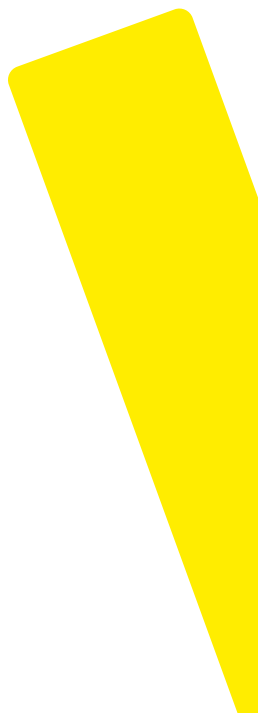


HRB Overview Series 10

Alcohol in Ireland: consumption, harm, cost and policy response

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HRB Overview Series 10

Alcohol in Ireland: consumption, harm, cost and policy response

Deirdre Mongan and Jean Long



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Table of contents

Acknowledgements	4	Alcohol-related harm	31
Foreword	5	Introduction	31
List of tables	6	Alcohol-related health harms	32
List of figures	7	Alcohol-related hospitalisations in Ireland	35
Summary	9	The Hospital In-Patient Enquiry (HIPE) scheme	35
Introduction and purpose	9	Wholly alcohol-attributable discharges	36
Data sources	9	Alcohol mortality in Ireland	44
Alcohol consumption in Ireland	10	Alcohol mortality by age and gender	44
Alcohol-related health harm	11	Alcohol mortality by diagnosis	45
Alcohol and crime	12	Liver disease	46
Alcohol and the workplace	13	Alcohol and self-harm	46
Conclusion	13	Alcohol treatment	48
Introduction	15	National Drug Treatment Reporting System (NDTRS)	49
Data sources	16	National Psychiatric Inpatient Reporting System (NPIRS)	51
Alcohol consumption in Ireland	17	Harm-to-others	52
Per capita consumption	17	Alcohol and crime	55
How much do people drink?	18	Alcohol and crime in Ireland	55
What does 11 litres of alcohol look like?	18	Alcohol and sexual crime in Ireland	57
What do people drink?	19	Alcohol and the workplace	58
What should per capita consumption be?	19	Alcohol and unemployment	58
Where do people drink?	19	Alcohol and premature mortality	59
Alcohol availability	20	Alcohol and workplace productivity	59
What is low-risk alcohol consumption?	20	Work environment and alcohol	60
Standard drinks	20	Harm to others in the workplace	61
Patterns of alcohol consumption in Ireland	21	Alcohol policy	62
Alcohol use among young people	23	Alcohol policy in Ireland	63
Alcohol use among schoolchildren	24	Overview of past 25 years	63
Alcohol consumption in third-level students and young people	25	Public support for alcohol policies	67
Alcohol consumption among older people	26	Pricing policies	68
Alcohol and women	27	Overview of alcohol marketing practices	72
		Conclusion	77
		Appendix 1: ICD coding used by HIPE	78
		References	82

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Foreword



Alcohol is widely consumed in Ireland and it is associated with many aspects of Irish social and cultural life. The results presented in this Overview reiterate that Ireland, by international standards, has a high level of alcohol consumption, overall and in single sessions. Moreover, over half the population drink in a harmful manner, making harmful drinking more the norm than the exception. In 2014, per capita consumption was 21% higher than the target of 9.1 litres per person annually recommended in the *Steering Group Report on a National Substance Misuse Strategy*. In 2013 at least 75% of all alcohol consumed was consumed during a binge drinking session.

In 2009, the Government established a steering group to formulate a national alcohol policy. The steering group published their report in 2012 and recommended that the Health Research Board be tasked with collecting information on the appropriate alcohol-related epidemiological indicators.

Given the apparent acceptance of harmful drinking patterns and drunkenness in Ireland, it is not surprising that the overall findings of this Overview illustrate that alcohol is responsible for a considerable burden of death, disease and injury. Alcohol is also responsible for three deaths each day and approximately 4,000 self-

harm presentations each year. The greatest burden of health harm is experienced by younger people. Three-quarters of all alcohol-related hospitalisations and deaths occurred among people under 65 years of age. The steep increase in alcoholic liver disease among those aged under 35 years is a worrying consequence of our harmful drinking patterns.

On the basis of evidence presented here, the health of Irish people would be improved if we change our norms by reducing overall alcohol consumption as well as risky drinking patterns. The international evidence is substantive and clear on the most effective policies to reduce alcohol-related harm. These policies include making alcohol more expensive, restricting its availability and reducing the promotion of alcohol, all of which are included in the Public Health (Alcohol) Bill 2015. The implementation of this bill would lead to a reduction in per capita consumption of alcohol in Ireland to a more appropriate level and to reduce the extent of alcohol-related harm faced by us as a society.

A handwritten signature in black ink, appearing to read 'G. Love', written over a light-colored background.

Dr Graham Love
Chief Executive, HRB

List of tables

Table 1 Number and length of stay of alcohol-related discharges, 1995–2013	36
Table 2 Classification of alcohol-related discharges by diagnosis	39
Table 3 Number of cases reported to the NDTRS, 2008–2013	49
Table 4 Characteristics of cases entering alcohol treatment, 2008–2013	50
Table 5 Negative consequences from alcohol consumption in the previous year, by gender and age	53
Table 6 Negative consequences from alcohol consumption in the previous year, gender by age group	53
Table 7 Comparison of drinking patterns among employed and unemployed persons in Ireland	59
Table 8 Alcohol policy activity in Ireland, 1990–2015 (adapted from Hope and Butler 2010)	63
Table 9 Steering group and Public Health (Alcohol) Bill measures	65
Table 10 Government alcohol policy groups/committees and reports published, 1996–2015	67
Table 11 Impact of excise duty changes in Ireland since 2002	69
Table 12 Percentage of students reporting exposure to various types of alcohol marketing	73

List of figures

Figure 1 Adult per capita consumption by total consumption and by beverage type, 1984–2014	18	Figure 13 Diagnoses of alcohol-related discharges by age, 2005–2013	41
Figure 2 Number of licences in Ireland by licence type, 1998–2013	20	Figure 14 Rate of alcoholic liver disease discharges per 100,000 adults, by age, 1995–2013	42
Figure 3 Harmful drinking patterns among 18–75-year-old Irish drinkers (National Alcohol Diary Survey 2013)	23	Figure 15 Number of discharges with a partially attributable chronic or acute alcohol condition 2007–2011	43
Figure 4 Percentage of 13–17-year-olds reporting having ever had an alcoholic drink, by age and gender, 2014	24	Figure 16 Partially attributable chronic and acute conditions by gender and age, 2011	43
Figure 5 Percentage of 13–17 year-olds reporting having ever been 'really drunk', by age and gender, 2014	24	Figure 17 Alcohol-related deaths by gender, 2008–2013	44
Figure 6 Trends in lifetime use of alcohol among school-aged children, 1998–2014	25	Figure 18 Alcohol-related deaths by age, 2008–2013	45
Figure 7 Trends in lifetime drunkenness among school-aged children, 1998–2014	25	Figure 19 Diagnosis of alcohol-related deaths by age and gender, 2008–2013	45
Figure 8 Harmful 3 patterns among 18–24-year-olds (National Drinking Diary Survey 2013)	26	Figure 20 Alcohol-related deaths with a diagnosis of liver disease, by gender and age, 2008–2013	46
Figure 9 Alcohol consumption, mechanisms of harm and alcohol-related consequences	31	Figure 21 Trends in deliberate self-harm presentations in Ireland, 2006–2013	48
Figure 10 Rate of alcohol-related discharges/100,000 by gender, 1995–2003	37	Figure 22 Types of treatment received by people entering alcohol treatment in 2013	51
Figure 11 Age profile of alcohol-related discharges by gender, 1995 and 2013	38	Figure 23 Rate of admission to psychiatric hospitals with an alcohol-related diagnosis, 2006–2013	52
Figure 12 Diagnoses of alcohol-related discharges, 2005–2008	40	Figure 24 Number of public order, drunkenness, assault, and drink driving offences, 2003–2015	56
		Figure 25 Effect of MUP on alcohol consumption by type of drinker	71

Summary

Introduction and purpose

In 2009, the Government established a steering group to formulate an alcohol policy. The steering group published their recommendations in 2012 and, following on from this, the government approved an extensive package of evidence-based measures in 2013 to deal with alcohol use. These were incorporated into the Public Health (Alcohol) Bill, which was published in 2015. This was significant because, for the first time, alcohol is being treated as a public health issue. The Bill aims to reduce alcohol consumption in Ireland to 9.1 litres of pure alcohol per person per annum by 2020, and to reduce alcohol-related harm. The main provisions of the Bill include minimum unit pricing, health labelling of alcohol products, the regulation of advertising and sponsorship of alcohol products, structural separation of alcohol products in mixed trading outlets, and the regulation of the sale and supply of alcohol in certain circumstances. The steering group report also recommended that the implemented measures be monitored, and the Health Research Board was tasked with collecting information on the appropriate alcohol epidemiological indicators. The purpose of this Overview is to compile and analyse the available data on alcohol use and its consequences in Ireland, and to describe alcohol policy.

Data sources

The data in this Overview are based predominantly on published Irish literature and existing information systems.

We used the HRB National Drugs Library (<http://www.drugsandalcohol.ie/>) to identify all Irish literature published since 2007. This resource provides one point of access to all Irish alcohol research and policy material, and a comprehensive collection of key international evidence.

Alcohol consumption at a population level was measured using data obtained from the Revenue Commissioners and the Central Statistics Office (CSO). The Revenue Commissioners compile annual alcohol sales figures based on the volume of each alcoholic beverage type released from bonded warehousing on payment of excise duty, and the CSO provides population data.

The Revenue Commissioners also record the number of licences in Ireland by licence type and data from 1998 to 2013 were obtained.

Alcohol use in the general population in Ireland and among specific subgroups is mainly described using published literature. To fill gaps in the literature, we undertook additional analysis of the National Alcohol Diary Survey, which was conducted by the HRB in 2013.

Alcohol and crime in Ireland is described using Garda-recorded statistics, which are published by the CSO.

Alcohol-related morbidity between 1995 and 2013 was analysed using previously unpublished data from the Hospital In-Patient Enquiry (HIPE) scheme from the Health Service Executive (HSE). We were provided with HIPE data and undertook the analysis presented here.

Alcohol-related mortality between 2008 and 2013 was analysed using previously unpublished data from the HRB's National Drug-Related Deaths Index (NDRDI). NDRDI staff undertook the required analysis on our behalf.

Alcohol treatment in Ireland from 2008 to 2013 is also described using published data from two information systems maintained by the HRB – the National Drug Treatment Reporting System (NDTRS) and the National Psychiatric In-patient Reporting System (NPIRS).

The raw data received by the authors was analysed using EXCEL or SPSS. Numbers were converted to population-based rates where appropriate. Trends overtime and experiences by age, gender and diagnosis are presented.

Alcohol consumption in Ireland

In the 30-year period 1984 to 2014, there was considerable variation in per capita alcohol consumption trends. Consumption increased between 1984 (9.8 litres) and 2001 (14.3 litres), when alcohol consumption reached its peak. This increase started in the mid-1990s, which coincided with the era of the 'Celtic Tiger', a period of unprecedented economic growth and prosperity in Ireland, and alcohol became more affordable due to increased disposable income and a lack of intervention by the government in terms of excise duty increases. Consumption decreased in 2003 following an increase in excise duty, and remained stable until 2007. In 2008, Ireland experienced a severe economic downturn and entered a recession from which it emerged in 2013, and this five-year period coincided with a decrease in alcohol consumption. In 2014, alcohol consumption increased by 3.8% to 11.0 litres, which may be due to increased economic growth. This corresponds to 41 (700 ml) bottles of vodka, 116 (750 ml) bottles of wine or 445 pints of beer (alcohol by volume (ABV) 4.3%) per adult in Ireland. As 20.6% of the adult population abstain from alcohol completely, those who drink alcohol consume even greater

quantities (46 bottles of vodka or 130 bottles of wine or 498 pints of beer). Consumption in 2014 was 20.9% higher than the target of 9.1 litres, as recommended by the steering group report.

There has been a shift from consuming alcohol in on-trade premises to consuming alcohol bought from the off-trade, which is reflected in Irish licence data from the Revenue Commissioners. Between 1998 and 2013, the number of pub licences in Ireland decreased by 19.1% (from 10,395 to 8,402). During the same period the combined number of wine and spirits off-licences increased by 377% (from 1,072 to 5,116). In 2013, there was one licence per 197 adults aged 18 years and over.

While per capita consumption is an important indicator of alcohol-related harm, the relationship between per capita consumption and harm is modified by the number of drinkers in a population and by the way alcohol is consumed, which is measured by conducting surveys. Survey data from 2013 indicate that drinkers in Ireland consume alcohol in an unhealthy pattern; 37.3% of drinkers engaged in monthly risky single-occasion drinking (RSOD), more commonly known as binge drinking, in the previous year; 54.3% of drinkers had a positive score on the AUDIT-C screening tool; 6.9% scored positive for dependence, which indicates that there were somewhere between 149,300 and 203,897 dependent drinkers in Ireland in 2013. At least three-quarters of the alcohol consumed was done so as part of a risky single-occasion or binge drinking session. Survey data indicate that older people consume alcohol the most frequently, but they are less likely to have a harmful pattern of consumption. Overall, women are less likely than men to consume alcohol in a harmful manner; however, the gender difference is much less among younger drinkers, compared with those aged 25 years and older. The figures presented here are probably an underestimate of the extent of harmful drinking as there is strong evidence that surveys of self-reported alcohol consumption result in estimates of per capita consumption well below the level calculated from alcohol sales data.

In the 2014 Health Behaviour in School-aged Children (HBSC) study, 51% of 13–17-year-old schoolchildren reported that they had ever had an alcoholic drink. This ranged from 23.2% of 13-years-old to 83.3% of 17-year-olds. More than a quarter (26.6%) reported that they had ever been 'really drunk', and this ranged from 5.7% of 13-year-olds to 60.5% of 17-year-olds. For all measures of drinking, there was little gender

difference. Since the first HBS study in 1998, there has been a steady decrease in the percentage of school-aged children reporting having ever had an alcoholic drink and in levels of lifetime drunkenness, especially among 13–15-year-olds. There has been less change in drinking patterns among 17-year-olds. While it is encouraging to see that alcohol use among schoolchildren has decreased since the 1990s, the situation appears to worsen for 18–24-year-olds. In the National Alcohol Diary survey, 18–24-year-olds had the highest rate of hazardous and harmful drinking and were most likely to experience alcohol-related harm. Among this age group, 60.2% engaged in monthly RSOD and 14.7% scored positive for dependence using the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) criteria. Almost one quarter (24.7%) reported harming their health, 26.0% harmed their work or study, 38.8% experienced harm to their finances and 11.8% had been stopped by the police as a result of their own drinking in the previous year. It is clear that alcohol consumption increases with age, particularly across the legal threshold.

Alcohol-related health harm

Harmful use of alcohol causes approximately 3.3 million deaths worldwide every year (or 5.9% of all deaths), and 5.1% of the global burden of disease is attributable to alcohol consumption. There are three main mechanisms by which alcohol may cause harm: toxic effects on organs and tissues; intoxication, leading to impairment of physical coordination, consciousness, cognition, perception, and behaviour; and dependence, whereby the drinker's self-control over his or her drinking behaviour is impaired.

In Ireland, the Hospital In-Patient Enquiry (HIPE) scheme collects clinical and administrative data on discharges (including deaths) from acute Irish hospitals. We analysed all alcohol-related discharges, that were either wholly attributable (alcohol is a necessary cause for these conditions to manifest) or partially attributable (alcohol must be a component cause) The number of wholly attributable alcohol-related discharges increased from 9,420 in 1995 to 17,120 in 2013, an increase of 82%, with males accounting for 72.4% of discharges and females accounting for 27.6% of discharges. In 2013, alcohol-related discharges accounted for 160,211 bed days or 3.6% of all bed days that year, which means that

each day 439 beds were occupied by people with a wholly attributable alcohol-related condition. In comparison, alcohol-related conditions accounted for 56,264 bed days or 1.7% of the total number of bed days in 1995. There has also been a steady increase in the mean length of stay, from 6.0 days in 1995 to 10.1 days in 2013, which suggests that patients with alcohol-related diagnoses are becoming more complex in terms of their illness. Between 2005 and 2013, acute conditions accounted for 17.2% of alcohol-related discharges; chronic diseases accounted for 21.2% of such discharges, and other chronic conditions accounted for 61.6% of alcohol-related discharges. Acute conditions were more prevalent among younger people, whereas chronic diseases and other chronic conditions were more common among older age groups.

Alcoholic liver disease (ALD) was the most common chronic alcohol disease, accounting for approximately four-fifths of all alcohol-related chronic diseases in 2013. The rate of discharges with ALD increased from 28.3 per 100,000 adults aged 15 years and over in 1995 to 87.7 in 2013, an increase of 210%. The most pronounced increase was among 15–34-year-olds, where the rate increased by 216% (from 3.8 in 1995 to 12.0 in 2013), albeit from a low base. Of all discharges with an ALD diagnosis, 8.7% died while still in hospital. The proportion of ALD discharges who died was similar across the study period, which suggests that there has been little improvement in the prognosis of patients with ALD since 1995.

The number of discharges with a partially attributable alcohol condition increased between 2007 and 2011 by 8.8%, from 52,491 to 57,110. The number of discharges with a partially attributable chronic condition increased by 12.8%, while the number of discharges with a partially attributable acute condition decreased in the same time period by 22.1%, from 5,965 to 4,646. The estimated cost to the health system in 2012 of dealing with inpatients with either a wholly or partially alcohol-attributable condition was €1.5 billion, which accounted for 11.0% of all public healthcare expenditure that year. The majority of these costs (77.4%) were associated with discharges with partially attributable alcohol conditions.

Alcohol mortality data from the National Drug-Related Deaths Index (NDRDI) were analysed for the years 2008–2013. There were 6,479 alcohol-related deaths between 2008 and 2013, which accounts for 3.8% of all deaths in Ireland in that

time period. In 2013, there were 1,055 deaths, which is an average of 88 deaths per month or three deaths per day. Males accounted for 73.8% of deaths and females accounted for 26.2% of deaths. Overall, 73.2% were aged under 65 years, which may be described as of working age. This represents a considerable economic loss to Ireland and contributes to the wider, intangible human costs associated with premature mortality due to alcohol use. From 2008–2013, medical causes accounted for 4,462 (68.9%) of alcohol-related deaths, poisonings accounted for 1,045 (16.1%) of such deaths, and traumatic causes accounted for 972 (15.0%) of alcohol-related deaths, with a similar pattern for males and females. However, there were considerable differences in the cause of death data for younger and older age groups. People aged under 35 years were most likely to have a poisoning or trauma cause of death while just one in five had a medical cause of death. Older people were more likely to die from medical causes. This trend is similar to that observed in the HIPE hospital data and is probably to be expected, as people in this age group are most likely to engage in RSOD and risk-taking behaviour. There were 1,276 alcohol-related deaths from 2008–2013 with a diagnosis of liver disease. Almost two-thirds (65.8%) were male; 45.8% were aged 50–64 years and 78.8% were aged under 65 years.

There is a strong link between harmful alcohol use and suicidal behaviour. The role of alcohol in non-fatal self-harm is well documented in Ireland by the National Registry of Deliberate Self Harm, which monitors the occurrence of persons presenting to hospital emergency departments as a result of an episode of deliberate self-harm. In 2014, 3,860 (34.7%) of self-harm presentations were alcohol-related. Alcohol was involved in a higher proportion of male episodes of self-harm than female episodes of self-harm (37% versus 33%). Alcohol may be one of the factors associated with the higher rates of self-harm presentations in the hours around midnight on Sundays, Mondays, and public holidays, times at which alcohol is most commonly consumed.

Alcohol treatment was analysed using data from the National Drug Treatment Reporting System (NDTRS) and the National Psychiatric Inpatient Reporting System (NPIRS). According to the NDTRS, 7,549 cases entered treatment in 2013. Cases were predominantly male, and the median age was 39–40 years. This represented a decrease of 12.3% since 2011. It may reflect a true decrease in the number of cases presenting for treatment; it

may also reflect reduced levels of participation, or under-reporting to the NDTRS, or it may be a combination of all of these factors. The total number of people admitted to psychiatric hospitals with an alcoholic diagnosis decreased by 46.9% between 2006 and 2013, from 2,767 to 1,470. One reason for this long-term decrease in the numbers admitted to psychiatric hospitals is the move to outpatient settings for clients who do not require inpatient treatment.

Alcohol and crime

Published data from the Garda PULSE (Police Using Leading Systems Effectively) system were analysed for the years 2005–2015. Analysis was confined to crimes in which alcohol was definitely involved, for example, drunkenness and drink driving offences, and crimes which commonly have alcohol as a contributory factor, for example, assaults and public order offences. Public order offences have decreased by 47.0% since 2008, drunkenness offences have decreased by 44.7% since 2005, and drink driving offences have decreased by 68.3% since 2007. In comparison, between 2005 and 2015 there was a 21% increase in the number of assault offences. The results presented here should be interpreted with caution due to concerns regarding the quality and reliability of the PULSE system. The observed reduction in the number of reported crimes may also be a result of the shift to home-drinking or it may be due to a decrease in Garda numbers, or it may be due to a combination of reasons.

According to the 2013 National Alcohol Diary Survey, 6.3% of all respondents aged 18 years and over reported that in the past year they had been stopped by the police as a result of their drinking, 4.9% of respondents were assaulted as a result of someone else's drinking, and 4.9% had property vandalised as a result of someone else's drinking. This suggests that in 2013, 215,155 people were stopped by the police, 167,170 people suffered an alcohol-related assault, and 167,170 had their property vandalised. In addition, 5.2% of respondents, which corresponds to 177,405 of the population, reported that they had been a passenger with a drunk driver in the past year. These figures and the Central Statistics Office (CSO) victimisation surveys suggest that only a portion of alcohol-related crime is actually reported and may, to some extent, explain the decreases noted in the Garda figures presented

here. In the most recent crime and victimisation survey in 2010, just over half (55%) of both assault and vandalism incidents were reported to the Garda Síochána.

Alcohol and the workplace

In Ireland, unemployment and harmful use of alcohol appear to be linked. According to the National Alcohol Diary Survey 2013, unemployed people were twice as likely as employed people to have a positive DSM-IV score for dependence. Among those who were unemployed, 1.4% reported that they had lost their job as a result of their alcohol consumption; when the experience among this representative sample is applied to the unemployed population, it is possible that 5,315 people on the Live Register in November 2013 had lost their job due to alcohol use.

The survey also indicated that 4.2% of employed respondents reported that they had missed days from work due to their alcohol use in the 12 months prior to the survey. On average, each of these respondents missed 3.3 days. Based on 2013 employment figures, we can extrapolate that of the 1,869,900 persons in employment, 78,536 missed work in the previous year due to alcohol. If we assume that the average daily cost is €159.32 per person, this suggests that the direct cost of alcohol-related absenteeism was €41,290,805 in 2013. This estimate does not include the costs associated with reduced productivity at work or the cost of alcohol-related injury at work. Of those who reported missing work due to alcohol, 82.6% engaged in monthly binge drinking and 40.8% scored positive for alcohol dependence, which highlights the link between harmful drinking patterns and alcohol-related absenteeism in Ireland.

Conclusion

It appears that per capita alcohol consumption in Ireland is too high and that we have a high prevalence of harmful drinking patterns. The consequences of our alcohol consumption are particularly evident in our hospital and mortality data. It is imperative that the measures outlined in the Public Health (Alcohol) Bill 2015 are implemented as soon as possible, in order to reduce alcohol consumption and reduce the level of alcohol-related harm that is experienced by Irish people.

Introduction

Alcohol can be described as a psychoactive substance with dependence-producing properties. It affects the drinker through the mechanisms of acute intoxication, toxic effects on organs and tissues, and alcohol dependence, and it is responsible for a considerable burden of death, disease and injury in Ireland.¹ Ireland has a high level of alcohol consumption and many Irish people engage in harmful drinking patterns.²

In 2009, the government established a steering group to formulate an alcohol policy. The steering group published their report in 2012. The report, which contained 45 recommendations as well as a monitoring and implementation plan, formed the basis of the Public Health (Alcohol) Bill, which was published in 2015. The report proposed that the overall impact of the implementation of the strategy should be reviewed, with particular reference to the following six key performance indicators:³

- » annual per capita consumption of pure alcohol by people over the age of 15;
- » the number of on-licences, specialist off-licences and mixed trading outlets in operation;
- » the level of enforcement of the provisions of the intoxicating liquor legislation on a regional basis across the country;
- » levels of alcohol-related crime on a regional basis;
- » levels of alcohol-related morbidity; and
- » the number of alcohol-related deaths.

The steering group report recommended that the Health Research Board (HRB) act as joint lead on the recommendation to collect information on the appropriate alcohol epidemiological indicators. The HRB previously published overviews on the health harms and social harms associated with alcohol in 2007⁴ and 2009,⁵ respectively. The purpose of this

Overview is to update the data and information contained in these previously published overviews and the steering group report, in order to assess the current situation in Ireland regarding alcohol consumption and harm, and to analyse trends over time.⁶ It may also be used to help assess the impact of the policy measures introduced in the Public Health (Alcohol) Bill 2015.

Data sources

The purpose of this Overview is to compile and analyse the available data on alcohol use and its consequences in Ireland, and to describe alcohol policy. The data in this Overview are based predominantly on published Irish literature and existing information systems.

We used the HRB National Drugs Library (<http://www.drugsandalcohol.ie/>) to identify all Irish literature published since 2007. This resource provides one point of access to all Irish alcohol research and policy material, and a comprehensive collection of key international evidence. This resource enabled us to identify all Irish journal articles and reports and we have included all relevant documents in this overview. For topics for which there was little Irish information, for example, alcohol and the workplace and alcohol and marketing, we undertook additional searches using the PubMed database. We also searched the World Health Organization website for relevant alcohol reports.

Alcohol consumption at a population level was measured using data obtained from the Revenue Commissioners and the Central Statistics Office (CSO). The Revenue Commissioners compile annual alcohol sales figures based on the volume of each alcoholic beverage type released from bonded warehousing on payment of excise duty, and the CSO provides population data.

The Revenue Commissioners also record the number of licences in Ireland by licence type and data from 1998 to 2013 were obtained.

Alcohol use in the general population in Ireland and among specific subgroups is mainly described using published literature. To fill gaps in the literature, we undertook additional analysis of the National Alcohol Diary Survey, which was conducted by the HRB in 2013.

Alcohol and crime in Ireland is described using Garda-recorded statistics, which are published by the CSO.

Alcohol-related morbidity between 1995 and 2013 was analysed using previously unpublished data from the Hospital In-Patient Enquiry (HIPE) scheme from the Health Service Executive (HSE). We were provided with HIPE data and undertook the analysis presented here.

Alcohol-related mortality between 2008 and 2013 was analysed using previously unpublished data from the HRB's National Drug-Related Deaths Index (NDRDI). NDRDI staff undertook the required analysis on our behalf.

Alcohol treatment in Ireland from 2008 to 2013 is also described using published data from two information systems maintained by the HRB – the National Drug Treatment Reporting System (NDTRS) and the National Psychiatric In-patient Reporting System (NPIRS).

The raw data received by the authors was analysed using EXCEL or SPSS. Numbers were converted to population-based rates where appropriate. Trends over time and experiences by age, gender and diagnosis are presented.

A fuller description of each data source is presented at the beginning of its relevant section.

Alcohol consumption in Ireland

Per capita consumption

Each year, alcohol consumption in Ireland is calculated using the alcohol sales figures provided by the Revenue Commissioners and the population figures provided by the CSO.

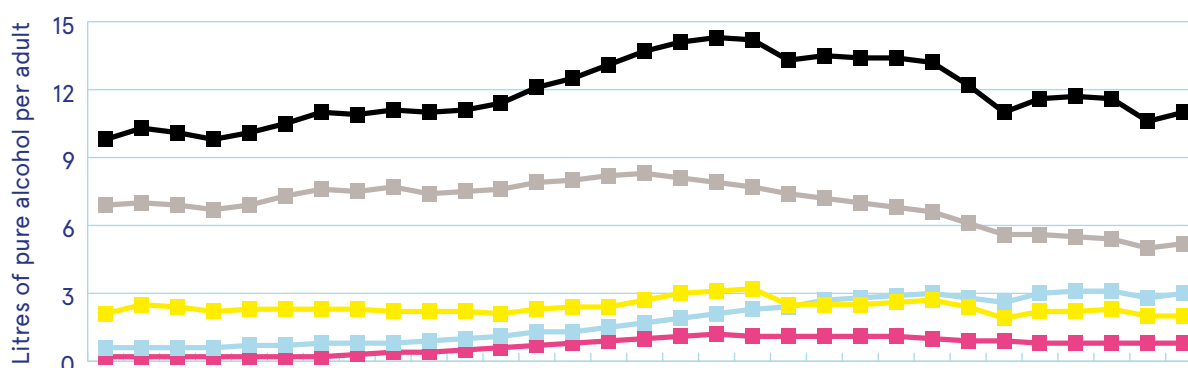
The Revenue Commissioners provide the alcohol sales figures for each beverage type (beer, spirits, wine and cider). The alcohol sales figures represent the volume of alcoholic beverages released from bonded warehousing and where excise duty has been paid. Beer and spirits are provided in litres of pure alcohol. Wine is provided in litres of alcohol and converted to pure alcohol based on an ABV (alcohol by volume) of 12.5%. Cider is converted to pure alcohol based on an ABV of 4.5%, as the highest proportion of cider product sold in Ireland is at this alcoholic strength. It is possible that the ABV used to calculate wine consumption in Ireland is too low. In Ireland, wines vary in strength from 11.0–14.8% ABV,⁷ and in the UK in 2011, the average ABV of all wine sold was 12.9%.⁸ While we do not have more detailed information on wine ABV in Ireland, the UK data would suggest that we are underestimating the amount of wine consumed which would mean that we are underestimating our per capita consumption.

The population figures provided by the CSO are based on the census data collected every five years and are estimated for the intervening years by the CSO. After a census year, the estimated population figures for the preceding years are revised, based on the actual census data. This means that previously calculated consumption figures for the years between census data collections may change due to revised population figures.

Although alcohol consumption may be presented in terms of per capita (total population), a more accurate reflection of alcohol consumption at a population level is the rate of consumption of alcohol per person aged 15 years or over, given that 21% of the Irish population are under 15 years of age (defined as 'adult' for the purposes of this section). A cut-off of 15 years is used because, for the most part, those under 15 years do not drink alcohol, whereas drinking is increasingly prevalent among 15–18-year-olds.

This section analyses alcohol consumption in Ireland over the 30-year period 1984–2014. Figure 1 presents adult per capita consumption by total consumption and by beverage type.

Figure 1 Adult per capita consumption by total consumption and by beverage type, 1984–2014



	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total	9.8	10.3	10.1	9.8	10.1	10.5	11.0	10.9	11.1	11.0	11.1	11.4	12.1	12.5	13.1	13.7	14.1	14.3	14.2	13.3	13.5	13.4	13.4	13.2	12.2	11.0	11.6	11.7	11.6	10.6	11.0
Beer	6.9	7.0	6.9	6.7	6.9	7.3	7.6	7.5	7.7	7.4	7.5	7.6	7.9	8.0	8.2	8.3	8.1	7.9	7.7	7.4	7.2	7.0	6.8	6.6	6.1	5.6	5.6	5.5	5.4	5.0	5.2
Spirits	2.1	2.5	2.4	2.2	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.3	2.4	2.4	2.7	3.0	3.1	3.2	2.5	2.5	2.5	2.6	2.7	2.4	1.9	2.2	2.2	2.3	2.0	2.0
Wine	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0	1.1	1.3	1.3	1.5	1.7	1.9	2.1	2.3	2.4	2.7	2.8	2.9	3.0	2.8	2.6	3.0	3.1	3.1	2.8	3.0
Cider	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.8

How much do people drink?

There has been considerable variation in alcohol consumption trends since 1984. Alcohol consumption increased by 45.9% between 1984 (9.8 litres) and 2001 (14.3 litres), when alcohol consumption reached its peak. This increase started in the mid-1990s, which coincided with the era of the 'Celtic Tiger', a period of unprecedented economic growth and prosperity in Ireland. During this period, alcohol became more affordable for drinkers, due to increased disposable income and a lack of intervention by the government in terms of excise duty increases. Consumption decreased by 6.3% between 2002 and 2003, which is attributable mainly to an increase in excise duty on spirits in the December 2002 Budget. Between 2003 and 2007, consumption remained stable, but it decreased by 16.7% over 2008 and 2009. In 2008, Ireland experienced a severe economic downturn and entered a recession, from which it emerged in 2013. The reduction in disposable income may explain the sharp decrease in consumption seen in 2008 and 2009. In the December 2009 Budget the government decreased excise duty on all alcohol products by 20–21%, which stopped the decline in consumption, and in 2010, alcohol consumption increased by 5.5% to 11.6 litres. In the December 2012 Budget, a new government increased excise duty on all alcohol products by 37–62%,

which probably explains the 8.6% decrease in consumption in 2013. In 2014, consumption increased by 3.8%, which may be due to increased economic growth. The figures presented here do not include unrecorded alcohol consumption, which includes alcohol that is purchased abroad or in duty-free outlets and alcohol that is illegally produced or imported. It is estimated by the WHO that such consumption in Ireland accounts for 0.5 litres of pure alcohol per adult each year.⁹

By international standards, Ireland has a high rate of per capita consumption. A comparison of alcohol consumption among OECD countries in 2012 revealed that Ireland had the fourth highest level of consumption among the 34 countries analysed. In that year, consumption in Ireland was 11.6 litres of alcohol per adult, 28.9% higher than the OECD average (9.0 litres).¹⁰

What does 11 litres of alcohol look like?

In 2014, alcohol consumption per adult was 11.0 litres; this corresponds to 41 (700 ml) bottles of vodka, 116 (750 ml) bottles of wine or 445 pints of beer (ABV 4.3%). As 20.6% of the adult population abstain from alcohol completely, the figures must be adjusted upwards, meaning that the figures for those who do consume alcohol are 46 bottles of vodka, 130 bottles of wine, or 498 pints of beer. Alternatively, if we use

the market share of each alcoholic beverage, we can conclude that each adult (including abstainers) in 2014 consumed 212 pints of beer, 32 bottles of wine, 8 bottles of vodka and 30 pints of cider.

What do people drink?

During the period from 1984–2014, many changes in beverage preferences have taken place. While beer continues to be the most popular drink, accounting for 47.3% of all alcohol consumed in 2014, the market share of beer has declined from 70.4% in 1984. The market share of spirits has decreased from 21.4% to 18.2%. Although the market share of cider is small, it has increased from 2.0% in 1984 to 7.3% in 2014. The most dramatic changes can be seen in wine consumption. In 1984, wine accounted for just 6.1% of all alcohol consumed. In the 30 years since then its market share has increased almost every year and it now accounts for 27.3% of all alcohol consumed. It is possible that this is due to increased consumption among women, or due to changes in the location where alcohol is consumed, from the on-trade to the off-trade.

What should per capita consumption be?

The Department of Health has recommended that men consume no more than 168 g of pure alcohol and that women consume no more than 112 g of pure alcohol per week. Per capita consumption is based on the entire population aged over 15 years. If every adult (15+ years) restricted his or her alcohol consumption to the recommended maximum low-risk limit on every week of the year, the actual per capita consumption would be 9.2 litres of pure alcohol per adult, or 16% less than was consumed in 2014. It may also be argued that this recommended limit should be even lower. If we take into account that 20.6% of the population do not drink alcohol at all, then the maximum low-risk limit for the remaining population should be 7.4 litres. According to the CSO, in 2014, there were 3,593,850 people aged 15 years and over in Ireland. Of these, 178,685 (5.0%) were aged 15–17 years. As there is no safe level of alcohol consumption for 15–17-year-olds, they should, therefore, drink no alcohol. Consequently, the actual per capita consumption would be 7.0 litres of pure alcohol per person aged 15 years and above, if every adult drinker pushed the guidelines on low-risk drinking to the limit (consuming the maximum weekly limit

on every week of the year), and if children under 18 years avoided alcohol completely. This would suggest that Irish drinkers actually need to reduce alcohol consumption by 36%.

Where do people drink?

As alcohol has become more affordable, there has been a shift from consuming alcohol in on-licence premises to purchasing alcohol from off-trade outlets for consumption at home. In 2012, the off-licence sector accounted for 55–60% of the total volume of alcohol sold.¹¹ According to the 2013 National Alcohol Diary Survey, in the week prior to the survey 64.8% of respondents consumed alcohol in their own home or someone else's home; 47.3% consumed alcohol in a pub, bar or nightclub; and 17.9% consumed alcohol in a hotel or restaurant.² Women were more likely than men to consume alcohol at their own or someone else's home (71.0% versus 59.5%). The preferred location for people over 25 years of age was at their own or someone else's home (60–69%), whereas pubs, bars or nightclubs were the preferred venues for those aged under 25 years (72.3%). The price of alcohol varies considerably between the on-trade and the off-trade. Expenditure data from the CSO indicate that in 2014 the average price of a pint of lager purchased from the on-trade cost €4.67, whereas a 500 ml can of lager purchased from the off-trade sector cost €1.98. A 750 ml bottle of wine from the off-trade cost €10.61, whereas a 187 ml quarter bottle from the on-trade cost €5.28. In 2006, the government abolished the Groceries Order, which had banned below-cost selling of certain goods, including alcohol. This policy change was undertaken for economic reasons – in the interest of achieving lower prices for consumers – and allowed alcohol to be sold below cost to consumers in Ireland. This initiative may also help explain the increased affordability of alcohol and the shift to consuming alcohol bought from the off-trade.

Alcohol availability

The change regarding where people drink is reflected in Irish licence data. Data from the Revenue Commissioners indicate that between 1998 and 2013, the number of pub licences in Ireland decreased by 19.1% (from 10,395 to 8,402). During the same time period, the combined number of wine and spirits off-licences increased by 377% (from 1,072 to 5,116) (Figure 2). In 2013 there was one licence per 197 adults aged 18 and over. There are a number of reasons that may explain the dramatic changes in the numbers of off-licences and pubs. The Intoxicating Liquor Act, 2000, abolished the restriction on the geographical movement of licences across the country. Prior to this Act, pub licences could only be transferred through a process that involved extinguishing one or more licences and issuing another licence for the new premises. The rules differed for rural and urban premises; a new rural licence required extinguishing two existing rural licences, while obtaining a new licence for a previously unlicensed premises in an urban area required one to extinguish a licence in the immediate vicinity of the proposed new licensed premises. The 2000 Act allowed for the transfer

of licences across the country, which resulted in many rural pub licences being sold to supermarket and petrol station chains, and transferred to urban areas.

What is low-risk alcohol consumption?

It is now recognised that there is no level of drinking that is without risk. That is the reason why it is recommended that terms such as 'moderate', 'healthy', 'safe', 'sensible', and 'responsible' drinking should be abandoned, and the term 'low-risk' used instead. The Department of Health has recommended that men consume no more than 168 g of pure alcohol and women no more than 112 g of pure alcohol per week. This corresponds to approximately 17 standard drinks for men and 11 standard drinks for women.

Standard drinks

In Ireland, a standard drink contains 10 g of pure alcohol (ethanol). It is usually expressed as a certain measure of beer, wine, or spirits. One

Figure 2 Number of licences in Ireland by licence type, 1998–2013



* Spirit off-licence retailers may also sell beer and wine, and can be referred to as full off-licences.

† The wine-only off-licence was created under Section 36 of the Intoxicating Liquor Act, 2000. Further legislation was introduced in 2008, requiring applicants for a wine-only off-licence to acquire a court certificate.

standard drink corresponds to one small glass or bottle of beer, one pub measure of spirits, or one small glass (100 ml) of wine. (This means that a 750 ml bottle of wine contains 7.5 standard drinks.) One standard drink always contains the same amount of alcohol regardless of the container size or the type of alcoholic beverage, but does not necessarily correspond to the typical serving size that is served. For example, a 750 ml bottle of wine contains 7.5 standard drinks, but in Ireland it is unlikely that one would get 7.5 servings of wine from a typical bottle. Most EU countries have a standard drink value of 10 g. However, in the UK, the term 'unit' is used instead; a unit contains 8 g of pure alcohol. As a unit is a different measure to a standard drink, the term 'unit' is inappropriate and should not be used in Ireland.

To establish the amount of pure alcohol, and thus the number of standard drinks in a beverage, requires knowledge of both the volume of alcohol in the beverage container and its percentage ABV. For example, to calculate the amount of pure alcohol in an alcoholic beverage requires multiplying the serving size of the drink (in millilitres) by the percentage ABV of the drink and dividing by 1.25 (1 ml = 1.25 g) to establish the grams of pure alcohol in that specific drink. If a standard drink contains 10 g of pure alcohol, then the number of grams is multiplied by 10.⁷ Using this calculation, we can ascertain that a 750 ml bottle of wine with an ABV of 12.5% contains 75 g of pure alcohol, and a pint of lager with an ABV of 4.3% contains 19.5 g of pure alcohol.

The concept of standard drink was introduced as a means of providing information to drinkers to help them measure their own alcohol consumption, and is often used in alcohol awareness or education campaigns as a way of communicating official guidelines regarding low-risk drinking. Standard drinks are also commonly used in drinking surveys for calculating respondents' drinking levels and for describing their drinking patterns. However, there are a number of disadvantages to using the 'standard drink' as a measure of alcohol. Given the calculations involved, it can be difficult for drinkers to estimate what exactly constitutes a standard drink. This is particularly the case for drinks with a high percentage ABV, such as spirits, as small differences in volume can have a large impact. It can also be difficult to estimate wine volume due to the use of varying glass sizes and the variance in percentage ABV, which can range from 10–14.8% in Ireland. It is probably

not surprising that most drinkers in Ireland have a poor understanding of standard drinks. A 2012 Irish survey tested 1,020 respondents' knowledge of standard drinks. All respondents were provided with a definition of the term 'standard drink' and were then asked the number of standard drinks in four different alcoholic drinks of various measures. Almost a quarter of the respondents (24%) were aware that a 200 millilitre glass of wine contains two standard drinks, 51% were aware that a half pint of Guinness contains one standard drink, 39% knew how many standard drinks are in a pint of lager, and 33% knew how many standard drinks are in a single measure of spirits. Just 9% knew the correct number of standard drinks in all four of the measures asked.¹² The lack of understanding of standard drinks in Ireland led to the *Steering Group Report on a National Substance Misuse Strategy* recommending that the term 'grams' should be used when promoting low-risk drinking guidelines. It also recommended that labels on alcohol beverage containers sold in Ireland should include the number of grams of pure alcohol in the container.

Patterns of alcohol consumption in Ireland

Per capita consumption is an important indicator of alcohol-related harm; in general, increases in the population's overall consumption are accompanied by a greater incidence of health and social problems and this also holds true at an individual level. The relationship between total alcohol consumption and harm is modified by the number of drinkers in a population and by the way in which alcohol is consumed.¹ It is only possible to analyse drinking patterns by conducting surveys. It is important to have data on both measures, as both per capita consumption and a person's overall volume of alcohol consumption and their pattern of drinking are important determinants of alcohol-related harm.

There are a number of internationally agreed methods to measure harmful drinking patterns. These include monthly risky single-occasion drinking (RSOD), the AUDIT-C screening tool and the DSM-IV screening tool. RSOD is more commonly known as binge drinking and can simply be described as excessive drinking on a single occasion. There is no international consensus as to what constitutes RSOD. In Ireland, the National

Alcohol Diary Survey 2013 defined RSOD as consuming 60 g (six standard drinks) of alcohol on a single drinking occasion. The AUDIT-C is a short version of the Alcohol Use Disorders Identification Test (AUDIT), which was developed by the World Health Organization to screen for excessive drinking and to identify persons with hazardous and harmful drinking patterns. It has been shown to be effective in screening for hazardous and harmful drinking patterns in healthcare settings and in population surveys.¹³⁻¹⁶ A cut-off score of five has been used in previous Irish surveys to denote harmful drinking. Alcohol dependence is defined as 'a cluster of physiological, behavioural, and cognitive phenomena in which the use of alcohol takes on a much higher priority for a given individual than other behaviours that once had greater value'.^{9, 17} The DSM-IV questionnaire can be used to screen for dependence in the population. A person is considered dependent on alcohol if they answer yes to three or more of the seven criteria during the previous 12 months. The seven criteria are:

1. Tolerance
2. Withdrawal symptoms or clinically defined alcohol withdrawal syndrome
3. Use in larger amounts or for longer periods than intended
4. Persistent desire or unsuccessful efforts to cut down on alcohol use
5. Time is spent obtaining alcohol or recovering from effects
6. Social, occupational and recreational pursuits are given up or reduced because of alcohol use
7. Use is continued despite knowledge of alcohol-related harm (physical or psychological)

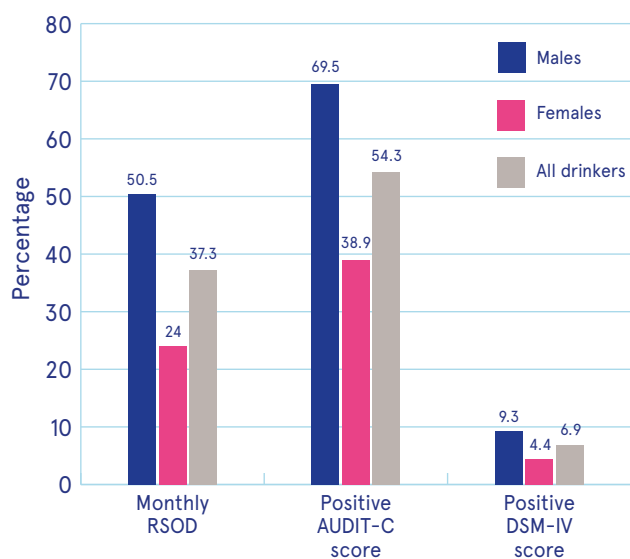
The National Alcohol Diary Survey collected comprehensive data on alcohol use in Ireland in 2013 from 5,991 respondents aged 18–75 years old.² The rate of abstinence, defined as consuming no alcohol in the previous 12 months, was 20.6% (men 19.4%, women 21.9%). Just over a quarter (26.1%) of respondents reported that they consumed alcohol at least twice weekly, whereas just under half (49.4%) reported that they consumed at least five standard drinks or 50 g of pure alcohol every time they drank. Older respondents consumed alcohol the most frequently, but they tended to consume less alcohol each time they drank. These results are consistent with a 2009 Eurobarometer survey of 29 countries, which reported that Irish drinkers consumed alcohol relatively infrequently, but were the most likely to binge drink when they

did drink.¹⁸ One-third (33.0%) of male drinkers and over one-fifth (22.8%) of female drinkers, who consumed alcohol in the week prior to the survey, drank more than the HSE's recommended guidelines on low-risk drinking, i.e., more than 168g (16.8 standard drinks) per week for men and 112g (11.2 standard drinks) for women.²

The survey also collected data on drinking patterns, and the main results are presented in Figure 3. Almost two-fifths (37.3% 95% CI 35.5–39.2) of drinkers engaged in monthly RSOD in the previous year. Overall, women were less likely than men to consume alcohol in this manner (24.0% versus 50.5%). More than half (54.3% 95% CI 52.5–56.1) of drinkers were classified as harmful drinkers using the AUDIT-C screening tool. When the proportion of survey respondents who were classified as harmful drinkers is applied to the population, this equates with between 1.3 and 1.4 million harmful drinkers. Using DSM-IV criteria, 6.9% (95% CI 6.0–7.9) scored positive for dependence. This indicates that there were somewhere between 149,300 and 203,897 dependent drinkers in Ireland in 2013.

We know that survey-based self-reported alcohol consumption greatly underestimates total alcohol consumption.¹⁹⁻²¹ Therefore, the consumption data reported earlier in this section should be taken as an underestimate of the true level of alcohol consumption in Ireland. Given the proportion of drinkers who consume alcohol in a harmful manner, one may conclude that harmful drinking has become the norm in Ireland; this has major public health and social implications, as Irish people consume alcohol in a manner that is most likely to cause harm both to themselves and others.

Figure 3 Harmful drinking patterns among 18–75-year-old Irish drinkers (National Alcohol Diary Survey 2013)



The figures presented here are probably an underestimate of the extent of harmful drinking as there is strong evidence that surveys of self-reported alcohol consumption result in estimates of per capita consumption well below the level calculated from alcohol sales data.^{22–24} In the National Alcohol Diary Survey self-reported alcohol consumption accounted for just 39% of per capita sales, even though the concept of a standard drink was explained in detail to each respondent and visual aids were provided depicting a standard drink according to beverage type.²

Alcohol use among young people

Children and adolescents are typically more vulnerable to alcohol-related harm from a given volume of alcohol than are other age groups. Because of the relative immaturity of the adolescent brain compared to that of an adult, excessive drinking is especially hazardous for young people. An adolescent need drink only half as much as an adult in order to experience the same negative effects, and even occasional binge drinking can damage the young brain.²⁵ This is reiterated by the US Surgeon General²⁶ who has highlighted that the developing adolescent brain is particularly susceptible to long-term negative consequences of alcohol use. A 2014 systematic review synthesised the results of 21 studies on magnetic resonance imaging (MRI) of alcohol-using adolescents. The authors concluded that alcohol contributes to structural and functional alterations

in the adolescent brain. These alterations were mainly observed in the prefrontal areas, which are critically involved in the capacity and command of executive control. Executive control encompasses response inhibition, which represents adolescents' ability to resist the temptation to engage in risky, but exciting and rewarding activities. In addition, the authors concluded that alcohol-using adolescent females may be at heightened vulnerability for alterations in brain structure and development. There was also evidence for a relationship between quantity of alcohol consumed and adolescent brain structure and function; greater alcohol consumption was related to lower brain volume in several regions.²⁷

Young people are at particular risk for alcohol-related harm, which is related in part to the fact that a greater proportion of the alcohol consumed by young people is consumed during heavy drinking sessions. Young people tend to be less risk averse and may engage in reckless behaviour when drunk. The substantial involvement of alcohol in cases of suicide, road traffic accidents, homicides and poisonings is well known and is especially marked among young people. According to the Global Burden of Disease analysis, alcohol is a major risk factor for disability-adjusted life years^a (DALYs); in 2010, alcohol was ranked the highest risk factor contributing to DALYs in 15–24-year-olds in Europe.²⁸ Hazardous alcohol use is estimated to cause 31.5% of all deaths among 15–29-year-old men in the developed world and 86% of the 3.6 million substance-related deaths of 15–29-year-old men and women worldwide.²⁹ Heavy drinking in adolescence is related to problem alcohol use in adulthood. People who begin drinking alcohol before the age of 15 years are four times more likely to develop alcohol dependence at some time in their lives than those who have their first drink at age 20 years or older.³⁰ It also appears that Irish children are starting to drink at a younger age. Data from the 2002–2003 and 2006–2007 National Drug Prevalence Surveys indicated that the median age of first alcohol use among Irish drinkers born between 1980 and 1984 was 15 years compared with 14 years for those born between 1990 and 1991.³¹

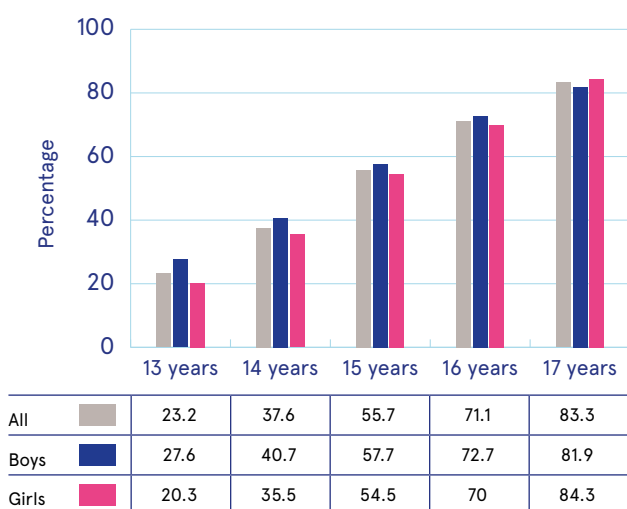
^a Disability-adjusted life year is a summary measure combining years of life lost because of premature mortality with years lost because of disability, and can be used to measure burden of disease.

Alcohol use among schoolchildren

There are two periodic school-based surveys that measure alcohol consumption among young people in Ireland: these are the European School Survey Project for Alcohol and Other Drugs (ESPAD) and the Health Behaviour in School-aged Children (HBSC). ESPAD has conducted surveys of 15–16-year-old schoolchildren every four years since 1995. The fifth survey was conducted in 36 European countries during 2010/11 and collected information from 2,207 students on alcohol, tobacco and illicit drugs. The sixth survey is currently under way and results should be available in late 2016. The HBSC has recorded health behaviours (including alcohol use) since 1998 and is also repeated every four years among schoolchildren. The most recent HBSC survey was conducted in 2014 and involved 16,060 participants.^{32, 33} As the HBSC survey data are the most up to date, we will predominantly report results from that survey to analyse trends in alcohol consumption among schoolchildren since 1998. One limitation of school-based surveys is that by definition they exclude early school-leavers, a group known to be vulnerable to alcohol use.

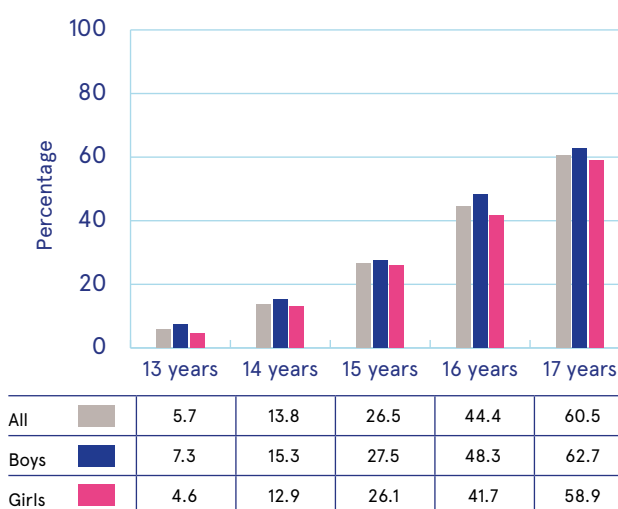
In 2014, 51% of 13–17-year-olds reported that they had ever had an alcoholic drink. Use of alcohol increased with each year of age and, with the exception of 17-year-olds, boys were more likely than girls to have ever drunk an alcoholic drink (Figure 4).

Figure 4 Percentage of 13–17-year-olds reporting having ever had an alcoholic drink, by age and gender, 2014



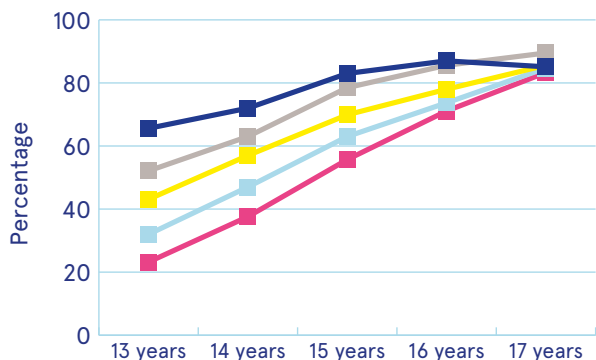
More than a quarter of 13–17-year-olds (26.6%) reported that they had ever been ‘really drunk’. For each age, boys were more likely than girls to report lifetime drunkenness (Figure 5). The prevalence of drunkenness among boys and girls was similar.

Figure 5 Percentage of 13–17 year-olds reporting having ever been ‘really drunk’, by age and gender, 2014



Since the first HBSC study in 1998, there has been a steady decrease in the percentage of school-aged children reporting having ever had an alcoholic drink, especially among 13–15-year-olds (Figure 6). In 1998, 65.6% of 13-year-olds and 72% of 14-year-olds had ever consumed alcohol, compared with 23.2% of 13-year-olds and 37.6% of 14-year-olds, respectively, in 2014. However, the incidence of alcohol use among 17-year-olds remained more or less consistent in each of the five studies spanning a 20-year time period.

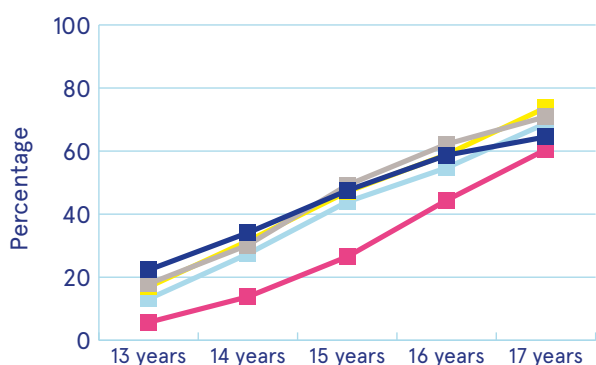
Figure 6 Trends in lifetime use of alcohol among school-aged children, 1998–2014



1998	65.6	72	83	87	85.1
2002	52.1	63	78.5	85.6	89.5
2006	43.1	57	69.9	78	85.6
2010	32	47	63	73.7	84.7
2014	23.2	37.6	55.7	71.1	83.3

Levels of lifetime drunkenness have also decreased since 1998 and this is most apparent among 13–15-year-olds. There is less variation among 17-year-olds (Figure 7).

Figure 7 Trends in lifetime drunkenness among school-aged children, 1998–2014



1998	22.3	34.1	47.5	58.7	64.5
2002	17.9	30.2	49.2	62.2	70.9
2006	16.9	31.5	47.1	58.9	73.8
2010	13.1	27.4	43.9	54.7	68.8
2014	5.7	13.8	26.5	44.4	60.5

There are a number of risk and protective factors that influence alcohol use among young people. An Irish study of the risk and protective factors in relation to harmful alcohol use among 991 Irish 15–18-year-olds³⁴ did not report significant differences between early school-leavers and schoolchildren in relation to lifetime or recent use of alcohol. Harmful use of alcohol was not measured. For both early school-leavers and students, aggressive ‘acting-out’ behaviour was associated with alcohol use. Parental or sibling alcohol use increased the risk of a young person also using alcohol. Parental concern also reduced the likelihood of drinking alcohol. At the school level, the most important protective factor in terms of reducing the risk of drinking alcohol was a positive relationship with supportive teachers or a positive school experience. This factor was absent among early school-leavers, who generally did not have a positive experience of school or a good relationship with teachers.

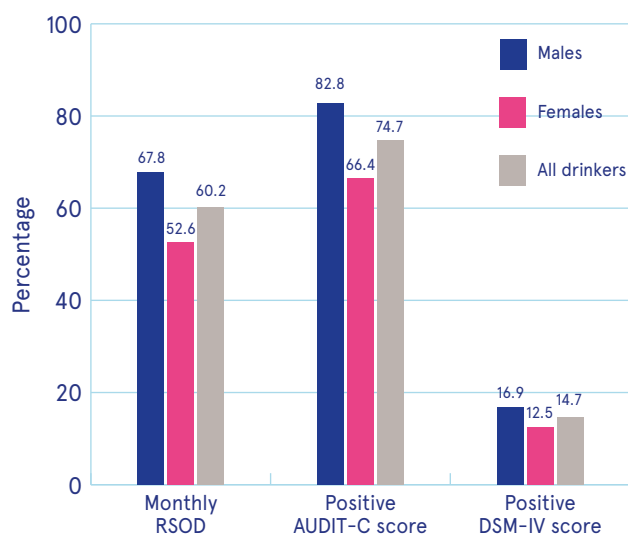
Alcohol consumption in third-level students and young people

A 2012 survey of 2,275 undergraduate students in a large Irish university³⁵ reported that 65.2% of men and 67.3% of women, respectively, met criteria for hazardous alcohol consumption using the AUDIT-C screening tool (a cut-off of 6 for men and 5 for women was used). Approximately 17% of men and 5% of women had an AUDIT-C score of 10 or more, which equates to consuming at least six standard drinks of alcohol at least four times a week. Those reporting hazardous alcohol consumption were more likely to experience adverse consequences as a result of their alcohol use; 92.2% of men and 92.4% of women with a hazardous alcohol consumption pattern reported experiencing one of 12 adverse consequences. In comparison, just 48.8% of men and 48.5% of women who did not have a hazardous pattern experienced an adverse consequence due to their own alcohol use. Among men with a hazardous pattern, 60.3% missed days from work or college due to a hangover; 34.4% felt that drinking had harmed their health; 27.4% got into a fight while drinking; and 20.7% had financial problems as a result of drinking. Women with a hazardous pattern were also likely to report adverse consequences; 57.4% missed days from work or college due to a hangover; 32.0% felt that drinking harmed their health; 23.0% had financial problems as a result of drinking; and 13.8% had unprotected sex as a result of their drinking. These findings were consistent with the 2003

College Lifestyle Attitudinal National Survey, which reported weekly RSOD in 61% of male students and 44% of female students in Ireland, and high level of harms among those who engaged in regular RSOD.³⁶

In the National Alcohol Diary Survey, 18–24-year-olds had the highest rate of hazardous and harmful drinking and were most likely to experience alcohol-related harm. This age group had the lowest level of abstinence at 13.1%, whereas three-fifths of 18–24-year-old drinkers (60.2%) engaged in monthly RSOD, three-quarters (74.7%) scored positive for harmful drinking using AUDIT-C, and 14.7% scored positive for dependence using DSM-IV criteria (Figure 8). High levels of harm were experienced by this age group. Among the general population, 29.9% of drinkers reported experiencing one of eight listed harms in the previous 12 months, and almost twice as many (56.6%) of those aged 18–24 years reported experiencing at least one harm. One quarter (24.7%) of 18–24-year-olds reported harming their health, 26.0% harmed their work or study, 38.8% experienced harm to their finances, and 11.8% had been stopped by the police as a result of their own drinking.

Figure 8 Harmful 3 patterns among 18–24-year-olds (National Drinking Diary Survey 2013)



It appears from our school, college, and general population survey data that there is little gender difference in drinking patterns among younger people. Similar proportions of male and female schoolchildren consume alcohol and report having ever been drunk. These findings are replicated among 18–24-year-olds. For example, among the general population who drink, men are twice as likely as females to have a harmful drinking pattern – 50.5% of males and 24.0% of females engaged in monthly RSOD, and 9.3% of males and 4.4% of females scored positive for dependence. Among 18–24-year-olds, 67.8% of males and 52.6% of females engaged in monthly RSOD, and 16.9% of males and 12.5% of females scored positive for dependence. In general, young people in Ireland report high levels of alcohol consumption and drunkenness. As noted earlier, the adolescent brain is particularly susceptible to alcohol, and the longer the onset of alcohol consumption is delayed, the less likely it is that alcohol-related problems and alcohol dependence will emerge in adult life. While it is encouraging to see that alcohol use among schoolchildren has decreased since the 1990s and that drunkenness has remained stable, the situation appears to worsen for young adults. It is clear that alcohol consumption increases with age, particularly across the legal threshold, and data from college surveys and general population surveys corroborate this.

Alcohol consumption among older people

Older people have historically tended to drink less than younger age groups. However, harmful use of alcohol is an under-reported problem among older people, particularly men. Alcohol use in older people is linked to cognitive problems and dementia, increased risk of falls, and can interact dangerously with prescription medications.³⁷ Tolerance to alcohol is lowered in older people; thus, for a given volume of alcohol consumed, they may have a higher blood alcohol concentration than a younger person. This is due to a number of physiological changes, including a reduction in the ratio of body water to fat, which results in less water for alcohol to be diluted in; liver enzyme inefficiency, which may lead to alcohol not being broken down as efficiently as in younger people; poorer kidney and liver function; and decreased hepatic blood flow, which may weaken the liver.³⁸ Older people are vulnerable to developing harmful patterns of alcohol use for a number of reasons. They may turn to alcohol as a coping mechanism to

help them deal with sudden disruptions in life such as retirement and bereavement. Decreased social activity, and isolation and loneliness, may also contribute to harmful drinking.

It has been estimated by the Royal College of Physicians in the UK that up to 60% of older people who are admitted to hospital because of confusion, repeated falls at home, recurrent chest infections and heart failure may have unrecognised alcohol-related problems.³⁸ There are two recognisable patterns in terms of harmful alcohol use among older people.³⁹

- » Early onset – This group have had a lifelong pattern of harmful drinking and they are more likely to have psychiatric illness, liver cirrhosis and organic brain syndromes.
- » Late onset – This group generally first develop problems at 40–50 years of age, and a stressful life event frequently causes or exacerbates their drinking. They tend to have fewer mental and physical health problems and are more likely to be able to recover.

In the National Alcohol Diary Survey, 65.2% of those aged 65–75 years had consumed alcohol in the previous year.² This age group consumed alcohol most frequently, but they consumed the least per drinking occasion, with 52.4% consuming 1–2 standard drinks per occasion. Although harmful drinking patterns were observed less often among this age group – 18.9% of older drinkers reported monthly RSOD or binge drinking, 33.8% scored positive on the AUDIT-C screening tool, and 2.2% scored positive for dependence using DSM-IV criteria – the proportion with harmful patterns is still considerable and a cause for concern. The National Alcohol Diary Survey also found that those aged 65–75 years were most likely to report drinking alone for every drinking occasion in the previous week; 11.8% of this age group reported drinking alone for each drinking occasion; a further 10.4% reported drinking alone for part of the week, and with others for the remainder of the week. The corresponding figures for the complete sample were 5.9% and 8.3%, which suggests that alcohol use for a substantial minority of older people in Ireland is associated with loneliness.

Another Irish survey, The Irish Longitudinal Study on Ageing (TILDA), a large-scale, nationally representative, longitudinal study on ageing with more than 8,500 participants aged 50 years and over, has also collected data on alcohol. TILDA respondents were asked about the frequency

and volume of their alcohol consumption within the preceding six months. Respondents were also asked if [at any stage in their life] a doctor had told them that they suffered from alcohol or substance abuse. In addition, respondents completed the CAGE (cut-annoyed-guilty-eye) questionnaire, which is a valid screening assessment for alcohol dependence. Overall, 1.8% of older Irish adults reported a diagnosed history of alcohol or substance abuse and the rate was highest in men aged 65–74 years (3.9%). The overall prevalence of 'problem drinking' (defined as a CAGE score of 3 or more) was higher at 4.8%.⁴⁰

According to the World Health Organization (WHO), the alcohol-related burden of disease among older people is an increasing public health concern due to the rapidly ageing population in many countries worldwide, and this can also be seen in Ireland.⁹ Alcohol problems among older people are often hidden and a number of barriers may hamper the identification of problems. These include similarities between symptoms of alcohol problems and other conditions common in old age; many older people are isolated, with minimal social contact or networks; they may under-report what they drink; and health professionals may feel awkward asking about their drinking, or they may consider alcohol to be a problem affecting mainly younger people. Irish survey data indicate that harmful use of alcohol is a pertinent problem among older people and needs to be addressed. Irish hospital data also indicate that alcohol-related falls are a problem among those aged over 65 years.⁴¹ It is important that health professionals can identify and know how to best approach an alcohol problem in an older person. Research has shown that older people are as likely to benefit from treatment as younger people, and the basic principles of treatment are the same.

Alcohol and women

Traditionally, women have consumed alcohol less often and in lower quantities than men. Over time, the societal role of women has changed and it has now become socially acceptable for women to consume alcohol, which has led to a rise in the frequency and level of alcohol consumption among women. Compared with men, women are more vulnerable to the negative effects of alcohol consumption, which can be explained by a number of gender differences in body structure and chemistry. Women have a lower body weight than men, and have less body water and a higher

percentage of body fat. They also metabolise alcohol differently from men; they have less of the enzyme alcohol dehydrogenase, which breaks down alcohol. This leads to more alcohol entering the bloodstream unmetabolised and, in turn, higher blood alcohol concentrations. For equivalent doses of alcohol, women are more susceptible than men to tissue damage and physical alcohol dependence. They also have an increased risk of developing liver, brain and heart damage. Some of this risk is due to gender differences in metabolism; it could also be due to gender-related differences in brain chemistry, differences in genetic risk factors, or to different factors that are currently unknown. However, animal research suggests that women's increased risk of liver damage may also be linked to physiological effects of the hormone oestrogen.⁴²

Analysis of data from the National Cancer Registry of Ireland found that between 2001 and 2010, of the 24,995 cases of breast cancer, 3,058 (12.2%) were attributable to alcohol. Of the 6,601 women who died of breast cancer, 695 (10.5%) cases were attributable to alcohol.⁴³ Alcohol has a dose-dependent effect on breast cancer, i.e. the more alcohol that is consumed on average, the higher the risk of breast cancer, although it is important to note that consuming just 10g (one standard drink) daily increases a woman's likelihood of developing breast cancer. There is a likely interaction between alcohol and hormones, especially oestrogen. Hamajima⁴⁴ undertook a large-scale analysis of 58,515 women with invasive breast cancer and 95,067 controls from 53 studies. Compared with women who reported drinking no alcohol, the relative risk of breast cancer was 1.32 for an intake of 35–44 g of alcohol per day; 10 g of alcohol, or one standard drink, per day was associated with a 7.1% increase in the risk of developing breast cancer relative to non-drinkers. Chronic heavy drinking is also associated with a variety of menstrual and reproductive disorders, from irregular menstrual cycles to inhibition of ovulation and infertility. It is also a recognised risk factor for osteoporosis.⁴⁵

Alcohol use, and binge drinking in particular, is associated with risky behaviours, with women being especially vulnerable. The 2010 Irish Contraception and Crisis Pregnancy Study had 3,002 respondents aged 18–45 years and also studied the reasons for not using contraception. In 2010, 16% of respondents reported lack of contraception use due to drinking alcohol or taking drugs. This was most common among 18–25-year-olds (27%) and

26–35-year-olds (18%). The finding represented a decrease since 2003, when 21% of all respondents cited drinking alcohol or taking drugs as a reason for not using contraception.⁴⁶

It is recognised that heavy drinking during pregnancy can result in a range of damage to the fetus. Alcohol crosses the placenta and reaches the fetus in the same concentration as in the mother's system, but, due to the immaturity of fetus's developing systems and organs, it cannot be efficiently eliminated from the fetus's system. This has major implications, as most women of childbearing age in Ireland consume alcohol and a high proportion of these consume alcohol in a harmful way. For example, 66.4% of women aged 18–24 years and 46.0% of women aged 25–34 years have a positive AUDIT-C score. According to the Growing Up in Ireland study, which is a longitudinal study that has collected data from 11,100 infants and their parents, 41% of mothers did not intend to get pregnant when the infant in the study was conceived.⁴⁷

Fetal Alcohol Spectrum Disorder (FASD) is an umbrella term used to describe the range of disabilities that may affect people whose mothers consumed alcohol during pregnancy. These disorders range in severity from the full presentation of fetal alcohol syndrome (FAS) to a range of conditions – Partial Fetal Alcohol Syndrome, Alcohol-Related Neurodevelopmental Disorder, and Alcohol-Related Birth Defects – which display some, but not all, of the features of FAS. The disabilities involve a wide continuum of challenges from mild to very serious disabilities, which affect an individual throughout the course of their life. FAS is characterised by hearing disabilities, retarded growth, and heart disorders, together with certain characteristic facial abnormalities. There is currently no reliable evidence on the incidence of FASD in Ireland or the UK. The estimated incidence of FAS in Europe is 0.4 per 1,000 live births.⁴⁸ In the USA, the incidence of FAS is estimated to be 0.5–2.0 per 1,000 live births.⁴⁹ There is still uncertainty as to the intensity and timing of the alcohol exposure needed to produce any type or degree of fetal impairment. There is robust and consistent evidence that heavy maternal alcohol use is associated with FAS and this is particularly evident in cases of maternal alcohol dependence or severe alcohol problems.⁵⁰ At present, the evidence regarding FASD and low to moderate drinking and binge drinking during pregnancy is less clear, due to a lack of appropriate studies to determine the true effects of alcohol.

Two systematic reviews have analysed the effects of prenatal alcohol exposure on pregnancy outcomes. One systematic review studied the fetal effects of prenatal alcohol exposure on child motor function, and included studies published up to 2010.⁵¹ A total of 39 studies were deemed suitable for inclusion. The authors found that all studies on children with alcohol-dependent mothers showed negative effects on motor function, with most studies reporting deficits in fine motor skills. In all studies involving mothers who consumed more than four alcoholic drinks a day (defined in this review as 48 g of alcohol per day), only one study showed no effect. Studies of the effect of alcohol at levels between 10 and 30 drinks (120 g–360 g) per week showed inconsistent results, while the evidence with regard to binge drinking was sparse and inconsistent. In the 13 studies investigating exposure levels of fewer than 10 drinks per week (120 g), 12 showed no effects on motor function.

The second systematic review measured the effects of prenatal binge drinking and low to moderate prenatal alcohol exposure on miscarriage, stillbirth, intrauterine growth restriction, prematurity, birthweight and FAS, and neurodevelopmental effects. The review included studies conducted between 1970 and 2005. Low to moderate consumption was defined as an intake of less than 84 g (8.4 standard drinks) per week. The review included 46 relevant articles and there were no consistently significant effects on any of the outcomes considered. However, it was noted that many of the included studies had methodological weaknesses.⁵² The review also included analysis of 14 relevant articles detailing measurement of the impact of binge drinking in women who otherwise consumed low to moderate amounts of alcohol. Binge drinking was most commonly defined as consuming six standard drinks (60 g) on a single occasion. The authors concluded that there is *'no consistent evidence of adverse effects across different studies. However, there was a possible effect on neurodevelopmental outcomes.'*⁵³

In the past decade, a number of Irish studies on alcohol consumption during pregnancy have been published. A study of 907 pregnant women undertaken in 2010–2011 aimed to establish whether women consumed alcohol during pregnancy and if there is a need for additional education in relation to alcohol consumption and breastfeeding. During the third trimester, 29% continued to consume alcohol, with 85% consuming between 1 and 9 standard drinks per week (10–90 g pure alcohol). Compared with

non-drinkers, women who consumed alcohol were more likely to be older, aged 35–39 years, of Irish nationality, and have private healthcare. Of those who were exclusively breastfeeding at the time of their discharge from hospital after giving birth, 32.5% had consumed alcohol during the third trimester of pregnancy. As the current advice to women in Ireland is to abstain from alcohol when pregnant or breastfeeding, the authors concluded that midwives and other health professionals need to address alcohol consumption at various stages of pregnancy, and specifically in relation to breastfeeding.⁵⁴

A study of 5,628 women in New Zealand, Australia, the UK and Ireland examined the association between maternal alcohol consumption in early pregnancy (<15 weeks) and low birth weight, spontaneous preterm birth and pre-eclampsia. Alcohol intake was classified as occasional (8–16 grams of alcohol/1–1.5 standard drinks per week), low (24–56 grams of alcohol/2.5–5.5 standard drinks per week), moderate (64–112 grams of alcohol/6–11 standard drinks per week), and heavy (more than 112 grams of alcohol/11 standard drinks per week). Binge alcohol consumption was defined as consumption of 48 grams of alcohol/5 standard drinks in one session. The majority of participants (60%) consumed some alcohol in pregnancy; 19% reported occasional consumption, 25% reported low consumption, 11% moderate consumption, and 5% heavy consumption. Overall, 23% reported binge drinking during the first 15 weeks of pregnancy. Ireland had the highest proportion of pregnant women consuming alcohol (80%). Participants who consumed occasional to heavy amounts of alcohol in early pregnancy did not have altered odds of a small-for-gestational-age neonate, reduced birth weight, pre-eclampsia, or spontaneous preterm birth. Similarly, those who binge drank in early pregnancy did not have altered odds of these adverse pregnancy outcomes. It should be noted that this study did not evaluate the association between alcohol consumption in pregnancy and long-term neurocognitive outcomes in the infant.⁵⁵

A study of 61,241 women in a large Dublin maternity hospital during the period 2000–2007 estimated the prevalence of peri-conceptional alcohol consumption and the relationship between it and maternal characteristics and perinatal outcomes. Self-reported alcohol consumption at the booking visit found that 19% were abstainers, 70.9% were low-level drinkers (0–5 standard drinks per week), 9.9% were moderate drinkers (6–20 standard

drinks per week) and 0.2% were heavy drinkers (more than 20 standard drinks per week). Factors associated with moderate alcohol consumption included being in employment, being of Irish nationality, having private healthcare, and smoking. Factors associated with heavy consumption included maternal age less than 25 years, and illicit drug use. Heavy alcohol consumption was also associated with very preterm birth (less than 32 weeks gestation) even after controlling for socio-demographic factors. Only three cases of FAS were recorded (0.05 per 1,000 total births), one each in the low, moderate and heavy consumption groups. The fact that cases of FAS occurred in the low and moderate consumption groups may be explained by under-reporting of alcohol consumption by pregnant women, as FAS does not normally occur in the infants of low and moderate users.⁵⁶ Another Irish study of 450 mother-infant pairs in a Dublin maternity hospital from 2004–2006 reported that 35.3% consumed alcohol during pregnancy. Irish nationality positively predicted alcohol consumption.⁵⁷

As part of the Growing Up in Ireland study, the mothers of 11,134 infants were questioned about their alcohol consumption during pregnancy. Almost one-fifth (19.4%) reported drinking at least one alcoholic drink during pregnancy; 15.0% consumed 1–2 standard drinks per week, 2.8% consumed 3–6 standard drinks, and 0.7% consumed 7+ standard drinks per week. A higher proportion consumed alcohol in the second and third trimesters of pregnancy than in the first. Older age, higher income, class and education were associated with more moderate drinking compared to younger women and those with lower levels of income and education. Younger and less educated women tended to drink more in early pregnancy, but their consumption fell quickly in the second or third trimesters; alcohol consumption among more advantaged women often increased over the pregnancy. Having had children previously was also associated with a higher prevalence of drinking, suggesting that the perception of risk falls with experience.⁵⁸

A study of 120,000 pregnant women attending the Coombe Women's Hospital in Dublin between 1987 and 2006 found that 60% of these women consumed alcohol during their pregnancy and 7.1% reported drinking more than six standard drinks per week. More than two-thirds of all pregnant women under the age of 18 reported drinking alcohol

during their pregnancy, while the 18–24-years age group reported the highest percentage of those who drank more than 10 standard drinks per week.⁵⁹

Among the Irish studies described above there appears to be substantial variation in the reported prevalence of drinking during pregnancy. It is possible that this may be due to differences in the demographic and socio-economic characteristics of the participating women in the studies. It may also be due to differences in the location of the interview (studies were conducted either in a maternity hospital or in the woman's home), time of interview (pre versus post pregnancy), which may have led to recall bias, and differences in the person conducting the interview (medical practitioner versus data collector). At present, it is not known whether there is a safe level of alcohol consumption during pregnancy and, consequently, most advice seems to advocate not drinking alcohol at all during pregnancy. In 2007, the Chief Medical Officer in the Department of Health provided unambiguous advice in relation to alcohol consumption and pregnancy, stating: 'Given the harmful drinking patterns in Ireland and the propensity to "binge drink", there is a substantial risk of neurological damage to the fetus, resulting in Fetal Alcohol Spectrum Disorders (FASD). Alcohol offers no benefits to pregnancy outcomes. Therefore, it is in the child's best interest for a pregnant woman not to drink alcohol during pregnancy.'⁶⁰ This is similar to advice from the Department of Health in the United Kingdom (UK) and the Surgeon General in the United States. In spite of the explicit advice from the Department of Health to avoid drinking alcohol in pregnancy, it would appear that a high proportion of women in Ireland continue to drink while pregnant. Even though the evidence has not clearly demonstrated adverse fetal effects from low levels of drinking, no safe limit of alcohol consumption during pregnancy has been identified. Given the limited evidence base on low levels of alcohol consumption during pregnancy, it would be prudent to adopt more effective public health approaches to inform pregnant women of the risks associated with alcohol.

Alcohol-related harm

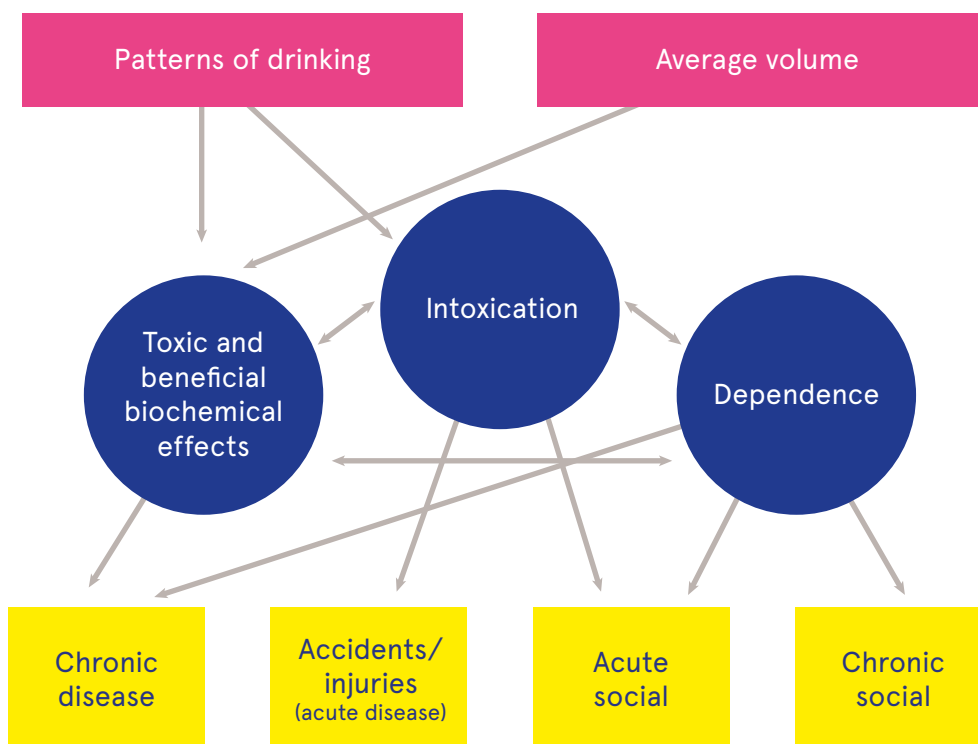
Introduction

Alcohol-related harm is determined by the volume of alcohol consumed and the pattern of drinking. In recent years, overwhelming evidence has confirmed that both the volume of lifetime alcohol use and the combination of frequency of drinking and amount drunk per incident increase the risk of alcohol-related harm, largely in a dose-dependent manner,^{61, 62} with the higher the alcohol consumption, the greater the risk. There are three main direct mechanisms by which consuming alcohol may

cause harm to an individual. These are toxic effects on organs and tissues; intoxication, leading to impairment of physical coordination, consciousness, cognition, perception, and behaviour; and dependence, whereby the drinker's self-control over his or her drinking behaviour is impaired.¹

⁶³ Babor *et al.* identified four broad categories of negative alcohol outcomes – chronic disease consequences, chronic social consequences, acute health consequences and acute social consequences. The relationship between alcohol consumption, mechanisms of harm and alcohol-related consequences is described in Figure 9.

Figure 9 Alcohol consumption, mechanisms of harm and alcohol-related consequences



As illustrated in Figure 9, different patterns of alcohol consumption can lead to different types of problems. Sustained heavy drinking may not lead to much intoxication and acute consequences, such as accidents, but can cause tissue damage. For example, daily drinking of modest amounts over a long period of time can have a cumulative effect on liver tissue, and lead to liver cirrhosis. By contrast, a relatively low frequency of drinking combined with RSOD can lead, through the mechanism of acute intoxication, to health and social problems such as accidents, injuries and violence. Sustained drinking may result in alcohol dependence, which can lead to chronic medical problems as well as acute and chronic social problems. Acute intoxication or RSOD, even in a person who does not have a long-standing drinking problem, can result in alcohol poisoning, acute pancreatitis and acute cardiac arrhythmias. Another category can be designated as 'acute and chronic'; for example, RSOD by a chronic heavy drinker may turn liver impairment into liver failure. A third category of harm is chronic disease resulting from long-term exposure to alcohol, with cancers and cirrhosis being prime examples.¹

Alcohol-related health harms

Even though only half the global population drinks alcohol, harmful use of alcohol causes approximately 3.3 million deaths worldwide every year (or 5.9% of all deaths), and 5.1% of the global burden of disease is attributable to alcohol consumption.⁹ In Europe, which is the region with the highest consumption in the world, 13.3% of all deaths and 12.8% of the burden of disease may be attributed to alcohol. Alcohol-related conditions may be classified into two categories – wholly alcohol-attributable conditions and partially alcohol-attributable conditions. Wholly attributable conditions can be easily identified in the WHO's International Classification of Diseases, 10th Edition (ICD-10), by the inclusion of 'alcohol' or 'alcoholic' in their names. Alcohol is a necessary cause for these conditions to manifest. There are more than 30 such conditions, including alcoholic liver disease, alcohol-induced pancreatitis, alcohol poisoning, and alcohol use disorders (alcohol dependence, harmful use, and alcohol abuse). For a condition to be deemed partially alcohol-attributable, alcohol must be a component cause. A component cause may be one among a number of components, none of which alone is sufficient to cause the disease. When all the components are present, the sufficient cause is formed.⁹ These conditions include cancers, cardiovascular disease and intentional and unintentional injuries, and there is usually a dose-response relationship. For example, for all alcohol-attributable cancers, the higher the consumption of alcohol, the greater the risk for these cancers.^{64, 65} A brief description of the major disease and injury categories associated with alcohol consumption is provided in the section describing major alcohol-related conditions.

Major alcohol-related health conditions where a causal impact of alcohol on incidence has been established**Cancer**

There is a causal link between alcohol and cancer of the oral cavity, pharynx, larynx, oesophagus, liver, colon, rectum and female breast.⁶⁶ In 2007, the International Agency for Research on Cancer (IARC) concluded that there was sufficient evidence for the carcinogenicity of ethanol and classified alcoholic beverages as carcinogenic to humans.⁶⁵ All alcohol-related cancers show evidence of a dose-response relationship, i.e. the risk of cancer increases steadily with greater volumes of drinking.^{62, 67} Varying dose-response thresholds may be observed for different cancers. For female breast cancer, each additional 10 g of pure alcohol per day is associated with an increase of 7% in the relative risk of breast cancer,⁴⁴ whereas regular consumption of approximately 50 g of pure alcohol increases the relative risk of colorectal cancer by 10–20%.^{62, 68} Data from the National Cancer Registry of Ireland indicates that between 2001 and 2010, 4,585 (4.7%) male and 4,593 (4.2%) female invasive cancer diagnoses were attributable to alcohol.⁴³

Cardiovascular disease

Alcohol use is considered detrimental to many cardiovascular outcomes, including hypertension, haemorrhagic stroke and atrial fibrillation, regardless of the drinking pattern. However, for ischaemic heart disease and ischaemic stroke, the relationship is more complex. Low-risk drinking has a cardioprotective effect, although this effect disappears when drinkers report at least one heavy drinking occasion per month,⁶⁹ and there is no protective effect for younger people, for whom any dose of alcohol increases the risk of ischaemic events.⁷⁰

Neuropsychiatric conditions

These primarily include alcohol use disorders – harmful use of alcohol and alcohol dependence. Harmful use of alcohol is defined as a pattern of alcohol use that is causing damage to health, and dependence is defined as a cluster of behavioural, cognitive, and physiological phenomena that develop after repeated alcohol use, and that typically include a strong desire to consume alcohol, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to alcohol use than to other activities and obligations, increased tolerance and sometimes a physiological withdrawal state. There is also a well-established link between alcohol and epilepsy; alcohol can cause unprovoked seizures, and plausible biological pathways have been identified that may underlie this relationship.⁷¹ A high percentage of heavy alcohol users with epilepsy meet the criteria of alcohol dependence. Alcohol is also associated with depression and anxiety disorders, but the complexity of these associations precludes the confirmation of a causal relationship.

Gastrointestinal conditions

Alcohol has marked detrimental effects on the liver and pancreas, as evidenced by the existence of ICD categories for alcohol-related liver and pancreatic disease. Both conditions are associated with heavy drinking, and higher levels of consumption lead to an exponential increase in risk.^{9, 67} Alcoholic liver disease spans a clinical spectrum, from fatty liver to alcoholic hepatitis to alcoholic cirrhosis. Although the majority of heavy drinkers do not develop alcoholic liver disease, approximately 15–20% develop alcoholic cirrhosis. Epidemiological data have shown an increased risk of developing alcoholic cirrhosis with intake of 60g pure alcohol per day in men and 20g pure alcohol per day in women.⁷²

Infectious diseases	Recent evidence has emerged stating that alcohol has a detrimental effect on some infectious diseases, namely tuberculosis, HIV infection, and pneumonia. The immune system is adversely affected by alcohol consumption, particularly heavy drinking. While there is little risk for those who consume less than 40 g of pure alcohol per day, this risk increases substantially for people who consume larger amounts. ⁶⁷
Diabetes	Alcohol can have both a beneficial and detrimental effect on diabetes. At lower levels of daily consumption (22 g for men; 24 g for women) alcohol has a protective effect, but a detrimental effect can be found at 50–60 g daily. ⁷³
Maternal and perinatal conditions	Fetal Alcohol Spectrum Disorder (FASD) is an umbrella term used to describe the range of disabilities that may affect people whose mothers consumed alcohol during pregnancy. The disabilities may range from mild to very serious and they can affect an individual for life. FAS is characterised by hearing disabilities, retarded growth, and heart disorders, together with certain characteristic facial abnormalities. While there is clear evidence regarding the link between heavy prenatal alcohol use and FAS, there is uncertainty as to the intensity and timing of the alcohol exposure needed to produce fetal impairment. Alcohol consumption during pregnancy also increases the risk of low birth weight, preterm birth and small size for gestational age. ⁷⁴
Unintentional injuries	There is a long-standing link between alcohol and almost all types of unintentional injuries, including road traffic accidents, falls, drowning, burning, and occupational injuries. The risk of injury increases exponentially with an individual's blood alcohol concentration (BAC). A threshold dose for negative effects is generally found at BACs of 0.04–0.05%, which is typically reached after consuming 2–3 standard drinks in an hour. ⁷⁵ Alcohol can affect psychomotor abilities, which impairs balance and movement, thus increasing the risk of accidents. Alcohol results in lengthened reaction time; this is dose-related and has a role in road traffic accidents. Impairment of judgement arising from alcohol use can lead to dangerous risk-taking, which in turn increases the likelihood of an accidents occurring.
Intentional injuries	Alcohol has been causally linked to suicide and violence. Both average volume of alcohol consumption and level of drinking before the event increases suicide risk. There is also a clear link between alcohol consumption and aggression, and several causal pathways have been identified that play a role in this link, including biological pathways and cultural factors.

It has long been accepted that consuming alcohol at low-risk levels has health benefits, particularly in relation to coronary heart disease, but it has been argued in recent years that the benefits accruing from low-risk alcohol consumption may have been over-stated.⁷⁶⁻⁷⁹ A recent systematic review and meta-regression analysis of studies which included 3,998,626 individuals, investigated alcohol use and mortality risk after controlling for quality-related study characteristics. The authors reported that estimates of mortality risk from alcohol were significantly altered by study design and characteristics. When meta-analyses were adjusted for these factors, low-volume alcohol consumption had no net mortality benefit compared with lifetime abstinence or occasional drinking.⁷⁷ Fekjaer (2013) reported evidence of health benefits from alcohol use for implausible types of health conditions including deafness, hip fractures, the common cold, cancers, birth complications, dementia, and liver cirrhosis in observational longitudinal studies. In these studies the J-shape curve was observed, with lower risk for low-volume drinkers compared with abstainers even though a causal basis for such associations is highly unlikely.⁷⁶ A recent genetic study reported that a genetic variant associated with reduced drinking lowered rather than increased cardiovascular risk among low-volume drinkers, which challenges the concept of a cardioprotective effect associated with low-risk alcohol consumption.⁸⁰ There is also evidence of lifestyle confounding factors influencing results. Research has shown that nondrinkers are more likely than low-risk drinkers to have characteristics associated with increased CVD mortality in terms of demographic factors, social factors, behavioural factors, access to health care, and health-related conditions.⁷⁹

Alcohol-related hospitalisations in Ireland

The Hospital In-Patient Enquiry (HIPE) scheme

HIPE is a computerised health information system designed to collect clinical and administrative data on discharges (including deaths) from acute Irish hospitals and is managed by the Healthcare Pricing Office (HPO) in the Health Service Executive (HSE). Each HIPE discharge record represents one episode of care; patients may be admitted to hospital(s) more than once with the same

or different diagnoses. HIPE uses discharges, which can be considered a proxy for admissions, to measure each patient contact. Emergency department and outpatient data are not collected. The records therefore facilitate analyses of hospital activity rather than epidemiological analysis of disease. Consequently, the use of HIPE for epidemiological purposes has some limitations. The HIPE system records the number of inpatient events rather than the number of patients and, as these records do not carry a unique personal identifier, it is not possible to determine accurately how many patients with a particular condition are admitted in a given time period. Using HIPE to assess the burden of alcohol use on acute hospital services can lead to an under-estimation of the real impact of alcohol, as emergency department attendances are not recorded. It has been highlighted that 28% of injury visits to Irish emergency departments are alcohol related;⁸¹ not all of these visits result in admission.

The analysis in this Overview relates to the years 1995–2013 and during this time there have been a number of changes in HIPE's coding. For 1995–2004, diagnoses and procedures performed were coded using the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM). Since 2005, ICD-10-AM – the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification – has been used. This revision resulted in a number of changes; for example, in ICD-10, there is no diagnosis of alcohol abuse. A list of the alcohol-related diagnoses from ICD-9 and ICD-10 that are used in this analysis is provided in Appendix 1. From 1995 to 2001, HIPE recorded the primary diagnosis and up to five secondary diagnoses; this increased to nine secondary diagnoses in 2002, 19 in 2005, and 29 in 2011. As the HIPE system counts each patient contact and not the number of patients, it is not possible to ascertain the incidence of alcohol-related morbidity. As an alternative, the number of alcohol-related discharges per 100,000 of population aged 15 years or over was calculated. The numerators used were obtained from the CSO.

As described in the previous section alcohol-related conditions may be wholly attributable (alcohol is a necessary cause for these conditions to manifest) or partially attributable (alcohol must be a component cause). The main part of this analysis related to wholly alcohol-attributable discharges (proxy for admissions) but we have also included a shorter analysis on partially attributable

conditions, which was undertaken by the University of Sheffield when they were completing their study on minimum unit pricing in Ireland. This analysis relates to the years 2007 to 2011.

Wholly attributable chronic and acute conditions, by definition, have alcohol-attributable fraction (AAF) of 1 and no relative risk function can be defined since the reference group of non-drinkers have no risk of a disease wholly caused by alcohol. The AAF is the proportion of the cases recorded in a population with a particular condition that is estimated to be caused by alcohol. The AAF of a disease can be defined as the difference between the overall average risk (or incidence rate) of the disease in the entire population (drinkers and never-drinkers) and the average risk in those without the exposure factor under investigation (never-drinkers), expressed as a fraction of the overall average risk. For example, the AAF for female breast cancer is simply the risk of breast cancer in the total female population minus the risk of breast cancer in women who have never drunk alcohol, divided by the breast cancer risk for the total female population. Thus, AAFs are used as a measure of the proportion of the disease that is attributable to alcohol. Further information on the relative risk functions for all chronic and acute conditions that are partially attributable to alcohol can be found in Angus et al. 2014.⁸²

Age and gender subgroup-specific mortality rates for each of the health conditions were calculated for the University of Sheffield by the HRB for 2007–2011. A list of all the partially attributable conditions included may be found in Appendix 1. All discharges including at least one alcohol-related diagnosis were included in the analysis. Where more than one alcohol-related diagnosis was present for a single discharge, the discharge was allocated to the diagnosis with the highest level of alcohol attribution.

Wholly alcohol-attributable discharges

The number of alcohol-related discharges increased from 9,420 in 1995 to 17,120 in 2013, an increase of 82% (Table 1). There was a considerable dip (-2,888) in the number of discharges in 2005, but this may be explained by the introduction of ICD-10 coding that year. For 1995–2013, males accounted for 74.2% of all discharges and females accounted for 25.8% of all discharges. In 2013, alcohol-related discharges accounted for 160,211 bed days or 3.6% of all bed days that year; in 1995, alcohol-related discharges accounted for 56,264 bed days or 1.7% of the total number of bed days. There has also been a steady increase in the mean length of stay (LOS), from 6.0 days in 1995 to 10.1 days in 2013, which suggests that patients with alcohol-related diagnoses are becoming more complex in terms of their illness.

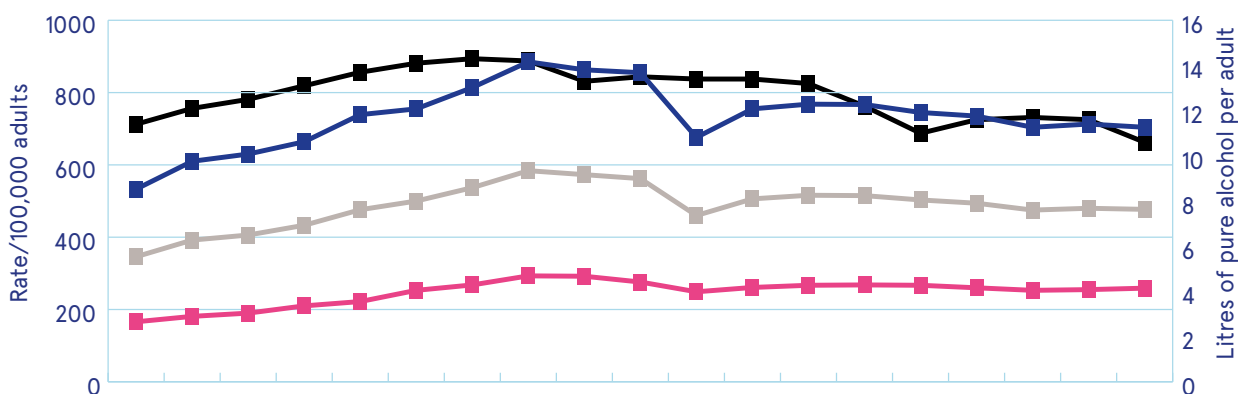
Table 1 Number and length of stay of alcohol-related discharges, 1995–2013

	All persons	Males	Females	Mean LOS	Median LOS	No. of bed days	% of bed days
1995	9,420	7,124	2,296	5.97	2	56,264	1.7
1996	10,842	8,289	2,553	5.64	2	61,107	1.8
1997	11,445	8,727	2,718	5.98	2	68,485	2.0
1998	12,421	9,366	3,055	6.31	2	78,433	2.3
1999	13,860	10,579	3,281	6.00	2	83,098	2.3
2000	14,807	11,007	3,800	5.9	2	87,353	2.4
2001	16,219	12,109	4,110	6.14	2	99,506	2.6
2002	18,057	13,471	4,586	6.62	2	119,510	3.1
2003	18,035	13,378	4,657	6.51	2	117,325	3.0
2004	17,976	13,505	4,471	6.94	3	124,836	3.1
2005	15,088	10,971	4,117	7.86	3	118,569	2.9
2006	17,053	12,629	4,424	8.11	3	138,307	3.2
2007	18,024	13,344	4,680	8.04	3	144,836	3.3
2008	18,400	13,579	4,821	8.75	3	161,016	3.6
2009	18,109	13,254	4,855	8.64	3	156,464	3.5
2010	17,755	13,015	4,740	9.07	3	160,991	3.6
2011	17,078	12,457	4,621	9.35	3	159,725	3.7
2012	17,225	12,552	4,673	9.18	3	158,074	3.6
2013	17,120	12,398	4,722	10.1	4	160,211	3.6

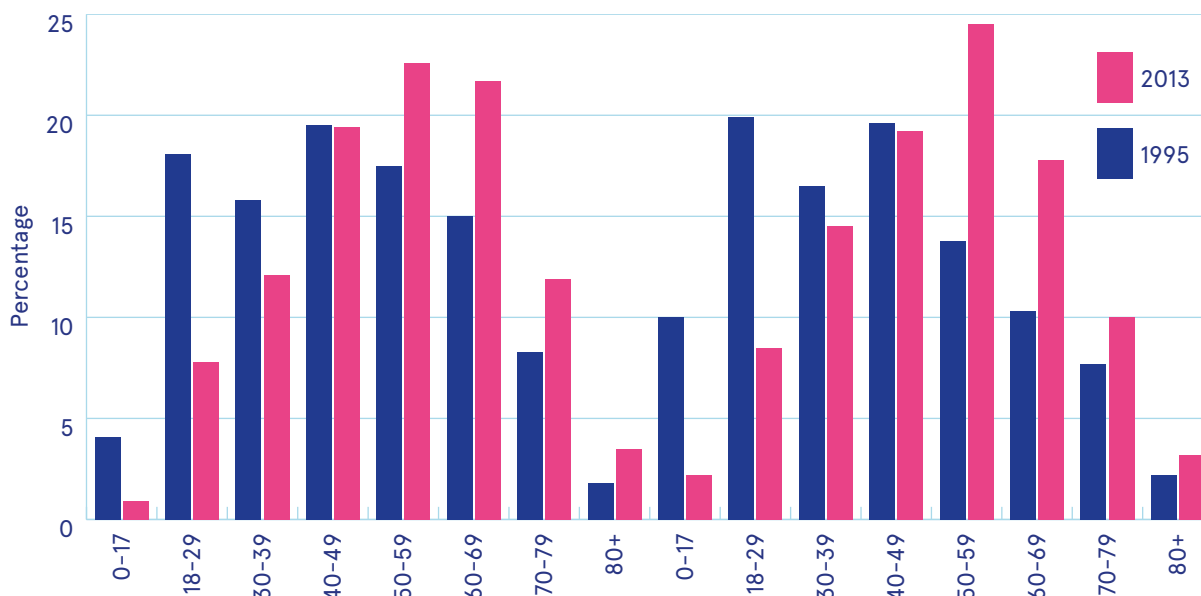
Figure 10 presents the rate of discharges per adult aged 15 years and over and alcohol consumption for 1995–2013. The overall trends in the rate of discharges and consumption are similar in that both increased steadily and peaked in the early 2000s and both have decreased since then, with alcohol consumption decreasing 25.9% since 2001 and discharges decreasing 18.3% since 2002.

In general, as alcohol consumption decreases, so too does alcohol-related harm. Thus, the decrease observed in discharges can most likely be attributed to the decrease in alcohol consumption. The overall increase since 1995 in the rate of discharges was 37.9%; this was more pronounced among women (56.0%) compared with men (32.1%).

Figure 10 Rate of alcohol-related discharges/100,000 by gender, 1995–2003



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
All persons	346	392	406	433	476	500	537	584	573	562	460	506	516	515	503	494	475	480	477
Males	533	610	630	664	739	755	814	885	863	855	676	755	768	767	745	735	704	713	704
Females	166	181	190	210	222	253	268	293	292	276	249	261	267	268	267	260	253	255	259
Consumption	11.4	12.1	12.5	13.1	13.7	14.1	14.3	14.2	13.3	13.5	13.4	13.4	13.2	12.2	11.0	11.6	11.7	11.6	10.6

Figure 11 Age profile of alcohol-related discharges by gender, 1995 and 2013

	Male								Female							
1995	4.1	18.1	15.8	19.5	17.5	15.0	8.3	1.8	10.0	19.9	16.5	19.6	13.8	10.3	7.7	2.2
2013	0.9	7.8	12.1	19.4	22.6	21.7	11.9	3.5	2.2	8.5	14.5	19.2	24.5	17.8	10.0	3.2

Age profile of alcohol-related discharges

In general, female discharges tend to be younger; in 2013, 25.2% of female discharges were aged less than 40 years compared with 20.8% of males. In 2013, males accounted for 72.4% of total discharges and females for 27.6%. However, among discharges aged less than 18 years, males accounted for 52.4% of discharges and females accounted for 47.6%. One explanation for this may be that health complications arising from alcohol tend to manifest themselves earlier in the drinking careers of women than in men. These trends may also be attributable to the fact that older women drink much less than younger women and men, and they are also more likely to abstain from alcohol altogether. However, the age profile for both genders has decreased significantly since 1995 (Figure 11). In 1995, 38.0% of male and 46.4% of female discharges were aged less than 40 years. Those aged less than 18 years accounted for 14.1% of discharges in 1995, but only accounted for 3.1% of discharges in 2013. It is unclear why these trends have emerged, as 2013 survey data show that those aged less than 40 years consumed the most alcohol and had the most harmful patterns of consumption. It may be the case that younger people are more likely to present at hospitals

with an acute alcohol condition, and these cases may be increasingly dealt with within emergency departments and do not result in these patients being admitted to hospital.

Discharges by condition

Due to the changeover to ICD-10 coding in 2005, it was not possible to analyse conditions since 1995, as not all codes are comparable between ICD-9 and ICD-10. We have therefore limited this analysis to discharges from 2005 onwards. Discharges with a diagnosis relating to FAS are not presented here, due to low numbers. Discharges were classified into one of the following categories – acute condition, chronic disease and other chronic condition (Table 2). If a case had both an acute and a chronic diagnosis, the chronic condition was selected. For cases with a chronic disease and a chronic condition, the disease was selected.

Table 2 Classification of alcohol-related discharges by diagnosis

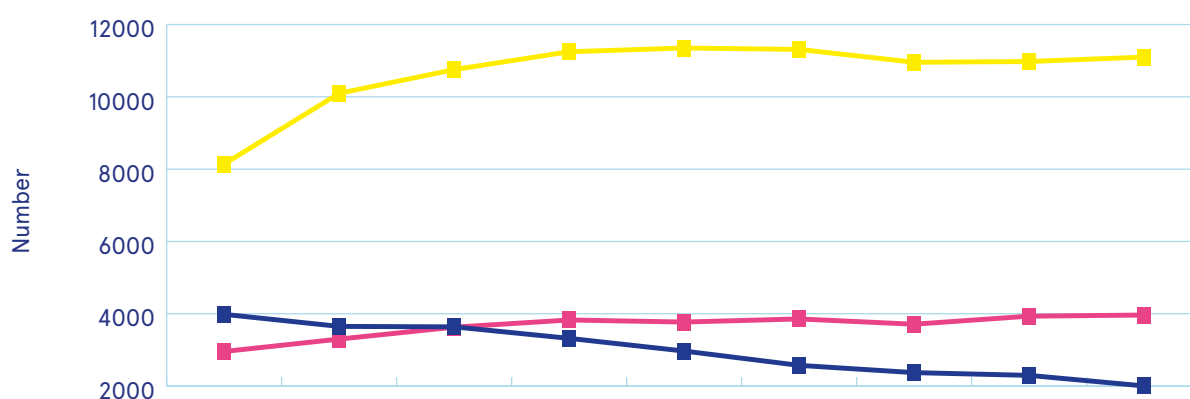
Acute conditions		Chronic diseases		Other chronic conditions	
ICD code	Description	ICD code	Description	ICD code	Description
F10.0	Acute intoxication	E24.4	Alcohol-induced pseudo-Cushing's syndrome	F10.1	Harmful use
T51.0–T51.9	Toxic effect of alcohol	G31.2	Degeneration of nervous system due to alcohol	F10.2	Dependence syndrome
X45	Accidental alcohol poisoning	G62.1	Alcoholic polyneuropathy	F10.3	Withdrawal state
X65	Intentional alcohol poisoning	G72.1	Alcoholic myopathy	F10.4	Withdrawal state with delirium
Y15	Alcohol poisoning – undetermined intent	I42.6	Alcoholic cardiomyopathy	F10.5	Psychotic disorder
R78.0	Finding of alcohol in blood	K29.2	Alcoholic gastritis	F10.6	Amnesic syndrome
Y90.0–Y90.9	Evidence of alcohol involvement determined by blood alcohol level	K70.0–K70.9	Alcoholic liver disease	F10.7	Residual and late onset psychotic disorder
Y91.0–Y91.9	Evidence of alcohol involvement determined by level of intoxication	K85.2	Alcohol-induced acute pancreatitis	F10.8	Other mental and behavioural disorders
		K86.0	Alcohol-induced chronic pancreatitis	F10.9	Unspecified mental and behavioural disorder
				Z50.2*	Alcohol rehabilitation
				Z71.4*	Alcohol abuse counselling and surveillance
				Z72.1*	Problems related to lifestyle – alcohol
				Z86.41*	Personal history of alcohol use disorder

*These conditions indicate the presence of an underlying alcohol disorder

For the period 2005–2013, acute conditions accounted for 17.2% of alcohol-related discharges; chronic diseases accounted for 21.2% of such discharges, and other chronic conditions accounted for 61.6% of alcohol-related discharges (Figure 12). There has been a year-on-year decrease in the number of discharges with an acute diagnosis. Acute conditions decreased by 1,980 or 49.7%, whereas both chronic diseases and other chronic conditions remained quite stable. This may be explained by the decrease in alcohol consumption that has been observed in Ireland since 2008. It is possible that the decrease in alcohol consumption has led to a decrease in alcohol poisoning and alcohol-related harm in the form of hospitalisations. Given that it usually takes a number of years of harmful drinking to develop chronic diseases such as alcoholic liver disease, this may explain why there has been no decrease in these types of diagnoses in spite of the decrease in alcohol consumption in Ireland since 2008.

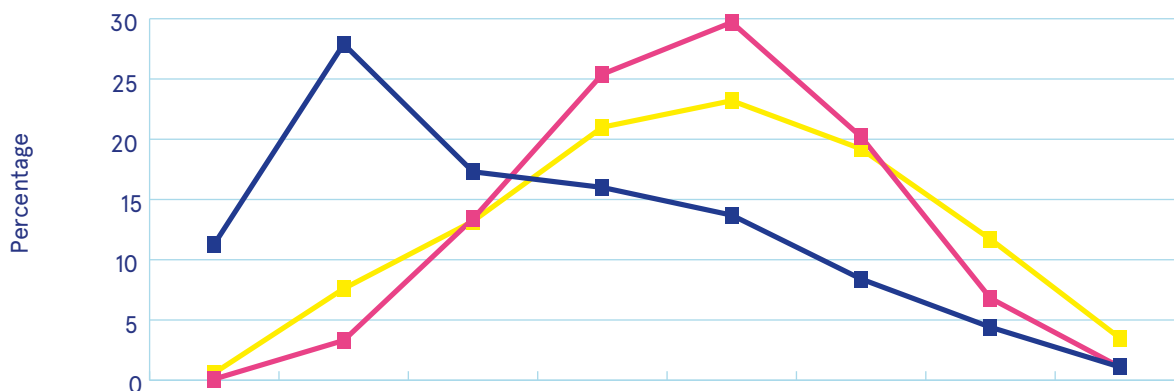
Acute conditions were more prevalent among younger people, whereas chronic diseases and other chronic conditions were more common among older age groups (Figure 13). Given that younger people are more likely to engage in RSOD, it is not surprising that 39.2% of those with an acute diagnosis were aged less than 30 years. In comparison, the numbers admitted to hospital with chronic diseases or other chronic conditions increased steadily with age, and peaked in the 50–59-years age group. The number of discharges for both types of chronic conditions decreased steadily among older age groups. It is possible that this can be explained by an increased incidence of alcohol-related mortality in those aged 50 years or over. Although the majority of discharges from 2005–2013 under the age of 30 years had an acute diagnosis, a sizeable proportion (46.0%, n=8,934) had a chronic diagnosis. This is a worrying trend, as these conditions usually develop after a number of years of harmful drinking and, consequently, are normally seen in much older people. However, it is probably simply a reflection of the prevalence of harmful drinking patterns that have been observed in numerous Irish surveys over the past decade.^{2, 83, 84}

Figure 12 Diagnoses of alcohol-related discharges, 2005–2008



	2005	2006	2007	2008	2009	2010	2011	2012	2013
Acute conditions	3,983	3,650	3,637	3,319	2,968	2,572	2,371	2,295	2,003
Chronic diseases	2,956	3,299	3,629	3,827	3,770	3,856	3,710	3,933	3,964
Chronic - other	8,142	10,096	10,754	11,247	11,350	11,312	10,956	10,977	11,100

Figure 13 Diagnoses of alcohol-related discharges by age, 2005–2013



	0-17	18-29	30-39	40-49	50-59	60-69	70-79	80+
Acute conditions	11.3	27.9	17.3	16.0	13.7	8.4	4.4	1.1
Chronic diseases	0.1	3.3	13.4	25.4	29.7	20.2	6.8	1.1
Chronic - other	0.6	7.6	13.2	21.0	23.2	19.2	11.7	3.5

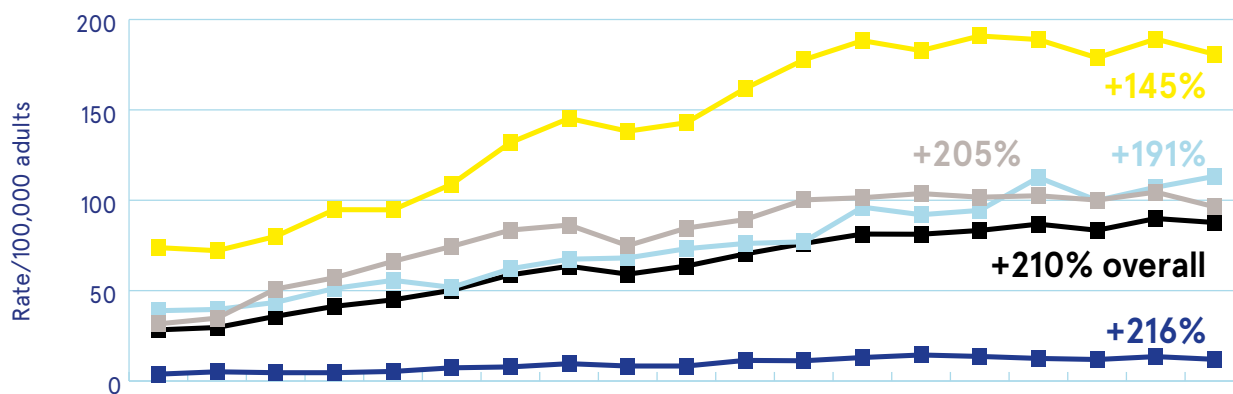
Alcoholic liver disease

Alcoholic liver disease (ALD) is by far the most common chronic alcohol disease, accounting for approximately four-fifths of all chronic diseases each year in 2013. This section presents a profile of discharges with an ALD diagnosis from 1995 to 2013. The number of discharges with a diagnosis of ALD has increased since 1995, with the rate per 100,000 adults aged 15 years and over increasing from 28.3 to 87.7, an increase of 210%. The rate per 100,000 male adults increased from 37.3 to 126.8, an increase of 240% and the rate per 100,000 female adults increased from 19.5 to 50.0, an increase of 156%. There were considerable increases in age-specific rates, especially among younger age groups, albeit from a low base; the rate of ALD discharges increased by 216% for 15–34 year-olds, 205% for 35–49-year-olds, 145% for 50–64-year-olds, and 191% for over 65s (Figure 14).

In 2013, 74.7% of drinkers aged 18–29 years were classified as hazardous drinkers, using the WHO AUDIT-C screening tool; 60.2% engaged in RSOD at least monthly, and 14.7% scored positive for dependence using the DSM-IV criteria. People in Ireland are starting to drink at a younger age compared with older generations; the average age of first alcohol use in children decreased from 15 years for children born in 1980 to 14 years for children born in 1990.³¹ While the relationship between alcohol consumption and ALD seems to be mainly dependent on volume of drinking,⁸⁵ research also indicates that frequency of RSOD also contributes to the likelihood of developing ALD.⁸⁶ It is possible that the high level of RSOD in Ireland may account for some of the increase in ALD, especially among the younger age groups.

The trend among young people is worrying, as it is generally accepted that it takes a number of years of heavy drinking for a person to develop ALD. However, drinking surveys have highlighted harmful drinking patterns among young people.

Figure 14 Rate of alcoholic liver disease discharges per 100,000 adults, by age, 1995–2013



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
15-34	3.8	5.1	4.6	4.6	5.3	7.3	7.8	9.6	8.3	8.3	11.4	11.2	13.0	14.4	13.6	12.5	11.9	13.5	12.0
35-49	31.6	34.8	50.9	57.1	66.2	74.5	83.5	86.3	74.9	84.6	89.3	100.2	101.4	103.7	101.7	102.5	100.1	104.5	96.4
50-64	73.8	72.1	80.0	94.8	94.7	108.9	131.9	145.3	138.2	142.9	161.8	177.7	188.3	182.8	190.9	188.9	178.8	189.2	180.8
65+	38.9	39.6	43.5	51.2	55.7	51.8	62.1	67.4	68.1	73.2	76.1	77.0	96.2	92.0	94.4	112.6	99.9	107.2	113.2
All	28.3	29.6	35.8	41.3	44.9	50.2	58.7	63.5	59.1	63.6	70.3	76.1	81.3	81.2	83.3	86.8	83.4	89.9	87.7

Of all discharges (including deaths) with an ALD diagnosis, 8.7% died while still in hospital. The proportion of ALD discharges who died was similar across the study period, which suggests that there has been little improvement in the prognosis of patients with ALD since 1995. As this is a case-based database and it is not possible to determine the number of repeat discharges, we can assume that the number of actual patients is less than the number of discharges. This indicates that the true percentage of ALD discharges who died while in hospital is probably higher. The ALD mortality rate per 100,000 population aged 15 years and over who died while in hospital was 2.6 in 1995 and 6.3 in 2013, an increase of 142%.

Research has shown that 16% of patients admitted to hospital with alcohol-related liver cirrhosis died within one month of being diagnosed.⁸⁷ As most patients who have been diagnosed with ALD have not previously had an admission to hospital with an alcohol-related condition⁸⁸ during which they could have been screened, this highlights the need for screening patients who are at risk of developing ALD in alternative settings, such as primary care.

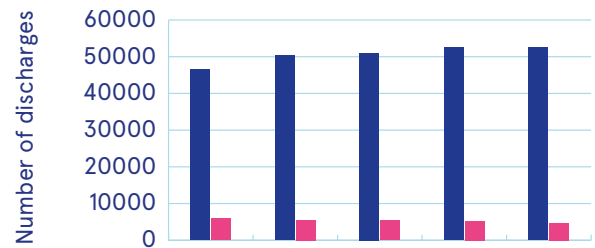
Partially-attributable alcohol conditions

Partially attributed conditions comprise acute and chronic conditions. The acute conditions comprise accidental and intentional injuries while the chronic conditions comprise cardiovascular diseases, cancers and disorders of the digestive system.

The number of discharges with a partially attributable alcohol condition increased between 2007 and 2011 by 8.8% from 52,491 to 57,110 (Figure 15). The number of discharges with a partially attributable chronic condition increased by 12.8%, while the number of discharges with a partially attributable acute condition decreased in the same time period by 22.1%, from 5,965 to 4,646. This decrease may be partly explained by the decrease of 41.4% in the number of discharges with a diagnosis of a road traffic accident from 1,634 in 2007 to 957 in 2011. This reflects the trends observed in overall road fatalities during the same time period. Total road fatalities decreased year on year from 2007 to 2012. For each year there were approximately three times as many discharges with a partially attributable alcohol condition compared to wholly attributable alcohol conditions.

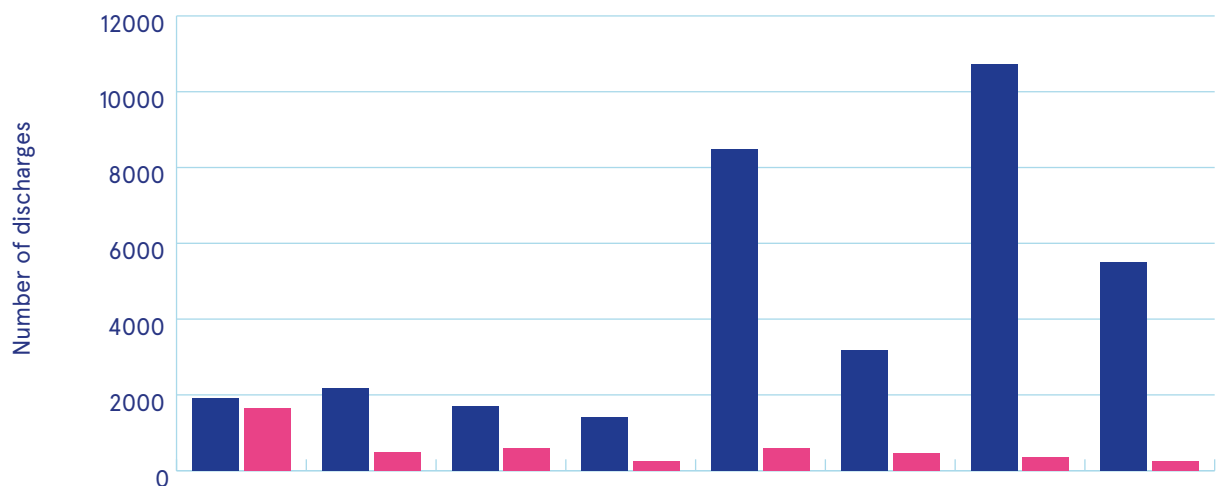
In 2011, there were 57,110 discharges with a partially attributable diagnosis. This is approximately three times the number of wholly attributable discharges. Males accounted for 65.5% of partially attributable alcohol conditions and females accounted for 34.5% (Figure 16). Acute conditions were most frequently observed in the 16–34 year age group. This age group accounted for 46.0% of all acute discharges. Males aged 16–34 years were 3.5 times more likely than females of the same age to have an acute diagnosis.

Figure 15 Number of discharges with a partially attributable chronic or acute alcohol condition, 2007–2011



	2007	2008	2009	2010	2011
■ Partially attributable chronic conditions	46,527	50,374	51,019	52,563	52,464
■ Partially attributable acute conditions	5,965	5,514	5,330	5,265	4,646

Figure 16 Partially attributable chronic and acute conditions by gender and age, 2011



	16–34		35–44		45–64		65+	
	Males	Females	Males	Females	Males	Females	Males	Females
Chronic conditions	1,915	2,165	1,712	1,408	8,493	3,181	10,735	5,505
Acute conditions	1,656	480	589	244	588	469	363	258

Cost of alcohol-related morbidity

As part of its work on minimum unit pricing in Ireland the Sheffield Alcohol Research Group analysed the cost of alcohol-related discharges in 2012 using HIPE data.⁸² They estimated that the cost of wholly alcohol-attributable conditions, which are described in this Overview, was €117,706,485 and the cost of partially-attributable conditions was €1,404,021,651, giving a total cost of €1,521,728,136 to the health system. Partially attributable conditions accounted for 77.4% of

all costs. According to the CSO, in 2012 the total expenditure on healthcare was €13,787,000,000. The cost of dealing with alcohol-related inpatient care accounted for 11.0% of all public healthcare expenditure. Given that this does not include the cost of dealing with alcohol-related emergency department presentations, or the costs incurred by psychiatric hospitals and community alcohol treatment services, we can assume that the true economic burden of alcohol on the health system is higher.

Alcohol mortality in Ireland

The National Drug-Related Deaths Index (NDRDI) and the General Mortality Register (GMR) both collect data on alcohol-related deaths in Ireland. The NDRDI is a census of drug- and alcohol-related deaths, and deaths among substance users and alcohol-dependent persons in Ireland. Data from four sources are collected: the Coroner Service, the General Mortality Register (GMR) (via the Central Statistics Office (CSO)), acute hospital records (via the Hospital In-Patient Enquiry (HIPE) system) and the national methadone treatment register (the Central Treatment List (CTL)). As it does not record all deaths that are partially attributable to alcohol, it may be considered an underestimate of the true extent of alcohol mortality.

Cases from the different data sources are cross-matched on a selection of variables, including name, gender, county of residence, date of birth and date of death, in order to avoid duplication and to ensure that information on each death is complete. An alcohol-related death is only recorded if it meets one of the following criteria:

- » Alcohol is implicated in the cause of death by the coroner.
- » It is mentioned that the deceased was 'an alcoholic or alcohol dependent' or 'alcohol dependence syndrome' (exact term only).
- » It is mentioned that the deceased suffered from 'chronic alcohol use' (exact term only).

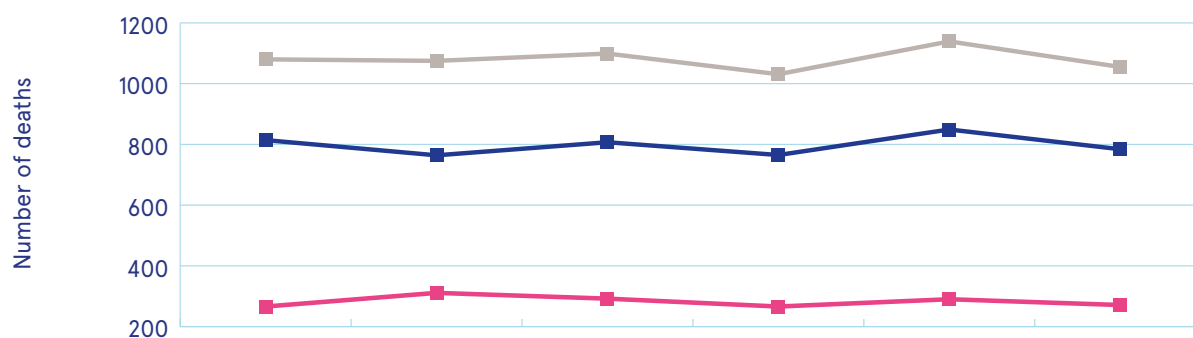
- » The pathologist documents that the deceased had 'alcoholic liver disease' (including alcoholic cirrhosis, steatosis, fatty liver, hepatitis), 'alcohol-induced pancreatitis', 'alcoholic cardiomyopathy', or 'liver disease due to alcohol abuse'.
- » Where the deceased has a recorded history of treatment for alcohol use: detoxification or medicines, for example, Antibus.

Alcohol mortality by age and gender

For this Overview, we analysed mortality data from the NDRDI for the years 2008–2013. Based on the above criteria, there were 6,479 alcohol-related deaths between 2008 and 2013, which accounts for 3.8% of all deaths in Ireland in that period. There were 4,783 alcohol-related deaths among males, accounting for 5.4% of all male deaths and 1,696 alcohol-related female deaths, which accounted for 2.0% of all female deaths (Figure 17). In 2013, there was an average of 88 deaths per month. There was little variation in the number of deaths each year; males accounted for 73.8% of deaths and females for 26.2% of deaths. The gender breakdown is very similar to that observed for hospitalisations.

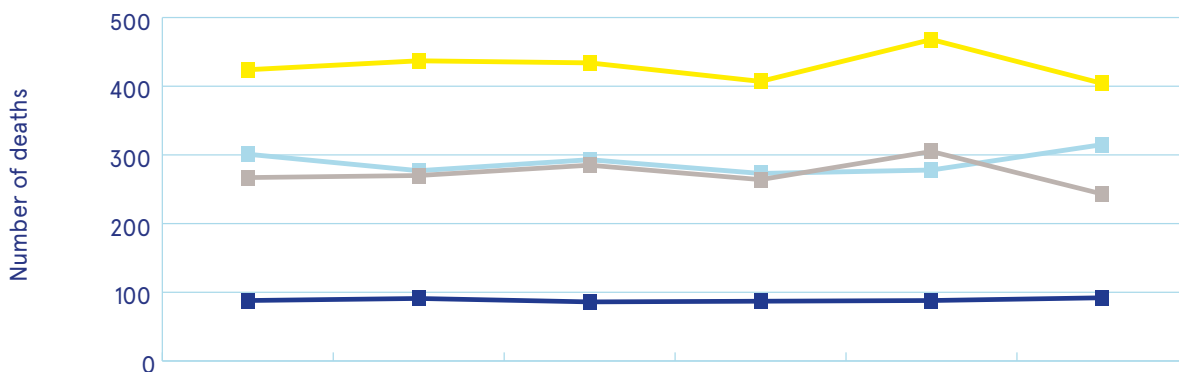
There was little variation in the age profile of alcohol-related deaths over time; 8.2% were 15–34 years old; 25.2% were 35–49 years old; 39.7% were 50–64 years old, and 26.8% were aged 65 years or over (Figure 18). Overall, 73.2% were aged under 65 years, which highlights the level of premature mortality associated with alcohol.

Figure 17 Alcohol-related deaths by gender, 2008–2013



	2008	2009	2010	2011	2012	2013
Total	1,080	1,075	1,099	1,031	1,139	1,055
Male	814	764	807	765	849	784
Female	266	311	292	266	290	271

Figure 18 Alcohol-related deaths by age, 2008–2013



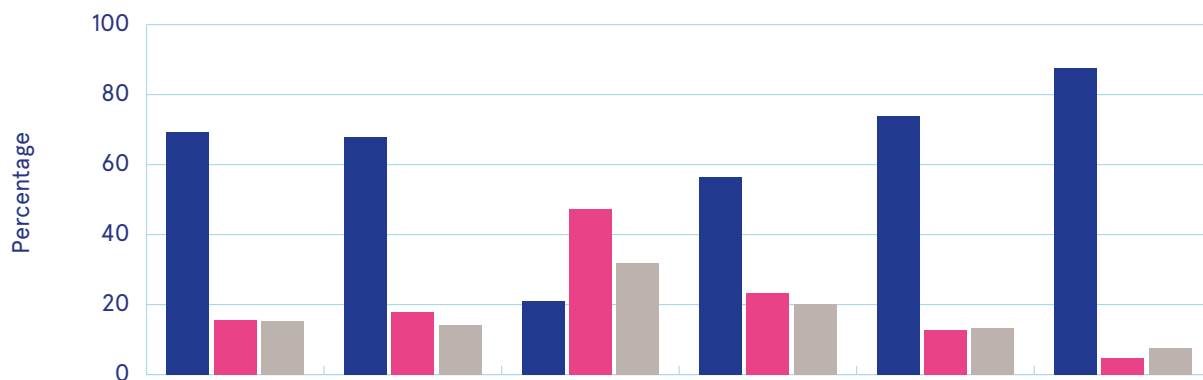
	2008	2009	2010	2011	2012	2013
15-34	88	91	86	87	88	92
35-49	267	270	285	264	305	243
50-64	424	437	434	407	468	404
65+	301	277	293	273	278	315

Alcohol mortality by diagnosis

The NDRDI collects detailed information on each death. However, we have classified the cause of death into three broad categories – medical causes (for example, alcoholic liver disease, cancer, cardiac conditions), poisonings, and traumatic causes (for example, falls, choking, drowning). From 2008 to 2013, medical causes accounted for 4,462 (68.9%) of deaths; poisonings accounted for 1,045 (16.1%) of alcohol-related deaths, and traumatic causes accounted for 972 (15.0%) of deaths. There was little difference in the cause of death

between males and females. However, there were considerable differences between younger and older age groups. People under 35 years were most likely to have a poisoning or trauma cause of death and just one in five had a medical cause of death (Figure 19). This trend is similar to that observed in the HIPE hospital data and is probably to be expected, as people in this age group are most likely to engage in RSOD and risk-taking behaviour. Just over half of those aged 35–49 years had a medical cause of death, and the likelihood of dying of a medical cause increased with increasing age.

Figure 19 Diagnosis of alcohol-related deaths by age and gender, 2008–2013

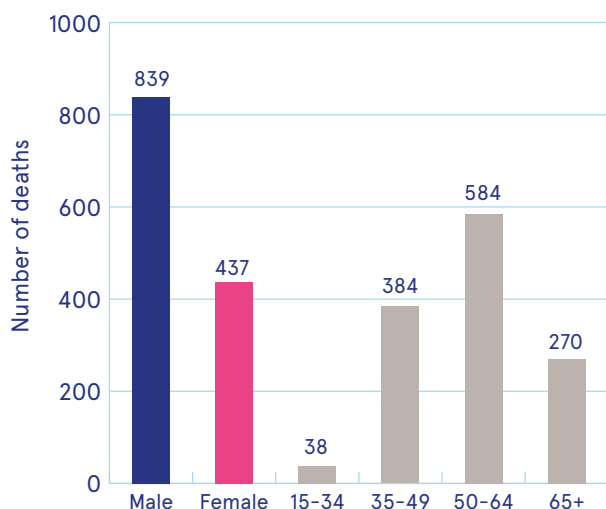


	Male	Female	15-34	35-49	50-64	65+
Medical	69.2	68.0	20.9	56.5	74.0	87.7
Poisonings	15.5	17.9	47.2	23.4	12.8	4.7
Trauma	15.3	14.2	32.0	20.1	13.2	7.7

Liver disease

Between 2008 and 2013 there were 1,276 alcohol-related deaths with a diagnosis of liver disease. Figure 20 presents the gender and age profile of these deaths. Just under two-thirds (65.8%) of these were male deaths; 34.2% were female deaths, which is higher than the overall proportion of female deaths. Almost half (45.8%), were aged 50–64 years and 78.8% were aged less than 65 years. Just 38 (3.0%) were aged 15–34-years. While the number is low for those aged 15–34-years, it is somewhat worrying, as it can take a number of years of heavy drinking to develop liver disease. We have seen a huge increase in the number of hospitalisations since 1995 with liver disease, especially among younger age groups and, as young people in Ireland consume alcohol in a harmful manner, it will be important to monitor both liver morbidity and mortality trends into the future.

Figure 20 Alcohol-related deaths with a diagnosis of liver disease, by gender and age, 2008–2013



Alcohol and self-harm

Although the link between harmful alcohol use and suicidal behaviour is robust, this relationship is very complex. Alcohol dependence and alcohol intoxication are important risk factors for suicidal behaviour, but the mechanism for this relationship remains unclear. There is a positive association between rising per capita consumption and suicide rates.⁸⁹ However, the strength of this relationship varies, with rates tending to be higher in countries

where binge drinking patterns are normal, such as Ireland. In the former USSR, from 1984 to 1990, the political process of *perestroika* resulted in much stricter controls on alcohol and raised prices, which led to significantly lower alcohol consumption. During this time, the suicide rate fell by 32% for men and 19% for women, compared with decreases of 8% and 17%, respectively, in 22 other European countries.⁹⁰

Numerous studies show a significantly increased risk of suicide and attempted suicide among alcohol abusers and heavy drinkers.^{91, 92} It has been estimated that the risk of suicide among alcohol dependents is 7–15%, which is considerably higher than the risk for the general population.⁹³ Longitudinal data from Norway have shown that heavy episodic drinking in young people is associated with an increase in risk of deliberate self-harm of 64%.⁹⁴ It has been observed that additional psychiatric illness or life stressors are required in order to create a risk of suicide among those with alcohol dependence. The greatest risk for suicidal ideation is in those who also have co-morbid anxiety and depressive disorders or personality disorders. Alcohol dependence can lead to lowered self-esteem and an increased risk of suicide through the occurrence of negative life events (such as marital separation and work problems), loss of social networks and social isolation.^{95, 93}

The acute effects of alcohol have been implicated in suicidal behaviour as much as the chronic effects of alcohol. A United States study of national violent death reporting system data for 2003–2011 indicated that of the 51,547 people who died by suicide, 37% of males and 29% of females had positive blood alcohol levels.⁹⁶ A positive blood alcohol concentration (BAC) was more prevalent among men; among those aged 21–49 years; and among those who were not married. Alcohol can have short-term effects on mood, cognitive processes and impulsivity. Young people appear to be particularly susceptible to alcohol-associated suicidal behaviour, and the pattern of drinking, especially binge drinking, may be of relevance. Many adults and adolescents believe that alcohol can be used as a form of self-medication, but this effect reverses itself at higher levels of intoxication and can precipitate suicidal behaviour. Young suicide attempters have been found to have difficulties with problem-solving. The inability to generate alternative solutions is particularly associated with suicide attempts, and this is likely to be enhanced or aided by alcohol.⁹³ Those

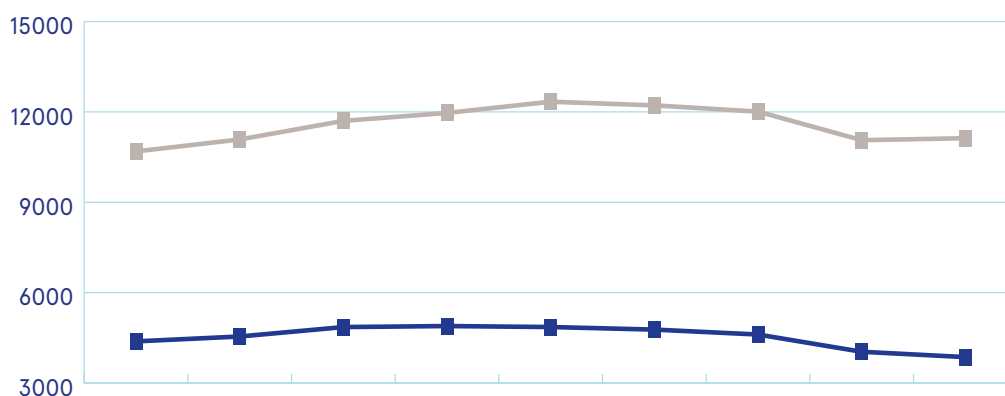
with more impulsive and aggressive traits are at greater risk of suicidal behaviour. It is plausible that excessive alcohol consumption exacerbates these traits, leading to a direct effect on suicide risk.⁹⁵ A study of alcohol-dependent people with co-morbid major depression⁹⁷ found a significant association between recent very heavy drinking and recent suicide attempts. The study also found that the quantity of alcohol drunk was higher in those who had made a recent suicide attempt, but was not associated with inducing suicidal ideation. The authors concluded that recent heavy alcohol use primarily affects suicidality by increasing the likelihood of acting on suicidal ideation rather than by inducing suicidal ideation per se.

Suicide continues to be a public health problem in Ireland. In 2014, 459 people (or 10 people per 100,000 of population) died by suicide, representing 1.6% of all deaths that year.⁹⁸ Males accounted for 80% of all suicide deaths. Suicide is a particularly acute problem among young people in Ireland. Of the 621 deaths among 15–34-year-olds in Ireland in 2014, 145 or 23.3% were due to suicide. It was the most common cause of death among this group. The contribution of alcohol to these deaths is unknown. An analysis of mortality data in Ireland reported that between 2000 and 2004 alcohol was estimated to be the major contributing factor in 823 suicides, with alcohol being the major contributing factor in just under half of young male suicides.⁹⁹ A study of people from three counties (Cavan, Monaghan and Louth) in Ireland who died as a result of injury or suicide in 2000 or 2001, found that 56% of those who died from suicide had alcohol in their blood.¹⁰⁰ Those aged under 30 years were more likely to have had alcohol in their blood at the time of death. However, the study involved a relatively small number of cases (N=31).

In 2008, the National Suicide Support and Information System (SSIS) was established and piloted in the Cork region. The SSIS collects information on risk factors associated with suicide and deaths classified as open verdicts. In total, 275 cases of suicide and 32 open verdicts (total 307) were ascertained in the Cork region between September 2008 and March 2012. Alcohol/drug abuse was identified as a major risk factor for suicide across all identified subgroups. The presence of alcohol and/or drug abuse was confirmed for 105 cases; among these, 48.6% had abused alcohol, 21% had

abused drugs and 27.6% had abused both alcohol and drugs. An increase in alcohol and/or drug abuse was observed in the year prior to death for 20 (20.8%) individuals and 28 had made recent attempts to stop abusing alcohol and/or drugs. Among both men and women, one-third had a history of alcohol and/or drug abuse (34.6% and 32.8%, respectively). A higher proportion of men than women had alcohol in their system according to their toxicology report (46.7% versus 32.8%). Younger men (<40 years) were more likely to have had alcohol in their toxicology report compared with those aged ≥ 40 years. A history of alcohol and/or drug abuse was more frequently reported for the younger men. Alcohol and/or drug abuse was more common among those currently unemployed (51.6%) compared with those currently employed (18.4%).¹⁰¹

The role of alcohol in non-fatal self-harm is well documented in Ireland by the National Registry of Deliberate Self-Harm, which monitors the occurrence of persons presenting to hospital emergency departments as a result of an episode of deliberate self-harm. The registry has collected data since 2003 and as of 2006 it has full coverage of all general and paediatric hospital emergency departments in Ireland. Figure 21 presents the involvement of alcohol in self-harm presentations from 2006 to 2014. The proportion of alcohol-related presentations from 2006 to 2013 was 39.2%. The number of alcohol-related presentations increased from 2006 to 2009 and has decreased year on year since then. The largest decrease was observed in 2013, when alcohol-related presentations decreased by 12.4%; this coincides with a decrease in per capita consumption, although it is unclear if these two events are related. In 2014, alcohol was significantly more involved in male episodes of self-harm than in female episodes (37% versus 33%). Alcohol may be one of the factors associated with higher rates of presentations in the hours around midnight on Sundays, Mondays, and public holidays, times at which alcohol is most commonly consumed.

Figure 21 Trends in deliberate self-harm presentations in Ireland, 2006–2013¹⁰²⁻¹⁰⁹

	2006	2007	2008	2009	2010	2011	2012	2013	2014
All presentations	10,688	11,084	11,700	11,966	12,337	12,216	12,010	11,061	11,126
Alcohol-related presentations	4,382	4,544	4,857	4,891	4,858	4,773	4,610	4,037	3,860

Alcohol treatment

Treatment for problem use of alcohol in Ireland is provided by statutory and non-statutory services, including general hospitals, psychiatric hospitals, community-based services and residential centres. Most treatment of problem alcohol use takes place in outpatient facilities. Treatment options for problem alcohol use include medication, psychiatric treatment, brief intervention, counselling (including cognitive behavioural therapy), medication-free therapy, family therapy, complementary therapy, and life-skills training.

There are two information systems that record information on treatment for problem alcohol use in Ireland – the National Drug Treatment Reporting System (NDTRS) and the National Psychiatric Inpatient Reporting System (NPIRS). The NDTRS is an epidemiological database on treated problem drug and alcohol use in Ireland. It is co-ordinated by the National Health Information Systems staff in the HRB on behalf of the Department of Health. For the purpose of the NDTRS, treatment is broadly defined as any activity that aims to ameliorate the psychological, medical or social state of individuals who seek help for their problem alcohol and other drug use problems. Compliance with the NDTRS requires that one form be completed for each new client coming for his/her first treatment and

for each previously treated client returning to treatment for problem drug use (including problem alcohol use). Data are collected on episodes of treatment, rather than on the individual person treated each year. This means that the same person could be counted more than once in the reporting year if they had more than one treatment episode in that year. The NPIRS is also hosted by the HRB and it provides detailed information on all admissions and discharges to inpatient psychiatric services in Ireland. Data are collected from psychiatric hospitals, general hospital psychiatric units, private hospitals, children's centres and the Central Mental Hospital. Each admission and discharge represents one episode or event, and not an individual patient; while a single individual may have several admissions in any given year, each one of these is recorded as a separate event. Diagnoses are categorised in accordance with WHO ICD-10 categories. NPIRS data are available in a series of interactive tables which are hosted on the CSO website at the link <http://cso.ie/en/databases/>.

Using data from the NDTRS and NPIRS, the incidence of treatment seeking, the socio-demographic features of those accessing treatment services, and the type of treatment provided to service users in Ireland will be described.

National Drug Treatment Reporting System (NDTRS)

In 2013, the 242 treatment services that returned alcohol treatment data to the NDTRS included 147 non-residential centres and 37 residential centres, and 58 low-threshold services. Table 3 presents trends in the number of cases attending treatment from 2008 and 2013 by treatment status. The total number of cases treated for problem alcohol use peaked in 2011 at 8,604 cases. In 2013, the number of cases decreased to 7,549, a drop of 12.3% since 2011. The number of new cases increased by 17.9% between 2008 and 2011, but had decreased by 20.8% by 2013. Even though there was an increase in the number of treatment centres reporting to the NDTRS across the time period 2008–2013, there was a substantial decrease in the number of cases treated in 2013. This may reflect a true decrease in the number of cases presenting for treatment, but may also reflect reduced levels of participation, or under-reporting to the NDTRS, or it may be a combination of all of these factors.¹¹⁰

Characteristics of cases entering treatment

Table 4 presents socio-demographic characteristics of cases entering treatment. Cases were predominantly male and the median age was 39–40 years. While those receiving alcohol treatment were much more likely than the general population to be unemployed, social disadvantage was more common among previously treated cases compared with new cases. Previously treated cases were more likely to be unemployed, homeless and to have left school early. It is difficult to interpret whether long-standing alcohol problems lead to social disadvantage, or whether failure to secure or retain employment and accommodation and complete second-level education leads to a greater likelihood of developing chronic alcohol problems.

Table 3 Number of cases reported to the NDTRS, 2008–2013^{110, 111}

	2008	2009	2010	2011	2012	2013
All cases	7,940	7,816	7,866	8,604	8,336	7,549
New cases	3,833 (48.3)	4,220 (54.0)	4,178 (53.1)	4,520 (52.5)	4,028 (48.3)	3,578 (47.4)
Previously treated cases	3,606 (45.4)	3,524 (45.1)	3,583 (45.6)	3,971 (46.2)	4,212 (50.5)	3,801 (50.4)
Treatment status unknown	501 (6.3)	72 (0.9)	105 (1.3)	113 (1.3)	96 (1.2)	170 (2.3)
New cases rate/100,000 (incidence)	119.7	131.0	129.8	141.2	125.1	112.0
All cases rate/100,000 (prevalence)	248.2	243.0	245.2	269.8	261.5	237.1

Table 4 Characteristics of cases entering alcohol treatment, 2008–2013 ^{110 111}

	2008	2009	2010	2011	2012	2013
Median age (5th and 95th percentiles) in years						
All	39 (19–61)	39 (19–61)	39 (18–62)	39 (18–62)	40 (19–63)	40 (19–64)
New	36 (17–60)	36 (17–60)	36 (17–62)	36 (17–61)	38 (17–64)	38 (17–64)
Previously treated	41 (21–62)	41 (22–62)	41 (20–62)	41 (20–62)	42 (21–63)	42 (22–64)
Number (%) of males						
All	5,110 (66.9)	5,071 (66.1)	5,018 (64.8)	5,566 (65.9)	5,273 (64.7)	4,702 (63.5)
New	2,466 (65.4)	2,756 (65.9)	2,700 (65.2)	2,920 (65.4)	2,517 (63.3)	2,205 (62.6)
Previously treated	2,310 (67.9)	2,270 (66.4)	2,259 (64.3)	2,581 (66.4)	2,690 (65.9)	2,375 (64.0)
Number (%) aged under 18 years						
All	229 (3.0)	253 (3.3)	334 (4.3)	328 (3.9)	276 (3.4)	221 (3.0)
New	194 (5.1)	220 (5.3)	267 (6.4)	253 (5.7)	213 (5.4)	178 (5.0)
Previously treated	34 (1.0)	23 (0.7)	60 (1.7)	73 (1.9)	61 (1.5)	41 (1.1)
Number (%) Irish nationality						
All	7,224 (94.5)	7,224 (94.2)	7,211 (93.1)	7,848 (92.9)	7,556 (92.7)	6,859 (92.7)
New	3,546 (94.0)	3,933 (94.0)	3,841 (92.7)	4,095 (91.7)	3,621 (91.0)	3,253 (92.3)
Previously treated	3,225 (94.8)	3,231 (94.6)	3,290 (93.6)	3,671 (94.4)	3,849 (94.4)	3,456 (93.2)
Number (%) left school early (aged <15 years)						
All	1,001 (13.1)	939 (12.2)	1,018 (13.1)	1,129 (13.4)	1,181 (14.5)	1,000 (13.5)
New	446 (10.7)	446 (10.7)	484 (11.7)	546 (12.2)	512 (12.9)	433 (12.3)
Previously treated	486 (12.9)	486 (14.2)	525 (15.0)	573 (14.7)	654 (16.0)	556 (15.0)
Number (%) employed						
All	2,314 (30.3)	1,991 (26.9)	1,747 (22.6)	1,732 (20.5)	1,609 (19.7)	1,506 (21.5)
New	1,378 (36.5)	1,239 (29.6)	1,104 (26.7)	1,051 (23.5)	966 (24.3)	923 (27.9)
Previously treated	829 (24.4)	727 (21.6)	617 (17.6)	657 (16.9)	625 (15.3)	557 (15.7)
Number (%) homeless						
All	337 (4.4)	238 (3.1)	327 (4.2)	471 (5.6)	383 (4.7)	420 (5.7)
New	89 (2.4)	61 (1.5)	96 (2.3)	164 (3.7)	109 (2.7)	135 (3.8)
Previously treated	232 (6.8)	170 (5.0)	228 (6.5)	296 (7.6)	271 (6.6)	276 (7.4)

Treatment provision

There is no single treatment or intervention to address alcohol problems. Rather, there is a range of effective treatments for different types of service users in different settings. People whose problems are more complex, by virtue of severe dependence, psychological morbidity or social disorganisation, are likely to need more intensive treatments. The selection of appropriate treatment depends on clinician preference, client choice, and availability of trained and enthusiastic therapists. Effective treatment requires a delivery system that provides organisational support to clinical services, and has well-trained therapists and a range of specific interventions that meet service users' needs. Figure 22 presents the type of initial treatment provided to those attending treatment in Ireland in 2013.

National Psychiatric Inpatient Reporting System (NPIRS)

In spite of the shift in emphasis towards outpatient treatment, a sizeable proportion of those with alcohol problems still receive treatment in psychiatric units. These people are recorded through the NPIRS. There has been a considerable decrease in the numbers admitted to psychiatric hospitals for alcohol treatment. The total number of people admitted to psychiatric hospitals with an alcoholic diagnosis decreased by 46.9% between 2006 and 2013, i.e. from 2,767 to 1,470. The rate of first admission with an alcohol diagnosis also showed a substantial decrease in the same time period. The rate decreased by 37.8% from 20.1 per 100,000 population to 12.5 per 100,000 population (Figure 23). One reason for the long-term decrease in the numbers admitted to psychiatric hospitals is the move to outpatient settings for clients who do not require inpatient treatment. In 2006, *A Vision for Change*, the report of the Expert Group on Mental Health Policy, stated that 'individuals whose primary problem is substance abuse and who do not have mental health problems will not fall within the remit of mental health services'.¹¹² This has been accompanied by a considerable decrease in the number of alcohol-related inpatient admissions.

Figure 22 Types of treatment received by people entering alcohol treatment in 2013¹¹¹

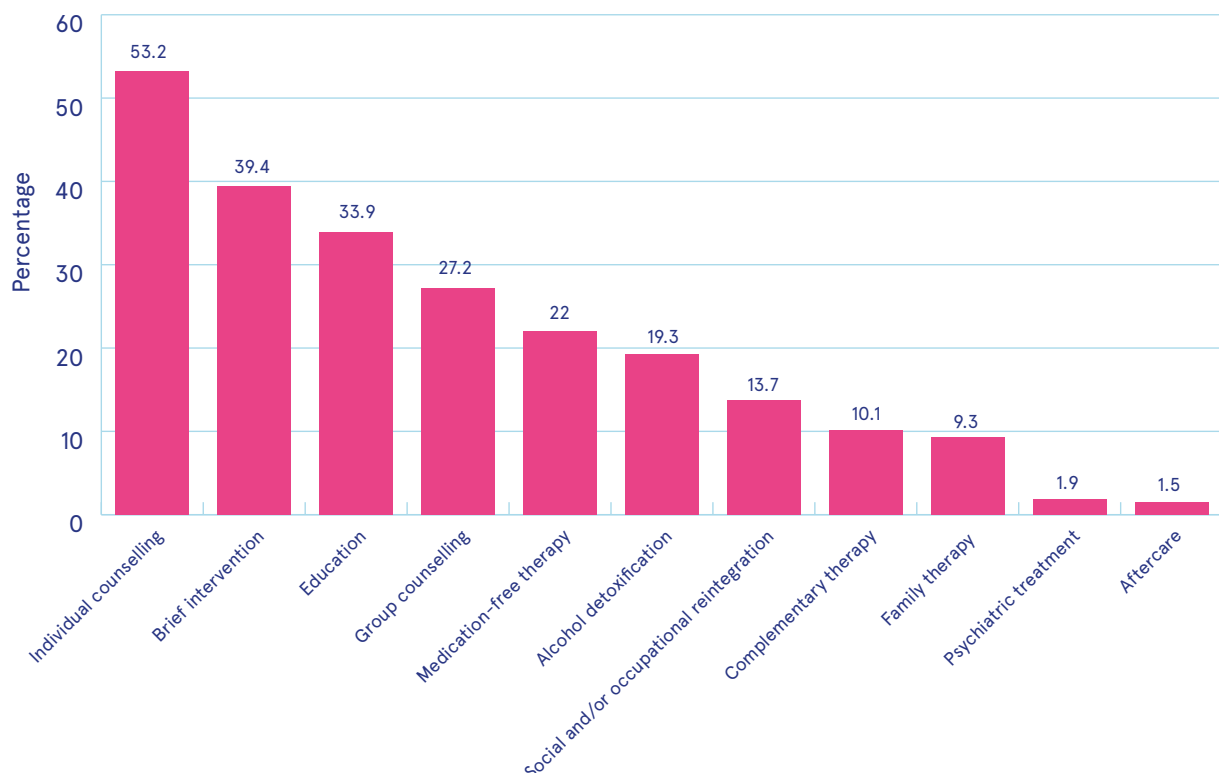
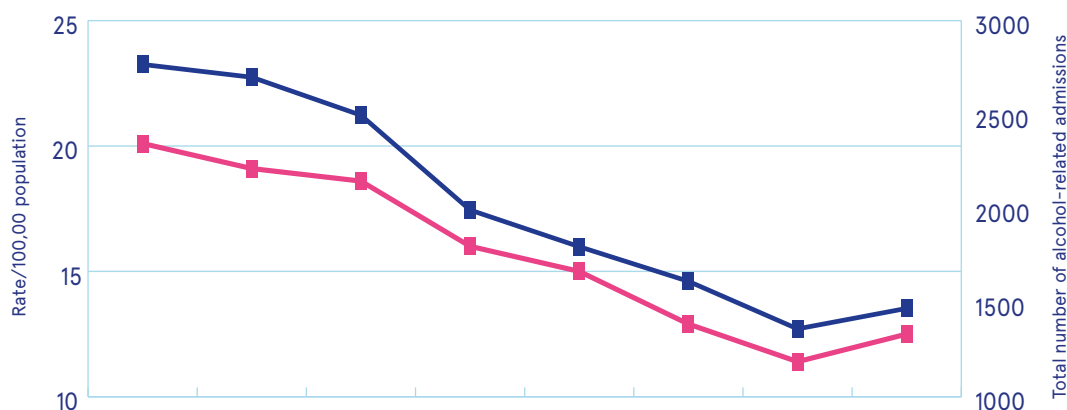


Figure 23 Rate of admission to psychiatric hospitals with an alcohol-related diagnosis, 2006–2013



	2006	2007	2008	2009	2010	2011	2012	2013
Number of admissions	2,767	2,699	2,497	1,993	1,798	1,614	1,361	1,470
Rate/100,000 population	20.1	19.1	18.6	16.0	15.0	12.9	11.4	12.5

Harm-to-others

In Ireland and internationally, the consequences of problem alcohol use on the drinker have proved easier to quantify and consequently have dominated public discussion on alcohol-related problems. In recent years, more attention has focused on alcohol's harms to others, as it is increasingly being recognised that the range and magnitude of such harm is considerable. The harms experienced as a result of someone else's drinking include, but are not confined to, intentional and non-intentional injury arising from assault, domestic violence, drink driving and workplace accidents; harm to family members in the form of psychological distress and suffering from child neglect and/or abuse, poverty, and marital separation and divorce; property damage; reduced work-related performance; loss of public amenity or peace of mind through public disturbances; and fetal alcohol syndrome (FAS).¹¹³

In 2010, a major study on harms to others was undertaken in Australia, which demonstrated that the range and magnitude of alcohol's harms to others is considerable.^{114, 115} The study used a two-pronged approach to measure harms to others:

1. Harms identified based on records – these include deaths and hospitalisations attributed to others' drinking, such as traffic injuries because of drink driving, child abuse or neglect cases involving a caregiver's drinking, and domestic and other assaults.
2. Harms based on survey reports – these include negative effects on co-workers, family and friends, and on the community.

In Ireland, there are limited data sources that allow us to measure and monitor alcohol's harms to others, especially harms relating to children and the family. In this section, we present results from Irish survey data which specifically asked questions to measure harms to others. Throughout this Overview, harms to others have been described in conjunction with harms to the drinkers, under topic headings such as alcohol and crime, alcohol-related morbidity, alcohol in the workplace etc.

The 2013 National Alcohol Diary Survey asked all respondents (including non-drinkers) if they had experienced any of five harms arising from others' drinking (Tables 5 and 6). The overall prevalence of experiencing at least one of the five harms as a result of someone else's alcohol use was 17.1%, with little difference between men's (18%) and women's experience (15.6%). The likelihood of experiencing one or more alcohol-related harms, as a result of others' drinking, decreased somewhat with age. Males were more likely to be

assaulted, and be a passenger with a drunk driver. Females were more likely to experience family problems arising from someone else's drinking. One in six (16.4%) males aged 18–24 years was assaulted in the previous 12 months. Males aged 18–24 years were also the group most likely to have been a passenger with a drunk driver (9.3%). Females aged 25–34 years were most likely to have experienced family problems (12.3%) and females aged 18–24 years were most likely to have had their property vandalised (8.6%).²

Table 5 Negative consequences from alcohol consumption in the previous year, by gender and age

	All	Gender		Age group				
		Male	Female	18–24	25–34	35–49	50–64	65–75
Family problems	7.3%	6.0%	8.6%	7.7%	10.5%	6.6%	6.5%	3.8%
Passenger with drunk driver	5.2%	6.2%	4.2%	8.8%	8.4%	3.8%	3.5%	1.7%
Had property vandalised	4.9%	5.0%	4.9%	8.0%	6.1%	4.5%	3.8%	2.5%
Assaulted by person who had been drinking	4.9%	6.7%	3.1%	12.5%	7.7%	2.9%	2.3%	0.8%
Money problems	2.3%	2.2%	2.4%	2.1%	3.1%	2.3%	2.1%	1.3%

Table 6 Negative consequences from alcohol consumption in the previous year, gender by age group

	Males					Females				
	18–24	25–34	35–49	50–64	65–75	18–24	25–34	35–49	50–64	65–75
Assaulted by person who had been drinking	16.4%	11.2%	3.6%	3.5%	1.7%	8.6%	4.3%	2.2%	1.3%	0.0%
Passenger with drunk driver	9.3%	10.4%	4.2%	4.5%	2.7%	8.1%	6.4%	3.4%	2.5%	0.7%
Had property vandalised	7.4%	5.0%	5.4%	4.0%	3.1%	8.6%	7.1%	3.6%	3.5%	1.6%
Family problems	6.1%	8.6%	6.0%	4.7%	3.1%	9.4%	12.3%	7.1%	8.2%	4.6%
Money problems	2.1%	3.7%	2.0%	1.2%	1.7%	1.8%	2.8%	2.7%	2.9%	1.0%

Two drinking surveys undertaken by the HSE in 2006 and 2010 also contained similar questions on harms to others and was undertaken by 2,011 respondents.¹¹⁶ Logistic regression was undertaken on those surveys to identify the factors that predict alcohol's harms to others. Those who reported experiencing at least one of the five harms were most likely to be under 50 years of age, be from a lower social class, and engage in regular RSOD. Those most likely to experience family problems were women, those under 50 years of age, and those from a lower social class. Those most likely to experience money problems were women and those who were single. Those most likely to be a passenger with a drunk driver were individuals who engaged in regular RSOD. Those more likely to experience physical assault were men aged 18–29 years, and those who were single. Those more likely to experience property vandalism were aged 30–49 years. This report also compared the Irish results with Canadian and American surveys which contained the same five questions. The prevalence of experiencing harm as a result of someone else's drinking in the previous 12 months for each of the five harm items was substantially higher in the Irish study than in the Canadian or United States studies.

Alcohol and crime

There is an extensive body of evidence which consistently shows that, in societies and situations in which alcohol consumption is commonplace, criminal acts often involve perpetrators who had been drinking prior to committing the offence or who were intoxicated at the time of their crime. This association does not in itself prove the existence of a direct causal connection between drinking and violence. While alcohol consumption may contribute to aggression and violent behaviour, drinking is neither a necessary nor a sufficient cause of either. However, many studies have demonstrated significant and positive associations between alcohol consumption and rates of criminal violence, and we can say with some confidence that more drinking tends to result in more violence, and less drinking tends to result in less violence.¹¹⁷ There is no simple causal relationship between alcohol and crime; however, a number of contributing factors leading to alcohol-related crime have been identified. These causes include the effects of alcohol; the effects of the drinking environment; personality, attitudes or other expectations of the drinker; and societal attitudes, expectations and values.¹¹⁸ There is a belief that disinhibition is a pharmacological property of alcohol, and that after drinking, people may behave differently to their behaviour while sober.¹¹⁹ The drinking context is also important; crowding, frustration and the presence of other intoxicated persons are correlated with alcohol-related crime and would be expected to increase the probability of aggression regardless of any effects of alcohol.¹¹⁸ The expectancies of alcohol, i.e. the belief that alcohol causes people to behave aggressively, may actually cause drinkers to behave aggressively. In some cultures, aggressive or criminal behaviour rarely or never occurs when people drink. However, other cultures have defined drinking occasions as situations in which normal restrictions on behaviour do not apply,

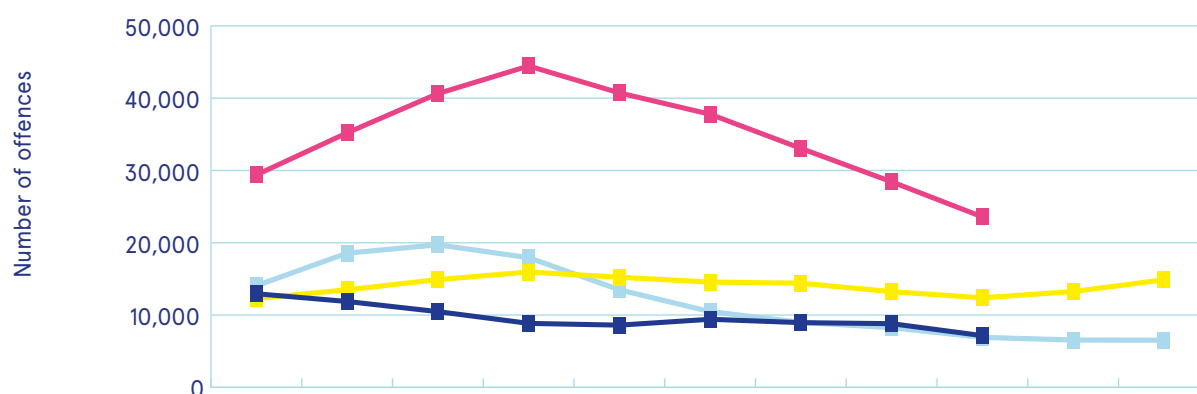
and drinking and violence are thereby associated. In other words, alcohol intoxication becomes an excuse for behaviour that would not normally be deemed acceptable.¹²⁰ A more thorough analysis of the link between alcohol and crime may be found in the HRB's previous overview on the social consequences of alcohol.⁵

Alcohol and crime in Ireland

In the HRB's 2009 overview on the social consequences of alcohol use we were provided with anonymised individual-level data from the Garda Síochána PULSE (Police Using Leading Systems Effectively) system. This allowed for the recoding of variables and cross-tabulations, which enabled us to undertake a comprehensive analysis of alcohol and crime, and the offenders of these crimes, in Ireland. However, we were unable to obtain similar data for this overview and therefore we are only able to present the aggregated crime data that are published by the CSO.

We have included crime data from the CSO as it is one of the epidemiological indicators for monitoring alcohol-related harm identified by the Steering Group Report on a National Substance Misuse Strategy.³ However, we have concerns about the validity of Irish crime data. A recent review of the PULSE system reported concerns about the quality and reliability of its data.¹²¹ Therefore the results in this section should be interpreted with caution. We limited this analysis to crimes in which alcohol was definitely involved, for example, drunkenness and drink driving offences, and crimes which commonly have alcohol as a contributory factor (e.g. assaults and public order offences). The PULSE system does not explicitly record whether an assault is alcohol related or

Figure 24 Number of public order, drunkenness, assault, and drink driving offences, 2003–2015



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Public order offences	29,384	35,204	40,630	44,449	40,727	37,775	33,051	28,431	23,576		
Drunkenness	12,948	11,877	10,476	8,851	8,607	9,417	8,951	8,810	7,154		
Assault	12,286	13,496	14,904	15,953	15,232	14,563	14,399	13,237	12,383	13,252	14,876
Drink driving	14,066	18,564	19,720	17,940	13,489	10,478	8,990	8,254	6,915	6,548	6,521

not. However, assaults are included in this analysis as they are considered a valid proxy for alcohol-related violence internationally.¹²² Similarly, there is sufficient evidence to support the argument that alcohol plays a major role in public disorder.^{123, 124} It would be ideal to study the incidence around licensed premises at night and this has been done in other countries. However, the existing Irish data does not allow such an analysis.^{125, 126}

Figure 24 presents the trends in the number of incidents of drunkenness, public order, assault and drink driving offences between 2005 and 2015 (data are only available until 2013 for drunkenness and public order offences). Overall, the number of alcohol-related crimes has decreased in recent years. Public order offences have decreased by 47.0% since 2008, drunkenness offences have decreased by 44.7% since 2005, and drink driving offences have decreased by 68.3% since 2007. In comparison, between 2005 and 2015 there was a 21% increase in the number of assault offences.

It is important to note that the PULSE system is an operational database and its main function is to record Garda activity. A decrease in the number of alcohol-related offences recorded does not necessarily reflect a decrease in the underlying level of these behaviours; decreased recording may also be a consequence of changing Garda priorities or the targeting of particular places or activities.

According to CSO data, there was a decrease of 14.3% in the number of Garda Síochána employed between 2008 and 2015. It may be the case that a decrease in manpower led to less detection of less serious types of crime, such as public order and traffic offences. Drinking patterns in Ireland have also changed, so that more alcohol is being bought from the off-trade sector; it may be the case that as more alcohol is being consumed in the home, this has led to fewer people being on the streets after a drinking occasion, and less public disorder and drink driving. It is still important to note that in 2013 there were 14,069 offences which can be fully attributed to alcohol (drink driving and drunkenness) and 35,959 offences where alcohol is likely to have played a substantial role (public order and assault offences).

In addition to the Garda data from the CSO, according to the 2013 National Alcohol Diary Survey, 6.3% of all respondents aged 18 years and over reported that in the past year they had been stopped by the police as a result of their drinking; 4.9% of respondents reported that in the past year they had been assaulted as a result of someone else's drinking, and 4.9% reported that they had property vandalised as a result of someone else's drinking. This suggests that in 2013, 215,155 people aged 18 years and over were stopped by the police as a result of their drinking, 167,170 people suffered an alcohol-related assault, and 167,170

had their property vandalised. In addition, 5.2% of respondents (which corresponds to 177,405 of the population in Ireland) reported that they had been a passenger with a drunk driver in the past year. These figures and the CSO victimisation surveys suggest that only a proportion of alcohol-related crime is actually reported. In the most recent crime and victimisation survey in 2010, just over half (55%) of both assault and vandalism incidents were reported to the Garda Síochána.¹²⁷

This large number of offences places considerable pressure on the scarce financial resources of the State, with major costs for the taxpayer in terms of the increased policing required. Demands on the criminal justice system and on hospital emergency departments, and the expense of cleaning up city and town centres, have not been considered here. There is also a human cost: innocent victims of alcohol-related violence may sustain injuries, and public disorder contributes to people's fear of crime.

Alcohol and sexual crime in Ireland

The only national Irish data relating to sexual violence and alcohol come from the 2002 Sexual Abuse and Violence in Ireland (SAVI) study of more than 3,000 Irish adults. It reported that 12% of men and 26% of women experienced some level of sexual abuse in adulthood. Alcohol was involved in almost half of the cases of sexual abuse (53% of men and 45% of women).¹²⁸ Six sexual assault treatment units (SATUs) in Ireland provide clinical, forensic and supportive care for those who have experienced sexual violence. In 2014, these units provided care for 628 men and women who disclosed rape or sexual assault. More than half (54.6%) reported that they had consumed at least four standard drinks in the 12 hours prior to the assault.¹²⁹ A 2009 study interviewed 100 individual rape victims about their experience of the legal process, and analysed 597 files on reported rapes received by the Director of Public Prosecutions (DPP) from 2000 to 2004.¹³⁰ The interviews with rape victims found that in 70% of cases the victim reported that she had been drinking prior to the incident; 25% of victims had consumed between three and five standard drinks, and 29% had consumed six drinks or more. In 58% of cases the victim reported that the offender had been drinking; 24% stated that

the offender had consumed a moderate amount of alcohol; and a further 24% stated that the victim had been drinking a lot at the time of the assault. Analysis of DPP files found that rates of alcohol consumption among complainants were high: more than 80% had consumed alcohol around the time of the offence, with 45% described as severely intoxicated. The majority of suspects were intoxicated at the time of the offence, with 41% severely intoxicated and 27% moderately intoxicated. The DPP prosecuted three out of every 10 reported rapes; in many cases, uncertainty about the incident, or about consent due to excessive alcohol consumption, was cited as a factor in the failure to prosecute. Following on from this study, the Rape Crisis Network Ireland commissioned NUI Galway to undertake a qualitative study to explore university students' attitudes to alcohol use and consent to engage in sexual activity. The study revealed that alcohol plays a key role in students' social interactions; with regard to sexuality, alcohol is perceived to be an enabler, which helps students to approach a person of the opposite sex. Alcohol provides 'Dutch courage' and is often the main reason that a couple get together. The study also found that alcohol had an impact on both the provision and understanding of consent, especially if one or both of the partners were drunk. The respondents also felt that alcohol plays an important role in sexual assaults and there was a belief that alcohol consumption can undermine a victim's credibility when it comes to reporting a rape or assault

Alcohol and the workplace

The impact of alcohol on employment and the workplace is multifaceted and considerable in a number of ways. Becoming unemployed worsens alcohol-related harm; heavy drinking can lead to unemployment. Alcohol can lead to a reduction in the productive workforce through premature mortality or morbidity. Alcohol is a significant risk factor for absenteeism and presenteeism – defined as being physically present at work, but due to a physical or emotional issue, being distracted to the point of reduced productivity. The acute effects of alcohol can increase the likelihood of workplace accidents and injury. Drinkers may create an additional burden for their co-workers in a number of ways. Their absenteeism may create additional work for those who cover for them, or their reduced productivity or suboptimal quality of work may create a burden for those who work with them.

Alcohol and unemployment

The international evidence suggests that becoming unemployed worsens alcohol-related harm. An analysis of the effects of the recent economic downturn in the European Union reported that a more than 3% increase in unemployment was associated with a 28.0% increase in deaths from alcohol abuse.¹³¹ It has been suggested that this may be explained by an increase in harmful patterns of drinking rather than overall alcohol consumption. It has also been reported that heavy drinking increases the risk of unemployment by as much as fivefold, compared with light drinking.¹³² Analysis of the National Alcohol Diary Survey facilitated a comparison of drinking patterns between employed and unemployed people in Ireland (Table 7). Unemployed people were more likely than employed people to have abstained from alcohol in the past year. However, unemployed people who did drink were significantly more likely to report a harmful pattern of drinking. This was particularly apparent in relation to alcohol dependence, with unemployed people twice as likely as employed people to have a positive DSM-IV score. Of the 442 people who said they were unemployed at the time of the survey, six (1.4%) reported that they lost their job as a result of their alcohol consumption. The CSO reported that 391,507 people were on the Live Register at the end of November 2013, and when the experience among this representative sample is applied to the unemployed population, it is possible that 5,315 people on the Live Register in November 2013 lost their job due to their alcohol consumption.

Table 7 Comparison of drinking patterns among employed and unemployed persons in Ireland

Working status	Abstainers (%)	Monthly RSOD (%)	Positive AUDIT-C (%)	Positive DSM-V score (%)
Employed (full time or part-time)	16.7	39.6	57.9	6.4
Unemployed	21.4	47.4	64.6	12.8

High unemployment is also common among people presenting for treatment. According to NDTRS data, in 2013 21.5% of cases receiving treatment for harmful use of alcohol were unemployed, compared with 13.1% of the general population aged 15–74 years. Just 21.5% of 15–64-year-olds reported to the NDTRS were in paid employment. The causal link between alcohol and unemployment is complex: harmful drinking may reduce employability, but unemployment can also increase alcohol use and abuse. It should be noted that people presenting to alcohol treatment services often have the most severe alcohol problems, which increases their likelihood of being unemployed.

Alcohol and premature mortality

The peak age of alcohol-related death is in middle age and older middle age, a period that may be considered workers' peak performance years.¹³³ In England, in 2010, it was estimated that 46.7% of alcohol-attributable deaths and 42.9% of alcohol-attributable hospitalisations occurred among 45–64-year-olds, an important segment of the working age population.¹³⁴ Analysis of Irish hospitalisation and mortality data indicates that people of working age accounted for the majority of alcohol-related discharges (74.0%) and alcohol-related deaths (73.2%). Some occupations are at a higher risk of alcohol-related mortality. Analysis of Finnish mortality data from 2001 to 2004 reported that most of the alcohol-related deaths involved people who were 40–59 years old (70.3% of men, 85.9% of women). Men in construction work, craft work, services and some unskilled manual occupations were generally at the highest risk of alcohol-related death.¹³⁵ According to a Swedish register-based study, occupations at an elevated risk of alcohol-related death were mainly

manual.¹³⁶ National data in England and Wales have consistently found that those with access to alcohol at work, such as publicans and bar staff, are more likely to die from alcohol-related causes.^{137, 138} We have no Irish data on occupation and alcohol-related mortality.

Alcohol and workplace productivity

Heavy drinking increases the risk of absenteeism, largely in a dose-response manner. It also increases the risk of presenteeism by as much as threefold, compared with light drinking; presenteeism is more important for lost productivity than is absenteeism.¹³² An Australian survey of 13,582 workers examined the relationship between workers' drinking patterns and alcohol-related absenteeism. High-risk drinkers were 22 times more likely to be absent from work due to their alcohol use compared with low-risk drinkers. High-risk drinking was defined as consumption of 11 or more standard drinks (110 g+ of pure alcohol) for men and seven or more standard drinks (70 g+ of pure alcohol) for women on any one day at least weekly, or an average weekly consumption of 43 or more standard drinks (430 g+ of pure alcohol) for men and 29 or more standard drinks (290 g+ of pure alcohol) for women. Young employees and males were more likely to report alcohol-related absenteeism compared with older employees and females. The study also showed that alcohol-related absenteeism was not restricted to chronic heavy drinkers, but included a large number of non-dependent drinkers who binge drink periodically.¹³⁹

There are few published studies in Ireland that examine the association between alcohol and workplace productivity. A conservative estimate of the cost of alcohol-related problems was reported as €2.65 billion a year in 2003, of which loss of output due to alcohol-related absences from work was estimated to be €1 billion.¹⁴⁰ The Irish Business and Employers Confederation (Ibec)¹⁴¹ carried out a short survey of 557 organisations, in which 12% of companies cited alcohol and alcohol-related illnesses as a cause of short-term absences for men, and 4% of companies reported the same rate of absences for women. Some 40% of short-term absences occurred around weekends. Ibec estimated that absence from work costs Irish businesses about €1.5 billion a year. The problem of alcohol-related absenteeism was noted in the final report of the Commission on Liquor Licensing,¹⁴² in particular, the adverse impact of later pub opening hours on Thursday nights on young people reporting for work or training on Friday mornings. While the evidence was mainly anecdotal, the Commission recognised the negative impact of the extended opening hours and recommended that pub closing time should revert to 11.30 pm on Thursdays.

Analysis of the National Alcohol Diary Survey indicates that 4.2% of employed respondents reported that they had missed days from work due to their own alcohol use in the 12 months prior to the survey. On average, each of these respondents missed 3.3 days. We recorded those who reported missing at least 10 days from work as having missed 10 days, although this is likely to be an underestimate for at least some respondents. Based on 2013 employment figures, we can extrapolate that of the 1,869,900 persons in employment, 78,536 missed work in the previous year due to alcohol. If they each missed 3.3 days, this amounts to 259,169 missed days. In 2013, the average hourly labour cost was €25.21 and the average number of hours worked was 31.6. Assuming that most people work five days per week, then the average daily number of hours worked was 6.32, which amounts to an average daily cost per person of €159.32. This suggests that the direct cost of alcohol-related absenteeism in 2013 was €41,290,805. This estimate does not include the costs associated with reduced productivity at work, or the cost of alcohol-related injury at work. Of those who reported missing work due to alcohol consumption, 82.6% engaged in monthly binge drinking, 93.9% had a positive

AUDIT-C score, and 40.8% scored positive for alcohol dependence, which highlights the link between harmful drinking patterns and alcohol-related absenteeism in Ireland.

Harmful alcohol use and RSOD increase the risk of arriving to work late and leaving work early, or the risk of disciplinary suspension, resulting in loss of productivity; turnover due to premature death; disciplinary problems or low productivity due to the use of alcohol; inappropriate behaviour (such as behaviour resulting in disciplinary procedures); theft and other crime; poor co-worker relations and low company morale.¹⁴³ An American study conducted at 114 work sites of 7 corporations showed a positive linear relationship between increasing alcohol consumption and the frequency of work performance problems. The strongest associations were between consumption and getting to work late, leaving early, and doing less work; by contrast, there was a weak association with missing days of work.¹⁴⁴

Work environment and alcohol

The workplace environment itself can lead to increased alcohol use. Stress, high-effort/low-reward work, low levels of supervision and poor integration of staff may lead to increased alcohol use.¹³²

Workplaces may also create a culture around drinking, through availability of alcohol at work, the extent to which members of an individual's workplace social network use alcohol, and perceived social network approval of using alcohol around work.¹⁴⁵ A recent systematic review and meta-analysis on long working hours and alcohol use analysed data from 333,693 participants from 14 countries. Long working hours were associated with higher levels of alcohol use. Compared with the standard (35–40) weekly working hours, working 49–54 hours was associated with an odds ratio of 1.13, and working 55 hours or more was associated with an odds ratio of 1.12 for new onset risky alcohol use. Possible explanations provided by the authors for the association between long working hours and risky alcohol use were factors around the work environment as well as individual characteristics. It may be the case that alcohol use alleviates stress that is caused by work pressure and working conditions, and that working overtime and characteristics such as high demands and lack of control might contribute to stress at work.¹⁴⁶ An

analysis of 76,136 employees in Canada reported that weekly high-risk alcohol consumption (204 g for men; 136 g for women) was 8.1% among workers. Increased working hours, higher levels of physical demands, and job insecurity were associated with increased odds of high-risk alcohol consumption.¹⁴⁷ A longitudinal study of 1,019 participants in New Zealand reported that longer working hours were associated with higher rates of alcohol-related problems, with rates tending to show a steady increase with increasing hours worked. Those working 50 or more hours per week had rates of alcohol-related problems that were 1.9–4.3 times higher than those who were not employed. Hours worked was significantly associated with more frequent alcohol use, higher rates of alcohol abuse/dependence and a greater number of alcohol abuse/dependence symptoms.¹⁴⁸ However, a systematic review found no clear relationship between job strain and alcohol intake. The review analysed data on work-related stress and alcohol intake using cross-sectional data from 12 European studies (n=142,140), and longitudinal data from four studies (n=48,646) were analysed.¹⁴⁹

Acute effects of alcohol increase the likelihood of injury, especially when undertaking activities that involve risk or require a degree of skill. The probability of an alcohol-related injury is greater for individuals who drink irregularly at risky or high-risk levels compared with regular risky or high-risk drinkers.^{150, 151} A study of work-related deaths from 2001 to 2006 in Victoria, Australia showed that alcohol was present in 26 (7%) of 355 unintentional work-related injury deaths.¹⁵²

Harm to others in the workplace

Most studies on alcohol and the workplace have neglected the costs borne by the drinker's co-workers. In Australia, one in 12 reported being negatively affected in some way by their co-workers' drinking. The study estimated that the cost of extra hours worked by workers due to a co-worker's drinking (\$453 million) was greater than the cost of absenteeism due to one's own drinking (\$368 million).¹¹⁴ An Irish 2010 survey of 1,000 respondents included a number of questions on harm to others in the workplace. Of the 723 workers surveyed, 8.3% reported that their ability to do their job was negatively affected due to co-workers' drinking; 6.1% had to work extra hours, and 2.2% reported that they had had an

accident or close call at work. Overall, 10.4% reported experiencing at least one harm in the workplace as a result of co-workers' drinking. Men were more likely than women to experience harm (13.6% versus 6.7%), as were those aged 18–34 years (16.2%). A comparison with similar Australian data revealed that for each of the three measures, the proportion of Irish workers reporting harm from co-workers' drinking was approximately twice as high when compared with figures for Australian workers.¹¹⁶

Alcohol policy

In *Alcohol: No Ordinary Commodity*,¹ a publication which was sponsored by the WHO, alcohol policy is defined as 'any purposeful effort or authoritative decision on the part of governments or non-government groups to minimise or prevent alcohol-related consequences. Policies may involve the implementation of a specific strategy with regard to alcohol problems (e.g. increase alcohol taxes), or the allocation of resources that reflect priorities with regard to prevention or treatment efforts.'

Reviews of the effectiveness of alcohol policies seem to agree that the most effective policy measures include minimum legal purchase age laws, restrictions on hours or days of sale, outlet density restrictions, alcohol taxes, random breath testing and lower blood alcohol concentration limits for drivers, and brief interventions in primary care settings for hazardous drinkers. Measures that generally do not work well include school-based education, alcohol industry-funded educational programmes, public information campaigns, designated driver campaigns, and advertising self-regulation.^{1, 153}

In 2010, the WHO published *Global Strategy on the Harmful Use of Alcohol*,¹⁵⁴ which was endorsed by all 193 WHO member states, including Ireland. The strategy aims to reduce the harmful use of alcohol by giving guidance for action at all levels, and setting priority areas for global action. The strategy provides a portfolio of policy options and interventions that fall into the following 10 categories:

1. Leadership, awareness and commitment
2. Health services response
3. Community action
4. Drinking-and-driving policies and countermeasures
5. Availability of alcohol

6. Marketing of alcoholic beverages
7. Pricing policies
8. Reducing the negative consequences of drinking and alcohol intoxication
9. Reducing the public health impact of illicit alcohol and informally produced alcohol
10. Monitoring and surveillance.

One of the strategy's principles is that public policies and interventions to prevent and reduce alcohol-related harm should be guided and formulated by public health interests, and based on clear public health goals and the best available evidence. The WHO also stresses the importance of developing surveillance systems to monitor progress when formulating alcohol policies. In addition, it states that countries should develop their own permanent coordinating entity (e.g., a national alcohol council) including senior representatives from all involved departments of government as well as representatives from civil society and relevant professional associations. The WHO strategy document identifies a number of significant challenges that may impede the implementation of alcohol policies. It states that the globalisation of the alcohol industry has increased the power of a few producers who are able to influence policies at the country level and protect their commercial interests, which are in conflict with public health goals. It also states that the alcohol industry should have no role in formulating policies, which must be protected from vested interests. Trade agreements may also be a potential threat if they do not protect public health policies aimed at saving lives and protecting young people from alcohol marketing and promotion.

Alcohol policy in Ireland

Overview of past 25 years

Table 8 provides an overview of alcohol policy in Ireland over the past 25 years.

Table 8 Alcohol policy activity in Ireland, 1990–2015
(adapted from Hope and Butler 2010)¹⁵⁵

1990	Minister for Health requested the development of a National Alcohol Policy
1994	BAC for drivers reduced to 0.80 mg
1994 to 2001	No increase in alcohol taxes
1996	National Alcohol Policy published by government
2000	Intoxicating Liquor Act, 2000 <ul style="list-style-type: none"> » Longer opening hours » Free movement of licences allowed » Lifting of restrictions for granting of certain licences » Temporary closure for selling to minors
2002	Tax increase on cider (December 2001 Budget) Strategic Task Force on Alcohol Interim Report
2003	Tax increase on spirits (December 2002 Budget) Intoxicating Liquor Act, 2003 <ul style="list-style-type: none"> » Revert to earlier pub closing time on Thursday nights » Temporary closure for serving to drunken customers » Ban on happy hours » Ban on children in pubs after 9pm (extended to 10pm subsequently) Proposed legislation to restrict alcohol marketing
2004	<i>Strategic Task Force on Alcohol – Second Report</i>
2005	Alcohol marketing legislation shelved in favour of industry self-regulation
2006	Mandatory alcohol testing (similar to random breath testing) Below-cost selling of alcohol allowed (Abolition of Groceries Order)
2008	<i>Report of the Government Alcohol Advisory Group</i> Intoxicating Liquor Act 2008 <ul style="list-style-type: none"> » Earlier closing time for off-licences » Regulation to restrict promotions changed to industry self-regulation Tax increase on wine (December 2007 Budget)
2010	Tax decrease on all drinks (December 2009 Budget) Road traffic bill <ul style="list-style-type: none"> » Reduction in BAC to 20 mg per 100 ml for learner, novice and professional drivers » Reduction in BAC to 50 mg per 100 ml for other drivers » Mandatory testing of drivers involved in collisions

Table 8 Alcohol policy activity in Ireland 1990–2015 (adapted from Hope and Butler 2010)¹⁵⁵ (cont.)

2013	Tax increase on all drinks (December 2012 Budget)
2014	Public Health (Alcohol) Bill announced » The introduction of minimum pricing » Regulation of the marketing and advertising of alcohol » Health labelling of alcohol products » Enforcement powers to be given to Environmental Health Officers in relation to sale, supply and consumption of alcohol products
2015	Public Health (Alcohol) Bill 2015 published

In 1996, a National Alcohol Policy was published by the Department of Health on behalf of the government.¹⁵⁶ This policy advocated evidence-based environmental and individual measures to reduce alcohol-related problems in Ireland, including limiting availability and access to alcohol, taxation, and drink driving regulations, as well as strategies oriented to individual prevention and treatment. While the policy stressed the importance of a multisectoral approach, it appears that no proper strategies were put in place for its implementation and, consequently, its impact is debatable as its effectiveness was never measured. In 2000, a Commission on Liquor Licensing was set up by the Department of Justice 'to review the liquor licensing system and to make recommendations for a system geared to meeting the needs of consumers in a competitive market economy, while taking due account of the social, health and economic interests of a modern society'. Its membership predominantly comprised people involved in aspects of the licensing trade and had very little public health input; the main premise of the Commission's recommendations promoted a greater availability of alcohol.¹⁴²

The Strategic Task Force on Alcohol was established by the Minister for Health in 2001 'to provide advice on best practice in alcohol harm prevention measures'. It had a broad public health remit and provided a comprehensive review of the problems associated with alcohol use in Ireland; in addition, it presented evidence-based strategies for the reduction of alcohol consumption and related harm.^{140, 157} However, like its predecessor, the National Alcohol Strategy,

it lacked an implementation plan. In 2008, the Department of Justice again set up a steering group, which included public health representatives, to examine the conditions of the off-licence retail sector.¹⁵⁸ The steering group's recommendation of a reduction in the opening hours of off-licences was the only significant measure put in place. Representatives of the drinks industry and the retail sector successfully lobbied to dilute the regulations regarding structural separation. As an alternative, self-regulation by the retail sector was introduced.

On foot of a government decision to integrate alcohol and illicit drugs into a combined National Substance Misuse Strategy, a steering group was established in 2009 to formulate an alcohol policy that could be integrated with the existing National Drugs Strategy going forward. In February 2012, the group reported their recommendations, which were presented under the pillars of supply, prevention, treatment and rehabilitation, and research, similar to the structure of the National Drugs Strategy 2009–2016. The steering group had a substantial public health input and made 45 recommendations.³ Unlike previous policy documents, the steering group report had a monitoring and implementation plan. In October 2013, the government announced that it had approved a number of measures to be incorporated in a Public Health (Alcohol) Bill to deal with harmful use of alcohol, and this Bill was published in December 2015.¹⁵⁹ The Bill aims to reduce alcohol consumption in Ireland to 9.1 litres of pure alcohol per person per annum by 2020 and to reduce alcohol-related harm. Table 9 presents

the recommendations of the steering group report and the proposed government measures in relation to minimum unit pricing, alcohol advertising, sports sponsorship, and structural separation of alcohol from other products in mixed trading outlets.

While the Bill is broadly similar to the steering group recommendations, the recommendation to phase out drinks industry sponsorship has been delayed indefinitely.

Table 9 Steering group and Public Health (Alcohol) Bill measures

Steering group recommendations	Public Health (alcohol) Bill measures
Minimum unit pricing	
Introduce a legislative basis for minimum pricing per gram of alcohol.	Minimum unit pricing will be introduced and set at 10 cent per gram of alcohol in the product.
Alcohol advertising	
<p>Introduce a statutory framework with respect to the volume, content, and placement of all alcohol advertising in all media in Ireland (including the advertising of pubs or clubs). At a minimum, the legislation and statutory codes should provide for:</p> <p>A 9.00 p.m. watershed for alcohol advertising on television and radio;</p> <p>Alcohol advertising in cinemas to only be associated with films classified as being suitable for over-18s;</p> <p>Prohibition of all outdoor advertising of alcohol; and</p> <p>All alcohol advertising in the print media to be subject to stringent codes, enshrined in legislation and independently monitored.</p>	<p>Content - the content of advertisements for alcohol products is restricted and includes:</p> <ul style="list-style-type: none"> an image or reference to an alcohol product; the country and region of origin, method of production and place of manufacture; the price; a brand/corporate name, trade mark; health and pregnancy warnings; details of an alcohol public health website to be provided by the HSE; and the ABV, quantity in grams of alcohol and energy value. <p>Outdoors - no advertising of alcohol products at: schools, creches, public play grounds, (or within 200 metres of these); public transport (trains, trams, buses, taxis, etc); bus/train/tram stops/stations.</p> <p>Publications - advertising space for alcohol products restricted to 20% per publication. No advertising of alcohol products in publications aimed at children or on front/back cover or wrapper.</p> <p>Cinema - advertising of alcohol products restricted to over 18s classified films and licensed premises.</p>

Table 9 Steering group and Public Health (Alcohol) Bill measures (cont.)

Steering group recommendations	Public Health (alcohol) Bill measures
Sports sponsorship	
<p>Drinks industry sponsorship of sport and other large public events in Ireland should be phased out through legislation by 2016. In the intervening time, it should not be increased.</p>	<p>The government requested a working group to report on the value, evidence, feasibility and implications of regulating sponsorship by alcohol companies of major sporting events, and its consideration of financial implications and alternative sources of funding for sporting organisations to replace potential lost revenue arising from any such regulation. This group could not reach clear evidence-based conclusions on the actual costs and benefits of further regulation. They concluded that the most useful approach would be to identify a range of options which could be taken, and seek to elaborate on the likely advantages and disadvantages of each approach, in order to inform consideration by government.</p>
Structural separation	
<p>Commence Section 9 of the Intoxicating Liquor Act 2008, which provides for the structural separation of alcohol from other products in mixed trading outlets, including supermarkets, convenience stores and garage forecourts.</p>	<p>Stores will have to choose to store alcohol either in a separate area of the store, or in a closed cabinet. A premises which sells alcohol products will be required to separate the alcohol from every day products by:</p> <p>confining the sale of alcohol to a single area in the premises which is separated, through which alcohol products are not visible, and to which customers do not have to pass through to buy “ordinary” products; or</p> <p>a closed storage unit(s) which contains only alcohol products.</p>

In addition to the measures in table 9, labels on alcohol products will include the number of grams of alcohol per container, calorific content, and health warnings in relation to consuming alcohol in pregnancy. Public health messaging relating to alcohol will be based on grams of alcohol; weekly low-risk drinking guidelines will be 168 grams (17 standard drinks) for men and 112 grams (11 standard drinks) for women. The other measures set out in the steering group report are endorsed by government and will be progressed by the relevant departments and organisations, as set out in that report.

It is somewhat surprising that given the high-profile nature of Irish people's harmful relationship with alcohol, it has taken so long for alcohol use to be addressed as a public health issue. In the past two decades there have been numerous government committees and reports relating to alcohol policy (Table 10), although the effectiveness of these is debatable. While a number of these reports advocated alcohol control strategies, they were effectively ignored by successive governments. It has been suggested that due to the generally neoliberal ethos of this era and active lobbying from the drinks industry, little or no implementation of such policies and strategies occurred.¹⁵⁵

Public support for alcohol policies

It is generally accepted that effective strategies for reducing the burden of alcohol-related harm, such as decreasing affordability and availability, are sometimes unpopular with legislators and the public, and are therefore less likely to be implemented, whereas politically popular strategies such as education are generally not very effective.¹⁶⁰ The public's acceptability of effective policy interventions can be a barrier to their introduction, and popular support plays an important role in passing legislation related to alcohol. The public may be more supportive of policies that they perceive will apply to someone else, such as drunk drivers or individuals under the legal drinking age.

In Ireland there is good public support for a number of effective alcohol policies. In 2012, following the publication of the steering group report, a survey was conducted among 1,020 respondents in Ireland to determine the extent of

Table 10 Government alcohol policy groups/committees and reports published, 1996–2015

Year	Government group established
1996	National Alcohol Policy
1996	Oireachtas committee on licensing
2000	Commission on Liquor Licensing – four reports between 2000 and 2003
2002	Strategic Task Force on Alcohol – interim report published in 2002 and second report published in 2004
2005	Sustaining progress
2008	Government Advisory Group On Alcohol
2009	Working Group On Sports Sponsorship By The Alcohol Industry established
2009	Steering Group for National Substance Misuse Strategy – reported in 2012
2013	Working Group On Regulating Sponsorship By Alcohol Companies Of Major Sporting Events established and report published in 2014
2006–2011	Oireachtas Committees on Health, Arts, Sports <ul style="list-style-type: none"> - The Inclusion of Alcohol in a National Substance Misuse Strategy – 2006 - The relationship between alcohol misuse and the drinks industry sponsorship of sporting activities – 2007 - Combating underage alcohol abuse through sport – 2010 - Report on the misuse of alcohol and other drugs – 2012 - Report on sponsorship of sports by the alcohol drinks industry – 2013 - Report on the pre-legislative scrutiny of the general scheme of the Public Health (Alcohol) Bill 2015

public support for measures to address alcohol use.¹² There was a strong belief (85%) that the current level of alcohol consumption in Ireland is too high. There was support for implementing some of the specific measures in the steering group report. Almost 6 out of 10 (58%) respondents supported minimum unit pricing (MUP). Over one-fifth (21%) would not support MUP, with the lack of support (at 33%) highest among those aged 18–24 years. Forty-seven per cent agreed that the government should reduce the number of outlets selling alcohol, whereas 28% disagreed; 40% agreed with selling alcohol in separate premises from food and other household products, whereas 32% disagreed. The majority supported restricting certain forms of alcohol advertising, with 40% supporting a ban on all alcohol advertising; 80% supported banning alcohol advertising in cinemas before screening movies rated as suitable for viewing by those aged 17 years or under; 76% supported banning any alcohol advertising on TV and radio before 9.00 pm; 70% supported banning alcohol advertising on social media; and 57% supported a ban on alcohol advertising on billboards and at bus stops. Two-fifths (42%) supported a ban on the alcohol industry sponsoring sporting events. There was a desire for better labelling of alcohol containers; the vast majority of respondents wanted information on the alcohol strength (98%), the number of calories (82%), details of alcohol-related harms (95%) and a list of ingredients (91%). There was near universal support (94%) for the mandatory testing of the alcohol levels of drivers involved in traffic accidents. More than 8 out of 10 respondents (84%) agreed that those convicted of drink driving on more than one occasion should have an 'alcohol lock' fitted in their car.

An analysis of public support in Ireland for alcohol control policies in 2002, 2006 and 2010 examined attitudes towards pricing, availability, marketing, and drink driving.¹⁶¹ The highest support across the three time periods was for drink driving countermeasures (91.1% in 2010). Support for stricter measures on price and availability was lower. Over time, there was a decline in support for tax increases (18.9% in 2010) and for early closing times (20.9% in 2010), whereas support for fewer off-trade outlets increased (32.5% in 2010). There was a significant increase in support for alcohol advertising restrictions on television and in public places (75.2% support in 2010), but there was no significant change in the level of support for restrictions in sports sponsorship by the alcohol industry (57.5% in 2010).

In the next section we discuss the policy measures that have generated the most debate in Ireland – pricing policies, marketing and sports sponsorship by alcohol companies.

Pricing policies

Alcohol is price sensitive – increasing the cost of alcohol reduces its consumption, and decreasing the cost of alcohol increases its consumption. Price is therefore often used as a policy lever to reduce alcohol consumption and its related health and social harms. Alcohol taxation and minimum unit pricing are two examples of pricing policies, and their effectiveness and their implementation in Ireland will be described here.

Alcohol taxation

In most countries the price of alcohol is increased above its production and distribution costs through alcohol taxes. The price of alcohol to the consumer usually includes a profit margin. In general, a reduction in excise duty rates leads to increased alcohol sales, lower excise receipts and higher consumption, whereas an increase in excise duty rates leads to reduced alcohol sales, higher excise receipts and lower consumption. An illustration of the link between tax, price and consumption is provided by Finland,¹⁶² where in 2004 the government reduced alcohol excise duty by an average of 33% in order to reduce the number of cheap imports. The result was an immediate 10% increase in consumption and a 17% increase in alcohol-related mortality, equivalent to approximately eight additional alcohol-related deaths per week. A meta-analysis combined data from 112 studies of alcohol prices and concluded that alcohol sales increase when prices fall, and sales decrease when prices (or taxes) increase; in addition, tax increases affect heavy drinkers as well as other drinkers.¹⁶³ Another systematic review of the literature reviewed 72 papers¹⁶⁴ and concluded that there was consistent evidence that higher alcohol prices and alcohol taxes are associated with reductions in both excessive alcohol consumption and related harms. A 10% increase in alcohol prices was associated with a 3–10% decrease in consumption. Results were robust across different countries, time periods, study design, and outcomes.

While excise duty may be introduced or increased due to public health considerations, it may also be an important source of State revenue. In Ireland, alcohol tax revenues accounted for 16.5% of all

State revenue in 1970,¹⁶⁵ but this had decreased to 5.0% by 1996.¹⁶⁶ There are two types of taxes on alcohol in Ireland – excise duties, which vary with the different categories of alcoholic drink, and VAT, a uniform rate currently set at 23%. Excise duties are normally reviewed annually by the Minister for Finance in his Budget and are not linked to inflation. The impact of recent excise duty rate changes in Ireland since 2002 is outlined in Table 11. These data were obtained from the Revenue Commissioners statistical reports. Between 1994 and 2002 there were no duty changes, which is one of the reasons that alcohol has become more affordable in the past two decades. The increases in excise on cider in 2002, spirits in 2003, and wine in 2008 led to reductions in the sale and consumption of each of these beverage types. In the December 2009 Budget, at the height of the economic recession, the government decided to

decrease excise duty on all beverage types by one-fifth. At a time when cuts to public services were being implemented, leading to hardship across Irish society, the decision to reduce excise duty resulted in a loss of €141,599,915 to the Exchequer as well as the costs associated with a 6% increase in overall alcohol consumption. The main winner of this decision was the alcohol industry, which sold an additional two million litres of pure alcohol (equivalent to 8.2 million 700 ml bottles of vodka or 22.9 million bottles of wine). This decision was reversed in December 2012 and excise duty on all beverage types was increased by 37–62%. This led to an 8.3% decrease in overall consumption and an increase of €155,958,404 in duty receipts in 2013.

Table 11 Impact of excise duty changes in Ireland since 2002

Year	Excise change	Impact on alcohol industry	Impact on Exchequer	Impact on public health
2013	Beer ↑44% Spirits ↑37% Wine ↑62% Cider ↑44%	Litres sold ↓3,490,027	↑€155,958,404	Overall consumption ↓8.3%
2010	All alcohol ↓20–21%	Litres sold ↑ 2,149,624	↓€141,599,915	Overall consumption ↑6%
2008	Wine ↑20%	Litres sold ↓334,206	↑€1,130,436	Wine consumption ↓6%
2003	Spirits ↑42%	Litres sold ↓1,935,707	↑€38,564,205	Spirits consumption ↓21%
2002	Cider ↑87%	Litres sold ↓418,693	↑€26,028,516	Cider consumption ↓13%

Although taxation is considered an effective policy lever in reducing alcohol consumption, it may not be successful in curbing the sale of cheap alcohol because some retailers – particularly supermarkets that sell cheap alcohol and use it as a loss leader – can simply absorb tax increases. In Ireland, when alcohol is sold below cost price, the retailer is entitled to a VAT refund on the difference between the cost price and the below-cost sale price. In effect, this means that the government is subsidising large retailers that can afford to sell alcohol at below cost price. No research has been conducted in Ireland to confirm if retailers pass on tax increases to the consumer. However, a 2014 UK study measured the extent to which UK retailers passed on duty changes to consumers following three duty changes, two VAT changes, and one combined duty and VAT change, between 2008 and 2011.¹⁶⁷ The study found that alcohol retailers treated cheap and expensive alcohol differently; for the cheapest 15% of alcohol products, prices were raised below the level of the tax increase, whereas for alcohol products sold above the median, price increases were higher than duty increases. This potentially reduces the effectiveness of tax increases as a policy lever. Cheaper alcohol is usually consumed by high-risk and younger drinkers,¹⁶⁸ and if price increases are not passed on to these consumers, then smaller consumption reductions will be achieved. In addition, taxation may have a greater impact on the on-trade, where the price of alcohol is already considerably more expensive, and where operators will be more likely to pass on the tax increase to the consumer.

Minimum unit pricing (MUP)

Minimum unit pricing (MUP) is the lowest price at which any alcohol beverage can be sold. Under such a regime, the price of a container of alcohol is set (by government), based on the number of grams of alcohol content in the beverage; consequently, the higher the number of grams of alcohol, the higher the minimum price will be. This increases the price of cheap imported alcohol rather than the price of high-quality beer and wine. In Ireland, alcohol has become more affordable, particularly in the off-trade sector. Cheap alcohol is also attractive to young people. Therefore, a minimum pricing policy is beneficial in that it targets the drinkers causing the most harm both to themselves and to society, while having little effect on the spending of adult low-risk drinkers. Whereas minimum pricing for most products is illegal, EU law (Treaty on the Functioning of the European Union) states that introducing a minimum

price for alcohol may be allowed, provided that it can be demonstrated that such a measure is both necessary and proportionate in order to reduce alcohol-related harm. In Scotland, the Alcohol (Minimum Pricing) (Scotland) Act 2012¹⁶⁹ was passed in June 2012. It has not yet been implemented due to a legal challenge led by the Scotch Whisky Association, which was referred to the European Court of Justice. The Court delivered its judgement in December 2015. The judgement states that MUP is not precluded by EU law if it is considered to be an appropriate and proportionate response for the protection of human life and health and this cannot be achieved by other measures, such as increased taxation. The test as to whether MUP is legal or not comes down to whether it is more appropriate and proportionate than less restrictive tax measures, namely increasing excise duty. The judgment states that the final test for whether or not MUP meets this condition of proportionality rests with the national courts. In light of this judgement the legal challenge to the Scottish Government's introduction of MUP will now be reconsidered by the Court of Session in Scotland.¹⁷⁰

The Sheffield Alcohol Research Group at the University of Sheffield appraised 18 pricing policies in 2010 using an epidemiological mathematical model based on English data. These policies included a range of different MUP prices, discount bans, general price increases, and combinations of these. The results indicated that general price increases were effective for reducing consumption, healthcare costs, and health-related quality of life losses in all population subgroups. MUP had a similar level of effectiveness among harmful drinkers, with fewer effects experienced by moderate drinkers. Very low MUP (<£0.40 thresholds had little effect, whereas effectiveness rapidly accelerated between thresholds of ~£0.40 and £0.70. Tight restrictions or total bans on off-trade discounting could have some positive effects.¹⁶⁸ A research study carried out in a liver unit in the UK analysed alcohol consumption and expenditure among 404 patients, and reported that patients with alcoholic liver cirrhosis consumed vast amounts of cheap alcohol. The mean weekly alcohol consumption was 117 standard drinks for men and 114 standard drinks for women. The cost per standard drink was £0.41 among liver cirrhosis patients compared with £1.36 among low-risk drinkers. The authors estimated that the

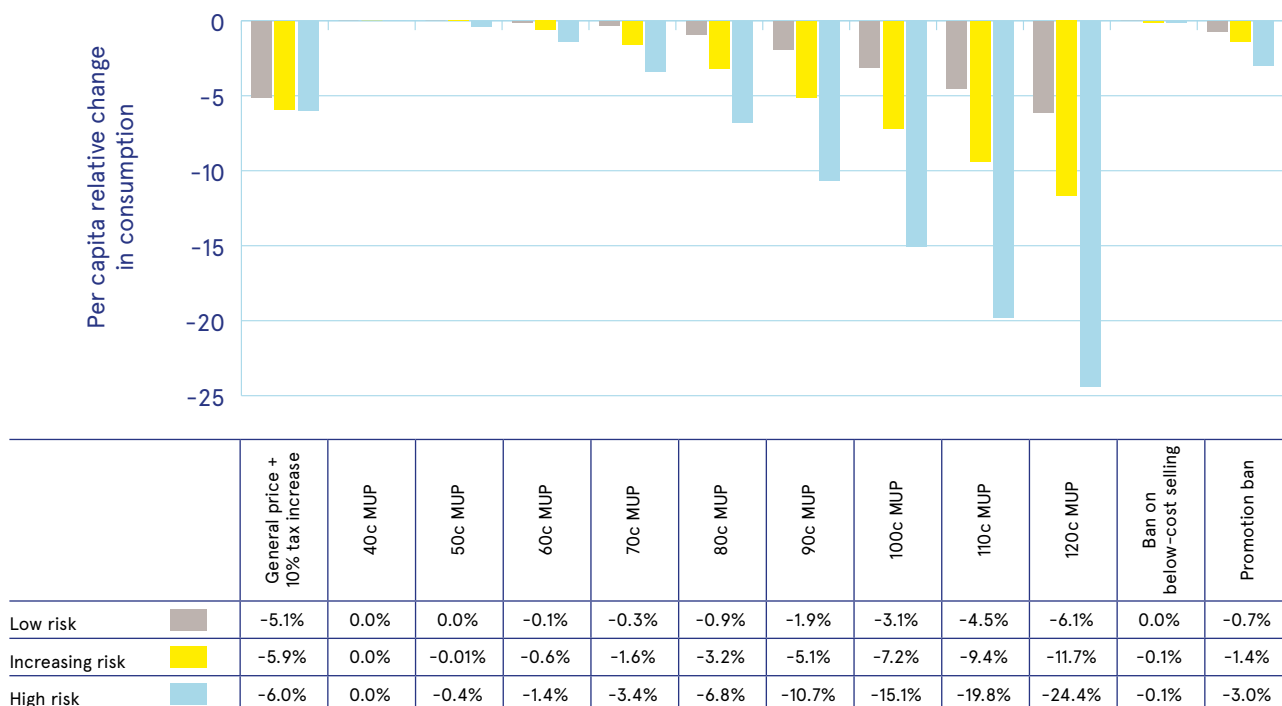
impact of introducing MUP would be 200 times higher for patients with liver disease who were drinking at harmful levels than it would for low-risk drinkers.¹⁷¹

In some Canadian states minimum liquor prices have been set by provincial government monopolies. In British Columbia, the minimum price for a litre of alcoholic beverage is set without any reference to ethanol content. By contrast, in recent years in Saskatchewan, prices were overhauled to reflect more clearly the ethanol content of the drinks to which they were applied. In Saskatchewan, a 10% increase in minimum prices significantly reduced consumption of beer by 10.1%, spirits by 5.9%, wine by 4.6%, and all beverages combined by 8.4%.¹⁷² Research in British Columbia has shown that a 10% increase in the minimum price reduced consumption of all alcoholic beverages by 3.4%¹⁷³ and was associated with a 31.7% reduction in wholly alcohol-attributable deaths.¹⁷⁴ There was an 8.9% reduction in acute hospital attributable hospital admissions and, two years later, a 9.2% reduction in chronic alcohol attributable admissions.¹⁷⁵ It was also associated with an 18.8% reduction in alcohol-related traffic violations, and a 9.2% reduction in crimes against persons.¹⁷⁶

MUP in Ireland

In 2013 the Sheffield Alcohol Research Group was commissioned by the Department of Health to adapt the Sheffield pricing model for alcohol to Ireland, in order to determine the effects of introducing a MUP per 10 grams of alcohol or per standard drink over a 20-year period, and to assess how MUP compares to, or enhances, other pricing policies. Other pricing policies included a 10% price rise on all alcohol products, a ban on below-cost selling, a ban on price-based promotions in the off-licence trade, and a combination of MUP policies with a ban on price-based promotions.⁸² The pricing model suggests that introducing MUPs below 70 cent in Ireland has a very small impact on reducing alcohol consumption (Figure 25), but alcohol consumption starts to reduce when the MUP is set at 70 cent or higher. For a 100 cent MUP per standard drink, the estimated per drinker reduction in alcohol consumption for the overall population is 8.8%. As this is a targeted pricing policy, high-risk drinkers have larger estimated reductions in alcohol consumption than lower-risk drinkers, as a result of MUP policy. For example, the estimated reductions in consumption for a 100 cent or one euro MUP are 15.1% for high-risk drinkers, 7.2% for increasing-risk drinkers and 3.1% for low-risk drinkers. These reductions correspond to an annual reduction of 57.2 standard drinks per drinker per year (494 standard drinks per year for high-risk drinkers, 83.2 standard drinks for increasing-risk drinkers and 5.2 standard drinks for low-risk drinkers).

Figure 25 Effect of MUP on alcohol consumption by type of drinker



For a 100 cent MUP, the estimated per drinker change in alcohol expenditure for the overall population is 1.3%, and this equates to an average annual increase of €15.70. As this is a targeted pricing policy, high-risk drinkers will save €106.60 (-2.1%) each year as a result of an MUP policy, whereas increasing-risk drinkers will spend an extra €25.40 (1.1%) per year on alcohol, and low-risk drinkers will spend an additional €24.20 (4.8%). For a 100 cent MUP policy, the total savings from reduced direct healthcare costs, savings from reduced crime and policing, savings from reduced workplace absence, and a financial valuation of the health benefits accruing from reduced alcohol consumption, is estimated at €1.7 billion cumulatively over the 20-year period modelled.

The Sheffield Alcohol Research Group also analysed the potential impact of alternative pricing policies. These include:

- » **Price promotion ban** – Banning all off-trade price-based promotions is estimated to reduce per person alcohol consumption by 1.8%. The estimated reductions are 3% for high-risk drinkers, 1.4% for increasing-risk drinkers and 0.7% for low-risk drinkers (Figure 25). Over the 20-year period modelled, the total societal value of the harm reductions resulting from a ban on promotions is estimated as €0.38 billion.
- » **Ban on below-cost selling** – A ban on below-cost selling, implemented as a ban on selling alcohol for below the cost of duty plus the VAT payable on that duty would have a negligible impact on alcohol consumption (Figure 25) or related harms. It would save a cumulative €31.4 million over 20 years.
- » **Overall tax increase** – The introduction of a 10% tax increase on the price of alcohol across all types of alcohol (cheap and expensive) would decrease alcohol consumption for all drinkers by 5%–6% and would affect low-risk, increasing-risk and high-risk drinkers equally (Figure 25). It would have health benefits as well as reducing crime and workplace absences. The total societal value of the harm reductions arising from a general price increase over the 20-year period modelled is estimated at €1.3 billion cumulatively.

There is unequivocal evidence that pricing policies can be effective in reducing alcohol consumption and its related harms. However, these policies are often opposed by the alcohol industry. In the *Steering Group Report on a National Substance Misuse Strategy*, the Alcohol Beverage Federation

of Ireland (ABFI) was opposed to fiscal measures to increase the price of alcohol. The report states that *'it (ABFI) is not convinced that the evidence supports such measures. The alcohol industry does not believe that increasing excise duties and introducing a minimum price for alcohol will reduce alcohol misuse.'*¹⁷⁵

Overview of alcohol marketing practices

Alcohol is one of the most heavily marketed products in the world.¹⁷⁷ The alcohol industry promotes its products using an integrated mix of marketing strategies and media, including marketing at the place of sale; advertising on television, magazines, newspapers, cinema and billboards; product placement in films and television programmes; newer forms of electronic communication such as social network sites; and sponsorship of events, teams etc. Alcohol marketing communicates a legitimacy and status to alcohol that belies the harms associated with its use. Alcohol marketing therefore influences social norms, and there is substantial evidence that these in turn influence young people's relationship with alcohol. The more common and the more acceptable that young people believe drinking is, both in society as a whole and among their peers, the more likely they are to be a drinker and to consume greater quantities of alcohol. The strongest evidence on the impact of alcohol advertising to date comes from systematic reviews of longitudinal studies.^{178, 179} These reviews provide evidence that exposure to alcohol advertising and promotion predicts both the onset of drinking among non-drinkers and increased levels of consumption among existing drinkers. There is increasing evidence that the impact of alcohol marketing is cumulative.^{180, 181}

Alcohol marketing in Ireland

In 2013, Alcohol Action Ireland commissioned the National University of Ireland, Galway to measure the exposure of 686 13–17-year-olds in Irish secondary schools to alcohol marketing, including the intensity and type of exposure, as well as their drinking behaviours and intentions.¹⁸² Some of the main results from this research are presented in Table 12.

Table 12 Percentage of students reporting exposure to various types of alcohol marketing

	Online exposure	Non-online exposure	Alcohol-branded merchandise ownership	Last sports event attended was sponsored by an alcohol brand	Last music event attended was sponsored by an alcohol brand
All students	77.2	90.9	61.2	18.3	16.1
Boys	74.0	90.5	71.4	22.8	15.4
Girls	80.8	91.3	50.0	13.2	16.9
13–15-year-olds	74.9	90.7	63.9	18.6	14.6
16–17-year-olds	79.6	91.0	58.5	18.0	17.6

Girls were more likely than boys to report online exposure to alcohol advertising. Boys were more likely to report that the last sports event they attended was sponsored by an alcohol brand, and to report that they owned alcohol-branded merchandise. Younger children were as exposed as older children to alcohol advertisements. Children reported to have seen an average of 7.4 alcohol advertisements in the week prior to the survey (boys 8.2, girls 6.5). Those aged 13–15 years reported seeing more advertisements than 16–17-year-olds (7.6 versus 7.2). Overall, 56% reported seeing more than four advertisements on a weekday and 54% reported seeing more than four advertisements on a weekend day. Increased exposure to alcohol marketing increased the risk of children engaging in the drinking behaviours examined (drinking alcohol, binge drinking, drunkenness, intention to drink in the next year), compared with children who were not exposed to alcohol marketing. In general, the higher the number of exposures (alcohol advertisements), the more common the drinking behaviours became. Owning merchandise, which may be described as engagement with alcohol brands beyond passive exposure, was the strongest predictor of alcohol behaviours.

Alcohol Action Ireland's *Have We Bottled It?* survey in 2010¹⁸³ found that among 16–21-year-olds, alcohol advertisements represented five out of their top ten favourite advertisements. The survey also looked at the awareness of alcohol advertising and merchandise among 16–17-year-olds:

- » 39% owned alcohol-branded merchandise, such as clothing.
- » 26% had a sports jersey with an alcohol brand name on it.

- » Five of their top-ten favourite television advertisements were alcohol related.
- » 30% had viewed an alcohol advertisement on the online social networking site Facebook.
- » One in five said they had received an online quiz about alcohol or drinking.

A study examined primary schoolchildren's awareness of sponsorship by the alcohol industry during Munster's 2008 Heineken Cup win. For many of the children in the study, Munster Rugby was associated with the Heineken Cup, which in turn was associated with alcohol. There was significantly higher awareness of Heineken being the sponsor of the cup among children in Munster (69.9%) compared with children outside Munster (21.5%).¹⁸⁴

Research by the National Youth Council of Ireland in 2007¹⁸⁵ reported that young people listed 16 different communication channels where they were exposed to alcohol marketing practices – the most commonly mentioned being television, magazines/newspapers, Internet, street flyers, billboards and supermarkets/shops. Integrated marketing was common. Two-thirds of the young people reported that they had seen the same alcohol products in other media channels. One in every four of the alcohol marketing practices recorded involved a price promotion such as special offers, free alcohol, volume sales and deep discounts, with street flyers and supermarkets the main channels of communication. The elements of the alcohol marketing practices that particularly appealed to young people were humour, cleverness, cheap/free alcohol and attractiveness. A study on *The Impact of Alcohol Advertising on Teenagers in Ireland* in 2001¹⁸⁶ reported that Irish adolescents were strongly attracted to alcohol advertisements, and this played a role in their beliefs, expectations and knowledge about alcohol use. For some

adolescents, especially girls, they were a source of encouragement to drink, with those aged 12–14 years the most vulnerable group. The current advertising of alcohol rarely concerns the product itself, but normally focuses on the image of a brand. Especially for young target groups, who constitute the future body of customers, the product has become subservient to the image. The available Irish research suggests that Irish young people and children are exposed to positive images of alcohol on a daily basis. In this way, the alcohol industry becomes a child's primary educator on alcohol, with the associations with healthy activities such as sport greatly aiding this miseducation.

Online marketing

There is a growing trend for marketing to shift away from traditional forms of direct advertising in the print and broadcast media, known as 'above-the-line' activity, to 'below-the-line' activity, such as sponsorship, competitions and special promotions, and an increased focus on new media online and social networking sites via smartphones. Alcohol marketing on the Internet is increasing rapidly; in 2011, online marketing became the largest marketing channel in the UK, overtaking television for the first time,¹⁸⁷ and the highest frequency of alcohol marketing seen by adolescents online was on social networking sites.¹⁸⁸ Online marketing may allow more meaningful interaction with the consumer compared with traditional forms of advertising. Due to the increase in online activity, the alcohol industry is able to reach young people at a very vulnerable age. It was estimated that Heineken and Google's partnership deal in 2011 to increase Heineken's YouTube activity would result in at least 103 million minors worldwide being exposed to the harmful effects of alcohol marketing on a monthly basis.¹⁸⁹ A cross-sectional analysis of 9,032 students' exposure to online marketing in four European countries – Germany, Italy, the Netherlands and Poland – reported high exposure to online alcohol marketing.¹⁹⁰ Higher exposure was associated with higher odds of becoming a binge drinker and there was a dose-response effect, with higher levels of exposure being associated with higher odds of becoming a binge drinker.

Alcohol Concern's publication *New Media, New Problem? Alcohol, young people and the internet* provides a comprehensive overview of alcohol and online media.¹⁹¹ It states that alcohol companies are present on social networking sites, including Facebook and Twitter, and on video sharing sites

such as YouTube. Alcohol brand websites often include features such as interactive games, competitions and videos that may appeal to minors. Age verification mechanisms designed to restrict access to social networking and alcohol brand websites to adults are often ineffective, as all that is required is entering a fictitious date of birth in order to bypass them. The boundaries between official marketing and user-generated unofficial content are becoming increasingly blurred. There are also many more user-generated pages that 'mirror' these official pages, which often consist of messages and images containing positive views on alcohol brands and products as well as describing or depicting acts of excessive consumption and drunkenness. Teenagers may present themselves as being able to consume large volumes of alcohol and are keen to be seen by their peers as 'drinkers'. This ultimately contributes to the normalisation and acceptability of alcohol consumption, including heavy drinking. In this way, young people themselves have become part of alcohol marketing strategies, and it can be difficult for policy makers to differentiate official advertising by alcohol companies from content provided by consumers.

Sports sponsorship

The topic of sports sponsorship by alcohol companies has probably generated the most debate in relation to alcohol policy in Ireland in recent years. Sponsorship of the major sports in Ireland by alcohol companies began in the early 1990s, intensified over the years, and, for most of these sports, continues today.¹⁵⁵ It is conservatively estimated that alcohol industry sponsorship of sporting events in Ireland in 2012 amounted to approximately €35 million.¹¹ In 2014, of the 20 clubs in the English Premier League, which is followed by many young people in Ireland, only two were not sponsored by drinks companies.¹⁹² In 2011, Anheuser-Busch InBev credited Budweiser's sponsorship of the 2010 World Cup as a key factor in Budweiser sales growing by 36.1%.¹⁹² The public perception of sponsorship is often more favourable than the public perception of advertising. It is generally accepted that the share prices of companies react positively to sports sponsorship, and that customers operate under the assumption that if a brand is good enough to back a much-loved sport, then it's good enough for them.

It has proven more difficult to document links between sports sponsorship and alcohol consumption. The strongest evidence of the health impact of sponsorship is on the athletes

themselves. A recent systematic review analysed the relationship between exposure to sports sponsorship and alcohol consumption.¹⁹³ The review identified seven relevant studies that had a combined 12,760 participants. All seven studies reported positive associations between exposure to alcohol sports sponsorship and increased levels of consumption, including risky drinking among adult athletes and schoolchildren.

Alcohol marketing regulation

There are many ways to limit exposure to alcohol marketing, ranging from avoiding the use of humour and glamour and other youth-appealing aspects, to avoiding sponsorship and television and cinema advertising, all the way up to a complete ban. In some jurisdictions, alcohol marketing relies on self-regulation implemented by commercial industries, including advertising, media, and alcohol producers. However, the WHO has stated that statutory regulation of alcohol marketing seems to be more effective than self-regulation in limiting appropriate exposure of marketing to children and young people.^{153, 154} Limiting exposure to attractive advertisements by adjusting their content can be an important restriction. France's loi Évin provides an example of national-level legislation that has achieved a comprehensive ban on alcohol marketing. In France, advertisements for alcohol can only contain product information, such as the name of the product, percentage of alcohol by volume, origin, name and address of the manufacturer, and consumption mode of the product. Regulation also needs a clear legislative framework. Effective regulation should include required pre-screening of advertisements, an effective complaints system, effective sanctions, and an independent monitoring system that routinely monitors the content and volume of alcohol marketing.

The alcohol industry consistently disputes the link between marketing and increased consumption, claiming that marketing simply acts as a brand differentiator. The protection of alcohol marketing has been a major focus for vested interest groups, which has probably affected governmental responses; this has certainly been the case in Ireland. Although numerous Irish policy reports have advocated marketing restrictions, no statutory restrictions have been introduced. In Ireland in 2003 the Minister for Health announced his intention to introduce legislation restricting alcohol marketing. The proposed legislation, namely the Alcohol Products Bill (Control of Advertising, Sponsorship and Marketing Practices/

Sales Promotions), was approved by the government, but it was not enacted. In December 2005, the new Minister for Health scrapped the proposed legislation after active lobbying by the alcohol industry, and established, under the auspices of the Department of Health, the Alcohol Marketing Communications Monitoring Body who developed voluntary codes of practice on placement and sponsorship. This body comprised industry, advertising, media and health official representatives and they were also responsible for overseeing compliance with voluntary codes.¹⁵⁵ The Public Health (Alcohol) Bill 2015 includes a number of advertising restrictions; however, these have not yet been enacted.

In relation to alcohol industry sponsorship of major sporting events, the steering group recommended this should be phased out legislatively by 2016. The government established a working group in 2013 to investigate the feasibility of this and ultimately decided to reject the steering group's recommendation. Documents obtained under the Freedom of Information Act by *The Irish Times* illustrate the extent to which the alcohol industry attempted to dissuade the government from implementing the steering group's recommendation.¹⁹⁴ These documents reveal that Diageo sent letters to the highest levels of government explaining corporate concerns, in addition to lobbying from industry groups such as Mature Enjoyment of Alcohol in Society (MEAS), the Drinks Industry Group of Ireland, Irish Distillers, and the Alcohol Beverage Federation of Ireland, a division of Ibec. The major sporting organisations that presented submissions to the parliamentary committee stated that the loss of funding through sports sponsorship would have a detrimental impact on local clubs and on their capacity to offer development programmes for young people. The Football Association of Ireland (FAI) and the Irish Rugby Football Union (IRFU) expressed concerns that additional restrictions could jeopardise their chances of hosting international tournaments such as UEFA's Euro 2020 football competition (sponsored by Carlsberg) and the 2023 Rugby World Cup (sponsored by Heineken). However, sport in France, which banned sports advertising and sponsorship by drinks companies in 1991 with the introduction of its loi Évin legislation, seems to have survived and France was able to successfully host the FIFA World Cup in 1998 and the Rugby World Cup in 2007. Indeed, in 1998, Anheuser-Busch InBev, one of the main sponsors of the

FIFA World Cup, failed in its legal challenge to loi Évin at the European Court of Justice and was subsequently replaced by Casio, proving that sport can survive without alcohol sponsorship.

The regulation and/or restriction of alcohol advertising and sponsorship continues to generate debate. Few jurisdictions have enforced marketing bans and, as a consequence, there is little evidence to show that the imposition of a ban would reduce consumption, even though there is a considerable evidence base linking early exposure to alcohol marketing and initiation of alcohol use and heavy alcohol use. Ideally, an international response to alcohol marketing which crosses national boundaries is required, but this has been lacking. For example, a legislative ban introduced in Ireland would only apply to media licensed in Ireland and it would not prevent media outlets outside the country from advertising in the Irish market. Greater engagement between countries to explore the feasibility of introducing common restrictions on alcohol marketing at a European level would help. This has been achieved in relation to tobacco with the WHO's Framework Convention on Tobacco Control, which was the first-ever global health treaty and provides a framework for countries to enact comprehensive tobacco control legislation.

Conclusion

The data presented in this overview indicate that alcohol consumption in Ireland is too high and that harmful drinking patterns are more the norm than the exception. In 2014, per capita consumption was 20.9% higher than the target of 9.1 litres recommended in the *Steering Group Report on a National Substance Misuse Strategy*, while in 2013, at least 75% of all alcohol consumed was consumed during a binge drinking session. Given the ambivalence towards alcohol and drunkenness in Ireland, it is not surprising that the overall findings of this Overview illustrate the prolonged negative impact of alcohol in Ireland on individuals and the people around them.

At a population level, harmful use of alcohol is a serious public health issue. Alcohol is responsible for a considerable burden of health harm. It costs our health system at least €1.5 billion annually, money it can ill afford. Alcohol is also responsible for three deaths each day and approximately 4,000 self-harm presentations each year. The greatest burden of health harm is experienced by younger people. Three-quarters of all alcohol-related hospitalisations and deaths occurred to people under 65 years of age; in addition to the pain and suffering borne by these people and their families, which is likely to be considerable, there is also a cost in terms of loss in productivity. Drunkenness, alcohol-related violence and public disorder diminish quality of life, undermine confidence in public safety and play a substantial role in driving people's fear of being a victim of crime. This has a considerable human cost: innocent victims of alcohol-related violence may sustain injuries, and public disorder can increase people's fear of crime.

This Overview has a number of limitations. While some published evidence exists in Ireland on the health and social harms caused by alcohol, there are major gaps in our knowledge base. There is no national data system to record alcohol cases attending hospital emergency departments. Given Ireland's high level of drunkenness and binge

drinking, alcohol is likely to be a substantial burden on our emergency departments, and without these data it is not possible to capture the full picture regarding the cost of alcohol to our health system. We know very little about the extent of suffering experienced by the families of harmful drinkers in Ireland, although it is likely that they endure the most serious effects. There are no social work data systems that collect information on alcohol. While the PULSE system provides valuable information in relation to alcohol and crime, there are concerns regarding its quality and reliability. As there are few high-quality data systems that specifically monitor alcohol-related harm in Ireland, it is important that existing data systems are utilised in order to gather data across a range of alcohol harm indicators. It is vital that alcohol-related questions are included in national surveys such as the Crime and Victimisation Survey and the Quarterly National Household Survey, and we need information systems to collect data relating to hospital emergency departments and social work. In conclusion, Ireland requires high-quality information systems that are accurate and complete to monitor effectiveness indicators so as to determine if the policy or strategy is working.

On the basis of the available evidence, the health and safety of Irish people would be improved if policies were introduced to reduce overall alcohol consumption as well as risky drinking patterns. The international evidence is substantive and clear on the most effective policies to reduce alcohol harm; these policies include making alcohol more expensive, restricting availability and reducing the promotion of alcohol. It is encouraging that the Irish Government has published the Public Health (Alcohol) Bill 2015, as it contains a number of important evidence-based measures. However, the legislation needs to be implemented without delay if Ireland is to reduce per capita consumption to a more appropriate level and reduce the extent of alcohol-related harm endured by its citizens.

Appendix 1

ICD coding used by HIPE

Categories of ICD-9-CM alcohol-related morbidity codes (1995–2004)

Code	Mental and behavioural disorders due to use of alcohol
2910	Alcohol withdrawal delirium
2911	Alcohol amnestic syndrome
2912	Other alcoholic dementia
2913	Alcohol withdrawal hallucinations
2914	Idiosyncratic alcohol intoxication
2915	Alcoholic jealousy
2918	Other specified alcoholic psychosis
29181	Alcohol withdrawal
29189	Other 'other specified alcoholic psychosis'
2919	Unspecified alcohol-induced mental disorders
	Dependent use of alcohol
3030	Acute alcoholic intoxication
3031	Alcohol dependence syndrome continuous
3032	Alcohol dependence syndrome episodic
3033	Alcohol dependence syndrome in remission
3039	Other and unspecified alcohol dependence
30300	Acute alcoholic intoxication unspecified
30301	Acute alcoholic intoxication continuous
30302	Acute alcoholic intoxication episodic
30303	Acute alcoholic intoxication in remission
30390	Other and unspecified alcohol dependence unspecified
30391	Other and unspecified alcohol dependence continuous
30392	Other and unspecified alcohol dependence episodic
30393	Other and unspecified alcohol dependence in remission
	Non-dependent use of alcohol
3050	Alcohol abuse
30500	Alcohol abuse unspecified
30501	Alcohol abuse continuous
30502	Alcohol abuse episodic
30503	Alcohol abuse in remission
	Alcohol disorders – other
3575	Alcoholic polyneuropathy
4255	Alcoholic cardiomyopathy
53530	Alcoholic gastritis with no haemorrhage
53531	Alcoholic gastritis with haemorrhage

	Alcoholic liver disease
5710	Alcoholic fatty liver
5711	Alcoholic hepatitis
5712	Alcoholic cirrhosis of liver
5713	Alcoholic liver disease, unspecified
	Poisoning
E8600	Accidental poisoning by alcohol (alcohol beverages)
E8609	Accidental poisoning by alcohol (unspecified)
E9509	Intentional alcohol poisoning
E9809	Alcohol poisoning – undetermined intent
	Problems associated with prenatal alcohol use
76071	Fetal alcohol syndrome
	Evidence of alcohol involvement determined by blood alcohol level
7903	Excessive blood alcohol level
	Toxic effect of alcohol
9800	Toxic effect of ethyl alcohol
9801	Toxic effect of methyl alcohol
9802	Toxic effect of isopropyl alcohol
9803	Toxic effect of fusel oil
9808	Toxic effect of specified alcohol
9809	Toxic effect of unspecified alcohol

Categories of ICD-10-AM alcohol-related morbidity codes (2005–2013)

Mental and behavioural disorders due to use of alcohol	
F10.0	Acute intoxication
F10.1	Harmful use
F10.2	Dependence syndrome
F10.3	Withdrawal state
F10.4	Withdrawal state with delirium
F10.5	Psychotic disorder
F10.6	Amnesic syndrome
F10.7	Residual and late-onset psychotic disorder
F10.8	Other mental and behavioural disorders
F10.9	Unspecified mental and behavioural disorder
Alcohol disorders – other	
E24.4	Alcohol-induced pseudo-Cushing's syndrome
G31.2	Degeneration of nervous system due to alcohol
G62.1	Alcoholic polyneuropathy
G72.1	Alcoholic myopathy
I42.6	Alcoholic cardiomyopathy
K29.2	Alcoholic gastritis
K85.2	Alcohol-induced acute pancreatitis
K86.0	Alcohol-induced chronic pancreatitis

Alcoholic liver disease	
K70.0	Alcoholic fatty liver
K70.1	Alcoholic hepatitis
K70.2	Alcoholic fibrosis and sclerosis of liver
K70.3	Alcoholic cirrhosis of liver
K70.4	Alcoholic hepatic failure
K70.9	Alcoholic liver disease, unspecified
Toxic effect of alcohol	
T51.0	Ethanol
T51.1	Methanol
T51.2	2-Propanol
T51.3	Fusel oil
T51.8	Other alcohols
T51.9	Alcohol unspecified
Poisoning	
X45	Accidental alcohol poisoning
X65	Intentional alcohol poisoning
Y15	Alcohol poisoning – undetermined intent
Problems associated with prenatal alcohol use	
O35.4	Maternal care for (suspected) damage to fetus from alcohol
P04.3	Fetus and newborn affected by maternal use of alcohol
Q86.0	Fetal alcohol syndrome
Evidence of alcohol involvement determined by blood alcohol level	
R78.0	Finding of alcohol in blood
Y90.0	Blood alcohol level of less than 20 mg/100 ml
Y90.1	Blood alcohol level of 20–39 mg/100 ml
Y90.2	Blood alcohol level of 40–59 mg/100 ml
Y90.3	Blood alcohol level of 60–79 mg/100 ml
Y90.4	Blood alcohol level of 80–99 mg/100 ml
Y90.5	Blood alcohol level of 100–119 mg/100 ml
Y90.6	Blood alcohol level of 120–199 mg/100 ml
Y90.7	Blood alcohol level of 200–239 mg/100 ml
Y90.8	Blood alcohol level of 240 mg/100 ml or more
Y90.9	Presence of alcohol in blood, level not specified
Evidence of alcohol involvement determined by level of intoxication	
Y91.0	Mild alcohol intoxication
Y91.1	Moderate alcohol intoxication
Y91.2	Severe alcohol intoxication
Y91.3	Very severe alcohol intoxication
Y91.9	Alcohol involvement, not otherwise specified
Alcohol problems – other	
Z50.2	Alcohol rehabilitation
Z71.4	Alcohol abuse counselling and surveillance
Z72.1	Problems related to lifestyle – alcohol
Z86.41	Personal history of alcohol use disorder

List of partially-attributable alcohol chronic and acute conditions (ICD 10)

	Diagnosis	ICD-10 code
Partially attributable chronic conditions	Malignant neoplasm of lip, oral cavity and pharynx	C00-C14
	Malignant neoplasm of oesophagus	C15
	Malignant neoplasm of colon	C18
	Malignant neoplasm of rectum	C20
	Malignant neoplasm of liver and intrahepatic bile ducts	C22
	Malignant neoplasm of larynx	C32
	Malignant neoplasm of breast	C50
	Diabetes mellitus (type II)	E11
	Epilepsy and status epilepticus	G40-G41
	Hypertensive diseases	I10-I15
	Ischaemic heart disease	I20-I25
	Cardiac arrhythmias	I47-I48
	Haemorrhagic stroke	I60-I62, I69.0-I69.2
	Ischaemic stroke	I66-I66,I69.3, I69.4
	Oesophageal varices	I85
	Gastro-oesophageal laceration-haemorrhage syndrome	K22.6
	Unspecified liver disease	K73, K74
	Cholelithiasis	K80
	Acute and chronic pancreatitis	K85, K86.1
	Psoriasis	L40 excludes L40.5
Spontaneous abortion	O03	
Partially attributable acute conditions	Road traffic accidents - non pedestrian	V12-14, V19.4-V19.6, V19.9, V20-V28, V29-V79, V80.3-V80.5, V81.1, V82.1, V83-V86, V87.0-V87.9, V89.2, V89.3, V89.9
	Pedestrian traffic accidents	V02-V04, V06.1, V09.2, V09.3
	Water transport accidents	V90-V94
	Air/space transport accidents	V95-V97
	Fall injuries	W00-W19
	Work/machine injuries	W24-W31
	Firearm injuries	W32-W34
	Drowning	W65-W74
	Inhalation of gastric contents	W78
	Fire injuries	X00-X09
	Accidental excessive cold	X31
	Intentional self-harm	X60-X84
	Assault	X85-Y09

References

1. Babor T, Caetano R, Casswell S, et al., *Alcohol: No ordinary commodity - research and public policy. Second Edition.* 2010, New York: Oxford University Press.
2. Long J and Mongan D (2014) Alcohol consumption in Ireland 2013: analysis of a national alcohol diary survey. Dublin: Health Research Board.
3. Department of Health (2012) Steering group report on a national substance misuse strategy. Dublin: Department of Health.
4. Mongan D, Reynolds S, Fanagan S, et al. (2007) Health-related consequences of problem alcohol use. Overview 6. Dublin: Health Research Board.
5. Mongan D, Hope A and Nelson M (2009) Social consequences of harmful alcohol use in Ireland. HRB Overview Series 9. Dublin: Health Research Board.
6. Revenue Commissioners (2011) Statistical report 2010.
7. Hope A (2009) A standard drink in Ireland: What strength? Health Service Executive - Alcohol Implementation Group.
8. Department of Health (2014) Responsibility Deal Alcohol Network - Pledge to remove 1 billion units of alcohol from the market by end 2015 - First interim monitoring report. London: Department of Health.
9. World Health Organization (2014) Global status report on alcohol and health. Geneva: WHO.
10. OECD (2014) OECD Health Statistics 2014. <http://www.oecd.org/els/health-systems/Briefing-Note-IRELAND-2014.pdf>.
11. Foley A (2013) The contribution of the drinks industry to tourism, festivals and sports. Prepared for Drinks Industry Group of Ireland. Dublin: Dublin City University.
12. Ipsos MRBI (2012) Alcohol: public knowledge, attitudes and behaviours. Dublin: Health Research Board.
13. Bush K, Kivlahan D, McDonell M, et al., (1998) The AUDIT alcohol consumption questions (AUDIT-C). *Archives of Internal Medicine*, 158: p.1789-1795.
14. Aalto M, Alho H, Halme JT, et al., (2009) AUDIT and its abbreviated versions in detecting heavy and binge drinking in a general population survey. *Drug and Alcohol Dependence*, 103: p.25-29.
15. Bradley KA, DeBenedetti AF, Volk RJ, et al., (2007) AUDIT-C as a brief screen for alcohol misuse in primary care. *Alcoholism: Clinical and Experimental Research*, 31: p.1208-1217.
16. Reinert DF and Allen JP, (2007) The alcohol use disorders identification test: an update of research findings. *Alcoholism: Clinical and Experimental Research*, 31(2): p.185-199.
17. World Health Organization (1993) International statistical classification of disease and health-related problems - ICD 10. Geneva: World Health Organization.
18. TNS Opinion and Social (2010) EU citizens' attitudes towards alcohol. Special Eurobarometer 331. Brussels: European Commission.
19. Knibbe RA and Bloomfield K, (2001) Alcohol Consumption Estimates in Surveys in Europe: Comparability and Sensitivity for Gender Differences. *Substance Abuse*, 22(1): p.23-38.
20. Stockwell T, Donath S, Cooper-Stanbury M, et al., (2004) Under-reporting of alcohol consumption in household surveys: a comparison of quantity-frequency, graduated-frequency and recent recall. *Addiction (Abingdon, England)*, 99(8): p.1024-1033.
21. Chikritzhs T, Catalano P, Stockwell T, et al. (2003) Alcohol indicators: patterns of alcohol use and related harms for Australian states and territories. Perth: National Drug Research Institute Curtin University of Technology.

22. Knibbe RA and Bloomfield K, (2001) Alcohol Consumption Estimates in Surveys in Europe: Comparability and Sensitivity for Gender Differences. *Substance Abuse*, 22(1): p.23-38.
23. Osiowy M, Stockwell T, Zhao J, et al., (2014) How much did you actually drink last night? An evaluation of standard drink labels as an aid to monitoring personal consumption. *Addictive Research and Theory*, 23(2): p.163-169.
24. Stockwell T, Zhao J, Chikritzhs T, et al., (2008) What did you drink yesterday? Public health relevance of a recent recall method used in the 2004 Australian National Drug Strategy Household Survey. *Addiction*, 103(6): p.919-28.
25. American Medical Association (AMA) (2002) Harmful consequences of alcohol use on the brains of children, adolescents and college students.
26. U.S. Department of Health and Human Services (2007) The Surgeon General's call to action to prevent and reduce underage drinking. Washington DC: Office of the Surgeon General.
27. Ewing S, Sakhardandeb A and Blakemore S, (2014) The effect of alcohol consumption on the adolescent brain: A systematic review of MRI and fMRI studies of alcohol-using youth. *NeuroImage: Clinical*, 5: p.420-437.
28. Gore FM, Bloem PJ, Patton GC, et al., (2011) Global burden of disease in young people aged 10-24 years: a systematic analysis. *Lancet*, 377(9783): p.2093-102.
29. Toumbourou J, Stockwell T, Neighbors C, et al., (2007) Interventions to reduce harm associated with adolescent substance use. *The Lancet*, 369: p.1391-1401.
30. Grant BF and Dawson DA, (1997) Age of onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: results from a national longitudinal alcohol epidemiologic survey. *Journal of Substance Abuse*, 9: p.103-110.
31. Smyth BP, Kelly A and Cox G, (2011) Decline in age of drinking onset in Ireland, gender and per capita alcohol consumption. *Alcohol Alcohol*, 46(4): p.478-84.
32. Gavin A, Keane E, Callaghan M, et al. (2015) The Irish Health Behaviour in School-aged Children (HBSC) study 2014. Dublin: Department of Health and National University of Ireland, Galway.
33. Perry C, Keane E and Nic Gabhainn S (2015) Short Report HBSC Ireland 2014. Alcohol and cannabis use in school-children in Ireland Galway: Health Promotion Research Centre, National University of Ireland, Galway.
34. Trutz Haase and Pratschke J (2010) Risk and Protection Factors for Substance Use among Young People: A comparative study of early school-leavers and school-attending students. Dublin: National Advisory Committee on Drugs.
35. Davoren MP, Shiely F, Byrne M, et al., (2015) Hazardous alcohol consumption among university students in Ireland: a cross-sectional study. *BMJ Open*, 5(1): p.e006045.
36. Hope A, Dring C and Dring J (2005) College lifestyle and attitudinal national (CLAN) survey. Dublin: Department of Health and Children.
37. Centre for Ageing Research and Development in Ireland (2013) Focus on alcohol misuse among older people. Dublin: CARDI.
38. Institute of Alcohol Studies (2013) Older people and alcohol. London: Institute of Alcohol Studies.
39. Dar K, (2006) Alcohol use disorders in elderly people: fact or fiction? *Advances in Psychiatric Treatment*, 12: p.173-181.
40. The Irish Longitudinal Study on Ageing (2011) Fifty Plus in Ireland 2011: First results from the Irish Longitudinal Study on Ageing. Dublin: Trinity College Dublin.
41. Mongan D, (2010) The burden of alcohol-related morbidity on hospital services. *Drugnet Ireland*, (Issue 35, Autumn 2010): p.9-12.
42. Hommer D, Momenan R, Rawlings R, et al., (1996) Decreased corpus callosum size among alcoholic women. *Arch Neurol*, 53(4): p.359-63.
43. Laffoy M, McCarthy T, Mullen L, et al., (2013) Cancer incidence and mortality due to alcohol: an analysis of 10-year data. *Ir Med J*, 106(10): p.294-7.
44. Hamajima N, Hirose K, Tajima K, et al., (2002) 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(11): p.1234-1245.
45. Emanuelle M, Wezeman F and Emanuelle N, (2002) Alcohol's effects on female reproductive function. *Alcohol Research and Health*, 26: p.274-281.
46. McBride O, K M and H M (2010) Irish Contraception and Crisis Pregnancy Study 2010. A Survey of the General Population. Dublin: Health Services Executive.
47. Department of Health (2010) Growing Up in Ireland: National Longitudinal Study of Children. Key findings: infant cohort (at 9 months). Pregnancy and birth. Dublin: Department of Health.

48. Abel E, (1998) Fetal alcohol syndrome: the 'American Paradox'. *Alcohol Alcohol*, 33(3): p.195-201.
49. May P and Gossage J, (2001) Estimating the prevalence of fetal alcohol syndrome: a summary. *Alcohol, Research and Health*, 25(3): p.159-167.
50. British Medical Association (2007) Fetal alcohol spectrum disorders. A guide for healthcare professionals. London: British Medical Association.
51. Bay B and Kesmodel US, (2011) Prenatal alcohol exposure - a systematic review of the effects on child motor function. *Acta Obstet Gynecol Scand*, 90(3): p.210-26.
52. Henderson J, Gray R and Brocklehurst P, (2007) Systematic review of effects of low-moderate prenatal alcohol exposure on pregnancy outcome. *Bjog*, 114(3): p.243-52.
53. Henderson J, Kesmodel U and Gray R, (2007) Systematic review of the fetal effects of prenatal binge-drinking. *J Epidemiol Community Health*, 61(12): p.1069-73.
54. Dunney C, Muldoon K and Murphy DJ, (2015) Alcohol consumption in pregnancy and its implications for breastfeeding. *British Journal of Midwifery*, 23(2): p.126-134.
55. McCarthy FP, O'Keeffe LM, Khashan AS, et al., (2013) Association between maternal alcohol consumption in early pregnancy and pregnancy outcomes. *Obstet Gynecol*, 122(4): p.830-7.
56. Mullally A, Cleary BJ, Barry J, et al., (2011) Prevalence, predictors and perinatal outcomes of peri-conceptual alcohol exposure-retrospective cohort study in an urban obstetric population in Ireland. *BMC Pregnancy Childbirth*, 11: p.27.
57. Tarrant RC, Younger KM, Sheridan-Pereira M, et al., (2011) Maternal health behaviours during pregnancy in an Irish obstetric population and their associations with socio-demographic and infant characteristics. *Eur J Clin Nutr*, 65(4): p.470-9.
58. McCrory C and Layte R (2015) Growing Up in Ireland: National longitudinal Study of Children - Maternal Health Behaviours and Child Growth in Infancy Dublin: Department of Children and Youth Affairs.
59. Barry S, Kearney A, Lawlor E, et al. (2007) The Coombe Women's Hospital study of alcohol, smoking and illicit drug use, 1988-2005. Dublin: Coombe Women's Hospital.
60. Department of Health and Children, (2007) Minister Gallagher renews advice to women not to drink alcohol in pregnancy.
61. WHO Regional Office for Europe (2009) Evidence for the effectiveness and cost-effectiveness of interventions to reduce alcohol-related harm. Copenhagen: World Health Organization.
62. Rehm J, Baliunas D, Borges GL, et al., (2010) The relation between different dimensions of alcohol consumption and burden of disease: an overview. *Addiction*, 105(5): p.817-43.
63. Rehm J, Room R, Graham K, et al., (2003) The relationship of average volume of alcohol consumption and patterns of drinking to burden of disease: an overview. *Addiction*, 98(9): p.1209-1228.
64. Shield KD, Parry C and Rehm J, (2013) Chronic diseases and conditions related to alcohol use. *Alcohol Res*, 35(2): p.155-73.
65. International Agency for Research on Cancer (2010) Alcohol consumption and ethyl carbamate. Lyon: International Agency for Research on Cancer.
66. Baan R, Straif K, Grosse Y, et al., (2007) Carcinogenicity of alcoholic beverages. *Lancet Oncol*, 8(4): p.292-3.
67. Rehm J, (2011) The risks associated with alcohol use and alcoholism. *Alcohol Res Health*, 34(2): p.135-43.
68. World Health Organization (2012) Alcohol in the European Union: consumption, harm and policy approaches. Geneva: WHO.
69. Rehm J and Roerecke M, (2011) Alcohol, the heart and the cardiovascular system: what do we know and where should we go? *Drug Alcohol Rev*, 30(4): p.335-7.
70. Juonala M, Viikari JS, Kahonen M, et al., (2009) Alcohol consumption is directly associated with carotid intima-media thickness in Finnish young adults: the Cardiovascular Risk in Young Finns Study. *Atherosclerosis*, 204(2): p.e93-8.
71. Samokhvalov AV, Popova S, Room R, et al., (2010) Disability associated with alcohol abuse and dependence. *Alcohol Clin Exp Res*, 34(11): p.1871-8.
72. Leibach WK, *Quantitative aspects of drinking in alcoholic liver cirrhosis*. Alcoholic Liver Pathology, ed. J. Khanna, Y. Israel, and H. Kalant. 1975, Toronto: Addiction Research Foundation of Ontario. 1-18.
73. Baliunas DO, Taylor BJ, Irving H, et al., (2009) Alcohol as a risk factor for type 2 diabetes: A systematic review and meta-analysis. *Diabetes Care*, 32(11): p.2123-32.

74. Patra J, Bakker R, Irving H, et al., (2011) Dose-response relationship between alcohol consumption before and during pregnancy and the risks of low birthweight, preterm birth and small for gestational age (SGA)-a systematic review and meta-analyses. *Bjog*, 118(12): p.1411-21.
75. Eckardt MJ, File SE, Gessa GL, et al., (1998) Effects of moderate alcohol consumption on the central nervous system. *Alcohol Clin Exp Res*, 22(5): p.998-1040.
76. Fekjaer HO, (2013) Alcohol-a universal preventive agent? A critical analysis. *Addiction*, 108(12): p.2051-7.
77. Stockwell T, Zhao J, Panwar S, et al., (2016) Do "Moderate" Drinkers Have Reduced Mortality Risk? A Systematic Review and Meta-Analysis of Alcohol Consumption and All-Cause Mortality. *J Stud Alcohol Drugs*, 77(2): p.185-98.
78. Fillmore KM, Stockwell T, Chikritzhs T, et al., (2007) Moderate alcohol use and reduced mortality risk: systematic error in prospective studies and new hypotheses. *Ann Epidemiol*, 17(5 Suppl): p.S16-23.
79. Naimi TS, Brown DW, Brewer RD, et al., (2005) Cardiovascular risk factors and confounders among nondrinking and moderate-drinking U.S. adults. *Am J Prev Med*, 28(4): p.369-73.
80. Holmes MV, Dale CE, Zuccolo L, et al., (2014) Association between alcohol and cardiovascular disease: Mendelian randomisation analysis based on individual participant data. *Bmj*, 349: p.g4164.
81. Hope A, Gill A, Costello G, et al. (2005) Alcohol and injuries in the accident and emergency department - a national perspective. Dublin: Department of Health and Children.
82. Angus C, Meng Y, Ally AK, et al. (2014) Model-based appraisal of minimum unit pricing for alcohol in the Republic of Ireland. Sheffield: University of Sheffield.
83. National Advisory Committee on Drugs and Public Health Information and Research Branch (2012) Drug use in Ireland and Northern Ireland Alcohol Consumption and Alcohol-Related Harm in Ireland 2010/2011 Drug Prevalence Survey: Bulletin 7. Dublin: National Advisory Committee on Drugs & Public Health Information and Research Branch.
84. Morgan K, McGee H, Dicker P, et al. (2009) SLAN 2007: Survey of lifestyle, attitudes and nutrition in Ireland. Alcohol use in Ireland: a profile of drinking patterns and alcohol-related harm from SLAN 2007. Dublin: Department of Health and Children.
85. Leibel WK, (1976) Epidemiology of alcoholic liver disease. *Progress in Liver Disease*, 5: p.494-515.
86. Rhodés J, Salaspuro M and Sorensen T, *Alcohol and liver diseases. In: Verschuren PM, ed. Health Issues Related to Alcohol Consumption*. 1993, Washington DC: International Life Sciences Institute/ILSI Press. 167-220.
87. Verrill C, Markham H, Templeton A, et al., (2009) Alcohol-related cirrhosis--early abstinence is a key factor in prognosis, even in the most severe cases. *Addiction*, 104(5): p.768-74.
88. Verrill C, Smith S and Sheron N, (2006) Are the opportunities to prevent alcohol related liver deaths in the UK in primary or secondary care? A retrospective clinical review and prospective interview study. *Substance Abuse Treatment, Prevention, and Policy*, 1: p.16.
89. Ramstedt M, (2001) Alcohol and suicide in 14 European countries. *Addiction*, 96: p.S59-S75.
90. Wasserman D and Varnik A, (1998) Suicide-preventive effects of perestroika in the former USSR: the role of alcohol restriction. *Acta Psychiatr Scand Suppl*, 394: p.1-4.
91. Rossow I, (2000) Suicide, Violence and Child Abuse: A Review of the Impact of Alcohol Consumption on Social Problems. *Contemporary Drug Problems*, 27: p.397-433
92. Rossow I, Parnanen K and J R, *Alcohol, suicide and violence. In: Klingemann H. and Gmel G (eds), Mapping the social consequences of alcohol consumption*. 2001, Dordrecht: Kluwer.
93. Brady J, (2006) The association between alcohol misuse and suicidal behaviour. *Alcohol Alcohol*, 41(5): p.473-8.
94. Rossow I and Norstrom T, (2014) Heavy episodic drinking and deliberate self-harm in young people: a longitudinal cohort study. *Addiction*, 109(6): p.930-6.
95. Hufford MR, (2001) Alcohol and suicidal behavior. *Clin Psychol Rev*, 21(5): p.797-811.
96. Giesbrecht N, Huguet N, Ogden L, et al., (2015) Acute alcohol use among suicide decedents in 14 US states: impacts of off-premise and on-premise alcohol outlet density. *Addiction*, 110(2): p.300-7.
97. Cornelius JR, Salloum IM, Day NL, et al., (1996) Patterns of suicidality and alcohol use in alcoholics with major depression. *Alcohol Clin Exp Res*, 20(8): p.1451-5.
98. Central Statistics Office (2015) Vital Statistics Yearly Summary. Cork: Central Statistics Office.
99. Martin J, Barry J, Goggin D, et al., (2010) Alcohol-attributable mortality in Ireland. *Alcohol Alcohol*, 45(4): p.379-86.

100. Bedford D, O'Farrell A and Howell F, (2006) Blood alcohol levels in persons who died from accidents and suicide. *Irish Medical Journal*, 99(3): p.80-3.
101. Arensman E, Wall A and McAuliffe C (2013) Second report of the Suicide Support and Information System. Cork: National Suicide Research Foundation.
102. National Registry of Deliberate Self Harm Ireland (2008) Annual Report 2006-2007. Cork: National Suicide Research Foundation.
103. National Registry of Deliberate Self Harm Ireland (2009) Annual report 2008. Cork: National Suicide Research Foundation.
104. National Registry of Deliberate Self Harm Ireland (2010) Annual report 2009. Cork: National Suicide Research Foundation.
105. National Registry of Deliberate Self Harm Ireland (2011) Annual report 2010. Cork: National Suicide Research Foundation.
106. National Registry of Deliberate Self Harm Ireland (2012) Annual report 2011. Cork: National Suicide Research Foundation.
107. Griffin E, Arensman E, Wall A, et al. (2013) National Registry of Deliberate Self Harm Annual Report 2012. Cork: National Suicide Research Foundation.
108. Griffin E, Arensman E, Wall A, et al. (2014) National Registry of Deliberate Self Harm Annual Report 2013. Cork: National Suicide Research Foundation.
109. Griffin E, Arensman E, Corcoran P, et al. (2015) National Registry of Deliberate Self Harm Annual Report 2014. Cork: National Suicide Research Foundation.
110. Carew A and Lyons S (2015) Treated problem alcohol use in Ireland. 2013 figures from the National Drug Treatment Reporting System. Dublin: Health Research Board.
111. Carew A, Bellerose D and Lyons S (2011) Treated problem alcohol use in Ireland, 2005 to 2010. HRB Trends Series 11. Dublin: Health Research Board.
112. Expert Group on Mental Health Policy (2006) A vision for change. Dublin: Stationery Office.
113. Navarro HJ, Doran CM and Shakeshaft AP, (2011) Measuring costs of alcohol harm to others: a review of the literature. *Drug Alcohol Depend*, 114(2-3): p.87-99.
114. Laslett AM, Catalano P, Chikritzhs T, et al. (2010) The range and magnitude of alcohol's harm to others. Fitzroy, Victoria . AER Centre for Alcohol Policy Research, Turning Point Alcohol and Drug Centre, Eastern Health.
115. Laslett AM, Room R, Ferris J, et al., (2011) Surveying the range and magnitude of alcohol's harm to others in Australia. *Addiction*, 106(9): p.1603-11.
116. Hope A (2014) Alcohol's harm to others in Ireland. Dublin: Health Service Executive.
117. Room R and Rossow I, (2001) The share of violence attributable to drinking. *Journal of Substance Use*, 6: p.218-228.
118. Graham K, West P and Wells S, (2000) Evaluating theories of alcohol-related aggression using observations of young adults in bars. *Addiction*, 95(6): p.847-863.
119. Room R and Collins Ge (1983) Alcohol and disinhibition: Meaning and nature of the link, NIAA research monograph 12. Washington DC: Department of Health and Human Resources.
120. Graham K, Leonard KE, Room R, et al., (1998) Current directions in research on understanding and preventing intoxicated aggression. *Addiction*, 93(5): p.659-676.
121. Central Statistics Office (2015) Review of the quality of crime statistics. Cork: Central Statistics Office.
122. World Health Organization (2004) Global Status Report on Alcohol 2004 Geneva: WHO.
123. National Crime Council (2003) Public order offences in Ireland. Dublin: National Crime Council.
124. O'Donnell I, (2005) Violence and social change in the Republic of Ireland. *International Journal of the Sociology of Law*, 33: p.101-117.
125. Livingston M, (2008) Alcohol outlet density and assault: a spatial analysis. *Addiction*, 103(4): p.619-628.
126. Kypri K, McElduff P and Miller P, (2014) Restrictions in pub closing times and lockouts in Newcastle, Australia five years on. *Drug Alcohol Rev*, 33(3): p.323-6.
127. Central Statistics Office (2010) Crime and Victimization. Quarterly National Household Survey 2010. Cork: Central Statistics Office.
128. McGee H, Garavan R, de Barra M, et al. (2002) The SAVI report: Sexual abuse and violence in Ireland. Dublin: The Liffey Press.
129. Eogan M (2015) National sexual assault treatment unit (SATU) annual key service activity report. Dublin: Rotunda.
130. Hanly C, Healy D and Scriver S, *Rape and justice in Ireland. A national study of survivor, prosecutor and court responses to rape*. 2009, Dublin: The Liffey Press.
131. Stuckler D, Basu S, Suhrcke M, et al., (2009) The public health effect of economic crises and alternative policy responses in Europe: an empirical analysis. *Lancet*, 374(9686): p.315-23.

132. European Alcohol and Health Forum (2011) Alcohol, work and productivity: Scientific opinion of the Science Group of the European Alcohol and Health Forum. Brussels: European Alcohol and Health Forum.
133. Rehm J, Taylor B and Room R, (2006) Global burden of disease from alcohol, illicit drugs and tobacco. *Drug Alcohol Rev*, 25(6): p.503-13.
134. Jones L and Bellis M (2014) Updating England-Specific Alcohol-Attributable Fractions. Liverpool: John Moores University.
135. Kaila-Kangas L, Koskinen A, Pensola T, et al., (2015) Alcohol-induced morbidity and mortality by occupation: a population-based follow-up study of working Finns. *Eur J Public Health*.
136. Hemmingsson T and Ringback Weitoft G, (2001) Alcohol-related hospital utilization and mortality in different occupations in Sweden in 1991-1995. *Scand J Work Environ Health*, 27(6): p.412-9.
137. Coggon D, Harris EC, Brown T, et al., (2010) Work-related mortality in England and Wales, 1979-2000. *Occup Environ Med*, 67(12): p.816-22.
138. Romeri E, Baker A and Griffiths C, (2006) Mortality by deprivation and cause of death in England and Wales, 1999-2003. *Health Stat Q*, (32): p.19-34.
139. Roche AM, Pidd K, Berry JG, et al., (2008) Workers' drinking patterns: the impact on absenteeism in the Australian work-place. *Addiction*, 103(5): p.738-48.
140. Department of Health and Children (2004) Strategic Task Force on Alcohol, second report. Dublin: DOHC.
141. IBEC (2004) Employee Absenteeism: A Guide to Managing Absence. Dublin: IBEC - the Irish Business and Employers Confederation.
142. Commission on Liquor Licensing (2003) Commission on Liquor Licensing: final report. Dublin: Department of Justice.
143. Anderson P (2010) Alcohol and the workplace. A report on the impact of work place policies and programmes to reduce the harm done by alcohol to the economy. Focus on Alcohol Safe Environments.
144. Mangione TW, Howland J, Amick B, et al., (1999) Employee drinking practices and work performance. *J Stud Alcohol*, 60(2): p.261-70.
145. Frone MR and Brown AL, (2010) Workplace substance-use norms as predictors of employee substance use and impairment: a survey of U.S. workers. *J Stud Alcohol Drugs*, 71(4): p.526-34.
146. Virtanen M, Jokela M, Nyberg ST, et al., (2015) Long working hours and alcohol use: systematic review and meta-analysis of published studies and unpublished individual participant data. *Bmj*, 350: p.g7772.
147. Marchand A, Parent-Lamarche A and Blanc ME, (2011) Work and high-risk alcohol consumption in the Canadian workforce. *Int J Environ Res Public Health*, 8(7): p.2692-705.
148. Gibb SJ, Fergusson DM and Horwood LJ, (2012) Working hours and alcohol problems in early adulthood. *Addiction*, 107(1): p.81-8.
149. Heikkila K, Nyberg ST, Fransson EI, et al., (2012) Job strain and alcohol intake: a collaborative meta-analysis of individual-participant data from 140,000 men and women. *PLoS One*, 7(7): p.e40101.
150. Gruenewald PJ, Mitchell PR and Treno AJ, (1996) Drinking and driving: drinking patterns and drinking problems. *Addiction*, 91(11): p.1637-49.
151. Treno AJ, Gruenewald PJ and Ponicki WR, (1997) The contribution of drinking patterns to the relative risk of injury in six communities: a self-report based probability approach. *J Stud Alcohol*, 58(4): p.372-81.
152. McNeilly B, Ibrahim JE, Bugeja L, et al., (2010) The prevalence of work-related deaths associated with alcohol and drugs in Victoria, Australia, 2001-2006. *Injury Prevention*, 16: p.423-428.
153. Anderson P, Chisholm D and Fuhr DC, (2009) Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *Lancet*, 373(9682): p.2234-46.
154. World Health Organization (2010) Global Strategy to reduce the harmful use of alcohol. Geneva: WHO.
155. Hope A and Butler S, (2010) Changes in consumption and harms, yet little policy progress. . *Nordic studies on alcohol and drugs*, 27(479-495).
156. Health Promotion Unit (1996) National alcohol policy. Dublin: Department of Health.
157. Department of Health and Children (2002) Strategic Task Force on Alcohol, interim report. Dublin: DOHC.
158. Government Alcohol Advisory Group (2008) Report of the Government Alcohol Advisory Group. Dublin: Department of Justice, Equality and Law Reform.
159. Department of Health (2015) General scheme of the Public Health (Alcohol) Bill 2015. Dublin: Department of Health.

160. Nelson TF, Xuan Z, Blanchette JG, et al., (2015) Patterns of change in implementation of state alcohol control policies in the United States, 1999–2011. *Addiction*, 110(1): p.59–68.
161. Hope A, (2014) The ebb and flow of attitudes and policies on alcohol in Ireland 2002–2010. *Drug Alcohol Rev*, 33(3): p.235–41.
162. Mäkelä P and Osterberg E, (2009) Weakening of one more alcohol control pillar: a review of the effects of the alcohol tax cuts in Finland in 2004. *Addiction*, 104(4): p.554–63.
163. Wagenaar AC, Salois MJ and Komro KA, (2009) Effects of beverage alcohol price and tax levels on drinking: a meta-analysis of 1003 estimates from 112 studies. *Addiction*, 104(2): p.179–90.
164. Elder RW, Lawrence B, Ferguson A, et al., (2010) The effectiveness of tax policy interventions for reducing excessive alcohol consumption and related harms. *Am J Prev Med*, 38(2): p.217–29.
165. Davies P and Walsh D (1983) Alcohol problems and alcohol control in Europe. London: Croom Helm.
166. Hurst W, Gregory E and Gussman T (1997) International Survey: Alcoholic Beverage Taxation and Control Policies. Ottawa: Brewers Association of Canada.
167. Ally AK, Meng Y, Chakraborty R, et al., (2014) Alcohol tax pass-through across the product and price range: do retailers treat cheap alcohol differently? *Addiction*, 109(12): p.1994–2002.
168. Purshouse RC, Meier PS, Brennan A, et al., (2010) Estimated effect of alcohol pricing policies on health and health economic outcomes in England: an epidemiological model. *Lancet*, 375(9723): p.1355–64.
169. Scottish Government (2012) Alcohol (Minimum Pricing) (Scotland) Act 2012. Edinburgh: Scottish Government.
170. European Court of Justice (2015) Judgment of the court (Second Chamber) 23 December 2015 <http://curia.europa.eu/juris/document/document.jsf?text=&docid=173249&pageIndex=0&doclang=EN&mode=lst&dir=&occ=-first&part=1&cid=5779>.
171. Sheron N, Chilcott F, Matthews L, et al., (2014) Impact of minimum price per unit of alcohol on patients with liver disease in the UK. *Clin Med*, 14(4): p.396–403.
172. Stockwell T, Zhao J, Giesbrecht N, et al., (2012) The raising of minimum alcohol prices in Saskatchewan, Canada: impacts on consumption and implications for public health. *Am J Public Health*, 102(12): p.e103–10.
173. Stockwell T, Auld C, Zhao J, et al., (2012) Does minimum pricing reduce alcohol consumption? The experience of a Canadian province. *Addiction*: p.Epub 11 February 2012.
174. Zhao J, Stockwell T, Martin G, et al., (2013) The relationship between minimum alcohol prices, outlet densities and alcohol-attributable deaths in British Columbia, 2002–09. *Addiction*, 108(6): p.1059–69.
175. Stockwell T, Zhao J, Martin G, et al., (2013) Minimum alcohol prices and outlet densities in British Columbia, Canada: estimated impacts on alcohol-attributable hospital admissions. *Am J Public Health*, 103(11): p.2014–20.
176. Stockwell T, Zhao J, Marzell M, et al., (2015) Relationships Between Minimum Alcohol Pricing and Crime During the Partial Privatization of a Canadian Government Alcohol Monopoly. *J Stud Alcohol Drugs*, 76(4): p.628–34.
177. Jernigan D, (2010) The Extent of Global Alcohol Marketing and its Impact on Youth. *Contemporary Drug Problems*, 37: p.57–89
178. Anderson P, de Bruijn A, Angus K, et al., (2009) Impact of alcohol advertising and media exposure on adolescent alcohol use: a systematic review of longitudinal studies. *Alcohol and Alcoholism*, 44(3): p.229–43.
179. Smith LA and Foxcroft DR, (2009) The effect of alcohol advertising, marketing and portrayal on drinking behaviour in young people: systematic review of prospective cohort studies. *BMC Public Health*, 9: p.51.
180. Gordon R, Mackintosh AM and Moodie C, (2010) The Impact of Alcohol Marketing on Youth Drinking Behaviour: A Two-stage Cohort Study. *Alcohol Alcohol*, 45(5): p.470–480.
181. Gordon R, Moodie C, Eadie D, et al., (2010) Critical social marketing – The impact of alcohol marketing on youth drinking: qualitative findings. *International Journal of Nonprofit and Voluntary Sector Marketing*, 15(3): p.267–275.
182. Fox K, Kelly C and Molcho M (2015) Alcohol Marketing and Young People’s Drinking Behaviour in Ireland. Galway: National University of Ireland Galway.
183. Alcohol Action Ireland (2010) Have we bottled it? Behaviour and attitudes survey. Presented at the *Have We Bottled It? Alcohol Marketing and Young People* conference, Dublin, 15 September 2010

184. Houghton F, Scott L, Houghton S, et al., (2014) Children's awareness of alcohol sponsorship of sport in Ireland: Munster Rugby and the 2008 European Rugby Cup. *Int J Public Health*, 59(5): p.829-32.
185. National Youth Council of Ireland (2009) Get 'em young: Mapping young people's exposure to alcohol marketing in Ireland. Dublin: NYCI.
186. Dring C and Hope A (2001) The Impact of Alcohol Advertising on Teenagers in Ireland. Dublin: Department of Health and Children.
187. Winpenny EM, Marteau TM and Nolte E, (2014) Exposure of children and adolescents to alcohol marketing on social media websites. *Alcohol Alcohol*, 49(2): p.154-9.
188. Hartigan A and Coe N (2012) Internet influences on adolescent attitudes to alcohol. London: Alcohol research UK.
189. European Centre for Monitoring Alcohol Marketing (2011) Heineken's new online marketing deal to reach 103 million minors monthly. 05/07/2011.
190. Anderson P, Braddick F, Reynolds J, et al. (2010) Alcohol policy in Europe: evidence from AMPHORA. The AMPHORA project.
191. Alcohol Concern (2011) New media, new problem? Alcohol, young people and the internet. Cardiff: Alcohol Concern.
192. Gornall J, (2014) World Cup 2014: festival of football or alcohol? *Bmj*, 348: p.g3772.
193. Brown K, (2016) Association Between Alcohol Sports Sponsorship and Consumption: A Systematic Review. *Alcohol Alcohol*.
194. Irish Times (06/01/2014) Powerful play by drinks sector to block ban on sponsorship of major sporting events. www.irishtimes.com/news/politics/powerful-play-by-drinks-sector-to-block-ban-on-sponsorship-of-major-sporting-events-1.1645201
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About the HRB

The Health Research Board (HRB) is a statutory agency under the aegis of the Department of Health. As the lead agency in Ireland, it is responsible for supporting and funding health research, information and evidence.

The **HRB Overview series** reviews specific health or social issues. It is envisaged that each issue in the series will be used as a resource document by policy makers, service providers, researchers, community groups and others interested in the topic area.

Overview series publications to date

Long J, Lynn E and Keating J (2005) *Drug-related deaths in Ireland, 1990–2002*. HRB Overview Series 1. Dublin: Health Research Board.

Connolly J (2005) *The illicit drug market in Ireland*. HRB Overview Series 2. Dublin: Health Research Board.

Connolly J (2006) *Drugs and crime in Ireland*. HRB Overview Series 3. Dublin: Health Research Board.

Long J (2006) *Blood-borne viral infections among injecting drug users in Ireland 1995 to 2005*. HRB Overview Series 4. Dublin: Health Research Board.

Keane M (2007) *Social reintegration as a response to drug use in Ireland*. HRB Overview Series 5. Dublin: Health Research Board.

Mongan D, Reynolds S, Fanagan S and Long J (2007) *Health-related consequences of problem alcohol use*. HRB Overview Series 6. Dublin: Health Research Board.

Walsh D (2008) *Suicide, attempted suicide and prevention in Ireland and elsewhere*. HRB Overview Series 7. Dublin: Health Research Board.

Pike B (2008) *Development of Ireland's drug strategy 2000–2007*. HRB Overview Series 8. Dublin: Health Research Board.

Mongan D, Hope A and Nelson M (2009) *Social consequences of harmful use of alcohol in Ireland*. HRB Overview Series 9. Dublin: Health Research Board.

