



Alcohol and Accidents

IAS Factsheet

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Alcohol is a major cause of accidents and accidental injury. The presence of alcohol in the body has also been shown to increase the severity of injuries from accidents¹. For these reasons alcohol consumption is normally closely regulated in relation to the operation of transport systems and other safety sensitive environments and activities.

Internationally, alcohol has been shown to be a frequent factor in accidental injury in the home, on the roads, in workplaces and during leisure-time activities, and to be a cause of falls, collisions, fires and drownings. For example, a study of 43 fatal falls in Frankfurt, Germany² found that 23 of the deaths (53.5%) were preceded by 'heavy drinking'. Alcohol is also a cause of death from accidental overdose.

Estimates of the proportion of deaths that occur in people who have been drinking range from 35-63% for falls to 21-47% for drownings and 12-61% for burns, with lower figures for non-fatal accidents.³

Alcohol-related injuries admitted to Accident & Emergency Departments

A 1983 study⁴ of attendances at Accident & Emergency Departments found injuries from assault to be the type of incident most frequently associated with alcohol. The table shows the proportions of patients from different types of incident who had a raised blood alcohol level, and also the proportions who were above the legal alcohol limit for driving.

Incident	Number of patients	Positive Alcometer		Alcometer > 80 mg/100 ml	
		No.	%	No.	%
Assault	56	39	69.6	28	50.0
Home	192	25	13.0	12	6.3
Road Traffic Accident	74	8	10.8	6	8.1
Work	242	19	7.9	9	3.7
Sport	79	4	5.1	1	1.3
Other	101	41	40.6	27	26.7
Not known	10	2	20.0	2	200.0
Total	754	138	18.3	85	11.3

Why alcohol increases the risk of accident

Alcohol has a range of psycho-motor and cognitive effects that increase accident risk on reaction times, cognitive processing, coordination, vigilance, vision and hearing.

The effects of alcohol impairment have been shown to begin at low blood alcohol levels. Adverse effects on vision have been found at blood alcohol concentrations of 30mg%, and the psychomotor skills required for driving have been found to show impairment from 40mg%. (In the UK the legal blood alcohol limit for drivers is 80mg%)

Raised risk of accident can also remain some time after drinking, as skills and faculties do not necessarily return to normal immediately even once all alcohol has left the body. In a study of airline pilots who had to perform routine tasks in a simulator under three alcohol test conditions, it was found that:

- * before the ingestion of any alcohol, 10 per cent of them could not perform all the operations correctly;
- * after reaching a blood alcohol concentration of 100mg/dl, 89 per cent could not perform all the operations correctly; and
- * fourteen hours later, after all the alcohol had left their systems, 68 per cent could not perform all the operations correctly⁵.

ALCOHOL AS A CAUSE OF ACCIDENTS

Blood alcohol concentration (BAC) is measured as the number of milligrammes of ethanol in every 100 millilitres of blood. This is denoted as mg/100 ml (mg%).

ALCOHOL IMPAIRMENT

Effects on central nervous system

At BACs of 30 mg% impairment begins in:

- cognitive function
- motor coordination
- sensory perception

BACs of 50 mg% may lead to changes of mood and behaviour, particularly euphoria

With increasing intoxication the following occur:

- slurring of speech
- unsteadiness
- drowsiness
- impaired reasoning and memory
- reduced perception
- decreased concentration

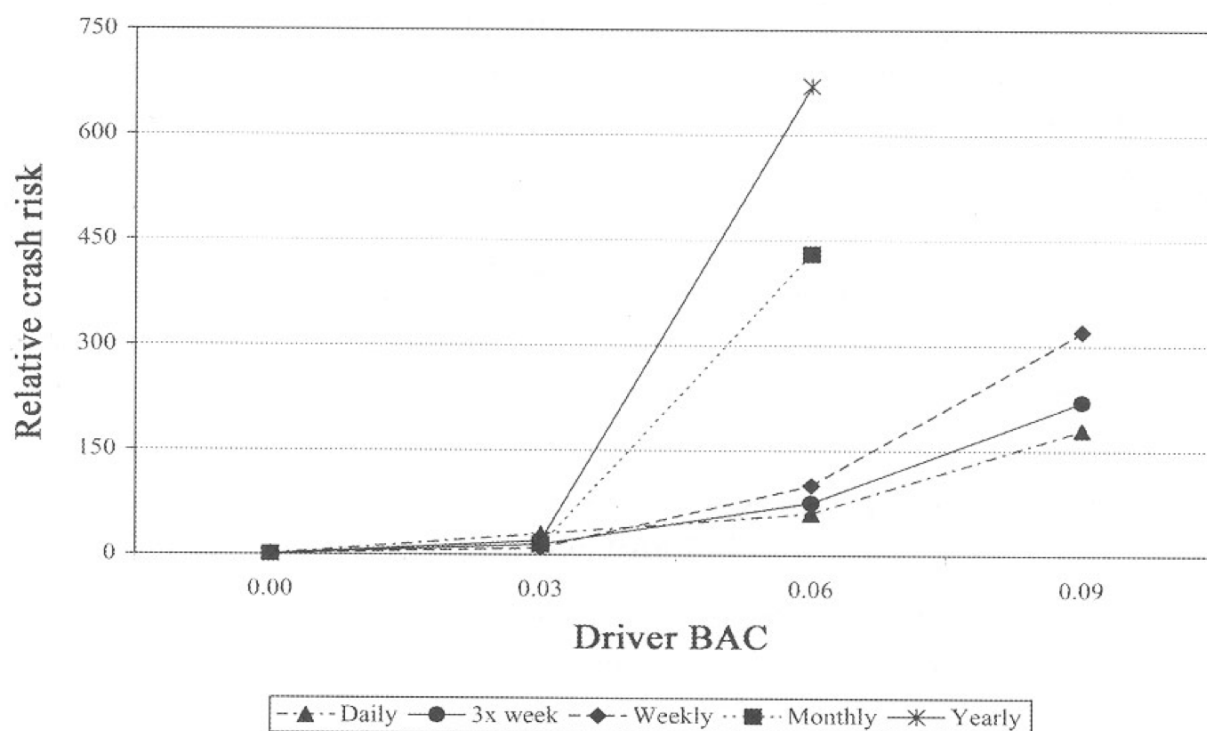
Effects on performance

At BACs of 30 mg% impairment begins in:

- focusing and ability to follow objects with eyes
- breadth of visual fields
- ability to discriminate between lights of different intensity
- discrimination of sounds
- reaction time
- performance on standard intellectual tests

Source: BMA Guide to Alcohol & Accidents⁶

Degree of impairment from a given dose of alcohol varies according to the individual's experience of drinking and also of the task being carried out (such as driving). Hence, risk of accident increases more steeply from a given quantity of alcohol in younger, less experienced drinkers and drivers. As can be seen from the graph below, at a given blood alcohol concentration, while risk of accident is increased in all drinkers, it is greatest in those who drink least frequently.



Road traffic crashes: driver BAC and relative crash risk plotted separately for different drinking frequencies. Grand Rapids data – re-analysed. US National data (based on National Highway Traffic Safety Administration (1992))⁷

Drink Driving

In the last full year for which figures are available (2007), 460 deaths were caused by drivers over the present legal alcohol limit. There are in addition a number of fatal accidents each year caused by drivers with a raised blood alcohol level but still below the present legal limit. If under-the-influence pedestrians are also taken into account, then alcohol is a factor in around one in five of all road deaths. (See IAS fact sheet Drinking and Driving)

Estimates of total casualties in accidents involving illegal alcohol levels adjusted for under-reporting: GB⁸

Year	Fatal	Serious	Slight	Total
2000	530	2,540	14,990	18,036
2001	530	2,690	15,550	18,770
2002	550	2,790	16,760	20,100
2003	580	2,590	15,820	18,990
2004	580	2,340	14,060	16,980
2005	560	2,100	12,740	15,400
2006	560	1,970	11,840	14,370
2007	460	1,760	12,260	14,480

Home Accidents

Each year there are approximately 4,000 deaths from home accidents. There are around 2.6 million home accidents each year resulting in the victim visiting an A & E Department for treatment. There are

a similar number of cases where the victim is treated by a GP. In addition, there are millions of minor cases where no medical assistance is sought.

A 2002 UK study⁹ found that faulty products were only a minor cause of domestic accidents resulting in death or injury, but that 'faulty behaviour' by someone involved in the incident was a much more important cause. Faulty behaviour was involved in 24.7% of fatalities, 35.1% of serious injuries and 44.8% of non-serious injuries. Being under the influence of alcohol emerged as the single most important form of contributory behaviour in regard to fatalities, and a major factor in regard to serious injuries. Based on this study, a conservative estimate is that alcohol is a causal factor in around 10% of fatalities from home accidents, in which case there are approximately 400 alcohol-related deaths from home accidents each year.

Alcohol and Deaths from Fire

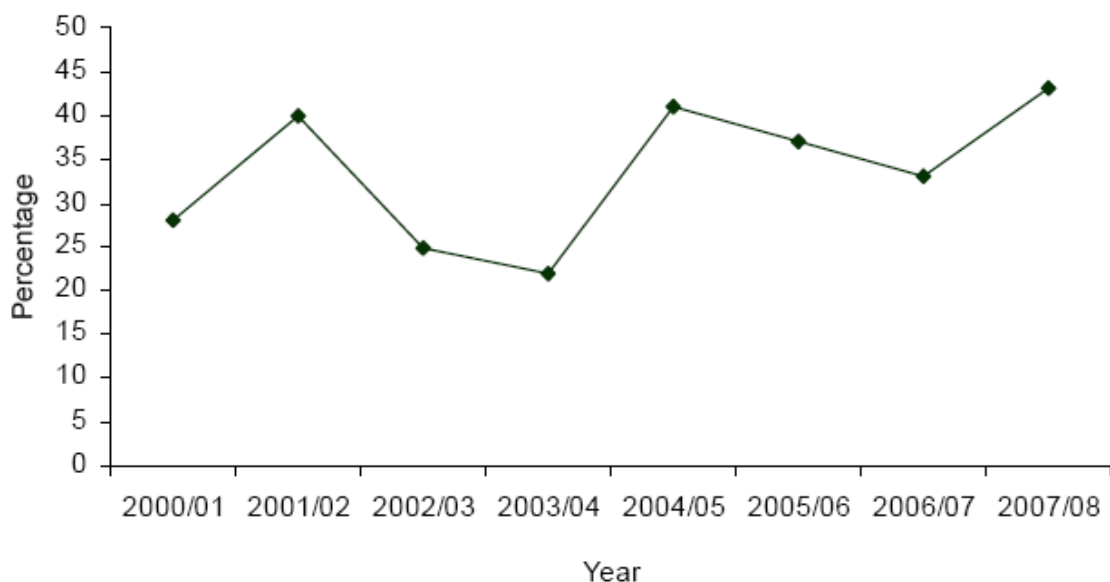
A UK study of a representative sample of deaths from fire¹⁰ found that in 47% of cases, the victim was under the influence of a substance of some kind at the time of the fire. In 33% of the cases, the substance was alcohol.

The study also found that alcohol impairment was a cause of the fire in 25% of cases, and a factor affecting response to the fire in 26% of cases. Alcohol impairment was often associated with fires at night and at weekends.

The study concluded that alongside the immediate causes of a fire (eg. carelessly discarded cigarettes), alcohol, (lack of) mobility and mental illness were the biggest single influences on whether a fire started and whether it had fatal consequences.

In 2007/8 Greater Manchester Fire Service recorded 43% of fire fatalities had consumed alcohol. However, care should be taken in interpreting these figures because of the low numbers involved and because most of these alcohol-related fire deaths share several contributory factors such as smoking, being alone and disability.¹¹

The percentage of fire related deaths in Greater Manchester where alcohol was consumed, 2000 – 2008¹¹



Source: Greater Manchester Fire & Rescue Service (2008)

In 2008 the London Fire Brigade stated that alcohol was a factor in 31% of fatal accidental fires in Londoners' homes. More than a third of fatal dwelling fires occurred on Friday or Saturday nights. London Fire Brigade's spokesman said: "people are more likely to take risks when they drink and lose control of their sensory awareness. These factors lead to a slower response time which can be deadly

if a fire starts. ...People are dying in fires even though they may have working smoke alarms and have taken other precautions (because) they can't react due to their lack of awareness."¹²

In Scotland in August 2006 a special publicity campaign was launched to warn people of the dangers of alcohol impairment in relation to fire. The campaign was targeted mainly at males aged 30-59, who, evidence suggests, are the group most at risk. The Chief Officer of Strathclyde Fire and Rescue stated that alcohol continued to be the single most important contributory factor in deaths from fire. In Strathclyde, 58% of fire deaths were alcohol related in 2005/6.

Alcohol and Domestic Drownings

There were 525 drowning fatalities in the UK involving adults and children aged 10 and over in the home and garden between 1993 and 1999 (excluding suicide), an average of 79 incidents per annum. 85% of the incidents occurred indoors and almost all in the bath. Alcohol was a factor in 13% of the cases. Alcohol affected females more than males and in particular the age range 40 to 59. The most common causes were tripping or falling outdoors, falling into or slipping in the bath, and losing consciousness or falling asleep in the bath while intoxicated.¹³

Workplace Accidents

Referring to substance abuse at the workplace, The International Labour Organisation states "in many workplaces, 20 to 25 per cent of accidents at work involve intoxicated people injuring themselves and innocent victims".

In 1979-80 in the UK, the Health and Safety Executive investigated blood alcohol concentrations in 35 of 92 fatal workplace accidents reported to them, of which 7 (20%) exceeded the drink drive limit.

However, there little work has been done to up-date that figure, and there is no reliable estimate of the current number of occupational deaths and injuries attributable to alcohol.

Institute of Alcohol Studies

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