting mandatory health warning labels on alcoholic beverage containers, including information for all pregnant women on the impact of alcohol on the fetus.

### 1.5.3 FAMILIAL RISK FACTORS

A family history of alcohol use disorders is considered a major vulnerability factor for both genetic and environmental reasons (Merigankas et al., 1998; WHO, 2004a).

Heritable or genetic risk factors account for a substantial proportion of the variation in alcohol dependence. Multiple genes influence alcohol use initiation, metabolism and reinforcing properties in different ways (Clark, 2006), contributing to the increased susceptibility to toxic, psychoactive and dependence-producing properties of alcohol in some vulnerable groups and individuals.

Parental alcohol use disorders have been found to negatively affect the family situation during childhood. Parents with alcohol use disorders display particular patterns of alcohol consumption and thereby increase the likelihood that their children will develop drinking patterns associated with high risk of alcohol use disorders when they are introduced to alcohol. Heavy drinking by parents affects family functioning, the parent-child relationship and parenting practices, which in turn affects child development adversely (Latendresse et al., 2008). The mistreatment of children, including sexual abuse, physical abuse and neglect, may also lead to childhood psychopathology and later to problem drinking (Shin et al., 2009).

### 1.5.4 SOCIOECONOMIC STATUS

Surveys and mortality studies, particularly from the developed world, suggest that there are more drinkers, more drinking occasions and more drinkers with low-risk drinking patterns in higher socioeconomic groups, while abstainers are more common in the poorest social groups. However, people with lower socioeconomic status (SES) appear to be more vulnerable to tangible problems and consequences of alcohol consumption (Grittner et al., 2012). For example, manual workers seem more vulnerable to severe alcohol-related health outcomes, including mortality, than non-manual workers for a given

pattern of drinking. Notably, this vulnerability is found to be handed down through the generations (Norström & Romelsjö, 1998; Mäkelä et al., 1999a, 2002; Hemström et al., 2002).

One explanation for the potentially greater vulnerability among lower SES groups is that they are less able to avoid adverse consequences of their behaviour due to a lack of resources. For example, individuals with higher SES may be more able to choose safer environments in which to drink, purchase social or spatial buffering of their behaviour and have better access to high-quality health care services (potentially explaining SES-related differences in survival after hospitalization or treatment for alcohol problems). A second explanation could be that individuals in lower SES groups have a less extensive support network, i.e., fewer factors or persons to motivate them to address alcohol problems before severe consequences occur. A third, contested, explanation that has been proposed in the past is that of an “all or nothing” pattern of behaviour in lower SES groups, i.e., poor people drink less often, but when they drink, they drink a lot (Schmidt et al, 2010).

The link between SES and alcohol-related harm is an area of growing public health concern, because market liberalization and increasing affluence have increased the availability of alcohol to lower SES groups in growing economies. Given that changes in affordability of alcohol have often increased drinking, particularly among lower SES groups (Mäkelä, 1999b; McKee et al., 2000; Hradilova Selin, 2004), a rise in alcohol consumption is expected to increase the alcohol-attributable burden of disease in developing economies. The process of marginalization and stigmatization related to alcohol use disorders, and the drift in social status that may result, may also cause significant social burden.

### 1.5.5 ECONOMIC DEVELOPMENT

The most important of the societal vulnerability factors related to alcohol consumption, as well as to alcohol-attributable disease burden, is economic development. For the purpose of this report World Bank income groups and gross domestic product per capita based on purchasing power parity (GDP-PPP) are used as a proxy for economic wealth. World Bank income groups aggregate countries into low-income, lower middle income, upper middle income and high-income countries. In contrast, GDP-PPP is gross domestic product converted to international dollars using purchasing power parity rates for the purposes of normalizing between-country differences (World Bank, see Appendix IV for details). Countries’ development status can be more broadly defined than just considering their economic wealth, for example by describing development in terms of levels of infant mortality and adult life expectancies.

The research on links between alcohol consumption, alcohol-related harm and economic development of a society, country or region largely mirrors data on associations between alcohol consumption and the SES of an individual. As described in more detail in chapter 2 and chapter 3, greater economic wealth is broadly associated with higher levels of consumption and lower abstention rates. However, for a given level or pattern of drinking, the alcohol-attributable mortality and burden of disease and injury will generally be greater in societies with lower economic development than in more affluent societies. For chronic effects of heavy drinking such as liver cirrhosis, for instance, there will often be a worse outcome because of the existence of cofactors such as nutritional deficiencies or viral hepatitis (Room et al., 2002a). Also, services to mitigate the adverse health effects of



drinking are likely to be less widely available. Drink–driving may also have a worse outcome because less affluent societies have less safe streets and vehicles.

### 1.5.6 CULTURE AND CONTEXT

The degree of risk for harm due to use of alcohol varies with the drinker’s age, sex, familial factors and SES, as well as the drinker’s behaviour and alcohol exposure (volume, patterns and quality of alcohol consumed; as discussed in section 1.2). However, it also varies with the physical and socioeconomic context in which a given drinking occasion and the ensuing hours take place. Moreover, the nature and extent of the harm that results from drinking can vary widely depending on the context.

In some contexts, drinkers will be vulnerable to alcohol-related social harm, disease, injury or even death if any volume of alcohol is consumed. This is the case for instance if a person drinks before driving a car or piloting an aeroplane, when consuming alcohol can result in serious penalties and harm. Also, in many countries there can be serious social or legal consequences for drinking at all, due to laws and regulations or cultural and religious norms, which can increase the vulnerability of drinkers to alcohol-related social harm. Studies showing differences in consumption or alcohol-related harm between different ethnicities within countries have underlined the importance of further research on culture-related vulnerabilities (Neumark et al., 2003; Chartier et al., 2013).

### 1.5.7 ALCOHOL CONTROL AND REGULATION

As discussed in greater detail in section 1.7 of this chapter and in chapter 4, another critical factor in determining the level of vulnerability to harmful use of alcohol and alcohol-related harm across countries is the level and effectiveness of alcohol control and regulations in each country, and within countries, in each jurisdiction with the ability to set alcohol policies (Babor et al., 2010).

## 1.6 ALCOHOL-RELATED HARMS

Alcohol consumption can have both health and social consequences for the drinker. The harmful use of alcohol can also result in harm to other individuals, such as family members, friends, co-workers and strangers. Moreover, the harmful use of alcohol results in a significant health, social and economic burden on society at large.

### 1.6.1 HEALTH CONSEQUENCES FOR DRINKERS

As mentioned in section 1.2, alcohol consumption has been identified as a component cause for more than 200 health conditions covered by ICD-10 disease and injury codes (see Box 3 for the main disease and injury categories causally linked to alcohol; WHO, 1992; Rehm et al., 2010a, Shield et al., 2013; see also Appendix IV for details on which of these disease and injury outcomes have been modelled in this report). Most notably, new evidence points to a causal link between alcohol and infectious diseases such as tuberculosis and pneumonia (Rehm et al., 2009b; Samokhvalov et al., 2010a). Also, it is important to note that alcohol consumption can contribute to more than one type of disease or injury in the drinker.

### Box 3. Major disease and injury categories causally impacted by alcohol consumption

**Green:** Overall beneficial effects from low-risk patterns of drinking, while heavy drinking is detrimental

**Red:** 100% alcohol-attributable

**Neuropsychiatric conditions:** **alcohol use disorders** (AUDs, see Box 4) are the most important neuropsychiatric conditions caused by alcohol consumption. Epilepsy is another disease causally impacted by alcohol, over and above withdrawal-induced seizures (Samokhvalov et al., 2010b). Alcohol consumption is associated with many other neuropsychiatric conditions, such as depression or anxiety disorders (Kessler, 2004; Boden and Fergusson, 2011), but the complexity of the pathways of these associations currently prevents their inclusion in the estimates of alcohol-attributable disease burden (Rehm et al., 2010a).

**Gastrointestinal diseases:** liver cirrhosis (Rehm et al., 2010b) and pancreatitis (both acute and chronic; Irving et al., 2009) are causally related to alcohol consumption. Higher levels of alcohol consumption create an exponential increase in risk. The impact of alcohol is so important that for both disease categories there are subcategories which are labelled as “alcoholic” or “alcohol-induced” in the ICD.

**Cancers:** alcohol consumption has been identified as carcinogenic for the following cancer categories (International Agency for Research on Cancer, 2012) cancer of the mouth, nasopharynx, other pharynx and oropharynx, laryngeal cancer, oesophageal cancer, colon and rectum cancer, liver cancer and female breast cancer. In addition, alcohol consumption is likely to cause pancreatic cancer. The higher the consumption, the greater the risk for these cancers, with consumption as low as one drink per day causing significantly increased risk for some cancers, such as female breast cancer (Seitz et al., 2012; Rehm & Shield, 2013; Nelson et al., 2013).

**Intentional injuries:** alcohol consumption, especially heavy drinking, has been causally linked to suicide and violence (Cherpitel, 2013; Macdonald et al., 2013).

**Unintentional injuries:** almost all categories of unintentional injuries are impacted by alcohol consumption. The effect is strongly linked to the alcohol concentration in the blood and the resulting effects on psychomotor abilities. Higher levels of alcohol consumption create an exponential increase in risk (Taylor et al., 2010).

**Cardiovascular diseases (CVD):** the relationship between alcohol consumption and cardiovascular diseases is complex. The beneficial cardioprotective effect of relatively low levels of drinking for **ischaemic heart disease and ischaemic stroke** disappears with heavy drinking occasions. Moreover, alcohol consumption has detrimental effects on hypertension, atrial fibrillation and haemorrhagic stroke, regardless of the drinking pattern (Roerecke & Rehm, 2012).

**Fetal alcohol syndrome (FAS) and preterm birth complications:** alcohol consumption by an expectant mother may cause these conditions that are detrimental to the health of a newborn infant (Foltran et al., 2011).

**Diabetes mellitus:** a dual relationship exists, whereby a low-risk pattern of drinking may be beneficial while heavy drinking is detrimental (Baliunas et al., 2009).

**Infectious diseases:** harmful use of alcohol weakens the immune system thus enabling development of pneumonia and tuberculosis. This effect is markedly more pronounced when associated with heavy drinking, and there may be a threshold effect, meaning that disease symptoms manifest mainly if a person drinks above a certain level of heavy drinking (Lönnroth et al., 2008).

In addition to the causal relationships between alcohol consumption and disease and injury categories described in Box 3, a strong association exists between alcohol consumption and HIV infection and sexually transmitted diseases (Baliunas et al., 2010; Hahn et al., 2011). This in itself is no proof of a causal relationship, as it may be that a common third cause, such as having generally risky behaviour impacts on both alcohol consumption and risky sexual behaviour leading to infection. However, experimental research, where alcohol consumption was manipulated, showed that it was clearly related to the increased risk of unsafe sex (Rehm et al., 2012). If one assumes a causal relationship between intention and (risky sexual) behaviour, which research has demonstrated to be the case (Sheeran et al., 1998; 1999), the result is acceptance of a causal relationship between alcohol consumption and HIV incidence. In addition, there is a clear causal effect of alcohol consumption on HIV/AIDS patients' adherence to antiretroviral treatment, which can be quantified (Hendershot et al., 2009; Azar et al., 2010; Gmel et al., 2011), as well as on the course of HIV/AIDS among patients who are not yet on antiretroviral therapy (Pol et al., 1996; Liu et al., 2003; Chander et al., 2006; Azar et al., 2010; Baum et al., 2010; Hahn & Samet, 2010).

Of the more than 200 ICD-10 disease and injury codes for which alcohol consumption is a component cause, more than 30 include alcohol in their name or definition. This indicates that these disease conditions would not exist at all in the absence of alcohol consumption. Of these 30, AUDs, (see Box 4) are the most significant.

#### **Box 4. Alcohol use disorders (AUDs)**

**Harmful use of alcohol** is defined as a pattern of alcohol use that is causing damage to health, and the damage may be physical (as in cases of liver cirrhosis) or mental (as in cases of depressive episodes secondary to heavy consumption of alcohol) (see ICD-10; WHO, 1992).

**Alcohol dependence** (also known as alcoholism or alcohol dependence syndrome) is defined as a cluster of behavioural, cognitive, and physiological phenomena that develop after repeated alcohol use and that typically include a strong desire to consume alcohol, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to alcohol use than to other activities and obligations, increased tolerance, and sometimes a physiological withdrawal state (see ICD-10; WHO, 1992).

### 1.6.2 SOCIOECONOMIC CONSEQUENCES FOR DRINKERS

In addition to harm to the physical (e.g., liver disease) and/or mental health (e.g., episodes of depressive disorder) of the drinkers, alcohol consumption is often associated with socioeconomic consequences, as shown in Figure 1. These socioeconomic consequences are tied up with the responses of other people. Where use of alcohol is forbidden for religious or cultural reasons, drinking at all will be negatively judged by others. Also in societies where drinking is thoroughly integrated into daily life, there are boundaries of acceptable drinking behaviour, whether in terms of a specific drinking event or a specific pattern of drinking (Bennett et al., 1993). When an individual crosses culture-specific boundaries, he or she may experience socioeconomic consequences such as loss of earnings, unemployment or family problems, stigma and barriers to accessing health care. These four consequences are discussed in more detail below.

Alcohol is typically a valued commodity, which means that drinking usually uses resources which would otherwise be available for other purposes. Where earnings are low, heavy drinking may further impoverish the drinker, the drinker's family, or a whole community, thus increasing health or social harm (Schmidt et al., 2010; De Silva et al., 2011).

Intoxication, dependence or alcohol withdrawal states can result in poor performance in major social roles – in functioning at work, in parenting, in relationship and friendship roles. Both the drinker and others may be affected by the consequences, such as job or productivity loss, break-up and dysfunction in family life, including domestic violence. This in turn can result in harm to physical or mental health, caused by the role functioning impairment itself, others' reactions to the impairment, or both (Schmidt et al., 2010).

The reputational drinking history of an individual, i.e., how the pattern of drinking is interpreted by others, is crucial in social judgements, both those made in the moment and in the longer term. There is a clear tendency in many cultures to marginalize and socially exclude habitually intoxicated persons and their families, even more so than "dirty or unkempt" persons (Room et al., 2001).

One direct path by which marginalization can affect health status is through diminished access to good health care. In several surveys around the world, respondents felt that heavy alcohol users should receive less priority in health care. Often the justification given is the belief that the users' behaviour contributed to their own illness (Olsen et al., 2003). More worryingly, studies on health services show that the care given is likely to be inferior, or the access to health care worsened, if the patient is seen as a run-down drinker or a similarly degraded status (e.g., Sudnow, 1967; Strong, 1980; Santana 2002; Mitchell et al., 2009). Given that access to good health care is expected to affect health status, this is a major concern both at the individual and at the societal level.

### 1.6.3 HARMS TO OTHER INDIVIDUALS

The harms done by people's drinking to others involve both socioeconomic consequences and substantial health problems, such as alcohol-related injuries, mental health impacts and FASD (see Box 5 for examples; Navarro et al., 2011). As stated in the WHO Global strategy to reduce the harmful use of alcohol (WHO, 2010a), "special attention needs to be given to reducing harm to people other than the drinker". The individual(s) affected may be a spouse or partner, child, relative, friend, neighbour, co-worker, person living in the same household, or a stranger, as is particularly common in the case of traffic crashes.

**Box 5. Examples of types of harm to other individuals**

**Injury** to other individuals can be intentional, e.g., assault or homicide, or unintentional, e.g., a traffic crash, workplace accident or scalding of a child.

**Neglect or abuse** can affect, for example, a child, a partner or a person in the drinker's care.

**Default on social role** can involve the drinker's role as a family member, as a friend and/or as a worker.

**Property damage** can involve damage, for example, to clothing, a car or a building.

**Toxic effects** on other individuals include most notably fetal alcohol syndrome (FAS) and preterm birth complications (Foltran et al., 2011).

**Loss of amenity or peace of mind** can influence family members (including children), friends, co-workers and strangers, who may, for example, be kept awake or frightened by the actions of the drinker.

The harms to others may be concrete and externally verifiable, as with injuries or damages, or may be more subject to social definition, as with some social role defaults, or to another's perception, as with many losses of amenity (Laslett et al., 2011). The harms may be relatively mild, such as being wakened by drunken carousers outside, or may be very severe, including death or a lifelong disability. A survey specific to harms to others in New Zealand found the prevalence of such harms to be higher than the prevalence of harms from one's own drinking (18% versus 12%), particularly among women and young people (Connor & Casswell, 2012). The same research group found that the greater the exposure to heavy drinkers, the lower people's scores on measures of personal well-being and health status (Casswell et al., 2011).

Reflecting the information that is most readily available in the underlying health system statistics, measures of problems from alcohol consumption have primarily focused on harm to the drinker's health and have placed limited emphasis on the harm to the health and welfare of others around the drinker. For example, chapter 3 reports on prenatal conditions caused by a mother's drinking, while injuries to others from violence inflicted by an intoxicated assailant are still not included in most current estimates of alcohol-attributable burden of disease (and are also not included in the calculations in chapter 3). It is important to develop algorithms to enable a more systematic and complete inclusion of both harm to health and social harm to others into future burden of disease studies. The first step was taken in an Australian survey, which found that more than two thirds of respondents had been adversely affected by someone else's drinking in the past year, and about 50% of the Australian population were negatively impacted by a stranger's drinking (Laslett et al., 2011). Building on this Australian study, recent studies in the European

Union (Graham et al., 2008; Shield et al., 2012a) and in Sweden (Ramstedt et al., 2013) tried to model alcohol-attributable harm to the health and social welfare of others. One significant finding is that women appear to suffer more from the drinking of others than men. Building on these studies, WHO has identified research on harm to others from drinking as a major strand in the Research Initiative on Alcohol, Health and Development, and initiated a collaborative research project with Thai Health on this topic (see Box 6 for details). More work is necessary to quantify the effects of alcohol on others in a way similar to that used to quantify the effects of passive smoking.

**Box 6. The Harm to Others from Drinking – A WHO/Thai Health international collaborative research project**

This aim of this research project is to measure and analyse the harm to others from drinking in low-income and middle-income countries, in terms of the situation in each society and also in cross-national analyses. The project is developing a master model for application in six countries, but it is expected that the master protocol will be more widely applied in future projects, including in developed countries. The study is divided into two phases.

**The first phase** will be carried out over 18 months and includes a scoping and assessment study; a general population survey of at least 1500 completed interviews of adults; a descriptive report for the country on the results; and a descriptive cross-national analysis of the results across societies.

**The second phase** will also last for 18 months and will include a register of data analyses of harm to others from drinking as manifested in the case records of societal first-response agencies. Agency caseload studies in three first-response agency systems will also be carried out, particularly where no electronic or other cumulative case registry is available for that type of agency.

#### 1.6.4 HARM TO SOCIETY AT LARGE

One of the key arguments for policy action to address harmful use of alcohol is that harmful use of alcohol results in a significant health, social and economic burden on society at large.

##### 1.6.4.1 BURDEN OF DISEASE

There is an increasing awareness of the significant impact of harmful use of alcohol not only on individuals, but also on global public health. As described in chapter 3, 5.9% of all deaths and 5.1 % of the global burden of disease and injury in 2012, as measured in DALYs, is attributable to alcohol (see Box 7 for explanations of the terminology). These figures translate into 3.3 million alcohol-attributable deaths, after taking into account the beneficial effects of low-risk patterns of alcohol consumption on some diseases. Beyond the population-level burden of diseases and injuries described, it is important to note that

harmful use of alcohol kills or disables people at a relatively young age, resulting in the loss of many years of life to death and disability. The latest data on alcohol-attributable burden of disease and injury are discussed in chapter 3, and the range of methods used to estimate the aggregate burden of disease at population level is discussed in section 1.8.

#### **Box 7. Terminology related to burden of disease and injury at population level**

**Burden of disease** is defined as the gap between current health status and an ideal situation in which everyone lives to old age free of disease and disability. Premature death, disability and risks that contribute to illness and injury are the causes of this health gap.

**Disability-adjusted life years (DALYs)** represent a time-based measure of overall burden of disease for a given population. DALYs are the sum of years of life lost due to premature mortality as well as years of life lost due to time lived in less than full health.

**Alcohol-attributable deaths** are defined as the number of deaths attributable to alcohol consumption. They assume a counterfactual scenario of no alcohol consumption. Thus, alcohol-attributable deaths are those deaths that would not have happened without the presence of alcohol.

**Alcohol-attributable fraction (AAF)** is the proportion of all diseases and deaths that are attributable to alcohol. AAFs are used to quantify the contribution of alcohol as a risk factor to disease or death. AAFs can be interpreted as the proportion of deaths or burden of disease which would disappear if there had not been any alcohol. AAFs are calculated based on level of exposure to alcohol and the risk relations between levels of exposure and different disease categories.

#### **1.6.4.2 SOCIAL AND ECONOMIC COSTS**

Harms from drinking are not only personal and they are not limited to health. Rather, harmful use of alcohol may also impose significant social and economic costs on society. As described below, there are three major categories of alcohol-attributable social and economic costs.

The first category of costs are direct economic costs of alcohol consumption, the estimates of which are typically derived from register data, i.e., the records of case-by-case operation of the major institutions of societal response to problems, e.g., hospitals and the health system, the police and criminal justice system, the unemployment and welfare systems (Anderson et al., 2006; Thavorncharoensap et al., 2009; Bouchery et al., 2011). Direct costs encompass costs for multiple types of health-care services, such as hospitalizations, ambulatory care, nursing home care, prescription medicines or home health care. However, such direct health sector costs appear to represent only 9–24% of all alcohol-attributable social costs (Van Gils et al., 2010). Direct costs also include significant costs in the justice sector caused, for example, by damage to property from vehicle crashes and arrests for being “drunk and disorderly” as well as increased crime. Depending on the society, many of the direct costs are borne by governments.

The second major category of social costs is indirect costs. These result, for example, from lost productivity due to absenteeism, unemployment, decreased output, reduced earnings potential and lost working years due to premature pension or death (Anderson et al., 2006; Thavorncharoensap et al., 2009). These indirect costs are typically borne by society at large, because the alcohol-attributable loss in workforce productivity can affect the economic viability of an entire community (Room et al., 2002).

A third category, which is poorly measured and for which the practice of adding estimates is disputable, is intangible costs. Intangible costs are the costs assigned to pain and suffering, and more generally to a diminished quality of life. Such intangible costs are borne by the drinkers, as well as their families and potentially by other individuals linked to the drinker (Anderson et al., 2006; Thavorncharoensap et al., 2009).

Monitoring social costs is important as it provides essential information regarding the full social consequences of alcohol consumption at a national financial level. For example, alcohol-attributable costs have been estimated at about 125 billion euros in the European Union for 2003 (Anderson et al., 2006), 21 billion pounds in 2009 in the United Kingdom of Great Britain and Northern Ireland (HM Government, 2012), and 233.5 billion dollars in 2006 in the United States of America (Bouchery et al., 2011). Such social costs attributable to alcohol represent from 1.3% to 3.3% of the gross domestic product (Rehm et al., 2009a; WHO, 2011a). Even when intangible costs are omitted, these costs are substantial, not only in comparison to gross domestic product, but also in relation to the costs associated with other risk factors. In the Republic of South Africa the estimates made of the combined tangible and intangible costs of harmful use of alcohol to the economy reached nearly 300 billion rand or 10–12% of the 2009 gross domestic product (Matzopoulos et al., 2014).

However, available measures of the social costs linked to harmful use of alcohol are mostly incomplete due to deficiencies in the available data. Although some studies separate out costs borne by governments (e.g., Johansson et al., 2006; Sacks et al., 2013), future studies should look more closely into who bears the harm and by whom the cost is paid, and should seek more robust ways of estimating intangible costs.

## 1.7 ACTION TO REDUCE HARMFUL USE OF ALCOHOL

As discussed above, the harmful use of alcohol has a severe impact on the health and well-being of individuals and populations. The scope and nature of alcohol-attributable disease burden and alcohol-related social harms provide a solid rationale for tackling harmful use of alcohol through national and international alcohol policies and interventions. “Alcohol policy”, as a collective noun, refers to the set of measures in a jurisdiction or society aimed at minimizing the health and social harms from alcohol consumption. These measures may be taken in any governmental or societal sector, and may include measures which are not directly aimed at alcohol consumption; for instance, the promotion of alternatives to drinking alcohol, where such a measure has the aim of minimizing alcohol-related harm (WHO, 2007). Box 8 describes the guiding principles for development and implementation of alcohol policies at all levels, as listed in the Global strategy to reduce the harmful use of alcohol (WHO, 2010a). These principles reflect the multifaceted determinants of alcohol-related harm and the concerted multisectoral actions required to implement effective interventions.



**Box 8. Guiding principles for development and implementation of alcohol policies at all levels (WHO, 2010a)**

(a) Public policies and interventions to prevent and reduce alcohol-related harm should be guided and formulated by public health interests and based on clear public health goals and the best available evidence.

(b) Policies should be equitable and sensitive to national, religious and cultural contexts.

(c) All involved parties have the responsibility to act in ways that do not undermine the implementation of public policies and interventions to prevent and reduce harmful use of alcohol.

(d) Public health should be given proper deference in relation to competing interests and approaches that support that direction should be promoted.

(e) Protection of populations at high risk of alcohol-attributable harm and those exposed to the effects of harmful drinking by others should be an integral part of policies addressing the harmful use of alcohol.

(f) Individuals and families affected by the harmful use of alcohol should have access to affordable and effective prevention and care services.

(g) Children, teenagers and adults who choose not to drink alcoholic beverages have the right to be supported in their non-drinking behaviour and protected from pressures to drink.

(h) Public policies and interventions to prevent and reduce alcohol-related harm should encompass all alcoholic beverages and surrogate alcohol.<sup>a</sup>

<sup>a</sup> Surrogate alcohol refers to liquids usually containing ethanol and not intended for consumption as beverages, that are consumed orally as substitutes for alcoholic beverages with the objective of producing intoxication or other effects associated with alcohol consumption.

### 1.7.1 EVIDENCE OF EFFECTIVENESS

The health, safety and socioeconomic problems attributable to alcohol can be effectively reduced. A substantial body of knowledge has accumulated during recent years on the feasibility, effectiveness and cost-effectiveness of different policy options and interventions shown to reduce the harmful use of alcohol (e.g., Room et al., 2002; Babor 2003; Anderson & Baumberg, 2006; Chisholm et al., 2006; WHO, 2007; Anderson et al., 2009; Wagenaar et al., 2009; Babor et al., 2010; OECD, 2014). While most of the evidence comes from high-income countries, the number of studies in low-income and middle income countries is steadily increasing.

The accumulated research findings indicate that population-based policy options – such as the use of taxation to regulate the demand for alcoholic beverages, restricting their availability and implementing bans on alcohol advertising – are the “best buys” in reducing the harmful use of alcohol as they are highly cost-effective<sup>3</sup> in reducing the alcohol-attributable deaths and disabilities at population level (Chisholm et al., 2004; Anderson et al., 2009; WHO, 2011b).

<sup>3</sup> Cost-effective interventions are defined as those that generate an extra year of healthy life for a cost that falls below the average annual income or gross domestic product per person.

There is also strong evidence of effectiveness for certain measures against drink-driving. Setting low limits (0.02% to 0.05%) for blood alcohol concentration (BAC) and enforcing them by random breath testing (RBT) are effective not only in reducing road traffic injuries, but also in reducing alcohol consumption among drivers (Babor et al., 2010).

Health professionals have an important role in reducing the harmful use of alcohol by monitoring alcohol consumption in their patients and providing brief interventions, counselling and pharmacotherapy, as appropriate, in all cases of identified hazardous drinking or alcohol use disorders (Schuckit, 2009; Babor et al., 2010; WHO, 2010c; Moyer et al., 2013). Screening and brief interventions for hazardous and harmful drinking have a good cost-effectiveness profile, although their implementation requires more resources than are needed for population-based measures (Chisholm et al., 2004; Anderson et al., 2009).

There is some evidence of effectiveness of multicomponent community interventions (Holder et al., 2000; Wagenaar et al., 2000; Ramstedt et al., 2013) and regulating serving practices in bars and restaurants when properly implemented and enforced (Trolldal et al., 2012).

There are practical and often also normative limits, including vested interests and trade agreements, on the application of effective policies. Hence, successful planning and implementation of appropriate national, regional and international measures requires good scientific, technical and institutional capacity, as well as good market knowledge and insight, an appropriate legislative framework and active enforcement.

### 1.7.2 GLOBAL ACTION

The Global strategy to reduce the harmful use of alcohol (WHO, 2010a) contains a set of guiding principles for the development and implementation of alcohol policies (see Box 8), sets priority areas for global action, recommends ten target areas for national action, and gives a strong mandate to WHO to strengthen action at all levels.

To ensure effective collaboration with and between Member States, WHO has facilitated establishment of the global network of WHO national counterparts for implementation of the Global strategy as well as a coordinating council for this purpose. At the inaugural meeting of the network, hosted by WHO in February 2011 and attended by national counterparts from 126 Member States, working mechanisms, plans and priority areas for implementation of the global strategy were established. WHO has supported the development of technical tools and training programmes according to the ten target areas for national action proposed in the Global strategy to reduce the harmful use of alcohol.

To strengthen national responses to alcohol-related public health problems, WHO co-hosted a Global Alcohol Policy Conference "From the Global alcohol strategy to national and local action", held in Thailand in February 2012. The conference provided a global platform for information exchange, sharing experiences, building new partnerships to raise awareness of public health problems attributable to alcohol and advocating for implementation of the global strategy at all levels. WHO also co-sponsored a follow-up Global Alcohol Policy Conference in 2013 in the Republic of Korea, focusing on "Alcohol, civil society and public health: from local and national action to global change".

The WHO Secretariat has worked closely with Member States, intergovernmental organizations and major partners within the United Nations system on promoting multisectoral action, building national capacity, identifying new partnership opportunities, and promoting effective and cost-effective approaches to reducing the harmful use of alcohol. Moreover, the WHO Secretariat has organized several consultations with nongovernmental organizations and professional associations to discuss their engagement in the implementation of the global strategy, and with economic operators on ways to reduce alcohol-related harm in their role as developers, producers, distributors, marketers and sellers of alcoholic beverages.

WHO has also supported capacity building workshops conducted at regional and country level in the African Region, the Region of the Americas, and the South-East Asia and Western Pacific regions. These workshops had a practical focus, working towards a country-specific roadmap that was both multisectoral and of immediate use in the countries concerned. The workshops also trained participants to roll out alcohol-related activities locally, enabled countries to share case studies, strengthened regional networks and provided an opportunity to pilot-test new technical tools including modelling taxation and pricing, regulating availability of alcohol, and addressing advertising and marketing and legal provision. WHO has also taken several steps to facilitate production and dissemination of alcohol-related knowledge, as well as to monitor progress in implementing the Global strategy to reduce harmful use of alcohol. WHO has been refining mechanisms for data collection, data analysis and dissemination of findings (see section 1.8). WHO has also begun a global research initiative on alcohol, health and development and supports international research activities focused on harm to people other than the drinkers themselves (see Box 6), FASD and the relationship between the harmful use of alcohol and such communicable conditions as HIV infection and tuberculosis. Work is also in progress to make more information on alcohol and health available on the Internet, including web-based capacity-building materials and self-help interventions for hazardous and harmful drinking.

In addition to the global and cross-regional actions described above, endorsement of the Global strategy has prompted the development of strategies, action plans and programme activities in WHO's regions (see section 1.7.3) and in WHO Member States (see section 1.7.4 and chapter 4).

Moreover, Member States took their commitment to action to reduce alcohol-related harm to another level when, in September 2011, the United Nations (UN) General Assembly, for only the second time in its history, met to focus on a health issue, namely meeting the challenge of NCDs. Within this discussion, alcohol was one of four common risk factors identified – the others being tobacco use, unhealthy diet and lack of physical activity (see Box 9 for the Political Declaration). Also the UN Conference on Sustainable Development (General Assembly resolution 66/288) and the first report of the UN System Task Team on the Post-2015 UN Development Agenda (UN System Task Team, 2012) have acknowledged that addressing NCDs and related risk factors, including harmful use of alcohol, is a priority for social development and investment in people.

**Box 9. Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-Communicable Diseases (NCDs) (brief outline of selected sections)**

The UN Political Declaration on NCDs, endorsed by Heads of State and Government in September 2011, acknowledges that the global burden and threat of NCDs constitutes one of the major challenges for development in the twenty-first century, which undermines social and economic development throughout the world and threatens the achievement of internationally agreed development goals. The Political Declaration recognizes that the most prominent NCDs are linked to common risk factors, namely tobacco use, harmful use of alcohol, an unhealthy diet and lack of physical activity and underlines the critical importance of reducing the level of exposure of individuals and populations to these risk factors while strengthening the capacity of individuals and populations to make healthier choices and follow lifestyle patterns that foster good health.

While the Political Declaration recognizes that governments have the primary role and responsibility in responding to the challenges of NCDs, it also reaffirms the leadership and coordination role of the World Health Organization in promoting and monitoring global action against NCDs.

With particular regard to reducing the harmful use of alcohol, the Political Declaration underlines the importance for Member States to continue implementation of the Global strategy to reduce the harmful use of alcohol (WHO, 2010a), while recognizing the need to develop appropriate domestic action plans, in consultation with relevant stakeholders, for developing specific policies and programmes, including taking into account the full range of options as identified in the Global strategy, as well as raising awareness of the problems caused by the harmful use of alcohol, particularly among young people, and calls upon the World Health Organization to intensify efforts to assist Member States in this regard.

The Sixty-sixth WHA followed up on the Political Declaration by endorsing the WHO Global Action Plan for the prevention and control of NCDs 2013–2020 (WHO, 2013a). This action plan reinforces the implementation of the Global strategy to reduce the harmful use of alcohol. Monitoring progress in implementing the action plan will follow the global monitoring framework, including 25 indicators and a set of nine voluntary global targets. One of these targets is at least a 10% relative reduction in the harmful use of alcohol, as appropriate, within each national context (see Box 10).

**Box 10. Global monitoring framework for the prevention and control of noncommunicable diseases (NCDs) (WHO, 2013a)**

The Political Declaration of the High-level Meeting of the United Nations General Assembly on the Prevention and Control of Non-Communicable Diseases (NCDs) mandated the development of a global monitoring framework for the prevention and control of NCDs. The developed framework includes one alcohol-related voluntary global target and three alcohol-related indicators of which one (alcohol-related morbidity and mortality) implies a group of indicators.

One alcohol-related voluntary global target: At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context.

Three alcohol-related indicators: The relative reduction in the harmful use of alcohol could be expressed in reductions in three alcohol-related indicators, which are:

1. total (recorded and unrecorded) alcohol per capita (aged 15+ years) consumption within a calendar year in litres of pure alcohol, as appropriate, within the national context
2. age-standardized prevalence of heavy episodic drinking among adolescents and adults, as appropriate, within the national context
3. alcohol-related morbidity and mortality among adolescents and adults, as appropriate, within the national context.

The indicators of the global monitoring framework and the voluntary global targets provide overall direction for reporting on the progress achieved in prevention and control of NCDs. For achieving the voluntary target on alcohol, the Global Action Plan for the prevention and control of NCDs proposes that Member States reduce the harmful use of alcohol through the development and implementation, as appropriate, of comprehensive and multisectoral national policies and programmes as outlined in the Global strategy to reduce the harmful use of alcohol.

The global leadership, commitment and awareness associated with the WHO Global Action Plan for the prevention and control of NCDs 2013–2020 have also increased the level of global commitment to reducing the harmful use of alcohol. However, it is crucial to note that the consequences of harmful use of alcohol extend far beyond NCDs (see section 1.6).

The Mental Health Action Plan 2013–2020 was endorsed by the WHA in 2013 (WHA 66/8), with the goal to promote mental well-being, prevent mental disorders, provide care, enhance recovery, promote human rights and reduce the mortality, morbidity and disability affecting people with mental disorders. Implementation of the action plan will support and strengthen activities at all levels on the prevention and management of alcohol use disorders and associated mental health conditions (WHO, 2013c).

### 1.7.3 REGIONAL ACTION

Endorsement of the Global strategy to reduce the harmful use of alcohol prompted the development of strategies, action plans and programme activities in WHO's regions focusing on the 10 recommended target areas and the strategy's five objectives. A regional plan of action for the reduction of alcohol-related harm in the WHO Western Pacific Region 2009–2014 (WHO, 2009b) predated adoption of the Global strategy to reduce the harmful use of alcohol. A regional strategy on reduction of the harmful use of alcohol was endorsed by the Regional Committee for Africa in 2010 (Resolution AFR/RC60/R2). The European action plan to reduce the harmful use of alcohol 2012–2020 (Document EUR/RC61/13), aligned with the Global strategy, was agreed upon by the Regional Committee for Europe in 2011 (Resolution EUR/RC61/R4). In the Region of the Americas, the plan of action (Document CD51/8, Rev.1) for implementation of the Global strategy was approved by the Pan American Health Organization's Directing Council (Resolution CD51.R14).

International networking at the regional level has also been enhanced by the continued functioning of the network of national counterparts in the WHO European Region, and by establishing the Pan American Network on Alcohol and Public Health in the WHO Region of the Americas and the networking of national counterparts in the WHO African Region and WHO Western Pacific Region.

### 1.7.4 NATIONAL POLICIES

There are some cross-border issues related to reducing the harmful use of alcohol, such as marketing, which cannot be resolved solely at the national level. Hence, regional and global action can support and complement national and local public health policies. However, harmful use of alcohol can only be reduced if effective actions are taken by Member States to protect their own populations. In other words, Member States have a primary responsibility for formulating, implementing, monitoring and evaluating public policies to reduce the harmful use of alcohol. A national alcohol policy will be made up of a set of individual policies, strategies and implementing actions. All countries will benefit from having a national strategy and appropriate legal frameworks to reduce harmful use of alcohol, regardless of the level of resources in the country. Depending on the characteristics of policy options and on national circumstances, some policy options can be implemented through non-legal frameworks, such as guidelines or voluntary restraints.

Successful implementation of national action requires sustained political commitment, effective coordination, sustainable funding and appropriate engagement of subnational governments as well as of civil society and economic operators. Many relevant decision-making authorities should be involved in the formulation and implementation of alcohol policies, such as the ministry of health and other relevant ministries, transportation authorities or taxation agencies. Governments need to establish, as appropriate, effective and permanent coordination structures comprising senior representatives of many ministries and other partners, to ensure a coherent approach to alcohol policies and a proper balance between policy goals in relation to harmful use of alcohol and other public policy goals. At the same time all the necessary measures should be taken to protect the formulation of health policies from distortion by commercial or vested interests, and, in the view of WHO, the alcohol industry has no role in the formulation of alcohol policies (Chan, 2013). Following endorsement of the Global strategy to reduce the harmful use of alcohol in 2010, an increasing number of countries have adopted a national alcohol policy or are in the process of developing or reformulating national policies for reducing the harmful use of alcohol (see chapter 4 for details). In addition to progress in the

development of written national alcohol policies, chapter 4 also describes a progress in adoption of countermeasures related to drink–driving, availability of alcohol and labelling of alcoholic beverages made since 2008. Several countries are in the process of considering an increase in the legal age for purchase of alcohol, introduction of a minimum price for a standard unit of alcohol and banning advertisement and promotion of alcoholic beverages. However, it is still true that a large proportion of countries, representing a high percentage of the global population, have weak alcohol policies and prevention programmes that do not effectively protect the health and safety of the population.

## 1.8 MONITORING

Effective monitoring is crucial in setting objectives for national plans to reduce harmful use of alcohol, evaluating success and making changes where needed. Hence, demand for global information on alcohol consumption (levels, patterns and context), alcohol-attributable harm (to drinkers, others and society at large) as well as related policy responses (existence, scale and timing) has increased. This is reflected in the fact that the Global strategy to reduce the harmful use of alcohol lists monitoring and surveillance as one of the 10 areas for national action, and identifies production and dissemination of knowledge as one of the key components for global action (WHO 2010a). Moreover, inclusion of an alcohol target and indicators in the global monitoring framework for NCDs and their risk factors will further increase demand for high-quality global data on alcohol consumption and alcohol-related harm and attention to the WHO monitoring activities in this area.

In response to this increasing demand for global information, WHO is continuously developing its Global Information System on Alcohol and Health (GISAH, see Box 11; Poznyak et al., 2013) and has integrated it with the WHO Global Health Observatory and four regional information systems for the Region of the Americas, and the European, South-East Asia, and Western Pacific regions (<http://www.who.int/gho/alcohol/en/index.html>). The GISAH functions as one single data repository, with common data collection and data quality control procedures to prevent discrepancies between the global and regional information systems on alcohol and health.

GISAH and the Global Alcohol Database that preceded the development of GISAH have served as the basis for all WHO publications on alcohol since 1999, including the first Global status report on alcohol (WHO, 1999), the Global status report: alcohol and young people (WHO, 2001), the Global status report on alcohol (WHO, 2004b), the Global status report: alcohol policy (WHO, 2004c), as well as the last Global status report on alcohol and health (WHO, 2011a). GISAH data from 2010 will also be used as the baseline for reporting progress on alcohol-related indicators listed in the Global monitoring framework for NCDs (see Box 10).

The ultimate goal of the WHO global monitoring system on alcohol and health is strengthening the link between monitoring activities and policy development and evaluation. The WHO global surveys on alcohol and health, GISAH with integrated regional information systems, and regular global and regional status reports on alcohol and health comprise the central mechanism in WHO for monitoring implementation of the Global strategy to reduce the harmful use of alcohol at global, regional and country levels.

### **Box 11. The Global Information System on Alcohol and Health**

**The Global Information System on Alcohol and Health (GISAH)** is a comprehensive Internet-based platform to provide information on alcohol and health (<http://www.who.int/gho/alcohol>). Currently, GISAH encompasses more than 180 alcohol-related indicators for 194 WHO Member States and two Associate Members. Over time, indicators will be updated and improved and new ones added in order to assess the full range of issues related to alcohol and health. Data are arranged under a broad set of seven categories that contain a number of indicators chosen to assess the alcohol situation in WHO Member States as they relate to public health. These seven categories are:

- levels of alcohol consumption
- patterns of consumption
- harms and consequences
- economic aspects
- alcohol control policies
- prevention, research and treatment
- youth and alcohol.

The information system is the source for most of the data presented in this report.

**The Global Survey on Alcohol and Health** is an important data collection tool for GISAH. The latest survey was conducted by WHO in 2012 and the questionnaire developed for the survey was sent to all WHO Member States through WHO's six regional offices at the beginning of 2012. The 44 questions in the questionnaire were divided into three sections: section A addressed alcohol policy; section B addressed alcohol consumption; and section C addressed national monitoring and surveillance systems for alcohol and health. By early 2013, 177 WHO Member States had responded to the survey. This represents a response rate of 91.2% and overall global coverage of 97.2% of the world's population (see Appendix IV for details).

**Other data sources for GISAH** (see Appendix IV for details; Poznyak et al., 2013) include: government documents and national statistics; data from the Global burden of disease project; data from national and international surveys that include questions on alcohol consumption and related harm such as the WHO STEPS survey instrument (<http://www.who.int/chp/steps/instrument/en/index.html>); data in the public domain from economic operators in alcohol production and trade, including industry-supported organizations; published scientific articles; data from the Food and Agriculture Organization of the United Nations (FAO) and other United Nations agencies; data from intergovernmental organizations such as Organization Internationale de la Vigne et du Vin. The Centre for Addiction and Mental Health (CAMH) in Canada conducts passive surveillance of the relevant publications as well as of the grey literature. The WHO Secretariat convenes regular meetings with key providers of data on alcohol consumption to discuss and triangulate available data with the aim of achieving better estimates when national data are either unavailable or incomplete.





global status  
report on alcohol  
and health

2. Alcohol  
consumption

## 2. ALCOHOL CONSUMPTION

**A**lcohol is consumed almost worldwide, but there are parts of the world where the majority of people, especially women are abstainers. This chapter reports on levels and patterns of alcohol consumption, including abstention rates in WHO regions and the world (see Appendix IV for a full list of WHO Member States included in this report by WHO region).

### 2.1 LEVELS OF CONSUMPTION

Levels of alcohol consumption can be measured using several indicators. Two of the most commonly used indicators are alcohol per capita consumption in liters of pure alcohol per year and alcohol consumption in grams of pure alcohol per person per day, and the latter indicator can be converted from the previous one (see Box 12).

#### **Box 12. Alcohol per capita consumption (APC)**

**Alcohol per capita consumption (APC)** is defined as the per capita amount of alcohol consumed in litres of pure alcohol in a given population.

**Adult per capita consumption (15+ years)** usually refers to per capita alcohol consumption in the population of those aged 15 years and older, but in this report the term “adult per capita consumption” is avoided as the population 15–19 years old is presented in this report as population of adolescents, also for consistency with the context of alcohol-related indicators included in the Global monitoring framework for the prevention and control of NCDs (see Box 10 in Chapter 1). In the international context limiting per capita alcohol consumption to the population 15+ years balances the fact that population distributions in developing countries are quite different from those in developed countries (i.e. developing countries have a much larger proportion of children and young people). Using per capita consumption for the whole population would mean that consumption among adults would be underestimated in those countries with many young people.

**Total per capita (15+ years) consumption** is defined as total (recorded plus estimated unrecorded) alcohol per capita (aged 15 years and older) consumption within a calendar year in litres of pure alcohol. In this report total APC in 2010 consists of the sum of average APC (15+) of recorded alcohol in 2008–2010 and an estimate of unrecorded per capita (15+) alcohol consumption (see Box 13) in 2010. Notably, the recorded APC data were adjusted for 29 countries where the number of tourists was at least equal to the number of inhabitants (see Appendix IV for methodology). There are different data sources and approaches for calculating APC and assessing distribution by alcoholic beverage, as discussed in Appendix IV. This report mostly uses official data sources such as tax or sales data, rather than data calculated from surveys, which is often imprecise and underreported. Aggregate data are weighted by population size in each country.

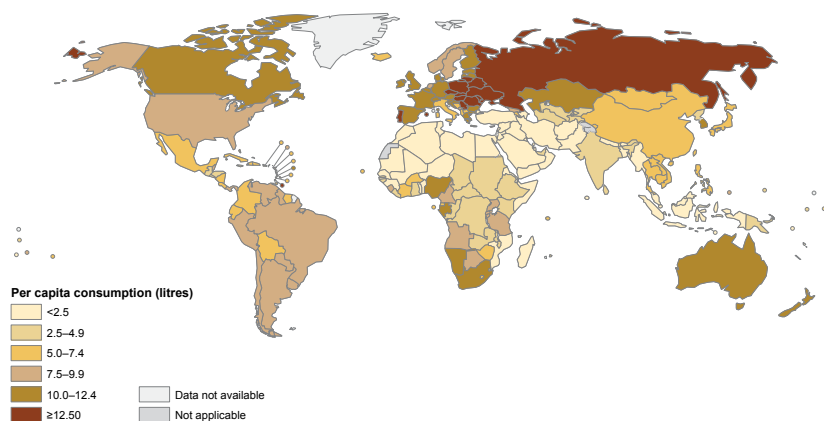
**Grams of pure alcohol per day** is another often used measure of alcohol consumption. In particular, this measure is used by a number of countries that have set guidelines for daily limits on alcohol consumption to minimize risks to health. Given the specific weight of alcohol of 0.793 g/cm<sup>3</sup> (at 20 °C), per capita consumption in litres of pure ethanol per year can be converted into grams per day as follows:

$$\text{g/day} = \text{APC} \times 1000 \times 0.793/365 \text{ days}$$

### 2.1.1 TOTAL PER CAPITA CONSUMPTION

As shown by the most recent WHO data, globally, individuals above 15 years of age drink on average 6.2 litres of pure alcohol per year (see Figure 2 for further details), which translates into 13.5 grams of pure alcohol per day. However, there is wide variation in total alcohol consumption across WHO regions and Member States (see Figure 2). The highest consumption levels continue to be found in the developed world, in particular in the WHO European Region (EUR) and the WHO Region of the Americas (AMR). Intermediate levels of consumption are found in the WHO Western Pacific Region (WPR) and the WHO African Region (AFR), while the lowest consumption levels are found in the WHO South-East Asia Region (SEAR) and particularly in the WHO Eastern Mediterranean Region (EMR; see Figure 3 for data).

**Figure 2.** Total alcohol per capita consumption (15+ years; in litres of pure alcohol), 2010



Differences in the levels of total consumption between regions of the world and between countries are the result of complex interactions between a wide range of factors. These include sociodemographic factors (see Chapter 1), prevalence rates of abstinence (see section 2.2.1), level of economic development (see section 2.2.4.4), culture, such as predominance of Islam religion, and the preferred beverage types (see section 2.1.3). For example, only 5.4% of the population in the Eastern Mediterranean Region had consumed alcohol in the past 12 months, contributing to the fact that the Eastern Mediterranean Region's share of the total alcohol consumption in the world is significantly less than the population size might suggest. Conversely, the WHO European Region is home to 14.7% of the world's population aged 15+ years, but consumes more than a quarter (25.7%) of the total alcohol consumed worldwide.

### 2.1.2 UNRECORDED ALCOHOL CONSUMPTION

Total APC as discussed above comprises two components, namely consumption of recorded and of unrecorded alcohol. Recorded alcohol is alcohol consumed as a beverage that is recorded in official statistics, such as data on alcohol taxation or sales (see Appendix IV for details by country). Unrecorded alcohol is alcohol consumed as a beverage but that is not accounted for in official statistics on alcohol taxation or sales (see Box 13).

#### **Box 13. Unrecorded alcohol**

**Unrecorded alcohol** refers to alcohol that is not taxed in the country where it is consumed because it is usually produced, distributed and sold outside the formal channels under government control. Unrecorded alcohol consumption in a country includes consumption of home-made or informally produced alcohol (legal or illegal), smuggled alcohol, alcohol intended for industrial or medical uses, and alcohol obtained through cross-border shopping (which is recorded in a different jurisdiction). Sometimes these alcoholic beverages are traditional drinks that are produced and consumed in the community or in homes. Home-made or informally produced alcoholic beverages are mostly fermented products made from sorghum, millet, maize, rice, wheat or fruits.

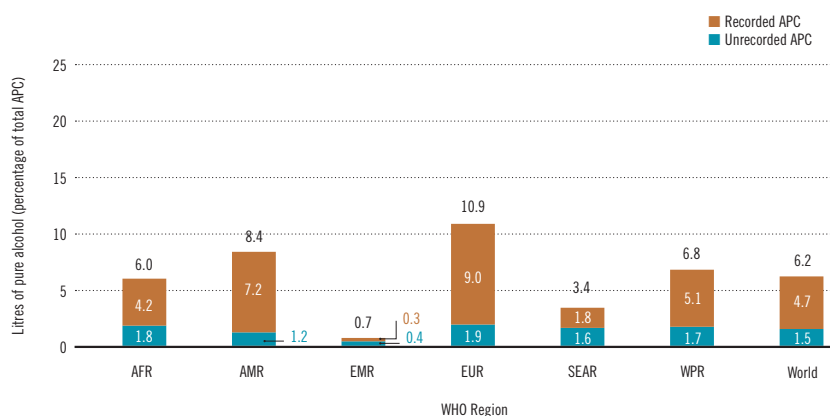
Unrecorded consumption also includes so-called surrogate alcohol, commonly ethanol that was not produced as beverage alcohol but is used as such, e.g. mouthwash, denatured alcohol, medicinal tinctures, aftershaves and perfumes.

There are different sources of relevant data and various approaches to estimating unrecorded alcohol consumption, as discussed in Appendix IV.

Worldwide almost a quarter (24.8%) of all alcohol consumed is consumed in the form of unrecorded alcohol (see Figure 3). In some countries, particularly within the WHO South-East Asia Region and the Eastern Mediterranean Region, unrecorded alcohol consumption makes up more than 50% of total alcohol consumption. For example, in some countries where alcohol is banned, as in some Islamic states in the Eastern Mediterranean Region, unrecorded alcohol amounts to 100% or almost 100% of total APC. Also, in lower middle and low-income countries in the WHO South-East Asia Region, particularly India, home-made spirits constitute a high proportion of total alcohol consumed (see section 2.2.4.4 for further data by income group).

The distribution of unrecorded alcohol consumption across WHO regions is approximately proportional to the distribution of the worldwide population across the regions. For example, in the WHO South-East Asia Region, which has 25.0% of the world's population, 26.4% of the worldwide unrecorded alcohol is consumed. In contrast, the WHO Eastern Mediterranean Region only consumes 1.9% of all worldwide unrecorded alcohol despite being home to 7.6% of the world's adult population, because overall consumption of alcohol in the Eastern Mediterranean Region is very low (see Appendix I for data on unrecorded alcohol consumption by WHO Member State).

**Figure 3.** Total, unrecorded and recorded alcohol per capita (15+ years) consumption in litres of pure alcohol by WHO region and the world, 2010

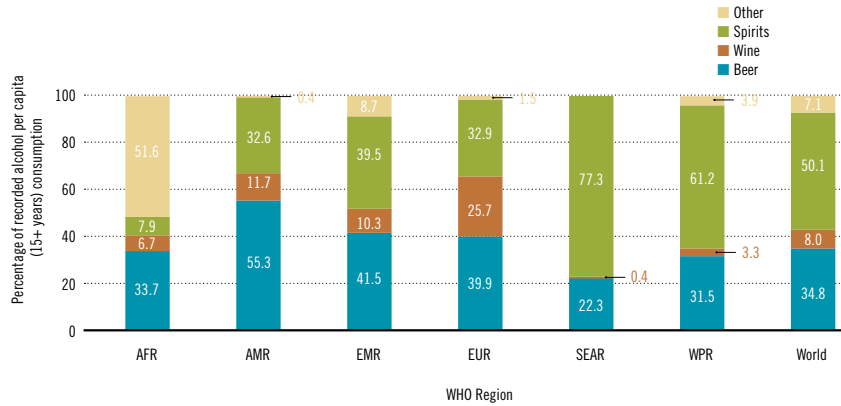


### 2.1.3 MOST CONSUMED ALCOHOLIC BEVERAGES

Geographical differences exist regarding the type of alcohol people consume – beer, wine, spirits or other alcoholic beverages (e.g. fortified wines, rice wine or other fermented beverages made of sorghum, millet or maize), as shown in the country profiles section of this report.

Globally, 50.1% of total recorded alcohol is consumed in the form of spirits, which are also the most consumed beverage type in the WHO South-East Asia and Western Pacific regions (see Figure 4). The second most consumed beverage type is beer, which accounts for 34.8% of all recorded alcohol consumed in the world. It is the most consumed type of beverage in the WHO Region of the Americas (55.3%). Only 8.0% of total recorded alcohol is consumed in the form of wine. However, consumption of wine represents one fourth of total consumption in the WHO European Region (25.7%) and one ninth of total consumption the WHO Region of the Americas (11.7%) notably due to the high share of wine consumption in Argentina and Chile. "Other" beverages only represent 7.1% of all consumption, but constitute the most popular beverage type in the African Region (51.6% of total recorded consumption).

**Figure 4.** Proportion (%) of recorded alcohol per capita (15+ years) consumption consumed in the form of beer, wine, spirits and other types of beverages by WHO region and the world, 2010



## 2.2 PATTERNS OF DRINKING

### 2.2.1 ABSTENTION RATES

A majority of the world's adult population had abstained from drinking alcohol in the past 12 months. These individuals may be lifetime abstainers or former drinkers (see Box 14).

#### Box 14. Types of abstainers

**Lifetime abstainers:** people who have never consumed alcohol.

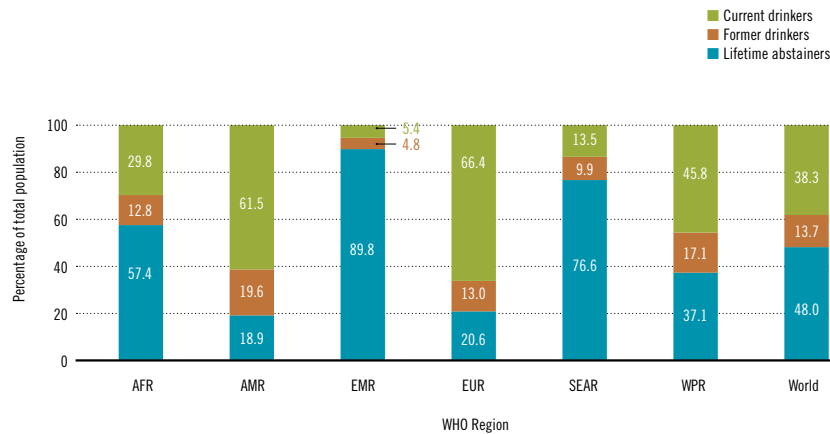
**Former drinkers:** people who have previously consumed alcohol but who have not done so in the previous 12-month period.

**Past 12-month abstainers:** people who did not drink any alcohol in the previous 12-month period. This includes former drinkers and lifetime abstainers.

In this report, rates of abstinence refer to the percentage of people in a given population aged 15 years or older who are either lifetime abstainers, former drinkers or past 12-month abstainers (as specified separately in each case). Best estimates for abstinence rates in 2010 are presented for 190 WHO Member States (and Associate Member States) based on the methodology discussed in Appendix IV.

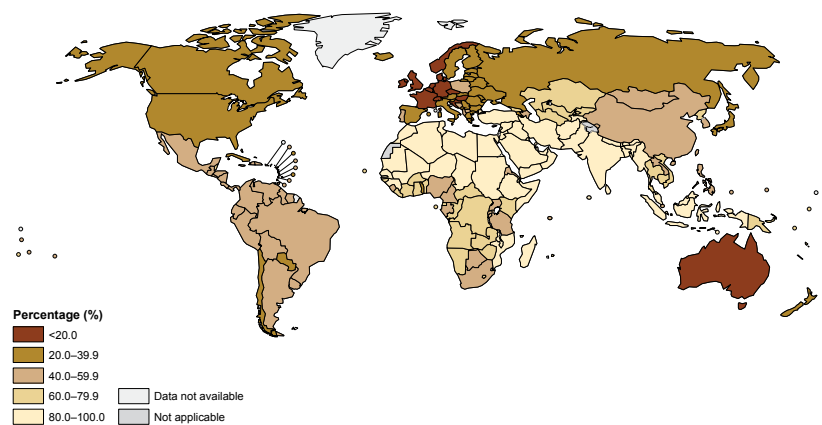
Worldwide, 61.7% of the population (15+) had not drunk alcohol in the past 12 months, and 13.7% had ceased alcohol consumption (i.e. they have consumed alcohol earlier in life but not in the past 12 months). Almost half of the global adult population (48.0%) has never consumed alcohol (see Figure 5).

**Figure 5.** Proportion (%) of current drinkers, former drinkers and lifetime abstainers among the total population (15+ years) by WHO region and the world, 2010



There is considerable variation in prevalence of abstinence across WHO regions (see Figure 5) and WHO Member States (see Figure 6). Comparing Figure 6 to Figure 2 (showing total APC) suggests that abstinence rates are high in countries with low APC, because fewer drinkers add to the APC of that country or region.

**Figure 6.** Prevalence of past 12-month abstinence (%; 15+ years), 2010



Worldwide, 22.2% of all past 12-month abstainers have consumed alcohol in an earlier period of their lives. Another trend suggested by Figure 5 is that the higher the proportion of past 12-month abstainers (lifetime abstainers plus former drinkers), the lower the proportion of former drinkers among abstainers. For example, 94.6% of the population in the WHO Eastern Mediterranean Region are abstainers (i.e. past 12-month abstainers), but only 4.8% of abstainers in this region are former drinkers. In contrast, only 33.6% of the population in the WHO European Region are past 12-month abstainers, but 38.7% of all abstainers were former drinkers.

### 2.2.2 HEAVY EPISODIC DRINKING

Heavy episodic drinking (HED) is an indicator of the pattern of alcohol consumption (defined as 60 or more grams of pure alcohol on at least one single occasion at least monthly, see Box 1 in Chapter 1), which varies widely between countries (see Figure 7).

**Figure 7.** Prevalence of heavy episodic drinking among current drinkers (%; 15+ years), 2010

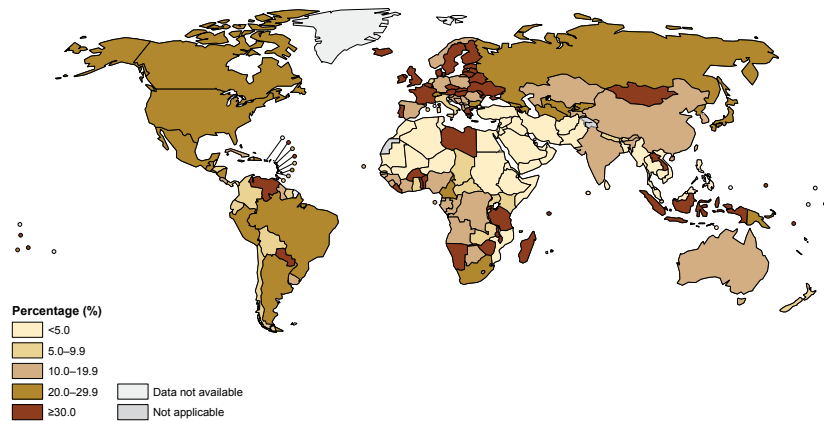


Table 1 shows, on the regional level, that higher APC is associated with higher prevalence of HED among drinkers and among the total population aged 15 years or older. For example, the WHO South-East Asia Region has an APC (15+ years) of 3.4 litres, while the prevalence of HED is 12.4% among drinkers (15+ years) and 1.6% in the total population aged 15 years or older. Compared to the WHO South-East Asia Region, the WHO Region of the Americas has higher APC (8.4 litres vs 3.4 litres), prevalence of HED among drinkers (22.0% vs 12.4%) and prevalence of HED in the total population aged 15 years or older (13.7% vs 1.6%).

While there is an association between total APC and prevalence of HED among the total population, there is no consistent association between total APC among drinkers and the prevalence of HED among drinkers. For example, in the WHO South-East Asia Region, drinkers consume on average 23.1 litres of pure alcohol per capita per year and the prevalence of HED among drinkers is 12.4%. In contrast in the WHO Region of the Americas, APC among drinkers (15+ years) is lower, 13.6 litres, yet the percentage of



HED among drinkers is higher, 22.0%. Also, it appears that both the WHO South-East Asia Region and the WHO African Region have a relatively low prevalence of HED (i.e. 12.4% and 16.4% respectively), but APC among drinkers aged 15 years or older reaches high levels (i.e. 23.1 litres and 19.5 litres).

**Table 1.** Total alcohol per capita consumption (in litres of pure alcohol) and prevalence of heavy episodic drinking (%) in total population aged 15 years or older (15+ years) and among drinkers (15+ years) by WHO region and the world, 2010

WHO region	Among all (15+ years)		Among drinkers only (15+ years)	
	Total APC	HED prevalence (percentage)	Total APC	HED prevalence (percentage)
AFR	6.0	5.7	19.5	16.4
AMR	8.4	13.7	13.6	22.0
EMR	0.7	0.1	11.3	1.6
EUR	10.9	16.5	16.8	22.9
SEAR	3.4	1.6	23.1	12.4
WPR	6.8	7.7	15.0	16.4
World	6.2	7.5	17.2	16.0

### 2.2.3 PATTERNS OF DRINKING SCORE

Measuring drinking patterns to account accurately for the impact of alcohol consumption on people's health and well-being is more complex than simply ascertaining the amount of alcohol consumed. In the 2000 Comparative Risk Assessment in the Global burden of disease study, a composite measure of drinking patterns – the patterns of drinking score (PDS) – was developed (Rehm et al., 2003b; see Box 15).

#### Box 15. Patterns of drinking score (PDS)

PDS reflect how people drink instead of how much they drink within a population. Strongly associated with the alcohol-attributable burden of disease in a country, PDS is measured on a scale from 1 (least risky pattern of drinking) to 5 (most risky pattern of drinking). The higher the score, the greater the alcohol-attributable burden of disease in population groups with the same level of consumption. Notably, different drinking patterns give rise to very different health outcomes in population groups with the same level of consumption.

PDS estimates are based on the following drinking attributes which are weighted differentially in order to provide the PDS on a scale from 1 to 5:

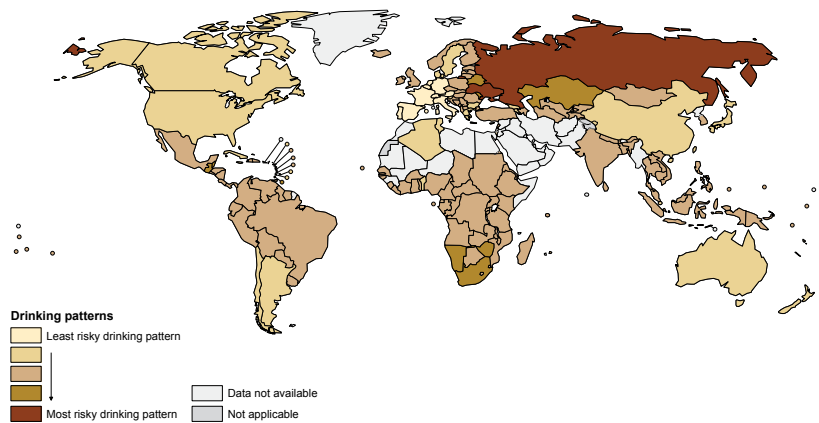
- the usual quantity of alcohol consumed per occasion;
- festive drinking;
- proportion of drinking events when drinkers get drunk;
- proportion of drinkers who drink daily or nearly daily;
- drinking with meals;
- drinking in public places.

Two of these attributes make the pattern of drinking less risky, namely, the proportions of drinkers who drink with meals or drink daily or nearly daily.

Data for 2010 on the above measures stem from surveys (see Appendix IV for details).

There are only a few countries in the world with the lowest PDS, or the least risky patterns of drinking (Figure 8). These countries are in southern and western Europe. The highest PDS, i.e., the most risky patterns of drinking, have been found in Russia and Ukraine. The widest diversity of patterns can be found in the WHO European Region, and half of all countries worldwide have a score of 3. Less risky drinking patterns (with a score lower than 3) are mainly found in the upper middle and high-income countries, whereas more than 95% of low-income and lower middle income countries have a score of 3.

**Figure 8.** Patterns of drinking score (15+ years), 2010



## 2.2.4 FACTORS IMPACTING ON ALCOHOL CONSUMPTION

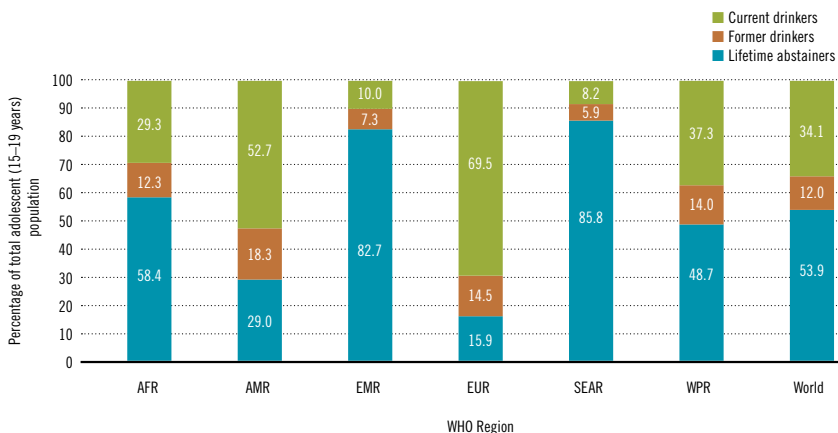
There are several major determinants that have an impact on levels and patterns of alcohol consumption. Some are individual risk factors and others are environmental factors, for example, availability of alcohol and the policy environment.

### 2.2.4.1 AGE

As discussed in Chapter 1, both young and old age can influence alcohol consumption. First we describe data collected on levels and patterns of alcohol consumption among adolescents (15 to 19-year-olds).

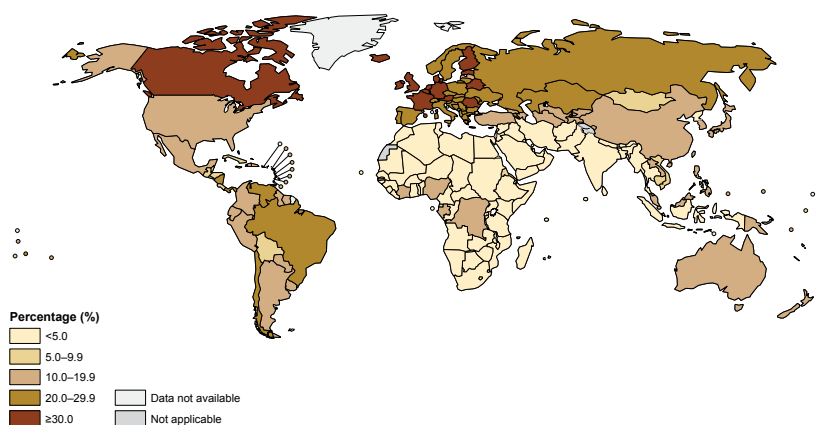
In general, regional differences in the proportions of abstainers and drinkers among 15 to 19-year-olds reflect those among the total population aged 15 years and older (compare Figure 5 and Figure 9). The WHO European Region and WHO Region of the Americas have the highest proportions of current drinkers among adolescents and the WHO South-East Asia Region and WHO Eastern Mediterranean Region the lowest.

**Figure 9.** Proportion (%) of current drinkers, former drinkers and lifetime abstainers among 15 to 19-year-olds by WHO region and the world, 2010

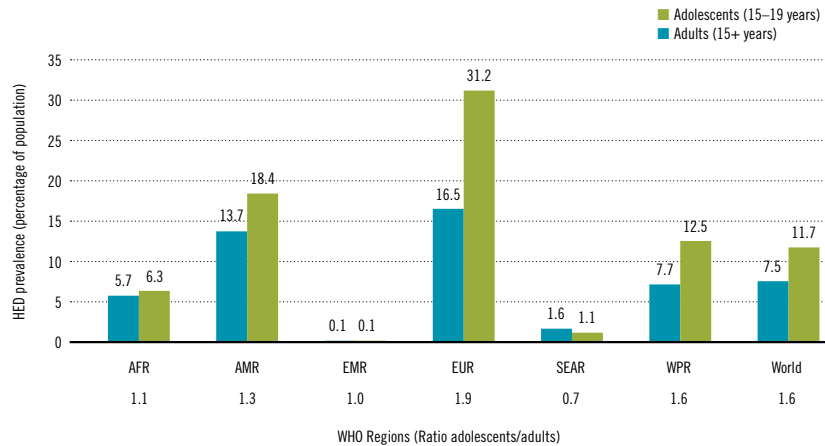


With regard to patterns of alcohol consumption, worldwide, monthly HED is slightly more prevalent among young people aged 15–19 years (11.7%) than among the total population aged 15 years or older (7.5%; see Figure 11). However, there are differences between WHO Member States (see Figure 10) and between WHO regions (see Figure 11). The highest rates of heavy drinking among adolescents are found in the WHO European Region, WHO Region of the Americas and WHO Western Pacific Region, and HED is more prevalent among adolescents than among the total population aged 15 years or older in all these WHO regions. In the WHO South-East Asia Region, HED is more prevalent in older age groups and in the WHO African Region, a similar proportion of HED is found among adolescents and among the total population aged 15 years or older. In the WHO Eastern Mediterranean Region, HED is generally too low to draw any firm conclusions.

**Figure 10.** Prevalence of heavy episodic drinking among 15–19-year-olds (%), 2010



**Figure 11.** Prevalence (%) of heavy episodic drinking (HED) among the total population aged 15 years and older and adolescents (15–19 years) and the corresponding adolescents-to-all ratios of HED prevalence by WHO region and the world, 2010



#### 2.2.4.2 SEX

In all WHO regions, females are more often lifetime abstainers than males. Also, when females drink alcohol, they drink less on average and engage less often in HED (see Table 2). Thus, there are also substantial sex differences in the proportion of current drinkers among all people aged 15 years or older (males/females ratio between 1.3 and 4.3), and total APC among drinkers aged 15 years or older (males/females ratio between 1.7 and 3.2), particularly in the WHO South-East Asia Region. Across WHO regions, sex differences are smaller in the WHO African Region, WHO Region of the Americas and WHO European Region than they are in the WHO Eastern Mediterranean Region, WHO South-East Asia Region and WHO Western Pacific Region. The biggest sex differences are found for prevalence of HED, with a ratio of 10.9 (i.e. almost 11 times more HED among males than among females) in the WHO South-East Asia Region and a ratio of 7.3 in the WHO Western Pacific Region. In interpreting these data, it may be important to note that the WHO Eastern Mediterranean Region consists mostly of Islamic states and, as the population in the WHO South-East Asia Region is composed largely of the population of India and that in the WHO Western Pacific Region largely of the population of China, the consumption and drinking patterns in those countries have a large impact on the situation in the regions.

Table 2 also shows that total alcohol per capita consumption in 2010 among male and female drinkers worldwide was on average 21.2 litres and 8.9 litres of pure alcohol, respectively. Depending on the WHO region, this translates into 30–57 grams of pure alcohol per day for males and 10–29 grams of pure alcohol per day for females.

**Table 2.** Proportion (%) of current drinkers among all (15+ years), total APC among drinkers (15+ years; in litres of pure alcohol), and prevalence (%) of heavy episodic drinking (HED) among drinkers (15+ years) by sex, as well as corresponding ratios, by WHO region and the world, 2010

WHO region	Proportion of current drinkers among all (15+ years) (%)			Total APC among drinkers (15+ years)			Prevalence of HED among drinkers (15+ years) (%)		
	Males	Females	Males/females	Males	Females	Males/females	Males	Females	Males/females
AFR	40.2	19.6	2.1	22.4	13.2	1.7	20.3	8.3	2.4
AMR	70.7	52.8	1.3	18.0	8.0	2.3	29.4	12.3	2.4
EMR	7.4	3.3	2.2	14.0	4.8	2.9	2.0	0.5	3.7
EUR	73.4	59.9	1.2	22.7	10.1	2.3	31.8	12.6	2.5
SEAR	21.7	5.0	4.3	26.3	8.2	3.2	15.4	1.4	10.9
WPR	58.9	32.2	1.8	19.0	7.1	2.7	23.1	3.2	7.3
World	47.7	28.9	1.6	21.2	8.9	2.1	21.5	5.7	3.8

### 2.2.4.3 AGE AND SEX

In line with sex differences among adults, there are more current drinkers and fewer lifetime abstainers among adolescent males than among adolescent females in all WHO regions. Moreover, there are about three times more young males (16.8%) than females (6.2%) who engage in HED.

In general, the prevalence of HED among adolescents aged 15–19 years mirrors the prevalence among all (15+ years), with the highest heavy drinking rates among young people of both sexes found in the WHO European Region, WHO Region of the Americas, and WHO Western Pacific Region (see Table 3).

**Table 3.** Prevalence (%) of heavy episodic drinking among the total population aged 15 years and older (15+ years) and adolescents (15–19 years) and the corresponding adolescents-to-adults ratios by sex, WHO region and the world, 2010

WHO region	Males			Females		
	All (15+) (%)	Adolescents (%)	Adolescents/all	All (15+) (%)	Adolescents (%)	Adolescents/all
AFR	9.3	10.3	1.1	2.1	2.2	1.0
AMR	20.9	29.3	1.4	6.9	7.1	1.0
EMR	0.1	0.1	0.8	0.0	0.0	2.4
EUR	24.9	40.0	1.6	8.9	22.0	2.5
SEAR	3.1	2.1	0.7	0.1	0.0	0.4
WPR	14.0	18.3	1.3	1.3	6.1	4.8
World	12.3	16.8	1.4	2.9	6.2	2.2

#### 2.2.4.4 ECONOMIC WEALTH

In general, the greater the economic wealth of a country, the more alcohol is consumed and the smaller the number of abstainers. As shown in Table 4, economic wealth is also associated with lower proportions of unrecorded APC of total APC and a higher prevalence of HED among drinkers. For example, in high-income countries only 8.5% of all alcohol consumed consists of unrecorded alcohol, whereas in low-income and lower middle income countries more than 40% of all alcohol consumed is unrecorded alcohol. One explanation for this association is that unrecorded alcohol is commonly cheaper than recorded alcohol.

**Table 4.** Total alcohol per capita consumption (APC) and unrecorded APC (in litres of pure alcohol) and the corresponding proportion (%) of unrecorded APC of total APC, as well as the prevalence (%) of current drinkers and of HED among current drinkers, all among the total population aged 15 years and older by income group and the world, 2010

Income group	Total APC	Unrecorded APC	Proportion of unrecorded APC of total APC (%)	Prevalence of current drinkers (%)	Prevalence of HED among drinkers (%)
Low income	3.1	1.4	44.3	18.3	11.6
Lower middle income	4.1	1.7	42.3	19.6	12.5
Upper middle income	7.3	1.8	24.2	45.0	17.2
High income	9.6	0.8	8.5	69.5	22.3
World	6.2	1.5	24.8	38.3	16.0

While the relationship between levels and patterns of alcohol consumption and economic wealth appears fairly straightforward at the global level (see Table 4), the associations described may not be equally true in all WHO regions (see Appendix I for further alcohol consumption-related data by WHO Member State as well as Appendix IV for a list of WHO Member States by World Bank income group).

#### 2.2.4.5 ECONOMIC WEALTH AND SEX

Another factor that can be considered in combination with economic wealth is sex (Table 5). Sex differences in alcohol consumption are generally smaller in low- and high-income countries compared to middle income countries.

**Table 5.** Total alcohol per capita consumption (APC; in litres of pure alcohol), as well as prevalence (%) of current drinkers and of heavy episodic drinking (HED) among the total population aged 15 years and older by sex, income group and the world, 2010

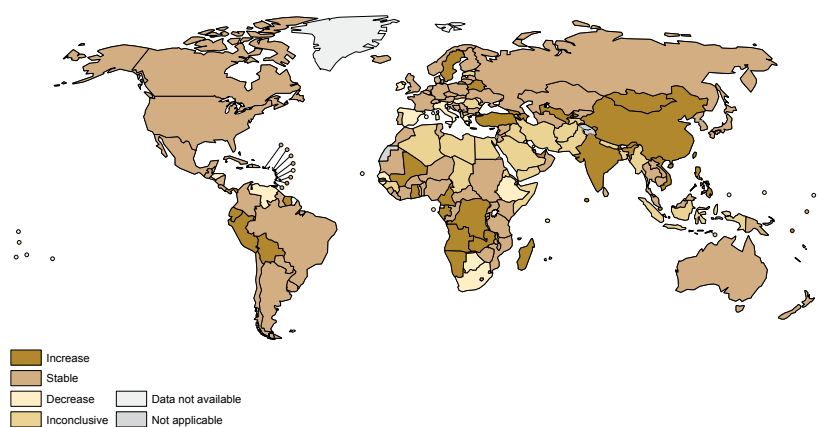
Income group	Proportion of current drinkers			Total APC among drinkers			Prevalence of HED among drinkers		
	Males (%)	Females (%)	Males/females	Males	Females	Males/females	Males (%)	Females (%)	Males/females
Low income	24.9	11.9	2.1	18.4	8.9	2.1	14.5	5.4	2.7
Lower middle income	28.0	11.0	2.5	24.0	8.0	3.0	15.8	2.6	6.2
Upper middle income	57.3	32.5	1.8	20.5	8.5	2.4	24.0	4.9	4.9
High income	75.6	63.6	1.2	18.9	8.4	2.3	30.2	13.4	2.3
World	47.7	28.9	1.6	21.2	8.4	2.5	21.5	5.7	3.8

## 2.3 TRENDS AND PROJECTIONS

### 2.3.1 FIVE-YEAR CHANGE IN ALCOHOL CONSUMPTION

The most prevalent tendency worldwide is an increase in recorded alcohol per capita consumption (see Figure 12). This trend is mainly driven by an increase in alcohol consumption in China and India, which could potentially be linked to active marketing by the alcohol industry and increased income in these countries. The five-year trend in the WHO African Region, WHO European Region and, particularly, the WHO Region of the Americas is mainly stable, although some countries in the WHO European Region and the WHO African Region report significant decreases in consumption.

**Figure 12.** Five-year change in recorded alcohol per capita (15+ years) consumption, 2006–2010



Since the last Global status report on alcohol and health (WHO, 2011a), there have been some changes in levels and patterns of alcohol consumption at the regional level (see Table 6), although any direct comparisons between 2005 and 2010 for such indicators as unrecorded APC and prevalence of current drinkers should be treated with caution in view of the differences in available data and methods used for producing the estimates for these indicators for 2005 and 2010. Globally, total per capita consumption (15+ years) has slightly increased, with regional increases in consumption being reported in the WHO South-East Asia Region and the WHO Western Pacific Region. In contrast, there has been a decrease in per capita consumption in the WHO African Region, the WHO Region of the Americas and particularly in the WHO European Region (from 12.2 litres in 2005 to 10.9 litres in 2010). It is important to note that there has also been a documented decrease in adolescents' consumption in several countries in the WHO European Region (Hibell et al., 2012). In line with the markedly lower estimates of total APC among aged 15 years and older (15+ years) and among adolescents in the WHO European Region, the estimates of prevalence of current drinkers in this region for 2010 are lower than for 2005 (see Table 6). These changes in the WHO European Region and in the Western Pacific Region are the main driver of a global decrease in the estimated prevalence of current drinkers, despite a slight increase in all other WHO regions. Finally, as presented in Table 6, unrecorded alcohol per capita consumption in the WHO Region of the Americas and the WHO European Region is estimated at substantially lower levels for 2010 than in 2005, and this difference largely determines the lower figures for unrecorded alcohol consumption in the world in 2010.

**Table 6.** Total alcohol per capita consumption (APC) and unrecorded APC (in litres of pure alcohol) and the proportion (%) of unrecorded APC of total APC, as well as the prevalence (%) of current drinkers, all among the total adult (15+ years) population by WHO region, 2005 and 2010

WHO regions	Total APC		Unrecorded APC		Proportion of unrecorded APC of total APC (%)		Prevalence of current drinkers (%)	
	2005	2010	2005	2010	2005	2010	2005	2010
AFR	6.2	6.0	1.9	1.8	31.4	29.3	29.2	29.8
AMR	8.7	8.4	2.0	1.2	23.1	14.4	58.3	61.5
EMR	0.7	0.7	0.4	0.4	56.2	54.5	3.5	5.4
EUR	12.2	10.9	2.7	1.9	21.9	17.1	68.8	66.4
SEAR	2.2	3.4	1.5	1.6	69	47.4	10.7	13.5
WPR	6.2	6.8	1.6	1.7	36.2	25.1	56.3	45.8
World	6.1	6.2	1.8	1.5	28.7	24.8	41.8	38.3

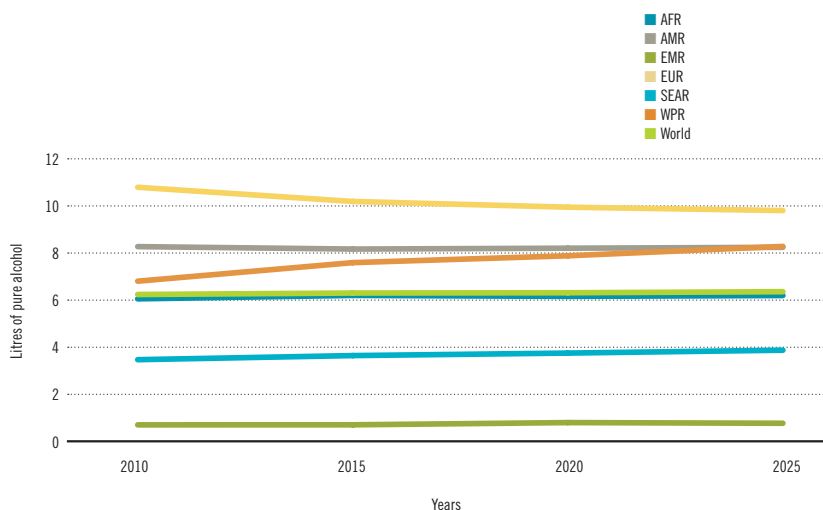
### 2.3.2 PROJECTIONS UP TO 2025

Up until 2025, alcohol per capita consumption (15+ years) is expected to continue to increase in half of the WHO regions (see Figure 13) unless effective policy responses reverse this trend. If this expected increase is not counterbalanced by substantial decreases in the other half of the WHO regions, alcohol per capita consumption globally is expected to increase. The highest increase is expected in the populations of the WHO Western Pacific Region, dominated by the population of China, with an increase in per capita consumption of 1.5 litres of pure alcohol by 2025. Recorded alcohol per capita



consumption is also expected to increase in the WHO Region of the Americas and the WHO South-East Asia Region. Alcohol consumption in the WHO Eastern Mediterranean Region and the WHO African Region is expected to remain stable. Despite the expected decrease of alcohol consumption in the WHO European Region (by 0.6 litres per capita), it will remain the region with the highest per capita consumption in the world.

**Figure 13.** Total alcohol per capita (15+ years) consumption by WHO region, 2010–2025



Note: Data for 2015, 2020 and 2025 are estimated: 95% confidence intervals will be made available by the Global Information System on Alcohol and Health (GISAH). See Appendix IV for details on the methodology.

It should be noted that the above predictions refer to APC (i.e. the volume of alcohol consumed by each individual aged 15 years or older on average). Thus, although APC is not expected to increase in the WHO African Region in the next 10 years, the high growth rate of the adolescent and adult population will increase the number of potential consumers. Consequently, the total amount of alcohol consumed in the WHO African Region might also substantially increase. The same applies to the WHO South-East Asia Region, which will be influenced by the high population growth rate in its populous countries.





global status  
report on alcohol  
and health

3. Health  
consequences

## 3. HEALTH CONSEQUENCES

Harmful use of alcohol is one of the world's leading risk factors for morbidity, disability and mortality. It is a component cause of more than 200 disease and injury conditions as described in the International Statistical Classification of Diseases and Related Health Problems (ICD) 10th Revision (WHO, 1992). Globally, alcohol consumption results in approximately 3.3 million deaths each year, and this number has already been adjusted to take into account the beneficial impact of low-risk patterns of alcohol consumption on some diseases. Of all deaths worldwide, 5.9% are attributable to alcohol consumption; this is greater than, for example, the proportion of deaths from HIV/AIDS (2.8%), violence (0.9%) or tuberculosis (1.7%). Also, 5.1% of the global burden of disease and injury is attributable to alcohol, as measured in disability-adjusted life years (DALYs).

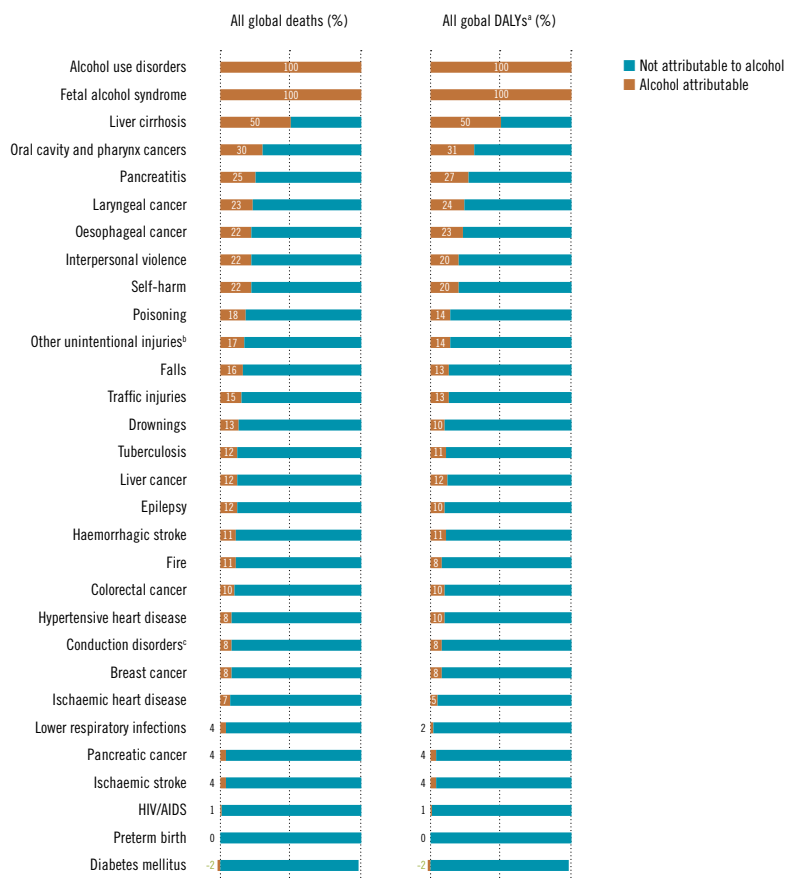
This chapter describes the impact of alcohol consumption on population health status, including the consequences on the health status of drinkers and some of the health consequences for individuals other than the drinker (notably, fetal alcohol syndrome and some alcohol-attributable injuries). The causal links between alcohol and death, disease and injury, as well as the impact of harmful use of alcohol on economic development and society at large are discussed in chapter 1.

### 3.1 AGGREGATE HEALTH EFFECTS

Figure 14 gives an overview of the proportion of all global deaths and burden of disease caused by alcohol consumption, i.e. alcohol-attributable fractions (AAFs, see Box 7 in chapter 1). In other words, this is the net impact of alcohol consumption on the health status of the world as a whole rather than the impact on individuals. As highlighted in chapter 1, associations with alcohol without a quantifiable causal link are not reported in this chapter.

As shown in Figure 14, alcohol impacts different disease and injury outcomes to various degrees. Besides alcohol use disorders (AUDs) and fetal alcohol syndrome (FAS), which are defined as being 100% attributable to alcohol, liver diseases (most prominently liver cirrhosis) have the highest AAF. As these diseases are relatively prevalent and are among the top 20 causes of death globally, alcohol-attributable liver disease is a major factor in global burden of disease (Rehm & Shield, 2013). Beyond AUDs, FAS and liver diseases, alcohol is related to many diseases and causes of death with relatively low AAFs. In other words, for most alcohol-attributable causes of death or burden of disease categories, less than 20% of the respective disease burden is attributable to alcohol. This has implications

**Figure 14.** Alcohol-attributable fractions (AAFs) for selected causes of death, disease and injury, 2012



<sup>a</sup> As measured in disability-adjusted life years.

<sup>b</sup> Includes smothering, asphyxiation, choking, animal or snakebites, hypothermia and hyperthermia,

<sup>c</sup> and other dysrhythmias.

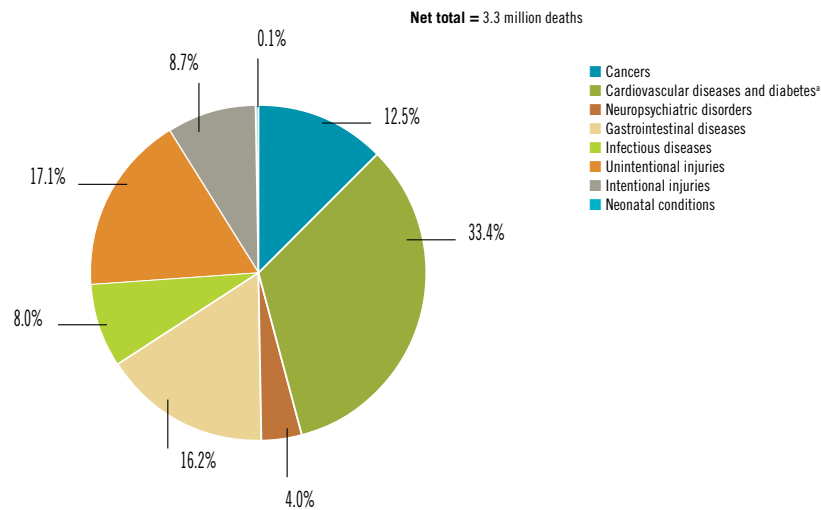
Note: For diabetes mellitus, the AAF was negative, meaning that, overall, alcohol consumption exerts a beneficial effect on this disease. Low-risk patterns of alcohol consumption also exert beneficial effects on some other diseases, e.g., ischaemic heart disease, but these effects are not strong enough for the overall AAF to be negative. For details on the methodology see Appendix IV.

for the public perception of alcohol as a risk factor. Most people are not aware of the health risks of alcohol consumption for diseases other than AUDs. This is especially true for the impact of alcohol on cancers: from 4% to about 25% of the disease burden due to specific cancers are attributable to alcohol worldwide. Alcohol consumption also contributes to about 10% of the disease burden due to tuberculosis, epilepsy, haemorrhagic stroke and hypertensive heart disease in the world.

### 3.1.1 ALCOHOL-ATTRIBUTABLE MORTALITY

In 2012, 5.9% of all global deaths were attributable to alcohol. Figure 15 shows the distribution of these 5.9% of global deaths by broad disease category. Notably, Figure 15 only shows alcohol-attributable deaths (5.9% of global deaths), not all global deaths (100%; as shown in Figure 14).

**Figure 15.** Distribution of alcohol-attributable deaths, as a percentage of all alcohol-attributable deaths by broad disease category, 2012

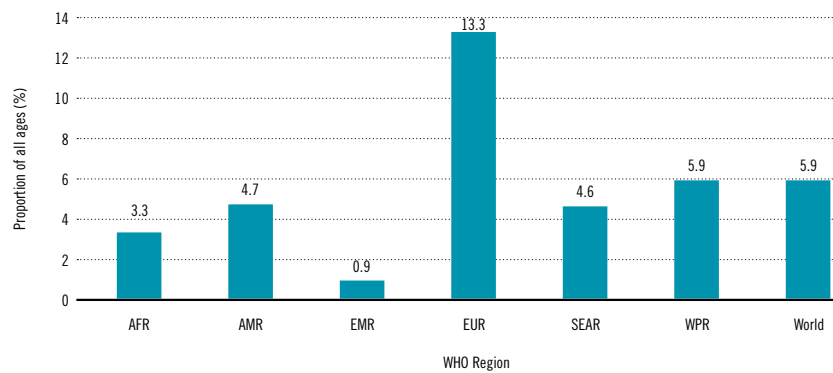


\* Including beneficial effects of low risk drinking patterns on some diseases.

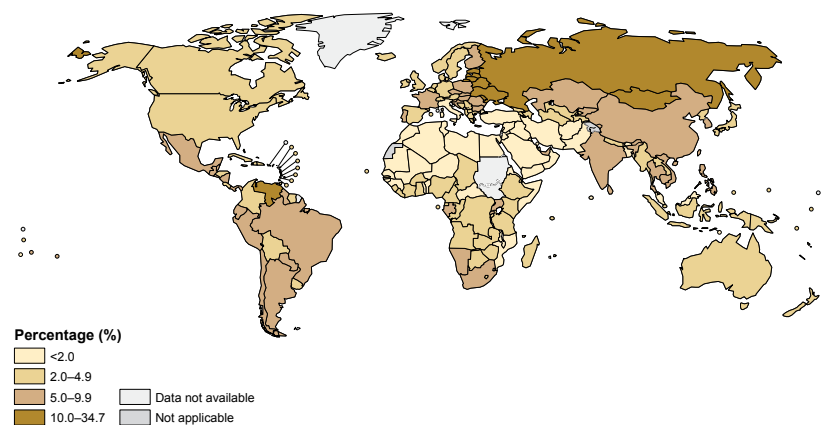
Overall, about 3.3 million deaths in 2012 are estimated to have been caused by alcohol consumption. This corresponds to 5.9% of all deaths, or one in every twenty deaths in the world (7.6% for men, 4.0% for women). No particular broad disease category stands out. The highest numbers of deaths are from cardiovascular diseases, followed by injuries (especially unintentional injuries), gastrointestinal diseases (mainly liver cirrhosis) and cancers. The key reasons for the change in the total number and distribution of alcohol-attributable deaths across broad disease categories since the Global status report on alcohol and health 2011 are the new evidence on the role of alcohol consumption in mortality in the Russian Federation (Zaridze et al., 2009, 2014) and the inclusion of infectious diseases in this assessment. This inclusion is based on an improved knowledge of the causal relationship between alcohol consumption and the incidence and clinical outcomes of infectious diseases such as tuberculosis and pneumonia (see chapter 1).

There is wide geographical variation in alcohol-attributable deaths. As shown in Figure 16 and Figure 17, the proportion of alcohol-attributable deaths relative to all deaths, i.e., AAFs, is highest in the WHO European Region. This is not surprising, as alcohol consumption is also the highest in this WHO region. However, it is important to note that the high AAF figures in the WHO European Region are almost entirely driven by Eastern European countries, which report both high-risk levels and patterns of alcohol consumption. The lowest AAFs are recorded in the African and Eastern Mediterranean Regions. Low AAFs in the African Region are probably due to high premature mortality in this region, while low AAFs in the Eastern Mediterranean Region are due to high rates of abstinence in this region (see chapter 2).

**Figure 16.** Alcohol-attributable fractions (AAFs) for all-cause deaths by WHO region and the world, 2012



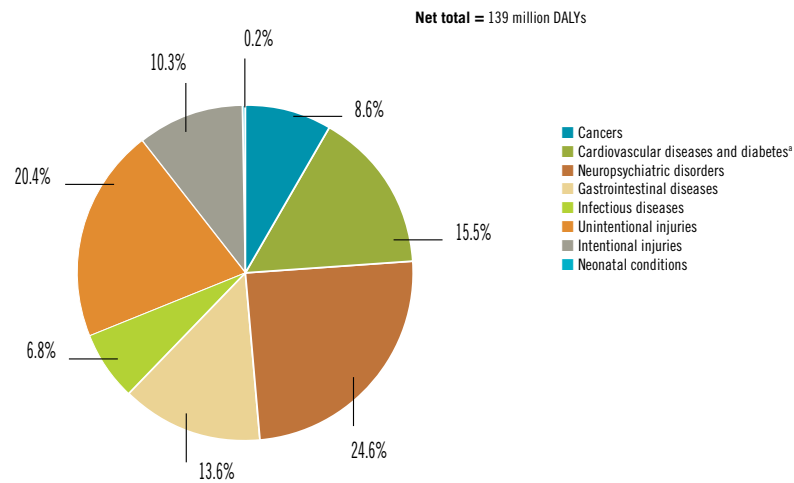
**Figure 17.** Alcohol-attributable fractions for all-cause deaths (AAFs; %; all ages), 2012



### 3.1.2 ALCOHOL-ATTRIBUTABLE BURDEN OF DISEASE AND INJURY

In 2012, 5.1% of the global burden of disease and injury, as measured in DALYs (see Box 7 in Chapter 1), was attributable to alcohol. Figure 18 shows the distribution of these DALYs across eight broad disease categories.

**Figure 18.** Distribution of alcohol-attributable burden of disease, as a percentage of all alcohol-attributable DALYs by broad disease category, 2012

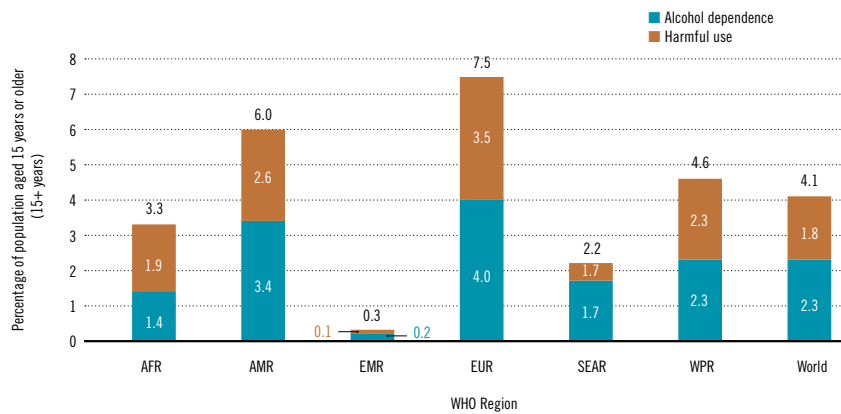


<sup>a</sup> Including beneficial effects of low-risk drinking patterns on some diseases.  
 Note: Percentages may not add up to 100% due to rounding.

The relative effect of alcohol consumption on disease burden from neuropsychiatric disorders was far more pronounced than was its effect on mortality (compare Figure 18 with Figure 15). About a quarter of all alcohol-attributable DALYs were due to neuropsychiatric disorders compared with 4% for all alcohol-attributable deaths. This is mainly due to AUDs (see Box 4 in Chapter 1), which cause more disability than mortality compared to other chronic diseases (Shield et al., 2013). Figure 19 provides further information on the prevalence of AUDs, as well as its component parts, alcohol dependence and harmful use of alcohol.



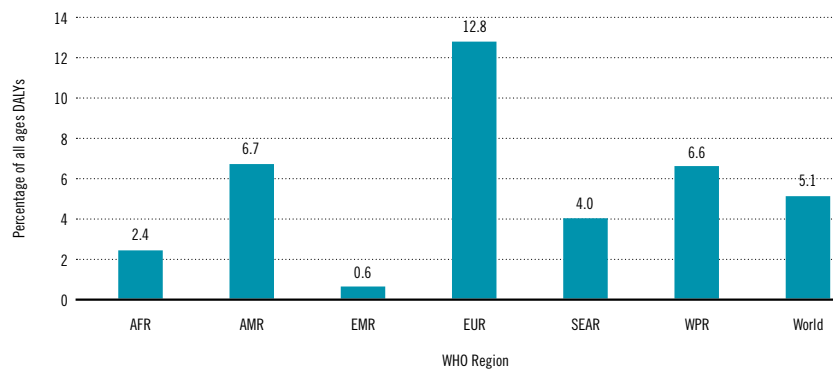
**Figure 19.** Prevalence of alcohol use disorders (AUDs<sup>a</sup>) by WHO region and the world, 2010



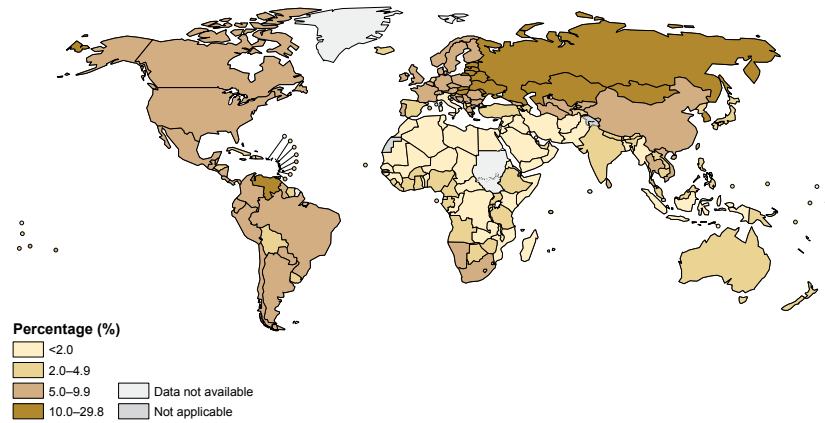
<sup>a</sup> The prevalence of AUDs is the sum of the prevalence of harmful use and alcohol dependence, in line with ICD-10 criteria (WHO, 1992).

As expected, there was substantial regional variability in the global alcohol-attributable burden of disease and injury similar to that observed for alcohol-attributable deaths (see Figure 20 and Figure 21). In the European Region and particularly in high-income countries within Europe, there is a much higher alcohol-attributable disease burden compared to alcohol-attributable deaths because of the disabling impact of AUDs.

**Figure 20.** Alcohol-attributable fractions (AAFs) for all-cause DALYs by WHO region and the world, 2012



**Figure 21.** Alcohol-attributable fractions (AAFs) for all-cause DALYs (AAFs; %; all ages), 2012

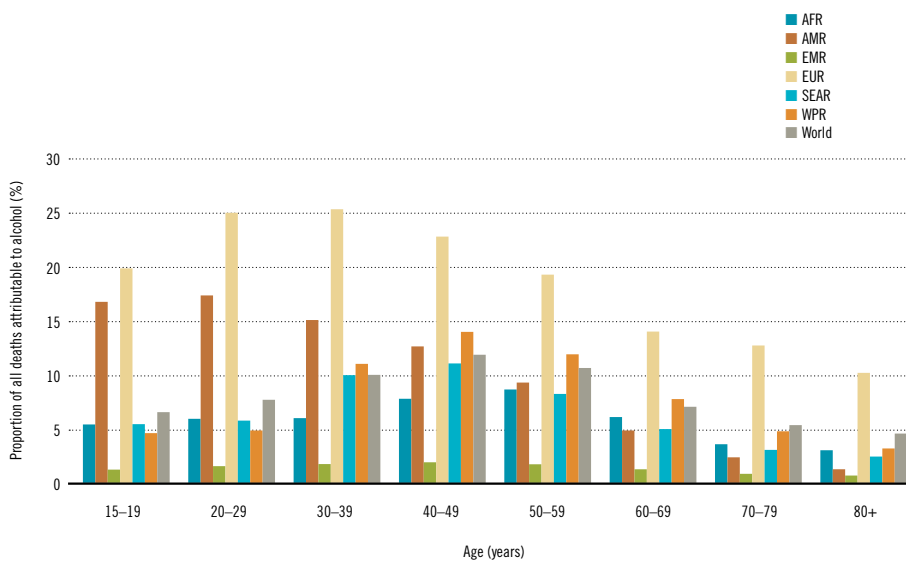


### 3.1.3 FACTORS IMPACTING ON HEALTH CONSEQUENCES

#### 3.1.3.1 AGE

Alcohol consumption causes deaths relatively early in life. Figure 22 gives an overview of the proportion of deaths attributable to alcohol over the life course. Among all age groups starting from 15 years old, AAFs are highest in the European Region, followed by the Region of the Americas. For the age periods of 60 years and above, the proportion of alcohol-attributable deaths is lower than for early and mid-adulthood. Worldwide, AAFs are highest within the population aged 40–49 years.

**Figure 22.** Proportion of alcohol-attributable deaths (%) of total deaths by age group, 2012



### 3.1.3.2 SEX

While 5.9% of all global deaths in 2012 were attributable to alcohol, the percentage of alcohol-attributable deaths among males was higher (7.6%) than that of deaths among females (4.0%). This difference between the sexes is an indicator of the difference in drinking patterns between males and females, both in volume of alcohol consumed and in number of heavy drinking occasions. Table 7 gives an overview of global deaths attributable to alcohol consumption by sex. While no particular broad disease category stands out, there are sex differences between alcohol-attributable causes of death. For females, cardiovascular disease categories are most important, while for males injuries are the most common cause of alcohol-attributable deaths.

**Table 7.** Global alcohol-attributable deaths, distribution of deaths and alcohol-attributable fractions by sex and broad disease category, 2012

Disease category	Alcohol-attributable deaths (AAFs; % of all global deaths)			Distribution of all alcohol-attributable deaths across disease categories (%)		
	Both sexes <sup>a</sup>	Males	Females	Both sexes <sup>a</sup>	Males	Females
Cancers	410 000 (5.0)	306 000 (6.6)	103 000 (2.9)	12.5	13.6	10.0
Cardiovascular diseases and diabetes	1 098 000 (5.8)	497 000 (5.3)	600 000 (6.2)	33.4	22.1	58.2
Neuropsychiatric disorders	131 000 (7.8)	104 000 (13.4)	26 000 (2.9)	4.0	4.6	2.6
Gastrointestinal diseases	533 000 (23.6)	375 000 (28.1)	158 000 (17.2)	16.2	16.6	15.3
Infectious diseases	262 000 (2.8)	191 000 (3.8)	71 000 (1.6)	8.0	8.5	6.9
Unintentional injuries	563 000 (15.2)	514 000 (21.5)	49 000 (3.7)	17.1	22.8	4.8
Intentional injuries	285 000 (20.0)	265 000 (25.8)	21 000 (5.2)	8.7	11.7	2.0
Neonatal conditions	3 500 (0.1)	1 900 (0.1)	1 500 (0.1)	0.1	0.1	0.1
Net alcohol-attributable deaths <sup>a</sup>	3 285 000 (5.9)	2 255 000 (7.6)	1 031 000 (4.0)	100	100	100

<sup>a</sup> May not be an exact sum of all the relevant deaths included in the table due to rounding.

There are also sex differences with respect to the global burden of disease and injury. While, overall, 5.1% of the global burden of disease and injury was attributable to alcohol (as measured in DALYs), it differed by sex: 7.4% for males and 2.3% for females (see Table 8).

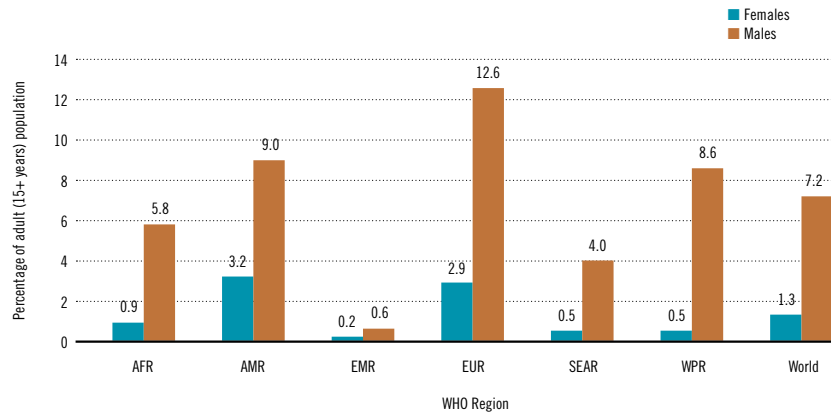
**Table 8.** Global alcohol-attributable burden of disease (in thousands of DALYs) by sex and broad disease category, 2012

Disease category	Alcohol-attributable DALYs (thousands) (AAFs; % of all global DALYs) <sup>a</sup>			Distribution of all alcohol-attributable DALYs across disease categories (%)		
	Both sexes <sup>a</sup>	Males	Females	Both sexes <sup>a</sup>	Males	Females
Cancers	12 000 (5.4)	9 000 (7.2)	3 000 (3.0)	8.6	8.2	10.2
Cardiovascular diseases and diabetes	22 000 (5.0)	12 000 (4.8)	10 000 (5.3)	15.5	10.6	33.6
Neuropsychiatric disorders	34 000 (12.2)	29 000(20.6)	6 000 (3.9)	24.6	26.1	18.8
Gastrointestinal diseases	19 000 (24.2)	14 000 (28.2)	5 000 (17.6)	13.6	12.5	17.6
Infectious diseases	9 000 (1.6)	7 000 (2.4)	2 000 (0.8)	6.8	6.7	7.2
Unintentional injuries	28 000 (12.5)	26 000 (17.2)	3 000 (3.4)	20.4	23.5	8.8
Intentional injuries	14 000 (18.3)	13 000 (23.6)	1000 (4.3)	10.3	12.2	3.2
Neonatal conditions	330 (0.1)	180 (0.1)	150 (0.1)	0.2	0.2	0.5
Net alcohol-attributable DALYs <sup>a</sup>	139 000 (5.1)	110 000 (7.4)	29 230 (2.3)	100	100	100

<sup>a</sup> May not be an exact sum of all the relevant DALYs included in the table due to rounding.

There is also regional variation in health consequences of alcohol consumption by sex, as exemplified by sex differences in the prevalence of AUDs (see Figure 23). AUDs are significantly more prevalent among males, with the highest prevalence (12.6%) in the WHO European Region. In contrast, the highest prevalence among females (3.2%) is seen in the WHO Region of the Americas.

**Figure 23.** Prevalence (%) of alcohol use disorders (AUDs<sup>a</sup>) by sex, WHO region and the world, 2010

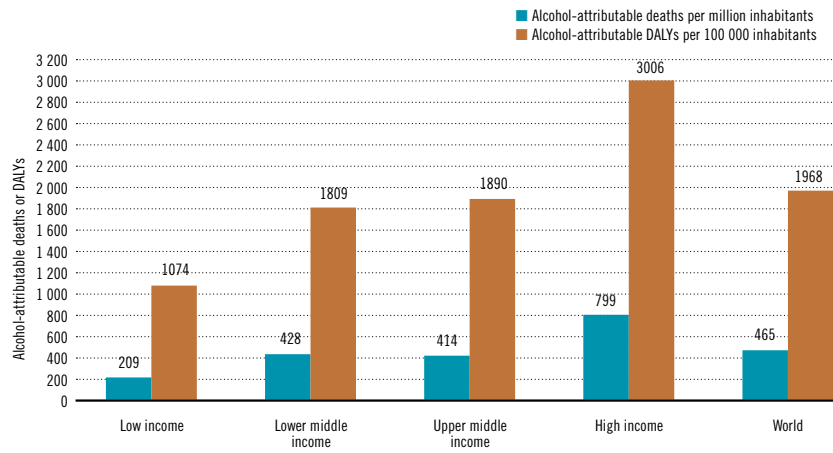


<sup>a</sup> The prevalence of AUDs is the sum of the prevalence of harmful use and alcohol dependence, in line with ICD-10 criteria (WHO, 1992)

### 3.1.3.3 ECONOMIC WEALTH

Modulating factors described in chapter 1 can impact not only on levels and patterns of alcohol consumption, but also alcohol-attributable deaths and DALYs. As shown in Figure 24, greater economic wealth is associated with higher alcohol-attributable burden of disease (as measured either as deaths or DALYs). In general, this mirrors the association between economic wealth and consumption levels discussed in chapter 2.

**Figure 24.** Alcohol-attributable deaths or DALYs by income group and the world, 2012



However, the relationship between economic development, alcohol consumption and alcohol-attributable burden of disease may be more complex than the above data suggest. As shown in Table 9, overall lower consumption in countries with lower economic wealth may in fact be associated with higher alcohol-attributable burden of disease per litre of pure alcohol consumed. This reflects the higher morbidity and mortality risks in countries with lower economic wealth, but is also partially due to more risky patterns of consumption that are usually observed in less wealthy countries.

The main exception to this trend is Eastern Europe, which has higher disease burden per litre consumed than might be expected from the economic development. Also, the African Region has a somewhat lower alcohol-attributable burden of disease than might be expected.

**Table 9.** Economic development and alcohol-attributable deaths and DALYs per litre of APC , 2012

WHO region	GDP-PPP per capita	Deaths	Deaths per 100 000	DALYs	DALYs per 100 000	Total APC	Deaths/ 100 000 per litre of APC	DALYs/ 100 000 per litre of APC
AFR	2 748	304 851	34.2	16 057 861	1 799	6.0	5.7	298.9
AMR	25 837	302 856	31.7	18 410 183	1 924	8.4	3.8	229.1
EMR	6 816	35 208	5.7	1 602 886	262	0.7	8.2	373.2
EUR except Eastern Europe	27 217	291 864	41.6	13 263 791	1 889	9.3	4.5	203.1
Eastern Europe <sup>a</sup>	16 962	933 434	463.0	26 970 549	13 377	14.8	31.3	903.9
SEAR	3 657	634 539	34.6	29 319 164	1 599	4.0	8.7	399.8
WPR	10 393	767 196	41.6	32 892 690	1 783	8.4	5.0	212.3
World	12 060	3 285 349	46.5	139 010 600	1 967	6.8	6.8	289.3

APC, alcohol per capita consumption in litres of pure alcohol among the total adult (15+ years) population; DALYs, disability-adjusted life years; GDP-PPP, gross domestic product converted to international dollars using purchasing power parity rates.

Total APC are predicted estimates for 2012.

<sup>a</sup> The Russian Federation, Belarus, Moldova and the Ukraine.

### 3.2 TRENDS AND PROJECTIONS

A comparison of alcohol-attributable burden of disease data presented in the present report and the Global status report on alcohol and health 2011 (WHO, 2011a) is not possible due to methodological variations. However, the comparable estimates of the global burden of disease attributable to different risk factors in 1990 and 2010 (Lim et al., 2012) suggest that, globally, alcohol-attributable deaths and DALYs have increased. According to this study, this increase has changed the estimated ranking of harmful use of alcohol as a leading cause of death and disability from eighth place in 1990 to fifth in 2010. Moreover, the available data suggest that harmful use of alcohol ranks as the leading risk factor for death and disability in large parts of the world as well as for persons aged 15–49 years. These findings highlight the need for continued and increased efforts to reduce the harmful use of alcohol using evidence-based population level intervention strategies (see Chapter 4 for national level alcohol policies and interventions).







global status  
report on alcohol  
and health

4. Alcohol policy  
and interventions

## 4. ALCOHOL POLICY AND INTERVENTIONS

Alcohol policies are developed with the aim of reducing harmful use of alcohol and the alcohol-attributable health and social burden in a population and in society. Such policies can be formulated at the global, regional, multinational, national and subnational level (see chapter 1). Successful alcohol policies outline comprehensive policy responses covering areas such as availability, marketing, pricing, drink-driving, prevention interventions and treatment in health-care systems. Policy should also have a clear focus on implementation and evaluation. Enforcement of alcohol policies often requires legislative support, although some policy options can be implemented through non-legal frameworks such as guidelines.

This chapter focuses on alcohol policies at the national level. The ten target areas for national action recommended by the Global strategy to reduce the harmful use of alcohol (WHO, 2010a) form the outline of this chapter. For each area, the existence of one or more alcohol policies at country level serves to indicate the degree of implementation of the global alcohol strategy (see Appendix IV for further details on definitions, data sources and methodology).

### 4.1 LEADERSHIP, AWARENESS AND COMMITMENT

As highlighted in the Global strategy to reduce the harmful use of alcohol, sustainable action to reduce harmful use of alcohol requires leadership at the national level, awareness of the issues and commitment. National governments face important decisions about implementation of evidence-based interventions, and their leadership in this area is critical (Casswell & Thamarangsi, 2009). The choice of interventions requires awareness of political, economic and social influences in order to select feasible options for sustainable action.

Many WHO Member States have demonstrated increased leadership and commitment to reducing harmful use of alcohol over the past years, also influenced by the Global strategy to reduce the harmful use of alcohol (see Box 16, Box 17 and Box 18, for selected case examples).

**Box 16. South Africa: establishment of an Inter-Ministerial Committee to reduce alcohol-related harm**

The Cabinet of the Republic of South Africa decided in 2010 to establish a committee at the highest possible level to urgently devise and implement strategies and programmes to reduce alcohol-related harm. An Inter-Ministerial Committee (IMC) under the Chairpersonship of the Minister of Social Development was thus established. This Committee consists of 13 ministers (the Ministers of Health, Correctional Services, Basic and Higher Education, Science and Technology, Economic Development, Finance, Transport, Sports and Recreation, Trade and Industry, Justice and Constitutional Development and the South African Police Service). The Minister in the Presidency is also represented to ensure coordination and involvement at the highest level of government. While there have been some advocates of an “individual responsibility” approach to addressing alcohol-related harm, the committee have taken a “public health” approach to alcohol-related harm since the beginning of their work together.

Different ministries represented on the Inter-Ministerial Advisory Committee have taken responsibility for different aspects of the overall goal of reducing alcohol-related harm. For example since the advent of the IMC the South African Police Service have very significantly increased their activities in shutting down unlicensed outlets (which are very prominent in South Africa); the Department of Transport have augmented both their campaigns against drinking and driving and the policing of drink-driving; those responsible for social development have embarked on a process of increasing access to rehabilitation services and so forth. In addition the committee has focused extensively on whether the government should introduce a zero limit on drinking and driving (responsibility of the Ministry of Transport), increase the age of legal drinking to 21 years (the responsibility of the Ministry of Trade and Industry) and whether to ban all alcohol advertising and sponsorship by the alcohol industry.

The impacts of the Inter-Ministerial Committee are now beginning to be felt – although it is probably too soon for the work of this committee to have resulted in significant actual reductions in alcohol-related harm. Notwithstanding, this approach of involving different government ministers in a single structure where, at a high level, they can plan strategies on how best to reduce the impacts of alcohol in society and where all departments can contribute to reducing alcohol-related harm as part of a “whole of government” approach has the potential to reduce alcohol-related harm considerably.

**Box 17. Belarus: an example of leadership and commitment to reducing harmful use of alcohol**

In 2011 the State programme for national action to prevent harmful use of alcohol 2011–2015, developed by the Ministry of Health in collaboration and consultation with relevant stakeholders, was adopted. The main objectives of this programme are to reduce alcohol-attributable crime, road crashes, injuries at work, deaths due to alcohol poisoning, cases of alcohol psychoses and dependence, as well as harmful use of alcohol among young people. New policies and initiatives that have been implemented since the adoption of the State programme include significantly strengthening laws on drink-driving, banning alcohol marketing on television and radio between 07:00 and 22:00, increasing the excise duty on specific alcohol products as well as increasing fines and strengthening police control of home producers. These measures have already delivered some rapid results, namely a decrease in recorded APC from 2011 to 2012 by 6.5% and from 2012 to 2013 by 11.4%, as well as a marked drop in criminal offences committed while under the influence of alcohol.

**Box 18. Mongolia: “Leadership makes change” – a case example**

In the past 3 years, under the committed leadership of the president, a national movement has started to influence regulations on production, sale, distribution and availability of alcohol with the aim of prevention and control of alcohol-related harm. The main actor in this process is a national network of 80 governmental and nongovernmental organizations, which has been established to implement an “Alcohol Free Mongolia” initiative that aims to increase public awareness, formulate policies, establish a legal environment to reduce the harmful use of alcohol and strengthen implementation of the regulation. Also, a revised Law on Alcohol Prevention and Control has been proposed, including a total ban on alcohol advertising, increased liability, and strengthened administrative and deterrence systems for infringements of the law. Once it is approved, the Division of Alcohol and Tobacco Control, within the newly established National Center for Public Health, will take the lead in monitoring and implementing this law and other national policies.

The two indicators included in the Global Survey on Alcohol and Health 2012 on leadership, awareness and commitment were: development of national alcohol policies and presence of awareness-raising activities.

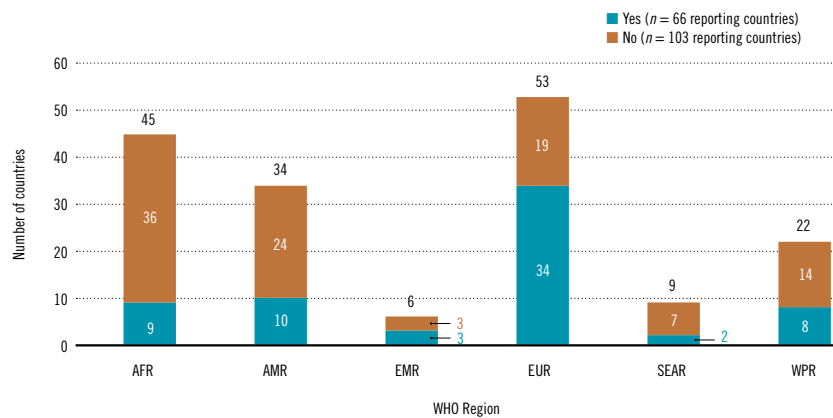
**4.1.1 WRITTEN NATIONAL ALCOHOL POLICIES**

The first key indicator in the Global Survey on Alcohol and Health 2012, on leadership, awareness and commitment is the presence of a written national alcohol policy, which is crucial for demonstrating commitment. National alcohol policies can be separate policy documents or may form part of national public health policies.

Overall, 66 of WHO’s Member States had written national alcohol policies in 2012 (39% of reporting countries; see Figure 25). The proportion of countries with written national alcohol policies varies across regions from 20% of reporting countries in the WHO African Region to 64% of reporting countries in the WHO European Region.

**Figure 25.** Existence of a written national alcohol policy, by WHO region and number of countries, 2012

(n = 169 reporting countries)



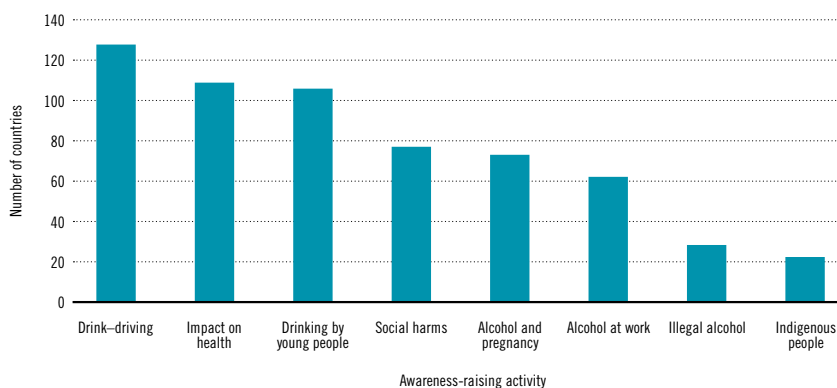
Of the 66 countries with national policies, 30 have adopted these policies formally through the national government, 18 through the national parliament, 13 through a specific ministry and five through another national body. Most commonly (in 51 countries), the national alcohol policies have been integrated into a written substance abuse policy. Sixty-two countries described their national alcohol policy as multisectoral, most frequently including the health, transport and/or road safety, education, and law enforcement sectors. Of the countries with national alcohol policies, 44 reported that health sectors had the main coordinating responsibility.

#### 4.1.2 NATIONWIDE AWARENESS-RAISING ACTIVITIES

The second key indicator on leadership, awareness and commitment is the presence of nationwide awareness-raising activities about alcohol. These are far more common than written national policies, with 138 countries reporting at least one such activity in the past three years (see Figure 26). Awareness-raising targeting drink-driving was most common and was reported by 128 countries.

**Figure 26.** Nationwide awareness-raising activities in the past three years by type, by number of countries, 2012

(*n* = 169 reporting countries, except 161 for drink-driving and 159 for drinking by young people)



#### 4.2 HEALTH SERVICES' RESPONSE

Health services play a critical role in tackling alcohol-attributable harm (see chapters 1 and 3) by developing and delivering prevention and treatment services (NICE, 2010a,b; WHO, 2010c,d; Drummond et al., 2011). For example, screening and brief intervention with referral to treatment (SBIRT) has been shown to be both effective and cost-effective in a variety of settings (Babor et al., 2007; Kaner et al., 2007; Humeniuk et al, 2012; Task Force on Community Preventive Services 2012). Hence, the Global strategy to reduce the harmful use of alcohol suggests several policy options and interventions related to development and delivery of prevention and treatment services, as well as health services

capacity development in a way that is commensurate with the magnitude of the public health problems caused by harmful use of alcohol:

- increasing capacity of health and social welfare systems to deliver prevention, treatment and care for alcohol-use and alcohol-induced disorders and comorbid conditions, including support and treatment for affected families and support for mutual help or self-help activities and programmes;
- supporting initiatives for screening and brief interventions for hazardous and harmful drinking at primary health care and other settings; such initiatives should include early identification and management of harmful drinking among pregnant women and women of child-bearing age;
- improving capacity for prevention of, identification of, and interventions for individuals and families living with fetal alcohol syndrome and a spectrum of associated disorders;
- development and effective coordination of integrated and/or linked prevention, treatment and care strategies and services for alcohol-use disorders and comorbid conditions, including drug-use disorders, depression, suicides, HIV/AIDS and tuberculosis;
- securing universal access to health including through enhancing availability, accessibility and affordability of treatment services for groups of low socioeconomic status;
- provision of culturally sensitive health and social services as appropriate.

**Box 19** provides a country example of implementation of national guidelines on alcohol interventions.

**Box 19. United Kingdom of Great Britain and Northern Ireland (UK): an example of national guidelines on alcohol interventions in health services**

In collaboration with the Department of Health, the National Institute for Health and Clinical Excellence (NICE) has published national guidelines on management of alcohol use and alcohol use disorders (AUDs) in the UK (Drummond et al., 2011). This guidance builds on the conceptual framework for alcohol treatment delivery developed by the Institute of Medicine in 1990 (Institute of Medicine, 1990), which recognizes a spectrum of severity of AUD, as well as on systematic reviews of effectiveness of interventions (for example, Raistrick et al, 2006; WHO, 2010c). The spectrum of AUD severity is from hazardous and harmful use of alcohol through to severe alcohol dependence, and the range of interventions appropriate to address this range of severity is from primary prevention for people not yet experiencing alcohol problems through to more intensive specialist treatment for those with alcohol dependence.

Another role of the health sector (in accordance with the Global strategy to reduce the harmful use of alcohol; WHO, 2010a) is to take the lead in informing society about the public health and social consequences of harmful use of alcohol, advocating effective societal responses, and supporting communities to take effective action to reduce alcohol-related harm. In doing so, health services should reach out to, mobilize and involve a broad range of players outside the health sector.

Finally, the Global strategy to reduce the harmful use of alcohol suggests that health services can also play a role in the establishment and maintenance of a system of registration and monitoring of alcohol-attributable morbidity and mortality, with regular reporting mechanisms. For instance, health service personnel can monitor alcohol-specific conditions such as alcohol use disorders, alcohol psychoses, and alcohol poisoning, as well as conditions closely associated with alcohol use such as liver disease, alcohol-related road traffic crashes and suicides. Countries can build these components into a national system for monitoring the health consequences of alcohol consumption.

More information on indicators related to health services' responses can be found in the Atlas on resources for the prevention and treatment of substance use disorders (WHO, 2010b) (available at: [http://www.who.int/substance\\_abuse/publications/treatment/](http://www.who.int/substance_abuse/publications/treatment/)). A new wave of data collection for the Atlas survey started in April 2014 and will yield new data in the coming years. Most countries are expected to continue to report a substantial unmet need for alcohol-related prevention and treatment services.

### 4.3 COMMUNITY ACTION

Governments and other stakeholders can support and empower communities to use their local knowledge and cultural expertise to adopt effective approaches to prevent and reduce harmful use of alcohol (e.g. Ramstedt et al., 2013). Through community action, communities can work to change behaviour at the population level. Controlled trials of community action projects using multicomponent approaches to reduce physical availability of alcohol and increase enforcement of laws on under-age purchase and drink-driving have found these community-based approaches to be effective in reducing alcohol-related harm (Holder et al., 2000; Wagenaar et al. 2000; Leifman et al., 2013). See Box 20 for a country example of community action and a health services response.

#### **Box 20. Zambia: an example of community action and a health services response**

Starting in 2006, Zambia has undergone an alcohol policy development process, including legislative reforms, in order to mitigate the impact of harmful use of alcohol on the general population. This work has included the development and enactment of the Liquor Licensing Act of 2011. One key stakeholder in the community-level enforcement of regulations related to this law is the newly established civil society group known as the Zambia Network Against Harmful Use of Alcohol (ZNAHUA). ZNAHUA also plays an important role in the facilitation of a multistakeholder, coordinated system aimed to reduce the harmful use of alcohol in line with the Ministry of Health Sector Wide Approaches (SWAp) mechanisms. One notable achievement of the efforts in Zambia is the training of 360 health workers in the management of conditions due to use of alcohol and other drugs. Nevertheless, given the drastically increased demand for alcohol-related services in recent years, the biggest challenges remain the availability of trained human resources and the necessary infrastructure.

The Global strategy to reduce the harmful use of alcohol (WHO, 2010a) suggests several policy options and interventions for community action, namely:

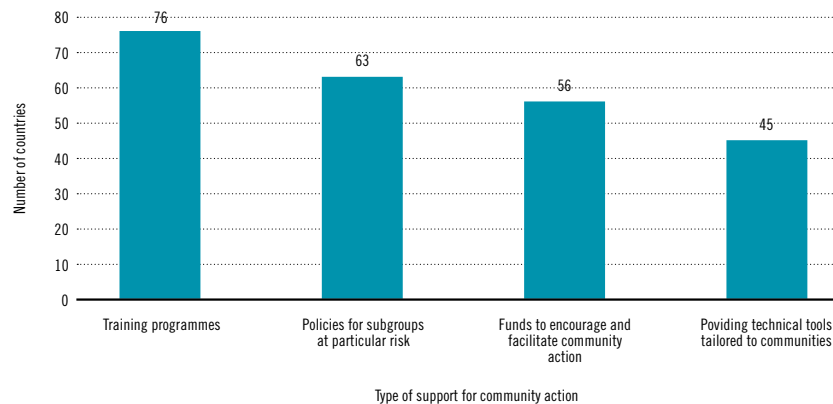
- supporting rapid assessments in order to identify gaps and priority areas for interventions at the community level;
- facilitating increased recognition of alcohol-related harm at the local level and promoting appropriate effective and cost-effective responses to the local determinants of harmful use of alcohol and related problems;
- strengthening capacity of local authorities to encourage and coordinate concerted community action by supporting and promoting the development of municipal policies to reduce harmful use of alcohol, as well as their capacity to enhance partnerships and networks of community institutions and nongovernmental organizations;
- providing information about effective community-based interventions, and building capacity at community level for their implementation;
- mobilizing communities to prevent the selling of alcohol to, and consumption of alcohol by, under-age drinkers, and to develop and support alcohol-free environments, especially for youth and other at-risk groups;
- providing community care and support for affected individuals and their families;
- developing or supporting community programmes and policies for subpopulations at particular risk, such as young people, unemployed persons and indigenous populations, specific issues like the production and distribution of illicit or informal alcohol beverages, and events at community level such as sporting fixtures and town festivals.

The Global Survey on Alcohol and Health 2012 contained one question related to community action, namely: in which ways does the national government support community action? Of the 167 reporting countries, 108 reported government support for community action. As shown in Figure 27, support most often took the form of training programmes, and community programmes and policies for subgroups at particular risk. Slightly less commonly, governments supported community action by providing technical tools tailored to communities, or funds specifically designated to encourage and facilitate community action.



**Figure 27.** Government support for community action by type of support and by number of countries, 2012

(*n* = 167 reporting countries)



## 4.4 DRINK-DRIVING COUNTERMEASURES

Drink-driving countermeasures are cost-effective strategies to reduce harmful use of alcohol and the burden of alcohol-attributable traffic crashes, which are more likely when drivers have blood alcohol concentrations (BACs) above 0.04% (Bloomberg et al., 2009).

The establishment of maximum BAC limits for drivers and the enforcement of drink-driving policies with sobriety checkpoints and random breath testing is a cost-effective strategy, and can reduce traffic crashes by roughly 20% (Peek-Asa, 1999; Elder et al., 2002). As described in section 4.11, drink-driving countermeasures are increasingly common among WHO Member States (WHO, 2013b).

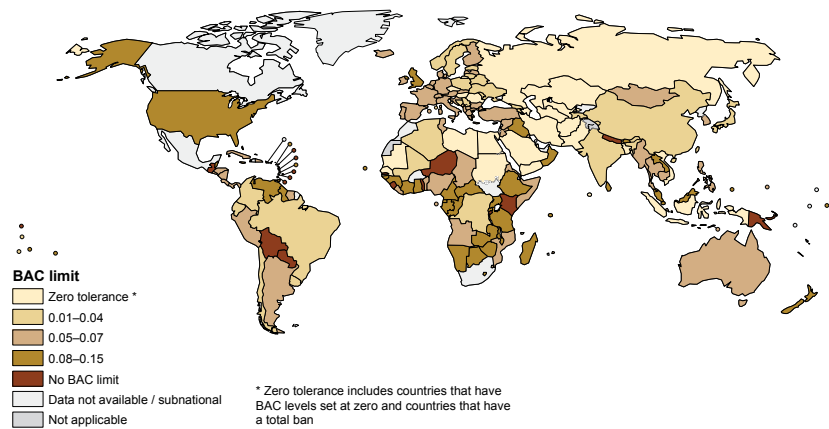
The two indicators included in the Global survey on alcohol and health 2012 on drink-driving policies and countermeasures were BAC limits set at the national level for the general population, for youth, and for operators of commercial vehicles, as well as the methods used by countries to ascertain driver BACs.

### 4.4.1 BAC LIMITS

Data on the maximum permissible BAC at the national level were available from 177 countries, including two countries with subnational policies. As shown in Figure 28 and Figure 29, the maximum permissible BAC for drivers in the general population most commonly lies between 0.05–0.07% (61 countries) or 0.08–0.15% (46 countries). Eighteen countries reported not having any limit and 25 countries reported zero as the permissible BAC at the national level for drivers, meaning that they did not tolerate any drinking of alcohol-containing beverages associated with driving, and any blood alcohol levels detectable by routine methods are not permitted for drivers in the general population.

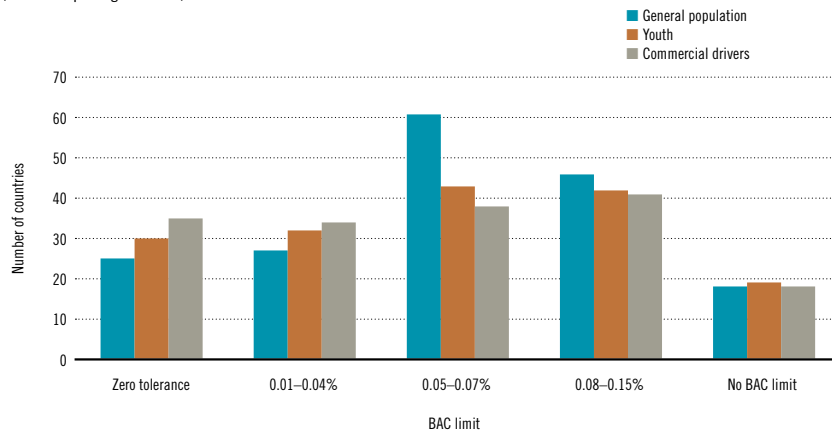
BAC limits for young/novice and commercial drivers were most commonly also above 0.05%. However, a greater number of countries had maximum permissible BAC limits below 0.05% for young/novice and commercial drivers than for the general population (see Figure 29).

**Figure 28.** Blood alcohol concentration (BAC) limits for drivers in the general population, 2012



**Figure 29.** Blood alcohol concentration (BAC) limits for the general population, young drivers and commercial drivers, by number of countries, 2012<sup>a</sup>

(n = 177 reporting countries)



<sup>a</sup> Includes countries that have BAC levels set at zero and countries that have a total ban.

In addition to the national-level data presented in Figure 29 for 2012, two countries reported subnational policies, and for one country (Tokelau) this survey question was inapplicable, because the country has no cars. Moreover, 18 countries had no BAC limits for the general population, 19 countries had no BAC limits for youth and 18 countries had no BAC limits for commercial drivers.

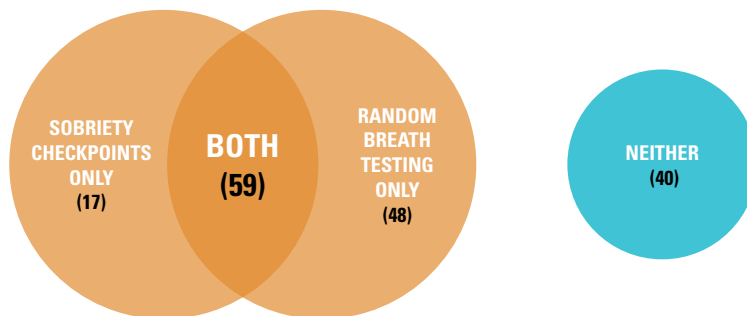
#### 4.4.2 METHODS USED TO ASCERTAIN DRIVER BACs

The Global Survey on Alcohol and Health 2012 asked countries to report on the presence of sobriety checkpoints and/or random breath testing to ascertain drivers' BACs. The definition used for sobriety checkpoints in this context was "checkpoints or roadblocks established by the police on public roadways to control for drink-driving". The definition used for random breath testing was "that any driver can be stopped by the police at any time to test the breath for alcohol consumption."

Of the reporting countries with policies setting a maximum BAC limit, breath testing was the most common method of assessing compliance with the limit (130 countries) although some countries used blood or urine analysis and observational assessments (see Figure 30). Forty-eight countries reported conducting random breath tests at roadside checkpoints, while 17 countries had sobriety checkpoints but did not use random breath testing. Fifty-nine countries indicated they used both random breath testing and sobriety checkpoints, while 40 countries reported using neither strategy.

**Figure 30.** Methods of enforcing the maximum legal BAC, by number of countries, 2012

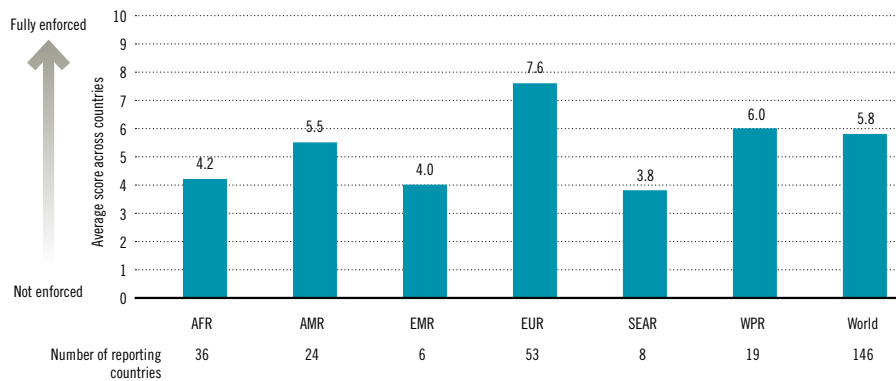
(*n* = 165 countries reporting on sobriety checkpoints and 166 countries reporting on random breath testing)



WHO received data from 146 countries on perceived level of enforcement of their policies on maximum BAC limits, on a scale from zero to ten, where zero indicated not enforced and ten indicated fully enforced. As shown in Figure 31, the average perceived level of enforcement among all reporting countries was 5.8, which suggests significant room for improvement.

**Figure 31.** Average perceived score on enforcement of maximum BAC policies by WHO region and the world, 2012

(n = 146 reporting countries)



#### 4.5 REGULATING AVAILABILITY OF ALCOHOL

Strategies regulating availability of alcohol are very cost-effective policy options to reduce the harmful use of alcohol. Examples of evidence-based strategies to reduce the availability of alcohol include regulating the density of alcohol outlets (Campbell et al., 2009), limiting the days and hours when alcohol sales are permitted (see Box 21; Hahn et al., 2010; Middleton et al., 2010), and national minimum legal age at which alcohol can be purchased or consumed (Elder et al., 2007).

**Box 21. Peru: a subnational example of regulating the hours during which alcohol can be sold**

In January 2007, a local ban in the district municipality of La Victoria in Lima on the sale of alcohol from Sundays to Wednesdays up to midnight and from Thursdays to Sundays up to 03:00 was established. A comparison of data from this district with those from a district without a ban two years after the enactment of the ban showed that violent incidents had decreased by almost half in La Victoria and this was correlated with the number of hours during which it was permitted to sell alcohol. Homicides and suicides also decreased in La Victoria.

In December 2011, a similar ban was established in the entire Metropolitan area of Lima. Concurrently, the national police began an intensive action campaign for zero tolerance to driving under the influence of alcohol. A year later, the number of violent deaths had decreased by 11%, homicides by 19%, and the number of victims of alcohol-attributable traffic crashes by 28%.

This report provides the most recent data on five policy areas recommended by the Global strategy to reduce the harmful use of alcohol:

- a licensing system on retail sales, or public health oriented government monopolies on the production and/or sale of alcohol;
- regulating the number and location of on-premise and off-premise alcohol outlets, expressed as efforts to reduce alcohol outlet density;
- regulating days and hours of retail sales;
- establishing an appropriate minimum age for purchase or consumption of alcoholic beverages;
- setting policies regarding drinking in public places.

The Global Survey on Alcohol and Health 2012 included a variety of questions linked to all five of these policy areas.

#### 4.5.1 NATIONAL CONTROL OF PRODUCTION AND SALE OF ALCOHOL

One evidence-based strategy to reduce the availability of alcohol is government control of alcohol distribution and sales to restrict the availability of alcohol at the population level. There are two basic models for achieving such restrictions: monopoly and licensing (Babor et al., 2010).

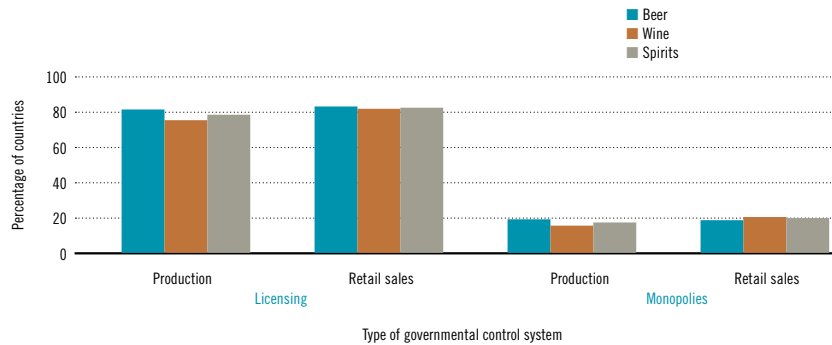
Most reporting countries use licensing systems: 126 reported requiring licences for the production of alcoholic beverages, while 22 countries do not require such licences. For the retail sales of alcohol, 136 countries require licences whereas 26 do not.

Governments may also exercise monopoly control over the alcohol market, at the level of the producer, distributor and/or retailer. Monopolies over production are most common for beer (32 countries), while monopolies over retail sales are most common for wine (34 countries).

Some countries employ a combination of licensing and monopoly systems. In 32 countries, there is a licensing system and a monopoly over beer production. Licensing systems for beer production exist in 106 countries. The prevalence of countries with licensing and monopoly systems by beverage type is shown in Figure 32.

**Figure 32.** Prevalence (%) of licensing and monopoly systems at the level of production and retail sales by beverage type and by number of countries, 2012

(*n* = 167 countries reporting on systems for retail sales of all three beverage types, while the number of reporting countries varied for beer production (166), wine production (159 on licensing, 160 on monopoly) and spirits production (162 on licensing, 161 on monopoly))



#### 4.5.2 RESTRICTIONS ON ON-PREMISE AND OFF-PREMISE SALES OF ALCOHOLIC BEVERAGES

A second independent evidence-based strategy for reducing availability includes restricting hours and days when sales are allowed and regulating the density of establishments permitting alcohol consumption on their premises (known as “on-premise” outlets, such as bars and restaurants), and establishments selling alcohol only for consumption away from their premises (known as “off-premise” outlets; Campbell et al., 2009; Hahn et al., 2010; Middleton et al., 2010).

Less than 30% of reporting countries (39–47 countries, depending on the premise and beverage type) indicated the existence of regulations on outlet density and/or days of sale (see Table 10). Regulations on hours of sale are more common than regulations on outlet density and days of sale. About 50% of reporting countries (73–90 countries depending on the premise and beverage type) indicated that they had regulations on opening hours.

The WHO Eastern Mediterranean Region had the highest prevalence of countries with outlet density regulations – for on- and off-premise consumption – and the WHO European Region had the lowest. Restrictions on on-premise hours of sales were most prevalent in the WHO Region of the Americas and the WHO South-East Asia Region, while the WHO Western Pacific and WHO South-East Asia Regions had the highest prevalence of restrictions on off-premise hours of sales. Regulations on days of sales of spirits on-premise were most common in the WHO South-East Asia Region, while the WHO Eastern Mediterranean Region had the highest prevalence of regulations on days of sales off-premise (see Table 10).

**Table 10.** Number of reporting countries with on-premise and off-premise regulations by type of regulation, by beverage type and by WHO region and the world, 2012

(n = 168 countries that reported on on-premise regulations and 167 countries that reported on off-premise regulations)<sup>a</sup>

	WHO regions	On-premise			Off-premise		
		Beer	Wine	Spirits	Beer	Wine	Spirits
Density	AFR	12	12	12	10	10	10
	AMR	10	10	10	8	8	8
	EMR	3	3	3	4	4	4
	EUR	6	6	6	7	8	8
	SEAR	5	5	4	4	4	4
	WPR	7	7	8	8	9	9
	World	43	43	43	41	43	43
Hours	AFR	24	24	24	17	17	17
	AMR	24	23	24	17	17	17
	EMR	2	2	2	3	3	3
	EUR	18	19	20	18	19	20
	SEAR	6	6	6	5	5	5
	WPR	13	13	14	13	14	15
	World	87	87	90	73	75	77
Days	AFR	5	5	5	8	8	8
	AMR	13	13	13	10	10	10
	EMR	2	2	2	4	4	4
	EUR	6	6	6	9	10	10
	SEAR	5	5	5	5	5	5
	WPR	8	8	8	10	10	10
	World	39	39	39	46	47	47

<sup>a</sup> The numbers of reporting countries by WHO region were 45 for AFR, 33 for AMR, 6 for EMR, 53 for EUR, 9 for SEAR and 22 for WPR.

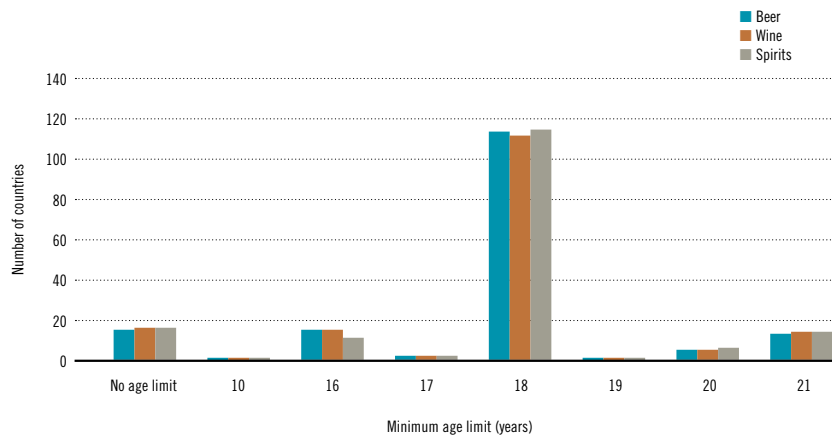
### 4.5.3 NATIONAL MINIMUM PURCHASE OR CONSUMPTION AGE

Minimum legal purchase age (MLPA) limits are effective in reducing alcohol consumption among youth (Wagenaar et al., 2005), and older age limits are more likely to effectively deter youth drinking than younger age limits (Wechsler and Nelson, 2010). Age restrictions can apply to the consumption of alcohol on-premise or off-premise. This report will focus on the on-premise minimum legal purchase age limits because more countries have on-premise than off-premise regulations.

In 2012, 15 countries reported having no on-premise age limits pertaining to beer sales and consumption, and 16 had no age limit for wine and spirits (see Figure 33). Twenty-one countries had no off-premise age restrictions for any beverage types. Among the countries that have legal purchase ages for alcohol, the ages range from 10 years to 25 years, but the most common age limit is 18 years: 115 countries have an on- or off-premise legal purchase age for at least one beverage set at 18 years. Fifteen countries set the MLPA at 16 years, while in 7 countries it is 20 years and in 14 countries the minimum age limit is set at 21 years.

**Figure 33.** Minimum age limits for on-premise sales of beer, wine and spirits, by number of reporting countries, 2012

(n = 166 reporting countries)



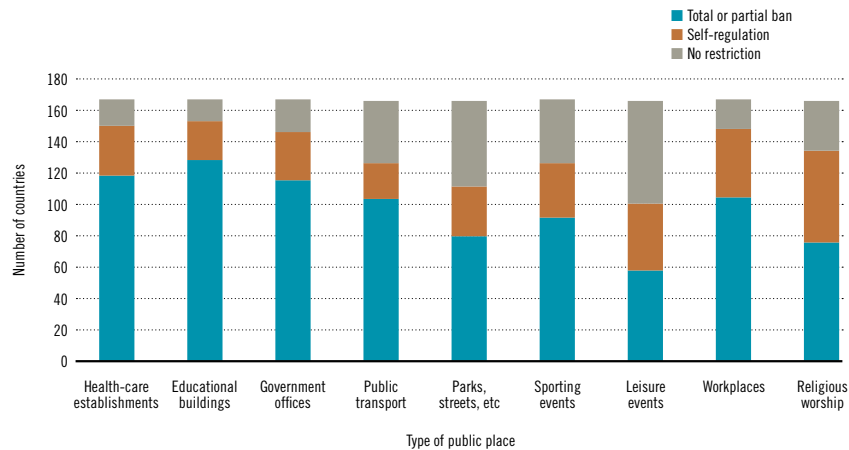
### 4.5.4 RESTRICTIONS ON DRINKING IN PUBLIC

To reduce alcohol consumption, some countries also have restrictions on alcohol consumption in public places (see Figure 34). Countries were most likely to restrict consumption in educational buildings (129 countries), followed by health-care establishments (119 countries). They were least likely to ban alcohol consumption at leisure events (58 countries).



**Figure 34.** Restrictions on alcohol consumption in public places, by number of countries, 2012

(*n* = 168 reporting countries, except 167 reporting countries for public transport, leisure events, religious places as well as parks, streets, etc.)



#### 4.5.5 RESTRICTIONS ON PURCHASE OF ALCOHOL AT PETROL STATIONS

Reducing the availability of alcohol at petrol stations is a strategy some countries employ to reduce the number of people drinking and driving. From 2008 to 2012, there was an increase in the percentage of countries that reported banning the sale of all types of alcoholic beverages at petrol stations: for beer, 46 countries reported a ban (31.1%) in 2008 compared to 61 countries (36.8%) in 2012; for wine, 46 countries had banned sales (31.7%) in 2008 as opposed to 64 countries (38.6%) in 2012; and 50 countries had banned spirits sales (34.3%) in 2008 while 65 (39.2%) did so in 2012.

#### 4.6 MARKETING RESTRICTIONS

Numerous longitudinal studies have found that young people who are exposed to alcohol marketing are more likely to start drinking, or if already drinking, to drink more (Anderson et al., 2009). Alcohol marketing may also have a substantial effect on alcohol consumption in lower and middle income countries, which have young populations, high rates of adult (and particularly female) abstinence, and emerging marketplaces for alcohol (Babor et al., 2010; Jernigan, 2013).

The Global strategy to reduce the harmful use of alcohol recommends setting up regulatory or co-regulatory frameworks, preferably with a legislative basis, to regulate the content and volume of direct or indirect marketing, sponsorships, promotions in connection with

**Box 22. South Africa: an example of marketing restrictions**

In South Africa, the established Inter-Ministerial Committee (IMC) (see Box 16) reviewed extensive inputs and evidence on alcohol marketing and alcohol-related harm and then mandated the Minister of Health to draft legislation banning all advertising and sponsorships and other marketing on the basis of this evidence. The draft Bill was ratified by the Cabinet to be published for public comment for a period of three months. In addition a Regulatory Impact Assessment is being conducted on the impacts of this legislation.

The IMC realize that combating alcohol-related harm requires a range of measures rather than a single "silver bullet". Policies acting in conjunction with each other usually produce greater impact than the sum of the parts. For example raising the age of legal drinking, introducing a policy of zero tolerance for drinking and driving and introducing education campaigns against alcohol-related harm in schools while at the same time permitting the glamourization and encouragement of alcohol through advertising is likely to have less impact on drinking behaviours, in both the short and longer term. It is realized that government should not give or permit mixed messages through commission or omission by neglecting to control marketing while introducing other measures.

activities targeting young people, and new forms of alcohol marketing techniques such as social media. Box 22 describes a country example of initiative to reduce alcohol-related harm by considering a ban on all alcohol marketing and sponsorships.

The indicators included in the Global Survey on Alcohol and Health 2012 on marketing restrictions were the prevalence of restrictions on advertising for alcoholic beverages and the overall restrictiveness of advertising regulation, regulation of product placements on television and at sporting events as well as regulation of promotions below cost.

#### 4.6.1 REGULATIONS ON ALCOHOL ADVERTISING

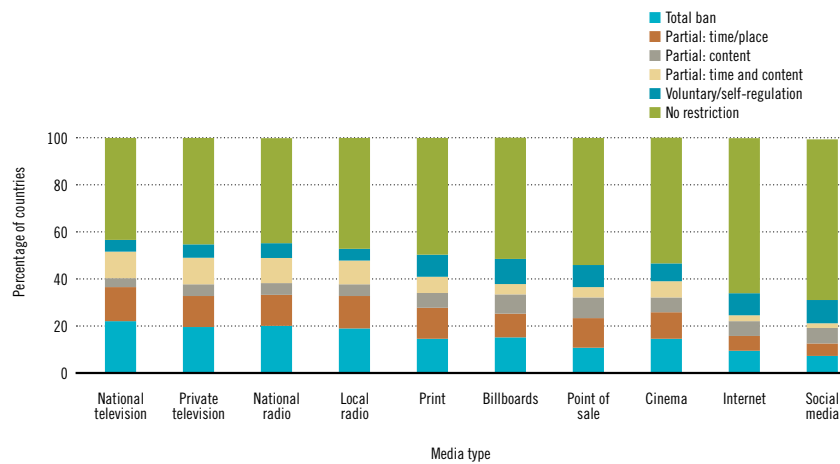
The Global survey on alcohol and health 2012 asked countries to report on national restrictions on advertising for three alcoholic beverage types (beer, wine and spirits) across ten media types (national television, private television, national radio, local radio,

print, billboards, point of sale, cinema, Internet and social media). Marketing restrictions range from no restrictions to total bans, across all media types. In this report marketing restrictions are described in detail for beer only; however, the restrictions across media types were consistent for wine and spirits, and the relevant information is available in GISAH.

Figure 35 shows the prevalence of restrictions on advertising for beer by media type; these are most prevalent for national television, but the majority of countries have no restrictions on beer marketing in any of the ten media types. The greatest number of countries reported no restrictions on social media, suggesting that regulation in many countries has fallen behind the pace of technological innovation in marketing. In 2012, 159 countries reported on alcohol marketing restrictions across all media and beverage types. Of the reporting countries, 39.6% had no restrictions, while 10.1% imposed total bans.

**Figure 35. Restrictions on advertising for beer, by percentage of countries, 2012**

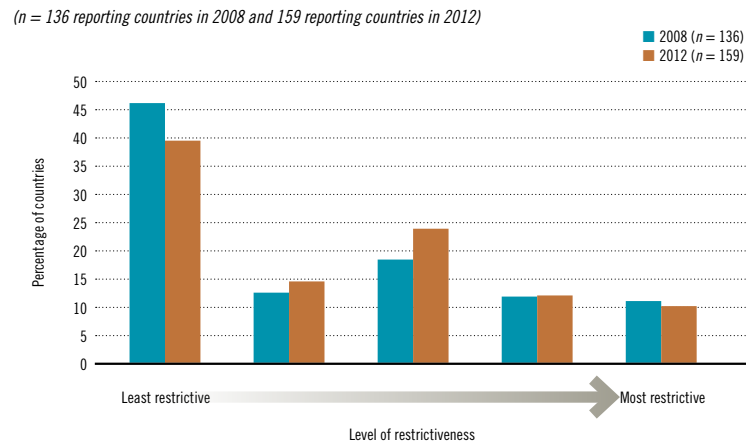
(n = 166 reporting countries, except 157 countries reporting on social media, 164 countries reporting on point of sale, 165 countries reporting on private television, and 167 countries reporting on national radio, local radio and print)



**Box 23. Statutory regulation of alcohol marketing score**

Another way of assessing the level of restrictiveness across countries is to sum the degree of restriction on alcohol advertising across all three beverage types. Using a scale first used in the Global status report on alcohol and health 2011 (WHO, 2011a), Figure 27 shows the distribution of countries across five levels of restrictiveness. The scale was further tested in a sensitivity analysis using both the 2002 and 2008 data (Esser and Jernigan, personal communication). Analysing restrictiveness in nine media types (social media were excluded in order to be able to compare to the 2008 data), countries received two points for a total statutory ban, one point for a partial statutory ban and zero points for no restrictions. In light of substantial evidence of their ineffectiveness (Jernigan, et al., 2005; Jones et al., 2008; Rhoades and Jernigan, 2013; Smith et al., 2013), self-regulation or voluntary restrictions were considered equivalent to no regulations in this analysis and received no points.

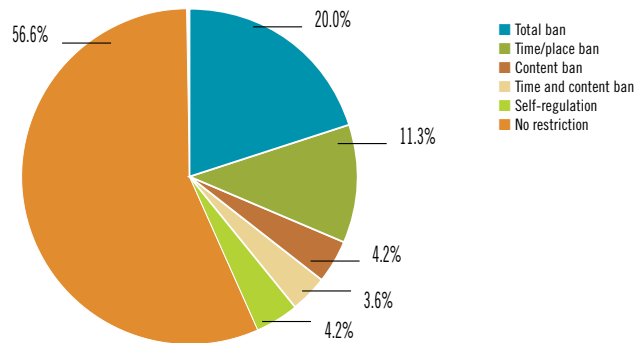
**Figure 36.** Stringency of overall statutory regulation of alcohol marketing, by percentage of countries, 2008 and 2012



**4.6.2 REGULATION ON ALCOHOL PRODUCT PLACEMENT**

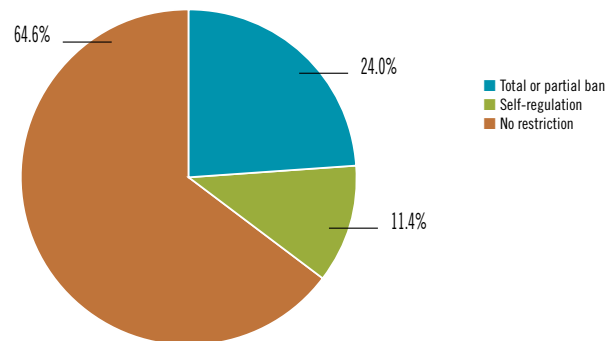
In addition to restrictions on alcohol advertising, countries also reported on their regulation of alcohol marketing in the form of product placement on television and at sporting events, as well as whether they had implemented bans on sale of alcohol below cost. Of the WHO Member States that reported on this in 2012 (n = 168), 39.3% (n = 66) had implemented either a total or partial ban on product placement of beer on television, 56.6% (n = 95) reported no regulation, and 4.2% (n = 7) reported industry self-regulation (see Figure 37).

**Figure 37.** Type of regulation of beer product placements on television, by percentage of countries, 2012 (*n* = 168 reporting countries)



As shown in Figure 38, nearly a quarter of reporting countries (24.0%, *n* = 40) had a total or partial ban on beer company sponsorships of sporting events, while 11.4% (*n* = 19) relied on industry self-regulation, and 64.6% (*n* = 108) had no regulation.

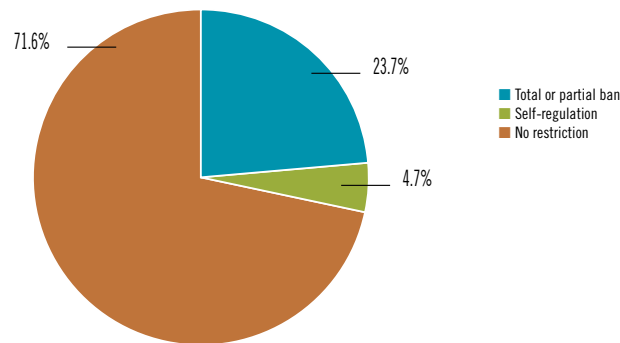
**Figure 38.** Regulation of beer company sponsorship of sporting events, 2012 (*n* = 167 reporting countries)



### 4.6.3 REGULATION ON ALCOHOL SALES PROMOTIONS

Figure 39 shows prevalence of regulation of beer sales promotions below cost, which are most commonly not restricted.

**Figure 39.** Regulation of beer sales promotions below cost, 2012  
(*n* = 169 reporting countries)



### 4.6.4 METHODS OF DETECTING MARKETING INFRINGEMENTS

The Global strategy to reduce the harmful use of alcohol (WHO, 2010a) also recommends setting up effective administrative and deterrence systems for infringement of marketing restrictions. While 148 Member States reported some kind of restriction of alcohol marketing or product placement, 98 countries have a method of detecting marketing infringements, and some use more than one method: 60 countries use active surveillance by government, a nongovernmental organization or an independent body; 61 use a complaint system; and 45 rely on case by case reporting. Penalties for violations of marketing restrictions range from warnings to imprisonment in the most severe cases; however, the most common mode of enforcement is through fines imposed on the offending party.

## 4.7 PRICING

A large body of literature has found raising the price of alcohol to be effective in reducing harmful use of alcohol among drinkers in general as well as among youth; the same literature has documented that as the price of alcohol increases, alcohol-attributable morbidity and mortality decline (Wagenaar et al., 2009; 2010; Elder et al., 2010).

The Global strategy to reduce the harmful use of alcohol (WHO, 2010a) recommends that Member States establish a system for specific domestic taxation which may take into account the alcohol content of the beverage, accompanied by an effective enforcement system. It also encourages countries to review prices regularly in relation to inflation and income levels; ban or restrict sales below cost and other price promotions; and establish minimum prices for alcohol where applicable.

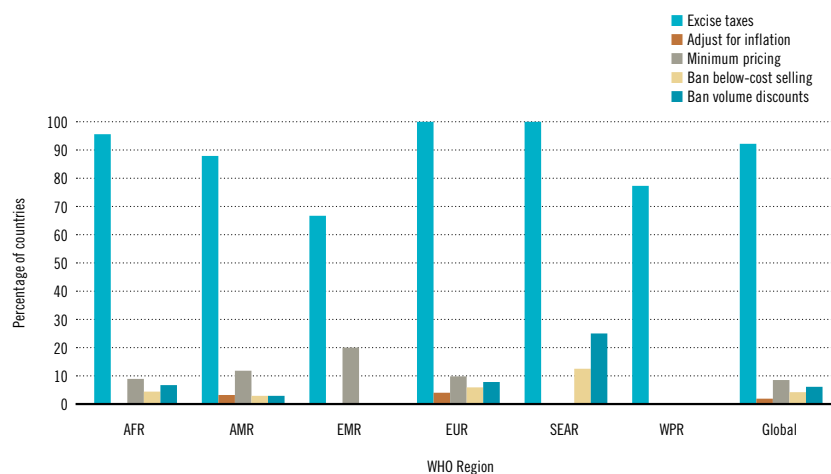
This report presents data on prevalence of specific taxation for alcohol, as well as how many countries adjust those taxes for inflation, employ minimum pricing, and ban low-cost selling and volume discounts.

#### 4.7.1 EXCISE TAX

Figure 40 shows that the majority of countries have alcohol excise taxes; however, few countries are using the other price strategies highlighted in the Global strategy, such as adjusting taxes to keep up with inflation and income levels, imposing minimum pricing policies, or banning below-cost selling or volume discounts.

**Figure 40.** Implementation of selected price and tax measures, by region and percentage of reporting countries, 2012

(*n* = 165 reporting countries, except 160 countries reported on inflation adjustment and 167 countries reported on excise taxes)



## 4.8 REDUCING NEGATIVE CONSEQUENCES OF DRINKING

The recommendations of the Global strategy to reduce harmful use of alcohol (WHO, 2010a) include enacting management policies relating to responsible serving of alcoholic beverages, and providing consumer information about, and labelling of, alcoholic beverages to indicate the harm related to alcohol. While the evidence for their effectiveness is not yet strong (Babor et al., 2010; Centers for Disease Control and Prevention, 2010), these strategies are showing some promising results (e.g., Trollid et al., 2012).

### 4.8.1 RESPONSIBLE BEVERAGE SERVICES TRAINING

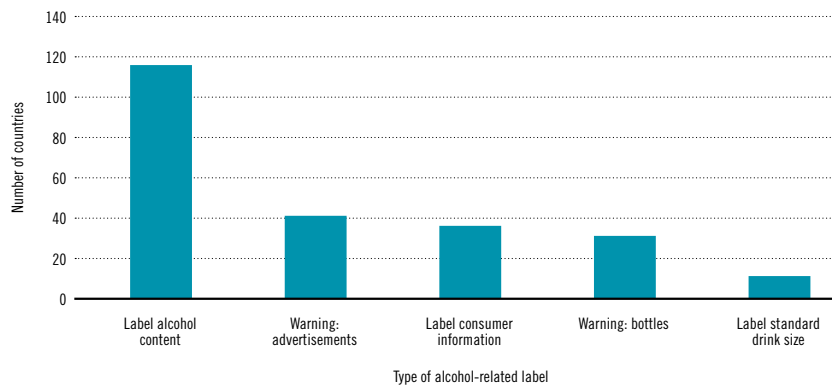
Forty-five of 167 reporting countries indicated that they provide responsible beverage service (RBS) training for people who serve alcoholic beverages. Enforcement agencies organize the training in 17 countries, and the private sector takes the lead in 18 countries. Elsewhere, sectors such as tourism and hospitality take responsibility for offering RBS training.

#### 4.8.2 LABELS ON ALCOHOL CONTAINERS

As Figure 41 shows, labels describing the alcohol content (i.e, percentage of pure alcohol), are the type most frequently reported by countries. These are required in 116 countries. Less common are warning labels on advertisements for alcohol (required in 41 countries), and health and safety warning labels on bottles or containers (mandatory in 31 countries). In countries with such warning labels, examples of wording commonly used on warning labels are “Excessive consumption of alcohol is harmful to health” (common in countries in South America) and messages about not selling to under-age customers, such as “Not for sale to persons under the age of 18 years” (common in African and South American countries).

**Figure 41.** Required warning and health-related information on labels, by number of countries, 2012

(*n* = 167 reporting countries, except 164 countries reported on consumer information labels, 165 countries reported on standard drink size labels and 166 countries reported on alcohol content labels)



#### 4.9 ADDRESSING ILLICIT AND INFORMAL PRODUCTION

Illicit and informally produced alcohol accounts for nearly a quarter of the alcohol consumed globally (see chapter 2). Unrecorded alcoholic beverages are generally less costly than recorded alcohol. As a result, unrecorded alcohol is commonly consumed by persons of lower social and economic status and may be associated with increased levels of alcohol consumed (Rehm et al., 2014).

Among the recommendations of the Global strategy to reduce the harmful use of alcohol (WHO, 2010a) in this area are developing and strengthening tracking and tracing systems for illicit alcohol, regulating sales of informally produced alcohol and bringing it into the taxation systems, and ensuring necessary cooperation and exchange of relevant information on combating illicit alcohol among authorities at the national and international levels. Box 24 presents a country example of increased tracking of alcohol as part of a federal law amendment.



#### Box 24. Russian Federation: an example of increased tracking of alcohol as part of a federal law amendment

In 2011, the President of the Russian Federation signed an amendment to the federal law on production and sales of alcohol-containing products. This amendment included strengthened restrictions on the availability of alcohol and marketing of alcoholic beverages. In particular, it increased the responsibility of citizens, officials and legal entities to ensure minors are not sold alcoholic beverages, with criminal consequences for doing so repeatedly. The law also established a series of measures to reduce negative consequences of drinking, such as regulations related to the size of consumer packaging of alcohol and mandatory stamps on alcohol containers.

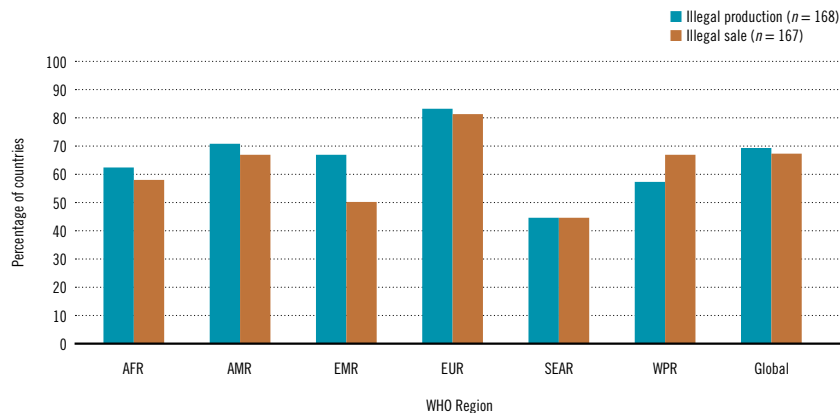
Moreover, the federal law is aimed at strengthening the protection against illegal production and trafficking of alcoholic beverages, for example through establishment of an automated traffic control system for ethanol and alcohol-containing products on the territory of the Russian Federation. The law also introduced stricter rules for obliging entities such as pharmacies to declare the extent of their use of ethanol for medical purposes in a timely fashion.

#### 4.9.1 INCLUSION OF INFORMAL OR ILLICIT PRODUCTION IN NATIONAL ALCOHOL POLICIES

Of the countries with written national alcohol policies, 69% have a national policy to address informal or illicit production and 67% have a national policy regarding sales of informal or illicit alcohol (see Figure 42). The existence of such policies varies by region: about 45% of the countries in the South-East Asian Region have such policies compared to 81% of the countries in the European Region.

**Figure 42.** National legislation to prevent illegal production and/or sale of informally produced alcoholic beverages, by region and percentage of countries, 2012

(*n* = 168 reporting countries for illegal production;<sup>a</sup> *n* = 167 reporting countries for illegal sale<sup>b</sup>)



<sup>a</sup> The numbers of reporting countries by WHO region were 45 for AFR, 34 for AMR, 6 for EMR, 53 for EUR, 9 for SEAR and 21 for WPR;

<sup>b</sup> the numbers of reporting countries by WHO region were the same with the exception of 33 for AMR.

#### 4.9.2 METHODS USED TO TRACK ILLICIT OR INFORMAL ALCOHOL

Some countries include questions on illicit and informally produced alcohol in their national systems for monitoring alcohol consumption. Seven countries obtain a regular estimate of illicit and informally produced alcohol based on expert opinion, 8 base regular estimates on research focused on unrecorded alcohol consumption, 5 use indirect estimates from government data on confiscated or seized alcohol, and 12 use indirect estimates from survey data. Nine countries use a combination of at least two of these methods to track illicit and informal alcohol production.

### 4.10 MONITORING AND SURVEILLANCE

Monitoring and surveillance are critical to measuring the success and delivery of efforts to reduce alcohol-related harm as recommended in the Global strategy to reduce the harmful use of alcohol (WHO, 2010a).

Both the Global strategy to reduce the harmful use of alcohol and the Global monitoring framework for noncommunicable diseases (see chapter 1, WHO, 2013a) encourage Member States to establish effective frameworks for monitoring and surveillance activities, including periodic national surveys on alcohol consumption and related harm.

#### 4.10.1 NATIONAL SURVEYS ON ALCOHOL CONSUMPTION

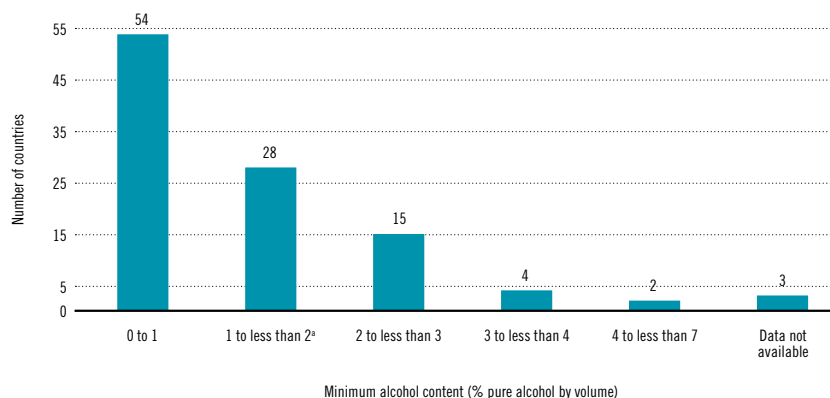
Of all WHO Member States, 109 have had at least one national survey of alcohol consumption among adults since 2000. Ninety-three of those countries have also had national surveys on alcohol consumption among youth since 2000, while 16 countries reported that they have only had surveys of youth consumption.

#### 4.10.2 LEGAL DEFINITION OF AN ALCOHOLIC BEVERAGE

Defining clearly what constitutes an alcoholic beverage is critical for monitoring and surveillance systems as well as for determining when alcohol policies, such as restrictions on production, sales and consumption, will apply. Legal definitions of alcoholic beverages exist in 106 reporting countries. Among Member States with established legal definitions, the specific definition varies (Figure 43). Fifty-four countries define alcoholic beverages as anything containing between 0 and 1% alcohol. One country – Belarus – defined alcoholic beverages as any beverage containing 7% or more of pure alcohol. However, for the most part there were no differences by region, with regional averages for such definitions ranging from 0.8% in the Region of the Americas to 1.3% in the European Region.

**Figure 43.** Legal definition of an alcoholic beverage in terms of percentage of pure alcohol by volume, by number of countries, 2012

(*n* = 106 reporting countries)



<sup>a</sup> Two countries listed in this category reported a minimum alcohol content of 1.2% for spirits and wine, but 0.5% for beer.

#### 4.10.3 NATIONAL MONITORING SYSTEMS

Of the WHO Member States, 71 reported having a national system for monitoring the health consequences of alcohol consumption and 4 indicated they have subnational monitoring systems. The national systems for monitoring most commonly collect data on alcohol consumption (55 countries) and related health consequences (54 countries), and less commonly monitor social consequences (25 countries) and alcohol policy responses (11 countries).

### 4.11 TRENDS

Between 2008 and 2012, WHO Member States made changes in alcohol policies, particularly in the following five areas of action recommended by the Global strategy to reduce harmful use of alcohol:

- leadership, awareness and commitment
- drink-driving countermeasures
- regulating availability
- marketing restrictions
- reducing negative consequences of drinking.

The key, positive changes in national alcohol policy development are that a higher percentage of reporting countries indicated that they had written national alcohol policies and stricter BAC limits in 2012 than in 2008. Notably, 12 countries reported having adopted their national alcohol policy since 2010, the year when the Global strategy to reduce the harmful use of alcohol was endorsed (five countries reported having adopted a national policy in 2010, six in 2011 and one in 2012).

Also, in 2012 a greater proportion of reporting countries had regulations on outlet density (at least off-premise), on the hours during which sales of alcohol are permitted, on minimum ages at which it is legal to purchase alcohol, on alcohol sales at petrol stations and on displaying national warning labels on advertisements than in 2008.

In contrast, a smaller proportion of reporting countries indicated regulations on days of sale, product placement on public television, company sponsorship of sporting events, and sales promotions below cost.