

Global status report on alcohol and health

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FOREWORD

The harmful use of alcohol is a worldwide problem resulting in millions of deaths, including hundreds of thousands of young lives lost. It is not only a causal factor in many diseases, but also a precursor to injury and violence. Furthermore, its negative impacts can spread throughout a community or a country, and beyond, by influencing levels and patterns of alcohol consumption across borders.

The Global status report on alcohol and health (2011) presents a comprehensive perspective on the global, regional and country consumption of alcohol, patterns of drinking, health consequences and policy responses in Member States. It represents a continuing effort by the World Health Organization (WHO) to support Member States in collecting information in order to assist them in their efforts to reduce the harmful use of alcohol, and its health and social consequences.

In May 2010, the World Health Assembly (WHA), representing all 193 WHO Member States, approved a resolution to endorse the global strategy to reduce the harmful use of alcohol. The strategy includes an array of evidence-based policies and interventions that can protect health and save lives if adopted, implemented and enforced. The World Health Assembly resolution urged countries to strengthen national responses to public health problems caused by the harmful use of alcohol.

Many countries recognize the serious public health problems caused by the harmful use of alcohol and have taken steps to adopt preventive policies and programmes, particularly to reduce drink-driving and the carnage that it causes. However, it is clear that much more needs to be accomplished.

This report, which is written for all who are concerned about the dangers posed by the harmful use of alcohol, can serve as a comprehensive knowledge base on the status of alcohol consumption, alcohol-related harm and alcohol policies in the world. Health ministries and other concerned parties can use it to support the development and implementation of their policies and interventions.

Since 1974, WHO has been actively involved in documenting and reporting on alcohol-related health issues and problems. Indeed, this publication follows in the wake of the first *Global status report on alcohol* in 1999 and the second in 2004. These reports were based on global, regional and national data collection efforts supported and coordinated by WHO. Data collection initiatives began with the Global Alcohol Database in 1996, which was further developed and transformed into the Global Information System on Alcohol and Health (GISAH; <http://www.who.int/globalatlas/alcohol>) in 2008, and which now contains data on more than 200 alcohol-related indicators.

In recent years, a larger number of countries have been providing data, enabling WHO to create a more comprehensive picture of the global situation on alcohol use and its health consequences. However, many gaps in the data remain and a detailed picture cannot be clearly drawn for all countries and regions. This information is critical in assessing progress in reducing the harmful use of alcohol at all levels and in monitoring and evaluating progress made in the implementation of the global strategy. I therefore encourage WHO Member States and all stakeholders to make a joint effort to improve data collection and reporting.

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This report was produced by the Management of Substance Abuse Team (MSB) in the Department of Mental Health and Substance Abuse (MSD) of the World Health Organization (WHO), Geneva, Switzerland, within the framework of its activities on the global monitoring of alcohol consumption, alcohol-related harm and policy responses, and is linked to WHO's work on the Global Information System on Alcohol and Health (GISAH). The following members of the MSB team were primarily involved in the development and production of this report at all stages: Alexandra Fleischmann, Daniela Fuhr, Vladimir Poznyak (Coordinator) and Dag Rekve.

In WHO, Ala Alwan, Assistant Director-General, Department of Noncommunicable Diseases and Mental Health, Benedetto Saraceno, former Director, Department of Mental Health and Substance Abuse, and Shekhar Saxena, Director, Department of Mental Health and Substance Abuse, provided vision, guidance, support and valuable contributions to this project.

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ABBREVIATIONS

AFR	WHO African Region
AIDS	acquired immunodeficiency syndrome
AMR	WHO Region of the Americas
APC	adult per capita alcohol consumption
AUD	alcohol use disorders
BAC	blood alcohol concentration
DALY	disability-adjusted life year
EMR	WHO Eastern Mediterranean Region
EUR	WHO European Region
GDP	gross domestic product
GISAH	WHO Global Information System on Alcohol and Health
GSHS	Global School-based Student Health Survey (WHO)
HED	heavy episodic drinking
HIV	human immunodeficiency virus
ICD	International Classification of Diseases
MA	moving average
PAF	population-attributable fraction
PPP	purchasing power parity
SEAR	WHO South-East Asia Region
WHA	World Health Assembly
WHO	World Health Organization
WPR	WHO Western Pacific Region

INTRODUCTION

The public health objective on alcohol of the World Health Organization (WHO) is to reduce the health burden caused by the harmful use of alcohol and, thereby, to save lives, reduce disease and prevent injuries. The hazardous and harmful use of alcohol is a major global contributing factor to death, disease and injury: to the drinker through health impacts, such as alcohol dependence, liver cirrhosis, cancers and injuries; and to others through the dangerous actions of intoxicated people, such as drink-driving and violence or through the impact of drinking on fetus and child development. The harmful use of alcohol results in approximately 2.5 million deaths each year, with a net loss of life of 2.25 million, taking into account the estimated beneficial impact of low levels of alcohol use on some diseases in some population groups. Harmful drinking can also be very costly to communities and societies.

This report provides comparable global information on: the consumption of alcohol (Section 1); the consequences of the harmful use of alcohol (Section 2); and the policy responses (Section 3). The four appendices include: country profiles for all 193 WHO Member States (Appendix I); a set of additional indicators (Appendix II); a table of comparable alcohol consumption data (Appendix III); and a section explaining data sources and methods used in this report (Appendix IV).

Alcohol consumption and problems related to alcohol vary widely around the world, but the burden of disease and death remains significant in most countries. Alcohol consumption is the world's third largest risk factor for disease and disability; in middle-income countries, it is the greatest risk. Alcohol is a causal factor in 60 types of diseases and injuries and a component cause in 200 others. Almost 4% of all deaths worldwide are attributed to alcohol, greater than deaths caused by HIV/AIDS, violence or tuberculosis. Alcohol is also associated with many serious social issues, including violence, child neglect and abuse, and absenteeism in the workplace.

Yet, despite all these problems, the harmful use of alcohol remains a low priority in public policy, including in health policy. Many lesser health risks have higher priority.

The harmful use of alcohol is a particularly grave threat to men. It is the leading risk factor for death in males ages 15–59, mainly due to injuries, violence and cardiovascular diseases. Globally, 6.2% of all male deaths are attributable to alcohol, compared to 1.1% of female deaths. Men also have far greater rates of total burden attributed to alcohol than women – 7.4% for men compared to 1.4% for women. Men outnumber women four to one in weekly episodes of heavy drinking – most probably the reason for their higher death and disability rates. Men also have much lower rates of abstinence compared to women. Lower socioeconomic status and educational levels result in a greater risk of alcohol-related death, disease and injury – a social determinant that is greater for men than women.

The world's highest alcohol consumption levels are found in the developed world, including western and eastern Europe. High-income countries generally have the highest alcohol consumption. However, it does not follow that high income and high consumption always translate into high alcohol-related problems and high-risk drinking. Western European

countries have some of the highest consumption rates but their net alcohol-attributable mortality rates are relatively low, though their alcohol-related disease burden may be high. Many eastern European countries have the highest consumption, risky patterns of drinking and, accordingly, high levels of alcohol-related deaths and disabilities. Every fifth death is due to harmful drinking in the Commonwealth of Independent States (CIS). Outside of the Russian Federation and some neighbouring countries, rates of disease and disability attributable to alcohol are also quite high, for example, in Mexico and in most South American countries.

Worldwide consumption in 2005 was equal to 6.13 litres of pure alcohol consumed per person aged 15 years or older. A large portion of this consumption – 28.6% or 1.76 litres per person – was homemade, illegally produced or sold outside normal government controls. However, despite widespread consumption, a higher percentage of people currently do not drink at all. Almost half of all men and two thirds of women have not consumed alcohol in the past year. Abstention rates are low in high-income, high-consumption countries, and higher in North African and South Asian countries with large Muslim populations. Female abstention rates are very high in these countries. Abstention from alcohol is very important in the global picture on alcohol consumption; it is one of the strongest predictors of the magnitude of alcohol-attributable burden of disease and injuries in populations. Obviously, lifetime abstention from alcohol means exemption from personal alcohol-attributable disease, injury and death. Because abstention is so prevalent in the world, any diminution in abstention trends could have a big impact on the global burden of disease caused by the harmful use of alcohol.

Heavy episodic drinking is another important pattern of drinking because it leads to serious health problems, and is particularly associated with injury. About 11.5% of drinkers have heavy episodic drinking occasions. Heavy episodic drinking is not the only measure of harmful drinking, but data for this aspect of the drinking pattern were not available in many countries. The pattern of drinking score, reflecting the frequency and circumstances of alcohol consumption and the proportion of people drinking alcohol to intoxication, is among the lowest, i.e. less risky, in western European countries, while it is the highest in the Russian Federation, and in some neighbouring countries. Risky patterns of drinking are also highly prevalent in Mexico and southern African countries.

Harmful alcohol consumption is risky both for the drinker and for other people. An intoxicated person can put people in harm's way by involving them in traffic accidents or violent behaviour, or by negatively affecting co-workers, relatives, friends or strangers. A survey in Australia found that two thirds of respondents were adversely affected by someone else's drinking in the past year. Alcohol consumption also affects society at large. Death, disease and injury caused by alcohol consumption have socioeconomic impacts, including the medical costs borne by governments, and the financial and psychological burden to families. The hazardous and harmful use of alcohol also impacts on workers' productivity. Perhaps the biggest social impact is crime and violence related to alcohol consumption, which create significant costs for justice and law enforcement sectors.

Contrary to the belief of many people, the health, safety and socioeconomic problems attributable to alcohol can be effectively reduced. Many evidence-based alcohol policies and prevention programmes are shown to work. One of the most effective is raising alcohol prices by raising taxes. This has the added benefit of generating increased revenues. A recent analysis of 112 studies on the effects of alcohol tax increases affirmed that when taxes go up, drinking goes down, including among problem drinkers and youth. Implementing and enforcing legal drinking ages for the purchase and consumption of alcohol is another effective way to reduce alcohol-attributable problems, as is the setting of maximum blood alcohol concentrations (BACs) for drivers and enforcing them with sobriety checkpoints and random breath testing. These are effective and cost-effective ways to reduce alcohol-related traffic accidents.

Yet, not enough countries use these and other effective policy options to prevent death, disease and injury attributable to alcohol consumption. Since 1999, when WHO first began to report on alcohol policies, at least 34 countries have adopted some type of formal policies. Restrictions on alcohol marketing and on drink-driving have increased but, in general, there are no clear trends on most preventive measures. A large proportion of countries, representing a high percentage of the global population, has weak alcohol policies and prevention programmes that do not protect the health and safety of the populace.

This report is another milestone in WHO's efforts to monitor the situation with alcohol consumption, alcohol-related harm and policy responses worldwide.



global status report on alcohol and health

1. CONSUMPTION

1. CONSUMPTION

Alcoholic beverages are widely consumed throughout the world. While most of the adult population drinks at low-risk levels most of the time or abstains altogether, the broad range of alcohol consumption patterns, from daily heavy drinking to occasional hazardous drinking, creates significant public health and safety problems in nearly all countries. This section examines global and regional alcohol consumption, abstinence from alcohol use and patterns of drinking. It also looks at the use of homemade or illegally produced alcoholic beverages, alcoholic beverage preference and recent trends in alcohol use. The main data source for information presented in this section is the WHO Global Information System on Alcohol and Health (GISAH).

Box 1. The Global Information System on Alcohol and Health

The Global Information System on Alcohol and Health (<http://www.who.int/globalatlas/alcohol>) is a comprehensive information system that includes data on more than 200 alcohol-related indicators. 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: alcohol production and availability; levels of consumption; patterns of consumption; harms and consequences; economic aspects; alcohol control policies; and resources for prevention and treatment. This 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 survey was conducted by WHO and the questionnaire developed for the survey was sent to all WHO Member States through its six regional offices at the beginning of 2008. The 69 questions in the questionnaire were divided into three sections: Section A addressed alcohol policy; Section B addressed alcohol consumption; and Section C addressed alcohol and health indicators. By early 2009, 162 WHO Member States had responded to the survey. This represents a response rate of 84% of WHO Member States and an overall global coverage of 97% of the world's population (see Appendix IV for details).

Box 2. Population data, WHO regions and World Bank income groups

Population data

Most of the population data are from the United Nation Population Division and refer to total population (unless otherwise specified), with data for males and females shown separately whenever available. World totals for males and females include populations living outside WHO Member States and World Bank income groups. Notably, most tables summarizing the world or regions, use the adult (people 15 years and older; 15+ years) population sizes. Hence, they weight data by the population size of the countries in these regions. Similarly, adult per

capita is used to measure alcohol consumption, instead of the also widely used per capita for the whole population. This is to balance the fact that population distributions in developing countries are quite different from developed countries (i.e. they have a much larger proportion of children and young people). Using per capita consumption would mean that consumption among adults would be underestimated in those with many young people if it were assumed that most young people below the age of 15 do not consume significant quantities of alcohol.

WHO regions

Most data in the present report are aggregated according to WHO regions and WHO subregions. For a full list of WHO Member States included in the report by WHO regions and WHO subregions, see Appendix IV.

World Bank income groups

Given that income levels are an important variable associated with overall alcohol consumption, some of the data presented in this report are investigated according to World Bank income groups. Income categories for 2004 are as defined by the World Bank's *World Development Report 2004: Making Services Work for Poor People*. Member States of the United Nations with populations of more than 30 000 are divided among income groups according to 2004 gross national income (GNI) per capita: high income (US\$ 10 066 or more), upper middle income (US\$ 3256–10 065), lower middle income (US\$ 826–3255) and low income (US\$ 825 or less). For a full list of countries and territories by income category, see Appendix IV.

1.1 HOW MUCH DO PEOPLE DRINK?

The true picture of alcohol consumption is often shrouded in myths and assumptions. A statistical presentation and mapping of the level and patterns of global, regional and country alcohol consumption by adults 15 years and older provides a sound basis for the analysis of problems related to alcohol. For this purpose, total adult consumption, unrecorded consumption, consumption in different World Bank income groups, and most consumed beverages in terms of litres of pure alcohol are examined and presented. The principal measure is adult per capita alcohol consumption (APC) in litres of pure alcohol (see Box 3). The country-level data on APC and consumption of different types of alcoholic beverages are presented in Appendix II.

Box 3. Adult per capita alcohol consumption (APC)

Total adult per capita alcohol consumption is the adult (the population of 15 years and over) per capita amount of alcohol consumed in litres of pure alcohol in a given population.

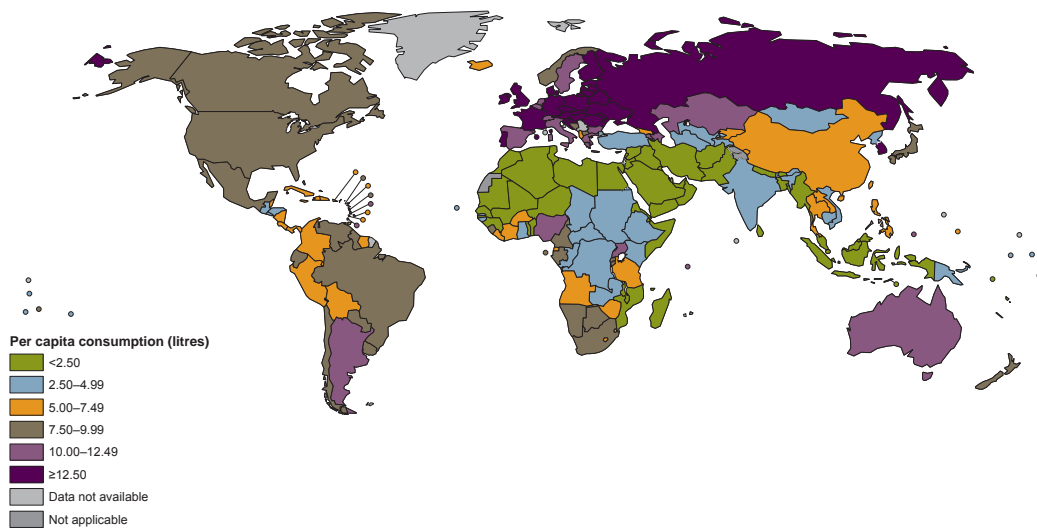
In the present report, total APC consists of the average APC of recorded alcohol in 2003–2005 and the APC of unrecorded alcohol (see Box 4) in 2005. Notably, the recorded APC data were adjusted for 22 countries where the number of tourists was at least the number of inhabitants (see Appendix IV for methodology). There are different data sources and approaches for calculating APC and assessing distribution of APC by alcoholic beverage, as discussed in Appendix IV.

1.1.1 TOTAL ADULT PER CAPITA CONSUMPTION

Worldwide per capita consumption of alcoholic beverages in 2005 equaled 6.13 litres of pure alcohol consumed by every person aged 15 years or older. A large portion of this consumption – 28.6% or 1.76 litres per person – was homemade and illegally produced alcohol or, in other words, unrecorded alcohol. The consumption of homemade or illegally produced alcohol may be associated with an increased risk of harm because of unknown and potentially dangerous impurities or contaminants in these beverages.

A large variation exists in adult per capita consumption (Figure 1). The highest consumption levels can be found in the developed world, mostly the Northern Hemisphere, but also in Argentina, Australia and New Zealand. Medium consumption levels can be found in southern Africa, with Namibia and South Africa having the highest levels, and in North and South America. Low consumption levels can be found in the countries of North Africa and sub-Saharan Africa, the Eastern Mediterranean region, and southern Asia and the Indian Ocean. These regions represent large populations of the Islamic faith, which have very high rates of abstention.

Figure 1. Total adult (15+) per capita consumption, in litres of pure alcohol, 2005^a



^a Best estimates of 2005 using average recorded alcohol consumption 2003–2005 (minus tourist consumption; see Appendix IV for details) and unrecorded alcohol consumption 2005.

1.1.2 UNRECORDED ALCOHOL CONSUMPTION

The consumption of unrecorded alcohol (see Box 4) is a significant issue in all WHO regions, and poses a difficult dimension for measuring the true nature of global alcohol consumption. Data must be culled from many sources to accurately estimate this sector of consumption, which accounts for nearly 30% of total worldwide adult consumption.

Box 4. Unrecorded alcohol

Unrecorded alcohol refers to alcohol that is not taxed and is outside the usual system of governmental control, because it is produced, distributed and sold outside formal channels. Unrecorded alcohol consumption in a country includes consumption of homemade or informally produced alcohol (legal or illegal), smuggled alcohol, alcohol intended for industrial or medical uses, alcohol obtained through cross-border shopping (which is recorded in a different jurisdiction), as well as consumption of alcohol by tourists. Homemade or informally produced alcoholic beverages are mostly fermented beverages made from sorghum, millet, maize, rice, wheat or fruits.

Estimating unrecorded alcohol consumption: in this report, unrecorded alcohol consumption in 2005 is calculated per adult (15+ years), and is based on litres of pure alcohol over a calendar year. There are different data sources and approaches for estimating unrecorded alcohol consumption, as discussed in Appendix IV.

As can be seen from Table 1, the consumption of unrecorded alcohol is associated with relatively high levels of total consumption of alcohol. Conversely, the percentage share of unrecorded alcohol consumption generally increases in regions with less total consumption. This means that the lower the alcohol consumption in countries, the higher the proportion of alcohol being homemade or illegally produced. Overall alcohol consumption is lowest in the Eastern Mediterranean (EMR) and South-East Asia (SEAR) regions, where consumption of homemade or illegally produced beverages is 56.2% and 69.0%, respectively, of APC.

Table 1. Total adult per capita consumption, unrecorded APC and proportion of unrecorded APC of total APC, in litres of pure alcohol, by WHO region, 2005^a

WHO region	Total APC	Unrecorded APC	Proportion of unrecorded APC of total APC (%)
AFR	6.15	1.93	31.4
AMR	8.67	2.01	23.1
EMR	0.65	0.36	56.2
EUR	12.18	2.67	21.9
SEAR	2.20	1.52	69.0
WPR	6.23	1.63	26.2
World	6.13	1.76	28.7

^a Best estimates of 2005 using average recorded alcohol consumption 2003–2005 (minus tourist consumption, see Appendix IV) and unrecorded alcohol consumption 2005.

Across the world, but also within regions, there is a strong negative association between total consumption and the proportion of unrecorded consumption in total consumption. This means that in countries, often poorer or developing countries, where alcohol use is rather low, much of this use is served by homemade or illegally produced and, therefore, cheaper alcohol, whereas in developed countries alcohol consumption is higher but most of it is with recorded legally produced alcohol.

1.1.3 ADULT PER CAPITA CONSUMPTION AND INCOME OF COUNTRIES

Income level of a country (see Box 2) is associated with overall levels of alcohol consumption and also with the levels of consumption of unrecorded alcohol.

Further analysis of adult per capita consumption results in two major findings for all regions of the world. Table 2 shows that APC is higher in countries with higher incomes. Secondly, in countries with higher incomes, there is proportionally less unrecorded alcohol consumed. Generally, with increasing income, alcohol use increases and the proportion of unrecorded alcohol consumption decreases. An exception is the Eastern Mediterranean Region, where alcohol use is generally very low.

Table 2. Total adult per capita consumption (APC), unrecorded APC and proportion of unrecorded APC of total APC, in litres of pure alcohol, by income group, 2005^a

Income	Total APC	Unrecorded APC	Proportion of unrecorded APC of total APC (%)
Low	2.97	1.42	47.9
Lower middle	4.41	1.71	38.9
Upper middle	9.46	2.88	30.5
High	10.55	1.18	11.2
World	6.13	1.76	28.7

^a Best estimates of 2005 using average recorded alcohol consumption 2003–2005 (minus tourist consumption, see Appendix IV) and unrecorded alcohol consumption 2005.

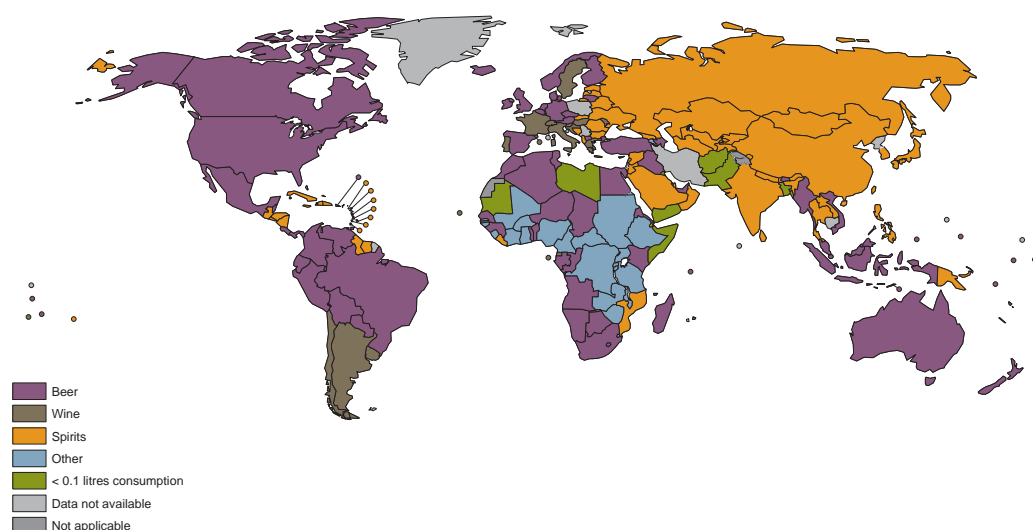
1.1.4 MOST CONSUMED ALCOHOLIC BEVERAGES

Geographical differences exist among the type of alcohol people consume – beer, wine, spirits or other alcoholic beverages. In this report, ‘beer’ includes malt beers, ‘wine’ includes wine made from grapes, and ‘spirits’ include all distilled beverages. Other includes one or several other alcoholic beverages, such as fermented beverages made from sorghum, maize, millet, rice, or cider, fruit wine, fortified wine, etc. Spirits are the most consumed beverages in terms of litres of pure alcohol in Asian and eastern European countries (Figure 2; Table 3).

Wine constitutes the largest proportion of alcohol consumed in some European countries and the South American wine growing countries of Argentina and Chile. The traditional European differences in beverage preference, where northern Europeans once preferred beer while southern Europeans drank more wine, are diminishing. Today, in Spain the most consumed alcoholic beverage in litres of pure alcohol is beer, while in Sweden, it is wine.

Other beverages than wine, beer and spirits are consumed mostly in sub-Saharan Africa, which has generally low alcohol use levels. In the rest of the world – including most of the Western Hemisphere, northern Europe, many African countries and Australia – the most consumed beverage in terms of litres of pure alcohol is beer.

Globally, more than 45% of total recorded alcohol is consumed in the form of spirits, predominantly in the South-East Asia and Western Pacific (WPR) regions (Table 3). Approximately 36% of total recorded alcohol is consumed in the form of beer. Beer

Figure 2. Distribution of most consumed alcoholic beverages, in litres of pure alcohol, 2005^a

^a Best estimates of 2005 using average recorded alcohol consumption 2003–2005 (minus tourist consumption; see Appendix IV for details). In countries marked in green, per capita alcohol consumption is less than 0.1 litre of pure alcohol and no data is available for countries marked in light grey.

Table 3. Distribution of recorded adult per capita consumption of alcoholic beverages (%), by WHO region and the world, 2005^a

WHO region	Spirits (%)	Beer (%)	Wine (%)	Other (%)
AFR	12.0	34.1	5.6	48.2
AMR	32.9	54.7	12.0	0.6
EMR	25.2	37.8	5.7	31.3
EUR	34.6	37.1	26.4	2.5
SEAR	71.0	25.5	2.5	1.0
WPR	54.0	35.5	3.6	6.9
World	45.7	36.3	8.6	10.5

^a Best estimates of 2005 using average recorded alcohol consumption 2003–2005 (minus tourist consumption, see Appendix IV).

consumption is highest in the Region of the Americas (AMR at 54.7% of total recorded adult per capita consumption). Commonly, high overall consumption levels (see Table 1) are found in countries such as the Russian Federation, which display both high beer and high spirits consumption (country data not shown here). As highlighted in Table 3, the consumption of wine as a percentage of total recorded alcohol is globally quite low (8.6%), with significant levels of alcohol consumed in the form of wine in the European Region (EUR at 26.4% of recorded APC) and the Region of the Americas (12.0% of recorded APC). Beverages other than beer, spirits and wine (e.g. fortified wines, rice wine or other fermented beverages made of sorghum, millet, maize) have the highest share in total recorded consumption in the African Region (AFR at 48.2%), and in the Eastern Mediterranean Region (31.3%).

However, it is important to note that Figure 2 and Table 3 only present most consumed alcoholic beverages in terms of litres of pure alcohol, which do not necessarily reflect that the overall level of consumption of this alcoholic beverage is high. For example in India, spirits are the most consumed alcoholic beverages, but this does not mean that

the consumption level of spirits is high, but that the proportion of total alcohol consumed in the form of spirits is high. Similarly, other beverages have high shares in total recorded consumption in the Eastern Mediterranean Region, but overall consumption of alcohol is very low in this WHO region (see Table 1).

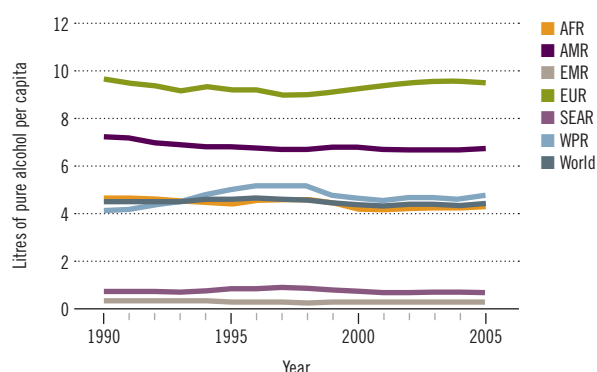
1.2 CHANGES IN ALCOHOL CONSUMPTION OVER TIME

Time series of alcohol consumption complete the picture of global alcohol use. Trends are measured in two ways: annual reported adult per capita alcohol consumption and estimates of five-year changes in consumption, which are not affected by small departures in a trend. For alcohol consumption, both the per capita consumption trend and estimate of five-year change in APC tell similar stories.

1.2.1 TRENDS IN ADULT PER CAPITA CONSUMPTION SINCE 1990

Worldwide recorded per capita consumption has remained stable at around 4.3–4.7 litres of pure alcohol since 1990, including relative stability in all WHO regions. After a slight decrease at the beginning of the 1990s, alcohol use in the European Region increased again to around the same level of 9.5 litres. The initial decline in the 1990s in the Region of the Americas stabilized in the new millennium at about 6.7 litres. There was an increase at the end of the last century in the Western Pacific Region, but recorded consumption then stabilized at around 4.7 litres (Figure 3).

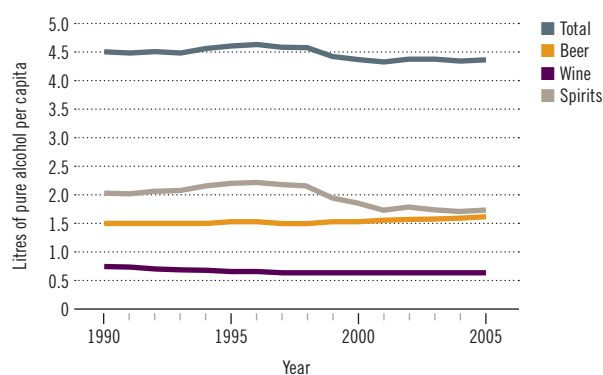
Figure 3. Recorded adult per capita consumption, in litres of pure alcohol, by WHO region and the world, 1990–2005^a



^a Data are three-year averages and the data source changed from year 2000 in some countries (see country profiles).

The trends presented in Figure 4 suggest that the recorded consumption of specific types of alcoholic beverages has been relatively stable since the 1990s, although an almost equal share of beer and spirits has eclipsed the former dominance of spirits in global alcohol use.

Figure 4. Recorded adult per capita consumption of specific alcoholic beverages, 1990–2005^a



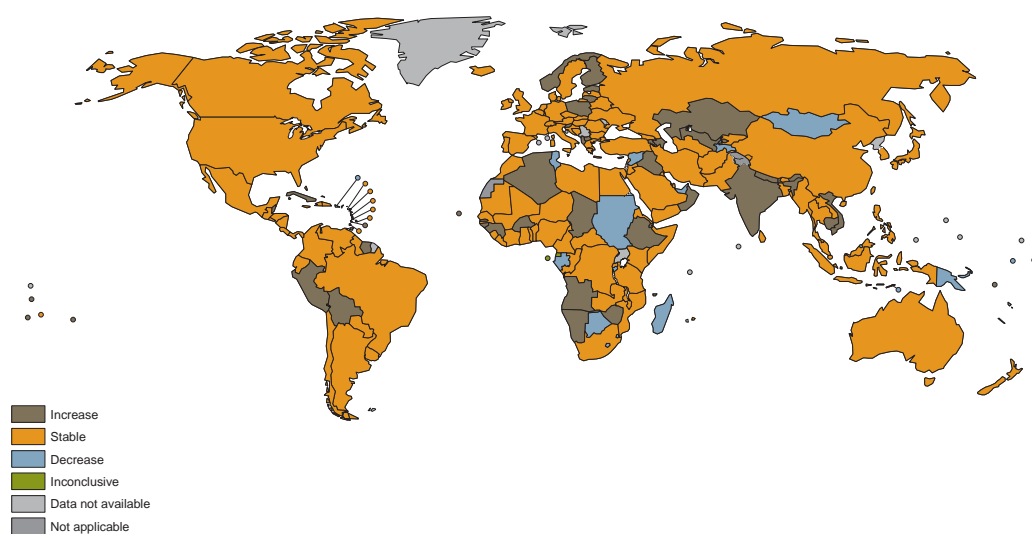
^a Data are three-year averages and the data source changed from year 2000 in some countries (see country profiles).

Two significant trends can be found in countries' consumption of particular types of alcoholic beverages (data not shown): in those countries where beer and wine are the most consumed alcoholic beverages, the overall decrease in alcohol use is due to decreased consumption of these beverages, whereas the other beverages remained stable. In countries where spirits are the most consumed alcoholic beverages, the increase in total alcohol use in the early 1990s was due to an increase in spirits consumption.

1.2.2 FIVE-YEAR CHANGE 2001–2005 IN ALCOHOL USE

The trend seen in Figure 5 of relatively stable global alcohol consumption is also supported by estimates of five-year change in alcohol use for the years 2001–2005.

Figure 5. Five-year change in recorded adult per capita consumption, 2001–2005^a



^a Best estimate of changes in recorded adult (15+) per capita alcohol consumption between 2001 and 2005, calculated using a mathematical algorithm (see Appendix IV).

Table 4 shows that countries with about three quarters of the world's population display a stable five-year trend in recorded consumption. Regional estimates suggest a stable consumption trend in most of the regions, while an increase can be noted in the African Region and the South-East Asia Region.

Table 4. Estimates of five-year trends in recorded adult per capita alcohol consumption (%), by WHO region and the world, 2001–2005

WHO region	Proportion of population displaying five-year trends in recorded APC		
	Increase (%)	Stable (%)	Decrease (%)
AFR	25.3	70.2	4.5
AMR	5.3	94.7	0.0
EMR	5.4	81.5	13.1
EUR	12.1	87.3	0.6
SEAR	68.3	31.7	< 0.1
WPR	5.1	94.5	0.4
World	23.5	74.9	1.6

1.3 ALCOHOL CONSUMPTION AMONG YOUNG PEOPLE

The World Health Organization initiated The Global School-based Student Health Survey (GSHS, 2004), which is a collaborative surveillance project designed to help countries measure and assess the behavioural risk factors including alcohol use and protective factors in 10 key areas among young people (aged 13–15 years). The GSHS is a relatively low-cost school-based survey which uses a self-administered questionnaire to obtain data on young people's health behaviour and protective factors related to the leading causes of morbidity and mortality among children and adults worldwide. Table 5 gives an overview of the national data from GSHS concerning current drinking among young people aged 13–15 years.

In the WHO Global Survey on Alcohol and Health (2008), the five-year trend of under-age drinking was assessed: out of 73 responding countries, 71% indicated an increase, 4% a decrease, 8% were stable and 16% showed inconclusive trends. The five-year trend of drinking among 18–25 year olds indicated that, out of 82 responding countries, 80% showed an increase, 11% a decrease, 6% were stable and 12% showed inconclusive trends.

Overall, hazardous and harmful drinking patterns, such as drinking to intoxication and binge drinking, seem to be on the rise among adolescents and young adults (WHO, 2007; McAllister, 2003; Lancet, 2008). One reason could be the use of alcoholic carbonate drinks, better known as 'alcopops', that is equated with more problematic drinking patterns, such as more frequent drinking, earlier onset of alcohol consumption, drunkenness and more alcohol-related negative consequences (Kraus et al., 2010). Johnston et al. (2008) pointed out that in the Monitoring the Future study since 2003, the perceived risk has risen somewhat and disapproval of binge drinking has increased appreciably in all grades in recent years, especially in the upper grades. In the ESPAD project, on average, no more gender differences in the frequency of drunkenness were found, whereas heavy episodic drinking was more common among boys (Hibell et al., 2009).

Table 5. Percentage of students who drank at least one drink containing alcohol on one or more of the past 30 days, in countries of WHO regions (based on the data from GSHS)^a

WHO region	WHO Member State	Men (%)	Women (%)
AFR	Benin	18.2	12.5
	Botswana	22.8	18.7
	Ghana	26.4	29.3
	Kenya	16.8	12.3
	Malawi	5.3	2.5
	Mauritius	19.3	16.8
	Namibia	35.0	30.9
	Senegal	4.0	2.0
	Seychelles	62.1	61.2
	Swaziland	19.6	14.3
	Uganda	14.1	11.6
	Zambia	38.7	45.1
AMR	Argentina	55.4	49.0
	Costa Rica	23.4	23.6
	Dominica	54.9	54
	Grenada	49.1	43
	Guatemala	18.1	14.2
	Guyana	46.9	25.9
	Saint Lucia	59.2	52.2
	Saint Vincent and the Grenadines	52.6	53.5
	Suriname	35.6	30.0
	Trinidad and Tobago	39.6	42.0
	Uruguay	62.0	57.7
EMR	Lebanon	28.5	12.3
	Morocco	5.5	1.6
EUR	The former Yugoslav Republic of Macedonia	40.8	30.6
	Tajikistan	1.1	0.4
SEAR	Maldives	7.3	2.6
	Myanmar	1.1	0.5
	Indonesia	4.3	0.8
	Thailand	22	10
WPR	Mongolia	6.6	4.5
	China (Beijing)	17.7	8.6
	Philippines	19.6	12.9

^a Data from the different countries range from 2003 to 2010.

Box 5. Surveys among young people with coverage of alcohol use

Data on alcohol consumption among young people stem mainly from surveillance systems focusing on different health behaviours, including alcohol consumption. Surveys are often conducted in schools as they provide a means to sample a large youth population in a cost-effective manner. While many high-income countries participate in school surveys, data on alcohol consumption among young people from low-income countries are scarce. Apart from the GSHS, there are several large surveillance programmes among young people, which include questions on alcohol consumption.

In Europe, there have been two large-scale surveys carried out in an attempt to collect comparable data on alcohol use among young people: on the one hand, The European School Survey Project on Alcohol and other Drugs (ESPAD), and on the other hand, The Health Behaviour in School Children study (HBSC).

The ESPAD project was conducted for the first time in 1995 and provides a reliable overview of trends in licit and illicit drug use among European students (aged 15–16 years) between 1995 and 2007 as well as a comprehensive picture of young people's use of tobacco, alcohol, cannabis and other substances in Europe (Hibell et al., 2009).

The HBSC study was initiated by researchers at the beginning of the 1980s and was subsequently adopted by WHO. It focuses mainly on young people's health, well-being, health behaviour and social context in Europe. Since then, several surveys have been conducted involving young people (aged 11–15 years), the most recent of which was carried out in 2005–2006. The number of participating countries is rising (Currie et al., 2008).

In the United States, an ongoing study of behaviour, attitudes and values of American secondary school children, college students and young adults is called Monitoring the Future. Approximately 50 000 8th, 10th and 12th grade students are surveyed each year and, for a number of years after their initial participation, annual follow-up questionnaires are mailed to a sample of each graduation class (Johnston et al., 2008).

The Centers for Disease Control and Prevention (CDC, 2010) in the United States maintains the Youth Risk Behavior Surveillance System (YRBSS) that includes a national-based survey that is conducted every two years during the spring semester. This system monitors priority health-risk behaviour and the prevalence of obesity and asthma among youth and young adults in 9th to 12th grades (Eaton et al., 2010).

1.4 PATTERNS OF DRINKING

Patterns of alcohol use are as important as per capita consumption in creating an accurate picture of the impact of global alcohol consumption on health. The most influential indicators related to patterns of drinking, which have an inordinate impact on the global alcohol scenario, include abstinence and heavy episodic drinking.

1.4.1 ABSTENTION

Prevalence of abstinence is an indicator that is equally relevant to the description of levels and patterns of alcohol consumption. Within the context of alcohol epidemiology there are several different types of abstinence (see Box 6), each of which has a different effect on global alcohol trends. Abstinence from all forms of alcohol is very prevalent in many parts

of the world and, to a significant extent, determines overall levels of alcohol consumption in a population. The past-year abstinence rate is an important characteristic of a pattern of drinking in a population and provides key information for the interpretation of adult per capita consumption figures.

Box 6. Prevalence of abstinence

Lifetime abstainers: the percentage of those in the population aged 15 years and older, who have never consumed alcohol.

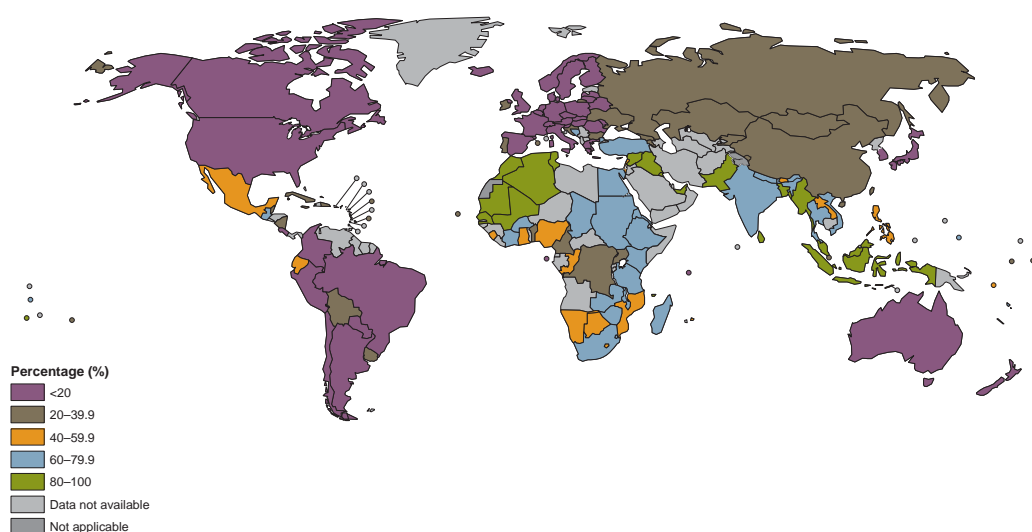
Former drinkers: the percentage of those in the population aged 15 years and older, who have previously consumed alcohol but who have not done so in the previous 12-month period.

Past year abstainers: the percentage of those in the population aged 15 years and older, who did not drink any alcohol in the past 12 months.

Estimating abstinence rates: in this report, best estimates for abstinence rates in 2004 are presented for 131 WHO Member States, based on surveys carried out within the time period 1993–2009.

As shown in Figure 6, lifetime abstinence is the opposite of per capita consumption. In countries with high APC, there are fewer lifetime abstainers compared to countries with low APC. This suggests that WHO regions with the highest per capita consumption, commonly found in the European Region or other developed areas, do not necessarily have the highest consumption per drinker. Often, per drinker consumption is particularly high in countries with moderate or even low APC combined with high abstinence rates (data on drinking among drinkers are not presented here). In such countries, the relatively smaller percentage of the population that drinks is consuming alcohol at high levels.

Figure 6. Lifetime prevalence of abstinence (%), 2004^a



^a Best estimates for abstinence rates in 2004 based on surveys carried out within the time period 1993–2009.

Globally, 45% of the world's population has never consumed alcohol (men: 35%; women: 55%). In addition, 13.1% (men: 13.8%; women: 12.5%) have not consumed alcohol during the past year. In conclusion, almost half of all men and two thirds of all women worldwide have abstained from drinking alcohol in the past 12 months.

Table 6 shows that more women than men in all regions abstained from drinking alcoholic beverages during the past year, which also has been shown in surveys from all over the world. The proportion of former drinkers among past-year abstainers is larger for women in all WHO regions.

Table 6. Prevalence of alcohol abstention by sex, WHO region and the world, 2004^a

WHO region	Sex	Lifetime abstainers (%)	Former drinkers (%)	Past-year abstainers (%)	Former drinkers among past-year abstainers (%)
AFR	Women	65.2	12.9	78.1	16.5
	Men	49.1	14.1	63.1	22.3
	Total	57.3	13.5	70.8	19.1
AMR	Women	27.4	22.4	49.8	45.0
	Men	15.2	17.8	33.0	54.0
	Total	21.5	20.2	41.7	48.4
EMR	Women	93.4	4.8	98.2	4.9
	Men	82.4	12.3	94.7	13.0
	Total	87.8	8.7	96.5	9.0
EUR	Women	24.6	13.5	38.1	35.5
	Men	12.6	11.0	23.5	46.5
	Total	18.9	12.3	31.2	39.4
SEAR	Women	92.8	4.2	97.1	4.4
	Men	68.4	13.5	81.9	16.5
	Total	80.4	8.9	89.3	10.0
WPR	Women	44.5	15.1	59.5	25.3
	Men	14.3	13.9	28.2	49.2
	Total	29.2	14.5	43.7	33.1
World	Women	55.0	12.5	67.5	18.5
	Men	34.9	13.8	48.7	28.4
	Total	45.0	13.1	58.2	22.6

^a Best estimates for abstention rates in 2004 based on surveys carried out within the time period 1993–2009.

1.4.2 PATTERNS OF DRINKING SCORE

Measuring drinking patterns to accurately account for the impact of alcohol consumption is more complex than simply ascertaining the amount of alcohol consumed. In the 2000 Comparative Risk Assessment in the Global Burden of Disease Study (Box 9), a composite measure of drinking patterns – the patterns of drinking score – was developed (see Box 7).

Box 7. Patterns of drinking score (PDS)

Patterns of drinking score reflects *how* people drink instead of *how much* they drink. Strongly associated with the alcohol-attributable burden of disease of 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. Notably, different drinking patterns give rise to very different health outcomes in population groups with the same level of consumption.

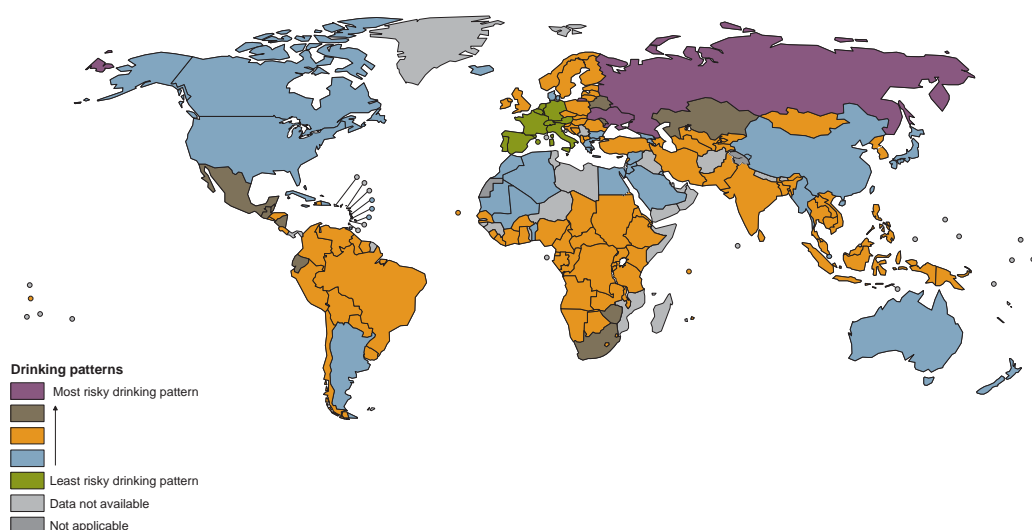
Estimating PDS: the PDS is based on an array of drinking attributes, which are weighted differentially in order to provide the PDS on a scale from 1 to 5:

- 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.

Data for 2005 on the above measures stem from survey information.

There are only a few countries in the world with the lowest patterns of drinking scores, or the least risky patterns of drinking (Figure 7). These countries in southern and western Europe have high adult per capita consumption (see Figure 1). High patterns of drinking scores, or the most risky patterns of drinking, prevail in Kazakhstan, Mexico, the Russian Federation, South Africa and Ukraine. South America (with the exception of wine producing Argentina), and many countries in Africa and South-East Asia, take an intermediate position.

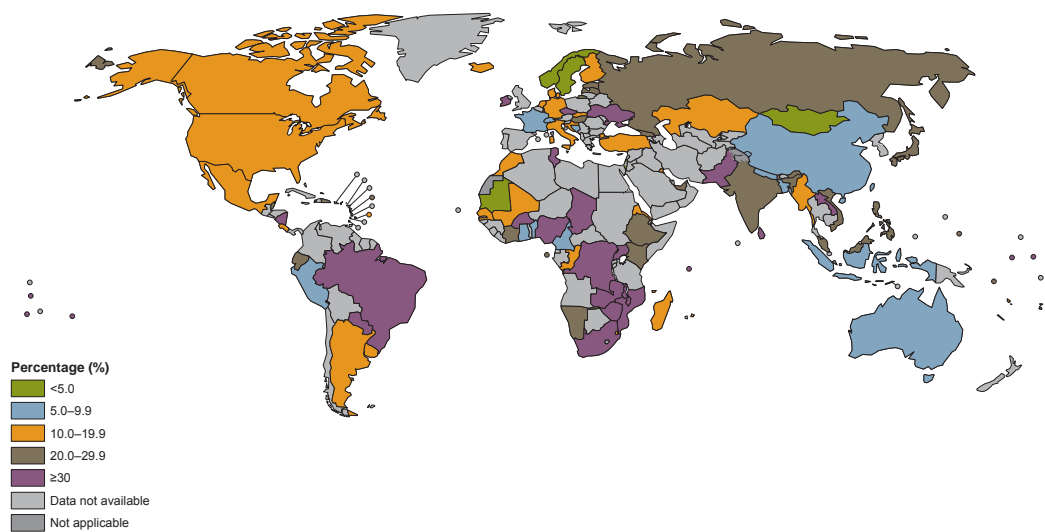
Figure 7. Patterns of drinking score, 2005



1.4.3 HEAVY EPISODIC DRINKING

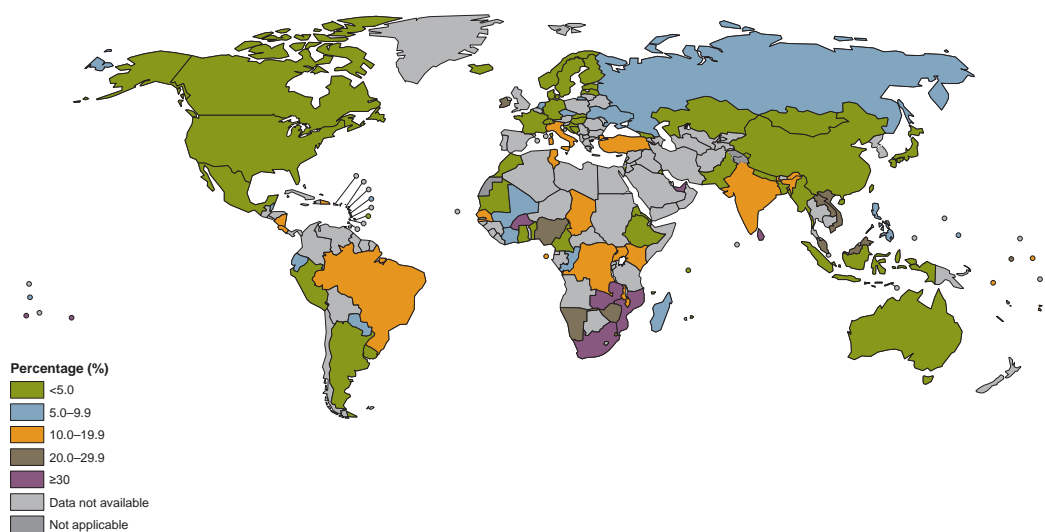
Heavy episodic drinking (HED) is another measurable pattern of alcohol consumption risk. In this report, it is defined as drinking at least 60 grams or more of pure alcohol on at least one occasion in the past seven days. Figures 8 and 9 map the percentages of heavy episodic drinkers among male and female past-year drinkers, respectively, for 62 WHO Member States.

Figure 8. Prevalence of heavy episodic drinking among past-year male drinkers, 2004^a



^a Best estimates for 2004 based on surveys carried out within the time period 1997–2009.

Figure 9. Prevalence of heavy episodic drinking among past-year female drinkers, 2004^a



^a Best estimates for 2004 based on surveys carried out within the time period 1997–2009.

Heavy episodic drinking is one of the most important indicators for acute consequences of alcohol use, such as injuries. Heavy episodic drinking is quite high in many countries with middle to high per capita consumption, such as in Brazil and South Africa. There are also differences among countries with similarly high adult per capita alcohol consumption. In some rather low consuming countries, such as India, Malawi, Pakistan and Zambia, a high proportion of drinkers drink heavily on single occasions, suggesting an “all-or-nothing” type of behaviour (Clausen et al., 2009). In some European countries, such as France with high APC, heavy episodic drinking is rather low, suggesting that APC can be driven by more regular but moderate drinking patterns.

Worldwide, about 11.5% of drinkers have weekly heavy episodic drinking occasions (Table 7), with men outnumbering women by four to one. Men consistently engage in hazardous drinking at much higher levels than women in all regions.

Table 7. Prevalence of weekly heavy episodic drinking among drinkers in the past 12 months by sex, WHO region and the world, 2005

WHO region	Women (%)	Men (%)	Total (%)
AFR	16.2	30.5	25.1
AMR	4.5	17.9	12.0
EMR	17.9	24.9	24.7
EUR	4.6	16.8	11.0
SEAR	12.9	23.0	21.7
WPR	1.3	11.6	8.0
World	4.2	16.1	11.5

There is no consistent picture regarding country income and heavy episodic drinking (data not shown). In the more developed regions like Europe or the Americas, heavy episodic drinking is more common in poorer countries. In developing or emerging regions such as Africa or South-East Asia, richer countries show a higher likelihood of heavy episodic drinking.



global status report on alcohol and health

2. CONSEQUENCES

2. CONSEQUENCES

2.1 ALCOHOL AND HEALTH

The harmful use of alcohol is one of the world's leading health risks. It is a causal factor in more than 60 major types of diseases and injuries and results in approximately 2.5 million deaths each year. If we take into consideration the beneficial impact of low risk alcohol use on morbidity and mortality in some diseases and in some population groups, the total number of deaths attributable to alcohol consumption was estimated to be 2.25 million in 2004 (WHO, 2009a). This accounts for more deaths than caused by HIV/AIDS or tuberculosis. Thus, 4% of all deaths worldwide are attributable to alcohol. The harmful use of alcohol is especially fatal for younger age groups and alcohol is the world's leading risk factor for death among males aged 15–59.

Approximately 4.5% of the global burden of disease and injury is attributable to alcohol. Alcohol consumption is estimated to cause from 20% to 50% of cirrhosis of the liver, epilepsy, poisonings, road traffic accidents, violence and several types of cancer. It is the third highest risk for disease and disability, after childhood underweight and unsafe sex. Alcohol contributes to traumatic outcomes that kill or disable people at a relatively young age, resulting in the loss of many years of life to death and disability. This section examines the causal links between alcohol and death, disease and injury.

2.1.1 HOW ALCOHOL CAUSES DISEASE AND INJURY

Alcohol is linked both to the incidence of disease and the course of disease. The impact of alcohol consumption on disease and injury is associated with two separate but related dimensions of drinking by individuals: the volume of alcohol consumed and the pattern of drinking. More than 30 International Classification of Diseases (ICD)-10 codes include alcohol in their name or definition, indicating that alcohol consumption is a necessary cause. Of these, alcohol use disorders (AUDs) are the most significant (see Box 8).

In addition, alcohol has been identified as a component cause for over 200 ICD-10 disease codes (see Box 9). A component cause may be one among a number of components, none of which alone is sufficient to cause the disease. When a number of the components are present, the sufficient cause is formed.

Apart from the volume of consumption, the pattern of drinking has been linked to two main categories of disease outcome: injuries (both unintentional and intentional) and cardiovascular diseases (mainly ischaemic heart disease). One of the key characteristics of the pattern of drinking is the presence of heavy drinking events.

Box 8. Alcohol use disorders

Alcohol use disorders: for the purposes of the WHO Global Burden of Disease (GBD) Study (see Box 9), the group of “alcohol use disorders” comprises not only diagnostic categories of the harmful use of alcohol and alcohol dependence, but also of alcohol psychoses.

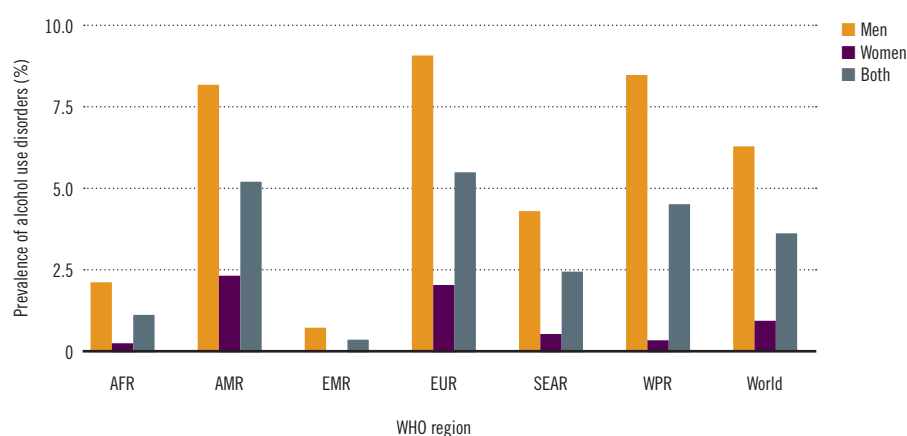
Harmful use of alcohol (also often referred to as “alcohol abuse”) is defined as “a pattern of alcohol use that is causing damage to health” (ICD-10).

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, 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 physical withdrawal state” (ICD-10).

Alcohol psychosis is defined as a cluster of psychotic phenomena that occur during or following alcohol use but that are not explained on the basis of acute intoxication alone and do not form part of a withdrawal state (ICD-10).

Estimating prevalence of AUDs: the present figure describes the prevalence of AUDs in the 15–64 age group during 2004. An indirect method for prevalence estimations of AUDs is used, based on survey results incorporating questions addressing diagnostic criteria for AUDs.

Figure 10. Prevalence of alcohol use disorders by sex, WHO region and the world, 2004^a



^a Source: Rehm et al., 2009.

The volume and pattern of alcohol consumption lead to three mechanisms that directly impact disease and injury. These mechanisms are (1) toxic and other effects of alcohol on organs and tissues; (2) intoxication; and (3) dependence (Rehm et al., 2003). In addition, the quality of alcoholic beverages may have an impact on health and mortality, for instance, when homemade or illegally produced alcoholic beverages are contaminated with methanol or lead.

Box 9. Major disease and injury categories causally linked to alcohol

Neuropsychiatric disorders: AUDs are the most important disorders caused by alcohol consumption in this category. Epilepsy is another disease causally impacted by alcohol, over and above withdrawal-induced seizures (Samokhvalov et al., 2010). Many other neuropsychiatric disorders are associated with alcohol, but whether they are caused or the extent to which they are caused by alcohol consumption is not clear.

Gastrointestinal diseases: liver cirrhosis and pancreatitis (both acute and chronic) can be caused by alcohol consumption. Higher levels of alcohol consumption create an exponential risk increase. The impact of alcohol is so large for both disease categories that there are sub-categories that are labelled as “alcoholic” or “alcohol-induced”.

Cancer: alcohol consumption has been identified as carcinogenic for the following cancer categories (Baan et al., 2007): cancers of the colorectum, female breast, larynx, liver, oesophagus, oral cavity and pharynx. The higher the consumption of alcohol, the greater the risk for these cancers: even the consumption of two drinks per day causes an increased risk for some cancers, such as breast cancer (Hamajima et al., 2002).

Intentional injuries: alcohol consumption, especially heavy drinking, has been linked to suicide and violence. In this report, intentional injuries include violence and self-inflicted injuries.

Unintentional injuries: almost all categories of unintentional injury are impacted by alcohol consumption. The effect is strongly linked to the level of alcohol concentration in the blood and the resulting effects on psychomotor abilities. Higher levels of alcohol consumption create an exponential risk increase. In this report unintentional injuries include road traffic accidents, falls, drowning, poisoning and other unintentional injuries.

Cardiovascular diseases: the relationship between alcohol consumption and cardiovascular diseases is complex. Light to moderate drinking can have a beneficial impact on morbidity and mortality for ischaemic heart disease and ischaemic stroke. However, the beneficial cardio-protective effect of drinking disappears with heavy drinking occasions. Roerecke and Rehm (2010) have shown, based on meta-analyses, that, on average, light to moderate drinkers experienced no protective effect if they reported at least one heavy drinking occasion per month. Moreover, alcohol consumption has detrimental effects on hypertension, cardiac dysrhythmias and haemorrhagic stroke, regardless of the drinking pattern (Rehm et al., 2010).

Fetal alcohol syndrome and pre-term birth complications: alcohol consumption by an expectant mother may cause these conditions, which are detrimental to the health and development of neonates.

Diabetes mellitus: a dual relationship exists between alcohol consumption and diabetes mellitus. Light to moderate drinking may be beneficial while heavy drinking is detrimental (Baliunas et al., 2009a).

In addition to the disease and injury categories listed in Box 9, new evidence points to a causal link between alcohol and infectious diseases. Namely, alcohol consumption weakens the immune system, thus enabling infections by pathogens, which cause pneumonia and tuberculosis. This effect is markedly more pronounced with heavy drinking and there may be a threshold effect (Lönnroth et al., 2008). A strong association exists between alcohol consumption and HIV infection and sexually transmitted diseases (Baliunas et al., 2009b). It may be that a common third cause, such as having particular personality traits, impacts on both alcohol consumption and risky sexual behaviour leading to infectious diseases (Shuper et al., 2010). However, there is a clear causal effect of alcohol consumption on HIV/AIDS patients' adherence to antiretroviral treatment (Hendershot et al., 2009).

This report does not discuss the estimates of detrimental effects of alcohol consumption on burden of infectious diseases, pancreatic disease and cardiac dysrhythmias, in part because these disease categories were not included separately in *The global burden of disease: 2004 update* (WHO, 2008b).

2.2 THE BURDEN OF DISEASE ATTRIBUTABLE TO ALCOHOL

The relationship between alcohol consumption and health outcomes is complex, often resulting from a series of factors, many of which are related to levels and patterns of alcohol consumption, but also to other factors, such as drinking culture, alcohol regulation or the lack of it, and alcoholic beverage quality (Box 10).

Box 10. The WHO Global Burden of Disease (GBD) project

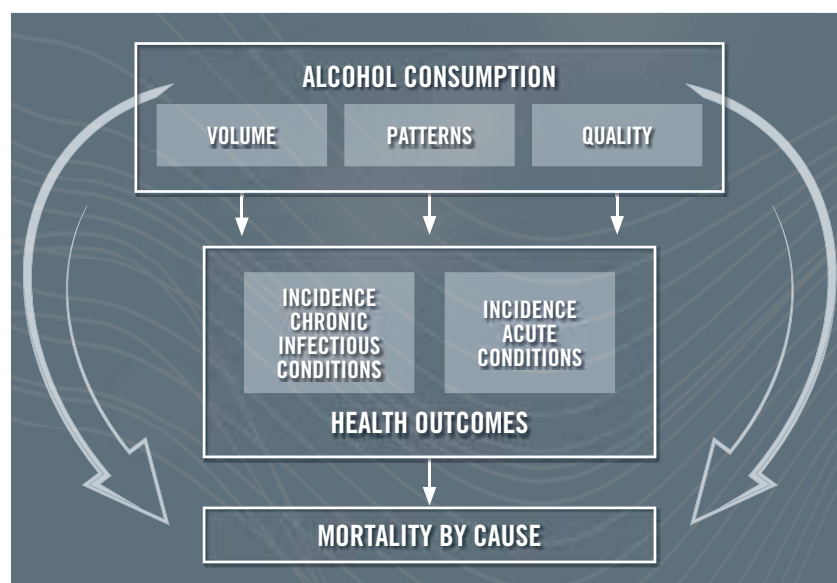
The WHO Global Burden of Disease project is a comprehensive and comparable assessment of mortality and loss of health from diseases, injuries and risk factors. The project draws from a wide range of data sources to quantify global and regional impacts of diseases and injuries, such as coronary heart disease, HIV/AIDS and road traffic accidents, on population health, as well as the impacts of risk factors, such as high blood pressure, unsafe sex and tobacco use, on population health. Alcohol use is included as a risk factor and alcohol use disorder is included as a specific disease entity in the GBD project.

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 measure of overall disease burden. The contribution of a risk factor to disease or a death is quantified using the population-attributable fraction (PAF).

Population-attributable fraction is the proportional reduction in population disease or mortality that would occur if exposure to a risk factor were reduced to an alternative exposure scenario (e.g. no alcohol use). Many diseases are caused by multiple risk factors, and individual risk factors may interact in their impact on overall risk of disease.

Figure 11 is the conceptual model used for the analysis of the impact of alcohol on health within the WHO Global Burden of Disease Study. It shows how inter-related factors result in alcohol-related death and burden of disease.

Figure 11. Causal model of alcohol consumption, intermediate mechanisms and health consequences^a



^a Source: Rehm et al., 2010.

2.2.1 ALCOHOL-ATTRIBUTABLE MORTALITY

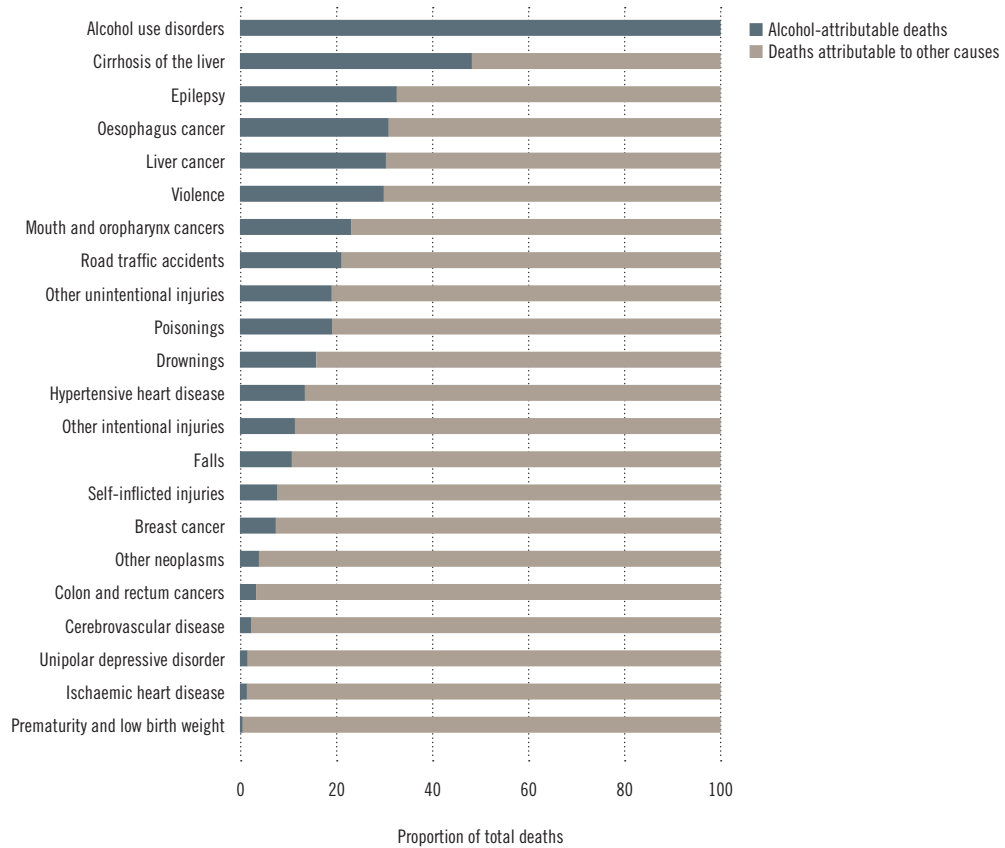
In 2004, 3.8% of all global deaths were attributable to alcohol, 6.2% for men and 1.1% for women. The harmful use of alcohol is the leading risk factor for death in men aged 15–59. The significant difference between the sexes is an indicator of the difference in drinking between men and women, both in volume of alcohol consumed and in heavy drinking occasions (Box 11). Table 8 gives an overview of global deaths associated with alcohol consumption.

Box 11. Alcohol-attributable deaths

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.

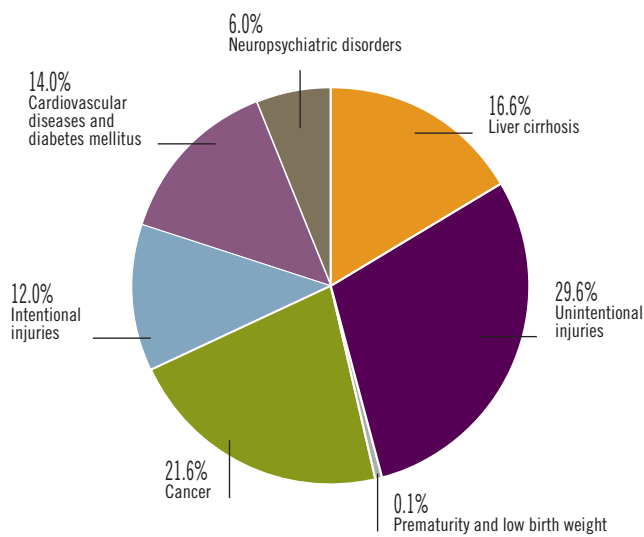
Estimating alcohol-attributable deaths were based on PAFs for alcohol and the number of deaths for each of the disease or injury categories. Population-attributable fractions are calculated based on the level of exposure to alcohol and the risk relations between consumption and different disease categories.

Figure 12. Global alcohol-attributable deaths as a percentage of total deaths by disease or injury, 2004^a



^a The population-attributable fraction for diabetes mellitus is -0.1 and is, hence, not included in this figure.

Figure 13. Global distribution of all alcohol-attributable deaths by disease or injury, 2004^a

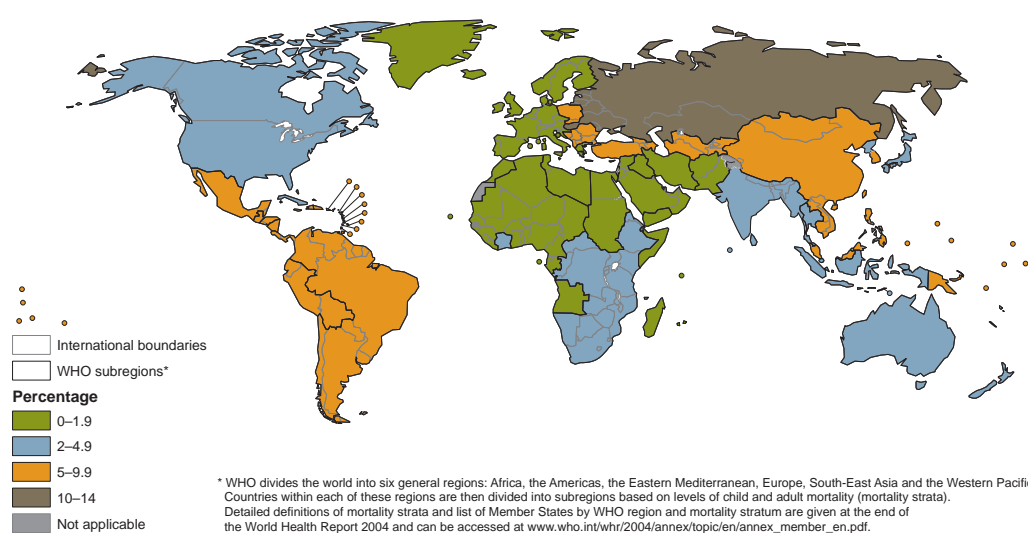


^a Percentages may not add up to 100% due to rounding.

Significant geographical differences exist for the impact of alcohol consumption on mortality, which is not surprising given the wide variation in the level and pattern of alcohol consumption, as well as the rates of deaths from other risk factors. Figure 14 gives an overview of alcohol-attributable mortality by WHO subregions.

The fact that there are least alcohol-attributable deaths in countries with predominantly Muslim populations is not surprising because of the high number of abstainers due to religious reasons. The relatively small proportion of deaths in western European countries in spite of the high level of alcohol consumption in these countries can be explained by the drinking patterns, the age structure, and the beneficial impact of low-risk drinking in these countries.

Figure 14. Alcohol-attributable deaths as a percentage of total deaths by WHO subregion, 2004



By far the highest proportion of alcohol-attributable mortality is in the Russian Federation and neighbouring countries, where every fifth death among men and 6% of deaths among women are attributable to the harmful use of alcohol. Figure 15 shows the relatively high numbers of alcohol-attributable deaths in economically expanding middle-income countries, such as Brazil and China. The relatively low overall mortality in high-income countries is due to the drinking patterns in these countries and to the age structure of the population, but largely because the beneficial impact of low-risk drinking on mortality in some health conditions in the elderly was taken into account in the estimations.

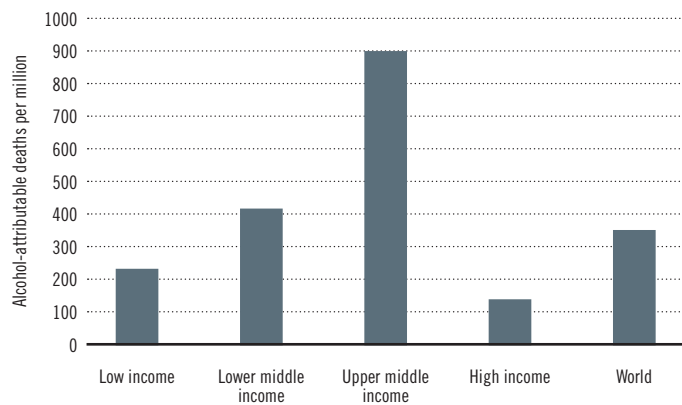
Table 8. Global alcohol-attributable deaths, distribution of deaths and population-attributable fractions by disease and injury, 2004^a

Disorder or injury	Alcohol-attributable deaths			Distribution of alcohol-attributable deaths (%)			Population-attributable fractions (%)		
	Total deaths	Male	Female	Total	Male	Female	Total PAFs	Male	Female
Cirrhosis of the liver	372 995	297 047	75 948	16.6	15.3	24.5	48.3	58.2	29.0
Road traffic accidents	268 246	237 677	30 569	11.9	12.3	9.9	21.0	25.2	9.2
Other unintentional injuries	223 252	177 502	45 750	9.9	9.1	14.8	19.2	25.0	10.1
Liver cancer	184 679	154 452	30 227	8.2	8.0	9.8	30.3	37.0	15.7
Violence	180 499	157 428	23 071	8.0	8.1	7.4	30.1	32.5	20.1
Oesophagus cancer	157 058	131 731	25 326	7.0	6.8	8.2	30.9	39.8	14.3
Hypertensive heart disease	130 895	100 860	30 035	5.8	5.2	9.7	13.3	22.1	5.7
Cerebrovascular disease	110 544	154 807	-44 263 ^a	4.9	8.0	-14.3 ^a	1.9	5.8	-1.5 ^a
Self-inflicted injuries	90 060	73 523	16 536	4.0	3.8	5.3	10.7	13.9	5.2
Alcohol use disorders	88 133	75 416	12 717	3.9	3.9	4.1	100.0	100.0	100.0
Ischaemic heart disease	85 509	120 146	-34 637 ^a	3.8	6.2	-11.2 ^a	1.2	3.1	-1.0 ^a
Mouth and oropharynx cancers	76 987	67 736	9251	3.4	3.5	3.0	23.0	28.3	9.6
Poisonings	66 513	53 055	13 458	3.0	2.7	4.3	19.2	23.9	10.9
Drownings	60 835	48 363	12 473	2.7	2.5	4.0	15.7	18.4	10.0
Falls	47 505	39 873	7 632	2.1	2.1	2.5	11.2	15.3	4.7
Epilepsy	46 457	33 716	12 741	2.1	1.7	4.1	32.7	41.1	21.2
Breast cancer	38 321	0	38 321	1.7	0.0	12.4	7.4	0.0	7.4
Colon and rectum cancers	18 313	15 436	2877	0.8	0.8	0.9	2.9	4.6	0.9
Other neoplasms	11 383	7383	4000	0.5	0.4	1.3	7.0	8.9	5.0
Prematurity and low birth weight	3210	1756	1454	0.1	0.1	0.5	0.3	0.3	0.3
Unipolar depressive disorder	225	183	41	0.0	0.0	0.0	1.5	2.7	0.5
Diabetes mellitus	-11 767 ^a	-7979 ^a	-3788 ^a	-0.5 ^a	-0.4 ^a	-1.2 ^a	-0.1 ^a	-1.6 ^a	-0.6 ^a
Net alcohol deaths	2 249 852	1 940 111	309 739	100.0	100.0	100.0	3.8	6.2	1.1

^a Depending on the drinking pattern, alcohol can have a protective effect for some subgroups of populations. In these specific cases, the number of alcohol-attributable deaths (AADs) may be negative.

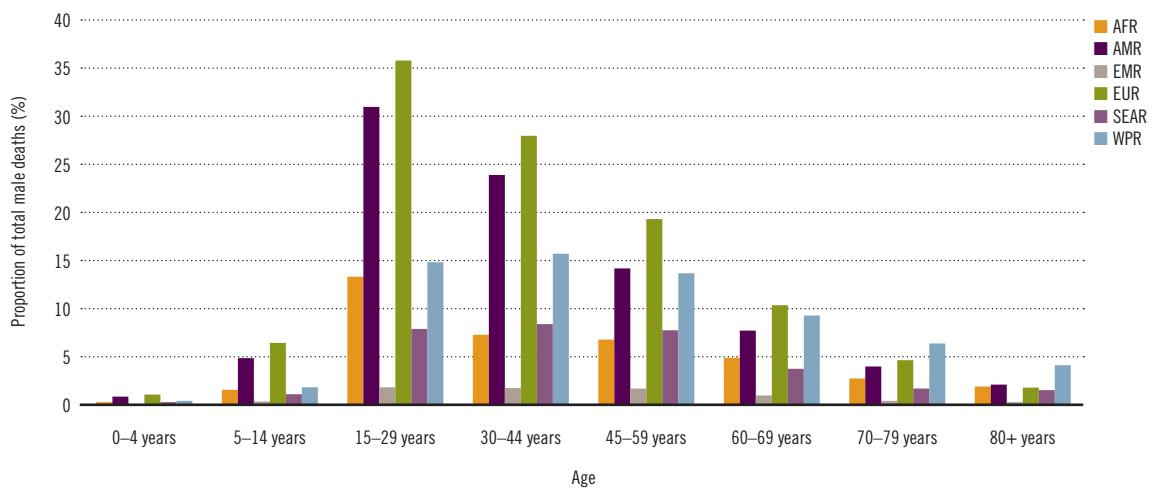
Figure 12 shows the distribution of all deaths attributable to alcohol as a risk factor. Most of the deaths caused by alcohol were in the categories of injury, cancer, cardiovascular disease and liver cirrhosis. Intentional and unintentional injuries account for 42% of all alcohol-attributable deaths (Table 8), which underlines the importance of addressing the intoxication propensities of alcohol. Alcohol-attributable deaths from neuropsychiatric disorders consist of 65% deaths due to alcohol use disorders and 35% deaths due to epilepsy and unipolar depressive disorder.

Figure 15. Alcohol-attributable deaths per million inhabitants by income group and the world, 2004



As mentioned earlier, the harmful use of alcohol is the leading risk factor for male deaths in the 15–59 age category (see Figure 16). Men in this age group have much higher risks of dying than women in the same age category in every region of the world. This is mainly because of injuries, including violence and conflict, and higher levels of heart disease. The gender difference is most pronounced in the Caribbean, eastern Europe, Latin America and the Middle East.

Figure 16. Proportion of alcohol-attributable male deaths (%) of all male deaths by age group and WHO region, 2004



2.2.2 ALCOHOL-ATTRIBUTABLE BURDEN OF DISEASE AND INJURY

Disability-adjusted life years represent a measure of overall disease burden (see Box 12). In 2004, 4.5% of the global burden of disease and injury was attributable to alcohol: 7.4% for men and 1.4% for women (Table 9).

Box 12. Disability-adjusted life years

Disability-adjusted life years are a time-based measure of health status, which was developed as part of the Global Burden of Disease Study. DALYs are years of life lost due to premature mortality combined with years of life lost due to time lived in less than full health to create a single indicator that assesses the overall burden of disease for a given population.

Estimating alcohol-attributable DALYs: DALYs data for 15+ years population in 2004 were obtained from *The global burden of disease: 2004 update*.

Table 9. Alcohol-attributable burden of disease, distribution of DALYs and population-attributable fractions by disease and injury, 2004^{a,b}

Disorder or injury	Alcohol-attributable DALYs ('000s)			Distribution of alcohol-attributable DALYs (%)			Population-attributable fractions (%)		
	Total DALYs	Male	Female	Total	Male	Female	Total PAFs	Male	Female
Alcohol use disorders	23 738	21 154	2584	34.2	35.7	25.5	100.0	100.0	100.0
Road traffic accidents	8046	7123	923	11.6	12.0	9.1	19.5	24.4	7.7
Cirrhosis of the liver	6632	5271	1361	9.6	8.9	13.4	48.6	59.4	28.5
Other unintentional injuries	6208	5043	1165	8.9	8.5	11.5	12.2	16.4	5.8
Violence	5443	4814	630	7.8	8.1	6.2	25.1	26.9	16.5
Liver cancer	2210	1860	350	3.2	3.1	3.5	32.9	39.4	17.6
Epilepsy	2150	1451	699	3.1	2.5	6.9	27.4	34.3	19.3
Self-inflicted injuries	2083	1712	372	3.0	2.9	3.7	10.6	14.6	4.7
Ischaemic heart disease	1807	1917	-110	2.6	3.2	-1.1	2.9	5.1	-0.4
Cerebrovascular disease	1579	1598	-19	2.3	2.7	-0.2	3.4	6.6	-0.1
Oesophagus cancer	1563	1300	263	2.3	2.2	2.6	32.8	41.7	16.0
Poisonings	1449	1170	278	2.1	2.0	2.7	19.5	23.9	10.9
Drownings	1378	1129	249	2.0	1.9	2.5	12.8	15.4	7.4
Hypertensive heart disease	1203	954	249	1.7	1.6	2.5	15.0	23.4	6.3
Falls	1152	977	175	1.7	1.6	1.7	6.7	9.4	2.6
Unipolar depressive disorder	1023	794	229	1.5	1.3	2.3	1.6	3.3	0.6
Mouth and oropharynx cancers	973	862	112	1.4	1.5	1.1	25.7	30.9	11.2
Breast cancer	546	0	547	0.8	0.0	5.4	8.2	0.0	8.3
Colon and rectum cancers	221	183	37	0.3	0.3	0.4	3.8	5.7	1.4
Other neoplasms	128	84	43	0.2	0.1	0.4	6.5	8.3	4.6
Prematurity and low birth weight	120	645	55	0.2	0.1	0.5	0.3	0.3	0.3
Diabetes mellitus	-280	-225	-56	-0.4	-0.4	-0.5	-1.4	-2.5	-0.5
Net alcohol DALYs	69 375	59 237	10 137	100.0	100.0	100.0	4.5	7.4	1.4

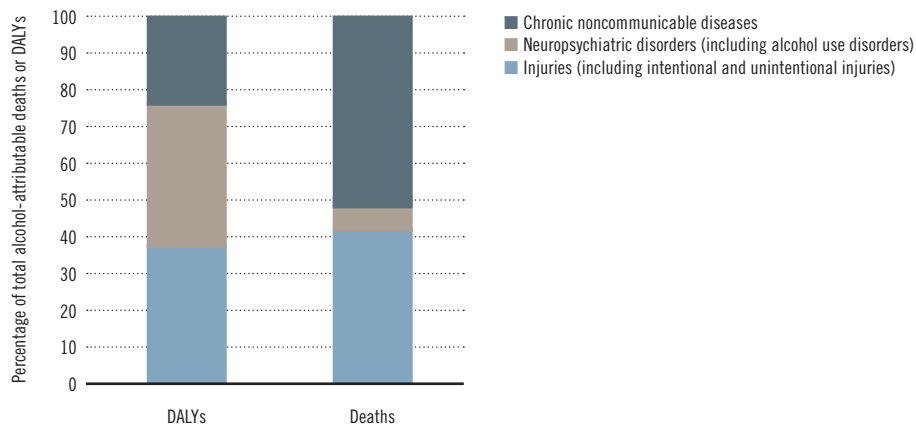
^a Depending on the drinking pattern, alcohol can have a protective effect for some subgroups of populations. In these specific cases, the number of alcohol-attributable DALYs may be negative.

^b DALYs may not add up to net alcohol DALYs due to rounding.

The relative effect of neuropsychiatric disorders linked to alcohol on disease burden was far more pronounced than its effect on mortality (Figure 17). Approximately 39% of all DALYs were for neuropsychiatric disorders compared with 6% for all deaths. Alcohol-attributable DALYs from neuropsychiatric disorders consist of 88% DALYs due to alcohol use disorders and 12% DALYs due to epilepsy and unipolar depressive disorder.

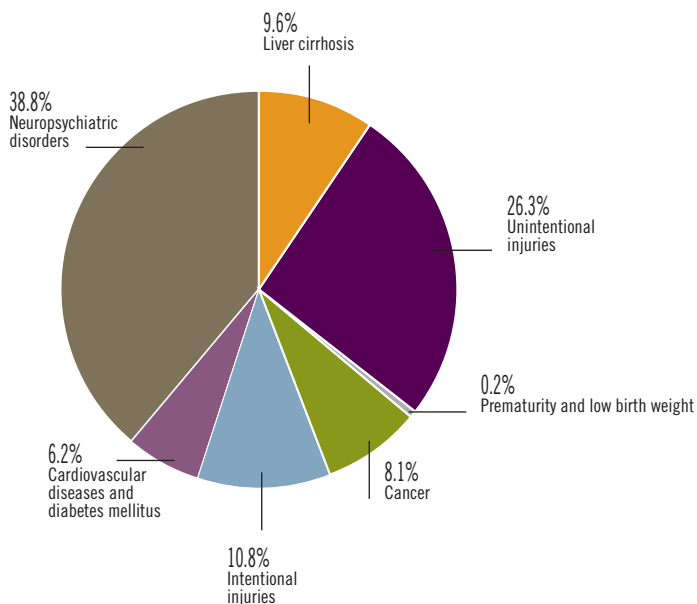
Alcohol use disorders, which are responsible for the largest proportion of all alcohol-attributable DALYs, cause significant disability but much less mortality than chronic non-psychiatric diseases. The relatively lesser importance of chronic noncommunicable diseases in distribution of alcohol-attributable DALYs is mainly due to the age distribution of these diseases and injuries. A more detailed distribution of alcohol attributable DALYs can be seen in Figure 18.

Figure 17. Global distribution of alcohol-attributable deaths and DALYs by broad disease and injury categories, 2004^a



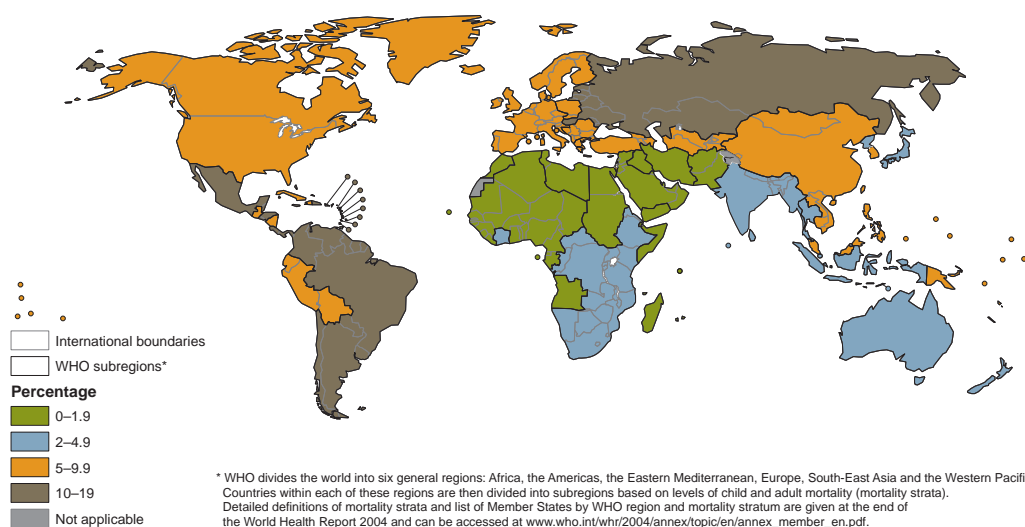
^a The contribution of premature and low birth weight is too small to be visible in the figure.

Figure 18. Global distribution of all alcohol-attributable DALYs by disease or injury, 2004



As expected, there was substantial regional variability for the global burden of disease and injury similar to that for alcohol-attributable deaths (Figure 19). For high-income countries in Europe, there is a much higher disease burden compared to death because of the significant impact of disorders caused by alcohol use on disability and poor health in populations.

Figure 19. Alcohol-attributable DALYs as a percentage of total DALYs by WHO subregion, 2004



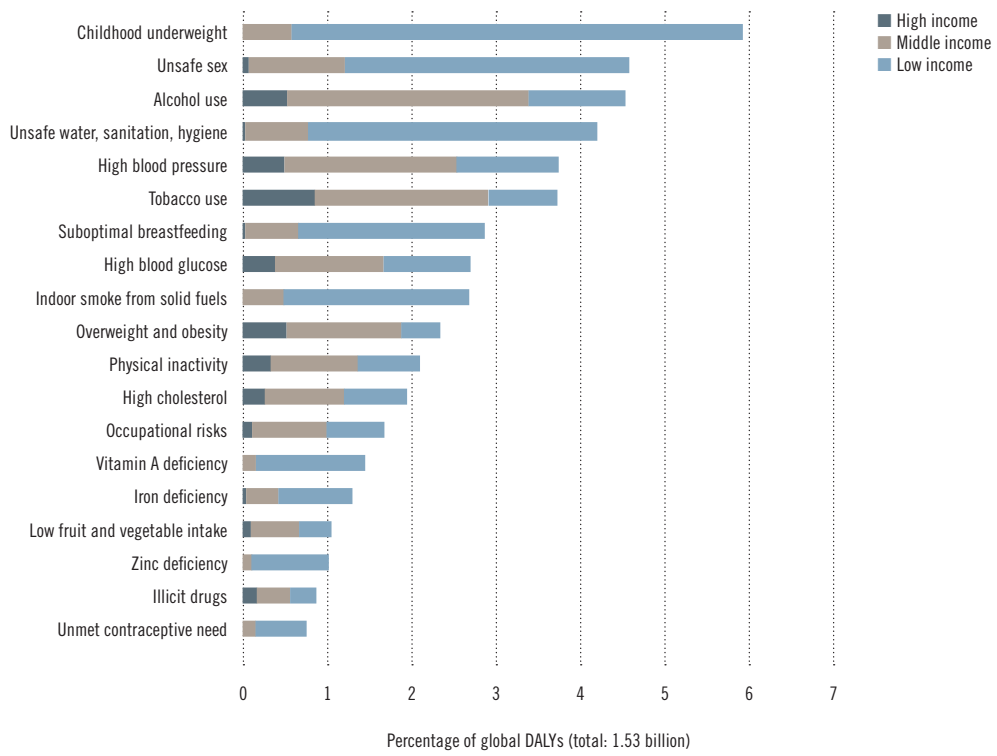
2.2.3 ALCOHOL CONSUMPTION COMPARED TO OTHER HEALTH RISKS

Alcohol ranks eighth among global risk factors for death, while it is the third leading global risk factor for disease and disability (Figure 20), after childhood underweight and unsafe sex. Overall, the effect of alcohol consumption on DALYs is more pronounced than on mortality for two reasons: alcohol-attributable deaths occur relatively early in life thus resulting in many years lost due to premature mortality, and because alcohol use disorders are often very disabling. In two WHO regions (the Americas and the Western Pacific) and in many middle-income countries, alcohol consumption is the greatest risk factor for the burden of disease.

Besides the numerous chronic and acute health effects, alcohol consumption is also associated with widespread psychosocial consequences, including violence, child neglect and abuse, absenteeism in the workplace, and many other impacts. Considering the significance of alcohol consumption compared to other health risks, the harmful use of alcohol is not given proper attention in public policy, particularly since other lesser health risks have higher priority.

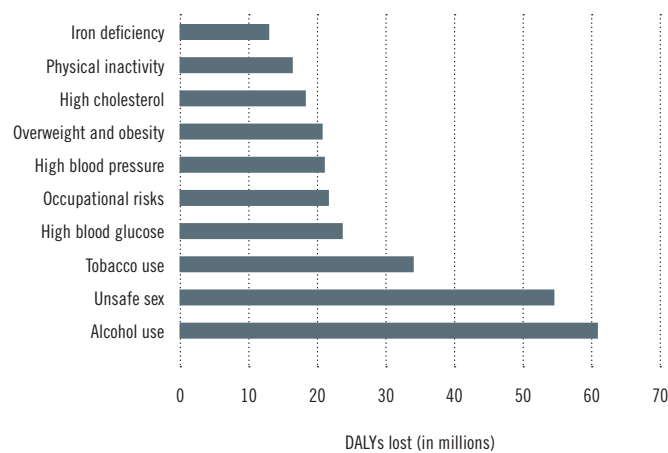
Figure 20 shows the comparative burden of disease attributable to global risk factors by level of economic development.

Figure 20. Global percentages of DALYs attributed to 19 leading risk factors by income group, 2004



Because the health impact from alcohol strikes relatively early in life, it is the leading risk factor for mortality and the overall burden of disease (Figure 21) in the 15–59 age group.

Figure 21. DALYs lost attributable to 10 leading risk factors for the age group 15–59 years in the world, 2004



2.2.4 ALCOHOL, HEALTH AND ECONOMIC DEVELOPMENT

Death, disease and injury related to alcohol consumption are clearly linked to economic status, and this is true for individuals, countries and regions. Lower economic development and socioeconomic status generally mean greater health problems related to alcohol, at least among people who drink alcohol.

The lower the economic development of a country or region, the higher the alcohol-attributable mortality and burden of disease and injury per litre of pure alcohol consumed (Table 10). Also, the lower the socioeconomic status of a person within a country, the higher the alcohol-attributable disease burden.

Overall, the relationship between alcohol consumption, economic development and disease burden is complex. In low- to middle-income countries – up to about US\$ 20 000 per capita purchasing power parity-adjusted GDP – the higher the economic development, the higher the consumption of alcohol and the lower the number of abstainers.

The lower the economic development of a country or region, the higher the alcohol-attributable mortality and burden of disease and injury per litre of pure alcohol consumed (Table 10).

Table 10. Economic wealth and alcohol-attributable mortality, and burden of disease and injury, by WHO subregion, 2004

WHO subregion	DALYs ('000s)	Deaths ('000s)	DALYs per litre per 1000 inhabitants	Deaths per litre per 10 000 inhabitants	GDP-PPP in US\$ per capita
AFR D	2591	90	1.83	1.00	1879
AFR E	5324	179	3.47	1.80	1615
AMR A	3400	55	1.34	0.24	37 765
AMR B	8767	264	3.23	1.04	8480
AMR D	1161	28	3.24	0.96	4297
EMR B	258	8	2.58	0.78	11 607
EMR D	517	15	3.74	1.19	2528
EUR A	2988	25	0.70	0.08	28 880
EUR B	2744	110	2.17	0.92	7803
EUR C	11 893	484	4.00	1.75	9211
SEAR B	2945	80	5.76	1.86	3523
SEAR D	9193	275	5.32	1.92	1768
WPR A	791	31	0.63	0.29	29 653
WPR B	18 338	611	2.53	0.95	4017
World	70 910	2255	2.9	1.0	10 930

Studies on relative risk for alcohol-related health problems clearly show the socioeconomic differences (Box 13). Relative risk, in these cases, is the risk of alcohol-attributable death, disease or injury in one group relative to other groups, as defined by socioeconomic status (SES).

Box 13. Alcohol, health and socioeconomic differences

The lower the socioeconomic status of a person within a country, the higher the alcohol-attributable disease burden per litre of pure alcohol consumed. Alcohol increases existing differences in mortality and morbidity between higher and lower socioeconomic strata. In England, Scotland, and Wales from 1988 to 1994, male census employment data linked to death records showed that unskilled workers had 4.5 times greater relative risk for alcohol-related mortality and 3.6 times greater relative risk for chronic liver disease and cirrhosis compared to professional workers (Harrison & Gardiner, 1999). In Finland, census data linked to death records for 2001–2005 found clear gradients for alcohol mortality by education. Men had a relative risk of 3.52 and women a relative risk of 4.13, and by social class (unskilled workers vs. white-collar workers), where men had a relative risk of 1.57 and women a relative risk of 2.72 (Herttua et al., 2008). In Brazil, the lowest educational group had 2.1 times greater relative risk of alcohol dependence compared to the highest educational group (Andrade et al., 2002). In the Russian Federation, the lowest educational group had a much higher relative risk for alcohol-related mortality than the highest educational group, with relative risks of 3.45 vs. 1.71 for men and 4.63 vs. 1.45 for women (Shkolnikov et al., 1998). In Europe as a whole, inequalities in alcohol-related mortality account for 11% of the difference in mortality among men in different socioeconomic groups and 6% of those among women (Mackenbach et al., 2008).

Infectious diseases are more common in terms of incidence and prevalence in less developed countries, and still more common in poorer populations within these countries. Overall, these populations have less heavy alcohol consumption than high-income countries. However, for those in less developed countries who consume alcohol, the risk of infectious disease can be considerably increased. This explains why, in countries with a high incidence of infectious diseases and relatively high consumption of alcohol, alcohol contributes over-proportionally to infectious disease burden. Social conditions associated with poverty include overcrowded communities, unsafe drinking water, unsanitary conditions and malnutrition. Infection with tuberculosis or pneumonia is relatively likely in such environments, particularly when the immune system has been harmed by heavy drinking.

2.3 HARM TO SOCIETY

The impact of alcohol consumption reaches deep into society. Alcohol consumption causes harm far beyond the physical and psychological health of the drinker. It also causes harm to the well-being and health of others. Some social harm to the drinker is implied in the health conditions already examined in this report. Diseases and injuries, for instance, have social implications, including medical costs, which are borne by governments, negative effects on productivity, and financial and psychological burdens on families. Examples of harm caused to others includes prenatal conditions caused by a mother's drinking and injuries from violence caused by an intoxicated assailant. The scope of such social harm stretches beyond these examples. In Australia, a country of 21 million, more than 10 million people have been negatively impacted in some way by a stranger's drinking (Laslett et al., 2010).

2.3.1 HARM TO OTHER PEOPLE

Social harm from drinking can be classified in terms of how they affect important roles and responsibilities of everyday life: work, family, friendship and public character. Intoxication interferes to a greater or lesser extent with most productive labour. The drinker's own productivity is reduced, and there may be adverse social consequences for the drinker, including loss of their job. The productivity of others around the drinker may be diminished if they have to take time out of their work to cover for the drinker's mistakes, absences or lateness.

Similarly, the ability of a parent or guardian to care for children is adversely affected by intoxication. There may be serious adverse immediate and long-term effects for the children because of neglect or abuse by the drinker. There also may be serious consequences for the drinker from family members, social services or public safety authorities in response to neglect or abuse by the drinker.

Drinking and intoxication can also adversely affect intimate and family relations, and friendships. The adverse effects are often most clearly visible in small and isolated communities. In an Australian indigenous group of 165 adults, there were 29 alcohol-related deaths in a 10-year period and 111 alcohol-related injuries and illnesses requiring hospitalization in a 7-year period (Room et al., 2002).

Again there may be both adverse effects for both the drinker and others in these relationships. A study of 98 families in an urban Indian slum found that families with frequently drinking husbands were much more likely to report a major illness or injury in the past year, were more likely to be in debt, or deeper in debt (Room et al., 2002).

Besides the adverse social impact on family members, relatives, friends and co-workers, people's drinking can also impact on strangers, who can be victims of road traffic accidents caused by a drunk driver or be assaulted by an intoxicated person. A report on one carnival season in Rio de Janeiro, Brazil, found that at least 16 800 people "were reported hurt in fits of violence, street fights, car crashes and accidents from excessive drinking" (Room, 2002). Intoxicated people commit many crimes where the victims are unknown to the perpetrators, including homicide, robbery, sexual assault and property crimes. The well-being of others can also be affected by verbal threats, noise and nuisance from intoxicated people. Again, these offences often also impact the drinker if she or he is arrested and punished.

Harm from other people's drinking can be measured from statistics of social agencies and population surveys. Social cost studies have generally relied on data from social and health agencies. Population surveys in a number of high-income countries have included questions about harms caused by other's drinking (e.g. Fillmore, 1985; Allen et al., 1998; Mäkelä et al., 1999; Greenfield et al., 2009). A recent study in Australia undertook a systematic measurement of harms to others from social agency records and population surveys (Laslett et al., 2010; Box 14).

Box 14. Alcohol's harm to others in Australia

Table 11 shows the broad range of people affected by other people's drinking. Around 1% of the population was hospitalized due to another person's drinking in the course of a year, and about the same proportion suffered a domestic assault related to alcohol, according to police records. But much larger numbers report being negatively impacted by somebody else's drinking in the workplace, household or public place, and by a family member, friend, stranger or someone not well known to the victim. More than two thirds of the survey respondents were adversely affected by someone else's drinking in the last year. The drinking of a stranger negatively impacted a total of 10.5 million people.

Table 11. Range and magnitude of alcohol's harm to others in Australia in 2008**Records based**

Deaths due to another's drinking	367
Hospitalizations due to another's drinking	13 699
Substantiated child protection cases involving a caregiver's drinking	19 443
Alcohol-related domestic assault in police records	24 581
Alcohol-attributable assaults in police records	69 433

Survey based

	Affected a little	Affected a lot
Negatively affected by a co-worker's drinking	496 700	120 400
Had one or more children negatively affected by the drinking of a caregiver	888 100	210 700
Negatively affected by the drinking of a household member, relative or friend	2 905 000	1 294 500
Negatively affected by drinking of a stranger or someone not well-known	5 463 900	617 100
Any negative effect of a stranger's drinking	10 536 400	—

Source: Laslett et al., 2010.

2.3.2 HARM TO SOCIETY AT LARGE

Alcohol can also do harm at the level of society, beyond small groups such as families. For instance, heavy lunchtime drinking at factories may affect the quality of work and the economic survival of the factories without it actually affecting any particular person. This, in turn, can affect the economic viability of a community that depends on factory jobs. In this way, widespread heavy drinking can adversely affect whole societies (Room et al., 2002).

A substantial body of research examines the economic costs of alcohol consumption for society as a whole, including the costs to governments and citizens and, to a certain extent, to drinkers themselves. The studies typically do not try to disentangle who within society is paying the costs, although some separate out costs that are paid by various levels of government. In a recent analysis pulling together cost studies from four high-income countries and two middle-income countries, the total costs attributable to alcohol ranged from 1.3% to 3.3% of GDP (Rehm et al., 2009). These costs are not only substantial when compared to GDP, but also in relation to other risk factors.

The Australian study of alcohol's harm to others (Laslett et al., 2010) added in costs to specific others, in terms of out-of-pocket expenses and time lost because of others' drinking. Adding in such costs roughly doubles the costs measured in cost studies limited to costs to the drinker and to society at large. It is important to note that alcohol-attributable costs go far beyond the health sector, and also create substantial costs in the justice sector as well (see Table 12).

Table 12. Overview of economic costs attributable to alcohol in selected high-income and middle-income countries, 2007

Year	High-income countries					Middle-income countries		
	Canada	France	Scotland	United States	Weighted average	Republic of Korea	Thailand	Weighted average
Year	2002	1997	2001–02	1998	ND	2000	2006	ND
Population in study year (million)	31.9	58.6	5.1	280.6	ND	47.5	64.6	ND
GDP (PPP) in study year ^a	929 912	1 301 087	133 179	8 587 884	6 689 552	760 549	604 575	670 666
Direct health-care costs	3045	3592	162	29 855	23 090	1516	344	841
Direct laws	2830	72	454	8049	6262	ND	15	9
Other direct costs	966	7619	145	26 244	20 848	5459	49	2341
Indirect costs	6564	11 223	1052	170 707	129 659	17 938	7496	11 921
Total economic costs of alcohol	13 406	22 506	1813	234 854	179 859	24 914	7903	15 111
Cost per head (2007 US\$ PPP)	420	384	358	837	725	524	122	293
Health-care costs (% of total costs)	22.7	16	8.9	12.7	12.8	6.1	4.3	5.6
Law enforcement (% of total costs)	21.1	0.3	25	3.4	3.5	ND	0.2	0.1
Other direct costs (% of total costs)	7.2	33.9	8	11.2	11.6	21.9	0.6	15.5
Indirect costs (% of total costs)	49	49.9	58	72.7	72.1	72	94.8	78.9
Total costs (% GDP, PPP)	1.4	1.7	1.4	2.7	2.5	3.3	1.3	2.1
Health-care costs (% GDP, PPP)	0.3	0.3	0.1	0.4	0.3	0.2	0.1	0.1
Law enforcement (% GDP, PPP)	0.3	0	0.3	0.1	0.1	0	0	0
Other direct costs (% GDP, PPP)	0.1	0.6	0.1	0.3	0.3	0.7	0	0.3
Indirect costs (% GDP, PPP)	0.7	0.9	0.8	2	1.7	2.4	1.2	1.7

^a Adjusted to 2007 US\$ million.

ND = Not determined.

Source: Rehm et al., 2009.



global status report on alcohol and health

3. POLICIES AND INTERVENTIONS

3. POLICIES AND INTERVENTIONS

Diseases and injuries attributed to alcohol kill millions and harm tens of millions of people each year worldwide. But the death and injury that strike at all strata of society can be reduced through prevention and treatment policies that are shown to work – if governments will adopt and enforce them (Box 15). Indeed, it is a significant shortcoming in all countries that alcohol-attributable death, disease and injury receive so little attention in public health and safety policy.

Box 15. Alcohol policy

“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 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, where such a measure has the aim of minimizing alcohol-related harms. A national alcohol policy will be made up of a set of individual policies, strategies, and implementing actions. There are also a variety of other policies which impinge on alcohol-related problems, increasing or reducing them, but which are neither normally described as alcohol policies nor normally included within an overall alcohol policy, since the policies are not adopted or implemented with the minimization of alcohol problems as a primary aim. (*WHO Expert Committee on Problems Related to Alcohol Consumption. Second report, 2007.*)

For the purpose of the WHO Global Survey on Alcohol and Health, alcohol policy was referred to as an organized set of values, principles and objectives for reducing the burden attributable to alcohol in a population.

As early as 1979, the World Health Assembly (WHA) called on WHO Member States to develop “intensive preventive programmes” and “appropriate legislation and other measures enabling effective action to be taken” to reduce the harmful use of alcohol (WHO, 1979). In 1983, the World Health Assembly recommended that Member States “formulate comprehensive national alcohol policies, with preventive measures as a priority” (WHO, 1983). In 2005, the World Health Assembly again called on Member States to “develop, implement and evaluate effective strategies and programmes for reducing the negative health and social consequences of harmful use of alcohol” (WHO, 2005). In 2010, the World Health Assembly endorsed a global strategy on the harmful use of alcohol (Box 16).

Box 16. The Global Strategy to Reduce the Harmful Use of Alcohol

The Global Strategy to Reduce the Harmful Use of Alcohol was endorsed by the Sixty-third World Health Assembly in May 2010. The consensus reached on the global strategy and its endorsement by the WHA is the outcome of close collaboration between WHO Member States and the WHO Secretariat. The process that led to the development of the global strategy included consultations with other stakeholders, such as civil society groups and economic operators.

The global strategy builds on several WHO global and regional strategic initiatives and represents the commitment by WHO Member States to sustained action at all levels. The strategy contains a set of principles that should guide the development and implementation of policies at all levels; it sets priority areas for global action, recommends target areas for national action and gives a strong mandate to WHO to strengthen action at all levels.



The strategy has five objectives:

- (a) raised global awareness of the magnitude and nature of the health, social and economic problems caused by the harmful use of alcohol, and increased government commitment to act to address the harmful use of alcohol;
- (b) strengthened knowledge base on the magnitude and determinants of alcohol-related harm and on effective interventions to reduce and prevent such harm;
- (c) increased technical support to, and enhanced capacity of, Member States to prevent the harmful use of alcohol and manage disorders caused by the use of alcohol and associated health conditions;
- (d) strengthened partnerships and better coordination among stakeholders and increased mobilization of resources required for appropriate and concerted action to prevent the harmful use of alcohol;
- (e) improved systems for monitoring and surveillance at different levels, and more effective dissemination and application of information for advocacy, policy development and evaluation purposes.

The Global Strategy to Reduce the Harmful Use of Alcohol includes ten recommended target areas for national action:

- leadership, awareness and commitment
- health service response
- community action
- drink–driving policies and countermeasures
- availability of alcohol
- marketing of alcoholic beverages
- pricing policies
- reducing the negative consequences of intoxication
- reducing the public health impact of unrecorded alcohol
- monitoring and surveillance.

The implementation of the global strategy will require active collaboration with Member States, with appropriate engagement of international development partners, civil society, the private sector, as well as public health and research institutions. The WHO Secretariat will report back to the WHA in 2013 on progress in implementing the strategy.

In the last 40 years, WHO has conducted several surveys of alcohol policies in Member States. In 1974, WHO published a report on problems and programmes related to alcohol and other drug dependence in 33 countries (Moser, 1974). In 1980, in collaboration with the Addiction Research Foundation, Canada, WHO published a review of alcohol-related prevention measures, policies and programmes in 80 countries (Moser, 1980). WHO's first *Global status report on alcohol* was published in 1999, and included information on alcohol consumption, problems and policies in 174 Member States (WHO, 1999). A report focusing solely on alcohol policies came out in 2004, based on a questionnaire dedicated to alcohol policy and summarizing responses from 118 Member States (WHO, 2004a). This section on national policies is based on questionnaire responses from 2008.

The World Health Organization and others have reviewed the evidence base for alcohol policies (Babor et al., 2003; Chisholm et al., 2004; WHO, 2008a). This section focuses on the most effective policies; those most likely to serve as future indicators of the effectiveness of a global strategy to reduce the harmful use of alcohol. These policies are also components of WHO's Global Strategy to Reduce the Harmful Use of Alcohol. Leadership is exemplified by the existence of national policies as well as awareness campaigns. Measures controlling the availability of alcohol include age limits for the purchase and consumption of alcohol, monopoly or licensing systems for alcohol distribution, bans on the sale of alcohol at petrol stations, and limits on the hours and days that it can be sold. Pricing policies focus on alcohol tax revenues as a percentage of total government revenues, and the existence of dedicated alcohol taxes. Drink-driving policies include blood alcohol concentration (BAC) laws and random breath testing. Policies on alcohol marketing include how much marketing is permitted, the existence of self-regulatory systems within the alcohol industry, bans on product placements and sports sponsorships, and limits on retail sales below cost. The existence of warning labels on alcohol advertising and containers is another policy. Treatment for disorders caused by alcohol use is also considered an alcohol policy because it controls demand.

Nine countries report a complete ban on alcohol: Afghanistan, Brunei Darussalam, the Islamic Republic of Iran, Maldives, Mauritania, Pakistan, Saudi Arabia, Somalia and Sudan. Because a total ban obviates the need for most other alcohol policies, these countries are not included in the descriptions of specific policies below except where noted. Four other countries report partial bans: Bangladesh, Comoros, India (in five states), and Qatar.

3.1 LEADERSHIP

The existence of explicit and articulated national policies on alcohol is an indicator of the level of a country's commitment to reducing the harmful use of alcohol. As many as 59 countries reported having national policies on alcohol, and another 10 have sub-national policies. Since WHO published the first *Global status report on alcohol* in 1999, at least 34 countries have adopted national policies on alcohol. Of the 59 countries with national policies, 52 of them have adopted these policies formally through a parliament or other national body.

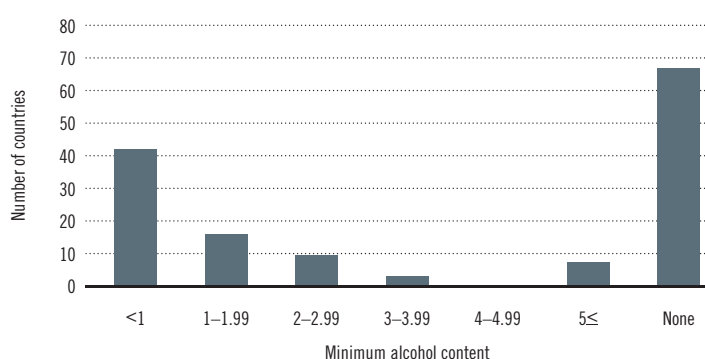
The implications of the legal definition of an alcoholic beverage are that they set the limit for when alcohol-related restrictions on production, distribution, sales and advertising laws apply. Hence, the definition of an alcoholic beverage (Box 17) is an integral part of the legislation on alcohol. The definition is usually not considered as an area of alcohol policy, but it can potentially have important negative effects. The consequence of a limit

that is set very high is that some beverages with lower alcohol content are not subject to regulation. For example, the limit could be set at a level that beer is not considered to be an alcoholic beverage, leaving it outside of any sales or advertising restrictions. Beverages just below the legal limit are also not subject to an alcohol-specific tax, which, justifiably, can be used to promote beverages with lower alcohol content.

Box 17. Legal definition of an alcoholic beverage

The legal definition of an alcoholic beverage differs between WHO Member States (see Figure 22). However, regionally, no major differences are found. The minimum alcohol content necessary to be considered an alcoholic beverage varies from 0.0% in the Eastern Mediterranean Region, 0.7% in the South-East Asia Region, 1.1% in the Region of the Americas, 1.4% in the Western Pacific Region and the European Region to 1.6% in the African Region.

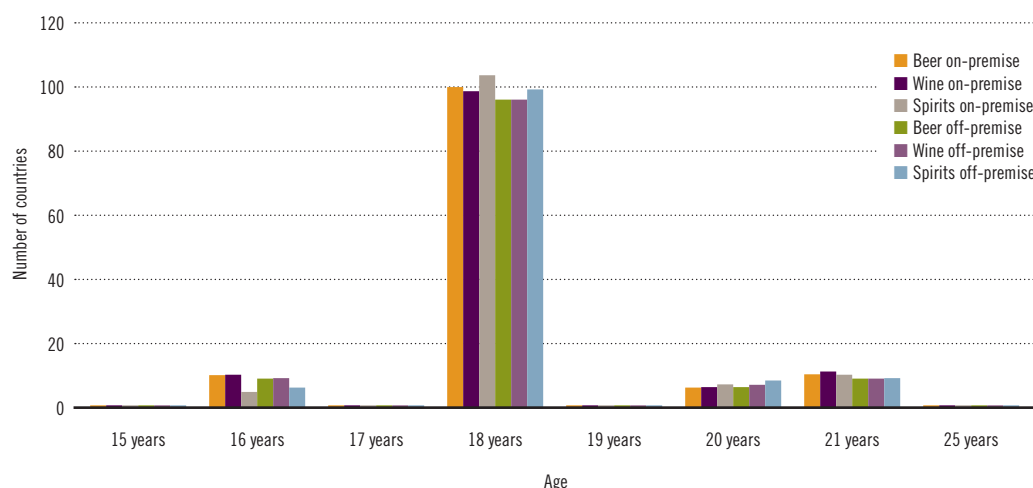
Figure 22. Legal definition of an alcoholic beverage (% pure alcohol by volume), as reported by countries, 2008



3.2 AVAILABILITY OF ALCOHOL

One of the most effective restrictions on the availability of alcohol is the restriction of sales and consumption by people below a legal drinking age (Wagenaar & Toomey, 2002). Such restrictions may apply to alcohol purchased and consumed in the same place (on-premise) or alcohol purchased for consumption elsewhere (off-premise). Of the 147 countries reporting on alcohol availability policies, 17 had no age restrictions for on-premise consumption, while 23, 22 and 21 had no age limits for off-premise consumption of beer, wine and spirits, respectively. On-premise and off-premise restrictions tended to cluster at age 18 (Figure 23). Age restrictions were as low as 15 (Angola) and as high as 25 (Nepal).

Another common means of restricting alcohol availability is through government control of alcohol distribution and sales. Such measures can be effective in reducing alcohol consumption at the population level (Babor et al., 2003). A common means of controlling alcohol distribution is through government-sanctioned licensing systems. Producers, distributors and sellers of alcohol may be required to obtain licences for the sale and/or distribution of alcohol, the availability of which may be restricted, particularly in the retail sector. Such government-sanctioned licensing systems were present in 123 Member States.

Figure 23. Age limits for serving or selling alcohol by major classes of alcoholic beverages, 2008

The most restrictive form of such government control is monopolies, which exists in 30 Member States. These monopolies may exist at the producer, distributor and/or retail levels, and may apply to all three principal categories of alcoholic beverages, or to only one or two.

In 29 Member States, national availability systems are a mixture of monopolies and licensing. As many as 93 Member States have licensing in the absence of a monopoly, whereas only one Member State has a monopoly, but no licensing on production and/or sales. Monopolies are most common for spirits production and sale, and least common for beer. Ten countries reported having monopolies over production and/or sale at the sub-national level. In Canada and the United States, for example, some provinces or states have one or the other, most commonly taking jurisdiction over the sale of spirits.

Some countries ban the sale of alcohol in petrol stations. While the effectiveness of this policy has not been evaluated, problems associated with drinking and driving have led countries to consider this option. Roughly a third of countries have banned the purchase of alcohol at petrol stations for off-premise consumption. This policy is more common in the Eastern Mediterranean and South-East Asia regions and least common in the Western Pacific Region, where less than a quarter of Member States have adopted it.

Restrictions are more common on hours of sale. More than a third of countries within each region and, in some regions, more than half have such restrictions on at least one category of beverage, and most restrict hours of sale for all three beverages (Table 13). Countries in the Americas and Eastern Mediterranean region are likely to limit days of sale and are also most likely to limit the density of alcohol outlets (Table 14). Outlet density restrictions are least common in the European and Western Pacific regions.

Table 13. Percentage of reporting countries with any regulations on the hours and days of the sale of alcohol by WHO region, 2008

WHO region	Hours of sale		Days of sale	
	On-premise consumption (%)	Off-premise consumption (%)	On-premise consumption (%)	Off-premise consumption (%)
AFR	46.7	40.0	13.3	11.1
AMR	64.0	55.6	56.0	56.0
EMR	57.1	57.1	57.1	71.4
EUR	42.9	38.1	17.1	22.0
SEAR	62.5	62.5	62.5	50.0
WPR	53.3	33.3	40.0	25.0

Table 14. Percentage of reporting countries with regulations on outlet density by beverage type and WHO region, 2008

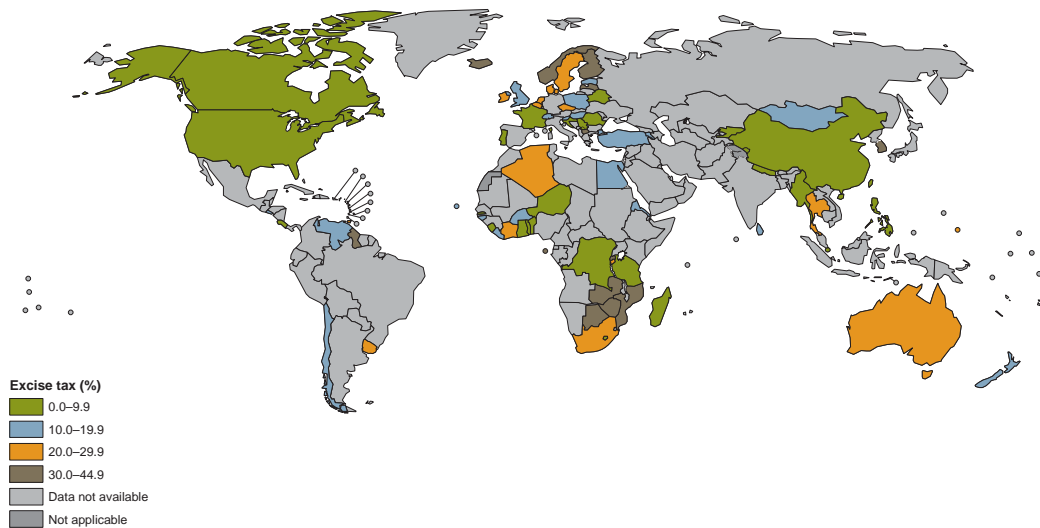
WHO region	On-premise consumption			Off-premise consumption		
	Beer (%)	Wine (%)	Spirits (%)	Beer (%)	Wine (%)	Spirits (%)
AFR	22.2	24.4	25.0	15.6	17.8	17.8
AMR	24.2	36.4	34.8	30.4	34.8	34.8
EMR	12.1	66.7	66.7	66.7	66.7	66.7
EUR	12.1	14.6	14.6	9.8	14.6	14.6
SEAR	12.1	57.1	50.0	28.6	28.6	25.0
WPR	9.1	21.4	21.4	18.8	13.3	13.3

3.3 PRICES AND TAXES

One of the most effective strategies for reducing consumption of alcohol at the population level is through increasing alcohol prices, usually accomplished by raising alcohol taxes. A recent review of 112 studies of the effects of alcohol tax affirmed that when alcohol taxes go up, drinking goes down – including among problem drinkers and youth (Wagenaar et al., 2009). However, such steps can only be effective if the illegal alcohol market is under control (Room et al., 2002).

In order to compare taxes among countries, excise taxes on one litre of pure alcohol in beer, wine and spirits were computed to obtain a nominal tax rate, unrecorded consumption was removed, and then a percentage value for the excise tax rate on one litre of total alcohol was determined (see Figure 24). The amount of excise duty in the price of a litre of pure alcohol ranges from as much as 44.9% in Norway to as little as 0.3% in Kyrgyzstan. For the 74 countries reporting this indicator, the mean amount is 17.3%, and the median is 17.5%.

Out of 132 countries, 20 reported using some portion of their alcohol excise tax revenues for alcohol control, health programmes or other dedicated purposes (Box 18).

Figure 24. Excise duty as a percentage of the price of one litre of pure alcohol, 2008**Box 18. Thailand: an example of alcohol excise tax usage for health promotion**

The **Thai Health Promotion Foundation** (ThaiHealth) is an autonomous state agency, which was established in 2001 as the first organization of its kind in Asia. It is funded by taxes collected from producers and importers of alcohol and tobacco. ThaiHealth aims to use its flexibility in management and budget to help initiate, facilitate and transform health promotion opportunities. Some of the tax revenues are used directly for alcohol consumption control.

ThaiHealth supports the establishment of an enforcement surveillance centre for alcohol control regulations, and a research centre on alcohol consumption. ThaiHealth has also paid for advertising campaigns to reduce alcohol-related traffic accidents, to encourage abstinence and to raise awareness of the links between alcohol and domestic violence. Finally, ThaiHealth helped persuade the government to pass a national policy to control alcohol advertising and to establish a National Committee for Alcohol Consumption Control.

3.4 DRINKING AND DRIVING

Blood alcohol concentration is the percentage of alcohol by volume in the bloodstream. The risk of traffic accidents begins to increase at a blood alcohol concentration of 0.04% (Blomberg et al., 2009). Setting maximum blood alcohol concentrations for drivers and enforcing these with sobriety checkpoints and random breath testing can reduce alcohol-related motor vehicle crashes by approximately 20%, and are very cost-effective (Peek-Asa, 1999; Elder et al., 2002). Also, setting lower permissible BACs for younger drivers can reduce alcohol-related crashes among this population by between 4% and 24% (Shults et al., 2001). For all of these measures, though, high-visibility enforcement is critical. Carefully planned mass media campaigns that complement high-visibility enforcement have been shown to reduce injury-producing alcohol-related crashes by 10%, and total alcohol-related crashes by 13% (Elder et al., 2004, Box 19).

Box 19. Brazil: an example of national drink–driving policy formulation

Lei Seca (Dry Law; formally Federal law number 11.705) is the Brazilian drink–driving law, which was passed on 19 June 2008. This law specifies that drivers caught with a BAC of 0.2 g/l can be arrested and criminally charged. Infringement of the law results in penalties of up to three years in prison, a considerable fine and suspension of the offender's driver's licence for one year. Instead of merely targeting drink–driving, *Lei Seca* also targets impaired driving. The law also prohibits the sale of alcoholic drinks at businesses along the rural stretches of federal roads. Police across Brazil test the BAC levels of suspected offenders on the spot using breathalysers.

Data on the maximum permissible BAC at national level were available from 133 countries. As shown in Figure 25 the maximum permissible BAC for drivers in most countries is either 0.05% (in 52 countries) or 0.08% (in 46 countries). In 14 countries, there is no permissible BAC for drivers, whereas 24 countries have no limits.

Figure 25. Blood alcohol concentration (BAC) limits for drivers, by countries, 2008

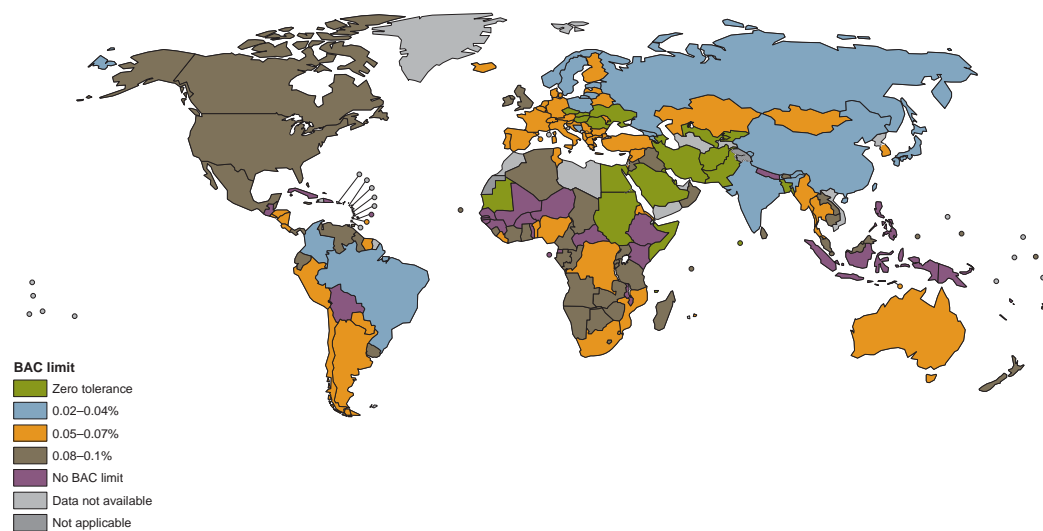
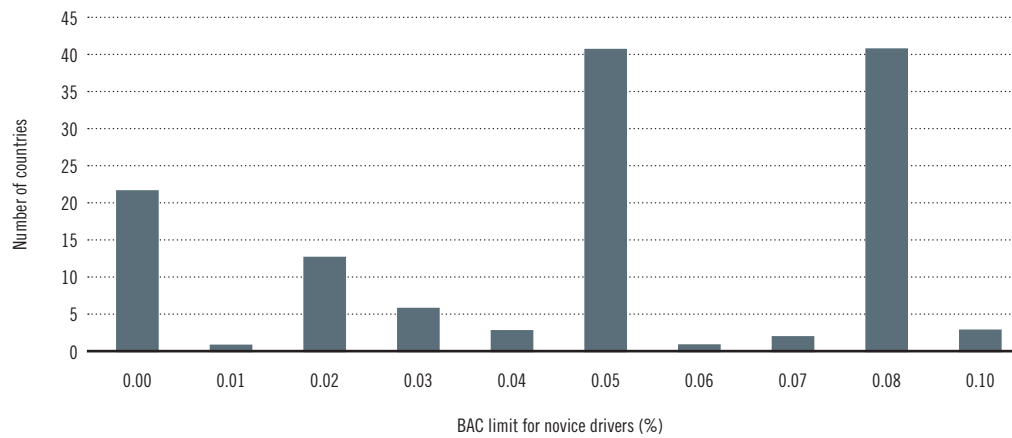


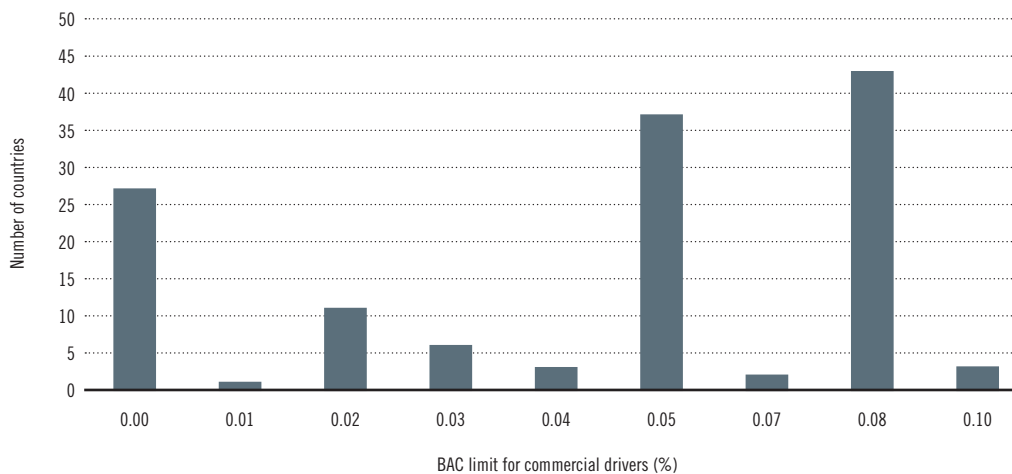
Figure 26 shows the maximum allowable BAC for novice drivers as reported by 133 countries. The two largest clusters of countries are still at 0.05% and 0.08%. However, the entire distribution has shifted to the left, reflecting the 18 countries that mandate a lower limit of alcohol for young and/or novice drivers. Of these, eight countries (Australia, Croatia, Fiji, Germany, Palau, Slovenia, the former Yugoslav Republic of Macedonia and the United Republic of Tanzania) have zero tolerance policies, forbidding young drivers from having any detectable alcohol in their blood. Austria permits only 0.01% BAC for young drivers. Bulgaria, Greece, Latvia, Lithuania, the Netherlands and the United States set the maximum BAC at 0.02%. New Zealand and Spain allow 0.03% for young or novice drivers. Canada sets the limit at 0.04%.

Figure 26. Blood alcohol concentration (BAC) limits for young/novice drivers, by number of countries, 2008



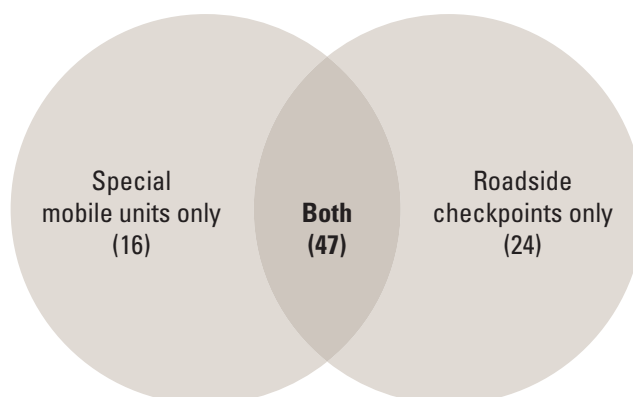
For commercial drivers, with 133 countries reporting, 22 countries set a lower BAC limit than for other drivers (Figure 27). These include 13 countries which specifically prohibit commercial drivers from having any trace of alcohol in their blood: Argentina, Australia, Bhutan, Croatia, Fiji, Israel, Mozambique, Norway, Palau, Serbia, Slovenia, the former Yugoslav Republic of Macedonia and Turkey. Austria sets the limit at 0.01%. Andorra, France, Greece, Lithuania and South Africa permit a maximum of 0.02% BAC for commercial drivers. Eritrea and Spain set the maximum BAC at 0.03%. In the United States, the BAC limit for commercial drivers is 0.04%.

Figure 27. Blood alcohol concentration (BAC) limits for commercial drivers, by number of countries, 2008



Of the 141 countries reporting on random breath testing of drivers, 71 carried out some type of testing; 24 did random breath testing only at roadside checkpoints, while 16 only used special mobile units. Both were used in 47 countries as a means of enforcing maximum BAC among drivers (Figure 28). Random breath testing of drivers became significantly more common between 2002 and 2008. Of the 108 countries that reported in both 2002 and 2008, 33 more countries were using random breath testing by 2008, whilst 11 countries had stopped using random blood testing.

Figure 28. Countries reporting random breath testing of drivers, 2008



3.5 ALCOHOL ADVERTISING AND MARKETING

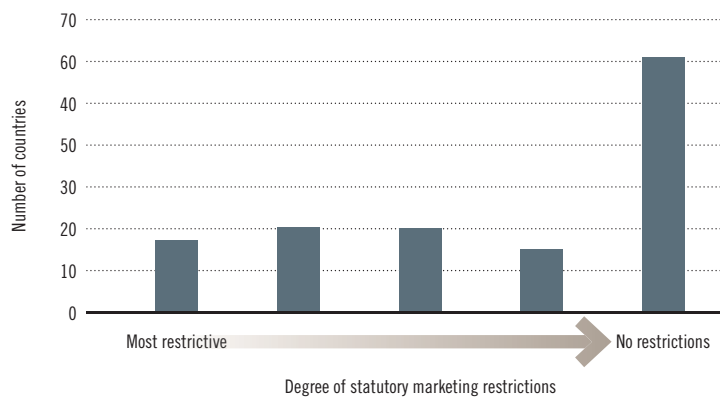
Countries use a wide range of policies to control alcohol advertising and marketing (Box 20). The most common is self-regulation or co-regulation, in which the primary responsibility for regulating alcohol marketing lies with the alcoholic beverage industry itself. Countries were asked to report regulation and self-regulation of alcohol advertising and marketing in nine media categories: public service and national television, commercial and private television, national radio, local radio, printed newspapers and magazines, billboards, points of sale, cinemas and the Internet. Of the reporting countries, 21 confirmed self-regulation for at least one of these media. Some self-regulation occurs at regional rather than country level (e.g. across the entire European Union by the European Forum on Responsible Drinking), and this was not captured by the questionnaire.

Box 20. France: an example of policy formulation to control alcohol advertising and marketing

La Loi Évin (formally *Loi n°91-32 du 10 janvier 1991 relative à la lutte contre le tabagisme et l'alcoolisme*) is the French alcohol and tobacco policy law. This policy bans the advertising of all alcoholic beverages containing over 1.2% alcohol by volume on television or in cinemas, and prohibits sponsorship of sports or cultural events by alcohol companies. *Loi Évin* also prohibits the targeting of young people and controls the content of alcohol advertisements. Messages and images should only refer to the characteristics of the products and a health warning must be included in each advertisement. In 2008, this legislation was extended to apply to alcohol advertising on the Internet and in newspaper and magazine editorials. Alcohol advertising is only permitted in the press for adults, on billboards, on radio channels (under certain conditions) and at some special events or places. There are significant monetary sanctions for infringements of the law, which have ensured its implementation.

No countries reported less strict marketing restrictions for spirits than for other beverages, so rankings of the degree of restrictiveness are based on either a total or a partial ban on the marketing of spirits in the media. Figure 29 divides the number of countries into five groupings based on the degree of statutory marketing restrictions beyond self-regulation reported by each country. Countries were assigned two points for a total statutory ban and one point for a partial statutory ban across the nine media categories. Among the reporting countries, the most restrictions were in Eastern Mediterranean, Nordic and South Asian countries. Of those countries providing complete data on all nine media, 72 reported some restriction and 60 countries reported no restrictions.

Figure 29. Stringency of statutory regulation of alcohol marketing, by reporting country, 2008



The use of the same scoring system permitted comparison between country responses to the 2002 and 2008 surveys for seven categories of marketing (all the items listed above except Internet and point of sale). Looking at the 106 countries, there was a statistically significant shift towards more restrictive measures, although the surveys did not measure enforcement. Belarus moved from a partial to a full ban on advertising of wine and spirits; Estonia shifted from a partial to a full ban on television advertising of all three beverages; and Kenya went from no restrictions in 2002 to partial restrictions in all seven categories by 2008.

Other areas in which countries have moved to restrict alcohol marketing include bans on product placement, either on public or private television; complete or partial restrictions on industry sponsorship of sporting events; and restrictions on sales promotion in the form of sales below cost.

Of all WHO Member States, 30% reported having either a full or partial ban for one or more beverage type, 41% reported no regulation, and 5% indicated that product placements for at least one beverage category were self-regulated by the alcohol industry (Figure 30).

Restrictions on alcohol sponsorship of sporting events were slightly less common than other marketing restrictions. Of all WHO Member States, 27% indicated they had either a full or partial ban on alcohol industry sponsorship of sport for at least one beverage category, 5% reported self-regulation, and 44% reported no regulation (Figure 31).

Because price is a critical component of marketing (Cowan & Mosher, 1985), countries were asked to report any regulation of alcohol promotions at prices below cost by retailers. Few countries regulate this form of marketing. Of all WHO Member States, 52% had no regulation at all, 5% reported self-regulation, and 20% had either total or partial bans for at least one category of alcoholic beverage (Figure 32).

Figure 30. Regulation of product placements on television, by type as a percentage of all WHO Member States, 2008

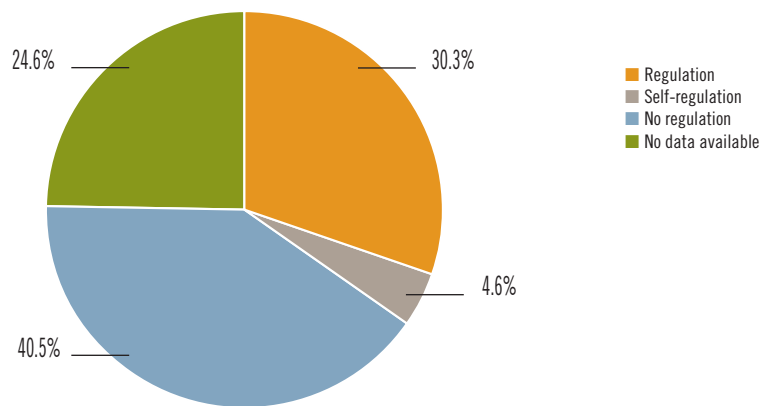


Figure 31. Regulation of alcohol industry sponsorship of sporting events, as a percentage of all WHO Member States, 2008

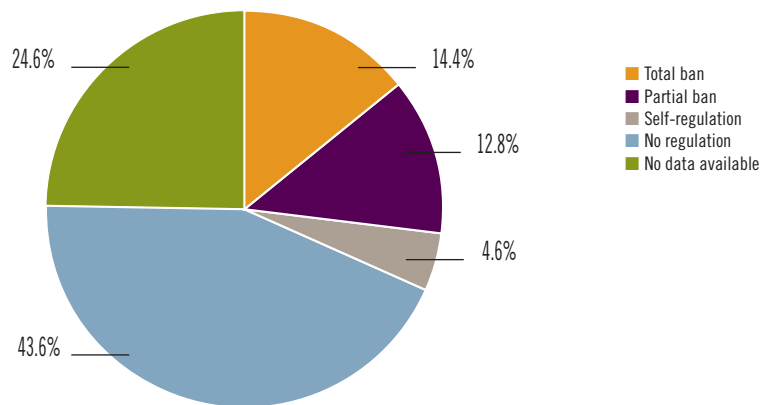
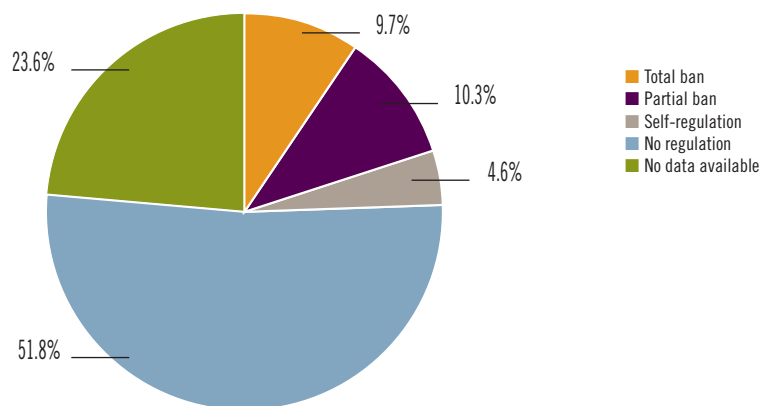


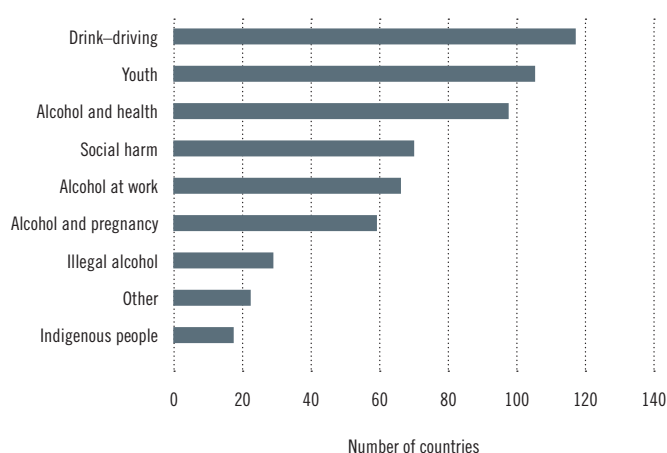
Figure 32. Regulation of sales promotions below cost by alcohol retailers, as a percentage of all WHO Member States, 2008



3.6 RAISING AWARENESS

Awareness raising activities are among the most common measures taken by governments. Out of 152 countries reporting, 126 (83%) indicated that they had undertaken some kind of alcohol awareness campaign in the past three years (Figure 33). While seven countries undertook only one activity, and two countries did as many as nine activities, the most common number of alcohol awareness campaigns reported by countries over the past three years was six (in 31 countries).

Figure 33. Countries reporting awareness campaigns on alcohol, 2008



The focus of these campaigns is most frequently on drink-driving, youth drinking, alcohol and health, and social harm related to alcohol use. The “other” category most commonly included in campaigns focuses on domestic or family violence, and alcohol use.

Another means of raising awareness about alcohol-related harm is through the mandated use of warnings on alcoholic beverage containers or on alcohol advertising. Such warnings are most common in the countries of the Americas Region (Table 15). The text of such warnings varies, from blanket proscriptions on drinking (“Consuming alcohol produces damage to health” in Panama, “Drinking alcohol in excess is harmful” in Peru) to focused warnings about specific problems (“Alcohol consumption is dangerous for your health and affects the family” in Ecuador, “Do not drink and drive” in Kenya). At least two countries report using multiple messages: Poland has three different texts mandated for use on alcoholic beverage advertisements, while Sweden has mandated 11 different texts.

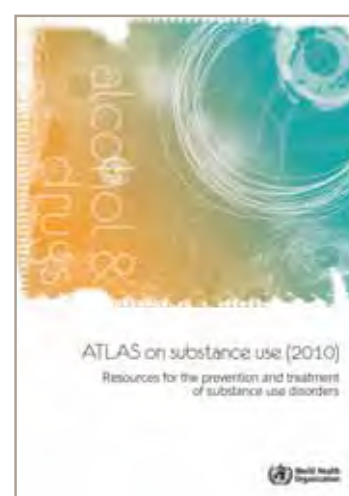
Table 15. Warnings on alcohol advertisements and containers, as a percentage of all reporting countries, by WHO region, 2008^a

WHO region	Warnings on advertisements			Warnings on alcohol containers		
	National (%)	Sub-national (%)	None (%)	National (%)	Sub-national (%)	None (%)
AFR	13	7	80	7	7	87
AMR	48	3	48	48	3	48
EMR	0	25	50	0	13	63
EUR	24	2	71	16	9	78
SEAR	11	0	78	22	11	67
WPR	6	12	76	12	6	76

^a Totals may not equal 100% because figures are based on the countries reporting divided by the total number of countries in each region, rather than by the total number of countries reporting.

3.7 TREATMENT

Only four countries have a dedicated line item in their national budgets for alcohol treatment: Croatia, Israel, the Republic of Moldova and Ukraine. However, 126 countries report a formal treatment policy, with 98 of them reporting a national policy. The *Atlas on substance use (2010): resources for the prevention and treatment of substance use disorders*, produced by WHO, provides detailed information on resources and policies for treatment of disorders caused by alcohol use. Most countries report a substantial unmet need for treatment. The report can be downloaded at http://www.who.int/substance_abuse/publications/treatment/



3.8 CONCLUSION

Since WHO first began in 1999 to report on policies to reduce the harmful use of alcohol, at least 34 countries have adopted formal policies. Statutory restrictions on alcohol marketing have increased significantly, and so has the use of random breath testing on roadways to prevent drink-driving. Regarding minimum drinking age laws and controls on distribution, no clear trends exist, with countries apparently experimenting with both leniency and restrictiveness. The large number of countries, representing a high percentage of the global population, where only weak or uneven alcohol policies exist underscores the persistent need for continued progress in the prevention of the harm done from alcohol consumption.

These policy surveys provide WHO and Member States with the means to evaluate the progress of efforts to reduce the harmful use of alcohol. Future surveys will build on the number of indicators that are tracked, in an effort to provide an increasingly clear picture of the level of effort and effectiveness of national responses to the many health and social challenges caused by the harmful use of alcohol.

REFERENCES

- Allen B, Anglin L, Giesbrecht, N (1998). Effect of others' drinking as perceived by community members. *Canadian Journal of Public Health*, 89:337–341.
- Andrade L et al. (2002). Prevalence of ICD-10 mental disorders in a catchment area in the city of São Paulo, Brazil. *Social Psychiatry and Psychiatric Epidemiology*, 37:316–325.
- Baan R et al. on behalf of the WHO International Agency for Research on Cancer Monograph Working Group (2007). Carcinogenicity of alcoholic beverages. *Lancet Oncology*, 8:292–293.
- Babor TF et al. (2003). *Alcohol: no ordinary commodity*. Oxford, Oxford University Press.
- Baliunas D et al. (2009a). Alcohol consumption and risk of incident human immunodeficiency virus infection: a meta-analysis. *International Journal of Public Health*, 55:159–166 [Epub 2009 Dec 1].
- Baliunas D et al. (2009b). Alcohol as a risk factor for type 2 diabetes: a systematic review and meta-analysis. *Diabetes Care*, 32:2123–2132.
- Blomberg RD et al. (2009). The Long Beach/Fort Lauderdale relative risk study. *Journal of Safety Research*, 40:285–292.
- Chisholm D et al. (2004). Reducing the global burden of hazardous alcohol use: a comparative cost-effectiveness analysis. *Journal of Studies on Alcohol*, 65:782–793.
- Clausen T et al. (2009). Diverse alcohol drinking patterns in 20 African countries. *Addiction*, 104:1147–1154. doi: 10.1111/j.1360-0443.2009.02559.x
- Cowan R, Mosher JF (1985). Public health implications of beverage marketing: alcohol as an ordinary consumer product. *Contemporary Drug Problems*, 12:621–657.
- Currie C et al., eds. (2008). *Inequalities in young people's health. HBSC international report from the 2005/2006 survey*. Copenhagen, World Health Organization Regional Office for Europe (Health Policy for Children and Adolescents, No. 5; http://www.euro.who.int/__data/assets/pdf_file/0005/53852/E91416.pdf, accessed 28 November 2010).
- Eaton DK et al. (2010). Youth risk behavior surveillance – United States, 2009. *Morbidity and Mortality Weekly Report*, 59:1–142 (Surveillance Summaries).
- Elder RW et al. (2002). Effectiveness of sobriety checkpoints for reducing alcohol-involved crashes. *Traffic Injury Prevention*, 3:266–274.
- Elder RW et al. (2004). Effectiveness of mass media campaigns for reducing drinking and driving and alcohol-involved crashes: a systematic review. *American Journal of Preventive Medicine*, 27:57–65.

- Fillmore, K (1985). Social victims of drinking. *British Journal of Addiction*, 80:307–314.
- Gmel G, Rehm J, Kuntsche E (2003). Binge drinking in Europe: definitions, epidemiology, and consequences. *Sucht*, 49:105–116.
- Greenfield TK et al. (2009). Externalities from alcohol consumption in 2005 US National Alcohol Survey: implications for policy. *International Journal of Environmental Research and Public Health*, 6:3205–3224.
- Hamajima N et al. (2002). Collaborative Group on Hormonal Factors in Breast Cancer. Alcohol, tobacco and breast cancer-collaborative reanalysis of individual data from 53 epidemiological studies, including 58,515 women with breast cancer and 95,067 women without the disease. *British Journal of Cancer*, 87:1234–1245.
- Harrison L, Gardiner E (1999). Do the rich really die young? Alcohol-related mortality and social class in Great Britain, 1988-94. *Addiction*, 94:1871–1880.
- Hendershot CS et al. (2009). Alcohol use and antiretroviral adherence: review and meta-analysis. *Journal of Acquired Immune Deficiency Syndromes*, 52:180–202. doi: 10.1097/QAI.0b013e3181b18b6e
- Herttua K, Mäkelä P, Martikainen P (2008). Changes in alcohol-related mortality and its socioeconomic differences after a large reduction in alcohol prices: a natural experiment based on register data. *American Journal of Epidemiology*, 168:1110–1118.
- Hibell B et al. (2009). *The 2007 ESPAD report: substance use among students in 35 European countries*. Stockholm, European School Survey Project on Alcohol and Other Drugs (<http://www.espad.org/espad-reports>, accessed: 28 November 2010).
- Johnston LD et al. (2008). *Monitoring the future national survey results on drug use, 1975–2007*. Bethesda, MD, National Institute on Drug Abuse (NIH Publication No. 08-6418A).
- Kraus L, Metzner C, Piontek D (2010). Alcopops, alcohol consumption and alcohol related problems in a sample of German adolescents: is there an alcopop-specific effect? *Drug and Alcohol Dependence*, 110:15–20.
- Lancet (2008). Calling time on young people's alcohol consumption. Vol. 371:871 (<http://www.thelancet.com/journals/lancet/article/PIIS0140673608603864/fulltext?rss=yes>, accessed 28 November 2010).
- Laslett AM et al. (2010). *The range and magnitude of alcohol's harm to others*. Fitzroy, Victoria, Turning Point Alcohol & Drug Centre.
- Lönnroth K et al. (2008). Alcohol use as a risk factor for tuberculosis - a systematic review. *BMC Public Health*, 8:289.
- Mackenbach JP et al. (2008). Socioeconomic inequalities in health in 22 European countries. *The New England Journal of Medicine*, 358:2468–2481.

- Mäkelä P et al. (1999). *Drinking habits in the Nordic countries*. Oslo, National Institute for Alcohol and Drug Research.
- McAllister I (2003). *Alcohol consumption among adolescents and young adults*. Melbourne, Victoria, Report commission by the Distilled Spirits Industries Council of Australia.
- Moser J (1974). *Problems and programmes related to alcohol and drug dependence*. Geneva, World Health Organization.
- Moser J (1980). *Prevention of alcohol-related problems: an international review of preventive measures, policies and programmes*. Geneva, World Health Organization.
- Peek-Asa C. (1999). The effect of random alcohol screening in reducing motor vehicle crash injuries. *American Journal of Preventative Medicine*, 16(Suppl. 1), 57–67.
- Rehm J et al. (2003). The relationship of average volume of alcohol consumption and patterns of drinking to burden of disease: an overview. *Addiction*, 98:1209-1228.
- Rehm J et al. (2004). Alcohol use. In: Ezzati M et al., eds. *Comparative quantification of health risks. Global and regional burden of disease attributable to selected major risk factors*, 1:959-1108. Geneva, World Health Organization:959–1108.
- Rehm J, Klotsche J, Patra J (2007). Comparative quantification of alcohol exposure as risk factor for global burden of disease. *International Journal of Methods in Psychiatric Research*, 16:66 -76.
- Rehm J et al. (2009). Alcohol and global health 1: global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *Lancet*, 373:2223–2233.
- Rehm J et al. (2010). The relation between different dimensions of alcohol consumption and burden of disease – an overview. *Addiction*, 105:817 -843.
- Roerecke M, Rehm J (2010). Ischemic heart disease mortality and morbidity rates in former drinkers: a meta-analysis. *American Journal of Epidemiology*, 14 December [online] doi: 10.1093/aje/kwq364
- Room R et al. (2002). *Alcohol in developing societies: a public health approach*. Helsinki, Finnish Foundation for Alcohol Studies.
- Samokhvalov AV et al. (2010): Alcohol consumption, unprovoked seizures and epilepsy: a systematic review and meta-analysis. *Epilepsia* [Epub ahead of print January 13].
- Shkolnikov VM et al. (1998). Educational level and adult mortality in Russia: an analysis of routine data 1979 to 1994. *Social Science and Medicine*, 47:357–369.
- Shults R et al. (2001). Reviews of evidence regarding interventions to reduce alcohol-impaired driving. *American Journal of Preventive Medicine*, 21(Suppl 4):66–88.
- Shuper PA et al. (2010). Causal considerations on alcohol and HIV/AIDS: a systematic review. *Alcohol and Alcoholism*, 45:159–166. doi: 10.1093/alcalc/agg091

- Wagenaar AC, Toomey TL (2002). Effects of the minimum drinking age laws: review and analyses of the literature from 1960 to 2000. *Journal of Studies on Alcohol*, 14(Supp):206–225.
- Wagenaar A C, Salois MJ, Komro KA (2009). Effects of beverage alcohol price and tax levels on drinking: a meta-analysis of 1003 estimates from 112 studies. *Addiction*, 104:179–190.
- World Health Organization (1979). Resolution WHA32.40. Development of the WHO programme on alcohol-related problems. In: *Thirty-ninth World Health Assembly, Geneva, 25 May 1979*. Geneva.
- World Health Organization (1983). Resolution WHA36.12. Alcohol consumption and alcohol-related problems: development of national policies and programmes. In: *Thirty-sixth World Health Assembly, Geneva, 13 May 1983*. Geneva.
- World Health Organization (1992). *The ICD-10 Classification of mental and behavioural disorders. Clinical descriptions and diagnostic guidelines*. Geneva.
- World Health Organization (1996). Global Alcohol Database [online database]. Geneva.
- World Health Organization (1999). *Global status report on alcohol*. Geneva, Department of Mental Health and Substance Abuse (WHO/HSC/SAB/99.11).
- World Health Organization (2000). *World health report 2000 – health systems: improving performance*. Geneva.
- World Health Organization (2004a). *Global status report: alcohol policy*. Geneva, Department of Mental Health and Substance Abuse.
- World Health Organization (2004b). Global school-based student health survey (GSHS). Geneva, World Health Organization (<http://www.who.int/chp/gshs/en/>, accessed 28 November 2010).
- World Health Organization (2005). Resolution WHA58.26. Public-health problems caused by harmful use of alcohol. In: *Fifty-eighth World Health Assembly, Geneva, 25 May 2005*. Geneva.
- World Health Organization (2007). *WHO Expert Committee on Problems Related to Alcohol Consumption. Second report*. Geneva (WHO Technical Report Series, No. 944).
- World Health Organization (2008a). *Strategies to reduce the harmful use of alcohol: report by the Secretariat*. Geneva (http://apps.who.int/gb/ebwha/pdf_files/A61/A61_13-en.pdf, accessed 28 November 2010).
- World Health Organization (2008b). *The global burden of disease: 2004 update*. Geneva (<http://www.who.int/evidence/bod>, accessed 28 November 2010).
- World Health Organization (2008c). *Global Survey on Alcohol and Health*. Geneva (http://www.who.int/substance_abuse/activities/gad/en/, accessed 28 November 2010).

World Health Organization (2009a). *Global health risks. Mortality and burden of disease attributable to selected major risks*. Geneva.

World Health Organization (2009b). *Global status report on road safety: time for action*. Geneva.

World Health Organization (2010). Global Information System on Alcohol and Health (GISAH) [online database]. Geneva (<http://www.who.int/globalatlas/alcohol>, accessed 28 November 2010).

APPENDIX III.

ALCOHOL CONSUMPTION DATA

WHO Member State	Recorded consumption ^a	Unrecorded consumption ^b	Total consumption ^c	Beer ^d	Wine ^e	Spirits ^f	Other ^g	Total male drinkers ^h	Total female drinkers ⁱ	Total drinkers ^j
Afghanistan	0.00	0.02	0.02	0.00	0.00	0.01	0.00	—	—	—
Albania	4.58	2.10	6.68	1.61	0.94	2.30	0.02	—	—	—
Algeria	0.66	0.30	0.96	0.09	0.07	0.00	0.50	26.50	15.60	22.60
Andorra	14.08	1.40	15.48	3.93	5.69	3.14	0.00	27.70	20.40	25.00
Angola	3.80	1.60	5.40	1.81	1.37	1.12	0.41	—	—	—
Antigua and Barbuda	6.76	0.46	7.22	2.67	1.70	5.04	0.09	—	—	—
Argentina	8.00	2.00	10.00	2.49	4.62	0.52	0.20	15.60	7.60	12.10
Armenia	10.05	1.30	11.35	1.05	0.39	0.65	9.36	24.40	12.10	18.30
Australia	9.89	0.13	10.02	4.56	3.12	1.16	1.02	16.30	7.20	11.90
Austria	12.60	0.64	13.24	6.70	4.10	1.60	0.40	21.90	9.50	15.70
Azerbaijan	7.30	3.30	10.60	7.00	0.03	0.97	0.00	—	—	—
Bahamas	8.16	0.60	8.76	3.99	1.55	5.27	0.23	—	—	—
Bahrain	3.56	0.10	3.66	1.91	0.52	1.24	0.00	—	—	—
Bangladesh	0.00	0.17	0.17	0.00	0.00	0.00	0.00	4.60	3.00	4.50
Barbados	6.41	0.50	6.91	2.90	0.73	3.78	0.17	19.10	13.70	16.90
Belarus	11.22	3.91	15.13	1.84	0.80	4.08	2.67	28.00	11.30	19.20
Belgium	9.77	1.00	10.77	5.49	3.55	0.62	0.03	17.50	7.80	12.80
Belize	5.07	1.00	6.07	3.89	0.13	1.78	0.01	20.40	9.60	17.20
Benin	1.15	1.00	2.15	0.49	0.14	0.15	0.30	4.20	2.70	3.70
Bhutan	0.22	0.33	0.55	0.21	0.00	0.00	0.00	2.50	0.20	1.60
Bolivia (Plurinational State of)	2.62	2.50	5.12	2.17	0.06	0.61	0.00	12.60	4.40	8.60
Bosnia and Herzegovina	9.63	0.00	9.63	2.22	0.34	7.08	0.00	60.30	33.00	56.00
Botswana	4.96	3.00	7.96	2.56	0.04	0.00	1.88	29.10	15.00	26.50
Brazil	6.16	3.00	9.16	3.36	0.33	2.49	0.03	24.40	10.60	18.50
Brunei Darussalam	1.76	0.25	2.01	1.67	0.02	0.05	0.00	—	—	—
Bulgaria	11.24	1.20	12.44	3.53	2.44	4.88	0.10	22.90	9.30	17.00
Burkina Faso	4.48	2.50	6.98	0.41	0.09	0.42	3.77	—	—	—
Burundi	6.47	3.00	9.47	1.16	0.01	0.00	5.07	—	—	—
Cambodia	1.77	3.00	4.77	0.74	0.02	1.21	0.00	—	—	—
Cameroon	4.97	2.60	7.57	2.05	0.05	0.00	2.60	17.20	9.30	13.70

WHO Member State	Recorded consumption ^a	Unrecorded consumption ^b	Total consumption ^c	Beer ^d	Wine ^e	Spirits ^f	Other ^g	Total male drinkers ^h	Total female drinkers ⁱ	Total drinkers ^j
Canada	7.77	2.00	9.77	4.10	1.50	2.10	0.00	18.20	7.00	12.60
Cape Verde	2.06	2.90	4.96	0.36	1.99	0.14	0.00	11.60	7.60	10.30
Central African Republic	1.65	1.70	3.35	0.21	0.02	0.03	1.37	—	—	—
Chad	0.38	4.00	4.38	0.23	0.01	0.02	0.15	26.20	14.20	20.70
Chile	6.55	2.00	8.55	2.03	2.59	2.16	0.04	16.70	8.20	12.70
China	4.21	1.70	5.91	1.50	0.15	2.51	0.23	13.70	5.20	10.60
Colombia	4.17	2.00	6.17	2.71	0.08	1.44	0.02	10.60	4.70	7.70
Comoros	0.26	0.10	0.36	0.14	0.02	0.06	0.00	45.70	24.30	37.00
Congo	2.04	2.23	4.20	1.76	0.00	0.11	0.12	14.30	7.10	11.30
Cook Islands	3.20	0.50	3.70	0.54	1.39	3.45	0.00	7.60	2.30	6.30
Costa Rica	4.15	1.40	5.55	2.29	0.18	1.71	0.02	11.40	7.80	10.00
Côte d'Ivoire	4.48	2.00	6.48	0.61	0.33	0.05	3.55	31.00	16.50	27.30
Croatia	12.61	2.50	15.11	4.66	5.80	1.91	0.14	32.00	18.80	26.30
Cuba	4.41	1.10	5.51	1.48	0.05	2.94	0.01	13.90	6.60	11.80
Cyprus	8.26	1.00	9.26	3.25	2.97	2.95	0.12	—	—	—
Czech Republic	14.97	1.48	16.45	8.51	2.33	3.59	0.39	26.60	12.40	19.50
Democratic Republic of the Congo	1.97	1.26	3.30	0.32	0.01	0.02	1.67	9.00	5.20	7.60
Denmark	11.37	2.00	13.37	5.06	4.43	1.78	0.00	19.50	8.40	14.40
Djibouti	1.37	0.50	1.87	0.24	0.08	1.35	0.00	—	—	—
Dominica	7.34	0.50	7.84	0.50	0.80	6.69	0.07	16.00	10.40	13.30
Dominican Republic	5.76	0.65	6.41	2.69	0.14	2.92	0.01	12.50	8.10	11.30
Ecuador	4.01	5.37	9.38	2.30	0.07	1.69	0.00	22.80	33.40	29.90
Egypt	0.27	0.10	0.37	0.10	0.02	0.06	0.00	35.20	18.20	33.60
El Salvador	2.61	1.00	3.61	0.88	0.04	1.57	0.00	—	—	—
Equatorial Guinea	5.31	0.77	6.08	0.45	4.18	0.00	0.00	—	—	—
Eritrea	0.94	0.60	1.54	0.56	0.00	0.25	0.00	4.90	2.10	3.90
Estonia	13.77	1.80	15.57	5.53	1.09	9.19	0.43	36.10	12.20	22.00
Ethiopia	0.52	3.50	4.02	0.19	0.01	0.13	0.25	21.70	7.20	14.50
Fiji	1.43	1.00	2.43	1.46	0.02	0.58	0.00	11.00	4.70	10.10
Finland	9.72	2.80	12.52	4.59	2.24	2.82	0.31	20.60	8.70	14.20
France	13.30	0.36	13.66	2.31	8.14	2.62	0.17	21.10	8.80	14.90
Gabon	7.32	2.00	9.32	5.38	0.80	1.69	0.00	—	—	—
Gambia	2.40	0.99	3.39	0.19	0.06	0.04	2.07	—	—	—
Georgia	3.90	2.50	6.40	0.76	0.83	2.56	0.02	14.80	9.40	13.10
Germany	11.81	1.00	12.81	6.22	3.15	2.30	0.00	19.50	7.80	13.40
Ghana	1.47	1.50	2.97	0.40	0.07	0.03	0.97	12.50	6.90	10.00
Greece	8.95	1.80	10.75	2.20	4.51	2.38	0.13	18.40	10.80	15.00
Grenada	9.85	0.50	10.35	3.16	0.42	7.15	0.04	—	—	—
Guatemala	2.43	1.60	4.03	1.12	3.92	1.20	0.05	18.80	10.00	17.70
Guinea	0.26	0.50	0.76	0.17	0.02	0.03	0.00	—	—	—
Guinea-Bissau	2.58	1.10	3.68	0.24	0.66	0.53	1.75	—	—	—
Guyana	7.50	2.00	9.50	1.14	0.31	5.70	0.01	—	—	—
Haiti	5.99	0.62	6.61	0.01	0.01	5.20	0.00	—	—	—

WHO Member State	Recorded consumption ^a	Unrecorded consumption ^b	Total consumption ^c	Beer ^d	Wine ^e	Spirits ^f	Other ^g	Total male drinkers ^h	Total female drinkers ^{h1}	Total drinkers ^{h1}
Honduras	3.08	1.40	4.48	1.29	0.04	1.87	0.00	—	—	—
Hungary	12.27	4.00	16.27	4.42	4.94	3.02	0.14	29.50	11.00	20.00
Iceland	5.91	0.40	6.31	3.67	1.95	1.33	0.10	10.80	5.00	7.70
India	0.55	2.04	2.59	0.06	0.02	0.50	0.00	23.90	10.40	22.30
Indonesia	0.06	0.50	0.59	0.06	0.00	0.00	0.00	16.90	11.40	16.50
Iran (Islamic Republic of)	0.02	1.00	1.02	0.02	0.00	0.00	0.00	—	—	—
Iraq	0.20	0.20	0.40	0.14	0.00	0.07	0.00	25.30	14.80	24.00
Ireland	13.39	1.00	14.41	7.04	2.75	2.51	1.09	26.20	12.20	19.30
Israel	2.39	0.50	2.89	0.97	0.18	1.30	0.04	6.30	4.40	5.50
Italy	8.33	2.35	10.68	1.73	6.38	0.42	0.00	17.10	8.20	13.00
Jamaica	3.50	1.50	5.00	1.49	0.11	1.80	0.10	13.10	9.30	11.60
Japan	7.83	0.20	8.03	1.72	0.29	3.37	2.61	13.80	5.80	9.90
Jordan	0.41	0.30	0.71	0.04	0.01	0.34	0.01	—	—	—
Kazakhstan	6.06	4.90	10.96	1.69	0.30	4.19	0.01	29.80	12.70	21.50
Kenya	1.64	2.50	4.14	0.84	0.02	0.51	0.55	31.60	19.00	28.40
Kiribati	1.71	2.00	3.71	1.56	0.02	0.02	0.00	12.20	5.90	7.40
Kuwait	0.00	0.10	0.10	0.00	0.00	0.00	0.00	3.20	1.90	3.10
Kyrgyzstan	3.19	1.90	5.09	0.45	0.10	2.26	0.01	12.80	6.00	10.40
Lao People's Democratic Republic	5.73	1.00	6.73	1.42	0.03	4.35	0.00	20.80	9.10	17.20
Latvia	9.50	3.00	12.50	3.61	1.10	6.24	0.10	24.90	9.70	16.50
Lebanon	1.73	0.50	2.23	0.36	0.56	0.78	0.01	6.20	1.60	4.20
Lesotho	1.90	3.65	5.55	1.24	0.00	0.01	0.69	18.70	10.50	16.20
Liberia	3.47	1.59	5.06	0.30	0.01	3.16	0.01	—	—	—
Libyan Arab Jamahiriya	0.01	0.10	0.11	0.00	0.00	0.00	0.00	—	—	—
Lithuania	12.03	3.00	15.03	5.60	1.80	4.50	0.60	27.50	11.10	18.80
Luxembourg	12.01	1.00	13.01	1.59	8.16	2.00	0.00	—	—	—
Madagascar	0.78	0.55	1.33	0.34	0.11	0.32	0.00	4.90	3.20	4.50
Malawi	1.24	0.50	1.74	0.14	0.00	0.22	0.74	15.40	13.00	15.50
Malaysia	0.50	0.32	0.82	0.38	0.02	0.08	0.00	32.20	14.60	30.40
Mali	0.54	0.50	1.04	0.07	0.00	0.01	0.46	62.10	1.80	36.90
Malta	3.85	0.42	4.27	1.79	1.45	1.86	0.15	—	—	—
Mauritania	0.01	0.10	0.11	0.00	0.00	0.01	0.00	12.90	2.60	9.20
Mauritius	2.72	1.00	3.72	1.92	0.32	0.39	0.00	10.30	4.30	8.00
Mexico	5.02	3.40	8.42	3.96	0.02	1.09	0.03	31.60	17.30	27.20
Micronesia (Federated States of)	4.50	1.00	5.50	1.43	1.31	0.60	0.00	21.40	9.70	18.80
Mongolia	1.24	2.00	3.24	0.39	0.11	0.67	0.21	8.00	2.00	5.00
Morocco	0.46	1.00	1.46	0.23	0.17	0.06	0.00	20.20	14.20	23.90
Mozambique	1.56	0.82	2.38	0.52	0.09	0.79	0.05	6.30	3.80	5.50
Myanmar	0.11	0.46	0.57	0.10	0.00	0.01	0.01	7.40	4.40	7.20
Namibia	5.87	3.75	9.62	4.35	0.48	1.30	0.35	36.00	25.20	31.60
Nauru	2.33	2.50	4.83	2.24	0.08	0.00	0.00	13.60	5.10	10.70
Nepal	0.20	2.21	2.41	0.07	0.00	0.13	0.00	15.10	1.80	10.50
Netherlands	9.55	0.50	10.05	4.72	3.26	1.56	0.00	15.60	12.20	13.80

WHO Member State	Recorded consumption ^a	Unrecorded consumption ^b	Total consumption ^c	Beer ^d	Wine ^e	Spirits ^f	Other ^g	Total male drinkers ^h	Total female drinkers ⁱ	Total drinkers ^j
New Zealand	9.12	0.50	9.62	4.09	3.04	1.37	0.81	17.30	7.20	12.00
Nicaragua	3.77	1.60	5.37	1.13	0.03	2.55	0.00	21.40	16.40	20.50
Niger	0.09	0.25	0.34	0.05	0.01	0.03	0.00	—	—	—
Nigeria	9.78	2.50	12.28	0.54	0.01	0.02	9.17	36.90	23.00	32.10
Niue	8.85	1.00	9.85	4.63	0.11	2.95	0.00	—	—	—
Norway	6.21	1.60	7.81	2.98	2.00	1.28	0.11	12.50	5.30	8.70
Oman	0.64	0.30	0.94	0.27	0.00	0.39	0.00	—	—	—
Pakistan	0.01	0.05	0.06	0.00	0.00	0.00	0.01	30.40	16.10	30.00
Palau	9.10	1.00	10.10	8.68	0.52	2.10	0.00	—	—	—
Panama	5.85	1.00	6.85	3.71	0.22	1.91	0.01	—	—	—
Papua New Guinea	1.49	2.00	3.49	0.57	0.02	0.90	0.00	—	—	—
Paraguay	6.38	1.50	7.88	3.48	0.97	1.77	0.19	14.90	9.20	12.80
Peru	2.90	4.00	6.90	2.16	0.32	0.61	0.00	13.40	5.60	10.00
Philippines	4.38	2.00	6.38	1.29	0.02	2.91	0.00	19.00	10.90	17.00
Poland	9.55	3.70	13.25	5.27	1.23	2.97	0.00	26.10	9.50	17.90
Portugal	12.45	2.10	14.55	3.75	6.65	1.27	0.51	32.30	19.90	27.50
Puerto Rico	5.47	0.28	5.75	3.68	0.34	1.35	0.05	—	—	—
Qatar	0.85	0.40	1.25	0.04	0.11	0.73	0.01	—	—	—
Republic of Korea	11.80	3.00	14.80	2.14	0.06	9.57	0.04	28.90	7.70	19.90
Republic of Moldova	8.22	10.00	18.22	4.57	4.67	4.42	0.00	32.00	13.60	23.40
Romania	11.30	4.00	15.30	4.07	2.33	4.14	0.00	31.80	15.00	24.50
Russian Federation	11.03	4.73	15.76	3.65	0.10	6.88	0.34	35.40	16.30	26.70
Rwanda	6.80	3.00	9.80	0.54	0.00	0.01	6.44	—	—	—
Saint Kitts and Nevis	8.93	0.50	9.43	3.98	0.18	6.00	0.10	—	—	—
Saint Lucia	11.35	0.50	11.85	3.49	0.71	8.21	0.31	—	—	—
Saint Vincent and the Grenadines	4.94	0.50	5.44	2.55	0.12	3.16	0.05	—	—	—
Samoa	3.80	1.00	4.80	3.31	0.08	0.24	0.00	19.50	7.20	18.00
Sao Tome and Principe	5.82	2.92	8.74	1.12	3.40	0.83	0.00	12.50	6.70	10.10
Saudi Arabia	0.05	0.20	0.25	0.00	0.00	0.05	0.00	—	—	—
Senegal	0.30	0.30	0.60	0.15	0.12	0.01	0.00	33.50	15.30	30.00
Serbia	9.97	1.12	11.09	4.40	2.21	3.42	0.04	—	—	—
Seychelles	9.59	1.00	10.59	7.15	3.15	1.59	0.00	17.30	8.10	12.10
Sierra Leone	6.72	3.00	9.72	0.46	0.01	0.02	6.06	31.70	16.70	24.90
Singapore	0.55	1.00	1.55	1.45	0.25	0.40	0.00	3.70	2.50	3.10
Slovakia	10.33	3.00	13.33	3.90	1.70	5.40	0.00	28.20	8.10	17.30
Slovenia	12.19	3.00	15.19	4.10	5.10	1.33	0.00	24.20	11.40	17.90
Solomon Islands	1.16	0.50	1.66	0.66	0.03	0.40	0.00	5.50	1.40	4.60
Somalia	0.00	0.50	0.50	0.00	0.00	0.00	0.00	—	—	—
South Africa	6.96	2.50	9.46	3.93	1.17	1.15	0.75	39.60	23.80	34.90
Spain	10.22	1.40	11.62	4.52	3.59	1.31	0.61	24.80	15.60	21.10
Sri Lanka	0.35	0.44	0.79	0.02	0.00	0.33	0.00	9.30	6.90	9.00
Sudan	1.56	1.00	2.56	0.00	0.00	0.27	1.08	—	—	—
Suriname	5.19	0.90	6.09	2.00	0.13	3.26	0.05	—	—	—

WHO Member State	Recorded consumption ^{*a}	Unrecorded consumption ^{*b}	Total consumption ^{*c}	Beer ^d	Wine ^e	Spirits ^f	Other ^g	Total male drinkers ^{*h}	Total female drinkers ^{*i}	Total drinkers ^{*j}
Swaziland	5.70	0.00	5.70	1.64	0.21	0.15	3.05	33.90	4.70	21.00
Sweden	6.70	3.60	10.30	2.60	2.90	1.10	0.00	16.70	7.80	12.50
Switzerland	10.56	0.50	11.06	3.10	5.10	1.80	0.10	17.70	8.40	13.40
Syrian Arab Republic	1.13	0.30	1.43	0.04	0.32	0.69	0.00	34.40	11.50	32.50
Tajikistan	0.39	3.00	3.39	0.08	0.02	0.29	0.00	—	—	—
Thailand	6.37	0.71	7.08	1.75	0.02	4.69	0.00	29.10	6.20	23.90
The former Yugoslav Republic of Macedonia	5.61	2.90	8.51	2.11	1.62	2.08	0.00	—	—	—
Timor-Leste	0.36	0.50	0.86	0.30	0.01	0.00	0.00	—	—	—
Togo	0.99	1.00	1.99	0.43	0.32	0.06	0.22	—	—	—
Tonga	3.28	0.50	3.78	0.89	2.29	0.64	0.18	37.80	13.70	31.80
Trinidad and Tobago	5.78	0.50	6.28	3.10	0.11	2.78	0.04	—	—	—
Tunisia	1.09	0.20	1.29	0.67	0.34	0.04	0.00	20.80	17.20	20.70
Turkey	1.37	1.50	2.87	0.78	0.07	0.46	0.00	31.20	19.40	29.40
Turkmenistan	2.33	2.30	4.63	0.21	0.90	1.22	0.00	—	—	—
Tuvalu	1.94	0.50	2.44	0.71	0.02	0.58	0.00	—	—	—
Uganda	10.93	1.00	11.93	0.51	0.00	0.18	14.52	37.60	16.60	28.20
Ukraine	8.10	7.50	15.60	2.69	0.58	5.21	0.02	37.40	17.10	27.90
United Arab Emirates	0.34	0.20	0.54	0.30	0.01	0.00	0.02	7.70	3.10	7.20
United Kingdom	11.67	1.70	13.37	4.93	3.53	2.41	0.67	21.60	9.50	15.60
United Republic of Tanzania	4.75	2.00	6.75	0.57	0.02	0.15	4.51	43.10	21.50	31.80
United States	8.44	1.00	9.44	4.47	1.36	2.65	0.00	20.00	8.50	14.40
Uruguay	6.14	2.00	8.14	1.33	3.95	1.21	0.06	21.50	12.70	17.90
Uzbekistan	1.64	1.90	3.54	0.28	0.19	1.30	0.00	—	—	—
Vanuatu	0.43	0.50	0.93	0.46	0.19	0.19	0.00	4.60	1.70	4.70
Venezuela (Bolivarian Republic of)	6.83	1.40	8.23	5.19	0.07	1.65	0.00	—	—	—
Viet Nam	1.07	2.70	3.77	1.13	0.01	0.02	0.00	16.10	11.60	15.60
Yemen	0.00	0.20	0.20	0.00	0.00	0.00	0.00	—	—	—
Zambia	2.35	1.50	3.85	0.42	0.01	0.27	1.62	24.90	21.40	23.90
Zimbabwe	4.08	1.00	5.08	0.96	0.19	0.06	2.61	36.70	23.50	35.30

* In countries where the number of tourists per year is at least equivalent to the number of inhabitants, the tourist consumption is deducted.

^a Recorded adult per capita consumption, average 2003–2005 (15+ years; in litres of pure alcohol).

^b Unrecorded adult per capita consumption, 2005 (15+ years; in litres of pure alcohol).

^c Total (recorded + unrecorded) adult per capita consumption, 2005, (15+ years; in litres of pure alcohol).

^d Recorded adult per capita consumption (beer), 2005 (15+ years; in litres of pure alcohol).

^e Recorded adult per capita consumption (wine), 2005 (15+ years; in litres of pure alcohol).

^f Recorded adult per capita consumption (spirits), 2005 (15+ years; in litres of pure alcohol).

^g Recorded adult per capita consumption (other), 2005 (15+ years; in litres of pure alcohol).

^h Total (recorded + unrecorded) adult per capita consumption among drinkers, males, 2005 (15+ years; in litres of pure alcohol).

ⁱ Total (recorded + unrecorded) adult per capita consumption among drinkers, females, 2005 (15+ years; in litres of pure alcohol).

^j Total (recorded + unrecorded) adult per capita consumption among drinkers, both sexes, 2005 (15+ years; in litres of pure alcohol).

— Data not available.

APPENDIX IV.

DATA SOURCES AND METHODS

DATA SOURCES

The Global Information System on Alcohol and Health (GISAH) is a user-friendly and comprehensive Internet-based platform to display information on alcohol and health (<http://www.who.int/globalatlas/alcohol>), and includes regional interfaces. It provides a reference source of information for global epidemiological surveillance of alcohol consumption, alcohol-related harm and alcohol policies. The data in GISAH are arranged under a broad set of seven categories that contain a number of indicators that were chosen to assess the alcohol situation in WHO Member States as they relate to public health. These seven categories are: alcohol production and availability; levels of consumption; patterns of consumption; harms and consequences; economic aspects; alcohol control policies; and resources for prevention and treatment. The GISAH is the portal to the Global Alcohol Database (GAD) which WHO has been building since 1997 through the compilation of information from published and grey literature, government documents, national statistics, national and global surveys, the industry, intergovernmental organizations, and data collection through the Global Survey on Alcohol and Health (see Box 1). Currently, GISAH encompasses more than 200 alcohol-related indicators in more than 225 countries and territories. Over time, indicators will be updated, improved and new ones added.

One important component of GISAH is the data from the Global Survey on Alcohol and Health, which was conducted in collaboration with all six WHO regional offices¹ as from 2008. The survey data collection tool was forwarded to all WHO Member States in each region for completion by focal points and national counterparts who were officially nominated by the respective ministries of health. At the same time, data was collected in conjunction with the European Commission in countries belonging to the European Union. In developing the questionnaire, comments on the draft were solicited from WHO regional offices, the European Commission and a group of experts. The 69 questions were divided into three sections. Section A addressed alcohol policy; Section B addressed alcohol consumption; and Section C addressed alcohol and health indicators. The questionnaire, which was initially in English, was translated into French, Portuguese, Russian and Spanish. By early 2009, focal points and national counterparts in 162 WHO Member States² had responded. This represents a response rate of 84% from WHO Member States, covering 97% of the world's population.

Whenever information was incomplete or in need of clarification, the questionnaire was returned to the focal point or national counterpart in the country concerned for revision. Amendments to the survey responses were then resubmitted.

In addition to the data collected by the Global Survey on Alcohol and Health (WHO, 2008c), other sources of data were utilized in the preparation of this report and the country profiles. These included data from the Global Burden of Disease project as well as from surveys and other studies conducted in the respective countries,

¹ WHO Regional Offices for Africa (AFRO), the Americas (AMRO), the Eastern Mediterranean (EMRO), Europe (EURO), South-East Asia (SEARO), and the Western Pacific (WPRO).

² In addition, Anguilla, the British Virgin Islands, French Polynesia, Hong Kong and Macau completed the survey.

mainly from published peer-reviewed journal articles and official reports, and, in some cases, literature such as conference papers and reports found on the Internet. For the data on alcohol consumption, several sources were utilized, as discussed in more detail below.

COUNTRY PROFILES: INDICATORS

Individual country profiles were prepared to give an overview of the current situation regarding alcohol and health in WHO Member States. This was achieved on the basis of a selected number of key indicators chosen by a group of experts for which as much data as possible were collected. The 30 key indicators are shown in the country profiles.

Although great efforts have been made to validate the data received from the countries, caution should be exercised in their interpretation. For example, the data on alcohol policy have not been checked against the actual alcohol legislation in the countries. Besides basic validation of inconsistencies with the focal points and national counterparts, the country profiles were shared with representatives from the individual countries who attended WHO regional consultation meetings in 2009 and feedback was incorporated as appropriate. In November 2009, the country profiles were sent to the governments for endorsement. Because of space limitations, not all the information collected in the questionnaires is presented in this report. However, these data are displayed on the GISAH web site.

The indicators used in the country profiles and the three data sections of the report are described in more detail below. Under each section heading, indicators related specifically to the individual sections will be presented. These indicators formed the basis for the global and subregional analyses presented in this report. Data sources and methods related to the indicators presented in the country profiles that do not appear elsewhere can be found on the GISAH web site.

WHO REGIONS, WHO SUBREGIONS AND WORLD BANK INCOME GROUPS

In many cases, the results of the present report are summarized by WHO regions or subregions, or by World Bank Income Groups. Detailed definitions of these are given below. The overall global coverage was exceptional, representing 97% of the world's population. However, it should be noted that not all countries responded to the survey. The Global Survey on Alcohol and Health addresses the situation at the national level in a given country with additional questions and space for comments on sub-national specificities¹. Countries with predominantly Muslim populations that have a total ban on alcoholic beverages (N=10), replied to specific survey questions accordingly.

¹ The data for the United Kingdom refer mainly to England and Wales. India is a federated state with large differences between the different states. The data in this study are from the southern parts of India and are not representative of the entire country. In the federated countries of Canada and the United States, most decisions on alcohol policy are taken at sub-national level, although efforts to respond to the restrictions at the national level were made wherever possible. In Canada, a questionnaire was completed for the provinces of Quebec and for British Columbia, as well as one for the country as whole. Responses from Quebec and British Columbia are not reflected in this report; however, the data is maintained in the Global Alcohol Database.

Table IV.I. WHO Member States by WHO region and WHO subregion

WHO region	WHO subregion	WHO Member States
AFR	AFR D	Algeria, Angola, Benin, Burkina Faso, Cameroon, Cape Verde, Chad, Comoros, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Madagascar, Mali, Mauritania, Mauritius, Niger, Nigeria, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Togo
	AFR E	Botswana, Burundi, Central African Republic, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Eritrea, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Namibia, Rwanda, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zambia, Zimbabwe
AMR	AMR A	Canada, Cuba, United States
	AMR B	Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, El Salvador, Grenada, Guyana, Honduras, Jamaica, Mexico, Panama, Paraguay, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela (Bolivarian Republic of)
	AMR D	Bolivia (Plurinational State of), Ecuador, Guatemala, Haiti, Nicaragua, Peru
EMR	EMR B	Bahrain, Iran (Islamic Republic of), Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates
	EMR D	Djibouti, Egypt, Morocco, Somalia, Sudan, Afghanistan, Iraq, Pakistan, Yemen
EUR	EUR A	Andorra, Austria, Belgium, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, United Kingdom
	EUR B	Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Georgia, Kyrgyzstan, Montenegro, Poland, Romania, Serbia ^a , Slovakia, Tajikistan, The former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Uzbekistan
	EUR C	Belarus, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Republic of Moldova, Russian Federation, Ukraine
SEAR	SEAR B	Indonesia, Sri Lanka, Thailand
	SEAR D	Bangladesh, Bhutan, Democratic People's Republic of Korea, Timor-Leste, India, Maldives, Myanmar, Nepal
WPR	WPR A	Australia, Brunei Darussalam, Japan, New Zealand, Singapore
	WPR B	Cambodia, China, Cook Islands, Fiji, Kiribati, Lao People's Democratic Republic, Malaysia, Marshall Islands, Micronesia (Federated States of), Mongolia, Nauru, Niue, Palau, Papua New Guinea, Philippines, Republic of Korea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Viet Nam

^a Parts of this report contains data from Serbia and Montenegro prior to Montenegro's formal declaration of independence.

Table IV.II. Geographical coverage of the Global Survey on Alcohol and Health data by WHO region and as a percentage of the population reached

WHO region	Countries with survey data/ total number of countries	Percentage of population covered
AFR	46 / 46	100
AMR	29 / 35	98.94
EMR	14 / 21	92.57
EUR	45 / 53	96.89
SEAR	10 / 11	98.61
WPR	18 / 27	94.68
Total	162 / 193	96.95

Table IV.III. The breakdown of World Bank income designation by WHO Member State in 2004

Income group	WHO Member State	Non-member states and territories
High	Andorra, Australia, Austria, Bahamas, Bahrain, Belgium, Brunei Darussalam, Canada, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Kuwait, Luxembourg, Malta, Monaco, Netherlands, New Zealand, Norway, Portugal, Qatar, Republic of Korea, San Marino, Saudi Arabia, Singapore, Slovenia, Spain, Sweden, Switzerland, United Arab Emirates, United Kingdom, United States	Aruba, Bermuda, Cayman Islands, Channel Islands, Faeroe Islands, French Polynesia, Greenland, Guam, Isle of Man, Lichtenstein, Netherlands Antilles, New Caledonia, Puerto Rico, United States Virgin Islands
Upper middle	Antigua and Barbuda, Argentina, Barbados, Belize, Botswana, Chile, Costa Rica, Croatia, Czech Republic, Dominica, Equatorial Guinea, Estonia, Gabon, Grenada, Hungary, Latvia, Lebanon, Libyan Arab Jamahiriya, Lithuania, Malaysia, Mauritius, Mexico, Oman, Palau, Panama, Poland, Russian Federation, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Seychelles, Slovakia, South Africa, Trinidad and Tobago, Turkey, Uruguay, Venezuela (Bolivarian Republic of)	American Samoa, Northern Mariana Islands
Lower middle	Albania, Algeria, Angola, Armenia, Azerbaijan, Belarus, Bolivia (Plurinational State of), Bosnia and Herzegovina, Brazil, Bulgaria, Cape Verde, China, Colombia, Cuba, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Fiji, Georgia, Guatemala, Guyana, Honduras, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Jordan, Kazakhstan, Kiribati, Maldives, Marshall Islands, Micronesia (Federated States of), Montenegro, Morocco, Namibia, Paraguay, Peru, Philippines, Romania, Samoa, Serbia and Montenegro, Sri Lanka, Suriname, Swaziland, Syrian Arab Republic, Thailand, The former Yugoslav Republic of Macedonia, Tonga, Tunisia, Turkmenistan, Ukraine, Vanuatu	West Bank and Gaza Strip
Low	Afghanistan, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Democratic People's Republic of Korea, Democratic Republic of the Congo, Eritrea, Ethiopia, Gambia, Ghana, Guinea, Guinea-Bissau, Haiti, India, Kenya, Kyrgyzstan, Lao People's Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mongolia, Mozambique, Myanmar, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Papua New Guinea, Republic of Moldova, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sudan, Tajikistan, Timor-Leste, Togo, Uganda, United Republic of Tanzania, Uzbekistan, Viet Nam, Yemen, Zambia, Zimbabwe	
Not included	Anguilla, British Virgin Islands, Cook Islands, Falkland Islands (Malvinas), French Guiana, Gibraltar, Guadeloupe, Holy See, Martinique, Montserrat, Nauru, Niue, Pitcairn, Réunion, Saint Helena, Saint Pierre et Miquelon, Tokelau, Turks and Caicos Islands, Tuvalu, Wallis and Futuna Islands, Western Sahara	

1. CONSUMPTION

Section 1 utilizes two main sources of data, namely the WHO Global Information System on Alcohol and Health and the *Global burden of disease: 2004 update*. The indicators are described in the order in which they are found in the section.

For the data on alcohol consumption, presented in GISAH, several sources were utilized. Official data on recorded adult (15+ years) per capita consumption supplied by the respective Member States were given priority. If these data were not available, data from economic operators¹ were used. When these data were not consistently available, data supplied by the United Nation's Food and Agriculture Organization (FAO) statistical database (FAOSTAT) were utilized.

The data is only as reliable as the original source data. This is illustrated by the fact that consumer surveys assessing people's self-reported alcohol consumption usually show overall consumption figures which are much lower, quite often from around 40–60% of supply-based estimates (i.e. data on the production and trade of alcohol). This would indicate that people are underestimating their own consumption and/or that these surveys do not reach the people with the highest consumption. Sales data, on the other hand, do not allow for the disaggregation of recorded APC by gender. To this end, other data sources such as survey data for measures of abstinence are needed.

As a result, the APC data presented in this report and in the country profiles are considered to be the best available data.

¹ Canadean, International Wine and Spirit Research (IWSR); Organisation Internationale de la Vigne et du Vin (OIV); The Wine Institute; World Drink Trends.

Table IV.IV. Indicators in Section 1

Indicator	Methodology	Data sources (in order of priority)
Total APC, 2005 (Box 3)	The recorded average APC for 2003–2005 and unrecorded consumption for 2005 were added to arrive at the <i>total consumption</i> of pure alcohol in litres. The comparison of this total with the <i>weighted</i> average of the total consumption for each region is shown in the country profile.	Government sources (42 countries), statistics from economic operators (133 countries) and FAOSTAT data (13 countries).
Recorded APC, 2003–2005	Using the <i>recorded</i> APC data from 2003, 2004 and 2005, three-year averages were computed. Tourist consumption was removed to provide a better estimate for APC in countries where the number of tourists per year is at least the number of inhabitants.	Government sources (42 countries), statistics from economic operators (133 countries) and FAOSTAT data (13 countries).
Tourist consumption (Table IV.V)	The estimates are linked to APC and based on the number of tourists and the following assumptions: <ul style="list-style-type: none"> • tourists consume alcohol like at home • the average length of stay by tourists was 14 days (except for Estonia, the Republic of Moldova and Singapore^a). 	Tourist offices of the respective countries and as above.
Consumption by type of alcoholic beverage	APC in litres of pure alcohol for 2005 for beer, wine and spirits were calculated separately as a percentage of the total recorded APC.	Government sources (42 countries), statistics from economic operators (133 countries) and FAOSTAT data (13 countries).
Unrecorded APC, 2005 (Box 4)	Unrecorded APC in litres of pure alcohol in 2005 was based on empirical investigations and expert judgements.	Algorithm used in estimating unrecorded consumption is available in the references. ^b
Prevalence of abstinence, best estimates for 2004 (Box 6)	The percentage of those in the population aged 15 years and older who did not drink any alcohol in the past 12 months (past-year abstainers), those who have never consumed alcohol (lifetime abstainers), and those who had previously consumed alcohol but who had not done so in the previous 12-month period (former drinkers) are presented.	Surveys carried out within the period of 1993–2009: recent national studies (14 countries); World Health Survey (WHS) 2003 (52 countries); STEPS ^c surveys (27 countries); GENACIS surveys ^d (20 countries); ECAS surveys ^e (3 countries); or peer-reviewed articles (16 countries).
Drinking among drinkers, 2005	Litres of pure alcohol (recorded and unrecorded) consumed only by the adult (15+ years) drinking population was obtained by calculating the total population of male and female drinkers using the abstainer data (see above) and computing the total litres of pure alcohol consumed by the 2005 adult population.	Total APC and abstainers data for each country (see above).
Heavy episodic drinking (HED), best estimates for 2004	The number of males in the population multiplied by the percentage of heavy episodic drinkers among males equals the number of male heavy episodic drinkers in the population. The number of male heavy episodic drinkers divided by the number of male drinkers equals the percentage of male heavy episodic drinkers among male drinkers. (Similar calculation performed for HED among females.)	Surveys carried out within the period 1997–2009.
Estimate of five-year change in recorded adult per capita consumption, 2001–2005	The five-year change was classed as: <p>“Increase” if the MA for 2005 >10% of the MA for 2001–2003 and the MA at 2003, and 2004 are within +/-15% of 2001;</p> <p>“Decrease” if MA for 2005 <10% of the MA for 2001–2003, and the MA at 2003 and 2004 are within +/-15% of 2001;</p> <p>“Stable” if MA 2005 <=10% of the MA for 2001–2003; and the MA at 2003, and 2004 are within +/-15% of 2001;</p> <p>“Inconclusive” if the MA for 2002, 2003 and 2004 are outside the boundary of +/-15% of 2001.</p>	Recorded APC data for each country (see above) was used to compute moving averages (MA) ^f for three-year periods for each year beginning with 2001 and ending with 2005

^a There is evidence that in Estonia, the Republic of Moldova and Singapore people export significant amounts of alcohol via cross-border shopping.

^b For more information on the methodology related to estimation of unrecorded alcohol consumption, please refer to Gmel et al., 2003; Lachenmeier et al., 2007; Rehm et al., 2003; Rehm et al., 2004; and Rehm et al., 2007.

^c STEPS questionnaire for Risk Fact Surveillance for years 2001–2009.

^d GENACIS (Gender, alcohol and culture; an international study) for the years 1999–2005.

^e ECAS (European Comparative Alcohol Study, 2002).

^f It is necessary to monitor the change in recorded adult per capita consumption in order to appreciate possible variations in the level and pattern of alcohol consumption within a population. This is also a way of monitoring whether policies in place influence alcohol consumption. In addition, one of the strategies we have adopted is to use moving averages. By using moving averages, non-significant variation in the values from year to year can be minimized.

Table IV.IV. Indicators in Section 1

Indicator	Methodology	Data sources (in order of priority)
Total APC, 2005 (Box 3)	The recorded average APC for 2003–2005 and unrecorded consumption for 2005 were added to arrive at the <i>total consumption</i> of pure alcohol in litres. The comparison of this total with the <i>weighted average</i> of the total consumption for each region is shown in the country profile.	Government sources (42 countries), statistics from economic operators (133 countries) and FAOSTAT data (13 countries).
Recorded APC, 2003–2005	Using the <i>recorded</i> APC data from 2003, 2004 and 2005, three-year averages were computed. Tourist consumption was removed to provide a better estimate for APC in countries where the number of tourists per year is at least the number of inhabitants.	Government sources (42 countries), statistics from economic operators (133 countries) and FAOSTAT data (13 countries).
Tourist consumption (Table IV.V)	The estimates are linked to APC and based on the number of tourists and the following assumptions: <ul style="list-style-type: none"> • tourists consume alcohol like at home • the average length of stay by tourists was 14 days (except for Estonia, the Republic of Moldova and Singapore^a). 	Tourist offices of the respective countries and as above.
Consumption by type of alcoholic beverage	APC in litres of pure alcohol for 2005 for beer, wine and spirits were calculated separately as a percentage of the total recorded APC.	Government sources (42 countries), statistics from economic operators (133 countries) and FAOSTAT data (13 countries).
Unrecorded APC, 2005 (Box 4)	Unrecorded APC in litres of pure alcohol in 2005 was based on empirical investigations and expert judgements.	Algorithm used in estimating unrecorded consumption is available in the references. ^b
Prevalence of abstinence, best estimates for 2004 (Box 6)	The percentage of those in the population aged 15 years and older who did not drink any alcohol in the past 12 months (past-year abstainers), those who have never consumed alcohol (lifetime abstainers), and those who had previously consumed alcohol but who had not done so in the previous 12-month period (former drinkers) are presented.	Surveys carried out within the period of 1993–2009: recent national studies (14 countries); World Health Survey (WHS) 2003 (52 countries); STEPS ^c surveys (27 countries); GENACIS surveys ^d (20 countries); ECAS surveys ^e (3 countries); or peer-reviewed articles (16 countries).
Drinking among drinkers, 2005	Litres of pure alcohol (recorded and unrecorded) consumed only by the adult (15+ years) drinking population was obtained by calculating the total population of male and female drinkers using the abstainer data (see above) and computing the total litres of pure alcohol consumed by the 2005 adult population.	Total APC and abstainers data for each country (see above).
Heavy episodic drinking (HED), best estimates for 2004	The number of males in the population multiplied by the percentage of heavy episodic drinkers among males equals the number of male heavy episodic drinkers in the population. The number of male heavy episodic drinkers divided by the number of male drinkers equals the percentage of male heavy episodic drinkers among male drinkers. (Similar calculation performed for HED among females.)	Surveys carried out within the period 1997–2009.
Estimate of five-year change in recorded adult per capita consumption, 2001–2005	The five-year change was classed as: <p>“Increase” if the MA for 2005 >10% of the MA for 2001–2003 and the MA at 2003, and 2004 are within +/-15% of 2001;</p> <p>“Decrease” if MA for 2005 <10% of the MA for 2001–2003, and the MA at 2003 and 2004 are within +/-15% of 2001;</p> <p>“Stable” if MA 2005 <=10% of the MA for 2001–2003; and the MA at 2003, and 2004 are within +/-15% of 2001;</p> <p>“Inconclusive” if the MA for 2002, 2003 and 2004 are outside the boundary of +/-15% of 2001.</p>	Recorded APC data for each country (see above) was used to compute moving averages (MA) ^f for three-year periods for each year beginning with 2001 and ending with 2005

^a There is evidence that in Estonia, the Republic of Moldova and Singapore people export significant amounts of alcohol via cross-border shopping.

^b For more information on the methodology related to estimation of unrecorded alcohol consumption, please refer to Gmel et al., 2003; Lachenmeier et al., 2007; Rehm et al., 2003; Rehm et al., 2004; and Rehm et al., 2007.

^c STEPS questionnaire for Risk Fact Surveillance for years 2001–2009.

^d GENACIS (Gender, alcohol and culture; an international study) for the years 1999–2005.

^e ECAS (European Comparative Alcohol Study), 2002.

^f It is necessary to monitor the change in recorded adult per capita consumption in order to appreciate possible variations in the level and pattern of alcohol consumption within a population. This is also a way of monitoring whether policies in place influence alcohol consumption. In addition, one of the strategies we have adopted is to use moving averages. By using moving averages, non-significant variation in the values from year to year can be minimized.

Table IV.V. Tourist consumption in litres of pure alcohol

WHO region	WHO Member State	Tourist consumption (litres of pure alcohol)
AFR	Cape Verde	0.43
	Seychelles	0.79
AMR	Antigua and Barbuda	1.98
	Bahamas	2.56
	Barbados	0.91
	Belize	0.62
	Dominica	0.65
	Grenada	0.56
	Saint Kitts and Nevis	0.41
	Saint Lucia	1.07
	Saint Vincent and the Grenadines	0.45
	EUR	Cyprus
Estonia		0.80
Iceland		0.85
Malta		1.37
Republic of Moldova		3.00
SEAR	Maldives	0.93
WPR	Cook Islands	2.65
	Fiji	0.41
	Singapore	1.51
	Tonga	0.50
	Vanuatu	0.53

2. CONSEQUENCES

The main data source for the indicators in Section 2 was *The global burden of disease study: 2004 update*, which utilizes data provided by the WHO mortality database (<http://www.who.int/healthinfo>) together with latest available information from WHO programmes for 35 causes of public health importance, and regional information on incidence and prevalence of diseases, injuries and their disabling sequelae. The study uses both event-based (mortality) and time-based (disability-adjusted life-years; Box 10) measures of population health.

National information for the WHO mortality database are obtained from countries that report their mortality and cause distribution each year to WHO using the International Statistical Classification of Diseases and Related Health Problems coding system. Eight causes of death, where alcohol is an underlying factor, were included in this report: maternal and perinatal conditions (low birth weight), cancer, diabetes mellitus, neuropsychiatric disorders, cardiovascular diseases, liver cirrhosis, unintentional injuries and intentional injuries (see Table IV.VII).

Table IV.VI. Indicators

Indicator	Methodology	Data sources (in order of priority)
Alcohol-attributable deaths (Box 11)	Alcohol-attributable deaths were estimated based on population attributable fractions for alcohol and the number of deaths for each of the disease or injury categories. PAFs are calculated based on level of exposure of alcohol and the risk relations between consumption and different disease categories.	<i>Global Burden of Disease: 2004 update</i>
Alcohol use disorders (Box 8)	An indirect method for prevalence estimations of AUDs is used, based on a survey incorporating questions addressing diagnostic criteria for AUDs.	<i>Global Burden of Disease: 2004 update</i>
Alcohol dependence	The number of adults in 2004 who were dependent on alcohol for that year provides the percentage of alcohol dependence for males and females.	<i>Global Burden of Disease: 2004 update</i>
Alcohol-attributable burden of disease (Box 12)	For the standard DALY estimates, 3% time discounting and non-uniform age weights were used, consistent with earlier burden of disease estimates released by WHO. Using discounting and age weights, a death in infancy corresponds to 33 DALYs, and deaths at ages 5–20 years to around 36 DALYs.	<i>Global Burden of Disease: 2004 update</i>
Social costs	The total alcohol-attributable amount of economic cost to a country including health care costs, law enforcement costs, other direct social costs, direct administrative or social work services costs, and other indirect costs.	Social costs in millions of US dollars were provided by 12 WHO Member States ^a

^a Australia, Canada, Chile, France, Germany, Italy, the Republic of Korea, Spain, Sweden, the United Kingdom (except for Northern Ireland) and the United States. Social costs in Thailand are in millions of International dollars. For further details see Rehm et al., 2009.

Table IV.VII. ICD codes used for causes of death, where alcohol is a contributing factor

Cause of death	Description	ICD-9 3-digit	ICD-10 3-digit	NIS ^a	China
Maternal and perinatal conditions	Abortion, low birth weight	630-676, 764-765	000-099, P05-P07	CH11	C064, C075
Cancer	Cancers of the mouth, oropharynx, oesophagus, female breast and liver	140-208	C00-C97	S08	C022
Diabetes mellitus	Diabetes mellitus	250	E10-E14	B181	C035
Neuropsychiatric disorders	Alcohol use disorders, depression, epilepsy	290-319, 324-359	F01-F99, G06-G99	CH05, CH06 minus B220	C038, C039 minus 040
Cardiovascular diseases	Hypertensive disease, ischaemic heart disease, cerebrovascular disorder	390-459	I00-I99	B25-B30	C041
Cirrhosis of the liver	Liver cirrhosis, liver fibrosis	571	K70, K74	S347	C060
Unintentional injuries	Motor vehicle accidents, poisonings, falls, fires, drowning	E800-949	V01-X59, Y40-Y98	S47	C089 minus C102, 103
Intentional injuries	Self-inflicted injuries, homicide	E950-978, 990-999	X60-Y09, Y35-Y36	B54, B55	C102, C103

^a The Newly Independent States (NIS) are states, which achieved independence after the disintegration of the Soviet Union.

3. POLICIES AND INTERVENTIONS

Section 3 presents 20 alcohol policy indicators. Data have been collected using the Global Survey on Alcohol and Health questionnaire. The general areas covered, as they relate to the WHO's Global Strategy to Reduce the Harmful Use of Alcohol, are: national alcohol policies (leadership, awareness, commitment); policies on the physical availability of alcohol; policies regarding alcohol price and tax; policies on drink-driving; policies regarding alcohol advertising and marketing; policies regarding awareness raising; and policies regarding treatment. Indicators are not described separately here as they are adequately covered in Section 3. The data presented reflect the status of alcohol policies as of December 2008.

With regard to alcohol policies and related information, data are cross-sectional, only looking at currently existing alcohol policies. As the report does not include any longitudinal data pertaining to alcohol policy, at least at this stage, it is not possible to draw any conclusions about the direction of possible changes over time. Another limitation is the focus on the national situation, which does not include federal states and which is outside the remit of this report.