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HEALTH COMMITTEE**

Expert group -- Economics of Prevention

**OECD ECONOMICS OF PREVENTION EXPERT GROUP MEETING
THE PREVENTION OF HARMFUL ALCOHOL USE**

**OECD Conference Centre, 2 rue andré Pascal, 75016 paris
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NOTE FROM THE SECRETARIAT

1. The OECD Health Committee endorsed the establishment of an Expert Group on the Economics of Prevention in its December 2010 meeting. The Group will meet once a year and will oversee work undertaken by the OECD Secretariat on the economics of chronic disease prevention. As part of the 2011-12 Programme of Work, three main projects will be undertaken in this thematic area.
2. The project discussed in this background paper will focus on policies to tackle harmful alcohol use, looking at past and projected future trends in harmful patterns of alcohol consumption in different social groups, as well as the likely health and economic impacts of alternative policies to tackle harmful alcohol use. This paper presents reviews of the existing evidence on alcohol consumption and policies to tackle harmful consumption, the analytical framework within which the project will develop, the data sources available and their main strengths and limitations.
3. Experts are asked to:
 1. Assess, and comment on, the relevance of the policy questions which the study attempts to address;
 2. Review, and comment on, proposals concerning the design of empirical analyses, especially in relation to the following aspects: country coverage; data sources; criteria for defining harmful alcohol use and its consequences; and analytical methods.

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Introduction

4. This paper presents the two main components of the project on the prevention of harmful alcohol use. Section 1 deals with trends in alcohol consumption across OECD countries and disparities in the consumption observed across demographic and socioeconomic groups. Section 2 gives an overview of the existing alcohol policy models, and describes the possible ways of assessing policies to tackle harmful alcohol use.

Background

5. Studying alcohol consumption from a public health perspective is quite challenging since alcohol may both benefit and harm people. A moderate use of alcohol may have health and social benefits (Bray, 2005; Stampfer *et al.*, 2005). On the other hand, an excessive alcohol consumption is harmful to health and brings considerable social and economic costs.

Harm to health

6. Heavy alcohol consumption may have considerable impacts on health (both on morbidity and mortality), health care cost and social harm cost (Rehm *et al.*, 2009). According to the 2007 WHO report, the harmful alcohol use is responsible each year for about 2.3 million premature deaths worldwide. Deaths directly or indirectly attributable to alcohol consumption can be injuries from car accidents, violence, and suicides, or diseases caused by alcohol such as cardiovascular diseases, cancers of mouth and oesophagus, and cirrhosis of liver (Burki, 2010).

7. The relationship between harmful alcohol use and increased risk of cancer, liver cirrhosis, lung and cardiovascular disease, mental and behavioural disorders is strong (Anderson *et al.*, 1993; Byrne *et al.*, 2004). Rehm *et al.*, (2010) show in a systematic literature review, that the average volume of alcohol consumption has a causal impact on many diseases outcomes and injuries. They found an impact on numbers of cancer, diabetes mellitus, alcohol use disorders, unipolar depressive disorders, epilepsy, hypertensive heart disease, ischaemic heart disease (IHD), ischaemic and haemorrhagic stroke, conduction disorders and other dysrhythmias, lower respiratory infections (pneumonia), cirrhosis of the liver, preterm birth complications and fetal alcohol syndrome.

Social and economic cost of alcohol abuse

8. In addition, alcohol abuse has a considerable effect on the labour market and society. Thavorncharoensap *et al.* (2009) found that the economic burden of alcohol was estimated at between 0.45 and 5.44% of GDP in the 12 studied countries. Lye and Hirschberg (2010) review the literature on the relationship between labour market outcomes and consumption of alcohol. Whilst they found older results indicated that alcohol consumption boosted wages (e.g. Grossman and Benham, 1974; Lee, 1982; Haveman *et al.*, 1994; Cai, 2007), they found evidence that these may result from omitted variable bias and a large proportion of abstainers who may have stopped drinking owing to problems. Furthermore evidence on other labour market outcomes such as employment suggested a negative return to drinking. They also found that there is evidence that problem drinking reduces academic efficiency and therefore the accumulation of human capital itself (DeSimone and Wolaver, 2005; Renna, 2007; Wolaver, 2007).

Section 1. Existing data sources and findings of pilot analyses on trends in harmful alcohol use

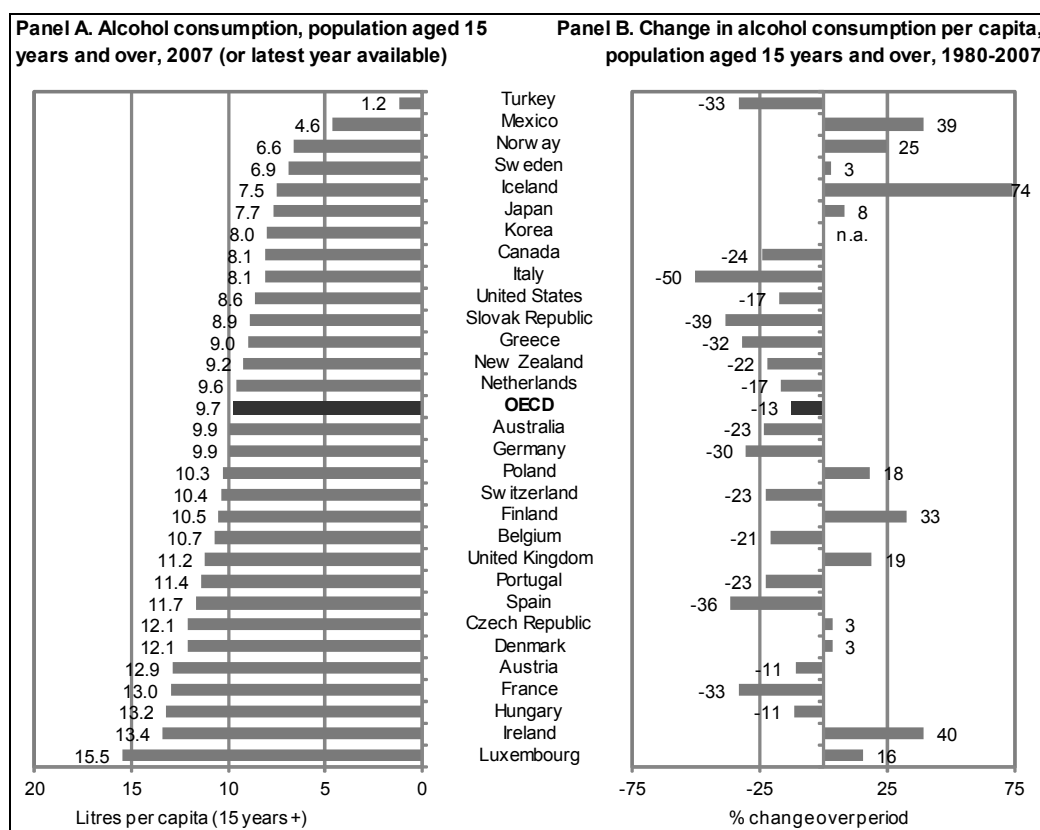
1.1. Trends and disparities in alcohol consumption

9. This section presents an overview of the literature on the existing evidence of trends in alcohol consumption and the disparities in alcohol consumption across population groups.

Trends

10. OECD Health at a Glance 2009 presents figures of alcohol consumption in litres per capita based on the annual sales of alcohol and reported per capita for people aged 15 years and over. Data sources are mostly from national institutes with the exception of the World Drink Trends 2005 which was used for 7 countries (Belgium, Greece, Italy, Luxembourg, Poland, Portugal and Spain). The methodology to convert alcoholic drinks to a more readily comparable metric of pure alcohol may differ across countries. Typically beer is weighted as 4-5%, wine as 11-12% and spirits as 40% of pure alcohol equivalent. In the OECD area, the consumption of alcohol is on average about 9.7 litres per capita per year. It should be noted that in some countries (e.g. Luxembourg), national sales do not accurately reflect actual consumption by residents, since purchases by non-residents may create a significant gap between national sales and consumption. Consumption of alcohol per capita over the period 1980-2007 has on average decreased by 13%. However, Ireland, Iceland and Mexico have seen increased consumption of 40% or more (OECD, 2009). These changes may reflect changes in drinking habits which in turn may have been caused policy changes to control alcohol use. Controls on advertising, sales restrictions and taxation have all proven to be effective measures to reduce alcohol consumption (Bennett, 2003). Strict controls on sales and high taxation are mirrored by overall lower consumption in most Nordic countries, while falls in consumption in France, Italy and Spain may be associated with the voluntary and statutory regulation of advertising, partly following a 1989 European directive.

Figure 1. Alcohol consumption in OECD area



Source: OECD Health at a Glance 2009

11. According to the recent WHO report on Global Survey on Alcohol and Health (WHO, 2011), the worldwide adult per capita alcohol consumption is about 6.13 litres on average, and about 10.55 litres in the high-income countries. The total adult per capita alcohol consumption is an estimate of recorded and unrecorded adult per capita consumption of pure alcohol in 2005. Unrecorded alcohol is defined as “alcohol that is not taxed and is outside the usual system of governmental control, because it is produced, distributed and sold outside formal channels” –it refers to homemade or illegally produced alcohol. The recorded consumption figures correspond closely to the OECD Health Data figures except for Czech Republic (12.1 in OECD Health Data and 14.97 in WHO), and Korea (8.0 in OECD Health Data and 11.80 in WHO). The unrecorded consumption figures added by WHO sometimes correspond to 3 or more litres per capita (e.g. in Hungary, Korea, Poland, Slovak Republic and Sweden). Therefore, total estimates may significantly differ such as for Czech Republic (12.0 in OECD Health Data and 16.45 in WHO) and Korea (8 in OECD Health Data and 14.8 in WHO).

12. The change in the global alcohol consumption in adults is reported to be relatively stable since 1990 (WHO, 2011). However the consumption among younger people has increased in most countries.

13. A European study on people aged 15-16 which was carried out in 1995, 1999, 2003, and 2007 shows that between the last two surveys, there was a decrease in the average proportion of students that had been drinking beer and/or wine during the past 30 days. But on the other hand, heavy episodic drinking has increased in the later years (ESPAD, 2009).

14. Burki (2010) discusses possible causes for the increases in average consumption and highlights a correlation between the consumption and the affordability (and availability) of alcohol. He refers to a report by the British Medical Association which indicates a higher affordability of alcohol in the UK between 1980 and 2006 at the same time as an increase in per person alcohol consumption of 1.5L.

15. These data relying on recorded levels of consumption and sales consumption may be the most reliable data to deliver country profiles of accurate levels of consumption. However, this OECD project will focus on the alcohol-related behaviours such as heavy and binge drinking, and on the spread of the alcohol through family and social network. Data based on individual-level survey are the most adapted for such an investigation.

Gender, Age and Ethnicity

16. Patterns of drinking may differ among gender, age, ethnicity and social groups. The international literature on these patterns is large and results may not appear consistent, largely due to the different measures of drinking patterns considered as outcomes.

17. There is some evidence that alcohol consumption varies with age. Casswell *et al.* (2003) find on New Zealand data that the frequency of drinking increased over early adult years and the quantities consumed peaked at age 21 and decreased thereafter for both males and females. There is other evidence for a decrease of alcohol amount by age (McKee *et al.*, 2000).

18. Numerous international studies confirm gender differences. Men are more often drinkers and consume more alcohol than women. Bloomfield *et al.* (2006a) highlight the gender differences in 13 European countries plus Brazil and Mexico, and find that the smallest gender differences in drinking behavior are found in Nordic countries, followed by western and central European countries, with the largest gender differences in countries with developing economies. Their results also indicate that the greater the societal gender equality in a country, the smaller the gender differences in drinking behavior.

19. Burki (2010) adds that patterns of alcohol consumption are also ‘bound up in issues of cultural identity’. A substantial literature refers to cultures from an international perspective – where drinking is seen to vary according to regions; e.g. the ‘Anglo-Saxon’ and ‘Latin’ cultures. Similarly, it is likely that separate identifiable cultures may exist within a country, especially given the existence of immigrant households. Whilst this may be the case, it is hard to empirically test this, due to problems defining culture and also confounding factors such as socioeconomic status.

Relationship between education and alcohol consumption

20. Attempts have been made in the literature to find associations between education and patterns of alcohol drinking. However, relationships between education and alcohol consumption are different across population groups and whether alcohol use or abuse is considered as outcomes. Some evidence suggests a positive association between education and the frequency of consumption but a negative link with heavy drinking (Bloomfield *et al.*, 2005; Caldwell *et al.*, 2008; Casswell *et al.*, 2003).

21. Huerta and Borgonovi (2010) find a positive association between educational qualifications and alcohol abuse in England and highlighted strong gender differences. They find, for females, a strong positive link between educational attainment and frequency of alcohol consumption and life-time drinking problems, while no such association is found for males. Moreover, testing another education marker, they showed that academic performance in childhood is positively linked with alcohol abuse for both genders, but to a lower degree for males.

22. Helasoja *et al.* (2007) analyze a set of neighbouring countries: the Baltic countries (Latvia, Lithuania and Estonia) and Finland. They look into different aspects of alcohol consumption including heavy consumption and binge drinking. They find that education is negatively associated with alcohol abuse in men, but that it is positively associated with heavy, but not binge, drinking in women.

Relationship between socioeconomic status and alcohol consumption

23. Some studies highlight a relationship between alcohol consumption patterns and income level. Young people with higher income drink more often and this was persistent over time (Casswell *et al.*, 2003). Some research finds that those with a less privileged socioeconomic background drink more (Kuntsche *et al.*, 2004; Leigh, 1996; Mossakowski, 2008); other research has found the converse association (Grossman *et al.*, 1995; Maggs *et al.*, 2008; NHS, 2008; McKee *et al.*, 2000). However, this relationship is complex as it might be influenced both by the level of income and by the relationship between the income levels and retail price.

Neighbourhood and living area effect

24. The area level may have an effect on the alcohol consumption. Scribner *et al.* (2000) using a multi-level model analyze the effect of alcohol retail outlet density, finding it affects problem drinking at the neighbourhood level rather than at the individual level. Other research finds that the divorce rate is both significant at an individual and an area level for frequency of alcohol consumption for the Czech Republic (Dzurova *et al.*, 2010). Alcohol is consumed more often not only by divorced persons, but also by people living in municipalities with a higher divorce rate.

Social multiplier effect

25. Drinking behaviors spread throughout social networks. In this sense alcohol consumption is a contagious social behaviour. Rosenquist *et al.* (2010) find that not only are behaviours correlated amongst peer groups, but note that the spread of behaviours is dynamic – i.e. entering into a drinking peer group would increase the probability of the person starting to engage in drinking behaviours. Similar results have been found for other health factors – see for instance Christakis and Fowler (2007) who find similar results for obesity. Additionally, there is some evidence that the behaviour of relatives (husband/wife and siblings) is significantly associated with a person's drinking behaviour (Rosenquist *et al.*, 2010).

26. Cutler and Glaeser (2005) argue that situations encountered may determine health behaviours in conjunction with genetic pre-disposition. They advance a hypothesis that health behaviours result from a combination of 'genetic pre-disposition' and 'situational influences'. The interaction between the two is crucial, since not everyone exposed to the same situation will, as a result, have the same set of health behaviours. They also find that only a fraction of behaviours are the same between twins. They therefore conclude that it is a combination of the two and express a desire for research as to what the 'relevant situational influences are'.

27. To design appropriate policies, it is necessary to identify which groups of the population are the most affected by harmful drinking and how the problematic drinking spread. Such investigations help policy makers to target population groups and to turn the contagious effect positively to reduce harmful drinking.

1.2. Proposal for analyses

28. This section presents a proposal for the analyses to be undertaken across OECD countries. This proposal tries to answer to the following questions: What are the trends across the OECD area? Which are

the groups the most affected? Is there a role of the household aggregation in the spread of the consumption behaviour?

29. This study will broadly follow the analyses undertaken in the obesity project (Sassi *et al*, 2009a). It will focus on three main aspects: trends of the consumption over time, disparities among social groups, and spread among household members.

30. Our study will use cross-sectional data for different data points across a selection of OECD countries. It will utilize rich datasets from national health surveys, containing many covariates as well as having information on household structure (at least, for England, France and Korea). This enables associations to be investigated based on the theoretical literature, crucially shedding light on the role of household-level factors.

31. In addition, according to the literature, social disparities in drinking across countries may differ not only with the alcohol consumption variables examined, but also with the country studied. Bloomfield *et al.* (2006b) use survey results from 15 countries in order to study ‘social inequalities’ existing for four different types of alcohol consumption: drinking status, heavy drinking, heavy episodic (binge drinking) and alcohol-related problems. They note that the patterns observed in countries were not universal, but that patterns were observable within each country and some groups of countries. Thus, it is important in this OECD analysis to identify drinking variables which are comparable across countries and which allow a distinction between heavy and moderate drinking.

Methodology

32. The first step is to measure the age-standardised trends of alcohol consumption by gender across countries. In a second step, we will implement inequality analysis and multilevel models on the levels of individual and household, following a similar methodology that was applied to problems of obesity in Sassi *et al.* (2009a). Regression analyses will take into account the household structure when possible to account for the variance within households.

33. Even though there are differences in the questions asked, the answers available and the survey technique adopted both across countries and across years, we will concentrate our effort to construct the most comparable outcomes variables. A preliminary version of the possible three dependant variables for the analysis is described below.

The dependent variables

34. Drinking status might be constructed on a regular basis across countries. A binary outcome variables using responses of whether alcohol is consumed over the last 12 months or 4 weeks, seems feasible.

35. Excessive drinking can be based on the national guidelines. It is worth mentioning that in most national surveys, the questions are related to the number of ‘standard drink’ or ‘unit’ consumed. As shown in Table1, the ‘standard drink’ (or unit) varies significantly across countries from 8 grams of alcohol (=10mL) in the UK to 14 grams in the US (ICAP, 2009).

Table 1. Quantity of alcohol in a standard drink across countries

Standard drink / unit size (in grams of ethanol)	Country
8	United Kingdom
9.9	Netherlands
10	Australia, France, Hungary, Ireland, New Zealand, Poland, Spain
11	Finland
12	Denmark, Italy, South Africa
13.6	Canada
14	Portugal, United States

Source: ICAP, 2009.

36. Similarly, the recommendations vary widely across countries (see Annex 1). In the English literature, the limit is set at 21 units per week or more on average for men and 14 units or more per week for women. This is based on NHS ‘safe drinking levels’ guidelines that state “men should not regularly drink more than three to four units of alcohol a day” and “women ... two to three units a day”, where “Regularly” means drinking this amount every day or most days of the week” (NHS Choices). This differs only slightly from the definition used in Bloomfield *et al.* (2006b) defined as “>20 g ethanol per day for women, >30 g a day for men” (British Medical Association, 1995) which are also the thresholds recommended in France (INPES, 2004; ICAP 2009; Anderson *et al.* 2008). In the US, the recommendation is 2 units per day for men and 1 unit per day for women (respectively, 28g and 14g of alcohol per day) while in Canada, it is 2 units per day (27.2 g) for both genders without exceeding 14 units/week for men and 9 units for women (see Table 3).

37. *Binge drinking* is defined as episodic excessive drinking. There is no international consensus on this definition. In the UK, it was defined according to the NHS definition: “For men, that's drinking more than eight units during one session. For women, it's more than six units” (NHS Choices). Other definitions of interest would be drinking within a certain time period (e.g. two hours) – or drinking with the intention of intoxication. Even though this variable is rarely available, it will be interesting to identify and understand this type of drinking behaviour as far as possible. In the US, binge drinking is defined as a consumption of 5 or more drinks for men, and 4 or more drinks for women, in about 2 hours (CDC, 2010). Canada uses the same thresholds (CAMH, 2008). Across European countries, it is often considered that episodic excessive drinking is 6 or more drinks per occasion (Anderson *et al.*, 2005) (see Table2).

Table 2. Definition of the possible dependant variables in the 8 countries studied

Country	Definition and Guidelines				Availability in the survey data	
	Unit	Drinking status	Heavy drinking	Binge drinking	Heavy drinking	Binge drinking
Austria		yes / no			yes (# of drinks past day or last Friday or Saturday)	Yes (# of drinks past day or last Friday or Saturday)
Canada	13.6g	yes / no	Men: >2 drinks per day (27.2g) and up to 14/ week Women : >2 drinks per day (27.2g) and up to 9/ week	Men: 5+ drinks per occasion (68g) Women : 4+ drinks per occasion (54.4g)	yes(# of drinks each day last week)	yes (more than 5 drinks per occasion)
England	8g	yes / no	Men: >21 drinks/week (>24g/day) Women : >14 drinks/ week (>16g/day)	Men: >8 drinks per occasion (64g) Women : >6 drinks per occasion (48g)	yes(# of drinks a day last week)	yes (# of drinks at the heaviest drinking occasion)
France	10g	yes / no	Men: >3 drinks per day (30g) Women : >2 drinks per day (20g)	Men: 6+ drinks per occasion (60g) Women : 6+ drinks per occasion (60g)	yes but only categorical response for # of drinks a day:[1-2]/[3-4]/[5-6]/[7-9]/[10+]	yes (more than 6 units per occasion)
Korea		yes / no			yes(# of drinks a month)	no
Mexico		yes / no		Men: 5+ drinks per occasion Women : 5+ drinks per occasion	yes(# of drinks a day/aweek/a month)	yes (#days have 5 or more drinks per occasion/past 30 days)
Spain	10g	yes / no	Men: >3 drinks per day (30g) Women : >2 drinks per day (20g)	Men: 6+ drinks per occasion (60g) Women : 6+ drinks per occasion (60g)	yes(# of drinks a day last week)	yes (more than 6 units per occasion)
USA	14g	yes / no	Men: >2 drinks per day (28g) Women : >1 drinks per day (14g)	Men: 5+ drinks per occasion (70g) Women : 4+ drinks per occasion (56g)	yes (avg # alcoholic drinks/day -past 12 mo)	yes (#days have 5 or more drinks per occasion/past 12 mo)
		yes / no			yes (avg # alcoholic drinks/day -past 12 mo)	yes (#days have 5 or more drinks per occasion/past 12 mo)

Explanatory variables

38. Based on datasets that were used in the obesity project (Sassi *et al.*, 2009a), the analysis will include the same explanatory variables that have already been harmonised across countries and over the years: age group, gender, ethnicity (where available), education level, socio-economic status (based on income or occupation), marital status, self-assessed health and occupation status.

1.3. Data availability and limitations

39. This section assesses the availability of alcohol consumption variables in the national health surveys which were used for the obesity analyses in eleven OECD countries. Data limitations are discussed.

Available data

40. A first attempt has been made to identify the surveys for which questions on alcohol are available among the health survey data we had collected in the frame of a previous project on obesity prevention (Sassi *et al.* 2009a). This project included national health surveys for 11 OECD countries. Recent national health surveys including relevant questions on alcohol have been identified for 8 countries: Austria, Canada, England, France, Korea, Mexico, Spain, and the US (see Table 3).

41. Datasets for England, France, and Korea are household-based surveys and will allow the multi-level analysis by household aggregation.

Table 3. Availability of the data from national health surveys

Country	Survey name	Survey editions available
Austria	Health Interview Survey	2006/07
Canada	National Health Population Survey and Canadian Community Health Survey	1994/95, 2000/01, 2003, 2005, 2007/08
England	Health Survey for England	1991-2009 (all years)
France	Enquête Santé et Protection Sociale	2004, 2006, 2008
Korea	Korean National Health and Nutrition Examination Survey	1998, 2001, 2005, 2008
Mexico	Mexican National Health and Nutrition Survey (Ensanut)	2006
Spain	Encuesta Europea de Salud	2009
USA	National Health and Nutrition Examination Survey	NHANES I, NHANES II, NHANES III (1988-94), 1999/2000, 2001/02, 2003/04, 2005/06, 2007/08, 2009/10
	National Health Interview Survey	1980-2009 (all years)

Limitations

42. Using different national survey data for several years may be a source of data heterogeneity across countries and over time. However, all the variables will be constructed to get the highest level of comparability across countries.

43. One limitation of these survey-based data is that alcohol consumption is a self-reported measure which may be biased downward. Self-reported consumption of alcohol is generally underestimated in general population surveys (Stockwell *et al.*, 2004). Reported drinking accounts for only 40 to 60% of alcohol sales (Midanik, 1982; WHO, 2011). This under-reporting bias is also verified in our dataset since for England (aged 16-75) we found an estimate of 6.0-6.6 litres of alcohol per capita per year. However, World Drink Trends found that the UK (aged 15+) drank on average, in the years 1992-1998, 7.4-8.2 litres¹. In the framework of an inequality analysis this would not necessarily affect the interpretations of the results significantly, but there is some evidence that suggests that under-reporting may not be uniformly distributed across respondents. For instance, the under-reporting bias is higher among the heavy drinkers (Townshend & Dukat, 2002). In the instructions provided for interviewers implementing the Health Survey for England for instance, there was explicit mention of the increased likelihood of Muslims under-reporting consumption of alcohol. Hence this represents an issue of concern for this study. Another limitation of these survey data is a possible under-sampling bias since household based surveys may under-represent some groups of people who drink the most (Stockwell *et al.*, 2004).

Other possible data sources

44. Another source of data that has been identified as a potential source is from the Nielsen Company that collects information across about 20 OECD countries on the consumption per week by type of alcohol over the last 2 years (Consumer Panel), and the volume sales over the same period (Retail Measurement

1. Some of this discrepancy may be due to higher levels of alcohol consumption in other UK countries.

Panel). However, this source of alcohol consumption only provides the amount of alcohol purchased which is only a proxy of our variable of interest. Moreover the socio-characteristics variables are very limited.

45. One additional possible source of data is the European Health Interview Survey. Its first wave has been carried out between 2006 and 2009 across 15 OECD European countries (Austria, Belgium, Czech Republic, Estonia, France, Germany, Greece, Hungary, Norway, Poland, Slovak Republic, Slovenia, Spain, Switzerland, and Turkey). Three questions about alcohol were asked: the frequency of alcohol consumption during the past 12 months, the number of drinks per day in the last week, and the number of heavy drinking occasions. However, this first wave will be available for researchers only by the end of 2011.

46. Finally is the European school Survey Project on Alcohol and other Drugs (ESPAD) which collects information on substance use among 15–16 year old student since 1995, every fourth year. In addition to a general population analysis, this dataset might be useful for a focus on children.

1.4. Preliminary findings

47. This section sums up the preliminary work which has been conducted so far focusing on the data from the Health Survey for England 1992-2007.

Analysis on England data

48. Preliminary analyses on data from the Health Survey for England 1992-2007 focused on the three drinking patterns described above (drinking status/excessive drinking/binge drinking) and especially on education-related inequalities in drinking.

49. There is some trend over time for increasing participation in drinking behaviours and the most pronounced trend is for binge drinking. These results for England are consistent with those of World Drink Trends (2005) and OECD Health at a Glance (2009).

50. The multivariate regression analysis identifies not only correlations between a range of demographic characteristics and drinking patterns, but also, strong associations between education and drinking patterns which may vary across demographic groups.

- Drinking behaviours have a quadratic association with age, and findings show consistently that age after a certain level has a significant negative effect on the probability of engaging in drinking behaviours.
- Concerning the relationship with self-assessed health, it is shown that the better the health status, the higher the likelihood of drinking.
- Living with children is always negatively associated with drinking behaviours. Being married is also estimated to be negatively associated with binge and excessive drinking, although a positive effect on drinking status is established.
- Socioeconomic status proxied by educational achievements has different effects upon different drinking behaviours. It is generally positively associated with drinking or drinking excessively, but negatively with binge drinking for some groups of the population. The association is not straight forward and varies across demographic groups (by gender and ethnicity). About the drinking status, the relationship is linear: the likelihood of drinking increases with education level in White and South Asian with a stronger magnitude in women. However, it is inverted U-shaped

among Black African, Black Caribbean and other ethnicity group. Concerning the excessive drinking behaviour, the relationship is significantly linear and stronger in women with higher probability of drinking excessively in higher educated women. On the other hand, the relationship with binge drinking follows an inverted-U pattern in women, and we observe a negative effect of ‘the highest educated’ in binge drinking amongst the White ethnic group. An exception is found for South Asians where having a higher education is significantly positively associated with binge drinking for both genders.

51. Finally, a quite large household effect is found among drinking behaviours. The magnitude of this effect is comparable, if not greater, than that observed in other health behaviours such as smoking, and fruit and vegetable consumption. Hence, this investigation suggests that any theory looking to explain alcohol-related health behaviours must account for the substantial correlation of behaviours within the household. More investigation is required to establish to what extent another person drinking in the house has upon an individual’s drinking behaviours and also the relative effect caused by genetic pre-disposition. However, the finding that the majority of variation occurs between households and not individuals, to a greater extent than with other health behaviours, may imply that the social multiplier effect is indeed substantial.

Section 2. Existing alcohol policy models and possible ways of assessing the effectiveness and efficiency of policies to tackle harmful alcohol use

2.1. Modelling the effects of policies to tackle harmful use of alcohol: review of existing approaches

52. This section will review the key features of existing models to assess the health and economic impacts of policies to tackle harmful use of alcohol, including an illustration of the application of such models in national settings.

53. We review here two main studies that have been identified in the literature: the model developed by the University of Sheffield (2008), and the study by Anderson, Chisholm and Fuhr (2009).

54. Researchers from the University of Sheffield examined the impact of various policies around pricing and promotion of alcohol on health (47 conditions analysed), crime, and employment, in England. This analysis is conducted for the population as a whole and also with a focus on (a) young people under 18 who drink alcohol, (b) 18-24 year old binge drinkers, (c) harmful drinkers whose patterns of drinking damage their physical / mental health or causes substantial harm to others.

55. This modelling aims to assess the potential effect on alcohol related harm of introducing changes to current policies as: (a) general price increases, including separate analyses for on- and off-trade and for low priced alcohol (on-trade refers to licensed premises, off-trade to supermarkets, off licenses etc), (b) minimum prices per unit of alcohol, (c) restrictions on the extent of discounted price-based promotion in the off-trade. This modelling based on simulations analysed 53 separate scenarios. In the study, 16 categories of alcohol were distinguished and 3 categories of drinkers were identified. Drinkers are classified according to their mean intake by week as moderate drinkers, hazardous drinkers or harmful drinkers.

56. The datasets used in this study are based on individual-level population surveys. On one hand, data on alcohol consumption are collected from the *2006 General Household Survey* for people aged 16 and over, and from the *Smoking Drinking and Drug Use Survey* for the youngsters aged 11-15. On the other hand, the data on alcohol purchasing including price paid are collected from the latest 5 waves of the *Expenditure and Food Survey*. Information on volumes of purchasing and distribution of prices paid were collected for the 3 categories of drinkers. The elasticities of demand for alcohol (own-price and cross-price

elasticities for 16 beverage categories) were estimated on this dataset. To analyse the effect of restrictions to price-based promotion, data on alcohol sales and prices in the off-trade sector from *Nielsen* were used.

57. The main results of policy effects on alcohol consumption are the following: (a) General price increases to all products in the on- and off-trade at once tend to show relatively large reductions in mean consumption for the population, and large consumption reduction. Targeting only low priced products causes some switching behaviours. (b) Minimum prices targeted at particular beverages are less effective than all-product minimum prices. Differential minimum pricing for the on-trade and off-trade leads to more substantial reductions in consumption. (c) Restrictions on off-trade price promotions like “buy one get one free” have small impacts as these affect a small proportion of total sales. But tighter restrictions have increasing effects.

58. Overall, problems related to health, crime and employment, are estimated to reduce as prices are increased, and unemployment harm reduces proportionately more than health or crime harms.

59. As mentioned in the website of the University of Sheffield, findings from this report have been used by senior decision making bodies, including the Parliamentary Health Select Committee, Chief Medical Officer, WHO Alcohol Strategy group, to inform UK and international policy (accessed on 11 March 2011: <http://www.shef.ac.uk/scharr/sections/ph/research/alpol>).

60. Based on the results of the modelling developed by the researchers of Sheffield, The National Institute for Health and Clinical Excellence released a set of 12 recommendations to reduce alcohol-related harm on its website (accessed on 11 March 2011: <http://guidance.nice.org.uk/PH24>) (NICE, 2010). The guidance is based on strong evidence resulting in particular from this modelling work. The policy recommendations 1 to 3 underline how government policies on alcohol pricing, its availability and how it is marketed could be used to combat such harm. The recommendations for practice (recommendations 4 to 12) support, complement – and are reinforced by – these policy options. They include the use of screening and brief interventions (structured brief advice and extended brief interventions).

61. Anderson, Chisholm and Fuhr (2009) review evidence for the effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. They examine a large set of policies in the WHO subregions. These policy options are grouped under nine policy target areas: (1) Education and information, (2) Health-sector response, (3) Community programmes, (4) Drink-driving policies and countermeasures, (5) Addressing the availability of alcohol, (6) Addressing the marketing of alcohol beverages, (7) Pricing policies, (8) Harm reduction, (9) Reducing the public health effects of illegally and informally produced alcohol. First, they assess the effectiveness of these strategies using systematic reviews and meta-analyses. Then, they evaluate the cost-effectiveness of policies (except for areas (8) and (9)) using the data from an earlier WHO analysis of the health costs and effects of measures for countering hazardous alcohol use in the WHO regions (Chisholm *et al.*, 2004). Updates are included for the cost of the interventions implementation and for intervention health effects to reflect demographic changes. Results show that effective policies in reducing alcohol related harms are those regulating the environment in which alcohol is marketed (economic and physical availability and commercial communications), enforced legislative measures in reducing drive-drinking, and individually-directed interventions to drinkers already at risk. However, programmes related to information and education are not effective. Cost-effective strategies are those making alcohol more expensive and less available, and those banning advertising.

2.2. Inputs and outputs

62. Modelling a risk factor and its associated chronic diseases is a daunting task. The first step, once identified the risk factor (harmful use of alcohol in this case), is to pinpoint all the major chronic diseases

that show a clear link with the risk factor and discern any other physiological or behavioural risk factor that falls between the risk factor under scrutiny and chronic diseases. The first list of risk factors and diseases is, usually, too wide to be modelled and the following step consists in ranking risk factors and diseases by level of importance as, for instance, by burden of disease or mortality. Another fundamental issue to take into account is the availability of evidence about the relationship between the different factors. This provides the essential starting point to outline the causal web that will be embedded into the software through algorithms.

63. The second step is to find the input data to “mathematically” model the relationship between risk factors and between risk factors and diseases. Epidemiological data is required by gender (males and females), by class of age (age 0 to 100) and, in some cases, by socioeconomic status (upper and lower). A full explanation of the parameters needed to simulate a causal web can be found elsewhere (Sassi *et al*, 2009b). In general, both for risk factors and diseases the model need: prevalence, incidence of new cases and remission rates. The initial clustering of risk factors on a virtual individual is modelled through relative risks (e.g. how more likely is an individual with low physical activity level to be, at the beginning of the simulation, overweight or obese compared to a person with a sufficient level of activity), while the likelihood of developing a more proximal risk factors or developing/dying of a disease during the simulated life is modelled through relative rates (e.g. how more likely is an obese person to develop or die of stroke compared to a person with normal-weight). A final parameter to be inputted, only for diseases, is the fatality rate, that is the hazard of dying due to a disease for individuals who have that disease.

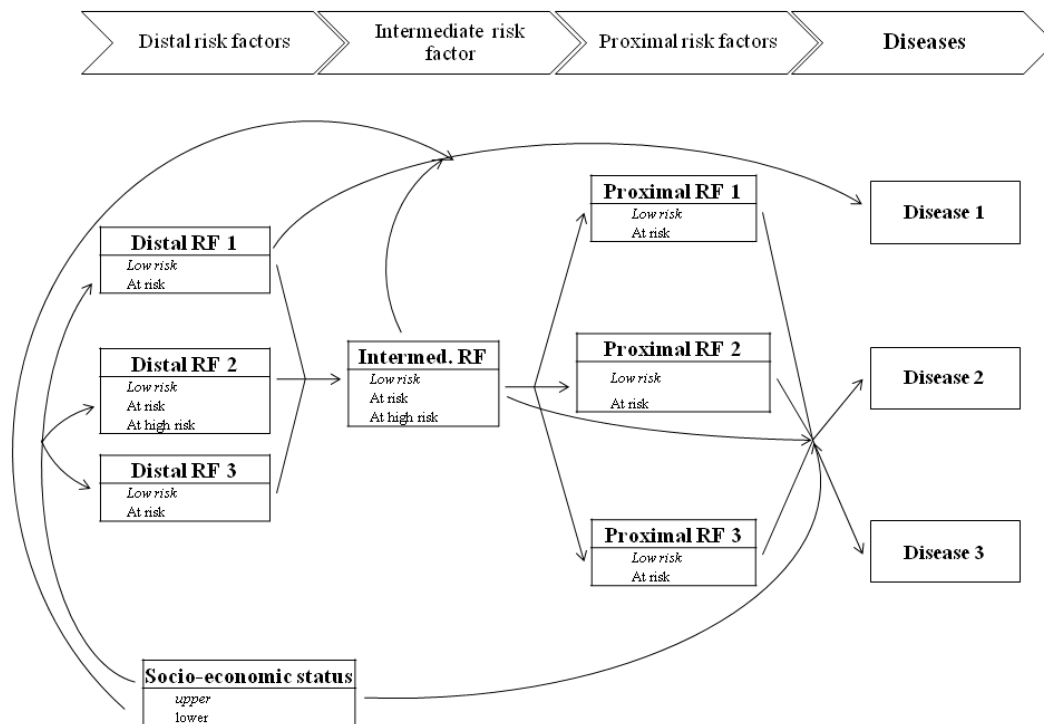
64. Interventions, particularly their effectiveness, are modelled on three dimensions: efficacy in changing behaviours and risk factors, coverage (i.e. share of the population covered by the intervention) and time to steady state. Data for the first two dimensions is usually retrieved from the literature by carrying out reviews of papers describing homogeneous interventions. Results are then summarized to produce consistent quantitative estimations that can be used to feed the model. The third dimension, time to steady state, is calculated as direct reflection of the age groups covered by the intervention. Further details on how the time to steady state is calculated can be found in box 2 of the background paper titled “Enhancing OECD’s health and health care modelling capabilities”.

65. Outcomes are produced in terms of effects on health and longevity; intervention costs and effects on health care costs; and cost-effectiveness. In particular, effectiveness is evaluated both as life years gained and as DALYs (Disability-Adjusted Life Years) that allow a quantification of the decrease of the morbidity of the diseases. Some intermediate outcomes can be quantified as well. For instance, in the case of the modelling work on obesity, the model was modified to produce figures on the decrease of the prevalence of obese people, and modification in the incidence of the three considered diseases (i.e. ischaemic heart disease, stroke and a set of the most common cancers).

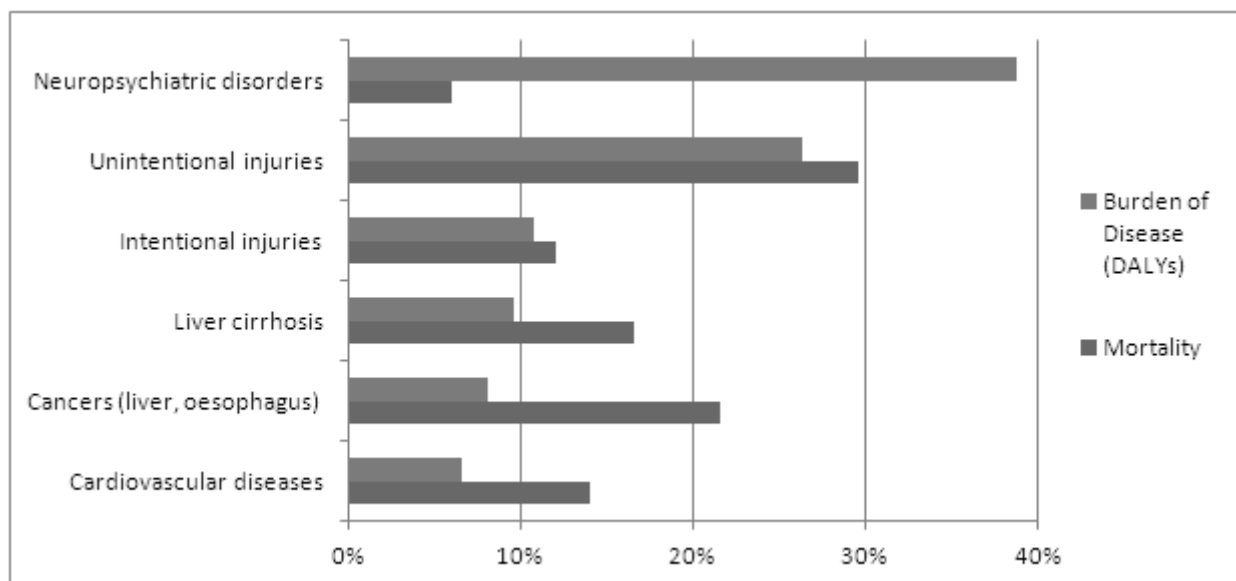
2.3. Tackling harmful use of alcohol with the CDP model

66. The current version of the CDP model includes seven risk factors divided into three levels: distal, intermediate and proximal and three diseases (figure 2). As further dimension, the CDP model also includes socio-economic status that produces direct effects on the development of the diseases as well as on the distal risk factors that are usually used to represent behaviours. One of the main advantages of the CDP modelling software is that it allows a good degree of flexibility. So, for instance, if not needed, some of the risk factors or of the diseases may be simply switched off without interfering with the portions of the web that are still in use. On the other hand, changes in the structure of the causal web entail major modifications on the programming code.

Figure 2. The structure of the CDP model



67. Modelling the health effects of alcohol is completely different from any other risk factors. The reason of this statement can be easily understood by taking a look at the latest WHO estimates (WHO, 2011), presented in figure 3. First of all, most of the mortality and morbidity produced by alcohol comes from unintentional and intentional injuries, a sizeable portion of which is due to harm caused on other people other than on the person with the unhealthy behaviour. Second, neuropsychiatric disorders are alone responsible for almost 40% of the morbidity linked to alcohol but cause just 6% of its mortality. Finally, cardiovascular diseases, which are, by far, the top killers in OECD countries are only moderately affected by this risk factor. Conversely, a number of studies (Corrao, 2004) would suggest that a moderate intake of alcohol would have a protective effect on coronary heart diseases and on ischaemic stroke (albeit the effect on the latter is not statistically significant).

Figure 3. Distribution of alcohol attributable deaths and DALYs

Source: WHO Global burden of disease, accessed on 14 March 2011 at: http://www.who.int/healthinfo/global_burden_disease/cra/en/index.html

68. In addition to worsening health outcomes, harmful use of alcohol produces also negative social outcomes the most important of which include effects on: crime or public disorder; family and social network; and the labour market. For instance, a study carried out in England (Strategy Unit, 2004) suggested that alcohol misuse has an overall annual cost of 7.3 billion because of anti-social behaviours and 6.4 billion due to losses in productivity and profitability. Unfortunately, these dimensions cannot be fully assessed in the current version of the CDP model which is, mainly, an epidemiological model. As part of the enhancement of the CDP model we are considering a nested model on the labour market (see the relevant section in the background paper number 3) that would allow an economic appraisal of the effect on the workplace of prevention policies to tackle alcohol harmful consumption. However, even if the proposed enhancement was to be accepted, the “second-layer” model would be ready only in the future.

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World Drink Trends, 2005 Edition.

ANNEXES

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Country	Source	Men	Women	Standard Drink	Other Recommendations
Australia	National Health and Medical Research Council (NHMRC); http://www.nhmrc.gov.au/.	no more than 2 standard drinks on any day reduces the lifetime risk of harm; no more than 4 standard drinks on a single occasion reduces the risk of alcohol-related injury arising from that occasion	no more than 2 standard drinks on any day reduces the lifetime risk of harm; no more than 4 standard drinks on a single occasion reduces the risk of alcohol-related injury arising from that occasion	10g	<p>For children and young people under 18 years of age, not drinking alcohol is the safest option.</p> <p>For women who are pregnant, planning to become pregnant, or breastfeeding, not drinking is the safest option.</p> <p>In some situations, not drinking is the safest option; this includes: when taking part in recreational or occupational activities that require a high level of attention, psychomotor skills, and concentration (e.g., driving, water activities, operating heavy machinery, etc.); when supervising others who are taking part in such activities; when supervising children.</p> <p>Specific population groups can be at increased risk if they drink alcohol; these include: young adults aged 18 to 25 years; older people aged over 60 years; people with family history of alcohol dependence; people who use drugs illicitly.</p> <p>A range of people may need to seek professional advice about drinking because of the possibility of interactions and harmful effects; they include: anyone taking medication; people with alcohol-related or other physical conditions that can be made worse or affected by alcohol; people with mental health conditions.</p> <p>See http://www.nhmrc.gov.au/publications/synopses/ds10syn.htm for the full text of the Australian Guidelines to Reduce Health Risks from Drinking Alcohol (2009).</p>
Austria	Bundesministerium für Arbeit, Gesundheit und Soziales (Federal Ministry for Labour, Health and Social Affairs) [http://www.bmsg.gv.at/]	24g pure ethanol per day	16g pure ethanol per day	10g	The "hazardous level" of drinking (posing unacceptable risk for health consequences) is defined as consuming 40g-60g alcohol or more.
Canada	Centre for Addiction & Mental Health	not to exceed 2 units per day (27.2g/day); not to exceed 14 units per week (190g/week)	not to exceed 2 units/day (27.2g/day); not to exceed 9 units per week (121.5g/week)	13.6g	<i>Low-risk Drinking Guidelines :</i> [http://www.camh.net/addiction/pims/pdfs/lowrisk_drinking.pdf] Note: The drinking guidelines do not apply to pregnant women—don't drink if you are pregnant or planning to become pregnant. (Source: Centre for Addiction and Mental Health, CAMH)
Canada	Health Canada			13.6g	Moderate drinking means no more than 1 drink a day, and no more than 7 drinks a week. Having more than 4 drinks on one occasion, or more than 14 drinks a week, poses a risk to health and safety. If you are pregnant or breastfeeding, avoid alcohol.
Czech Republic	National Institute of Public Health [http://www.szu.cz]	less than 24g per day	less than 16g per day	N/A	The recommendations are for adults (aged over 18 years) who are healthy and not engaged in risky behaviors or taking medication.
Denmark	Sundhedsstyrelsen [National Board of Health (NBH)] [http://www.sst.dk/english/index.asp]	not to exceed 21 alcohol units (252g) a week	not to exceed 14 (168g) units a week	12g	The National Board of Health recommends that children under the age of 15 years should not drink alcohol.
Finland	Oy Alko AB (Alko Inc.) [http://www.alko.fi/]	not to exceed 15 units/week (165g/week)	not to exceed 10 units/week (110g/week)	11g	
France	Ministry of Health and Sports [www.sante-sports.gouv.fr/]	not to exceed 30g/day	not to exceed 30g/day	10g	« <i>La santé vient en mangeant : le guide alimentaire pour tous</i> », National Program for Health & Nutrition (PNNS) recommends: Those who drink should reduce their consumption; pregnant women should not drink; do not drink and drive.

Country	Source	Men	Women	Standard Drink	Other Recommendations
Germany	Bundeszentrale für gesundheitliche Aufklärung (BzGA, Federal Center for Health Education) [http://www.kenn-dein-limit.de/]	not to exceed 24g/day	not to exceed 12g/day		BzGA recommends at least two days of abstinence from alcohol a week. Drinking above the recommended levels is said to be risky for one's health.
Hong Kong	Department of Health & Social Security	not to exceed 3-4 units/day, not to exceed 21units/week	not to exceed 2-3 units/day, not to exceed 14 units/week	1 unit = glass/wine or pint/beer	
Iceland	Alcohol and Drug Abuse Prevention Council			N/A	Pregnant women are advised to abstain from alcohol during pregnancy and breastfeeding.
Indonesia	Ministry of Health			N/A	National Dietary Guidelines state: "Avoid drinking alcoholic beverages."
Ireland	Department of Health	21 units/week (210g/week)	14 units/week (140g/week)	10g	
Israel	Ministry of Education, Psychological & Counselling Services			N/A	Recommended: Pregnant women should not drink; students should not drink more than one unit of alcohol per drinking session; avoid alcohol if taking medication.
Italy	Ministry for Agriculture & Forestry and National Institute for Food & Nutrition	less than 40g per day	less than 40g per day	12g	The Nutritional Guidelines (<i>Linee guida per una sana alimentazione italiana</i>) state: The acceptable daily quantity of alcohol is 0.6g per kilo of body weight. If only wine is consumed, the guidelines suggest drinking less or equal to 450ml (3 glasses) for men and less or equal to 350 ml (2 glasses) for women, to be divided between lunch and dinner. Consumers are recommended to avoid consumption during "evolutionary age," pregnancy, and breastfeeding; older adults are recommended to reduce their drinking; alcohol should be avoided before driving, when using dangerous machinery, or if undergoing drug therapy. [Legislation: Law Decree 28 Dec. 1998 converted in Law 26 Feb. 1999 n. 39 – Chapter "The aims of Health" pg. 17-18]
Japan	Ministry of Health, Labor & Welfare	1-2 units/day (19.75-39.5g/day)		19.75g	
Luxembourg	Ministry of Health				The health authorities promote moderate alcohol consumption (without specifying limits of daily or weekly amounts of pure alcohol that should not be exceeded) and urge consumers to refrain from drinking alcohol when driving.
Netherlands	Stichting Verantwoord Alcoholgebruik (STIVA) [www.stive.nl]	not to exceed 4 units/day (39.6g/day)	not to exceed 2 units/day (19.8g/day)	9.9g	STIVA recommends that consumers do not drink at least 2 days in a week and avoid alcohol when pregnant, driving, or operating machinery. Underage young people should avoid alcohol. Women with a low body weight are advised to drink less than the recommended daily limit.
New Zealand	Alcohol Liquor Advisory Council (ALAC)	not to exceed 3 units/day (30g/day), not to exceed 21units/ week (210g/week)	not to exceed 2 units/day (20g/day), not to exceed 14 units/week (140g/week)	10g	ALAC recommends that, on special drinking occasions, consumption should not exceed 6 units/day (60g/day) for men and 4 units/day (40g/day) for women. Consumers are reminded that alcohol-containing drinks are high in energy density and may contribute to weight gain. Some alcohol-free days are recommended each week. To reduce the risk of cancer, it is recommended to avoid alcohol. To reduce cardiovascular risk, it is suggested to drink only moderate amounts of alcohol. When serving drinks, servers are urged to ensure that non-alcoholic (and low-alcohol) drinks and food are available. Consumers are recommended to eat food when drinking alcohol and to restrict or avoid alcohol when driving, operating machinery, or engaging in water activities.

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Country	Source	Men	Women	Standard Drink	Other Recommendations
New Zealand	The Ministry of Health			10g	<i>The Food and Nutrition Guidelines for Health Pregnant and Breastfeeding Women: A Background Paper</i> advises women to avoid drinking alcohol during pregnancy and breastfeeding. [http://www.moh.govt.nz/moh.nsf/by+unid/F4F10903136588EFCC25716200123030?Open]
Norway	Directorate for Health & Social Welfare			N/A	Situational abstinence is recommended, such as when driving, during pregnancy, at work, or in the company of children and young people.
Norway	Alkokutt [http://www.alkokutt.no]			N/A	Allkokutt suggests: Don't drink on an empty stomach; warn friends when they have had enough to drink; show respect to people who do not drink alcohol; remember that women can hold less alcohol than men; listen to experienced professionals; be on guard against social pressures to drink, even among friends; remember situations when no alcohol should be consumed; never drink alone; do not drink if you are underage.
Philippines	Department of Health			N/A	<i>National Dietary Guidelines</i> state: "For a healthy lifestyle and good nutrition, exercise regularly, do not smoke, and avoid drinking alcoholic beverages."
Poland	State Agency for Prevention of Alcohol Related Problems	2 units/day (20g/day) up to 5 times/week (not to exceed 100g/week)	1 unit/day (10g/day) up to 5 times/week (not to exceed 50g/week)	10g	Two alcohol-free days a week are recommended.
Portugal	National Council on Food and Nutrition	2-3 units/day (28-42g/day)	1-2 units/day (14-28g/day)	14g (unofficial)	Based only on wine consumption.
Romania	Ministry of Health	not to exceed 32.5g beer/day or 20.7g wine/day	not to exceed 32.5g beer/day or 20.7g wine/day	N/A	
Singapore	Ministry of Health			N/A	<i>National Dietary Guidelines</i> state: "Limit alcohol intake to no more than 2 standard drinks a day" (about 30g alcohol).
Slovenia	Institute of Public Health of Slovenia	not to exceed 20g/day and not to exceed 50g/drinking occasion	not to exceed 10g/day and not to exceed 30g/drinking occasion	N/A	
South Africa	South African National Council on Alcoholism & Drug Dependence	not to exceed 21 units/week (252g/week)	not to exceed 14 units/week (168g/week)	N/A	The government's position is outlined in a brochure titled <i>Healthy Lifestyles</i> (1995), which calls for drinking in moderation ("Limit yourself to no more than 2 to 3 drinks a day").
Spain	Ministry of Health and Spanish Institute for the Investigation of Beverage Alcohol	not to exceed 3 units/day (30g/day)	not to exceed 3 units/day (30g/day)	10g	It is noted that wine is officially considered as an integral part of a Mediterranean diet.
Spain	Basque Country: Department of Health & Social Security	not to exceed 70g/day	not to exceed 70g/day	N/A	
Spain	Catalonia: Central Authority	not to exceed 4-5 units/day (32-50g/day)	not to exceed 4-5 units/day (32-50g/day)	8-10g	
Sweden	Vetenskapsradet (Swedish Research Council) [http://www.vr.se/English/]	not to exceed 20g/day	not to exceed 20g/day	N/A	It is recognised that moderate alcohol intake may have certain positive medical effects.
Sweden	The Swedish National Institute of Public Health (SNIPH)			N/A	

Country	Source	Men	Women	Standard Drink	Other Recommendations
Switzerland	Swiss Federal Commission for Alcohol Problems and Institut Suisse de Prevention de l'Alcoolisme et Autre Toxicomanies (Swiss Institute for the Prevention of Alcohol & Drugs Problems)	not to exceed 2 units/day (not to exceed 24g/day)	not to exceed 2 units/day (not to exceed 24g/day)	10-12g	Consumers are recommended not to drink more than 4 units of alcohol in one session and not to consume more than 1 unit per hour; they are asked to avoid drinking alcohol when participating in sports or before driving/operating machinery. Underage young people are urged to avoid alcohol.
Thailand	Ministry of Public Health			N/A	<i>National Dietary Guidelines</i> state: "Avoid or reduce the consumption of alcoholic beverages."
United Arab Emirates	Ministry of Health			N/A	No official drinking guidelines exist. Alcohol is available in hotels to guests and visitors. Expatriate residents must possess a liquor permit, available to non-Muslims. Retail outlets sell only to permit holders for personal consumption. Providing alcohol to others (beyond licensed retail outlets) is forbidden.
United Kingdom	Department of Health	should not regularly drink more than 3-4 units/day (24-32g/day)	should not regularly drink more than 2-3 units/day (16-24g/day)	8g	"Regularly" means drinking every day or most days of the week; a break of 48 hours after a heavy drinking session is recommended "to let your body recover." Consumers are reminded the following: "Don't mix alcohol with any kind of medication as it can reduce the effect of the medication and increase harmful side-effects; don't mix alcohol with recreational drugs; don't drink and drive or operate machinery; be careful if you have mental health problems such as depression, as alcohol can make these worse." Women who are pregnant or who are trying to become pregnant are advised to avoid drinking alcohol; if they do choose to drink, they "should not to drink more than 1-2 units of alcohol once or twice a week and should not get drunk." <u>Consumers are directed to the Know Your Limits website for further advice: http://www.drinking.nhs.uk/.</u>
United Kingdom	Scottish Executive	3-4 units/day (not to exceed 32g/day)	2-3 units/day (not to exceed 24g/day)	8g	
United States	Department of Agriculture and Department of Health & Human Services	1-2 units/day (14-28g/day), not to exceed 14 units/week (196g/week)	1 unit/day (14g/day), not to exceed 7units/week (98g/week)	14g	<i>Nutrition and Your Health: Dietary Guidelines for Americans</i> (5th ed.) recognizes that moderate drinking may lower the risk of coronary heart disease among men over 45 and women over 55 and that exceeding moderate consumption can raise the risk for accidents, high blood pressure, stroke, violence, suicide, birth defects, and certain cancers; a safe level of alcohol intake has not been established for women at any time during pregnancy; consumers are urged to avoid drinking before or when driving. It is recommended to consume alcohol with food to slow absorption.
United States	National Institute of Alcohol Abuse and Alcoholism (NIAAA)	not to exceed 4 units/day (56g/day), not to exceed 14units/week (196g/week)	not to exceed 3 units/day (42g/day), not to exceed 7units/week (98g/week)	14g	
United States	American Heart Association	not to exceed 2 units/day (28g/day)	not to exceed 1 unit/day (14g/day)	14g	

Source: ICAP 20.

