
Global Burden of Disease

Estimates of alcohol use and attributable burden in Ireland

What the data tell us and what we need to do to address the burden of alcohol

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Summary

Alcohol places a significant health burden on Ireland. Understanding the extent of this burden is an important element in policy decisions around alcohol. Data from the Global Burden of Disease (GBD) Study indicates that previous measures of alcohol related deaths and illnesses are underestimates and that 5% of all deaths in Ireland in 2019 are attributable to alcohol.

This gives further weight to arguments for serious consideration of alcohol control measures. In particular, it is clear given the harms outlined, that full implementation of the Public Health (Alcohol) Act 2018 is urgently needed.

In addition, the analysis presented demonstrates that the GBD study provides a readily accessible, frequently updated, source of data around the alcohol burden in Ireland, employing a standardized metric- the Disability-Adjusted-Life-Years (DALYs), which could be useful for policy makers in Ireland.

Introduction

Alcohol plays a complex role in Irish society and is associated with many aspects of Irish social life but also routinely consumed at home. However, alcohol is no ordinary commodity. It has major public health implications and is responsible for a considerable burden of health and social harm at individual, family and societal levels. The societal cost of alcohol use is estimated at €3.7 billion per year, with annual healthcare costs alone having been estimated at up to €1.5 billion¹.

Alcohol is also recognised as an obstacle to achieving 13 out of 17 of the UN's 2030 Sustainable Development Goals².

Alcohol consumption levels in Ireland are high. In 2019 the level of consumption for those aged 15 and over was 10.8 litres of pure alcohol per capita³ with a small decrease in 2020 to 10.07 litres/per capita⁴. This is approximately 35% above the Health Service Executive low risk drinking guidelines⁵. Reducing alcohol use is a key outcome for the government-led initiative, Healthy Ireland⁶, which would bring significant benefits to the physical and mental health of our population. The Public Health (Alcohol) Act 2018 (PHAA) is the first legislation to address alcohol as a public health issue. Its full implementation is a critical element in efforts to reduce alcohol use and the subsequent harms. However, important parts of the Act remain unimplemented more than three years after the passage of the legislation.

Understanding the burden of alcohol on the health of Ireland is an important element in policy decisions around alcohol. This paper examines recent evidence from the Global Burden of Disease (GBD)⁷ and makes appropriate policy recommendations.

Global Burden of Disease (GBD)

The GBD is a global enterprise supported by a team of over 7000 researchers in more than 200 countries, including Ireland. The data captures premature death and disability from more than 350 diseases and injuries in 202 countries, by age and sex, from 1990 to the present, allowing comparisons over time, across age groups, and among populations.

The GBD core team is based at the Institute for Health Metrics and Evaluation (IHME) at the School of Medicine, University of Washington, Seattle, USA. One of the co-authors of this paper (ZK) is the lead researcher on GBD studies from Ireland.

A major report from the GBD study on alcohol burden was published in the *Lancet*⁸ in 2018 examining the world-wide level of the alcohol attributable burden in 2016. This study reported alcohol is the number one risk factor for disability-adjusted life years and premature deaths among males aged 15–49 years. It also noted that there is no safe drinking level – a finding similar to there being no safe level of second-hand smoke exposure.

In this paper, recent analysis of the GBD data from 2019 is presented which looks at the estimate of years of life lost (YLLs), and years lived with disability (YLDs) – both combined contributes to DALYs (Disability-Adjusted-Life-Years) as a result of alcohol use in Ireland. There is also time-trend analysis of the alcohol attributable age-standardized death rates from 1990 to 2019.

Total Deaths from Alcohol

The actual number of deaths from alcohol in Ireland has been reported at an average of three deaths per day, with 1094 deaths in 2017 noted by the Health Research Board (HRB) and over a period 2008–2017, 3.7% of all deaths were attributable to alcohol.⁹ However, as noted in this HRB report, the data depended on very specific rules in relation to the recording of cause of death on the death certificate and it was thought likely to be an underestimate of alcohol-related mortality in Ireland. Similarly, it was noted in a recent major European study of liver disease that 'Ireland appears to have lower standardised liver-related mortality rates than might be expected from population-level alcohol consumption, but this might, in part, reflect errors in coding in relation to death certificates.'¹⁰

In the *Lancet* report on the GBD study on alcohol burden noted above,⁸ an estimation was made of the number of deaths in Ireland attributable to alcohol and found to be 2790 in 2016. The database though has since been updated in a number of ways to improve accuracy.¹¹

Using the latest version of the GBD researchers estimated that in 2019 there were 1543 deaths in Ireland attributable to alcohol from all causes, representing 4.77% of all deaths. 1104 of these deaths were in males (6.6% of all male deaths) and 439 in females (2.81% of all female deaths).

* It should be noted that there is no safe consumption level of alcohol for those under 18 years.

This gives an estimate of 4 deaths per day or 30 per week, 5% of all deaths.

These deaths translated into losing a total of approximately 62,237 Disability-Adjusted Life-Years (DALYs) attributable to alcohol in 2019. Full details are given in Appendix 1.

These findings would appear to confirm that deaths officially recorded as attributable to alcohol are an underestimate of alcohol-related mortality in Ireland.

Death by age group

The burden of deaths attributable to alcohol and DALYs lost are disproportionately borne by different age-groups. The young and middle-aged (15–49 years) lost 8% of total DALYs attributable to alcohol compared to 3% of total DALYs lost among the older populations (70 years and above), although the older populations had a larger number of alcohol attributable deaths (approximately 750 compared with around 260 among 15–49 year olds). The young and middle-aged males (15–49 years) had the largest health gap because of a combination of relatively more premature mortality and morbidity (approximately 12% of total DALYs lost).

Causes of alcohol-related deaths

The GBD database allows for measurement of a range of alcohol related conditions. In Ireland, the largest number of alcohol related deaths from illness arise from liver cancer, cirrhosis and other chronic liver disease combined – 274 in 2019. Other significant conditions included pharyngeal, lip and oral cavity, oesophageal and breast cancers as well as alcohol use disorders, respiratory and heart diseases and accidents.

Suicide and self-harm

There were approximately 390 deaths by suicide reported in Ireland by the Central Statistics Office in 2019¹². GBD data suggests that 27% of suicides and self-harm incidents are attributable to alcohol.

Deaths 1990–2019

Figure 1: Attributable age-standardized death rates/100,000 in Ireland, 1990–2019

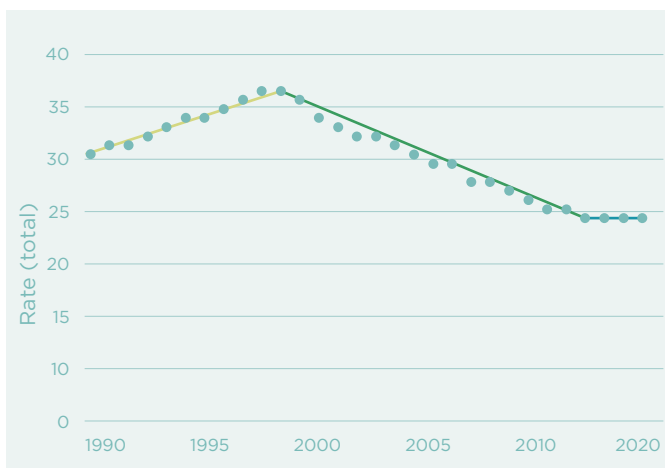


Figure 2: Alcohol consumption litres per capita, age > 15 years

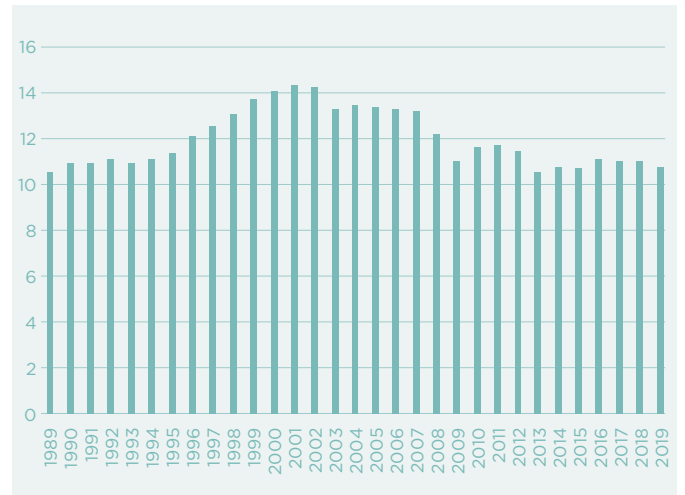


Figure 1 illustrates the gradual increase in alcohol-attributable death rates from 1990 onwards, peaking at around 1998–2000 and then a gradual fall but plateauing or even going upwards in the most recent period from 2017 onwards. The pattern appears to relate to the peaking of per-capita adult alcohol consumption patterns in Ireland around 2000 as seen in Figure 2. This pattern was similar across both genders and also by broad age group (15–49, 50–69 and 70 and above years of age).

Changes in rates of alcohol consumption in this period are linked to factors such as:

Availability – for example in the period 1998–2018 the combined number of wine and spirits off-licences increased by 407%, from 1,063 to 5,389 while the number of on-licenses decreased by 22% in the same period.³

Affordability – As alcohol sales moved from on-trade to off-trade, alcohol became more affordable.³ There were also variations in levels of personal disposable income, with, for example, the economic recession 2008–2013 having an impact on alcohol sales while changes in excise duties also contributed to changes in affordability, though it should be noted that there have been no increases in excise rates since 2014.¹³

Other impacts on alcohol-related deaths

Over the past 30 years there were a number of policy developments which would also have had an impact on deaths from alcohol, which include improvements in road safety and cancer treatment as well as hospital emergency care.

Alcohol related road deaths

The establishment of the Road Safety Authority in 2006 and related measures such as reductions in legal drink-driving limits have had a significant impact on alcohol-related road deaths. For example, in the five-year period 2008–2012 alcohol was a contributory factor in 330 fatal collisions¹⁴ but in the following five-years, 2013–2017 this had reduced to 219.¹⁵

Alcohol related cancer

Alcohol is classified as a group 1 carcinogen by the International Agency for Research on Cancer (IARC) as there is a proven, causal link between alcohol and several types of cancer including oral cavity, pharynx, larynx, oesophagus, liver, colon, rectum and female breast.

According to the Health Research Board⁹ between 2012 and 2017, there were 55,097 discharges from Irish hospitals due to partially alcohol-attributable cancers. A recent global population-based study found approximately 1000 diagnoses of cancer in Ireland in 2020 were attributable to cancer (670 male, 380 women).¹⁶ This study also found that risky and heavy drinking contributed most to the burden of alcohol-attributable cancers; however, moderate drinking still contributed one in seven alcohol-attributable cases and more than 100 000 cancer cases worldwide.

The International Agency for Research on Cancer has found that one in eight breast cancers is due to alcohol consumption.¹⁷

It should be noted that there have also been significant changes in Ireland's approach to cancer with national screening programmes and investment in centres of excellence which have had an impact on cancer mortality rates. For example, the National Cancer Registry Ireland noted that age-standardised mortality rates for breast cancer have been declining fairly steadily (-1.8% annual percentage change) over the period 1994-2016.¹⁸

While such improvement in cancer care outcomes is very welcome, clearly prevention is better than cure, yet current public knowledge of the link between cancer and alcohol is low – as demonstrated in a Healthy Ireland survey¹⁹. Just one-quarter of Irish women are aware of the direct link between alcohol and breast cancer, despite this being the most common type of cancer among women in Ireland.

Policy Implications

Public Health (Alcohol) Act 2018

The World Health Organization's 'Best Buys'²⁰ for the prevention and control of non-communicable diseases are focussed on measures which seek to place some level of control on the main drivers of alcohol consumption – price, marketing and availability. The Public Health (Alcohol) Act 2018²¹ (PHAA) is based on these principles and contains a suite of modest measures which aim to reduce per capita alcohol consumption to the OECD average of 9.1 litres for every person aged 15 and over by 2020 and hence reduce alcohol harms.

The PHAA has a particular focus on the protection of children and young people from alcohol harm. Such harm is particularly apparent from the HRB 2019–2020 Irish Drug and Alcohol Survey²² which found that 37% of 15–24 year olds had an Alcohol Use Disorder and an earlier survey which found that one in six carers reported that children for whom they had parental responsibility experienced harm as a result of someone else's drinking.²³

The legislation, though, was significantly delayed during consideration in the Oireachtas and even since its passage, major sections have not yet been implemented. Not surprisingly this target reduction level has not been reached. Since November 2019 a number of measures have been implemented in stages which prohibit:

- Outdoor alcohol advertising close to schools, in public playgrounds and on public transport plus stops and stations
- Alcohol advertising in a cinema except around over 18 films
- Alcohol promotion on children's clothing

and

- Provide for a statutory code on visibility and separation of alcohol products in mixed retail outlets
- The ending of bonus/loyalty rewards accruing to or for alcohol products
- Minimum unit pricing for alcohol

Outstanding sections yet to be commenced include:

- A broadcast watershed for alcohol advertisements on TV and radio
- Statutory restrictions on the content of alcohol advertisements and on the placement of advertisements in publications
- Health information labelling of alcohol products including warnings about drinking and pregnancy and cancer

Improvements in health care and other measures such as legislation and enforcement of drink driving regulations are also important in dealing with the burden of alcohol on Ireland. However, the GBD data combined with the links between the alcohol attributable death rate and alcohol consumption levels provide a striking illustration of the need to press forward urgently with the implementation of the Act.

Establishment of a State Sponsored Alcohol Office

The example was cited above of the success of the Road Safety Authority in reducing road deaths. This was achieved by taking a multi-pronged approach including licensing, vehicle road-worthiness, public campaigns and enforcement of regulations. There is much to be learned from this approach that could be extended to alcohol.

Given the level of alcohol harm as indicated by the GBD data, the children, families, the health service and the broader Irish society deserve no less.

Appendix 1

A brief overview of GBD methodology adopted for this report

The data source used in this study is the most recently available Global Burden of Disease (GBD) Compare Dataset for 2019. The GBD study is worldwide enterprise collecting comparable data in 204 countries and territories using standardised methodology. This dataset contains estimates of Disability Adjusted Life Years (DALYs) and age-standardised death rates attributable to alcohol. These estimates are generated by the GBD comparative risk framework and are based on data from both national vital statistics and disease registries as well as systematic review and meta-analysis of risk outcomes for alcohol use. These metrics are available to view online on the GBD interactive Visualisation Hub (<http://ihmeuw.org/5nbg>). The visualisation tool allows for the selection of a specific disease or risk factor, location, year, sex and several pre-defined age categories, 15–49 years old, 50–69 years old and over 70 years old.

The GBD estimates report 95% uncertainty intervals (UI) for estimation of attributable death, and DALYs, which is calculated by taking 1000 draws from the data's uncertainty due to sampling error and modelling uncertainty arising from hyperparameter selection and parameter estimation. The dataset contains estimates of risk factor attribution (RFA) of alcohol for the leading causes of death within a region. This is established by calculating a population attributable fraction (PAF) using GBD estimates of exposure, relative risks, and the theoretical minimum risk exposure level (TMREL) e.g., alcohol-use disorders, which are fully attributable to alcohol are assigned a PAF of 1. The PAF is then multiplied by disease-specific estimates of deaths and DALYs to calculate the total attributable burden.

Table 1. Total deaths from all causes, attributable to alcohol in 2019 in Ireland.

Sex	Age	n (95% Uncertainty Interval)	Rate per 100,000	% of total deaths
All	All	1543 (1237 – 1860)	31 (25 – 38)	4.77 (3.86 – 5.75)
Male	All	1104 (896 – 1327)	45 (37 – 55)	6.6 (5.37 – 7.93)
Female	All	439 (295 – 599)	18 (12 – 24)	2.81 (1.86 – 3.79)

The above deaths translated into losing a total of 62,237 DALYs (Disability-Adjusted-Life-years) attributable to alcohol in 2019.

Table 2. Total DALYs from all causes, attributable to alcohol in 2019 in Ireland.

Sex	Age	n (95% Uncertainty Interval)	Rate per 100,000	% of total DALYs
All	All	62237(52062 – 73939)	1267 (1060 – 1506)	5.24 (4.56 – 6.01)
Male	All	44538 (37377 – 52277)	1834 (1539 – 2152)	7.56 (6.61 – 8.57)
Female	All	17669 (14096 – 22191)	713 (568 – 894)	2.97 (2.41 – 3.55)

Table 3. Risk Factor Attribution for the leading alcohol related conditions in all ages for both sexes in Ireland in 2019.

Alcohol related disease/condition	Rank	Risk factor attribution (both sexes)
Cirrhosis and other chronic liver disease	1	73.27 (57.38 – 86.0)
Pharyngeal Carcinoma	2	54.17 (44.04 – 63.2)
Lip and Oral Cavity Carcinoma	3	50.28 (41.82 – 57.94))
Pancreatitis	4	43.54 (32.59 – 57.76)
TB	5	37.6 (26.04 – 46.88)
Hepatic Carcinoma	6	37.0 (27.32 – 46.5)
Oesophageal Carcinoma	7	31.48 - (23.81 – 38.58)
Laryngeal Carcinoma	8	30.8 (18.49 – 41.01)
Self-Harm	9	26.9 (15.11 – 38.73)
Idiopathic epilepsy	10	25.65 (21.2 – 35.63)

Endnotes

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