

Measuring Alcohol Consumption and the Levels of ‘Risky’ Consumption

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The purpose of this paper is to document UK ways of measuring alcohol consumption; and to put in question the unit levels that are proposed for risky drinking

Risks of Alcohol Consumption

Alcohol has long been known as a risk factor for disease. The 1990 Global Burden of Disease (GBD) study (Murray and Lopez 1996a, 1996b) identified alcohol as one of the major global risk factors, accounting for 1.5% of global deaths, 2.1% of years of healthy life lost owing to premature mortality, 6.0% of years of life lost owing to disability and 3.5% of disability-adjusted life years (DALYs). Based on the epidemiological literature, and modelling the relationship between alcohol exposure and disease, two dimensions of alcohol consumption were defined as exposure variables:

- average volume of alcohol consumption; and
- pattern of drinking.

Average volume of consumption is usually estimated using country-specific adult per capita consumption (based on production and sales data) and sometimes self-reported alcohol consumption from general population surveys. Country-specific patterns of drinking are defined using indicators of high-volume drinking occasions and types of drinking situation (e.g. drinking with meals). These indicators were drawn from key informant surveys and general population surveys, where available.

Estimates of the relationship between categories of average volume of alcohol consumed and chronic disease are based on disease-specific

meta-analyses. Estimates of the relationship between average volume of alcohol consumption and acute disease are based on alcohol-attributable fractions (AAFs) published in the literature (Rehm et al. (1999).

Recent Literature on alcohol consumption measurement.

Alcohol consumption has traditionally been measured through self-reports from a household survey of adults. But, survey data from many established market economies was found to considerably underestimate total volume (Midanik 1988; Midanik and Harford 1994; Rehm 1998a; de Vries et al. 1999). The conclusion was that retail sales data were thought to provide the most accurate means of estimating population level alcohol consumption ([World Health Organization, 2000](#)) and were preferred over their less objective alternative, self-reported survey data.

At the same time, retail sales data have not been subject to the same level of scrutiny as survey data. To explore this, Robinson [et al. \(2013\)](#) identified and, where possible, quantified biases in retail sales data when estimating annual population alcohol consumption levels. Henderson et al (2016) updated these estimated biases from wastage/spillage (estimated by the industry at nearly 10%), consumption by under 16s (affecting the estimated consumption per adult 16+), tourism and travel affecting both the denominator and the numerator, unrecorded alcohol production and consumption, census population estimates and online sales not being included. They conclude that the net bias of under-estimation, whilst not to be ignored, is small, about 4% in 2010 and 7% in 2013.

What is the 'Real' Alcohol Consumption in the UK

There are good – not perfect for the reasons given above - estimates of the amount of alcohol consumed, based on how much taxes HM Revenues and Customs collect from alcohol consumption. These show the following for 2011/12 and 2005/06 (Table 1).

Table 1 Alcohol Consumption registered by HM Revenue and Customs in 2011/12 and 2005/06

	2011/12			2005/06		
Poison	Volume Consumption (million hectolitres)	Alcohol by Volume	Pure Alcohol consumption (million hectolitres)	Volume Consumption (million hectolitres)	Alcohol by Volume	Pure Alcohol consumption (million hectolitres)
Wine	13.0	0.12	1.56	13.1	0.12	1.39
Made Wine	1.4	0.10	0.14	0.9	0.10	0.09
Spirits	1.4	0.375	0.52	1.17	0.375	0.44
Beer	1.9	1.0*	1.9	2.4	1.0	2.4
Cider	0.9	0.04	0.36	6.5	0.04	0.26
TOTAL			4.48			4.58

Source; HM Revenue and Customs June 2016 and January 2010

* The HMRC Excel tables give volumes consumed and revenue for each of the categories except beer where they also give number of hectolitres of pure alcohol.

The total alcohol consumption in 2011/12 was therefore 4.48 million hectolitres (compared to 4.58 in 2005/06). Noting that a hectolitre = 100 litres, we have a total of 448 million litres of pure alcohol registered by the HMRC in 2011/12 (and 458 million in 2005/06). Obviously, this excludes all legally imported duty free alcohol, which includes the large allowances when from an EU member State (oh won't the car-owners among us – including Brexiteers - weep when the per trip allowances of 110 litres of beer, 90 litres of wine and 10 litres of spirits are reduced to the standard duty-free allowance), any smuggled alcohol and any home-made beer. It would be reasonable to round both figures up to 500 million litres of pure alcohol a year.

The problem is that, whilst sales data provide reasonably accurate estimates of per capita consumption, they do not tell us anything about the distribution (between people) and the pattern (over time) of drinking; for that we have to rely on survey data.

Using Survey Data

Given that we have been consummate fraudsters and liars over the centuries – in 'capturing' and ruling colonies without any consent, in redesigning our non-existent constitution, etc. – one might expect

quite a high level of dissimulation when responding to a survey on such a sensitive matter.

How Much is Reported to be Consumed

Consumption for Men and Women 16 and over is estimated by self-report from the General Household Survey in terms of units per week (where 1 unit = 10millitres of pure alcohol); but the only reporting in terms of specific numbers of units (rather in terms of grouped number of units) is in Goddard (2007) based on 2005 GHS data. Then men's weekly consumption was 19.9 units and for women it was 9.4.

In 2005, when grossed up to the male and female UK population 16+, this implied a consumption of 723.7 million units per week or 3.76 million hectolitres of pure alcohol per year. Taken together with the data from HMRC 2005/06, this means that the self-reported levels of alcohol consumption were 18% lower than the amount of alcohol actually sold in 2005/06 (and 25% less than the guesstimate of 5 million hectolitres).

Unfortunately, the GHS reports have not provided the same data subsequently. The GHS report for 2011 does however show the trend between 2005 and 2011, of patterns of drinking last week (Table 2). For men, based on whether or not they drank at all last week, there has been a decline of 8.3%; but based on whether they drank 5 or more times last week, there has been a decline of 27.3%; for women based on whether or not they drank at all last week, there has been a decline of only 5.3%; but based on whether they drank 5 or more times last week, there has been a decline of 30.8%.

The current 'mantra' is to look at the latter figures (frequency of drinking) but, being conservative as I am, I have taken the average of the two figures, i.e. 17.8% for men and 18.1% for women. This suggests that the figures for units consumed should be estimated as 16.4 for men and 7.7 for women.

On this basis, in 2011, when grossed up to the male and female UK population 16+, this implied a consumption of 614.2 million units per week or 3.19 million hectolitres of pure alcohol per year. Taken together with the data from HMRC 2011/12, this means that the self-reported levels of alcohol consumption were 29% lower than the

amount of alcohol actually sold in 2011/12 (and 36% less than the guesstimate of 5 million hectolitres).

Table 2 Drinking in the Last Week 2005-2011

		Percentages							Weighted base 2011
		2005	2006	2007	2008	2009	2010	2011	
Men									
Drank last week									
	16-24	64	60	64	63	55	49	52	2,313
	25-44	74	73	74	72	70	69	67	6,672
	45-64	77	76	76	74	72	73	72	6,679
	65 and over	66	67	67	66	66	65	63	4,184
	Total	72	71	72	70	68	67	66	19,848
Drank on 5 or more days last week									
	16-24	10	8	9	6	7	5	5	2,313
	25-44	18	17	18	14	13	12	11	6,672
	45-64	28	26	27	24	23	20	22	6,679
	65 and over	26	27	29	27	27	26	24	4,184
	Total	22	21	22	19	18	17	16	19,848
Women									
Drank last week									
	16-24	56	53	54	52	51	46	50	2,481
	25-44	62	60	61	59	59	56	56	7,455
	45-64	61	61	61	60	59	60	60	7,200
	65 and over	43	44	45	43	43	43	42	5,089
	Total	57	56	57	55	54	53	54	22,225
Drank on 5 or more days last week									
	16-24	5	3	4	2	2	2	3	2,481
	25-44	11	9	11	9	7	7	6	7,455
	45-64	17	15	15	15	14	13	12	7,200
	65 and over	14	15	15	15	14	14	13	5,089
	Total	13	11	12	11	10	10	9	22,225

Obviously, the partner /spouse was chucking about a third of the bottle of gin or wine down the sink every day or – just perhaps - the reported levels are underestimates?

Implications

All this would be amusing tittle-tattle in a pub or – of you are that way inclined – at a dinner party, except that the definition of limits for risky drinking are derived from longitudinal studies of individuals reporting their alcohol consumption and their (mostly later) illnesses together with records of their actual medically diagnosed conditions.

It seems plausible to assume that, if someone (everyone) underestimates – naively or fraudulently – what they drink on one occasion, they are going to carry on in subsequent occasions, so that the conclusions from the longitudinal studies will give a distorted estimate of the importance of alcohol as a causative factor.

On this basis, the current limits promoted by the UK Government should be updated to account for the under-reporting either by 41% to 19.7 units or by 56% to 21.8.

Limits Elsewhere

The advised alcohol limit in the UK for men was reduced to the same level as for women - 14 units a week - a year ago (Arnett, 2016). Several countries also have advised alcohol limits, but comparisons are not immediately obvious because a unit in the UK is equivalent to 8gms. of pure alcohol, which is usually lower than in other countries: for example, the US advice is for men to drink no more than 14 drinks a week and women no more than 7; but a drink is about 14gms of pure alcohol (NIAAA, 2016).

In fact, British men have now been told they should drink considerably less than those in Denmark (21 British units), Ireland (21), New Zealand (19), US (24) and much less than the recommended upper limit for men in Spain (35). However, the 14-unit limit for women remains in line with international standards. It is higher than the advised limits in the US (12.3) and Denmark (10.5) and roughly on par with Ireland; but lower than in Spain (21). More details of comparisons with other countries are in the Guardian article.

Discussion

All of these limits are based on relating *reported* alcohol consumption to medically diagnosed conditions. **Come on**, if we are going to have limits, let them be based on what people *actually* drink. It is no good the BMA and the Department of Health saying that it is good to prevaricate (lie) in order that the proletariat will drink less – which is effectively what they have told me – when:

- (a) we know that the major impetus for reducing smoking was not because of the evidence but the fact that the population *saw* that their GPs had stopped smoking because of *their* interpretations of the evidence; but
- (b) many people suspect that the GP happily keeps a bottle of whisky in her/ his desk.

And, in any case, as Charlotte Despard said, ‘truth is revolutionary’ (1912).

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