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ALCOHOL AND THE PUBLIC PURSE

Do drinkers pay their way?

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About the author

Christopher Snowdon is the Director of Lifestyle Economics at the IEA. He is the author of *Selfishness, Greed and Capitalism*, *The Art of Suppression, The Spirit Level Delusion* and *Velvet Glove; Iron Fist*. He has authored a number of IEA publications including *Drinking, Fast and Slow, Sock Puppets, The Proof of the Pudding, The Crack Cocaine of Gambling* and *The Fat Lie*.

Summary

This study estimates the direct costs of alcohol use to the government in England, including the NHS, police, criminal justice system and welfare system. Taken together, they amount to a gross cost of £3.9 billion per annum (in 2015 prices).

Revenues from alcohol taxation in England amount to £10.4 billion, leaving an annual net benefit to the government of £6.5 billion.

The estimated cost of alcohol-related violent crime is nearly £1 billion per annum. Other alcohol-related crimes, including drink-driving, add a further £627 million, leaving a total cost to the police and criminal justice system of £1.6 billion.

The estimated cost of alcohol-related health problems is £1.9 billion. Half of this results from alcohol-related hospital admissions (£984 million). A further £530 million is due to ambulance and Accident and Emergency attendances.

Welfare payments given to people who are unable to work because of mental or physical ill health problems that are attributable to alcohol consumption incur a further cost of £289 million.

This study uses the most recent health, crime and drinking data to build on previous cost-of-alcohol studies. Cost-of-alcohol studies are plagued by a shortage of reliable data in several areas. This study is no exception and its estimates should be regarded as being at the top end of the plausible range. The gross cost of £3.9 billion is more likely to be an over-estimate than an under-estimate.

It is important to distinguish between social and economic costs (most of which are paid by individuals and businesses) and the costs to government departments (i.e. the 'cost to the taxpayer'). Intangible costs, internal costs and societal costs are often misrepresented as being costs to taxpayers. This is the first study to have looked at the total net cost of alcohol consumption to the government in England.

Our estimates suggest that the net cost of alcohol to the state is *minus* £6.5 billion pounds, which is to say that drinkers subsidise non-drinkers to the order of £6.5 billion pounds a year. The government could halve all forms of alcohol duty and still receive more in tax than it spends dealing with alcohol-related problems.

Societal, economic and government costs of alcohol

It is often said that alcohol use costs Britain £20 billion a year. Depending on the speaker, this is said to be the cost to society, the cost to the economy, or the cost to the taxpayer. As we shall see, these are very different things. The source of the figure is a report produced by a young economist, Dr Rannia Leontaridi, for the Cabinet Office in 2003. It applied to England, not Britain, and it is a societal cost, which is to say it is a broad measure of financial and emotional costs to individuals, businesses and government departments, including economic activity foregone due to absence and premature mortality.

The Leontaridi study is a thorough piece of work in many respects, but has been misrepresented by those who have either not read it or not understood it. Leontaridi was charged with making an estimate of the *gross negative externalities* associated with alcohol consumption. It was not, and was never intended to be, an estimate of how much the government spends to deal with the consequences of alcohol misuse. The author makes this explicit in the report, saying: 'The cost estimates reported in this study affect society as a whole and not just public finances' (Leontaridi 2003: 14).

Some of the costs in the Cabinet Office report are paid by the government, others are not. Many of them are not financial costs at all, but are intangible or emotional costs which are arbitrarily monetised. The costs also include 'private costs' i.e. those incurred by people who have taken the decision to drink and which are not obviously a matter for public policy. The cost of lost productivity, for example, is likely to be mainly borne by the drinker himself and not by wider society. The final total does not represent a bill that has to be paid by the taxpayer - or anybody. Moreover, the study

gives the *gross* cost. It does not attempt to estimate the *net* cost of drinking, i.e. the cost of alcohol consumption minus the benefits of alcohol consumption, such as tax revenue generated from the sale of alcohol.

Leontaridi (2003: 59) estimated that the gross cost of alcohol to society was between £18.5 billion and £20 billion. A figure of £21 billion is also sometimes cited in public debate. This figure differs from Leontaridi's estimate in that it strips out some of the non-financial costs and adjusts for inflation since 2001. The final total purports to be the gross cost to the NHS (£3.5 billion) plus the cost of crime (£11 billion) and the cost of lost productivity (£7.3 billion). Unlike Leontaridi's estimate, it is an estimate of the cost of alcohol to the economy rather than to society. However, it still includes many emotional and private costs.[1] Neither estimate shows the cost to government.

There is nothing wrong with estimating the gross cost of an activity to society or the economy, but neither tells us how much the activity costs the taxpayer and the inclusion of private costs gives a wholly misleading impression. Despite this, both sets of figures have frequently been portrayed as if they told us just that. For example, the Centre for Social Justice (2013: 5) prefaced their report on alcohol and drug misuse by stating: 'Alcohol abuse costs taxpayers £21 billion a year' and Sarah Wollaston MP asked the House of Commons rhetorically in 2012 'What about taxpayers? The cost of the [drinking] epidemic is out of control. It is at least £20 billion' (Hansard 2012).

It is also not unusual for temperance and public health campaigners to compare the £20 billion societal cost estimate with the £10 billion revenue the government receives in alcohol duty. The implication is that drinkers do not pay their way and alcohol taxes should be higher, but it is an apples and oranges comparison. There is no connection between the hard cash received by government and the costs of emotional distress and lost output that make up much of the societal figure. Economic and societal cost estimates include many costs that are not paid by the taxpayer. Lost productivity costs, for example, are borne by individuals and possibly by businesses. Most of the cost of crime, such as damage to property, is borne by individuals (sometimes including drinkers themselves). There is

1 For example, more than half of the £11 billion cost of crime results from sexual offences (£5.8 billion). This is a much higher estimate than that reported by Leontaridi and, as the authors note, 'is primarily due to the high emotional and physical cost to the victim of this type of offence, as well as the cost to the Criminal Justice System of prosecution' (Crime & Policing Analysis Unit, 2012). Of these three types of cost, only the latter is a cost to the taxpayer.

an externality or 'social cost' here but it is not one that is borne by the government. Only the direct costs to the NHS, police, judiciary, prison service and benefits system are true costs to the taxpayer.

Surprisingly, no research has attempted to estimate the net cost of alcohol use to the government in England.[2] How much does the English taxpayer actually pay for the costs of alcohol misuse, and are these costs higher or lower than the Treasury receives in alcohol taxes? This paper seeks to find an answer to that question.

Estimating the net financial cost to the government requires a different methodology from that used in estimates of 'societal costs' and 'non-financial welfare costs'. In many respects, this makes for an easier task. We do not need to put an arbitrary value on the drinker's consumer surplus. We do not need to put a value on a lost year of life or the emotional cost of a drunken brawl. We do not need to work out how much more (or less) productive drinkers are than teetotallers. We only need to calculate how much drinkers cost public services *as a result of their drinking.* Internal costs and benefits (those which only affect the individual) can be dropped. Intangible costs, emotional costs and costs to employers are also irrelevant.

By contrast, some costs and benefits which are usually excluded must be added. Welfare payments and taxes, for example, are usually excluded from cost-of-alcohol studies because economists regard them as transfers which neither add nor subtract from the nation's resources. This makes sense if one is looking at GDP as a whole, but such payments are legitimate costs and benefits in terms of the state's budget. The estimates that follow therefore include costs to the health service, police service, prisons, courts and social security, but do not include emotional or financial costs to businesses and individuals.

Within these parameters, we have largely based our methodology on the Cabinet Office report prepared by Leontaridi, using the most recent available figures. In general, we err towards generosity rather than conservatism when compiling the estimates. When given the choice between two plausible figures, we use whichever is the highest. The final figure is therefore more likely to be an overestimate than an underestimate, although there are significant knowledge gaps in all studies of this sort which necessitate a more cautious interpretation than they often receive.

2 In line with the Cabinet Office study, this paper will confine itself to estimating the cost in England only.

Alcohol-related crime

Leontaridi based her cost of crime figure on the assumption that 47 per cent of violent crime is alcohol-related. This estimate comes from survey data in the 2001/02 British Crime Survey which found that the victims of violent crime believed the perpetrator to be under the influence of alcohol in 47 per cent of cases. As Leontaridi acknowledges, it cannot be assumed that all these offences were 'caused' by alcohol *per se*, nor that the attack would not have happened in the absence of alcohol. There are fundamental problems with defining an 'alcohol-related crime' and she emphasises that her cost of crime figures 'must be considered as maximum estimates' (Leontaridi 2003: 47).[3]

Leontaridi estimated that the total societal cost of alcohol-related crime was nearly £12 billion in 2001. This includes several large components that are not costs to the state, including £4.7 billion of 'emotional impact' costs, £1 billion of lost productivity, £2.5 billion of costs borne by victims and £1.5 billion spent in anticipation of crime (eg. insurance, security systems). It is likely that some proportion of the latter figure is borne by the government (eg. security around government buildings), but there is no way of knowing how much, nor is it clear that this money would not be spent if nobody drank alcohol. Most crime prevention expenses are borne to prevent crime *per se* rather than alcohol-related crime specifically and are therefore fixed costs. The only unambiguous and direct costs to government from alcohol-related crime are those relating to the police

3 The assumption that half of violent crime is alcohol-related is liable to lead to an overestimate. As Leontaridi (2003: 47) notes, a survey of perpetrators (albeit in the USA) found that only half of those who were drunk at the time attributed their actions to alcohol. The subjective views of both parties should be treated with scepticism, but the reliance on victim testimony is likely to lead to over-reporting rather than under-reporting. It is highly improbable that every assault perpetrated by somebody who had been drinking would not have taken place in the absence of alcohol.

and criminal justice system which amount to £1.7 billion in Leontaridi's study. To reach a new estimate for 2015, we need to adjust her figures for (a) inflation, and (b) changes in the crime rate since 2001.

Violent crime

In 2013/14, the perpetrator was perceived by the victim to be under the influence of alcohol in 53 per cent of violent incidents. Although this is a slightly higher proportion than in 2001/02, the number of violent incidents fell significantly in the intervening years. The ONS estimates that there were 704,000 alcohol-related violent incidents in England and Wales[4] in 2013/14 (ONS 2015: 1), compared with Leontaridi's estimate of 1,151,500 (Leontaridi 2003: 51).[5] This is a 39 per cent decline.

Leontaridi (2003: 52) estimated that the cost to the criminal justice system of assaults and woundings was £1,114,347,185 in 2001. To bring this figure up to date, it needs to be adjusted for two variables. First, inflation, which increased prices by 47 per cent between 2001 and 2015, turning Leontaridi's £1.1 billion into £1,638,090,369 in today's money. Second, the 39 per cent decline in violent crime since 2000/01. Lowering Leontaridi's inflation-adjusted figure by 39 per cent leaves a cost to the police and criminal justice system of **£999,235,125**.

Other alcohol-related crime

In addition to alcohol-related assaults and woundings, other offences can be attributed to alcohol consumption, including sexual offences, homicide, criminal damage and various forms of theft and robbery. In Leontaridi's Cabinet Office study, the proportion of these crimes that were attributed to alcohol consumption bore a cost on the criminal justice system of £522 million. Table 1 shows the cost of those crimes today after adjusting for (a) inflation and (b) the change in the incidence of each crime since 2001. All figures are from comparable crime surveys, except those marked with an asterisk which are police recorded crime figures (plus multiplier[6]).

4 As with the Cabinet Office study, the limitations of the data force us to include Welsh figures alongside those from England. As an estimate for England, the costs that result are therefore likely to be overestimates.

5 Both sets of figures exclude homicide and both figures come from the British Crime Survey (now known as the Crime Survey for England and Wales).

6 This is the same methodology used by Leontaridi (2003: 49): 'The multipliers for burglary in business, sexual offences, criminal damage and robbery from business were 2.1, 3.5, 6.3 and 5.8 respectively.'

2013/14 figures from the same sources are used to update the figures. In the case of ‘attempted vehicle theft’ and ‘other theft and handling’, no comparable figures are available for 2013/14 and so we have only adjusted for inflation, despite the likelihood that there has been a decline in these offences.

Alcohol-related offence	2001 prices	2015 prices	Change in incidence since 2001/02	Fully adjusted cost in 2015 prices
Homicide	£7,352,279	£10,806,379	-41%	£6,375,763
Burglary in business*	£82,143,653	£120,734,741	-50%	£60,367,371
Criminal damage*	£198,146,380	£291,235,549	-53%	£136,880,708
Robbery from individual	£63,720,755	£93,656,765	-56%	£41,208,976
Robbery from business*	£13,473,349	£19,803,128	-56%	£8,713,376
Burglary in a dwelling	£86,493,150	£127,127,631	-44%	£71,191,473
Theft from a person	£7,551,437	£11,099,102	-16%	£9,323,246
Theft of a pedal cycle	£1,573,216	£2,312,312	+3%	£2,381,681
Theft of vehicle	£3,146,432	£4,624,625	-77%	£1,063,664
Theft from a vehicle	£6,374,590	£9,369,372	-84%	£1,499,100
Attempted vehicle theft	£962,999	£1,415,415	N/A	£1,415,415
Other theft and handling	£4,042,689	£5,941,944	N/A	£5,941,944
Sexual offences*	£77,019,657	£113,203,491	+76%	£199,238,144
TOTAL	**£552,000,586**	**£811,330,454**		**£545,600,861**

Table 1: Estimated cost of alcohol-related crime in 2001 and 2015 (England and Wales)

As this table shows, the effect of inflation on the criminal justice costs of alcohol-related crime is offset by savings from the decline in most of the crimes in question.[7] Using the same methodology as the Cabinet Office, we find that the current cost of these alcohol-related crimes to the criminal justice system is **£545,600,861**. Add to this the £999 million cost of alcohol-related violent crime and the full cost to the police and criminal justice system is **£1,544,835,986**. This is slightly lower in nominal terms, and significantly lower in real terms, than the £1,666 million reported in Leontaridi's 2003 report.

Drink driving

The Cabinet Office report attributes £525 million to the costs of drink driving. Most of these are lost output and emotional costs borne by victims and perpetrators. Since they are not paid for by the taxpayer, they are ineligible for our purposes, but relevant criminal justice and medical costs account for £109 million. Adjusted for inflation, this amounts to £160 million.

In 2001, there were 12,270 drink-related traffic accidents and an estimated 530 drink-drive deaths in Great Britain[8] (Leontaridi 2003: 53-54). By 2013, these figures had fallen by more than half, to 5,710 accidents and 260 deaths (Department for Transport 2015: 4). Between 2003 and 2013, the number of people who failed a breath test each year also fell by more than half, from 7,289 to 3,296 (Department for Transport 2015b). Every indicator points to drink-driving becoming significantly less common since the Cabinet Office study was published. The steep decline in accidents, arrests and fatalities suggests that the amount spent on medical treatment and court costs has fallen by around half. If so, we estimate that the total for 2013 is £80 million. In addition, we have included the £1,090,000 spent on the THINK! drink drive campaign in 2013/14[9] to reach a total cost to government of **£81,090,000**. This is half of Leontaridi's total after adjusting for inflation, reflecting the apparent halving of drink-driving incidents.

7 Sexual offences are the only 'alcohol-related' crime to have seen a major rise in numbers in recent years. The ONS attributes this to increased reporting rather than an increase in the number of offences.

8 Data for England is not held separately, therefore the following costs are likely to be overestimates for England.

9 https://www.gov.uk/government/publications/dft-think-drink-drive-campaign-costs-and-impact

Total crime cost:

Violent crime: £999,235,125
Other crime: £545,600,861
Drink-driving: £81,090,000

= **£1,625,925,986**

Alcohol-related health costs

The cost of alcohol-related harm to the NHS has been estimated and re-estimated several times. The Cabinet Office study put the figure at between £1,383 million and £1,683 million (in 2003 prices). The same methodology has been used subsequently, with prices adjusted for inflation, consumption of health care and changes in patterns of heavy drinking. In 2008, the Health Improvement Analytical Team estimated that the cost to the NHS in England was £2.7 billion (HIAT 2008). In 2010, the National Institute of Clinical Excellence (NICE 2010) adjusted the HIAT figure by the rate of inflation, arriving at a cost of £2.9 million and this was subsequently upgraded to £3.5 billion by the NHS (2012).

For our estimate of the cost to the NHS in 2015 prices, we analyse each of the categories in the original Cabinet Office report.

Health: Hospital admissions

To calculate the cost of alcohol-related hospital admissions to the NHS, we take the total number of hospital admissions that are wholly attributable to alcohol consumption and multiply it by the average cost of an alcohol-related admission. In 2012/13, there were 103,160 such admissions (ONS 2014: 28) and NICE estimated in 2010 that each admission cost the NHS £1,560 in 2008/09 prices. Adjusted to 2015 prices, this suggests an average cost of £1,860 and a total cost of wholly attributable alcohol-related hospital admissions of **£160,929,600**.

In addition to hospital admissions that are wholly attributable to alcohol, the Office for National Statistics provides figures for the number of *partly* attributable admissions. These are hospital visits involving the treatment of conditions that are sometimes, but not always, caused by alcohol

consumption, such as mouth cancer, hypertension and pancreatitis. Based on a system of alcohol-attributable fractions it is estimated, for example, that 15 per cent of breast cancer cases amongst women aged 45 to 54 are caused by alcohol consumption. Similarly, 23 per cent of hypertensive diseases amongst men aged 65 to 74 are assumed to be alcohol-related (Jones and Bellis 2013: 38-40).

Many of the diseases and conditions that are partly attributable to alcohol use are common, chronic and require multiple hospital visits. As a result, they are associated with more hospital admissions than wholly attributable conditions. In 2012/13, there were 325,870 hospital admissions for which a partly alcohol-attributable cause was the primary reason for the visit (ONS 2014: 28). The cost of each of these admissions was estimated by NICE to be £2,120 in 2008/09 prices, which equates to £2,525 in 2015 prices. In total, then, hospital admissions that are partly attributed to alcohol cost a total of **£822,821,750** in today's prices.

Partly attributable admissions involve people attending hospital for treatment or diagnosis of a condition that was caused by alcohol, i.e. their primary diagnosis is an alcohol-attributable ailment. It is right that the cost of these admissions be included as a 'cost of alcohol' to the taxpayer. However, several recent cost-of-alcohol estimates have also included a large number of additional admissions that are more difficult to justify. Under what the ONS calls the 'broad measure', there are admissions which involve people who have a partly or wholly alcohol-attributable condition *as a secondary diagnosis* but who were attending hospital for a condition that was not alcohol-related.

For example, if someone who happened to have hypertension went to hospital for treatment of a virus, this would be counted as an alcohol-related admission (or, to be precise, a fraction of an alcohol-related admission) because hypertension is sometimes caused by alcohol use. This is a broad measure indeed. Since a hospital admission of this kind was not caused by alcohol and would not be prevented in the absence of alcohol, it makes little sense to include it in a cost-of-alcohol study. It seems more reasonable to only include cases in which a person goes to hospital as a result of having an alcohol-attributable condition, rather than including everybody who happens to have a partially alcohol-related condition but attends hospital for an ailment that is not related to their drinking.

Moreover, clinicians are more likely to record a secondary diagnosis than they were in the past, leading to 'artificial inflation over time due to changes unrelated to the actual occurrence of disease' (NHS 2012: 10) and implausibly large increases in putative costs.[10] For example, if taken at face value, the most recent NHS cost estimate showed a 67 per cent rise in the cost of alcohol-related hospital admissions in the space of just three years (ibid.: 9). The claimed cost of alcohol-related hospital admissions snowballed from around £500 million in Leontaridi's report to £1.3 billion in 2008 and then to £1.8 billion in 2012. These runaway costs, which coincided with a steep *decline* in alcohol consumption, are an almost inevitable result of including admissions for which alcohol was not the primary diagnosis. It reflects little more than the ageing population, coding drift, and the increased use of hospitals (the number of 'finished consultant episodes' in English hospitals for all causes rose from 12 million to 18 million between 2001 and 2013).

For these reasons, we have followed Leontaridi's methodology by only including alcohol-attributable admissions when the primary diagnosis was partly or wholly alcohol-attributable. By narrowing our focus to people who attend hospital *for the treatment* of conditions that were directly or indirectly caused by alcohol consumption, we have produced an estimate that can more realistically be described as 'alcohol-related'. The measure we have used is also the preferred measure of the Department of Health (Public Health England 2013: 14). It leaves us with a figure of **£983,751,350** in 2015 prices.

Health: Outpatients

Estimates of the cost of alcohol-related outpatient admissions rely heavily on a key assumption in the Cabinet Office study that heavy drinkers use outpatient services 'almost twice as much as their general population counterparts' (Leontaridi 2003: 22). The source of this claim is a study of heavy drinkers in Birmingham (the Birmingham Untreated Heavy Drinkers Study) published in 2002 which Leontaridi (2003: ix) uses 'due to the lack of better data'. The updated 2009 edition of the Birmingham research confirmed this finding, although the estimate refers not only to outpatient admissions but to 'A & E and/or outpatients services' (Rolfe et al. 2009: 62). The 2009 research also notes that use of these services by heavy drinkers fell by a third between 2001 and 2007 (when the study ended)

10 'Between 2002/03 and 2010/11, the percentage of admission episodes with at least one secondary diagnosis increased from 58% to 75%.' (Public Health England 2013: 8)

(ibid.). Despite the risk of over-estimating the cost, we base our figures on the same assumption - that heavy drinkers use outpatients twice as much as the general population.

It is necessary first to calculate how many heavy drinkers live in England. The 2000/01 General Household Survey found that seven per cent of men and three per cent of women were heavy drinkers, defined as consuming more than 50 or 35 units a week for men and women respectively (Walker et al. 2001: 161). Leontaridi (2003: 8) calculated that this amounted to 1,930,705 heavy drinkers in England, and this formed the basis of her estimate of alcohol-related outpatient costs. A subsequent Department of Health estimate assumed that seven per cent of men and four per cent of women were heavy drinkers, thus increasing the cost (DoH 2012: 1). A 2008 estimate assumed even greater numbers of heavy drinkers: eight per cent of men and five per cent of women (HIAT 2008). All these assumptions reflected ONS prevalence figures at the time and inevitably led to higher cost estimates.

In our analysis, we use the most recent data from the 2013 Health Survey for England which classifies five per cent of men and three per cent of women as heavy drinkers (HSCIC 2014b: 10). Extrapolating this figure across the adult population of England (43.7m) suggests that there are 1,740,859 heavy drinkers in England (1,077,722 men, 663,137 women). Despite population growth since 2003, this is a smaller number than that used by Leontaridi, reflecting the decline in heavy drinking amongst men in the years since.

According to the Department of Health (2013: 9), each outpatient visit cost the NHS £108 in 2012/13, which is £117 in 2015 prices. In line with NHS (2012: 3), we assume that the average man attends outpatients 1.04 times per year and the average woman attends outpatients 1.17 times per year. In line with Leontaridi and subsequent researchers, we further assume that heavy drinkers use outpatient services twice as much as the general population. This amounts to 1,896,701 excess admissions at a cost of **£221,914,037** (in 2015 prices). This is somewhat lower than the NHS estimate of £246 million for 2009/10 and is entirely due to the decline in heavy drinking.

Health: Accident and Emergency

Leontaridi (2003: 23) estimated that alcohol-related Accident and Emergency (A & E) attendances cost the taxpayer £510,162,038 in 2000/01, based on the assumption that 35 per cent of all A & E attendances and emergency ambulance journeys are due to alcohol misuse, as shown in Table 2.

	Total (2000/01)	35% alcohol-related	Cost per service	Total cost
Accident and Emergency attendances	14,293,307	5,002,658	£85	£425,225,930
Emergency ambulance journeys	2,914,000	1,019,038	£83.35	£84,936,108

Table 2: Cabinet Office estimate of alcohol-related costs to A & E and ambulance services in 2000/01.

The same calculation with more recent statistics is shown in Table 3. Use of A & E departments has risen by 50 per cent since 2001, with 21,779,000 attendances in England in 2013/14 (NHS 2015). It is estimated that each A & E attendance now costs the NHS £114 (Department of Health 2013: 9). If 35 per cent of all attendances in 2013/14 were alcohol-related, the cost would be £868,982,100.

Over the same period, the number of emergency ambulance calls has more than doubled, from nearly three million in 2001 to nearly seven million today (HSCIC 2013). If 35 per cent of these emergencies were also alcohol-related (as Leontaridi assumed), the cost to taxpayers would be £386,540,000. This would make a combined total cost to A & E and the ambulance service of nearly £1.3 billion - more than twice Leontaridi's estimate.[11]

11 A & E figures from NHS (2015). Ambulance figures from (HSCIC 2013). Cost of A & E attendance from Department of Health (2013: 9). Cost of emergency ambulance call from National Audit Office (2011: 5)

	Total (2012/13)	35% alcohol-related	Cost per service	Total cost
Accident and Emergency attendances	21,779,000	7,622,650	£114	£868,982,100
Emergency ambulance journeys	5,020,000	1,757,000	£220	£386,540,000

Table 3: Estimate of alcohol-related costs to A & E and ambulance services in 2012/13 if 35 per cent of all attendances were alcohol-related.

However, the key assumption that 35 per cent of these incidents are alcohol-related was dubious in 2003 and is quite untenable today. The only evidence for it comes from a long-forgotten MORI survey which reputedly found that a sample of A & E staff believed that 35 per cent of the people they treated had been drinking. The details of this survey have been lost to the mists of time. It is not clear how many people were surveyed or where they worked. In 2003, the government's Strategy Unit referred to the survey and suggested that 35 per cent was the estimate's uppermost limit, saying '*Up to* 35 per cent of all accident and emergency (A&E) attendance and ambulance costs (c. £0.5bn) are estimated to be alcohol-related' (my italics) (Strategy Unit 2003: 48).

Whatever the source of the figure, 35 per cent seemed implausibly high in 2003 and it is almost impossibly high in 2015. Of the 18 million A & E attendances for which records were held in 2012/13, 3.6 million (20 per cent) involved children under the age of 15 and 3.9 million (22 per cent) were treated with nothing more than guidance and advice. A handful of the paediatric cases, and some of those that resulted in mere guidance, may have been alcohol-related, but few of them would have been the result of alcohol-induced violence, injury or acute health problems. It is difficult to imagine the majority of the remaining 58 per cent of A & E attendances being alcohol-related.

Newspapers often give the impression that A & E staff do little else but take care of drunks and their victims, particularly at the weekend, but the data do not bear this out. It is generally agreed that a large number of assaults are alcohol-related and yet only 0.9 per cent of A & E attendances

are due to assault of any kind. As a cause of A & E activity, assaults are far outnumbered by sports injuries, for example. Figure 1 shows the hourly attendance rate in England for both in 2012/13, with the solid line showing sports injuries and the dotted line showing assaults (HSCIC 2014: tables).

It is clear from Figure 1 that there is a significant rise in attendances for assault on Friday and Saturday evenings. Drunkenness surely plays a major role in these weekend spikes, and yet the pattern of attendances overall does not suggest that alcohol is responsible for a third of all A & E activity. Even at the weekend, there are many more attendances for sports injuries than for assault and, as Figure 2 shows, there is not a dramatic rise in A & E attendances at the weekend. Indeed, the majority of A & E attendances and emergency ambulance journeys take place between 8am and 6pm.

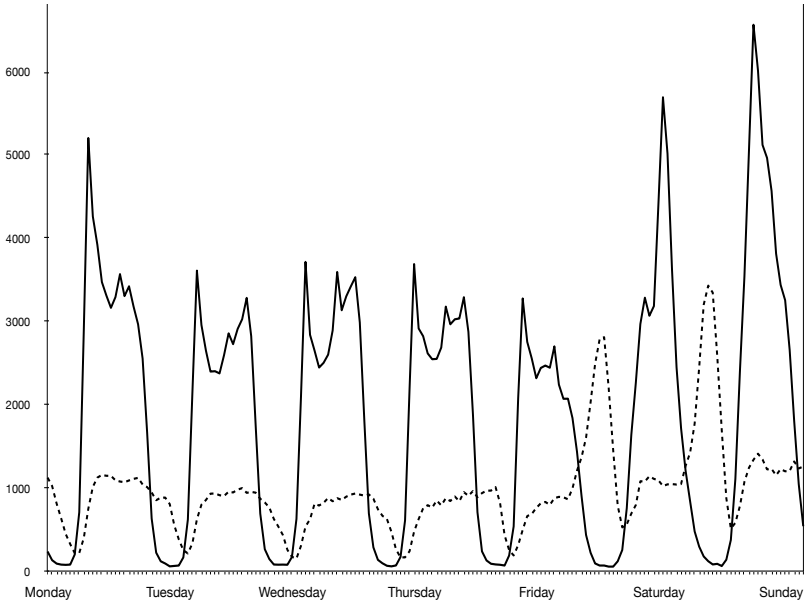

Figure 1: A & E attendances by hour and day - assaults (dotted line) and sports injuries (solid line)

Contrary to popular belief, Friday and Saturday nights are not the busiest time for A & E departments. For example, in 2012/13 there was an average of 182,612 A & E attendances between 11am and noon on Tuesdays, compared to 73,738 attendances between 11pm and midnight on Saturdays (HSCIC 2014: tables). Figure 3 shows A & E attendances by hour.

Furthermore, December - the month with the highest alcohol sales - is one of the quietest for A & E departments. Only February, the shortest month of the year, sees fewer attendances.

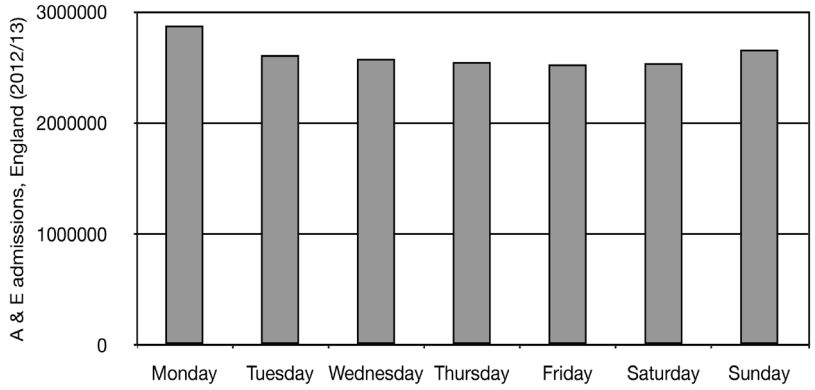

Figure 2: A & E attendances by day of week

None of this provides more than a rough sketch and there is no doubt that alcohol-related incidents put a strain on A & E departments, but the claim that alcohol is a causal factor in 35 per cent of all A & E attendances is scarcely credible. Moreover, even if alcohol had been a factor in 35 per cent of attendances in 2000/01, there is no reason to assume that it accounts for the same proportion fifteen years later. As mentioned above, the total number of A & E attendances has risen by 50 per cent since 2003. It cannot be assumed that alcohol-related incidents have risen by the same amount (from four and a half million to more than seven and a half million) during a period when alcohol consumption fell by nearly a fifth, the number of pubs declined by twenty per cent and the rate of violent crime fell by 39 per cent.

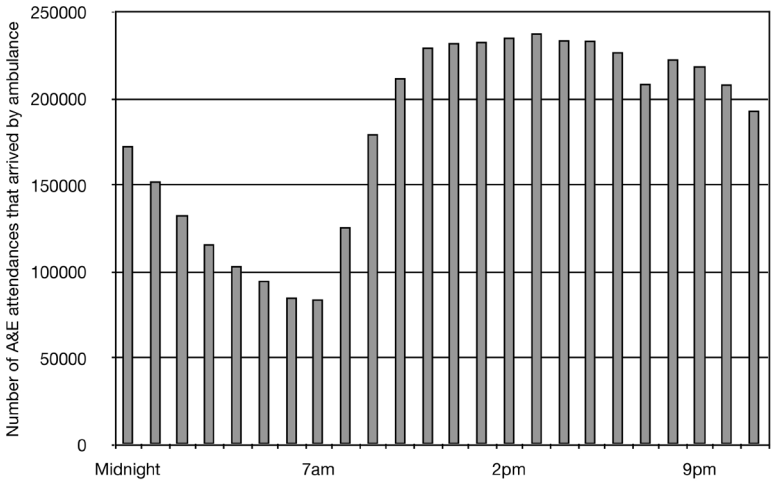

Figure 3: A & E attendances by hour

The 50 per cent rise in A & E attendances since 2000/01 does not reflect a 50 per cent rise in the number of accidents and emergencies, let alone in the number of alcohol-related accidents and emergencies. From 2003/04, there was a change in the way the data were collated, with minor injury units and walk-in centres included for the first time. As John Appleby, Chief Economist at the King's Fund, notes: 'much of the increase in 2003/4 was due to previously unrecorded attendances now being collected, but also additional - but less serious - work being carried out in the new units. From 2003/4 to 2012/13, attendances in type 1 units have remained more or less unchanged. It is attendances in type 2 and 3 units [which typically deal with less serious incidents] that account for all the increase' (Appleby 2013).

All cost-of-alcohol estimates since 2003 have ignored the changes in data collation and have simply assumed that 35 per cent of the rapidly growing number of A & E attendances are alcohol-related. It is no wonder that the putative cost of alcohol to NHS England continues to rise despite the decline in the amount of alcohol consumed. The 35 per cent estimate was never reliable and seems to have been used in the absence of anything better. When the NHS re-estimated the cost in 2012, it acknowledged that the statistic was 'now over 10 years old and may therefore be considered out-of-date' but used it anyway because 'no new estimates are available' (NHS 2012: 4).

In fact, alternative estimates can be found. The Birmingham Untreated Heavy Drinkers Study reported that heavy drinkers were 'almost twice as likely as the general population to have used A&E and/or outpatients services in the previous three months' (Rolfe et al. 2009: 62). If this estimate is good enough to calculate the cost to outpatient services, it should be good enough to calculate the cost to A & E. In England, the average person aged 15 years or older attends Accident & Emergency 0.32 times per annum.[12] If heavy drinkers use A & E an additional 0.32 times each, our 1,740,859 heavy drinkers account for additional 557,075 attendances. At £114 per attendance, this amounts to an excess cost of £63,506,550. In other words, heavy drinkers account for 2.6 per cent of all A & E attendances. This is not trivial, but it is a far cry from 35 per cent.

However, it is not just heavy drinkers who attend A & E as a result of alcohol-related harm. A recent study estimated that so-called 'binge drinkers' account for 390,628 A & E attendances (Francesconi and James 2015: 72). At £114 each, this represents an excess cost of £44,531,592. Adding the figures for heavy and binge drinkers together (notwithstanding the obvious cross-over between the two categories) suggests that heavy and binge drinking explains less than five per cent of A & E attendances at a cost of £108 million per annum. This likely overstates the cost to NHS England since the Francesconi and James study relates to the whole of Great Britain.[13] Nevertheless, the total that emerges is much lower than that previously suggested in studies which assume 35 per cent of all attendances are alcohol-related. The NHS (2012: 4) notes that the 35 per cent figure is at the 'upper range of possible estimates', with 2.9 per cent and 7 per cent being the low and mid-range estimates. Our analysis suggests that these lower, single-digit estimates are more realistic.

Another piece of evidence comes from a 2013 study published in *Emergency Medicine* which found that 14 per cent of attendances to the emergency department at Bristol Royal Infirmary were caused by alcohol consumption (Hoskins and Benger 2013). This figure, though clearly imperfect as an estimate for England as a whole, is more than twice as high as our estimate above and is at the top end of what we believe to be credible. In keeping with our policy of selecting the highest plausible estimate, we base our final figure on the assumption that 14 per cent of A & E attendances are

12 Based on 46,184,774 people aged 15 or over (2011 census) using A & E 14,683,207 times (2012/13 NHS data).

13 The estimates are actually based on data from Solihull Care Trust which are extrapolated across the whole of the UK.

alcohol-related, with a high probability that it is lower and a low probability that it is higher. Like Leontaridi, we are forced to assume that the figure for A & E also applies to emergency ambulance journeys (there are no separate data on this whatsoever). This amounts to a cost of £502,208,840 in 2012/13 (see Table 4). Adjusted for inflation, this is **£529,689,707** in 2015 prices.

	Total (2012/13)	14% alcohol-related	Cost per service	Total cost in 2012/13 prices
Accident and Emergency attendances	21,779,000	3,049,060	£114	£347,592,840
Emergency ambulance journeys	5,020,000	702,800	£220	£154,616,000

Table 4: Estimate of alcohol-related costs to A & E and ambulance services in 2012/13 if 14 per cent of all attendances were alcohol-related.

Health: GP and practice nurse consultations

Leontaridi adds £28-£49 million to her total on the basis that 'total NHS GP consultations among heavy drinkers in England in 2000/01 range between 1.5 and 2.7 million' (Leontaridi 2003: 23). If heavy drinkers visit GP surgeries more than the general population, this figure would be credible but, as Leontaridi acknowledges, they actually consult family doctors *less often*. In fact, it is non-drinkers who go to the GP most often - six times a year for men and seven times a year for women, compared with four times a year for the heaviest drinkers (both male and female) (Leontaridi 2003: xii).

Leontaridi assumes that 22 per cent of heavy drinkers' GP consultations are alcohol-related and bases her cost estimate of £28 million on this assumption. She also includes a higher cost estimate of £49 million based on the assumption that 35 per cent of consultations are alcohol-related.[14] Both are difficult to justify. The 35 per cent figure comes from the A & E survey and has no bearing on GP practices. The 22 per cent figure may be nearer the truth (although the Birmingham heavy drinkers claimed that only one per cent of their GP appointments were due to alcohol), but it is not an *excess* cost. To be clear, the aim of a study of this kind is to compare current costs with the costs that would exist in a hypothetical world in which alcohol does not exist. Since non-drinkers visit the GP six or seven times a year, it is implausible that heavy drinkers would only visit the GP three times a year if they had never drunk. In terms of GP appointments, heavy drinking appears to be either cost-saving or cost-neutral. As a conservative estimate, we have assumed cost-neutrality.

This is not to suggest that alcohol is never a factor in GP consultations. Of course it is. It is just that heavy drinkers are less likely to consult a GP about this, or other, health issues. There are plausible reasons for why heavy drinkers might make fewer GP appointments. They may be generally neglectful of their health or may rely on A & E for medical treatment. They may be younger and therefore less likely to suffer from chronic illness. Whatever the reason, the fact that they have fewer GP consultations suggests that they are cost-saving on this measure. They may be storing

14 The most recent NHS cost estimate assumes, without evidence, that heavy drinkers have the same number of GP appointments as the general population and further assumes that 28.5 per cent of these appointments are alcohol-related and, therefore, constitute an excess cost (NHS 2012: 5) 28.5 per cent is chosen because it is midway between 22 and 35 per cent.

up health problems which place a burden on hospitals and A & E departments, but these costs have been accounted for elsewhere in our calculation.

The same applies to practice nurse consultations. Leontaridi (2003: 23) acknowledges that 'no data exist linking directly practice nurse consultations and patient alcohol consumption'. Lacking relevant figures, she simply assumes that 'all consultations of heavy drinkers with the practice nurse have been due to problems associated with alcohol misuse' (ibid. x). This is untenable. The important point is that 'heavy drinkers in the [Birmingham] study had on average one practice nurse contact a year, which compares closely with general population averages' (ibid.). Since heavy drinkers do not see practice nurses more than average, there is no excess cost. We therefore conclude that the cost of heavy drinking in terms of practice nurse consultations, as with GP consultations, is zero.

It should be noted that the issues raised in this section have little bearing on the final cost estimate. GP and nurse consultations make up just three per cent of the total cost to the NHS in the Cabinet Office study (Leontaridi 2003: 26) as well as in the most recent update of the Cabinet Office study (NHS 2012).

Health: Other costs

In addition to the NHS costs outlined above, Leontaridi includes the cost of treatment services, counselling, alcohol-related drug prescriptions and other primary care services. These costs are relatively trivial compared to hospital admissions and A & E attendances, amounting to around £130 million in her study (Leontaridi 2003: 26).

In 2013, NHS England spent £3.13 million on alcohol dependence drugs (ONS 2014: 29). For the rest of the costs, we use figures from the NHS (2012) and convert them to 2015 prices, leaving a combined total for drugs, treatment and other services of **£218,176,782**.

Total cost to the NHS

Taken together, the total cost of alcohol use to the NHS in England amounts to nearly two billion pounds. This is less than some recent estimates have suggested, partly because the decline in heavy drinking has led to a decline in costs, but also because of the following methodological weaknesses in previous studies which have led to over-estimates:

Firstly, the inclusion of hospital admissions in which an alcohol-related condition was the secondary diagnosis is difficult to justify. In this study we follow the Department of Health's current best practice by defining hospital admissions as alcohol-related if a partly or wholly alcohol-related condition was the primary reason for an individual attending hospital.

Secondly, the belief that 35 per cent of A & E attendances are alcohol-related lacks serious evidence. It is based on subjective opinions in a fifteen year old survey that no longer seems to exist. In this study, we use an estimate from a more recent academic study which may also be an over-estimate but is more likely to be in the right ballpark.

Thirdly, the evidence shows that heavy drinkers do not have more GP and practice nurse consultations than the rest of the population and therefore do not incur expenses above and beyond those of the average citizen for these services.

Table 5 shows the full breakdown of the cost of alcohol to NHS England. Table 6 shows how our estimate compares to previous estimates, with the main assumptions and data sources shown on the right.[15]

15 Abbreviations: General Household Survey (GHS), Hospital Episode Statistics (HES), Health Survey for England (HSE), Birmingham Heavy Drinkers Study (BHDS), Health Improvement Analytical Team (HIAT)

Wholly attributable hospital	£160,929,600
Partially attributable hospital	£822,821,750
Outpatients	£221,914,037
A & E and ambulance	£529,689,707
GP/nurse appointments	£0
Other	£218,176,782
Total	**£1,953,531,876**

Table 5: Annual costs of alcohol use to NHS services

Study	Year	Cost	Assumptions/sources
Cabinet Office	2003	£1.4-£1.7 billion in 2001 prices	Heavy drinking prevalence: 7 per cent (male), 3 per cent (female) (GHS). 35 per cent A & E admissions due to alcohol use (MORI). Hospital admissions: primary diagnosis (whole and partial) (HES) Heavy drinkers use outpatients twice as much (BHDS).
HIAT	2008	£2.7 billion in 2006/07 prices	Heavy drinking prevalence: 8 per cent (male), 5 per cent (female) (GHS). 35 per cent A & E admissions due to alcohol use (MORI). Hospital admissions: primary and secondary diagnoses (whole and partial) (HES). Heavy drinkers use outpatients twice as much (BHDS).

Study	Year	Cost	Assumptions/sources
NICE	2010	£2.9 billion in 2008/09 prices	HIAT (2008) cost adjusted for inflation.
NHS	2012	£3.5 billion in 2009/10 prices	Heavy drinking prevalence: 7 per cent (male), 4 per cent (female) (GHS). 35 per cent A & E admissions due to alcohol use (MORI). Hospital admissions: primary and secondary diagnoses (whole and partial) (HES). Heavy drinkers use outpatients twice as much (BHDS).
IEA	2015	£2.0 billion in 2015 prices	Heavy drinking prevalence: 5 per cent (male), 3 per cent (female) (HSE). 14 per cent A & E admissions due to alcohol use (Hoskins and Benger 2013). Hospital admissions: primary diagnoses (whole and partial) (HES). Heavy drinkers use outpatients twice as much (BHDS).

Table 6: Alcohol-related NHS England cost estimates 2003-2015

Social security

To our knowledge, nobody has estimated the costs of welfare payments to those who do not work as a result of alcohol-related problems. In the Cabinet Office study, Leontaridi (2003: 28) did not include such costs because she calculated the cost of lost productivity instead, correctly explaining that including the cost of benefit payments would be double-counting if lost output had already been accounted for. Our task requires the opposite assumption. Since lost productivity from absenteeism, presenteeism, reduced efficiency, sickness and mortality are costs to individual workers and/or employers (rather than the state) they are not relevant to our calculation of costs to the taxpayer. Benefit payments, by contrast, are largely avoidable costs to the government and should be included.

There are many challenges in estimating the cost to the taxpayer of alcohol-related welfare payments. Not for the first time, we are confronted with a shortage of relevant data. It cannot be assumed that an unemployed heavy drinker is necessarily out of work *as a consequence* of being a heavy drinker. As Leontaridi (2003: 32) notes, he may be a heavy drinker as a consequence of being unemployed. Furthermore, both unemployment and heavy drinking may be caused by a third variable, such as psychiatric problems. There is, then, 'not a clear one way causation' between alcohol and unemployment (ibid.) and it is not even clear whether heavy drinkers are more likely to receive unemployment benefits than the general population (Grant and Dawson 1996, Rodriguez and Chandra 1996). Studies on this topic are conflicting and of variable quality (Bauld et al. 34-43). Heavy alcohol use may be a barrier to employment but there is also evidence that people who drink less heavily are attractive to employers, as evidenced by their higher salaries (Hamilton and Hamilton 1997). It is unclear what impact - negative or positive - alcohol has on employment and the economy overall, but even if the picture was less murky, there is

insufficient data in England upon which to base an estimate of the costs and benefits to the taxpayer.

Although heavy drinkers do not seem to be more likely than the general population to claim Jobseekers Allowance, dependent drinkers are twice as likely to claim other benefits, such as disability allowance (Hay and Bauld 2010: 23). According to the Department for Work and Pensions (2014: 6), 53,880 people had a 'primary disabling condition of alcohol misuse' which left them in receipt of an incapacity benefit in 2013. The Employment and Support Allowance, which has replaced Incapacity Benefit and Severe Disability Allowance, offers a range of payments depending on age and circumstance. For our calculation, we have used one of the higher payments of £102.15 per week - a sum that is paid to those who have been out of work for more than three months. Assuming that all claimants receive this payment throughout the year, this amounts to a cost to the government of £289,199,874.

This figure should be considered a high estimate for several reasons. Firstly, many claimants receive less than £102.15 per week. Secondly, some claimants are not in receipt of the allowance for the full year. Thirdly, there may be fewer claimants today than there were in 2013 (the number has been falling since 2010). On the other hand, this estimate does not include administrative costs. Given the limited data available, a cost of **£289,199,874** in benefit payments due to alcohol-related ill health is a realistic, though possibly high, estimate.

The net cost of alcohol to the government in England

As we have seen, English taxpayers pay a price for alcohol use in terms of alcohol-related crime, alcohol-related ill health and alcohol-related welfare dependency. This study finds that the gross costs amount to an annual bill of £3.9 billion, as shown in Table 7.

	Gross cost
Crime	£1,625,925,986
Health	£1,953,531,876
Welfare	£289,199,874
Total	**£3,868,657,736**

Table 7: Gross cost of alcohol use to the government in England in 2015

Since this figure relates only to government expenditure, it is naturally lower than the £20-21 billion figure that is often cited as being the 'cost to society', but it is consistent with studies from Australia and France which find that the cost to the state is 15 to 25 per cent of the total societal cost (WHO 2010: 7).

From the perspective of the government, financial costs are offset by financial benefits. Most obviously, there are significant revenues from alcohol duty. Cost-of-alcohol studies usually ignore these revenues because they do not add to the economy - they merely transfer resources from one

part of the economy to another.[16] The World Health Organisation's guidelines for best practice in estimating the costs of alcohol note that 'taxation is a transfer of money from one group to another and therefore does not constitute a social benefit. However, if we are looking at external costs (or the costs to a particular actor such as government) then taxation does become an external benefit' (WHO 2010: 44). For our purposes of estimating the *net cost* of alcohol use to the government, taxation is an eligible benefit and, in England, and very substantial one.

In England in 2013/14, HMRC (2014) received £3,143 million in wine duty, £2,839 million in beer duty, £2,413 million in spirits duty and £281 million in cider duty. This amounts to £8,676,000,000 in alcohol duty with an additional £1,735,200,000 raised in VAT on the duty. In total, HMRC received £10,411,200,000 as a direct result of alcohol consumption in England in 2013/14.

Table 8 shows that the cost of alcohol in England is comfortably offset by alcohol taxes. The government makes a tidy net profit from alcohol consumption, with an annual surplus of over £6.5 billion per annum. To put it another way, the net cost of alcohol use to the state is *minus* £6.5 billion pounds. To put it still another way, drinkers are subsidising non-drinkers to the tune of six and a half billion pounds a year.

	England (2015)
Alcohol-related costs (health, crime, welfare)	£3,868,657,736
Alcohol-related revenue (alcohol taxes)	£10,411,200,000
Net cost to government	**-£6,542,542,264**

Table 8: Net cost of alcohol to the government in England

16 As Mäkelä (2012) notes, this does not deter researchers from including the proceeds of crime as a loss to society when they should more properly be viewed as a transfer of resources.

Limitations

The reader cannot fail to have noticed how slender some of the evidence is behind the assumptions in cost-of-alcohol studies. Faced with a shortage of reliable data, researchers have had to extrapolate from local studies and surveys. Upon inspection, claims about alcohol misuse costing various parts of the NHS hundreds of millions of pounds turn out to be based on an old opinion poll and a study of heavy drinkers in Birmingham. Official data also leave enormous room for error. For example, the authors of the 2012 NHS estimate acknowledged that they had a choice between using a figure of 195,000 or 1.1 million as the number of partially alcohol-attributable inpatient admissions.[17] There is a vast gulf between the two, and by choosing the latter the authors increased the putative cost to the NHS by over a billion pounds.

There is no way of knowing whether the resulting estimates paint a true picture of the cost of alcohol in England. Although this study strives to provide the best possible estimate of the cost of alcohol to the government in England in 2015, the limitations of the underlying data must be acknowledged. Like those that came before it, its final tally can be regarded as no more than a rough estimate. To be 'accurate' in this context means being within a few hundred million pounds of the true figure. If nothing else, we hope this paper will make journalists and politicians more circumspect when citing cost-of-alcohol estimates in the future.

Overall, the costings provided here are more likely to be overestimates than underestimates. When given the choice between two credible figures, we have shown a preference for the highest. However, it is possible that

17 195,000 was the number of admissions if only the primary diagnosis was alcohol-related. 1.1 million was the figure if either the primary or secondary diagnosis was alcohol-related.

some of the figures may still be underestimates. Our costings for alcohol-related outpatient admissions may be an underestimate because they do not include services accessed by non-heavy drinkers. On the other hand, our study does not account for the apparent decline in the use of outpatient services by heavy drinkers since 2001 (Rolfe et al. 2009: 62), so our figures pertaining to heavy drinkers may be overestimates.

There is almost nothing about alcohol-related cost estimates that is compelling beyond reasonable doubt and it is important to be open about the limitations. The problems of estimating the amount, let alone the cost, of alcohol-related crime and ill health are well known to economists (WHO 2010: 21-23, Mäkelä 2012, Leontaridi 2003: xxv, Crampton 2011). A few of the issues specific to England are as follows:

1. The number of heavy drinkers in England is based on ONS estimates of the percentage of heavy drinkers in Great Britain. Although the ONS does not collect these data separately for England, there is evidence of higher rates of heavy drinking in Scotland and Wales that make the average for Great Britain higher than the likely average for England (Duncan 2012: 32). If so, some of our figures may overestimate the costs associated with heavy drinking. However, England is home to such a large proportion of the British population that any distorting effect from the other home nations is likely to be small.

2. This study has not attempted to incorporate the positive effects of alcohol on health. The World Health Organisation (2010: 13) notes that there is 'strong evidence that alcohol conveys certain health benefits' and recommends that *net* costs - that is, the cost of alcohol-related ill health minus the savings from alcohol-related good health - be presented as well as *gross* costs. The WHO references two studies which find the net cost to be one third lower than the gross cost (ibid.). If moderate alcohol consumption is cost saving, our estimate of alcohol-related health costs is likely to be too high. However, the WHO also raises the thorny question of whether good health and longer lives are cost-saving at all. It notes that:

> '... if people do not die from an alcohol-related cause, then they will ultimately die from a different cause instead - yet nearly all COI [cost of illness] studies fail to take the health care costs for other causes into account... It is even possible that reducing the incidence of a disease may raise health care costs, if the disease prevented is fatal in a relatively short time and the diseases that eventually replace it lead to long periods of ill health that are expensive to treat' (ibid.).

This is an important issue to which we will return in a future discussion paper. For this paper, however, we have abided by the unspoken rule in 'public health' and ignored the cost of substitute diseases.

3. We have also ignored all financial benefits except those that go directly to government, i.e. alcohol taxes. In line with Leontaridi's methodology, we do not include benefits provided by the alcohol industry, such as job creation, corporation tax and income tax, on the basis that replacement goods, services and jobs would fill the void if alcohol did not exist.[18] Since it is unclear whether substitute industries would lead to the government receiving more, less, or the same amount of revenue (aside from the loss of alcohol taxes), we have ignored the economic contribution of the alcohol industry altogether (WHO 2010: 44). We do, however, include taxation placed specifically on alcoholic beverages, namely alcohol duty and VAT levied on alcohol duty (but not VAT levied on the product itself, which we assume would be levied on alternative products in the absence of alcohol).

4. Although our costs have been converted into 2015 prices, the underlying data come from the most recent year for which data are available. Typically, this is 2012/13 or 2013/14, but in some instances we have had to use older data. We have been able to use recent costings for the health service, but not for the criminal justice system. Many health costings have risen well above the rate of inflation. For example, in the Cabinet Office study a single A & E attendance was assumed to cost £61. According to the most recent NHS costings, this has since risen to £114 - far above inflation. Most other health costs have also increased in real terms. If the same is true of costs associated with dealing with alcohol-related crime, our estimates may be too low. Leontaridi's cost estimates for criminal offences were based on research by Sam Brand and Richard Price (2000), adjusted to 2001 prices. The crime costings in this study are based on the same figures, adjusted for subsequent inflation. Whilst it is possible that the cost of dealing with certain crimes has risen (or fallen) since 2000, no new costings have been produced since 2003/04 (Home Office 2005). The ONS no longer reports the number of woundings and common assaults but instead uses broad categories such as 'violence with injury' and 'violence without injury' which have no costings attached to them in the literature. As a result, we have assumed that the 39 per cent decline in violent crime has resulted in a 39 per cent decline in the cost of violent

18 'If the resources employed in producing alcohol related products and services were not engaged in these activities they would be released to produce other commodities instead.' (Leontaridi 2003: 13)

crime to the criminal justice system, but if the cost of dealing with each offence has risen above the rate of inflation, the fall in spending may not be commensurate with the fall in alcohol-related crime.

5. The assumption that half of all violent crime is *caused* by alcohol is far from certain. It is based on the subjective opinion of victims but, as discussed above, other sources suggest that the proportion may be lower. Even if half of all violent offences are perpetuated by somebody who has been drinking, it cannot be assumed that none of these offences would have taken place in the absence of alcohol. Moreover, drunk offenders are much more likely to be arrested than those who are sober and may therefore be over-represented in police records (Leontaridi 2003: xxv).

6. It could also be argued that some portion of lost productivity should be viewed as a cost to the taxpayer. Lost output is a cost to the individual and, to some extent, the employer, but since the employer of public sector workers is ultimately the government, their lost output could be relevant to a study of this kind. Whilst this argument appears to have merit, it opens up the question of how much alcohol affects output. The largest single element of Leontaridi's lost productivity figure, amounting to nearly £2.5 billion, results from premature mortality, but the WHO (2010: 34) says that premature mortality 'should not be included' in lost output estimates because it wrongly implies that job vacancies are not filled by other workers. It has also been noted that the costs of absenteeism are limited in most modern workplaces because companies have 'coping strategies' and other staff are usually able to provide cover (WHO 2010: 31). Other assumptions about lost output are also contentious. Lower productivity from individuals (due to hangovers, for example) tends to lead to lower wages and missed promotions which are a cost to the employee, not the employer. All told, the external costs of lost productivity are much smaller than is often assumed and the costs borne by government employers are smaller still. It would be extremely difficult to estimate what these costs are, but they are unlikely to have a substantial impact on our total.

7. Another important source of potential overestimation, which is only briefly alluded to by Leontaridi, is that some of the costs attributed to England actually refer to England and Wales or even to the whole UK. This is true of all the costs of crime and is an unavoidable consequence of the ONS collecting crime data for England and Wales together. The drink-driving figures refer to the whole of Great Britain, not just England. In line with Leontaridi, we have sought to reach an estimate for England

with our grand total but, faced with the same data constraints, our figures inevitably overestimate the amount, if not the cost, of alcohol-related crime and drink-driving in England.

Clearly, there are many issues raised here that would benefit from fresh research. Three topics, in particular, urgently require better data. Firstly, estimates of the number of Accident and Emergency admissions that are due to alcohol misuse are currently little more than a guess. The evidence presented in this report suggest that the percentage of A & E visits that are due to alcohol consumption may well number in the single digits. Although we have used a higher figure of 14 per cent for our final estimate, the 35 per cent figure used in earlier studies seems implausible and should be officially revised.

Secondly, estimates of the cost of alcohol-related crime - indeed, of crime in general - have not been updated for over a decade and need to be brought in line with the latest ONS counting methods.

Finally, estimates of the number of alcohol-related hospital admissions vary from 100,000 to over a million depending on which measure is used. We have used the highest credible figure, but other studies have used an excessively broad measure which, if applied consistently to every health issue, would suggest that there are twice as many hospital admissions than are actually recorded. Future cost-of-alcohol studies should take heed of the Department of Health's guidelines and use the ONS's 'narrow' measure.

Conclusion

The best estimate of the *gross annual cost* of alcohol consumption to state-run services, including the Department of Health, the Department of Work and Pensions, and the Home Office, is £3.9 billion in 2015 prices. This consists £1,954 million to treat alcohol-related injuries and ill health, £1,626 million to tackle alcohol-related crime, and £289 million paid in benefits to those who are unable to work as a result of alcohol-related mental or physical health problems.

This figure is naturally lower than estimates of 'societal' costs or costs to the wider economy. It only includes spending that comes from the general taxpayer via government in line with Mäkelä's view that 'Cost calculations should focus on money spent from clearly defined budgets' (Mäkelä 2012). Since societal and non-financial costs are frequently misrepresented as being costs to the taxpayer, this study of direct costs to government departments is long overdue.

The net 'cost' of alcohol consumption, taking into account taxes on alcohol, turns out to be a surplus of £6,542 million. Whilst there are a number of externalities associated with alcohol consumption, many of them negative, when it comes to the cost to the Exchequer, there is no doubt that drinkers in England pay their way. Indeed, they subsidise non-drinkers. Furthermore, many of the costs that are cited as being generalised societal costs are, in fact, costs relating to lost productivity which are largely borne by the individual drinker.

We have previously recommended that all alcohol duties in the UK should have halved to make them less regressive and bring them closer in line with duties in other European countries (Snowdon, 2013). Based on alcohol sales in 2013/14, a halving of each duty would generate a total of £5,206 million, though it would be more if lower prices led to higher sales.

Regardless of whether more alcohol was sold under a lower tax regime, government revenues would comfortably exceed government expenditure on alcohol-related problems.

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