Local Alcohol Profiles for England 2011

User Guide

April 2012

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1. Background

This working document outlines methods used by the North West Public Health Observatory (NWPHO) to produce a national alcohol dataset, the Local Alcohol Profiles for England (LAPE), together with a brief guide on how to use the online tool. The metadata and methods for individual indicators are outlined in Section 4.

The NWPHO has produced and published LAPE on an annual basis since 2006. The latest update, LAPE 2011, was released on August 25th 2011. The profiles contain 25 alcohol-related indicators for every Local Authority (LA) and 22 for every Primary Care Trust (PCT) in England. The indicators measure the impact of alcohol on local communities and include a national indicator generated by the Department Of Health – *Admission episodes for alcohol-attributable conditions (previously National Indicator 39 or NI39)*. Profiles are available online through the tool at LA and PCT geographies via dynamic PDF and with a range of download options through: www.lape.org.uk.

The NWPHO is one of nine Public Health Observatories (PHO) in England. Each PHO takes a lead role in key areas of public health intelligence and NWPHO leads on alcohol intelligence on behalf of the Public Health Observatories in England.

Alcohol misuse has health and social consequences borne by individuals, their families, and the wider community. In 2006, the NWPHO and the Alcohol Research Team (Centre for Public Health, Liverpool John Moores University) gathered routine data and intelligence from a range of sources (including the Department of Health and the Home Office), to provide a national indicator set intended to inform and support local, sub-national and national alcohol policies. These indicators provided measures to help prioritise and target local areas of concern. In addition, they provided a baseline for monitoring progress in reducing alcohol-related harm at local, sub-national and national level.

During the compilation of the indicators, the NWPHO reviewed methods of deriving population measures of alcohol-related harm, selecting indicators and developing methods consistent with current knowledge and understanding, thus reflecting the wide range of domains that may be affected by alcohol misuse.

2. Alcohol-attributable fractions and definitions

2.1 Alcohol-attributable fractions

Attributable fraction (AF) values, or population attributable fractions, are the proportion of conditions that are attributable to exposure to a specific risk factor (such as alcohol) in a given population. LAPE indicators use AFs to estimate the number of deaths, hospital admissions and crimes that are attributable to alcohol consumption. AFs may be estimated directly, for example, by assigning specific AFs to external causes of morbidity and mortality. Alternatively indirectly estimated AFs can be derived from the relative risk associated with the exposure of interest, in combination with information about the prevalence of the exposure in the target population. Note that the population AF calculation assumes a causal association between risk factor and disease, meaning that the AF can also be viewed as the expected proportional reduction in cases of disease arising in the population as a result of removing the exposure.

Table 1 shows the AFs used to estimate the number of alcohol-attributable deaths and hospital admissions reported in LAPE. These alcohol-attributable fractions (AAFs) are taken from the report by Jones et al. (2008)[1]. Sex and age specific AAFs reflect the difference in exposure, prevalence and intensity, and physiological differences between males and females. The table does not include conditions with negative AAFs, where low levels of alcohol were found to have a protective effect for the following conditions diabetes mellitus, ischaemic heart disease and cholelithiasis.

An average of the former UK Prime Minister's Strategy Unit's AFs[2] were used to estimate the number and rate of land transport accident deaths attributable to alcohol (Table 2). AAFs from the former Strategy Unit were also used in the production of the alcohol-attributable crime indicators (Table 3). These AAFs estimate the statistical association between measures of alcohol and crime, and not necessarily the causal association, and should therefore be distinguished from the disease specific AAFs used for the hospital admission and mortality indicators.

An alcohol-attributable fraction (AAF) is the attributable fraction due to alcohol i.e. 1 = 100%, 0.25 = 25% of cases are attributable to alcohol.

2.2 Alcohol-specific conditions

Alcohol-specific conditions include those conditions where alcohol is causally implicated in *all* cases of the condition; for example, alcohol-induced behavioural disorders and alcoholic liver cirrhosis. By definition, the AAF equals one because no cases would be expected to arise in the absence of alcohol.

2.3 Alcohol-attributable/related conditions

Alcohol-attributable or related conditions include all alcohol-specific conditions (see Section 2.2), plus those where alcohol is causally implicated in some but not all cases of the condition, for example, as for hypertensive diseases, various cancers and falls. The attributable fraction for alcohol-attributable conditions ranges from between greater than zero and less than one. For example, the AAF for drowning is 0.34 and the AAF for assault is 0.27 (Table 1).

AAFs for children (aged under 16 years) are only included for alcohol-specific diagnoses i.e. where the attributable fraction is one, meaning that alcohol consumption is a contributory factor in all cases. For other conditions, AAF estimates were not available for children.

A confidence interval is a range of values that is normally used to describe the uncertainty around a point estimate of a quantity.

This uncertainty arises as factors influencing the indicator are subject to chance occurrences that are inherent in the world around us. These occurrences result in random fluctuations in the indicator value between different areas and time periods. In the case of indicators based on a sample of the population, uncertainty also arises from random differences between the sample and the population itself.

The stated value should therefore be considered as only an estimate of the true or 'underlying' value. Confidence intervals quantify the uncertainty in this estimate and, generally speaking, describe how much different the point estimate could have been if the underlying conditions stayed the same, but chance had led to a different set of data. The wider the confidence interval, the greater the uncertainty in the estimate.

Confidence intervals are given with a stated probability level. In LAPE 2011 this is 95%, and so we say that there is a 95% probability that the interval covers the true value. The use of 95% is arbitrary but is conventional practice in medicine and public health.

The confidence intervals have also been used to make comparisons against the national value in the local area summary charts (for an example screen shot, see Section 3.3). For this purpose the national value has been treated as an exact reference value rather than as an estimate and, under these conditions, the interval can be used to test whether the value is statistically significantly different to the national value. If the interval includes the national value, the difference is not statistically significant and the value is shown on the summary chart as a white circle. If the interval does not include the national value, the difference is statistically significant and the value is shown on the summary chart with a red or green circle depending on whether it is worse or better than the national value respectively.

(Definition taken from: 'The Indicator Guide. Health Profiles 2011' - www.apho.org.uk/resource/view.aspx?RID=50204)

LAPE
Local Alcohol Profiles for England

Table 1: List of ICD-10 codes used and attributable fractions for alcohol-attributable/specific hospital admissions and mortality

ICD-10 code	ICD-10 name	Alcohol-attributable fraction*															
		0-15		16-24		25-34		35-44		45-54		55-64		65-74		75+	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
E24.4	Alcohol-induced pseudo-Cushing's syndrome	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
F10	Mental and behavioural disorders due to use of alcohol	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
G31.2	Degeneration of nervous system due to alcohol	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
G62.1	Alcoholic polyneuropathy	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
G72.1	Alcoholic myopathy	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
I42.6	Alcoholic cardiomyopathy	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
K29.2	Alcoholic gastritis	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
K70	Alcoholic liver disease	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
K86.0	Chronic pancreatitis (alcohol induced)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
T51.0	Ethanol poisoning	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
T51.1	Methanol poisoning	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
T51.9	Toxic effect of alcohol, unspecified	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
X45	Accidental poisoning by and exposure to alcohol	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
C00-C14	Malignant neoplasm of lip, oral cavity and pharynx	0.00	0.00	0.50	0.40	0.50	0.35	0.49	0.36	0.53	0.35	0.50	0.33	0.44	0.26	0.36	0.20
C15	Malignant neoplasm of oesophagus	0.00	0.00	0.32	0.23	0.31	0.20	0.30	0.20	0.34	0.20	0.32	0.18	0.26	0.14	0.20	0.10
C18	Malignant neoplasm of colon	0.00	0.00	0.05	0.03	0.05	0.03	0.04	0.03	0.05	0.03	0.05	0.03	0.04	0.02	0.03	0.01
C20	Malignant neoplasm of rectum	0.00	0.00	0.08	0.06	0.08	0.05	0.08	0.05	0.09	0.05	0.08	0.05	0.07	0.03	0.05	0.03
C22	Malignant neoplasm of liver and intrahepatic bile ducts	0.00	0.00	0.16	0.11	0.15	0.10	0.15	0.10	0.17	0.10	0.16	0.09	0.13	0.07	0.10	0.05
C32	Malignant neoplasm of larynx	0.00	0.00	0.34	0.25	0.33	0.21	0.32	0.22	0.36	0.21	0.34	0.20	0.28	0.15	0.22	0.11
C50	Malignant neoplasm of breast	0.00	0.00	0.00	0.09	0.00	0.08	0.00	0.09	0.00	0.09	0.00	0.08	0.00	0.06	0.00	0.04
G40-G41	Epilepsy and Status epilepticus	0.00	0.00	0.56	0.64	0.58	0.59	0.58	0.61	0.61	0.61	0.61	0.57	0.51	0.45	0.42	0.35
I10-I15	Hypertensive diseases	0.00	0.00	0.34	0.24	0.33	0.19	0.32	0.20	0.37	0.20	0.34	0.18	0.27	0.13	0.20	0.09
I47-I48	Cardiac arrhythmias	0.00	0.00	0.35	0.36	0.36	0.35	0.37	0.35	0.38	0.35	0.37	0.33	0.34	0.27	0.30	0.22
**I50-I51	Heart failure	0.00	0.00	0.004	0.002	0.004	0.002	0.004	0.002	0.004	0.002	0.004	0.002	0.004	0.002	0.004	0.002
I60-I62, I69.0-I69.2	Haemorrhagic stroke	0.00	0.00	0.31	0.20	0.30	0.15	0.27	0.15	0.34	0.15	0.30	0.13	0.24	0.10	0.16	0.06
I63-I66, I69.3-I69.4	Ischaemic stroke	0.00	0.00	0.16	0.03	0.13	0.00	0.08	0.00	0.18	0.00	0.12	0.00	0.06	0.00	0.00	0.00
I85	Oesophageal varices	0.00	0.00	0.77	0.67	0.76	0.59	0.74	0.60	0.79	0.59	0.77	0.57	0.71	0.48	0.61	0.38
K22.6	Gastro-oesophageal laceration-haemorrhage syndrome	0.00	0.00	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
K73-K74	Chronic hepatitis, not elsewhere classified and Fibrosis and cirrhosis of liver	0.00	0.00	0.77	0.67	0.76	0.59	0.74	0.60	0.79	0.59	0.77	0.57	0.71	0.48	0.61	0.38
K85, K86.1	Acute and chronic pancreatitis	0.00	0.00	0.27	0.19	0.27	0.16	0.26	0.16	0.30	0.16	0.27	0.14	0.22	0.10	0.16	0.07
L40 excluding L40.5	Psoriasis	0.00	0.00	0.34	0.33	0.34	0.33	0.35	0.33	0.36	0.32	0.35	0.31	0.33	0.26	0.30	0.22
O03	Spontaneous abortion	0.00	0.00	0.00	0.23	0.00	0.21	0.00	0.22	0.00	0.21	0.00	0.20	0.00	0.15	0.00	0.12
§	Pedestrian traffic accident- hospital admission	0.00	0.00	0.35	0.16	0.45	0.19	0.46	0.21	0.46	0.21	0.23	0.03	0.23	0.03	0.23	0.03
§	Pedestrian traffic accident- death	0.00	0.00	0.69	0.50	0.58	0.22	0.51	0.42	0.51	0.42	0.16	0.06	0.16	0.06	0.16	0.06
§§	Road traffic accident (driver/rider) - hospital admission	0.00	0.00	0.21	0.09	0.33	0.15	0.24	0.12	0.24	0.12	0.09	0.03	0.09	0.03	0.09	0.03
§§	Road traffic accident (driver/rider) - death	0.00	0.00	0.37	0.18	0.37	0.18	0.37	0.18	0.37	0.18	0.09	0.00	0.09	0.00	0.09	0.00
V90-V94	Water transport accidents	0.00	0.00	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
V95-V97	Air/space transport accidents	0.00	0.00	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
W00-W19	Fall injuries	0.00	0.00	0.22	0.14	0.22	0.14	0.22	0.14	0.22	0.14	0.22	0.14	0.12	0.04	0.12	0.04
W24-W31	Work/machine injuries	0.00	0.00	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
W32-W34	Firearm injuries	0.00	0.00	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
W65-W74	Drowning	0.00	0.00	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
W78-W79	Inhalation of gastric contents/Inhalation and ingestion of food causing obstruction of the respiratory tract	0.00	0.00	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
X00-X09	Fire injuries	0.00	0.00	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
X31	Accidental excessive cold	0.00	0.00	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
**X60-X84, Y10-Y34	Intentional self-harm/Event of undetermined intent	0.00	0.00	0.34	0.35	0.34	0.33	0.35	0.34	0.37	0.34	0.36	0.32	0.31	0.25	0.27	0.20
X85-Y09	Assault	0.00	0.00	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27

§ V02-V04 (.1, .9), V06.1, V09.2, V09.3
§§ V12-V14 (.3 -.9), V19.4-V19.6, V19.9, V20-V28 (.3 -.9), V29-V79 (.4 -.9), V80.3-V80.5, V81.1, V82.1, V82.9, V83.0-V86 (.0 -.3), V87.0-V87.9, V89.2, V89.3, V89.9
*An alcohol-attributable fraction is the attributable fraction due to alcohol; i.e. 1 = 100%, 0.25 = 25% of cases are attributable to alcohol.
** Admission episodes for alcohol-attributable conditions (previously NI39) do not include ICD-10 codes I50-I51 (they become zero when rounded to two decimal places), or Y34. The difference is negligible.

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Table 2: Alcohol-attributable fractions for land transport accident mortality

Cause	Alcohol-attributable fraction*				
	Males		Females		Average
	Low	High	Low	High	(used in LAPE)
Road Injuries	0.37	0.43	0.18	0.43	0.353

*An alcohol-attributable fraction is the attributable fraction due to alcohol; i.e. 1 = 100%, 0.25 = 25% of cases are attributable to alcohol.

Table 3: Alcohol-attributable fractions for crime

Crime category	Alcohol-attributable fraction*
Violence against the person	0.37
Sexual offences	0.13
Robbery	0.12
Burglary	0.17
Theft of motor vehicle	0.13
Theft from a motor vehicle	0.13

*An alcohol-attributable fraction is the attributable fraction due to alcohol; i.e. 1 = 100%, 0.25 = 25% of cases are attributable to alcohol.

3. Local Alcohol Profiles for England (LAPE) online tool

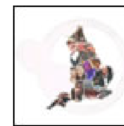
3.1 Instructions

1. Accessing the tool
2. Selecting a profile from the launch page
3. Viewing local area profile charts and data
4. Downloading data
5. Admission episodes for alcohol-attributable conditions (previously NI39)
6. Associated reports and maps

3.2 Accessing the Local Alcohol Profiles for England tool

Online at www.lape.org.uk or via mobile at www.lape.org.uk/mobile

Click one of the quick link icons from the NWPHO homepage www.nwpho.org.uk



Alcohol Profiles 2011

3.3 Selecting profiles from the Local Alcohol Profiles for England tool

The ‘Profiles’ tab allows you to select profiles for either Local Authority or Primary Care Trust (default is Local Authority).

Read announcements about data releases here.

Select type of Profiles

Select region by clicking area on map

LAPE
Local Alcohol Profiles for England

3.4 Viewing Local Alcohol Profile for England charts and data

The ‘Chart’ tab shows the local result for each indicator as a circle, against the England and regional averages. (Example shown using Local Authority Profiles.)

Download the profile as a PDF (includes displays from chart, trend charts, data and footnotes tabs).

Select Local Authority area from drop down menu

Click here to display interquartile ranges* on the chart.

* The interquartile range is the distance between the 75th percentile and the 25th percentile.

The ‘Trend Charts’ tab displays local trends over five time periods for seven selected indicators.

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Site design, development and data produced by North West Public Health Observatory on behalf of the Public Health Observatories in England

LAPE

Local Alcohol Profiles for England

The ‘Data’ tab displays the local values, national rank and regional average for all indicators.

The ‘Footnotes’ tab provides a definition of Data indicators.

‘Footnotes’ tab provides definitions for Data indicators.

Local Authority Profile - North West

Return to the map to choose another Profile

Chart | Trend Charts | Data | Footnotes

Data

	Indicator	Measure(a)	National Rank (b)	Regional Average
1	Months of life lost - males	14.2	319	12.0
2	Months of life lost - females	7.2	321	5.9
3	Alcohol-specific mortality - males	27.9	322	19.0
4	Alcohol-specific mortality - females	13.9	321	9.9
5	Mortality from chronic liver disease - males	28.4	322	20.6
6	Mortality from chronic liver disease - females	14.4	320	11.3
7	Alcohol-attributable mortality - males	61.5	320	45.7
8	Alcohol-attributable mortality - females	21.9	304	19.6
9	Alcohol-specific hospital admission - under 18s	147.8	324	102.8
10	Alcohol-specific hospital admission - males	1082.4	326	666.4
11	Alcohol-specific hospital admission - females	517.4	326	348.1
12	Alcohol-attributable hospital admission - males	2443.1	326	1807.4
13	Alcohol-attributable hospital admission - females	1371.8	326	1044.8

Click on individual indicators for graphs displaying all areas in the region.

Months of life lost - males - Liverpool

Limit to selected region | Show all England LAs

Click here to display all areas in England.

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3.5 Data downloads data (including trend data at Local Authority and Primary Care Trust level)

Data is available for:

- Alcohol indicators at Local Authority and Primary Care Trust level (2011 version). These also contain trend data for some of the indicators.
- Department of Health data – Admission episodes for alcohol-attributable conditions (previously NI39)

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NorthWest Public Health Observatory
LJMU Centre for Public Health

Site design, development and data produced by North West Public Health Observatory on behalf of the Public Health Observatories in England

LAPE
Local Alcohol Profiles for England

3.6 Department of Health indicator

The National Indicators page provides links to reports and sub-analysis of number of the admissions for alcohol-attributable conditions, by condition groups.

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Profiles | Maps | Data | National Indicators | Resources

Admission episodes for alcohol-attributable conditions (previously NI39)
Click on the links below to access alcohol indicators at Local Authority and Primary Care Trust level.

Datasets (Department of Health data)
- Annual Trends: 2002/03 to 2009/10 - Updated 10/01/11
- Quarterly Data: 2008/09 Quarter 1 to 2010/11 Quarter 3
- Subanalysis by 10 conditions: 2007/08
- Subanalysis by 10 conditions: 2008/09 - Updated 18/10/10

Associated documents
- New alcohol attributable fractions for England
- National planning tool

Sub analysis tool
Coming soon

User Guide
For guidance and methods advice download our User Guide
*Requires Adobe Acrobat Reader

LAPE On Your Mobile
For instructions on how to access LAPE on your mobile click here

Alcohol E-shot Sign Up
Keep in touch with the latest alcohol research, evidence, policy and media articles by signing up for our E-shot

3.7 Associated reports and maps (maps at Local Authority level only)

The 'Maps' tab allows access to mapped data for the alcohol indicators at Local Authority level.

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Maps
Click on the links below to access mapped data for the alcohol indicators at Local Authority level.

Deaths
- Alcohol-attributable mortality (Male)
- Alcohol-attributable mortality (Female)
- Alcohol-specific mortality (Male)
- Alcohol-specific mortality (Female)
- Months of life lost (Male)
- Months of life lost (Female)
- Mortality from chronic liver disease (Male)
- Mortality from chronic liver disease (Female)
- Mortality from land transport accidents

Admissions
- Alcohol-attributable hospital admissions (Male)
- Alcohol-attributable hospital admissions (Female)
- Alcohol-specific hospital admissions (Male)
- Alcohol-specific hospital admissions (Female)
- Alcohol-specific hospital admissions (Under 18s)
- Hospital admissions for alcohol-related harm (NI39)

Crime
- Alcohol-attributable recorded crimes
- Alcohol-attributable violent crimes
- Alcohol-related sexual offences

Drinking
- Abstainers (synthetic estimate)
- Lower risk drinking (% of drinkers only) synthetic estimate
- Increasing risk drinking (% of drinkers only) synthetic estimate
- Higher risk drinking (% of drinkers only) synthetic estimate
- Binge drinking synthetic estimate

Other
- Claimants of incapacity benefits (Working age)
- Employees in bars (percentage of all employees)

User Guide
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4. Indicator overview and metadata

This section provides an overview and metadata for the 26 indicators below.

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1	Months of life lost - males	15
2	Months of life lost - females	15
3	Alcohol-specific mortality - males	17
4	Alcohol-specific mortality - females	17
5	Mortality from chronic liver disease - males	19
6	Mortality from chronic liver disease - females	19
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8	Alcohol-attributable mortality - females	20
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11	Alcohol-specific hospital admission - females	25
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24	Binge drinking synthetic estimate	47
25	Employees in bars - % of all employees	50
26	Alcohol treatment - prevalence per 1,000 population	52

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4.1 Mortality and months of life lost due to alcohol

1. Months of life lost - males.
2. Months of life lost - females.
3. Alcohol-specific mortality - males.
4. Alcohol-specific mortality - females.
5. Mortality from chronic liver disease - males.
6. Mortality from chronic liver disease - females.
7. Alcohol-attributable mortality - males.
8. Alcohol-attributable mortality - females.

Mortality data for the months of life lost due to alcohol, alcohol-specific and alcohol-attributable mortality indicators were extracted by NWPHO using the underlying cause of death corresponding to the International Classification of Diseases (ICD) 10 codes in Table 1 and the corresponding Office for National Statistics (ONS) mid-year population estimates. Alcohol-specific deaths were given an AF of one, while alcohol-attributable deaths were applied the given alcohol-attributable fractions (AAF). The mortality indicator for chronic liver disease was calculated by the Compendium of Clinical and Health Indicators, National Centre for Health Outcomes Development[3] (further details from www.nchod.nhs.uk) using the same data sources (ONS mortality and population data).

Key points

- Months of life lost is based on three consecutive years of alcohol-attributable mortality data.
- Alcohol-specific mortality is based on three consecutive years of mortality data and the measures are a directly standardised rate (DSR).
- Alcohol-attributable mortality is based on one year of mortality data and the measures are a DSR.
- Mortality from chronic liver disease is based on three years of mortality data and the measures are a DSR.

Indicator details: Months of life lost (males and females)

Collection ID(s)	1, 2
Indicator name	Months of life lost due to alcohol.
What is being measured	An estimate of the increase in life expectancy at birth which would be expected if all alcohol-attributable deaths among males/females aged under 75 years were prevented.
Who does it measure	Males and females, aged less than 75 years.
When does it measure	Calendar years 2007-2009 (three year moving average). *(Trends available for 2003-2005, 2004-2006, 2005-2007, 2006-2008).*
Timeliness	Produced annually by NWPHO. The Office for National Statistics (ONS) provides public health observatories with the annual death extract and mid-year population estimates around July-September. ONS produce annual interim life tables around October.

Indicator definition	Months of life lost due to alcohol, males and females aged less than 75 years.
Geographical coverage	England, Government Office Regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs).
Numerator definition	Deaths from alcohol-attributable conditions, classified by underlying cause of death (ICD-10 codes, Table 1), registered in the respective calendar years 2007-2009 in males and females aged under 75 years. Children under 16 years were only included if they had an alcohol-specific diagnosis, that is, where the alcohol-attributable fraction (AAF) equalled one, meaning that alcohol consumption was a contributory factor in all cases. For other conditions, AAF estimates were not available for children.
Numerator source	Annual death extracts from ONS.
Denominator definition	Mid-year population estimates (2007, 2008, 2009) for 0-74 year olds (age bands: <1, 1-44, 45-54, 55-64 and 65-74 years) males and females. Estimates are aggregated from single year age bands. The three years of data are pooled.
Denominator source	ONS
Confidence interval methodology	Confidence intervals have not been generated for this indicator.
Are there any caveats?	Data on deaths are considered to be complete and robust. Records without a valid area code are excluded (the number of these is negligible). There is the potential for the underlying cause of death to be incorrectly attributed on the death certificate and, therefore, the cause of death misclassified.
Method employed to create the indicator	1. Select deaths under 75. 2. Assemble three consecutive years of data for locality deaths in England. 3. Assemble corresponding three consecutive years of locality mid-year population estimates (age bands: <1, 1-44, 45-54, 55-64 and 65-74 years). 4. Reduce each observed death by the corresponding AAF. 5. Attach national (England and Wales three year aggregates) years of life lost (YLL) values to each fractional observed death from ONS interim life tables (www.statistics.gov.uk). • deaths in first year counted as life expectancy at birth. • deaths in years one to four counted as life expectancy at age two. • deaths in years five to nine counted as life expectancy at age seven, etc….. • ….deaths at 70-74 counted as life expectancy at 72. 6. Tabulate from the district deaths extracts - summing attributable years of life lost - age groups <1, 1-44, 45-54, 55-64, 65-74 years. • sex • locality • aggregated for the 3 years. 7. Calculate local and England three year attributable YLL rates per 100,000 population by age group and sex. 8. Standardise to the European Standard Population in age groups. 9. This gives the average YLL for each year lived in the area, and for England. 10. Multiply by 12 (to convert to months), and by life expectancy at birth (to project lifetime effect). *This method was developed by Tom Hennell, Regional Analyst, Government*

	Office North West.
Summary footnote	An estimate of the increase in life expectancy at birth that would be expected if all alcohol-attributable deaths among males/females aged under 75 years were prevented. (NWPHO from 2007-2009 England and Wales life expectancy tables for males and females (from ONS), alcohol-attributable deaths from Public Health Mortality File 2007-2009 in males/females aged under 75 and ONS mid-year population estimates for 2007-2009).

Indicator details: Alcohol specific mortality (males and females)

Collection ID(s)	3, 4
Indicator name	Alcohol-specific mortality - males/females.
What is being measured	Mortality rate from alcohol-specific conditions.
Who does it measure	Males and females, all ages.
When does it measure	Calendar years 2007-2009 (three year moving average) *(Trends available for 2003-2005, 2004-2006, 2005-2007, 2006-2008).*
Indicator definition	Mortality from alcohol-specific conditions, directly standardised rate (DSR), males and females, all ages, per 100,000 European Standard Population.
Timeliness	Produced annually by NWPHO. The Office for National Statistics (ONS) provides public health observatories with the annual death extract and mid-year population estimates around July-September.
Geographical coverage	England, Government Office Regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs).
Numerator definition	Deaths from alcohol-specific conditions, classified by underlying cause of death (ICD-10 codes with an attributable fraction of one, Table 1), registered in the respective calendar years 2007-2009 in males and females of all ages.
Numerator source	Annual death extracts from ONS.
Denominator definition	Mid-year population estimates (2007, 2008, 2009) by sex and five year age band.
Denominator source	ONS.
Confidence interval methodology	A combination of the exact methodology and Byar's methodology was used to generate 95% confidence intervals, as detailed in '*APHO Technical Briefing 3: Commonly Used Public Health Statistics and their Confidence Intervals*'. The formula numbers below correspond to those in the briefing available from: www.apho.org.uk/apho/techbrief.htm. An accompanying Excel spreadsheet, replicating all formulae, is also available from this link. The confidence limits for the DSR are given by: $DSR_{lower} = DSR + \sqrt{\frac{Var(DSR)}{Var(O)}} \times (O_{lower} - O)$

$$DSR_{upper} = DSR + \sqrt{\frac{Var(DSR)}{Var(O)}} \times \left(O_{upper} - O\right)$$

where:
O is the total observed count of events in the local or subject population;
O_{lower} and O_{upper} are the lower and upper confidence limits for the observed count of events;
$Var(O)$ is the variance of the total observed count O;
$Var(DSR)$ is the variance of the DSR.

Using Byar's method[a], the 100(1–α)% confidence limits for the observed number of events are given by:

$$O_{lower} = O \times \left(1 - \frac{1}{9O} - \frac{z}{3\sqrt{O}}\right)^3$$

$$O_{upper} = \left(O+1\right) \times \left(1 - \frac{1}{9(O+1)} + \frac{z}{3\sqrt{(O+1)}}\right)^3$$

where:
z is the 100(1–α/2)th percentile value from the Standard Normal distribution. For example, for a 95% confidence interval, $\alpha = 0.05$ and $z = 1.96$ (i.e. the 97.5th percentile value from the Standard Normal distribution).

The variances of the observed count O and the DSR are estimated by:

$$Var(O) = \sum_i O_i$$

$$Var(DSR) = \frac{1}{\left(\sum_i w_i\right)^2} \times \sum_i \frac{w_i^2 O_i}{n_i^2}$$

where:
O_i is the observed number of events in the local or subject population in age group i;
n_i is the number of individuals in the local or subject denominator population in age group i, or the population × period at risk (e.g. 'person-years');
w_i is the number (or proportion) of individuals in the reference or standard population in age group i.

The Excel formulas from the Association of Public Health Observatories (APHO) spreadsheet were used to calculate confidence intervals. The APHO spreadsheet uses Excel's built-in functions for exact probabilities for all cases based on numerators under 389, in order to give the most accurate results. For higher numerators, Excel's statistical functions fail (intermittently), and while macros are available to calculate exact Poisson probabilities, it is simpler to use Byar's method, and extremely accurate to do so.

References

a. Breslow N.E. and Day N.E. (1987) Statistical methods in cancer research, volume II: The design and analysis of cohort studies. Lyon: International Agency for Research on Cancer, World Health Organization.
b. Armitage P. and Berry G. (1994) Statistical methods in medical research (third edition). Oxford: Blackwell.

Are there any caveats?	Data on deaths are considered to be complete and robust. Records without a valid area code are excluded (the number of these is negligible). There is the potential for the underlying cause of death to be incorrectly attributed on the death certificate and, therefore, the cause of death misclassified.
Method employed to create the indicator	The DSR is the rate of events that would occur in a population with a standard age structure if that population were to experience the age-specific rates of the subject population. The standard population used is the European Standard Population. The age groups used are: <1, 1-4, 5-9,… , 80-84, 85+ years. The rate for 2007-2009 has been calculated as the simple average of the individual annual rates. The rate is expressed per 100,000 population.
Summary Footnote	Deaths from alcohol-specific conditions (all ages, male/female), DSR per 100,000 population (standardised to the European Standard Population). (NWPHO from ONS Public Health Mortality File for 2007-2009 and mid-year population estimates for 2007-2009).

Indicator details: Mortality from chronic liver disease (males and females)

Collection ID(s)	5, 6
Indicator name	Mortality from chronic liver disease - males/females.
What is being measured	Mortality rate from chronic liver disease.
Who does it measure	Males and females, all ages.
When does it measure	Calendar years 2007-2009 (three year moving average).
Timeliness	The mortality from chronic liver disease indicator is updated annually for the Compendium of Clinical and Health Indicators by the National Centre for Health Outcomes Development (NCHOD), usually around November/December.
Indicator definition	Mortality from chronic liver disease, directly standardised rate (DSR), males and females, all ages, per 100,000 European Standard Population.
Geographical coverage	England, Government Office Regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs).
Numerator definition	Deaths from chronic liver disease, including cirrhosis, classified by underlying cause of death (ICD-10 K70, K73-K74), registered in the respective calendar years 2007-2009, in males and females of all ages.
Numerator source	Annual death extracts from the Office for National Statistics
Denominator definition	2001 Census based mid-year population estimates for the respective calendar years 2007-2009. Data are based on the latest revisions of ONS mid-year population estimates for the respective years, current as at November 2010.
Denominator source	ONS.
Confidence interval methodology	95% confidence intervals were calculated by NCHOD. The method is described below and available from: www.nchod.nhs.uk.

	95% confidence intervals for the DSR were calculated using a normal approximation. Standard errors are obtained using the method described by Breslow and Day[a], but modified to use the binomial variance for a proportion to estimate the variances of the crude age-specific rates[b]. This method is likely to be unreliable when there are fewer than 50 cases in an area, hence confidence intervals for rates based on less than 50 cases should be viewed with caution. The lower and upper limits for the rates are denoted by DSR_{LL} and DSR_{UL} respectively. $$DSR_{LL/UL} = DSR \pm 1.96 \times 100{,}000 \times \sqrt{\frac{1}{\left(\sum_{ij} w_i\right)^2} \times \sum_{ij} \frac{w_i^2 \cdot r_{ij}(1-r_{ij})}{n_{ij}}}$$ where: w_i is the number, or proportion, of individuals in the standard population in age group i. r_{ij} is the crude age-specific rate in the subject population in age group i, in year j. n_{ij} is the number of individuals in the subject population in age group i, in year j. References a. Breslow, N.E. and Day, N.E. (1987) Statistical Methods in Cancer Research, Volume II: The Design and Analysis of Cohort Studies. Lyon: International Agency for Research on Cancer, World Health Organization b. Keyfitz, N. (1966) Sampling variance of age-standardised mortality rates. Human Biology. 38: 309-317
Are there any caveats?	Data on deaths are considered to be complete and robust. Records without a valid area code are excluded (the number of these is negligible). There is the potential for the underlying cause of death to be incorrectly attributed on the death certificate and, therefore, the cause of death misclassified.
Method employed to create the indicator	DSR per 100,000 for males and females (all ages) and their corresponding confidence intervals were taken directly from the Compendium of Clinical and Health Indicators, NCHOD. The DSR is the rate of events that would occur in a population with a standard age structure if that population were to experience the age-specific rates of the subject population. The standard population used is the European Standard Population. The age groups used are: <1, 1-4, 5-9,…, 80-84, 85+ years. The rate for 2007-2009 has been calculated as the simple average of the individual annual rates. The rate is expressed per 100,000 population. For explanations of the statistical methods used in this indicator please see: www.nchod.nhs.uk.
Summary Footnote	Deaths from chronic liver disease including cirrhosis (ICD-10: K70, K73-K74) (all ages, male/female), DSR per 100,000 population (standardised to the European Standard Population). (Compendium of Clinical and Health Indicators, NCHOD 2007-2009 pooled).

Indicator details: Alcohol-attributable mortality (males and females)

Collection ID(s)	7, 8
Indicator name	Alcohol-attributable mortality - males/females.

What is being measured	Mortality rate from alcohol-attributable conditions.
Who does it measure	Males and females, all ages.
When does it measure	Calendar year 2009. *(Trends available for 2005, 2006, 2007 and 2008).*
Timeliness	Produced annually by NWPHO. The Office for National Statistics (ONS) provides public health observatories with the annual death extract and mid-year population estimates around July-September.
Indicator definition	Mortality from alcohol-attributable conditions, directly standardised rate (DSR), males and females, all ages, per 100,000 European Standard Population.
Geographical coverage	England, Government Office Regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs).
Numerator definition	Deaths from alcohol-attributable conditions, classified by underlying cause of death (ICD-10 codes, Table 1), registered in the respective calendar year 2009, in males and females, all ages. Children under 16 years were only included if they had an alcohol-specific diagnosis i.e. where the alcohol-attributable fraction (AAF) equalled one, meaning that alcohol consumption was the sole cause in all cases. For other conditions, the AAF estimates were not available for children.
Numerator source	Annual death extracts from ONS.
Denominator definition	Mid-year population estimates (2009) by sex and five year age band.
Denominator source	ONS.
Confidence interval methodology	A combination of the exact methodology and Byar's methodology was used to generate 95% confidence intervals, as detailed in *APHO Technical Briefing 3: Commonly Used Public Health Statistics and their Confidence Intervals* available from: (www.apho.org.uk/apho/techbrief.htm). Formulae and further details on the 'Confidence interval methodology' are given in the indicator details for alcohol specific mortality (indicators 3 and 4).
Are there any caveats?	Data on deaths are considered to be complete and robust. Records without a valid area code are excluded (the number of these is negligible). There is the potential for the underlying cause of death to be incorrectly attributed on the death certificate and, therefore, the cause of death misclassified.
Method employed to create the indicator	Each alcohol-attributable death is assigned an AAF based on underlying cause of death ICD-10 code, age group and gender (see Table 1). The AAFs are then aggregated by age group (<1, 1-4, 5-9, …, 80-84, 85+ years), gender and area of residence. Mid-year population estimates are used to calculate DSR. The DSR is the rate of events that would occur in a population with a standard age structure if that population were to experience the age-specific rates of the subject population. The standard population used is the European Standard Population. The age groups used are: <1, 1-4, 5-9, …, 80-84, 85+ years. The rate for 2009 has been calculated as the simple average of the individual annual rates. The rate is expressed per 100,000 population.
Summary Footnote	Deaths from alcohol-attributable conditions (all ages, male/female), DSR per 100,000 population (standardised to the European Standard Population).

	(NWPHO from ONS Public Health Mortality File for 2009 and mid-year population estimates for 2009).

4.2 Number of people and number of admissions to hospital for alcohol-related conditions

9	Alcohol-specific hospital admission - under 18s
10	Alcohol-specific hospital admission - males
11	Alcohol-specific hospital admission - females
12	Alcohol-attributable hospital admission - males
13	Alcohol-attributable hospital admission - females
14	Admission episodes for alcohol-attributable conditions (previously NI39)

Indicators 9 to 13 relate to the number of people admitted to hospital each year per 100,000 population for alcohol-specific and alcohol-attributable conditions.

In contrast, indicator 14 relates to the number of admissions to hospital for alcohol-attributable conditions for every 100,000 population. Some individuals may be admitted more than once in any one year.

The list of International Classification of Diseases (ICD) 10 codes (Table 1) is used to extract all episodes containing alcohol-attributable diagnoses from the Hospital Episode Statistics (HES) datasets. Sex and age specific alcohol-attributable fractions (AAFs) are then applied to each episode.

Within the LAPE profiles, NWPHO calculates the number of men and women admitted to hospital each year for alcohol-specific and alcohol-attributable conditions. The analysis carried out by NWPHO is person based, yielding a period prevalence estimate of the number of persons admitted to hospital at least once during the course of a (financial) year. Episodes relating to the same individual are linked using HESID (which uniquely identifies a patient across all data years). As there are 20 diagnosis codes per episode, and potentially more than one episode per person, there may be more than one alcohol-attributable ICD-10 code associated with an individual over the course of the year. The decision rule below allocates individuals to a single ICD-10 code so that an AAF can be applied. These rules produce estimates for period prevalence and avoiding double counting.

Criteria to allocate individuals to a single ICD-10 code for person based analysis

1) For each individual, identify all alcohol-related diagnosis codes from their HES records;
2) Select the code(s) with the largest attributable fraction;
3) In the event of there being two or more episodes with the same high attributable fraction, select the one from the earliest episode (using start date); and
4) In the event of there being two or more diagnoses with the same high attributable fraction, within the same episode, select the one from the lowest diagnostic position.

Person-specific admissions were originally adopted by the NWPHO LAPE tool as one measure of the number of individuals being adversely affected by alcohol. However, an additional indicator (admission episodes for alcohol-attributable conditions, previously NI39) was

subsequently developed as a measure of pressures from alcohol on health systems, for which the alcohol-attributable fractions have been applied to estimate the number of admissions rather than the number of people.

Indicator details: Alcohol specific hospital admission – under 18s

Collection ID(s)	9
Indicator name	Alcohol-specific hospital admission - under 18s
What is being measured	Individual (in year) persons aged under 18 years old admitted to hospital due to alcohol-specific conditions.
Who does it measure	Persons aged under 18 years old.
When does it measure	Three financial years 2007/08 to 2009/10 (pooled). *Trends available for 2003/04 to 2005/06, 2004/05 to 2006/07, 2005/06 to 2007/08 and 2006/07 to 2008/09.*
Timeliness	Produced annually by NWPHO. Hospital Episode Statistics (HES) publish annual extracts around November of each year. The Office for National Statistics (ONS) publishes mid-year population estimates around July-September.
Indicator definition	Persons admitted to hospital due to alcohol-specific conditions - under 18s, crude rate per 100,000 population.
Geographical coverage	England, Government Office Regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs).
Numerator definition	Persons aged under 18 years, resident in the area, admitted to hospital where the primary diagnosis or any of the secondary diagnoses contain one of the listed conditions specific to alcohol misuse (alcohol-attributable admissions, alcohol-attributable fraction, AFF, of one, Table 1) for years 2007/08, 2008/09 and 2009/10.
Numerator source	HES online extract.
Denominator definition	Mid-year population estimates (2007, 2008, 2009) for 0-17 year olds.
Denominator source	ONS.
Confidence interval methodology	A combination of the exact methodology and Byar's methodology was used to generate 95% confidence intervals, as detailed in *APHO Technical Briefing 3: Commonly Used Public Health Statistics and their Confidence Intervals*. The formula numbers below correspond to those in the briefing available from: (www.apho.org.uk/apho/techbrief.htm). An accompanying Excel spreadsheet, replicating all formulae, is also available from the link above. The rate of events r is given by: $r = \frac{O}{n}$ where: O is the numerator number of observed events; n is the denominator population-years at risk.

	The confidence limits for the rate *r* are given by: $r_{lower} = \frac{O_{lower}}{n}$ $r_{upper} = \frac{O_{upper}}{n}$ where: O_{lower} and O_{upper} are the lower and upper confidence limits for the observed count of events; Using Byar's method[a], the 100(1–α)% confidence limits for the observed number of events are given by: $O_{lower} = O \times \left(1 - \frac{1}{9O} - \frac{z}{3\sqrt{O}}\right)^3$ $O_{upper} = (O+1) \times \left(1 - \frac{1}{9(O+1)} + \frac{z}{3\sqrt{(O+1)}}\right)^3$ where: *z* is the 100(1–α/2)th percentile value from the Standard Normal distribution. For example, for a 95% confidence interval, α = 0.05 and *z* = 1.96 (i.e. the 97.5th percentile value from the Standard Normal distribution). The Excel formulas from the Association of Public Health Observatories (APHO) spreadsheet were used to calculate confidence intervals. The APHO spreadsheet uses Excel's built-in functions for exact probabilities for all cases based on numerators under 389, in order to give the most accurate results. For higher numerators, Excel's statistical functions fail (intermittently), and while macros are available to calculate exact Poisson probabilities, it is simpler to use Byar's method, and extremely accurate to do so. References a. Breslow N.E. and Day N.E. (1987) *Statistical methods in cancer research, volume II: The design and analysis of cohort studies*. Lyon: International Agency for Research on Cancer, World Health Organization. b. Armitage P. and Berry G. (1994) *Statistical methods in medical research (3rd edn)*. Oxford: Blackwell.
Are there any caveats?	Hospital admission data can be coded differently in different parts of the country. In some cases details of the patient's residence are insufficient to allocate the patient to a particular area and in other cases the patient has no fixed abode. These cases are not included in this indicator.
Method employed to create the indicator	Under 18, alcohol-specific hospital admissions are calculated as follows (text in square brackets refers to terms in HES dataset fields): 1. Select HES records where: – the admission is a finished episode [epistat = 3]. – the admission is an ordinary admission, day case or maternity [*classpat* = 1, 2 or 5]. – the sex of the patient is valid [sex = 1 or 2]. – there is a valid age, under 18, at start of episode [*startage* between 0-17 or between 7001-7007]. – the region of residence is one of the English regions [*resgor* between A and K]. – the episode end date [epiend] falls within the specified period. – an alcohol-specific ICD-10 code appears in any diagnosis field

	[*diag_nn*] (Table 1 – the first 13 conditions listed with an AAF of one). 2. Select a single diagnosis to create a person-based indicator by: – identifying all alcohol-specific diagnosis codes for each individual [using *HESID*] within each financial year. – in the event of there being two or more episodes with an alcohol-specific diagnosis, select the one from the earliest episode using start date [*epistart*]; and – in the event of there being two or more alcohol-specific diagnoses within the same episode, select the one from the lowest diagnostic position [*diag_nn*]. ('Diagnostic position', takes an integer value between 1 and 20, corresponding to the 20 diagnosis fields [*diag_01* to *diag_20*]). 3. Calculate crude rates by: – aggregating alcohol-specific admissions above by area of residence. – aggregating under 18 mid-year population estimates for each area. Crude rates per 100,000 were calculated using the following formula: *(a/b) x 100,000* Where: *a= number of alcohol-specific person based admissions (under 18 years old)* *b= ONS population estimate aged under 18 years.*
Summary Footnote	Persons admitted to hospital due to alcohol-specific conditions (under 18s, persons), crude rate per 100,000 population. Numerator counts of between one and five have been suppressed (indicated as *). Some secondary suppression was necessary to prevent disclosure by subtraction. (NWPHO from HES 2007/08-2009/10 and ONS mid-year population estimates 2007-2009). Does not include attendance at Accident and Emergency (A&E).

Indicator details: Alcohol specific hospital admission (males and females)

Collection ID(s)	10, 11
Indicator name	Alcohol-specific hospital admission - males/females.
What is being measured	Individual (in year) persons admitted to hospital due to alcohol-specific conditions.
Who does it measure	Males and females (all ages).
When does it measure	Financial year 2009/10. *(Trends available for 2005/06, 2006/07, 2007/08 and 2008/09).*
Timeliness	Produced annually by NWPHO. Hospital Episode Statistics (HES) publish annual extracts around November of each year; the Office for National Statistics (ONS) publishes mid-year population estimates around July-September.
Indicator definition	Persons admitted to hospital due to alcohol-specific conditions - males, females all ages, directly standardised rate (DSR) per 100,000 European Standard Population.
Geographical coverage	England, Government Office Regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs).

Numerator definition	Persons, resident in the area, admitted to hospital where the primary diagnosis or any of the secondary diagnoses contain one of the listed conditions specific to alcohol misuse (alcohol-attributable fraction, AAF, of one, in Table 1) - males/females, all ages, for the year 2009/10.
Numerator source	HES online extract.
Denominator definition	Mid-year population estimates (2009) by sex and five year age band.
Denominator source	ONS.
Confidence interval methodology	A combination of the exact methodology and Byar's methodology was used to generate 95% confidence intervals, as detailed in '*APHO Technical Briefing 3: Commonly Used Public Health Statistics and their Confidence Intervals*' available from: www.apho.org.uk/apho/techbrief.htm Formulae and further details on the 'Confidence interval methodology' are given in the indicator details for alcohol specific mortality (indicators 3 and 4).
Are there any caveats?	Hospital admission data can be coded differently in different parts of the country. In some cases details of the patient's residence are insufficient to allocate the patient to a particular area and in other cases the patient has no fixed abode. These cases are included in the England total but not in the LA, PCT or regional figures. Therefore the total numbers of admissions for LAs, PCTs and regions do not equal the England total.
Method employed to create the indicator	Male, female alcohol-specific hospital admissions are calculated as follows: 1. Select HES records where: – the admission is a finished episode [*epistat* = 3]. – the admission is an ordinary admission, day case or maternity [*classpat* = 1, 2 or 5]. – the sex of the patient is valid [sex = 1 or 2]. – there is a valid age at start of episode [*startage* between 0-120 or between 7001-7007]. – the region of residence is one of the English regions, no fixed abode or unknown [*resgor*<= K or U or Y]. – the episode end date [*epiend*] falls within the specified period. – an alcohol-specific ICD-10 code appears in any diagnosis field [*diag_nn*] (see Table 1 – the first 13 conditions listed with an AAF of one). 2. Select a single diagnosis to create a person-based indicator by: – identifying all alcohol-specific diagnosis codes for each individual [using *HESID*] within the financial year. – in the event of there being two or more episodes with an alcohol-specific diagnosis, select the one from the earliest episode using start date [*epistart*]; and – in the event of there being two or more alcohol-specific diagnoses, within the same episode, select the one from the lowest diagnostic position [*diag_nn*]. ('Diagnostic position', takes an integer value between 1 and 20, corresponding to the 20 diagnosis fields [*diag_01* to *diag_20*]). 3. Calculate DSR by: – aggregating alcohol-specific admissions above by age group (5-year age bands to age 84, and 85 years and over), gender and area of residence. – using mid-year population estimates to derive age group and gender-specific rates for each area. – calculating DSR per 100,000 population, standardised to the European population.

Summary Footnote	Persons admitted to hospital due to alcohol-specific conditions (all ages, male/female), directly standardised rate per 100,000 population. Numerator counts of between one and five have been suppressed (indicated as *). Some secondary suppression was necessary to prevent disclosure by subtraction. (NWPHO from HES 2009/10 and ONS mid-year population estimates 2009). Does not include attendance at Accident and Emergency (A&E).

Indicator details: Alcohol-attributable hospital admission (males and females)

Collection ID(s)	12, 13
Indicator name	Alcohol-attributable hospital admission – males/females.
What is being measured	Individual (in year) persons admitted to hospital due to alcohol-attributable conditions.
Who does it measure	Males and females (all ages).
When does it measure	Financial year 2009/10. *(Trends available for 2005/06, 2006/07, 2007/08 and 2008/09).*
Timeliness	Produced annually by NWPHO. Hospital Episode Statistics (HES) publish annual extracts around November of each year; the Office for National Statistics (ONS) publishes mid-year population estimates around July-September.
Indicator definition	Persons admitted to hospital due to alcohol-attributable conditions - males, females all ages, directly standardised rate (DSR) per 100,000 European Standard Population.
Geographical coverage	England, Government Office Regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs).
Numerator definition	Persons, resident in the area, admitted to hospital where the primary diagnosis or any of the secondary diagnoses contain one of the listed conditions attributable to alcohol misuse (see Table 1) - males/females, all ages, for the year 2009/10. Children under 16 years were only included if they had an alcohol-specific diagnosis i.e. where the alcohol attributable fraction (AAF) equalled one, meaning that alcohol consumption was a contributory factor in all cases. For other conditions, the AAF estimates were not available for children.
Numerator source	HES online extract.
Denominator definition	Mid-year population estimates (2009) by sex and five year age band.
Denominator source	ONS.
Confidence interval methodology	A combination of the exact methodology and Byar's methodology was used to generate 95% confidence intervals, as detailed in '*APHO Technical Briefing 3: Commonly Used Public Health Statistics and their Confidence Intervals*' available from: www.apho.org.uk/apho/techbrief.htm. Formulae and further details on the 'Confidence interval methodology' are given in the indicator details for alcohol specific mortality (indicators 3 and 4).

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Are there any caveats?	Hospital admission data can be coded differently in different parts of the country. In some cases details of the patient's residence are insufficient to allocate the patient to a particular area and in other cases the patient has no fixed abode. These cases are included in the England total but not in the Calculate crude rates by: LA, PCT or regional figures. Therefore the total numbers of admissions for LAs, PCTs and regions do not equal the England total.
Method employed to create the indicator	Male, female alcohol-attributable hospital admissions are calculated as follows: 1. Select HES records where: – the admission is a finished episode [*epistat* = 3]. – the admission is an ordinary admission, day case or maternity [*classpat* = 1, 2 or 5]. – the sex of the patient is valid [*sex* = 1 or 2]. – there is a valid age at start of episode [*startage* between 0-120 or between 7001-7007]. – the region of residence is one of the English regions, no fixed abode or unknown [*resgor*<= K or U or Y]. – the episode end date [*epiend*] falls within the financial year. – an alcohol-attributable ICD-10 code appears in any diagnosis field [*diag_nn*] (see Table 1). 2. For each episode identified in step 1 above attach the appropriate AAF to the alcohol-attributable diagnoses using the ICD-10 code, age group and gender of the patient (see Table 1). 3. Select a single diagnosis to create a person-based indicator by: – identifying all alcohol-attributable diagnosis codes for each individual [using *HESID*] within the financial year. – select the code(s) with the largest attributable fraction. – in the event of there being two or more episodes with the same high AAF, select the one from the earliest episode using start date [*epistart*]); and – in the event of there being two or more diagnoses with the same high AAF, within the same episode, select the one from the lowest diagnostic position [*diag_nn*]. ('Diagnostic position', takes an integer value between 1 and 20, corresponding to the 20 diagnosis fields [*diag_01* to *diag_20*]). 4. Calculate DSR by: – aggregating alcohol-attributable admissions above by age group (5-year age bands to age 84, and 85 years and over), gender and area of residence. – using mid-year population estimates to derive age group and gender-specific rates for each area. – calculating DSR per 100,000 population, standardised to the European population.
Summary Footnote	Persons admitted to hospital due to alcohol-attributable conditions (all ages, male/female), DSR per 100,000 population. (NWPHO from HES 2009/10 and ONS mid-year population estimates 2009). Does not include attendance at Accident and Emergency (A&E)..

Indicator details: Admission episodes for alcohol attributable conditions

Collection ID(s)	14
Indicator name	Admission episodes for alcohol-attributable conditions (previously NI39)

What is being measured	Admission episodes for alcohol-attributable conditions
Who does it measure	All admissions, all ages.
When does it measure	Financial year 2009/10. *(Trends available for 2005/06, 2006/07, 2007/08 and 2008/09).*
Timeliness	Continually reported and updated every year. Data are released quarterly via www.lape.org.uk/nationalindicator.htm. Annual data are available around November.
Indicator definition	Hospital admissions for alcohol-attributable conditions, directly standardised rate (DSR), all ages, admissions per 100,000 European Standard Population.
Geographical coverage	England, Government Office Regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs).
Numerator definition	Admissions to hospital where the primary diagnosis or any of the secondary diagnoses contain an alcohol-attributable condition (see Table 1) for the year 2009/10. Children under 16 were only included if they had an alcohol-specific diagnosis i.e. where the alcohol-attributable fraction (AAF) equalled one, meaning that alcohol consumption was a contributory factor in all cases. For other conditions, the AAF estimates were not available for children.
Numerator source	Department of Health using Hospital Episode Statistics (HES).
Denominator definition	Mid-year population estimates (2009) by sex and 5-year age band.
Denominator source	Office for National Statistics (ONS).
Confidence interval methodology	A combination of the exact methodology and Byar's methodology was used to generate 95% confidence intervals of the age/sex specific rates, as detailed in '*APHO Technical Briefing 3: Commonly Used Public Health Statistics and their Confidence Intervals*' available from: www.apho.org.uk/apho/techbrief.htm. Formulae and further details on the 'Confidence interval methodology' are given in the indicator details for alcohol specific mortality (indicators 3 and 4).
Are there any caveats?	Hospital admission data can be coded differently in different parts of the country. In some cases the PCT of residence is recorded in HES but not the LA. Previously, where a person's LA was missing in their HES record, and where LAs were coterminous with PCTs, the PCT of the provider organisation was used to derive their LA of residence. This is no longer the case and the LA and PCT of residence are derived from the postcode of residence. The England value includes events for individuals with no fixed abode, and therefore maybe greater than a sum of the regional totals which do not.
Method employed to create the indicator	A detailed definition of the methodology used for this indicator can be found at: www.lape.org.uk/NI39Technical_Dec2008.pdf Alcohol-related hospital admissions are calculated as follows: 1. Select HES records where: – the admission is a finished episode [*epistat* = 3]. – the admission is an ordinary admission, day case or maternity [*classpat* = 1, 2 or 5]. – it is an admission episode [*epiorder* = 1]. – the sex of the patient is valid [*sex* = 1 or 2].

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- there is a valid age at start of episode [*startage* between 0-120 or between 7001-7007].
- the region of residence is one of the English regions, no fixed abode or unknown [*resgor*<= K or U or Y].
- the episode end date [epiend] falls within the financial year.
- an alcohol-related ICD-10 code appears in any diagnosis field [*diag_nn*] (see Table 1).

2. For each episode identified in step 1 above an AAF is applied based on the diagnostic codes, age group and gender of the patient (see Table 1). Where there is more than one alcohol-related ICD-10 code among the 20 possible diagnostic codes (from *diag_nn*) the code(s) with the largest AAF is selected. In the event of there being two or more codes with the same AAF within the same episode, select the one from the lowest diagnostic position [*diag_nn*]. ('Diagnostic position', takes an integer value between 1 and 20, corresponding to the 20 diagnosis fields [*diag_01* to *diag_20*]).
3. Calculate directly standardised rates by:
   - aggregating alcohol-related admissions above by age group (five year age bands to age 84, and 85 years and over), gender and area of residence.
   - using mid-year population estimates to derive age group and gender-specific rates for each area.
   - calculating DSRs per 100,000 population, standardised to the European Standard population.

The DSR is the rate of events that would occur in a standard population if that population were to experience the age/sex-specific rates of the subject population. Explicitly:

$$DSR = \frac{\sum_i w_i r_i}{\sum_i w_i} \times 100{,}000$$

(expressed per 100,000 population)

where:
w_i is the number, or proportion, of individuals in the standard population in age/sex group i.
r_i is the crude age/sex-specific rate in the subject population in age/sex group *i*, given by:

$$r_i = \frac{O_i}{n_i}$$

where:
O_i is the observed number of events in the subject population in age/sex group *i*.
n_i is the number of individuals in the subject population in age/sex group *i*.
The standard population generally used for the direct method is the European Standard Population.

The methodology used by the Department of Health to create the DSR rates for admission episodes for alcohol-attributable conditions (previously NI39) is available from the alcohol-related admission (ARA) tool: www.alcohollearningcentre.org.uk/Topics/Latest/Resource/?cid=5369.

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<tr><td>Summary Footnote</td><td>Admission episodes for alcohol-attributable conditions (previously NI39): DSR per 100,000 population, 2008/09. (Department of Health using HES and ONS 2008 mid-year population estimates). Note that data have been re-calculated</td></tr>
</table>

	for this collection and should not be compared with external sources. Does not include attendance at Accident and Emergency (A&E).

4.3 Alcohol-attributable crime

15. Alcohol-attributable recorded crimes
16. Alcohol-attributable violent crimes
17. Alcohol-attributable sexual offences

Recorded crime attributable to alcohol is calculated using the former Strategy Unit's alcohol attributable fractions (AAFs) and applying them to the total number of recorded crimes. The AAFs were taken from the Home Office New English and Welsh Arrestee Drug Abuse Monitoring System (NEW-ADAM) arrestee survey (1999-2001) and were based on urine tests of arrestees. One in five arrestees tested positive for alcohol. Data were taken from 16 police stations in England and Wales; only offences with sample sizes of more than 50 arrestees have been included. Intoxicated arrestees were not interviewed, which suggests that some figures are likely to be underestimates and explains why drunkenness offences are not included. The proportions of arrestees testing positive for alcohol (and thus the attributable fractions) are shown in Table 3.

Numerators and population denominators (based on Office for National Statistics, ONS, mid-year estimates) for the following categories of offences for all Local Authorities (LAs) in England were obtained from the Home Office:

- Violence against the person
- Sexual offences
- Robbery
- Burglary
- Theft of a motor vehicle
- Theft from a motor vehicle

Numerators were multiplied by the relevant AAF to obtain the number of alcohol-attributable crimes, and results presented as crude rates.

Further details on the reporting of crimes can be found on the Home Office website: www.homeoffice.gov.uk/publications/science-research-statistics/research-statistics/crime-research/.

Indicator details: Alcohol-attributable recorded crimes (all, violent, and sexual offences)

Collection ID(s)	15, 16, 17
Indicator name	Alcohol-attributable recorded crimes, alcohol-attributable violent crimes and alcohol-attributable sexual offences.
What is being measured	Recorded crime for selected key offences attributable to alcohol.
Who does it measure	All persons, all ages.

When does it measure	Financial year 2010/11. *(Trends available for 2006/07, 2007/08, 2008/09 and 2009/10).*
Timeliness	Produced annually by NWPHO. The Home Office recorded crime data are published annually in July.
Indicator definition	Alcohol-attributable recorded crimes, alcohol-attributable violent crimes, alcohol-attributable sexual offences, crude rate per 1,000 population, all ages, persons.
Geographical coverage	England, Government Office regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts.
Numerator definition	Annual counts of the following recorded crime offences, by location of incident in 2010/11, multiplied by the relevant alcohol-attributable fraction (AAF, see Table 3): 1. *alcohol-attributable* crimes are an aggregate of six offences - violence against the person, sexual offences, robbery, burglary dwelling, theft of a motor vehicle, theft from a motor vehicle. 2. *violence against the person.* 3. *sexual offences.* Crimes are recorded using the practice governed by Home Office counting Rules for Recorded Crime and the National Crime Recording Standard. Please see the following for more details: www.homeoffice.gov.uk/publications/science-research-statistics/research-statistics/crime-research/user-guide-crime-statistics/ Numerator data have been used exactly as published in the Home Office supplied data. Where new Unitary Authorities that have been created as part of the April 2009 boundary changes are exactly coterminous with pre-existing counties (Cornwall, Durham, Northumberland, Shropshire and Wiltshire), the numerator data have been drawn from the relevant county figures. Where the new Unitary Authorities represent only part of the existing counties, numerator data have been aggregated from the relevant published figures for the constituent districts.
Numerator source	Home Office: webarchive.nationalarchives.gov.uk/20110220105210/http://rds.homeoffice.gov.uk/rds/crimeew0910.html
Denominator definition	Mid-year population estimates (2009).
Denominator source	Office for National Statistics (ONS) provided by the Home Office at: webarchive.nationalarchives.gov.uk/20110220105210/http://rds.homeoffice.gov.uk/rds/crimeew0910.html
Confidence interval methodology	A combination of the exact methodology and Byar's methodology was used to generate 95% confidence intervals, as detailed in '*APHO Technical Briefing 3: Commonly Used Public Health Statistics and their Confidence Intervals'* available from: www.apho.org.uk/apho/techbrief.htm. Formulae and further details on the 'Confidence interval methodology' are given on in the indicator details for alcohol specific hospital admissions under 19s (indicator 9).
Are there any caveats?	Crimes that have not been reported to the police or incidents that the police decide not to record are not included. In order to protect confidentiality the Home Office suppresses data with a base number of less than 50. Other counts have also been suppressed to protect confidentiality. Caution needs to be taken when considering crime rates in London and other city centre areas due to the very small populations in these areas. The high reported crime rates in city centres are partly due to the use of small resident population figures as the denominator of the crime rate. The 'transient population' that migrates into these areas on a daily basis, either for work or leisure, will not be reflected in the resident population figures. Changes in population estimates between years must also be borne in mind when comparing changes in

	crime rates.
Method employed to create the indicator	The AAF in Table 3 were applied to the recorded crime offences for (1) alcohol-attributable crimes, (2) violence against the person, (3) sexual offences. Please note that the alcohol-attributable crime indicator is a sum of the following recorded offences; violence against the person, sexual offences, robbery, burglary dwelling, theft of a motor vehicle, theft from a motor vehicle. Crude rates were calculated using mid-year ONS populations. Crude rates per 1,000 were calculated using the following formula: $((a \times b)/c) \times 1{,}000$ Where: *a= alcohol-attributable fraction* *b= number of offences* *c= ONS population estimate, all ages* The following formula was used to calculate the sum of the six offences included in the alcohol-attributable crime rate indicator: $((a^1 \times b^1) + (a^2 \times b^2) + (a^3 \times b^3) + (a^4 \times b^4) + (a^5 \times b^5) + (a^6 \times b^6))/c) \times 1{,}000$ Primary care organisation values were estimated as a population weighted average of component Local Authority values.
Summary Footnote	Alcohol-attributable recorded crimes, crude rate per 1,000 population. (NWPHO from Home Office recorded crime statistics 2010/11). ONS 2009 mid-year populations were used. Attributable fractions for alcohol for each crime category were applied, based on survey data on arrestees who tested positive for alcohol by the Strategy Unit. Please note that data are missing for a small number of areas.

4.4 Incapacity

18. Claimants of incapacity benefits - working age

This indicator provides a measure of claimants whose main medical reason is alcoholism as provided by the Department for Work and Pensions.

Indicator details: Claimants of Incapacity Benefits – working age

Collection ID(s)	18
Indicator name	Claimants of Incapacity Benefit – working age.
What is being measured	A snapshot of claimants of Incapacity Benefit (IB) or Severe Disablement Allowance (SDA) whose main medical reason is alcoholism.
Who does it measure	Persons, working age (males aged 16-64 years, females aged 16-59 years).
When does it measure	Single year: August 2010.
Timeliness	Produced annually by NWPHO. The Department for Works and Pensions (DWP) analyse data quarterly. August 2010 was the most current dataset as at July 2011. Office for National Statistics (ONS) publish mid-year population estimates around July-September.

Indicator definition	IB or SDA whose main medical reason is alcoholism, crude rate per 100,000 (working age, persons) population.
Geographical coverage	England, Government Office regions, 2009 Local Authority (LA) districts*: (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs). *Isles of Scilly has not been included in this indicator due to small resident population.
Numerator definition	IB or SDA whose main medical reason to not work is alcoholism. Causes of incapacity are based on the International Classification of Diseases, 10th Revision, published by the World Health Organization. To qualify for IB/SDA, claimants have to undertake a medical test of incapacity for work which is called the Personal Capability Assessment. Therefore, the medical condition recorded on IB/SDA claim form does not itself confer entitlement to incapacity benefits, so for example, the decision for a customer claiming IB on grounds of alcoholism would be based on their ability to carry out the range of activities in the Personal Capability Assessment; or on the effects of any associated mental health problems.
Numerator source	DWP Information Directorate.
Denominator definition	Mid-year population estimates (2009) for males aged 16-64 years and females aged 16-59 years.
Denominator source	ONS.
Confidence interval methodology	A combination of the exact methodology and Byar's methodology was used to generate 95% confidence intervals, as detailed in *'APHO Technical Briefing 3: Commonly Used Public Health Statistics and their Confidence Intervals'* available from: www.apho.org.uk/apho/techbrief.htm. Formulae and further details on the 'Confidence interval methodology' are given on in the indicator details for alcohol specific hospital admissions under 19s (indicator 9).
Are there any caveats?	Figures exclude Employment Support Allowance (ESA), introduced in October 2008 to replace IB/SDA. The introduction of ESA has led to a reduction in the number of IB claimants.
Method employed to create the indicator	Crude rates per 100,000 working age population were calculated using mid-year population estimates for males aged 16-64 years and females aged 16-59 years. The following formula was used: *(a/b) x 100,000* Where: *a= Claimants of IB or SDA whose main medical reason is alcoholism* *b= ONS population estimate working age* Primary care organisation values were estimated as a population weighted average of component Local Authority values.
Summary Footnote	Claimants of IB or SDA whose main medical reason for not working is alcoholism, crude rate per 100,000 (working age, persons) population. (NWPHO from DWP data August 2010 and ONS 2009 mid-year population estimates for males aged between 16-64 years and females aged 16-59 years).

4.5 Land transport accidents

19. Mortality from land transport accidents

Alcohol-attributable mortality due to land transport accidents has been calculated using an average of the former Strategy Unit's attributable fractions (see Table 2).

Indicator details: Mortality from land transport accidents attributable to alcohol

Collection ID(s)	19
Indicator name	Mortality from land transport accidents attributable to alcohol.
What is being measured	Mortality rate from land transport accidents attributable to alcohol.
Who does it measure	Persons, all ages.
When does it measure	Calendar years 2007-2009 (three year moving average).
Timeliness	Produced annually by NWPHO. The mortality from land transport accident indicator is updated annually for the Compendium of Clinical and Health Indicators by the National Centre for Health Outcomes Development (NCHOD), usually around November/December.
Indicator definition	Mortality from land transport accidents attributable to alcohol, directly standardised rate (DSR), persons, all ages, per 100,000 European Standard Population.
Geographical coverage	England, Government Office regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs).
Numerator definition	Deaths from land transport accidents, classified by underlying cause of death (ICD-10 V01-V89), multiplied by an alcohol-attributable fraction (AAF) of 0.353, (see Table 2), registered in the respective calendar years 2007-2009, persons, all ages.
Numerator source	Annual death extracts from Office for National Statistics (ONS).
Denominator definition	2001 Census based mid-year population estimates for the respective calendar years 2007-2009. Data are based on the latest revisions of ONS mid-year population estimates for the respective years, current as at November 2010.
Denominator source	ONS.
Confidence interval methodology	95% confidence intervals were calculated by NCHOD. The method is described under indicators 5 and 6 and available from: www.nchod.nhs.uk
Are there any caveats?	Data on deaths are considered to be complete and robust. Records without a valid area code are excluded (the number of these is negligible). There is the potential for the underlying cause of death to be incorrectly attributed on the death certificate and, therefore, the cause of death misclassified.
Method employed to create the indicator	DSR per 100,000 for persons (all ages) and their corresponding confidence intervals were taken directly from the Compendium of Clinical and Health Indicators, NCHOD. The DSR is the rate of events that would occur in a population with a standard age structure if that population were to experience the age-specific rates of the subject population. The standard population used is the European Standard Population. The age groups used are: <1, 1-4, 5-9,…, 80-84, 85+ years. The rate for 2007-2009 has been calculated as the simple average of the individual annual rates. The rate is expressed per 100,000 population. For explanations of the statistical methods used in this indicator please see: www.nchod.nhs.uk. The former Strategy Unit's average attributable fraction of 0.353 (see Table 2) was applied to both the DSR and their corresponding upper and lower confidence intervals for an estimate of mortality from land transport accidents attributable to

	alcohol.
Summary Footnote	Estimated number of deaths attributable to alcohol from land transport accidents (ICD-10: V01-V89) (all ages, persons) DSR per 100,000 population (standardised to the European Standard Population). (NWPHO from Compendium of Clinical and Health Indicators, NCHOD 2007-2009 pooled and ONS mid-year population estimates 2007-2009). The former Strategy Unit's AAF was applied to obtain the estimates.

4.6 Alcohol consumption by adults

20. Abstainers synthetic estimate
21. Lower risk drinking (% of drinkers only) synthetic estimate
22. Increasing risk drinking (% of drinkers only) synthetic estimate
23. Higher risk drinking (% of drinkers only) synthetic estimate
24. Binge drinking synthetic estimate

Four synthetic drinking estimates are included in LAPE. The abstain, lower risk, increasing risk and higher risk drinking estimates were developed by NWPHO and the binge drinking estimates by the National Centre for Social Research (NatCen) and East Midlands Public Health Observatory (EMPHO). These local area synthetic estimates are generated from statistical models combining national survey and local area level data.

Indicator details: Alcohol consumption by adults (synthetic estimates)

Collection ID(s)	20, 21, 22, 23
Indicator name	Abstaining from drinking, lower risk drinking (% of drinkers only) increasing risk drinking (% of drinkers only), and higher risk drinking (% of drinkers only) synthetic estimates.
What is being measured	Percentage of adult drinkers, aged 16 and over who abstain from drinking, and who are lower risk/increasing risk/higher risk drinkers (% of the drinking population).
Who does it measure	Persons, aged 16 years and over.
When does it measure	Multinomial logistic regression model calculated using General Lifestyle Survey (GLF) 2008. Predicted probabilities from the model are applied to mid-2007 population data.
Timeliness	Produced by NWPHO, in 2011, for the Department of Health. Updated estimates could be provided in the future.
Indicator definition	Estimate of the percentage of increasing risk/higher risk drinkers percentage of resident drinking population, 2008, persons, aged 16 years and over.
Geographical coverage	England, Government Office regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts).
Numerator definition	2008 synthetic estimate of the percentage of the total population, and the drinking population aged 16 years and over who report either abstaining or engaging in: lower risk/increasing risk/higher risk drinking, where: – Lower risk drinking is defined as usual consumption of fewer than 22 units of alcohol per week for males, and fewer than 15 units of alcohol per week for females.

	– Increasing risk drinking is defined as usual consumption of between 22 and 50 units of alcohol per week for males, and between 15 and 35 units of alcohol per week for females. – Higher risk drinking is defined as usual consumption of more than 50 units of alcohol per week for males, and more than 35 units of alcohol per week for females.
Numerator source	Model estimates by NWPHO, using data from multiple sources including: – General Lifestyle Survey 2008. – Alcohol-attributable hospital admissions (HES), NWPHO, 2008/09. – Alcohol-specific mortality, NWPHO, 2006 to 2008. – Index of Multiple Deprivation 2007, Department for Communities and Local Government. – Strategic Health Authority (2004 structure), Office for National Statistics (ONS).
Denominator definition	Mid-year 2007 population estimates: Estimated resident population by ethnic group, age bands (16-19, 20-25,…,70-74, 75+) and sex (April 2009 release), ONS. These populations were multiplied by the predicted probabilities obtained from the multinomial logistic regression model for abstainers, lower risk, increasing risk and higher risk drinkers in the respective age/sex/ethnic group for each local authority. Overall prevalence estimates for each drinking category involving the consumption of alcohol were obtained by summing the predicted number of lower risk, increasing risk and higher risk drinkers within England.
Denominator source	Bespoke request for NWPHO from ONS date file produced 26th November 2010.
Confidence interval methodology	Using Monte Carlo methods, estimates of 95% confidence intervals for each LA were calculated using the variation in the coefficients for each covariate in tables 4-6, sampling from the normal distribution: $N\text{–}\beta_{ij}, se_{ij}^{2}$ Where *N* is the normal distribution *i* are the covariates *j* are the model states (lower risk, increasing risk or higher risk drinkers). β_{ij} is the coefficient value for covariate *i*, state *j* (listed in tables 4-6) *se* is the standard error of β (listed in tables 4-6) 30,000 estimates for the prevalence of abstainers, lower risk, increasing risk and higher risk drinkers using equations: $P_s(x_i) = \frac{exp(x_i^T \beta_s)}{1+\sum_t exp(x_i^T \beta_t)}$ for s ≠ 1 $P_1(x_i) = \frac{1}{1+\sum_t exp(x_i^T \beta_t)}$ Where s are the states: 1. Abstainers 2. Lower risk drinkers 3. Increasing risk drinkers 4. Higher risk drinkers x_i is the vector of attributes of the *i*th Local Authority β_s is the sampled vector of coefficients for state s

βt are the sampled vector of coefficients for states 2 to 4.

By replacing the mean β values given in Tables 1 to 3 with the sample from the β distribution, a different sampled estimate for each of the 30,000 estimates is calculated. This gives a sampled distribution for each state.

By sorting the 30,000 estimates in ascending order and removing the first and last 2.5% of observations gives a sampled 95% confidence interval. An example of the distributions with 95% thresholds for one LA for each state (abstainers, lower risk, increasing risk and higher risk drinkers) are presented in figures 1-4:

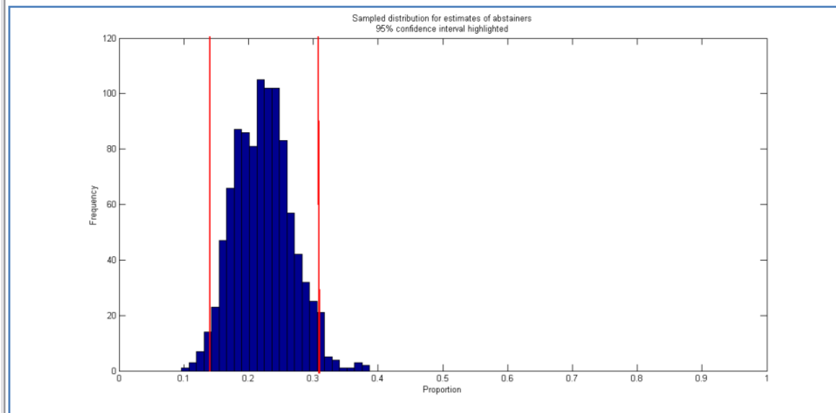


Figure 1. Sampled distribution for abstainers with 95% thresholds

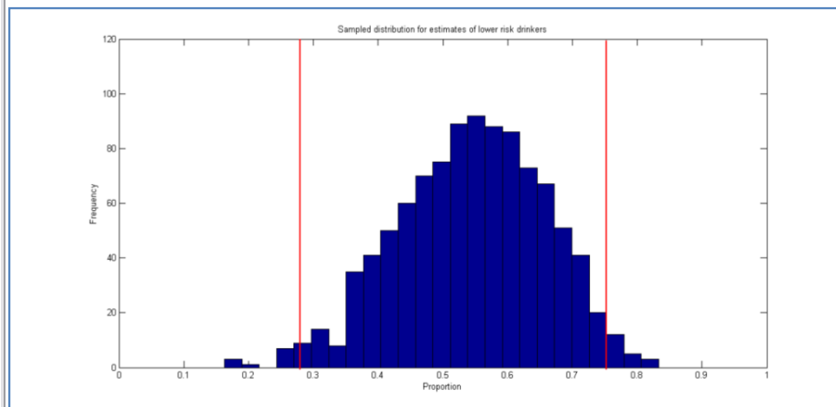
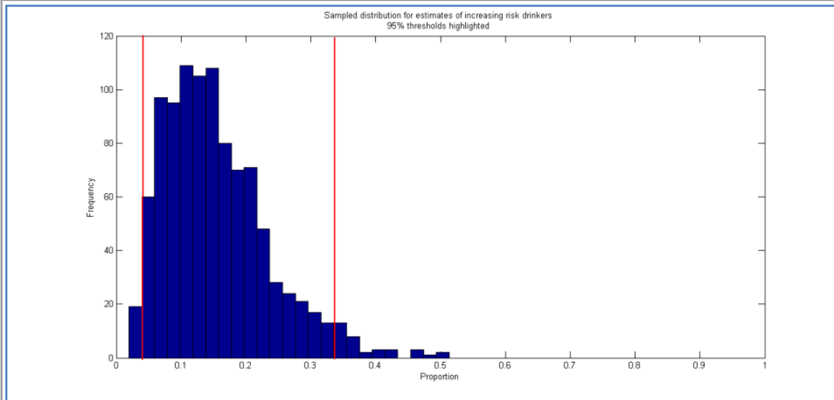
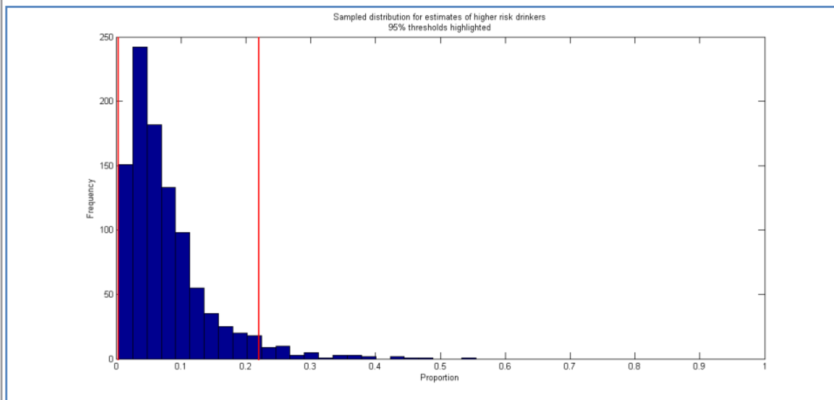


Figure 2. Sampled distribution for lower risk drinking with 95% thresholds

	 **Figure 3.** Sampled distribution for increasing risk drinkers with 95% thresholds  **Figure 4.** Sampled distribution for higher risk drinkers with 95% thresholds
Are there any caveats?	Hospital admission data can be coded differently in different parts of the country. Differences in coding practices of providers will affect comparisons between areas. GLF data are based on observed self-reported drinking behaviour and self-reported consumption may be prone to respondent bias. The GLF only includes people in private households and does not, therefore, include people in institutions such as prisons or care homes, nor those who are homeless. The people excluded from participation may have a different pattern of alcohol consumption. Not all participants selected for inclusion participated in the survey, possibly introducing selection bias, where those that agreed to take part in the survey differed systematically from those who did not. The estimates use directly standardised rates (DSRs) for alcohol-specific mortality and alcohol-attributable hospital admissions, in their calculation therefore they must be viewed with caution for the City of London and the Isle of Scilly due to their low resident populations. The population estimates by ethnic group released in April 2009 are experimental statistics. This means that they have not yet been shown to meet the quality criteria for ONS, but are being published to involve users in

	the development of the methodology and to help build quality at an early stage (more information on experimental statistics and National Statistics is provided in the National Statistics *Code of Practice: Protocol on Data Presentation, Dissemination and Pricing Office for National Statistics*, National Statistics *Code of Practice: Protocol on Data Presentation* available at: www.statistics.gov.uk/about/national_statistics/cop/protocols_published.asp). The GLF collects information on a range of topics from people living in private households in Great Britain and samples approx 9,000 responding households per annum. More details can be found at: www.statistics.gov.uk/about/data/methodology/quality/downloads/SQRGHSv1pdf.pdf These are modelled estimates based on national survey data. The process assumes that the relationships identified in the national GLS between alcohol consumption and age, sex and ethnicity are the same at the LA level; the model-based estimates are unable to take account of any additional local factors that may impact on the true prevalence.

Method employed to create the indicator	Estimates for increasing or high risk drinking were derived from a statistical model developed to estimate the percentage of abstainers, lower risk, increasing risk and high risk drinkers in LA populations. The overall process of producing LA level prevalence estimates for abstaining, lower risk, increasing risk and higher risk drinking involved a number of steps:
	– The probability of abstaining from drinking or being a lower risk, increasing risk or higher risk drinker was modelled using multinomial regression as a function of variables measured at the individual (age, sex, ethnicity) and area (Index of Multiple Deprivation 2007 (IMD 2007), alcohol-attributable hospital admission (2008/09) and alcohol-specific mortality (2006 to 2008) directly standardised rates and Strategic Health Authority (SHA) (2004 structure, i.e. 28 geographic areas) level.
	– The model was used to generate estimated probabilities of increasing and higher risk drinking by age group, sex and ethnicity for all English LAs.
	– Age, sex and ethnicity specific probabilities were applied to the age, sex and ethnicity specific population estimates for each LA to provide an estimate of the overall number, and prevalence (as a percentage), of increasing and higher risk drinkers in each area.
	– The abstaining, lower risk, increasing risk and higher risk estimates were then summed to obtain a combined estimate.
	
	Predictive modelling in detail
	
	To compile the predictive model, individual level data from the GLF 2008 along with a number of LA level covariates were used to determine the relationship between abstainers, lower risk, increasing risk and higher risk drinking. The variables included in the final model included:
	
	– Three individual level variables:
	    o Age bands (16-19, 20-24…70-74, 75+)
	    o Gender
	    o Ethnic groups (white, Asian and black/other).
	– Three LA level covariates transformed to quintiles:
	    o IMD 2007.
	    o Alcohol-specific mortality 2006 to 2008, persons.
	    o Alcohol-attributable hospital admissions 2008/09, persons.
	– A further geographic identifier, SHA at 2004, was included to capture

sub region-level unobserved heterogeneity.

Predicted probabilities and Local Authority prevalence estimates

For each LA, a series of population subgroups were defined according to:

- Gender (male, female)
- Ethnicity (white, Asian and black/other)
- Age-band (16-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74 and 75+ years)

Along with LA level covariate values for IMD (2007) alcohol-attributable hospital admissions (2008/09 HES) and alcohol-specific mortality (2006 to 2008).

The updated covariate values were then substituted in the final multinomial logistic regression model, and predicted probabilities obtained using:

$$P_s(x_i) = \frac{exp(x_i^T \beta_s)}{1+\sum_t exp(x_i^T \beta_t)} \qquad \text{for } s \neq 1$$

$$P_1(x_i) = \frac{1}{1+\sum_t exp(x_i^T \beta_t)}$$

Where

s are the states:

1. Abstainers
2. Lower risk drinkers
3. Increasing risk drinkers
4. Higher risk drinkers

x_i is the vector of attributes of the *i*th LA

β_s is the vector of coefficients (tables 4-6) for state s

Mid-2007 population estimates for LAs by age bands (16-19, 20-25…70-74, 75+), gender and ethnicity were obtained from ONS. These estimated populations were multiplied by the predicted probabilities for increasing risk and higher risk drinking in the respective age/gender/ethnicity group, to obtain predicted numbers. Overall prevalence estimates were obtained by summing the predicted numbers of, increasing risk and higher risk drinkers over all gender/age/ethnicity groups in each LA.

Table 4: Estimated model parameters for lower risk drinking with respect to the base category (abstainers)

Lower risk drinking	B	Std. Error	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
					Lower Bound	Upper Bound
Intercept	-1.982	.220	.000			
Male	.536	.059	.000	1.709	1.524	1.917

Female	0[b]	.	.	.	.	.
White	2.452	.127	.000	11.611	9.058	14.884
Black/other	.793	.158	.000	2.209	1.621	3.011
Asian	0[b]	.	.	.	.	.
Area 1	.152	.197	.442	1.164	.791	1.712
Area 2	.031	.225	.891	1.031	.664	1.602
Area 3	.334	.240	.163	1.397	.873	2.234
Area 4	-.038	.249	.877	.962	.591	1.567
Area 5	-.287	.253	.257	.750	.457	1.233
Area 6	-.526	.258	.041	.591	.356	.979
Area 7	.024	.244	.923	1.024	.635	1.652
Area 8	-.162	.225	.472	.850	.547	1.323
Area 9	-.310	.220	.159	.734	.477	1.129
Area 10	.062	.257	.809	1.064	.643	1.760
Area 11	.036	.216	.866	1.037	.679	1.584
Area 12	.088	.212	.678	1.092	.721	1.655
Area 13	.136	.210	.517	1.146	.759	1.729
Area 14	.196	.204	.337	1.216	.815	1.815
Area 15	-.023	.200	.910	.978	.660	1.448
Area 16	-.186	.208	.372	.830	.552	1.249
Area 17	.375	.222	.090	1.455	.943	2.247
Area 18	.117	.225	.603	1.124	.723	1.748
Area 19	.316	.212	.135	1.372	.906	2.079
Area 20	.358	.208	.086	1.431	.951	2.153
Area 21	.323	.232	.165	1.381	.876	2.176
Area 22	-.149	.220	.497	.861	.560	1.325
Area 23	.143	.225	.525	1.154	.742	1.795
Area 24	.158	.189	.403	1.171	.809	1.697
Area 25	.114	.220	.605	1.120	.728	1.724
Area 26	.342	.229	.135	1.408	.899	2.204
Area 27	.054	.203	.791	1.055	.709	1.572
	0[b]	.	.	.	.	.
16-19 yrs	.433	.138	.002	1.542	1.177	2.020
20-24 yrs	1.271	.169	.000	3.563	2.557	4.964
25-29 yrs	.979	.139	.000	2.662	2.026	3.496
30-34 yrs	1.052	.131	.000	2.865	2.217	3.702
35-39 yrs	1.260	.130	.000	3.524	2.733	4.544
40-44 yrs	1.191	.126	.000	3.289	2.572	4.207
45-49 yrs	.999	.123	.000	2.715	2.132	3.456
50-54 yrs	1.071	.133	.000	2.918	2.251	3.783
55-59 yrs	.850	.121	.000	2.339	1.844	2.966
60-64 yrs	.697	.113	.000	2.007	1.608	2.504
65-69 yrs	.450	.115	.000	1.568	1.251	1.966
70-74 yrs	.455	.120	.000	1.576	1.246	1.992
75 yrs and over	0[b]	.	.	.	.	.
IMD q1	.185	.168	.271	1.203	.866	1.672
IMD q2	.216	.145	.137	1.241	.934	1.649

IMD q3	.185	.128	.146	1.204	.938	1.545
IMD q4	.150	.103	.144	1.162	.950	1.421
IMD q5	0[b]	.	.	.	.	.
AS Mortality q1	-.117	.164	.477	.890	.644	1.228
AS Mortality q2	.110	.148	.457	1.117	.835	1.494
AS Mortality q3	-.080	.123	.513	.923	.725	1.174
AS Mortality q4	.028	.103	.786	1.028	.841	1.258
AS Mortality q5	0[b]	.	.	.	.	.
AA Hosp Admissions q1	.327	.172	.057	1.386	.991	1.940
AA Hosp Admissions q2	.098	.153	.520	1.103	.818	1.488
AA Hosp Admissions q3	.150	.139	.279	1.162	.885	1.526
AA Hosp Admissions q4	.025	.112	.826	1.025	.823	1.277
AA Hosp Admissions q5	0[b]	.	.	.	.	.

Table 5: Estimated model parameters for increasing risk drinking with respect to the base category (abstainers)

Increasing risk drinking	B	Std. Error	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	Upper Bound
Intercept	-5.124	.353	.000			
Male	.935	.070	.000	2.546	2.219	2.921
Female	0[b]	.	.	.	.	.
White	3.371	.263	.000	29.107	17.369	48.776
Black/other	.631	.350	.072	1.879	.946	3.734
Asian	0[b]	.	.	.	.	.
Area 1	-.193	.250	.439	.824	.505	1.345
Area 2	.108	.273	.692	1.115	.652	1.905
Area 3	.122	.295	.679	1.130	.634	2.013
Area 4	.005	.336	.988	1.005	.520	1.943
Area 5	.068	.335	.840	1.070	.555	2.061
Area 6	-.045	.343	.897	.956	.488	1.875
Area 7	.485	.302	.109	1.623	.898	2.935
Area 8	.239	.281	.395	1.270	.733	2.202
Area 9	-.045	.274	.869	.956	.559	1.635
Area 10	.588	.305	.054	1.801	.990	3.275
Area 11	.094	.261	.719	1.098	.658	1.832
Area 12	.627	.257	.015	1.871	1.132	3.094
Area 13	.513	.252	.042	1.670	1.019	2.737
Area 14	.477	.247	.054	1.611	.992	2.616
Area 15	.005	.249	.984	1.005	.617	1.637
Area 16	-.206	.255	.419	.813	.493	1.342

Area 17	.473	.267	.076	1.605	.951	2.708
Area 18	-.190	.284	.503	.827	.474	1.443
Area 19	.640	.251	.011	1.897	1.161	3.101
Area 20	.420	.249	.092	1.522	.934	2.481
Area 21	.910	.276	.001	2.485	1.448	4.264
Area 22	-.277	.274	.312	.758	.443	1.297
Area 23	.452	.276	.101	1.572	.915	2.700
Area 24	.211	.234	.366	1.235	.782	1.953
Area 25	.326	.268	.224	1.385	.819	2.343
Area 26	.314	.275	.253	1.369	.799	2.345
Area 27	-.129	.266	.629	.879	.522	1.481
	0[b]	.	.	.	.	.
16-19 yrs	1.031	.186	.000	2.804	1.949	4.035
20-24 yrs	2.100	.207	.000	8.169	5.448	12.248
25-29 yrs	1.717	.180	.000	5.569	3.913	7.925
30-34 yrs	1.604	.174	.000	4.971	3.536	6.990
35-39 yrs	2.031	.166	.000	7.625	5.511	10.551
40-44 yrs	1.987	.161	.000	7.293	5.323	9.994
45-49 yrs	1.810	.159	.000	6.109	4.470	8.347
50-54 yrs	1.946	.167	.000	6.998	5.044	9.709
55-59 yrs	1.703	.157	.000	5.492	4.036	7.473
60-64 yrs	1.204	.154	.000	3.333	2.464	4.510
65-69 yrs	1.032	.158	.000	2.805	2.057	3.827
70-74 yrs	.719	.170	.000	2.053	1.471	2.864
75 yrs and over	0[b]	.	.	.	.	.
IMD q1	.528	.204	.010	1.696	1.138	2.527
IMD q2	.511	.177	.004	1.667	1.180	2.357
IMD q3	.525	.155	.001	1.690	1.247	2.292
IMD q4	.097	.126	.440	1.102	.861	1.412
IMD q5	0[b]	.	.	.	.	.
AS Mortality q1	-.207	.199	.299	.813	.550	1.202
AS Mortality q2	-.038	.180	.833	.963	.676	1.371
AS Mortality q3	-.253	.149	.091	.777	.580	1.041
AS Mortality q4	-.021	.123	.864	.979	.769	1.247
AS Mortality q5	0[b]	.	.	.	.	.
AA Hosp Admissions q1	.220	.209	.292	1.247	.827	1.880
AA Hosp Admissions q2	-.012	.190	.951	.988	.681	1.434
AA Hosp Admissions q3	.132	.172	.444	1.141	.814	1.598
AA Hosp Admissions q4	-.088	.140	.530	.916	.696	1.205
AA Hosp Admissions q5	0[b]	.	.	.	.	.

Table 6: Estimated model parameters for higher risk drinking with respect to the base category (abstainers)

Higher risk drinking	B	Std. Error	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	Upper Bound
Intercept	-6.888	.528	.000			
Male	1.043	.094	.000	2.837	2.361	3.409
Female	0[b]	.	.	.	.	.
White	3.176	.375	.000	23.959	11.498	49.923
Black/other	.578	.502	.249	1.782	.667	4.765
Asian	0[b]	.	.	.	.	.
Area 1	-.247	.361	.494	.781	.385	1.585
Area 2	-.130	.399	.745	.878	.401	1.921
Area 3	.403	.401	.315	1.496	.682	3.283
Area 4	1.201	.410	.003	3.323	1.489	7.418
Area 5	.113	.462	.806	1.120	.453	2.772
Area 6	.646	.456	.157	1.907	.781	4.661
Area 7	.819	.409	.045	2.268	1.018	5.051
Area 8	.664	.383	.083	1.942	.917	4.112
Area 9	.363	.373	.330	1.438	.692	2.986
Area 10	.441	.438	.314	1.554	.659	3.665
Area 11	.428	.343	.211	1.535	.784	3.005
Area 12	.944	.339	.005	2.571	1.322	5.001
Area 13	.808	.339	.017	2.243	1.155	4.357
Area 14	.474	.346	.171	1.607	.815	3.168
Area 15	.229	.347	.509	1.257	.637	2.480
Area 16	.042	.346	.903	1.043	.529	2.056
Area 17	.346	.370	.350	1.413	.684	2.919
Area 18	.151	.394	.701	1.163	.537	2.518
Area 19	.701	.338	.038	2.017	1.040	3.910
Area 20	.080	.353	.821	1.083	.542	2.165
Area 21	.894	.384	.020	2.444	1.151	5.189
Area 22	-.507	.419	.226	.602	.265	1.370
Area 23	1.009	.358	.005	2.742	1.359	5.533
Area 24	.599	.319	.060	1.820	.975	3.397
Area 25	.159	.381	.676	1.173	.556	2.476
Area 26	.384	.372	.302	1.468	.709	3.042
Area 27	-.324	.404	.422	.723	.328	1.595
	0[b]	.	.	.	.	.
16-19 yrs	1.972	.299	.000	7.188	4.001	12.914
20-24 yrs	2.861	.315	.000	17.485	9.439	32.390
25-29 yrs	2.278	.301	.000	9.761	5.411	17.608
30-34 yrs	2.206	.295	.000	9.083	5.097	16.185
35-39 yrs	2.668	.279	.000	14.408	8.335	24.905

40-44 yrs	2.661	.273	.000	14.311	8.379	24.444
45-49 yrs	2.752	.268	.000	15.670	9.275	26.475
50-54 yrs	2.588	.280	.000	13.307	7.692	23.023
55-59 yrs	2.205	.276	.000	9.071	5.279	15.587
60-64 yrs	2.210	.265	.000	9.115	5.424	15.317
65-69 yrs	1.745	.279	.000	5.725	3.314	9.891
70-74 yrs	1.321	.300	.000	3.747	2.081	6.748
75 yrs and over	0[b]	.	.	.	.	.
IMD q1	.756	.274	.006	2.129	1.244	3.643
IMD q2	.363	.238	.126	1.438	.903	2.290
IMD q3	.299	.209	.153	1.349	.895	2.033
IMD q4	.154	.167	.358	1.166	.840	1.618
IMD q5	0[b]	.	.	.	.	.
AS Mortality q1	-.733	.270	.007	.480	.283	.816
AS Mortality q2	-.389	.241	.107	.678	.422	1.087
AS Mortality q3	-.660	.202	.001	.517	.347	.769
AS Mortality q4	-.372	.165	.025	.690	.499	.954
AS Mortality q5	0[b]	.	.	.	.	.
AA Hosp Admissions q1	.370	.284	.193	1.447	.830	2.525
AA Hosp Admissions q2	.395	.257	.124	1.484	.897	2.455
AA Hosp Admissions q3	.639	.229	.005	1.895	1.210	2.968
AA Hosp Admissions q4	.088	.190	.645	1.092	.752	1.584
AA Hosp Admissions q5	0[b]	.	.	.	.	.

Summary Footnote

Mid 2008 synthetic estimate of the percentage of abstainers in the population aged 16 years and over who report abstaining from drinking. Estimates were derived from a statistical model developed to estimate the percentage of abstainers, lower risk (% of drinkers only), increasing risk (% of drinkers only) and high risk drinkers (% of drinkers only) in LA populations.

Mid 2008 synthetic estimate of the percentage of drinkers (not including abstainers) in the population aged 16 years and over who report engaging in lower risk drinking (consumption of fewer than 22 units of alcohol per week for males, and fewer than 15 units of alcohol per week for females). Estimates were derived from a statistical model developed to estimate the percentage of abstainers, lower risk (% of drinkers only), increasing risk (% of drinkers only) and high risk (% of drinkers only) drinkers in LA populations.

Mid 2008 synthetic estimate of the percentage of drinkers (not including abstainers) in the population aged 16 years and over who report engaging in increasing risk drinking (consumption of between 22 and 50 units of alcohol per week for males, and between 15 and 35 units of alcohol per week for females). Estimates were derived from a statistical model developed to estimate the percentage of abstainers, lower risk (% of drinkers only), increasing risk (% of drinkers only) and high risk (% of drinkers only) drinkers in LA populations.

	Mid 2008 synthetic estimate of the percentage of drinkers (not including abstainers) in the population aged 16 years and over who report engaging in higher risk drinking (consuming more than 50 units of alcohol per week for males, and more than 35 units of alcohol per week for females). Estimates were derived from a statistical model developed to estimate the percentage of abstainers, lower risk (% of drinkers only), increasing risk(% of drinkers only) and high risk drinkers (% of drinkers only) in LA populations. Please see this publication for further information: www.lape.org.uk/downloads/alcoholestimates2011.pdf

Indicator details: Binge drinking by adults (synthetic estimate)

Collection ID(s)	24
Indicator name	Binge drinking synthetic estimate.
What is being measured	Prevalence of adult binge drinking.
Who does it measure	Persons, aged 16 years and over.
When does it measure	2007-2008.
Timeliness	Originally produced by National Centre for Social Research (NatCen) Updated by East Midlands Public Health Observatory (EMPHO) March 2011. Updated on an ad-hoc basis.
Indicator definition	Prevalence of binge drinking, percentage of resident population, 2007-2008, persons, aged 16 years and over.
Geographical coverage	England, Government Office regions (GOR), 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities (SHA), 2006 Primary Care Trusts (PCTs).
Numerator definition	**England, GOR and SHA:** Proportion of adult men who drank eight or more units of alcohol on the heaviest drinking day in the previous seven days at time of survey and adult women who drank six or more units of alcohol on the heaviest drinking day in the previous seven days at time of survey, 2007-2008. **LA and Primary Care Organisation:** Model estimates by EMPHO using data from a number of sources including Health Survey for England (HSE) 2007-2008, Census 2001.
Numerator source	**England, GOR and SHA:** HSE, commissioned by the Department of Health and carried out by the Joint Health Survey Unit of Social and Community Planning Research and of the Department of Epidemiology and Public Health at University College, London. **LA and PCT:** EMPHO
Denominator definition	**England, GOR and SHA:** Total number of respondents (with valid measurements on drinking habits in the last week) aged 16 and over in the HSE 2007-2008. **LA and PCT:** Not applicable.

Denominator source	**England, GOR and SHA:** Health Survey for England (HSE), commissioned by the Department of Health/Information Centre and carried out by the Joint Health Surveys Unit of NatCen, the Department of Epidemiology and Public Health at the Royal Free and University College Medical School, London. **LA and PCT:** Not applicable.
Confidence interval methodology	Confidence limits provide an indication of the reliability of a result. The 95% confidence intervals provide a range within which there is 95% chance of the true result lying. The methodology for the MSOA-level estimate confidence intervals is available at www.apho.org.uk/resource/item.aspx?RID=96790. The confidence intervals for the aggregated estimates have been calculated using an approximate method, details available at www.apho.org.uk/resource/item.aspx?RID=103520.
Are there any caveats?	These estimates include data from 2007 and 2008 only and cannot be compared with earlier years' data due to changes in the way alcohol units are calculated. HSE data are based on observed self-reported drinking behaviour. Self-reported consumption may be prone to respondent bias. HSE under-samples younger people, people in employment, ethnic minorities, women and those who are healthier but exhibit less healthy behaviour. **England, GOR and SHA:** These data have not been age-standardised and, therefore, variation between area values may be a result of differences in population structure. **LA and PCT:** These are modelled estimates based on national survey data. The model is non-aetiological (not based on known casual factors). The estimates do not take into account additional local factors that may impact on the true prevalence of binge drinking in an area and may not match with local lifestyle survey results or modelled estimates, which use known risk factors such as socio-economic status, age, gender and ethnicity. These estimates are modelled and the model used is not intended to be explanatory. They should, therefore, be used and interpreted with caution (see above) and not used to measure performance or change over time. The use of statistical models for prediction involves making assumptions about relationships in the data. The suitability of the chosen models for the given data and the validity of the model in describing real world dynamics have a bearing on the nature and magnitude of the errors introduced. A key source of modelling error arises from omitting variables that would otherwise help improve the model predictions either by error or because there are no available or reliable data source for them. The model-based estimate generated for a particular area is the expected measure for that area based on its population characteristics - and is not an estimate of the actual prevalence. In statistical terms, the model-based estimate is actually a biased estimate of the true value for the area and, as such, should be treated with caution. As mentioned above, the model-based estimates are unable to take account of any additional local factors that may impact on the true prevalence rate. To interpret the estimates, NatCen recommend that users adopt statements such as "*given the characteristics of the local population we would expect approximately x% of adults within Local Authority Y to indulge in binge drinking*" (Health Development Agency, 2004).
Method employed to create the indicator	The HSE questions concerning alcohol consumption ask respondents to give the number of days they drank alcohol in the previous week. If this was greater than zero, information on the heaviest drinking day was collected on the types of alcoholic drink (e.g. beer, spirits, wine etc) and amount to allow a calculation of units drunk.

	From these questions, an estimated weekly consumption expressed in terms of units of alcohol was derived. Respondents whose information on drinking was missing were excluded. **England, GOR and SHA:** The SHA, Region and England estimates are taken directly from the Health Survey for England reported results for 2007-2008. **LA and PCT:** The methodology for the MSOA-level estimates is available at www.apho.org.uk/resource/view.aspx?RID=96790. The estimates for LAs, UAs, Counties and PCTs are calculated by aggregating the estimates and populations for their constituent MSOAs. MSOAs that are split across PCTs are allocated to the PCT containing the majority of the MSOA's LSOAs, or arbitrarily if equal. The MSOA populations were the average of the mid-year estimates for the relevant years available at September 2010.
Summary Footnote	Synthetic estimate of the proportion (%) of adults who consume at least twice the daily recommended amount of alcohol in a single drinking session (that is, eight or more units for men and six or more units for women). Estimates produced for the Association of Public Health Observatories (2007-2008) (Revised dataset published March 2011 and updated to LAPE resources in April 2012). Please see PHO JSNA Datasets for further information: www.apho.org.uk/resource/view.aspx?RID=91736.

4.7 The alcohol economy

25. Employees in bars - percentage of all employees.

The proportion of employees working in bars has been calculated for each area using data from the Annual Business Inquiry carried out on behalf of the Office for National Statistics.

Indicator details: Employees in bars

Collection ID(s)	25
Indicator name	Employees in bars - percentage of all employees.
What is being measured	The number of employees employed in bars as a percentage of all employees.
Who does it measure	Persons employed in bars.
When does it measure	Single year: September 2009.
Timeliness	Produced annually by NWPHO. The Office for National Statistics (ONS) publishes the Business Register and Employment Survey (BRES) in December of the following year (September 2009 data published in 2010).
Indicator definition	The number of employees employed in bars as a percentage of all employees.
Geographical coverage	England, Government Office regions, 2009 Local Authority (LA) districts (Non-Metropolitan Districts, Unitary Authorities, London boroughs and Metropolitan Districts), Strategic Health Authorities, 2010 Primary Care Trusts (PCTs).

Numerator definition	Employment (employees and working proprietors) in the beverage serving activities industry sector (Standard Industrial Classification (SIC) 2007: 563-Beverage serving activities). *See denominator definition for definition of employee.*
Numerator source	ONS, BRES data via Nomis: www.nomisweb.co.uk.
Denominator definition	Employment included both employees and the working proprietors. Working Proprietors are sole traders, sole proprietors, partners and directors. This does not apply to registered charities. An employee is anyone aged 16 years or over that an organisation directly pays from its payroll(s), in return for carrying out a full-time or part-time job or being on a training scheme. It excludes voluntary workers, self-employed, working owners who are not paid via the pay-as-you-earn (PAYE) tax.
Denominator source	ONS, BRES data via Nomis: www.nomisweb.co.uk.
Confidence interval methodology	The Wilson Score[a,b] method was used to generate 95% confidence intervals, as detailed in '*APHO Technical Briefing 3: Commonly Used Public Health Statistics and their Confidence Intervals'*. The formula numbers below correspond to those in the briefing available from: www.apho.org.uk/apho/techbrief.htm. An accompanying Excel spreadsheet, replicating all formulae, is also available from the link above. The proportion p is given by: $p = \frac{O}{n}$ where: *O* is the numerator observed number of individuals in the sample/population having the specified characteristics; *n* is the denominator total number of individuals in the sample/population. Using the Wilson Score method[a,b], the 100(1–α)% confidence limits for the proportion *p* are given by: $$p_{lower} = \frac{\left(2O + z^2 - z\sqrt{z^2 + 4Oq}\right)}{2\left(n + z^2\right)}$$ $$p_{upper} = \frac{\left(2O + z^2 + z\sqrt{z^2 + 4Oq}\right)}{2\left(n + z^2\right)}$$ where: *q* is 1–p; *z* is the 100(1–α/2)th percentile value from the Standard Normal distribution. For example, for a 95% confidence interval, α = 0.05 and *z* = 1.96 (i.e. the 97.5th percentile value from the Standard Normal distribution). Reference a. Wilson, E.B. (1927) Probable inference, the law of succession, and statistical inference. *Journal of the American Statistical Association*; 22: 209-12. b. Newcombe, R.G. and Altman, D.G. (2000) Proportions and their differences. In Altman, D.G. et al. (eds). *Statistics with confidence (2nd edn).* London: BMJ Books; pp 46–8.
Are there any caveats?	No

Method employed to create the indicator	Percentages were calculated using the following formula: *(a/b) x 100* Where: *a= employment in bars* *b= all in employment*
Summary Footnote	The number of those in employment in the beverage serving activities industry sector (SIC2007: 563), as a percentage of all in employment. (BRES 2010, ONS from Nomis: www.nomisweb.co.uk).

4.8 Treatment for alcohol misuse

26. Alcohol treatment prevalence per 1,000 population.

Introduced to LAPE in 2010 the treatment for alcohol misuse indicator uses data from the National Alcohol Treatment Monitoring System (NATMS). NATMS 2009/10 figures provide the opportunity to analyse a full year of alcohol treatment data, currently at Primary Care Trust (PCT) level only.

Indicator details: Alcohol treatment

Collection ID(s)	26
Indicator name	Alcohol treatment prevalence per 1,000 population.
What is being measured	Adults aged 18-75 years in contact with structured treatment for alcohol misuse.
Who does it measure	Adults aged 18-75 years.
When does it measure	Financial year 2009/10.
Timeliness	Produced annually by NWPHO. The National Treatment Agency (NTA) publishes alcohol treatment data approximately six months on from the preceding financial year.
Indicator definition	Adults aged 18-75 years receiving structured treatment for alcohol misuse, as a rate per 1,000 population aged 18-75 years.
Geographical coverage	England, Strategic Health Authorities*, 2010 Primary Care Trusts (PCTs). * For SHAs with PCTs that do not fully fall within the region, the whole PCT value has been assigned to the SHA which contains the majority of the PCT population. See Appendix 2.
Numerator definition	Number of adults aged 18-75 years in contact with structured treatment (Tier 3/Tier 4: structured community-based services/residential and inpatient services) during the financial year (2009/10) who cited alcohol as their primary problematic substance. The methodology to calculate numbers receiving treatment follows that described in the National Alcohol Treatment Monitoring System (NATMS) annual report available at: www.nta.nhs.uk/uploads/ndtmsannualreport2009-10finalversion.pdf. Detailed definitions of all key terms are available at: www.ndtms.net/alcohol.aspx.
Numerator source	NTA's NATMS.

Denominator definition	Mid-year population estimates (2009) for persons aged 18-75 years.
Denominator source	Office for National Statistics (ONS).
Confidence interval methodology	A combination of the exact methodology and Byar's methodology was used to generate 95% confidence intervals, as detailed in '*APHO Technical Briefing 3: Commonly Used Public Health Statistics and their Confidence Intervals*' available from: www.apho.org.uk/apho/techbrief.htm. Formulae and further details on the 'Confidence interval methodology' are given on in the indicator details for alcohol specific hospital admissions under 19s (indicator 9).
Are there any caveats?	The data include some cases with no PCT of residence assigned. These cases are included in the England total but not in the PCT or regional figures. Therefore the total numbers of adults for PCTs and regions do not equal the England total.
Method employed to create the indicator	Crude rates per 1,000 population aged 18-75 years were calculated using mid-year 2009 population estimates for males and females aged 18-75 years. The following formula was used: *(a/b) x 1,000* Where: *a= numbers in treatment aged 18-75 years* *b= ONS population estimate aged 18-75 years*
Summary Footnote	The number of adults aged 18-75 years receiving structured treatment for alcohol misuse (NATMS 2009/10), as a rate per 1,000 population (ONS mid-year population estimates 2009). Currently only available at PCTl.

5. Appendices

5.1 Appendix 1: Earlier/other work on alcohol-attributable health effects

Details of other sources of statistics and information on alcohol related morbidity and mortality in the UK are presented below to provide some context.

1. The former UK Prime Minister's Strategy Unit (PMSU) produced estimates of alcohol-attributable health effects (mortality and hospital admission) in their Interim Analytical Report. The estimates were derived using alcohol-attributable fractions (AAFs) for a set of 53 alcohol-related conditions, which were adapted from the WHO International Guide for monitoring alcohol consumption and related harm (2000), using data from the Health Survey for England to estimate alcohol consumption levels in the UK population.
2. Subsequent work by the NWPHO and Northwest Alcohol Strategy Group mapped the PMSU AAFs from ICD9 to ICD10 diagnosis codes, and statistics on alcohol-attributable deaths and hospital admissions were included in their 2004 report Taking Measures[4].
3. Similar work on alcohol-attributable health impacts has been carried out in Scotland [www.alcoholinformation.isdscotland.org] and the USA [www.cdc.gov/alcohol/ardi.htm], with each using a slightly different definition of alcohol related conditions in terms of the ICD10 codes used.
4. The Office for National Statistics publishes statistics on alcohol-related deaths in the UK, which include a subset of alcohol-related conditions which are 'most directly due to alcohol consumption' [www.statistics.gov.uk/statbase/Product.asp?vlnk=14496]. The conditions included in these statistics were revised in 2006 [www.statistics.gov.uk/downloads/theme_health/Summary_responses.pdf].
5. The Information Centre for Health and Social Care also publishes the Annual Alcohol Statistics for England which include information on hospital admissions for three alcohol specific conditions - mental and behavioural disorders due to use of alcohol, alcoholic liver disease and toxic effect of alcohol [www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles/alcohol].
6. In 2007/08 the Department of Health commissioned a study to review and update the AAFs from England, taking into account the full range of potential health impacts of alcohol as reflected in the epidemiological literature, and updating the estimates of alcohol consumption levels using data from the General Household Survey (2005). This resulted in production of a revised set of age group and gender specific AAFs by the Centre for Public Health, Liverpool John Moores University.

5.2 Appendix 2: Allocation of PCTs with areas in more than one SHA

For Primary Care Trusts (PCTs) with an area falling within the boundaries of two Strategic Health Authorities (SHAs), the whole PCT value has been assigned to the SHA which contains the majority of the PCT population. This affects four PCTs:

- Berkshire East PCT is split between South Central SHA and South East Coast SHA and is allocated to South Central SHA;
- Lincolnshire PCT is split between East Midlands SHA and Yorkshire and the Humber SHA and is allocated to East Midlands SHA;
- Swindon PCT is split between South West SHA and South Central SHA and is allocated to South West SHA; and

- Tameside and Glossop PCT is split between North West SHA and East Midlands SHA and is allocated to North West SHA.

5.3 Appendix 3: Glossary

AAF	Alcohol Attributable fraction
AF	Attributable Fraction
APHO	Association of Public Health Observatories
ARA	Alcohol Related Admissions
BRES	Business Register and Employment Survey
CPH	Centre for Public Health
DH	Department of Health
DSR	Directly age-Standardised Rate
DWP	Department for Work and Pensions
ESA	Employment Support Allowance
GLF	General Lifestyle Survey
GOR	Government Office Regions
HES	Hospital Episode Statistics
HESID	Hospital Episode Statistics Identification code
HO	Home Office
IB	Incapacity Benefit
ICD	International Classification of Diseases
IMD	Index of Multiple Deprivation
LA	Local Authority
LAPE	Local Alcohol Profiles for England
LJMU	Liverpool John Moores University
NatCen	National Centre for Social Research
NATMS	National Alcohol Treatment Monitoring System
NCHOD	National Centre for Health Outcomes Development
NEW-ADAM	New English and Welsh Arrestee Drug Abuse Monitoring system
NI39	National Indicator 39
NWPHO	North West Public Health Observatory
ONS	Office for National Statistics
PAYE	Pay As You Earn
PCT	Primary Care Trust
PHO	Public Health Observatory
PMSU	Prime Minister's Strategy Unit
PSU	Primary Sampling Units
SDA	Severe Disablement Allowance
SHA	Strategic Health Authority
SIC	Standard Industrial Classification
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization
YLL	Years Life Lost

6. References

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[4] Hughes K, Tocque K, Humphrey G, and Bellis M A (2004) *Taking Measures: A Situational Analysis of Alcohol in the North West.* Liverpool: Centre for Public Health, Liverpool John Moores University. ISBN 1-902051-2-9. Available from: http://www.cph.org.uk/showPublication.aspx?pubid=134 [accessed 13 June 2011].

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