Conflict of interest in the alcoholic drinks industry: how important are 'unhealthy drinkers' in total UK consumption?

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Abstract

Introduction: the 'alcohol industry' has been advancing an agenda of Corporate Social Responsibility, claiming that there is no conflict between commercial interests and public health goals. This study subjects this claim to critical scrutiny by estimating the share of total alcohol consumption that is due to 'unhealthy drinkers' in the UK, extending previous studies geographically, methodologically and conceptually.

Methods: secondary analysis of the amount of alcohol consumption above various official guidelines in four British datasets for 2000-2002: the National Diet and Nutrition Survey; the General Household Survey; Smoking, Drinking and Drug Use Among Young People; and the March 2002 ONS Omnibus Survey.

Results: unhealthy drinking accounts for 55-82% of total consumption by 18-64 year olds, depending on the definition of unhealthy drinking used. If only alcohol above the official guidelines is counted, this falls to 22-47%. Consumption by underage drinkers accounts for 4.5% of total consumption, while consumption by drink-drivers accounts for 0.5-8.0% depending on the assumptions made.

Discussion: this study shows that the role of unhealthy drinkers in total consumption depends heavily on the assumptions made, namely whether to count drinking above guidelines or all drinking, and the definition of unhealthy drinking used. Nevertheless, in the absence of any countervailing factors there is a significant potential conflict of interest under *any* assumptions, in contrast to the alcohol industry's claims. Further research is needed to examine whether other potential motivations of the alcohol industry compensate this potential conflict of interest sufficiently to achieve genuinely responsible behaviour.

Introduction

In alcohol as in other areas of public health, businesses have been advancing an agenda of 'corporate social responsibility' (CSR) as a way of meeting public health goals. A common claim of such businesses is that they have real economic reasons to do the 'right thing' (Orley and Logan, 2005). For example, the alcohol industry board members of the global International Center for Alcohol Policies have said that *"we take strong exception with the assertion that 'there is a fundamental conflict' between commercial interests and the public health goal… Our operators…see no contradiction between these goals"* (Leverton et al., 2000:1430).

These arguments have been influential with policymakers: the industry was given a major role in the first England & Wales alcohol strategy (PMSU, 2004), while at EU level the CSR-based Alcohol and Health Forum was one of the major outcomes of the European Commission's (2006) alcohol strategy. However, some public health professionals believe that there is a conflict of interest for the alcohol industry when it comes to health goals. This is primarily because the distribution of alcohol consumption is skewed, so that a small number of 'unhealthy drinkers' account for a large proportion of total alcohol consumption – and that a large reduction in alcohol consumption would be bad for the alcohol industry as a whole (Foster et al., 2006; Stockwell et al., 2005; Stockwell et al., 2008).

This study follows previous studies in estimating the proportion of consumption accounted for by unhealthy drinkers, but extends the literature in three ways. Firstly, it presents transparent estimates for the UK for the first time, going beyond the unpublished recent work recently referred to by the Department of Health (2008:12). Secondly, the study develops the methodology of these studies, in particular by using bootstrapped confidence intervals. Finally, the study produces estimates based on a variety of assumptions, and – seemingly for the first time in a peer-reviewed journal – discusses which of these estimates provides the best estimate of conflict of interest in the alcohol industry.

Methodology

To estimate the share of total alcohol consumption that is accounted for by unhealthy drinking, two methodological decisions first need to be made: how to define 'unhealthy drinking', and which parts of this unhealthy drinking should be counted.

Defining 'unhealthy drinking': some alcohol researchers avoid describing levels of drinking as 'unhealthy', as this implies that drinking below this level is 'healthy', despite evidence of certain conditions where there is no threshold for harm (e.g. Collaborative Group on Hormonal Factors in Breast Cancer, 2002).   Nevertheless, to look at conflict of interest in terms of *public health goals*, it is essential to split between healthy and unhealthy consumption in some way. Because such definitions are bound to be contentious, this study uses official drinking guidelines (as in Foster et al., 2003; Stockwell et al., 2005) and considers several definitions:

1. The main definition follows the current 'sensible drinking message' that drinkers should not regularly exceed 3-4 units/day (men) or 2-3 units/day (women), a unit being 8g/10ml of pure alcohol. In practice this is operationalised as ≤4(men)/≤3(women) units/day (PMSU, 2004:11) – noting that this is a high definition based on the upper daily limits, and ignores the suggested 1-2 days per week of non-drinking (Goddard, 2001:14).

2. Before 1995, the official drinking guidelines were based on weekly rather than daily limits of 21(men)/14(women) units. These were still used by the 2004 Alcohol Strategy as a definition of 'moderate to heavy drinking' (PMSU, 2004:11).

3. Drinking relatively large amounts of alcohol on single occasions – 'binge-drinking' – is associated with particularly high risks of harm (Anderson and Baumberg, 2006:ch4). While there is no NHS definition of binge-drinking, the Prime Minister's Strategy Unit defined it as more than twice the current daily guidelines; i.e. >8(men)/>6(women) units/day (PMSU, 2004:11).

This study also looks at the share of consumption involved in two other aspects of unhealthy drinking: underage drinking and drink-driving. The definitions of these are more straightforward, but the way of estimating these is discussed in more detail below.

Counting unhealthy drinking: among researchers conducting similar studies, there has been a debate about whether researchers should count *all* unhealthy drinking or only drinking that is actually above the guidelines. For example, if unhealthy consumption for men is defined as >4 units/day, then the 5 units/day drunk by a given man could be seen as either 5 units of unhealthy drinking (the entire consumption) or only 1 unit (the consumption above the guidelines).

This study adopts the approach of conducting estimates under *both* assumptions, to enable us to examine the assumption's effect (this also helps comparability with previous studies in other countries that generally count the entire consumption). The Discussion section below considers which of these two assumptions is more useful for understanding conflict**s** of interest.

Data Sources

Using the Institute of Alcohol Studies' Data Map – a publicly available resource for secondary analysis on alcohol, available from www.ias.org.uk – it became clear that no single survey contained data on daily as well as weekly drinking, in the full age range of the population, and including data on drink-driving behaviour. It was therefore decided to conduct estimates using several separate surveys from a single period, 2000-2001. These surveys are briefly described below and in Table 1; further information is available in Web Appendix 1. Readers wishing to replicate the analysis or look for further detail on the data cleaning process can access the full Stata code for this study in Deposit #11472 from ICPSR (http://www.icpsr.umich.edu/ICPSR/).

TABLE 1 – DESCRIPTIVE STATISTICS FOR DATASETS USED IN THIS PAPER

	NDNS	GHS	SDDYP	ONS Omnibus
Sample size	1,724	14,081	8,820	1,773
Data Archive reference	SN5140	SN4518	SN4648	SN4701
Weights supplied	Yes	Yes	No	Yes
Age range	19-64	16+	10-17	18+
Mean age (years)	40.6	46.4	13.1	48.5
% female	51.7%	52.0%	50.6%	53.2%
Method	7 day diary	Interview (self completion 16-17 year olds)	Self-completion	Interview
% drinkers	73.2%	88.6%	22.8%	88.2%
Mean consumption (units/wk)	13.4	12.0	2.2	11.6
Share of consumption reported *	59.9%	60.7%	n/a	57.0%

Data refer to sub-sample that were asked all relevant alcohol/drink-driving questions.

* Under-reporting is calculated assuming constant reporting in all age groups, using SDDYP data for under-16s, and (in the case of NDNS) GHS data on 16-18 year olds and 65+ year olds / (in the case of ONS Omnibus) GHS data on 16-17 year olds. Total alcohol sales in the UK are calculated from HMRC tax receipt data. Population data for 2001. Population data was taken from National Statistics estimates of the mid-year population 2001 [available from http://www.statistics.gov.uk/statbase/ssdataset.asp?vlnk=8525&More=Y accessed 5/2/2008]

The main survey used in this analysis is the National Diet and Nutrition Survey (NDNS), as it is one of the few surveys to ask about daily as well as weekly consumption. However, NDNS does not cover the full age range of the drinking population, hence the General Household Survey (GHS) was used for older drinkers and 16-18 year olds based on a standard quantity-frequency measure for each of six types of alcoholic drink (see Web Appendix for details). For the ages covered in both surveys, this also allows us to compare average consumption assessed via two methods: a seven-day diary (NDNS) vs. an interview-based quantity-frequency recall of average drinking behaviour over the past 12 months (GHS). While seven-day measures are not generally recommended for alcohol surveys as they may not be a good guide to an individual's usual consumption (Stockwell, In Press:58), seven-day diaries may be slightly better at capturing unusual consumption that is ignored when people are asked about how much they 'usually drink' (although not to the level of past-day reports; Greenfield and Kerr, 2008). They may therefore be more suited to estimating the proportion of alcohol consumed above daily and weekly thresholds at the population level.

To get information on 11-15 year old drinkers, the Smoking, Drinking and Drug Use among Young People (SDD) survey was used. Mean alcohol consumption in each single-year age group from SDD and GHS and the 18+ age group from GHS was multiplied by age-specific population data for 2001, taken from National Statistics estimates. Finally, the March 2002 ONS Omnibus survey is the closest survey to this time period that contains data on both self-reported drinking and drink-driving. This includes separate questions on the self-reported past-12-month

frequency of (i) drinking before driving and (ii) driving over the legal drink-driving limit, which may be considered as upper and lower limits. For each, the share of alcohol consumption on such occasions was estimated in two ways. Firstly, it was assumed that people drank as much on each drink-driving occasion as their average consumption. Secondly, it was assumed that people drank as much on each drink-driving occasion as their maximum reported consumption before driving in the past 12 months. These assumptions are discussed below.

Calculating confidence intervals

While the estimates are straightforward, producing confidence intervals (CIs) for them is more difficult as no formal mathematical expression is available; previous studies have therefore often not included CIs. Where occasional studies have included them (Foster et al., 2006; Greenfield and Rogers, 1999), these appear to be based on the survey-design-adjusted CI for the *mean consumption* in those drinking over official guidelines, which is (i) a different quantity than the *share* of consumption by that group; and (ii) does not take into account sampling error around the proportion of people consuming over official guidelines.

This study instead uses non-parametric bootstrap estimates to create confidence intervals (Carpenter and Bithell, 2000; Efron and Tibshirani, 1993). These were done using the 'bootstrap' command in Stata v9.0, with 2,000 replications and using the 'bca' option to provide BC_a estimates as recommended by Efron and Tibshirani. However, because the estimates for underage drinking use three different surveys, it was not possible to produce boostrapped confidence intervals for these estimates.

Results

Main results – counting all drinking

The main NDNS results using the conventional method of counting all drinking are shown in the third column of Table 2. The share of total alcohol consumption by 18-64 year olds accounted for by unhealthy drinking ranged from 55% for binge-drinking, to 82% for the current sensible drinking guidance.

TABLE 2 – SHARE OF TOTAL ALCOHOL CONSUMPTION IN UNHEALTHY DRINKING, 19-64 YEAR OLDS IN NDNS 2000/1

Unhealthy drinking definition	Proportion of drinkers affected	Share of consumption by unhealthy drinking (95% CI)*	
		Total	If replaced by max healthy drinking
Current guidance (>4 units/day (m), >3 units/day (f))	55.2%	82.3% (80.7, 83.9)	46.6% (44.8, 48.6)
(Old) weekly guidance (>21 units/wk (m), >14 units/wk (f))	28.0%	73.7% (70.8, 76.6)	36.1% (33.7, 38.7)
Binge-drinking (>8 units/day (m), >6 units/day (f))	39.1%	54.7% (51.8, 57.8)	22.3% (20.6, 24.3)

* Confidence intervals for main estimates are bootstrapped; see methodology section for details.

Given that NDNS only includes 18-64 year olds, GHS was used to look at the implications of including a full adult age range for the pre-1996 weekly definition of unhealthy drinking (the more recent daily definition not being available in GHS). Table 3 shows that restricting the age range *within GHS* increases the share of consumption accounted for by unhealthy drinkers – unsurprisingly given that those over 65 are less likely than younger drinkers to drink heavily, although the extent of this reduction is generally small.

TABLE 3 – SHARE OF TOTAL ALCOHOL CONSUMPTION BY UNHEALTHY DRINKERS, COMPARING GHS AND NDNS

Healthy drinking definition	Survey	Age-group	Proportion of drinkers affected	Share of consumption in unhealthy drinking (95% CI)*	
				Total	If replaced by max healthy drinking
Weekly (>21 units/wk (m), >14 units/wk (f))	NDNS	19-64	28.0%	73.7% (70.8, 76.6)	36.1% (33.7, 38.7)
	GHS	19-64	24.8%	69.9% (68.6, 71.2)	35.5% (34.1, 37.1)
	GHS	18+	22.3%	68.7% (67.5, 69.9)	34.7% (33.4, 36.2)

Main results – only counting drinking above the guidelines

If we only count drinking above the guidelines, we obtain the estimates in the fourth column of Table 2. These estimates are considerably lower than the estimates based on all unhealthy drinking; for example, under the current sensible drinking guidelines, we would see a decline of 46.6% rather than 82.3%. The differences will be greater where the cut-off point for unhealthy consumption is highest (it is consumption between zero and the guideline level that is different in the two methods). As a result, the difference is greatest for the binge-drinking definition (the decline in consumption in the absence of binge-drinking drops from 54.7% in the first estimates to 22.3% here). The impact of looking at the full age range in Table 3 is similar if smaller than that described above.

Underage drinking

Because there is no guideline for healthy consumption in underage drinkers, the estimates for underage drinking have counted all underage drinking, with the results shown in Table 4. In total underage drinking accounts for 4.5% of consumption, this being primarily among 15-17 year olds rather than under-15s.

TABLE 4: SHARE OF TOTAL ALCOHOL CONSUMPTION ACCOUNTED FOR BY UNDER-AGE DRINKING IN 2000/1

Age group	Average consumption units/wk (95% CI)	Dataset	Population in this group 000s	Share of consumption
10 year olds	0.16 (0, 0.48)	SDD	791.9	0.0%
11 year olds	0.14 (0.06, 0.21)	SDD	778.9	0.0%
12 year olds	0.41 (0.32, 0.50)	SDD	771.8	0.1%
13 year olds	1.2 (0.99, 1.41)	SDD	782.2	0.2%
14 year olds	2.96 (2.58, 3.35)	SDD	764.9	0.4%
15 year olds	5.83 (5.34, 6.33)	SDD	756.3	0.8%
16 year olds	10.23 (9.92, 10.55)	GHS	761.2	1.4%
17 year olds	13.66 (13.59, 13.74)	GHS	732.6	1.7%
Adults (18+)	12.01 (11.67, 12.36)	GHS	45,757.1	95.5%

Drink-driving

Table 5 shows the results from the drink-driving estimates, based on people's self-reported drink-driving behaviour. Two different assumptions are used for each definition of drink-driving behaviour: method 1 assumes that drink-drivers drank their personal average consumption level before driving, while method 2 assumes that drink-drivers drank their maximum reported drinking-before-driving level in the past 12 months. Unsurprisingly method 1 produces greater estimates than method 2; the method 2 figures would seem likely to be more accurate, but given likely under-reporting in the drink-driving data (see Limitations below) the method 1 results are included as an upper bound.

TABLE 5 – DRINK-DRIVING

Healthy drinking definition	Percentage of population	Method ‡	Share of consumption in drink-driving days (95% CI)*
Self-reported drink-driving	29.3%	1	8.0% (7.8, 8.2)
		2	4.2% (3.9, 4.4)
Self-reported driving above the legal limit	7.9%	1	1.0% (0.9, 1.1)
		2	0.5% (0.3, 0.7)

* Confidence intervals for main estimates are bootstrapped; see methodology section for details.
‡ Method 1 assumes that people drink as much on every drink-driving occasion as their own average consumption; Method 2 assumes that people drink as much on every drink-driving occasion as their own maximum reported drinking-before-driving in the past 12 months. See Methodology section for further discussion.

If we then compare the two self-report measures of drink-driving, we see that the share of consumption drunk before driving *at all* is much greater than the share of consumption drunk before *breaking drink-driving laws*. This is unsurprising; the former is an upper bound of the true figure (as it includes legal drinking-before-driving) while the latter is a lower bound (due to social desirability effects and lack of knowledge about the law). Even so, the size of the difference is perhaps surprisingly large (4.2-8.0% vs. 0.5-1.0%).

Limitations

There are several limitations to the estimates presented here. Firstly, the definitions used here refer to official guidelines, but this is substantially higher than the absolute lowest-risk level of alcohol consumption in the UK (White et al., 2002).[i] Using this definition as a sensitivity analysis, we find that nearly all of the alcohol consumed in the UK is involved in unhealthy consumption, however this is calculated. For example, looking at the counterfactual where unhealthy drinkers instead drank the maximum healthy amount, total consumption would decline by 91.7% (95% bootstrapped CI 90.9-92.5%). However, this figure is less useful for policy for two reasons: the figures will be conservative as they do not take *patterns* of drinking into account, and the absolute lowest-risk level cannot be a public health goal given the need to trade health against other considerations.

Secondly, the drink-driving data appear to be unreliable. For example, of those reporting very frequent drink-driving, many report drink-driving more often than they report drinking per se. Simultaneously, nearly half of those drinking 10+ units on the last drink-driving occasion said they were not over the legal limit when they drove, suggestive of (predictable) social desirability effects or ignorance of the law. The drink-driving estimates are therefore not robust and only give indicative figures as to the likely share of consumption associated with drink-driving.

Third, it is well-established that most surveys of alcohol consumption find less alcohol has been drunk than has been recorded as sold. The volume of alcohol reported in surveys is usually 40-60% of total consumption (Stockwell et al., 2005), and previous studies of conflict of interest have accepted low coverage rates of 30-40% (Foster et al., 2003; Miller et al., 2006). In this study, 57-60% of alcohol consumption is reported in the surveys (see Table 1). To the extent that under-reporting is greater among heavier-drinking respondents (Goddard, 2008) and heavy drinkers are less likely to respond (Bloomfield et al., 2003), there will be an under-estimate in the share of consumption associated with unhealthy drinking.

There are two other minor limitations of the research. The survey of young people (SDD) is unweighted and restricted to England, and will therefore produced biased estimates for Great Britain as a whole. However, consumption at ages 11-15 is very low (as shown in Table 6 of the main paper), hence even relatively large biases will have small effects on the overall results. The other minor limitation is that the NDNS data are diary-based unlike the rest of the data that is interview-based. In particular, interview-based data represents people's reports of their average consumption in the past 12 months, and unusually heavy drinking occasions will be missed out from these self-reports. However, comparing NDNS and GHS data for 19-64 year-olds in Table 3, the effect seems relatively small.

Discussion

Comparisons to other studies

While different studies internationally have used different definitions of unhealthy drinking and are based on different survey methodologies, it is possible to undertake a cautious comparison between studies to set the present results in context. These comparisons can account for the differences in 'standard drink' sizes between countries, but there will be unaccounted-for differences between standard drinks and the actual drink size poured in the country (Stockwell et al., 2008). Beginning within the UK, it is reassuring that the estimates are close to the Department of Health figures (2008:12). They estimate that drinking above the official weekly guidelines accounted for 76% of UK alcohol consumption (in 2006 using updated conversion factors), which is relatively close to the 69% estimated here (for 2001 using GHS and the old conversion factors).

Looking internationally, the limited comparison available suggests the UK figures are higher than the estimates for the US and Canada but roughly comparable to those from Australia. This is most clearly apparent for the estimates counting all drinking: 46% of alcohol consumption in the US (Foster et al., 2003) and 61% in Canada was above 3.4 UK units/day (Stockwell et al., 2005), compared to 82% of consumption by 18-64 year olds being above 4 (men)/3(women) units/day in the UK. Similarly, 42% of Canadian consumption was above 6.8 (men)/5.1(women) UK units/day (Stockwell et al., 2005), and 60% above 7.5(men)/5(women) UK units/day in Australia (Stockwell et al., 2008), compared to 55% of consumption being above the slightly higher UK binge-drinking limits (8(men)/6(women) units).

The right methodology for estimating conflict of interest

This study has shown that the estimates depend on the exact definition of unhealthy drinking used. For example, if we see unhealthy drinking as the current official definition of binge-drinking, then the potential conflict of interest is considerable but not all-encompassing (55% if we count all consumption, 22% if only consumption above the guidelines). In contrast, if we define unhealthy drinking as the sensible drinking message, then the potential conflict of interest is much larger (82% and 47% respectively). The appropriate definition is likely to vary by context – much public debate about crime is closer to a binge-drinking definition, while public health debates may be closer to the sensible drinking message's definition. Readers and policymakers must decide themselves the definition that best fits their own framework.

Both this study and Foster et al 2003 also show that it matters whether we count all drinking or just drinking above guidelines. Unhealthy drinking here consistently accounts for a majority of sales if we count all drinking (55-82%) but only a minority if we only include drinking above the guideline levels (22-45%). Which, then, is the most appropriate definition given our purpose of estimating conflict of interest?

After further consideration, it appears that the two definitions are complementary rather than competing, in that they answer different questions. Looking at all unhealthy drinking enables us to say what proportion of total alcohol sales is currently due to unhealthy drinking. As Tim Stockwell has pointed out (in a personal communication on 25/1/2009), for a person drinking over the guidelines it is not possible to say which of the drinks they consume are healthy and which are unhealthy; essentially they are *all* involved in the unhealthy consumption. From a political perspective, the level of alcohol industry profits from unhealthy drinkers – robustly estimated – may also be a valuable figure to add to the public debate (Tom Greenfield, personal communication on 27/1/2009).

However, looking only at drinking above guidelines, we can better describe the conflict of interest of the alcohol industry. Drinking above the guidelines represents the sales that the alcohol industry would lose if unhealthy drinking was replaced by the highest-possible level of healthy drinking, and corresponds most closely to the idea of 'conflict of interest'. It is therefore the more useful figure to take forward to analyses of the phenomenon of CSR in the alcohol field.

In practice, policies are based on particular policy measures rather than hypothetical ideas about whether unhealthy drinking could be replaced by the maximum healthy level. Nevertheless, the analyses here are valuable in that they show that *to the extent that any given policy measure reduces unhealthy drinking*, it will have significant effects on total alcohol sales. If the policies are expected to turn unhealthy drinkers into non-drinkers then the estimates based on all consumption will be a better guide; if policies are more likely to reduce consumption in unhealthy drinkers to levels close to the recommended guidelines then the estimates based on consumption above the guidelines will be more helpful.

Conflict of interest in the alcohol industry

Finally, does this study therefore purport to show – like other similar studies have claimed (Anderson, 2003:4; Foster et al., 2006:477; Hawks, 1993) – that *"it is not in the alcohol industry's financial interest to voluntarily enact strategies to reduce underage or adult excessive drinking"* (2003:994), as Foster et al put it? The answer to this question is both yes and no.

The study does not directly show conflict of interest for two reasons. Firstly, the figures relate to total sales by *volume* rather than total sales by *value*. The proportion of spending by unhealthy drinkers will be lower than the proportion of consumption by them, given that underage and heavy drinkers are likely to spend less-per-unit than others (as accepted by Foster et al., 2003:992; and confirmed by Kerr and Greenfield, 2007). Secondly, the figures say nothing about whether there may be other reasons why it would be in the alcohol industry's interests to act responsibly, an issue covered in detail elsewhere (Baumberg, 2008).

Yet at the same time, the results here clearly suggest that there will be a conflict of interest for the alcohol industry in reducing unhealthy drinking – and that even if there are other reasons to

be responsible, these will be balanced by strong reasons to be irresponsible. While the amount due to underage drinking (4.5% of sales) and drink-driving (0.5-8.0%, probably closer to the lower figure) is not that high, the conflict of interest is substantial – that is, greater than 20% and sometimes as high as 82% of sales to 18-64 year olds – for all of the different definitions of unhealthy drinking among adults. The claim we saw in the introduction from certain people within the alcohol industry – that there is no possibility of a conflict of interest – therefore becomes difficult to sustain in the light of the evidence.

In conclusion, this paper's contribution has been partly methodological and partly empirical. Methodologically, the study has shown the sensitivity of estimates of conflict of interest in the alcohol industry to different definitions of unhealthy drinking and different counterfactuals, as well as introducing bootstrap methods to calculate confidence intervals for the estimates. Empirically, this paper has transparently estimated for the first time the potential conflict of interest in the UK alcohol industry. Any naïve optimism about the potential for the alcohol industry to reduce alcohol-related harm may therefore be misplaced. From this, we have the necessary starting point for a more complex analysis of the phenomenon of alcohol CSR, an analysis that is developed elsewhere (Baumberg, 2008).

Conflict of Interest Declaration

Acknowledgements

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[i] The age-specific lowest-risk level of consumption at ages 16-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84 and 85+ respectively estimated to be 0, 0, 2, 5, 7, 8, 8, 8 units/week (men) and 0, 0, 0, 1, 2, 3, 3, 3 units/week (women).