

Changing Drinking and Driving Patterns: a Case History

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One of the important problems springing from the use of alcohol is the incidence of road accidents involving drink driving. Many of the things that are done to prevent accidents generally - or to make them less severe - have an effect on accidents involving alcohol as well. For this specific category of accidents, it would also be possible to reduce the incidence by changing the behaviour of the drivers involved. This would involve changing their drinking behaviour, or their driving behaviour, or both.

A good deal of effort has been devoted to attempts to do this throughout the world for many years. Most such attempts are not evaluated, and hence it is not possible to say whether they are effective or not.

During the period 1977-1986 a number of changes occurred that may have influenced drinking and drink driving in Victoria. There is evidence that the number of road accidents involving alcohol has decreased over this period.

The first piece of evidence comes from the results of the analysis of blood taken from drivers and motorcyclists killed in road accidents. Most of this information comes from blood tests conducted post mortem for the coroner, with some for drivers who died some time after the accident coming from the analysis of blood taken compulsorily from injured drivers taken to a hospital following involvement in an accident. Table 1 below shows the results.

Table 1

Blood Alcohol Concentration (BAC) of Drivers and Motorcyclists Killed in Road Accidents in Victoria

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Total No. killed	429	398	383	295	343	344	339	317	334	348
Total No. tested	366	326	343	268	319	299	312	277	295	308
No. over .05 %	181	158	137	117	120	110	115	90	111	118

Percentage of those tested who are over .05 g/100 mL	49.5%	48.5%	39.9%	43.7%	37.6%	36.8%	36.9%	32.5%	37.6%	38.3%
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There was a drop from 1977 to 1980 in the number of drivers and riders killed known to have a blood alcohol concentration (BAC) exceeding .05 g/100 mL. No consistent pattern of change is obvious from 1981-1986. This is not simply a reflection of an overall drop in the number of drivers killed. With the exception of 1980, the number of drivers killed who were tested and found to be zero or below .05 g/100 mL has been relatively constant.

There was also a drop in the proportion of drivers and riders killed who have a BAC exceeding .05 g/100 mL over the period 1977 to 1981.

The second piece of evidence comes from an examination of the results of analysis of blood taken from drivers and motorcyclists who were admitted to hospital following a motor car accident. Table 2 shows these figures.

Table 2

Drivers and Motorcyclists Admitted to Hospital Following a Road Accident

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Total No.	4461	4469	4180	4284	4237	4369	4151	4296	4464	4686
No. tested	2541	2471	2499	2758	2628	2888	2652	2957	3101	2918
No. over .05	873	844	674	742	687	821	650	648	579	596
% over .05	34.4%	34.2%	27.0%	26.9%	26.1%	28.4%	24.5%	21.9%	18.7%	20.4%

The actual numbers here are less meaningful, as some accidents are not reported, and blood samples are not taken from some drivers admitted to hospital.

The proportion of drivers tested found to have a blood alcohol concentration over .05 g/100 mL is meaningful, however. There was a drop in this proportion from 1977-78 to 1979, a 'plateau' to 1983, and then a lower level in the next three years.

Direct Mechanism

It is proposed that one major reason for the decline in the number of alcohol related accidents is that drinking and drink driving patterns have changed, and that the new patterns are less likely to involve driving after drinking than the old patterns. There is some evidence for this from surveys of (self-reported) drink driving. In December 1978, a sample of people who were drivers and did drink alcohol were interviewed, and asked questions about their drinking in the previous week, and whether they had driven after drinking. Of the 382 males interviewed, 72 (18.8 per cent) had driven with a BAC estimated to have exceeded .05 g/100 mL at least once during the previous week. When the survey was repeated in December 1983, only

50 (14.7 per cent) of the 341 males interviewed had done so (MacLean et al. 1985).

Qualitative research, and a great deal of anecdotal evidence also, suggests that many drivers have changed their drinking and drink driving patterns in recent years.

Many drivers drink less frequently and drink less alcohol when they do drink. They are less likely to drink in a hotel (particularly in Melbourne, less so in the country). Many of those with a regular pattern of drinking away from home - such as at a sporting club - have changed the drinking location so that they are now drinking closer to home, and driving home through back streets rather than on main roads (Hutchinson 1987; Frank 1986).

There has been no great change in overall consumption. The number of litres of absolute alcohol consumed per person aged 15 years and over in Victoria has fluctuated between 11.5 and 11 litres over this whole period (Ross 1986). There have, however, been changes in the kinds of drink consumed.

The Liquor Control Commission Annual Reports show that sales on draught beer (sold by the glass) have declined throughout Victoria, and sales of packaged beer (bottles and cans) have increased. It is estimated that 73 per cent of beer sold now is for 'off premise' consumption. Sales of wine have increased, particularly white wine in casks (4 litre disposable containers). Wine coolers (about 30 per cent wine and 70 per cent fruit juices) have been introduced and taken a significant share of the market. Lower alcohol beers have been introduced, and promoted as such. These have an alcohol content of 3.4 per cent, 2.1 per cent and even 0.9 per cent, as compared to 5 per cent for normal beer. They now hold about 10 per cent of the beer market.

Average beer consumption in Victoria has fallen 16 per cent from 137.5 litres per capita in 1976-77 to 115.5 litres per capita in 1985-86. Wine consumption in Australia was at the relatively low level of less than 6 litres per capita until 1965, when consumption started to increase. By 1976 it had increased to 13.5 litres per capita, and in 1986 it was 21.2 litres. Spirit consumption has remained relatively static.

It may well be that the changes in drinking pattern reflect the fact that new drinkers coming of age are adopting different patterns to their predecessors, as well as that existing drinkers are changing.

Reasons for Changes in Drinking and Drink Driving Patterns

From the Victorian authorities' point of view of wanting to maintain the reduced level of alcohol involvement in accidents, or to reduce the level further, or from the point of view of another state wanting to achieve similar results, it is important to know what has caused the changes in drinking and drink driving patterns.

The answer to this question cannot be given with any certainty. The causes are almost certain to be complex, with many factors, differentially important for the various groups of drivers and for accidents of different severity, being involved.

There are many ways of looking at complex processes like this, and the choice of any one approach will be to some degree arbitrary. It is proposed here to adopt the following classification of the factors involved.

- Drink driving countermeasures tending to encourage 'safe' drinking and drink driving practices.
- Drink driving countermeasures tending to discourage 'unsafe' drinking and drink driving practices.
- Changes affecting drink driving and drinking which were not introduced primarily as drink driving countermeasures.

Changes Tending to Encourage 'Safe' Drinking and Drink Driving Practices

Drink driving material in the mass media

Since 1979 the Road Traffic Authority and the Federal Office of Road Safety have produced mass media campaigns, primarily for television, making positive suggestions (such as to eat while drinking alcohol, organise alternative transport if drinking away from home, arrange to stay the night, and to suggest these things to friends who have been drinking) to avoid drink driving.

Drink driving education in schools and as preparation for passing the driving test

The Road Traffic Authority produced a curriculum unit for use in Years 8-10 of secondary schools which places a great deal of emphasis on responsible decision making with respect to the use of alcohol. It has increasingly been used in schools since its release in 1984, and has now been requested by 98 per cent of post-primary schools in Victoria.

Since 1985 all learner drivers obtaining a licence have had to pass a test of knowledge of material in the Victorian Traffic Handbook. This manual contains a considerable amount of material advocating the behaviour that people who drink alcohol should adopt when they will be driving.

Industry initiatives

The liquor industry in Victoria has organised some mass media campaigns advocating responsible drinking. It has developed and distributed 'Home Safely' contracts, which require young drinkers to agree to ring their parents when they have been drinking and need transport under those circumstances. The Industry has also been involved in programs whereby a person, who identifies himself or herself as the 'designated driver' for a group of drinkers, is provided with free soft drinks.

Some licensed premises also have a mini-bus, and drive drinkers home at the end of the evening. Increasingly, coin-operated breath testers are being installed in licensed premises, so that drinkers who will be driving have a facility to test their BAC, and to learn what BAC particular drinking patterns lead to.

Changes Tending to Discourage 'Unsafe' Drinking and Drink Driving Practices

General deterrence

It is assumed that proscribing driving after drinking, applying severe mandatory penalties to those detected, and persuading drivers that if they do drive after drinking the probability of detection is high and the imposition of penalty certain, will lead to a 'general deterrence' effect, and a change in behaviour. General deterrence requires legislation creating offences, setting BAC limits, giving police power to test drivers and setting penalties. It also requires enforcement and publicity.

Legislation

Victoria has had a limit of .05 g/100 mL since December 1966, as well as offences of driving under the influence and being drunk in charge of a motor vehicle.

In May 1984, a zero limit was introduced for learner drivers, those in the first year of a probationary licence, and those without a licence. On 1 March 1987, the zero limit was extended to those in the second year of the probationary licence.

To achieve general deterrence, it is important that drivers believe that if they drive after drinking, the police will have the power to stop and test them.

Until 1974, the only circumstances under which police could require a driver to provide a sample of breath for analysis were when the person was the driver of a car involved in an accident, or when the policeman had reason to believe, based on his personal observations, that the person in charge had consumed intoxicating liquor, and that the person's ability to drive a motor car might thereby have been impaired.

In 1974, a provision was introduced so that when a person was taken to a hospital as a consequence of an accident involving a motor vehicle, the medical practitioner first treating or examining that person was required to take a blood sample for analysis for the presence of alcohol.

In June 1976, police were given the power to stop vehicles 'at random' at designated preliminary breath test stations. In March 1987, police were given the power to test any person 'found driving' a motor vehicle. From 1 March 1987, police have also had the power to suspend a licence on the spot, until the case is heard, where BAC is .15 g/100 mL or more.

It is important that potential offenders believe that if caught, conviction and the imposition of a penalty will always follow. To ensure that stories about avoidance of the penalty following detection do not spread, and reduce the deterrent value of the legislation, it is important that there be no 'loopholes' enabling drinking drivers to escape the penalty. Early steps in this direction were the use of the breathalyser (1961) to provide objective evidence in driving under the influence cases, the introduction of a 'per se' limit in 1966, and mandatory minimum periods of licence cancellation in 1967.

In 1978, the courts were prohibited from using general powers to 'adjourn without proceeding to conviction' in drink driving cases (except for first offenders with a

blood alcohol concentration of .10 g/100 mL or less).

In 1987, the Road Safety Act introduced new provisions to ensure that the only way to challenge a breathalyser reading was to call the breathalyser operator to appear in court, and prove that on that occasion, the breathalyser was defective, or was not used correctly.

In 1977, the penalties for exceeding .05 were as shown in Table 3. These minimum licence cancellation periods had been in effect since May 1971.

In December 1978, the minimum periods of licence cancellation were doubled and the maximum period of imprisonment for second and subsequent offenders reduced to 3 months. On 1 February 1987, the maximum fines that a court could award were increased to \$1,200 for a first offence, and \$2,500 for a second or subsequent offence. On 1 March 1987, the minimum licence cancellation periods were changed, to those in Table 4 below.

Table 3

Penalties for exceeding .05 in 1977 and 1978

Offence	First Offence Penalties	Second or Subsequent Offence
Driving while exceeding the prescribed blood alcohol concentration (BAC)	Up to \$750 fine where BAC is more than 0.05 but less than 0.10% disqualification from driving for at least six months	Up to \$1,500 fine, or up to six months imprisonment, plus where BAC is more than 0.05% but less than 0.15% disqualification from driving for at least 12 months BAC is 0.15% or more disqualification from driving for at least two years
	BAC is 0.10% but less than 0.15% disqualification from driving for at least six months	
	BAC is 0.15% or more disqualification from driving for at least 12 months	

Other sanctions

There are a number of other penalties that apply to a convicted drink driver. If he was involved in an accident, and was incapacitated, the benefits he can receive from the Transport Accident Commission are reduced. Most motor vehicle insurance companies have a clause denying liability if the driver is convicted of a drink driving offence.

In most social groups, a drink driving conviction is now something to be ashamed of (Hutchinson 1987). It is believed that this change has taken place over the last 10 years. A drink driver involved in an accident in a smaller country centre in which someone is severely injured or killed is usually rejected and ostracised by the local community (Hutchinson 1987).

Table 4

Maximum Licence Cancellation Periods from 1 March 1987

BAC	First Offence Minimum Licence Cancellation	BAC	Second or Subsequent Offence Minimum Licence Cancellation
less than .07	6 months	less than .07	12 months
.07 or more but less than .08	6 months	.07 or more but less than .08	14 months
.08 or more but less than .09	6 months	.08 or more but less than .09	16 months
.09 or more but less than .10	6 months	.09 or more but less than .10	18 months
.10 or more but less than .11	10 months	.10 or more but less than .11	20 months
.11 or more but less than .12	11 months	.11 or more but less than .12	22 months
.12 or more but less than .13	12 months	.12 or more but less than .13	24 months
.13 or more but less than .14	13 months	.13 or more but less than .14	26 months
.14 or more but less than .15	14 months	.14 or more but less than .15	28 months

.15 or more but less than .16	15 months	.15 or more but less than .16	30 months
.16 or more but less than .17	16 months	.16 or more but less than .17	32 months
.17 or more but less than .18	17 months	.17 or more but less than .18	43 months
.18 or more but less than .19	18 months	.18 or more but less than .19	36 months
.19 or more but less than .20	19 months	.19 or more but less than .20	38 months
.20 or more but less than .21	20 months	.20 or more but less than .21	40 months
.21 or more but less than .22	21 months	.21 or more but less than .22	42 months
.22 or more but less than .23	22 months	.22 or more but less than .23	44 months
.23 or more but less than .24	23 months	.23 or more but less than .24	46 months
.24 or more	24 months	.24 or more	48 months

Enforcement

It is important for general deterrence that drivers believe the police are likely to detect them if they drive after drinking. Table 5 below shows the number of persons detected for drink driving offences each year.

Table 5

Drivers Detected for Drink Driving Offences

Year	Exceed .05	DUI	Drunk in Charge	Exceed 0	Total
1977	13,766	1,259	155		15,180
1978	17,824	1,415	192		19,431
1979	15,225	1,040	183		16,448
1980	14,379	1,160	150		15,689
1981	14,079	1,124	141		15,344
1982	14,583	1,032	142		15,757
1982-83*	14,272	1,013	134		15,419
1983-84	13,557	914	152		14,623
1984-85	13,656	904	135	1,045	15,740
1985-86	14,712	1,002	167	1,957	17,838

*Police data recording system changed to fiscal years.

The average is 16,149 each year. Samples examined show that of these, 16 per cent are detected via the compulsory hospital blood testing system, 60 per cent by police on patrol, 12 per cent by breath analysis of those involved in accidents, and 12 per cent from random breath test stations.

Random breath testing is an important component of a general deterrence program, in that most drinking drivers believe that their driving is not obviously impaired. While police can only test drivers who are obviously impaired, the above drivers believe they will not be detected. Random breath testing provisions force drivers to accept that they may be detected, even if their driving is not obviously impaired. The numbers of drivers stopped and tested at random breath test stations are shown in Table 6.

Experimental studies have shown that random breath test 'blitzes' are effective (Cameron & Strang 1982). Following the success of continuous high level random breath testing in NSW from December 1982, a similar policy was adopted in Victoria, and commenced in October 1983. It is noted that the proportion of drivers and motorcyclists admitted to hospital who had a BAC over .05 g/100 mL dropped at about this time (Table 2), though the data on those killed (Table 1) does not show any obvious effect.

Publicity

Since January 1979, the Road Traffic Authority has produced and placed mass media commercials designed to make sure drivers know how severe the penalties are, and to persuade them that the chances of being picked up at a random breath test station are high. The amount spent on advertising has increased each year.

\$660,000 worth of drink driving advertisements were placed in Victoria in 1986-87 with most effort directed at television. A large proportion of this publicity was material designed to add to the deterrent value of police random breath testing.

Table 6

Drivers Stopped at RBT Stations

Year	No. of Tests Administered
1977	19,006
1978	41,000
1979	79,000
1980	76,000
1981	60,000
1982	62,000
1983	161,000
1984	183,000
1985	238,000
1986	314,000

Additionally, press releases are put out by the police in this area, and the media has regularly featured drink driving in news, current affairs and in feature articles.

Specific deterrence, rehabilitation, containment and assessment on re-licensing

A number of programs in place are designed to prevent those who are detected and convicted of a drink driving offence from being subsequently involved in alcohol related accidents.

Approximately 12,000 licences were cancelled each year for drink driving during the period 1977-1986. Sample studies show the mean period of disqualification is 17.9 months. There are therefore approximately 18,000 drivers under disqualification for a drink driving offence at any one time.

Drivers who were convicted with a BAC of .10 g/100 mL or more or those for whom the conviction is a second offence must apply to a court for a licence restoration order before they can be re-licensed. The court hears evidence from police, and may call medical evidence. Sample studies suggest that about one-third of drivers whose licences are cancelled do not apply for a new licence, although the rate of refusal of licence restoration orders by courts is less than 10 per cent. About 8,000 drivers per year are re-licensed following licence cancellation for a drink driving offence.

In a number of courts, magistrates make it known that they prefer applicants for a licence restoration order to have completed a 'drink driver program'. It is estimated that at present approximately 3,500 people attend these courses each year. This has been the situation for the 10 years under consideration.

As part of the requirements introduced when zero BAC limits were imposed P plate, L plate and unlicensed and disqualified drivers under 21 years of age are required to complete a 'driver education' course before they can be re-licensed.

Changes affecting Drinking and Drink Driving, but which were not introduced as Drink Driving Countermeasures

Changes in the physical environment in which drinking takes place

In the last few years there have been dramatic changes within the hotel industry in Melbourne, resulting in widespread change to the physical circumstances in which alcohol can be purchased and consumed.

Mr Darryl Washington, the President of the Victorian Branch of the Australian Hotels Association, was quoted in *The Age* newspaper in January 1987 as saying that in Melbourne, 'the death of the public bar is imminent'. He said that these days, few public bars are viable, and cited three main reasons for the changes in hotel operation.

The first of these is the activity of the Liquor Control Commission which had for many years carried out a vigorous program of forcing the proprietors of establishments selling alcohol to 'improve' their premises. The second reason is increased potential from providing accommodation for tourists, and the third is the competition for patrons. The majority of hotels now have a restaurant, and provide such entertainment, as rock concerts.

Availability of alcohol

The availability of alcohol is difficult to examine in Victoria. A number of changes have been occurring, making the picture very complex.

There has been a trend away from 'on premise' drinking to buying packaged alcohol and consuming it in other than licensed premises. For those whose drinking patterns do not involve drinking on licensed premises, hours of opening are of minor importance.

There has been a trend to permit licensed premises to open for longer hours if they wish to. Permits have been increasingly available to remain open until very late at night. Sunday bar trading has been introduced. Also, because of decreased patronage, many licensed premises do not remain open for as long as they are permitted to.

During the period under consideration, restrictions were introduced on the sale of alcohol at many sporting events. Typically, patrons can only buy two opened 375 mL cans of beer at a time. They are not permitted to bring their own alcohol into the ground.

Liquor Control Commission Annual Reports show that the number of licensed hotels has declined from 1,441 in 1976-77 to 1,429 in 1985-86. Considering the population increase over this period (from 3,837,400 to 4,152,300) the ratio of hotels to population has declined substantially. The number of retail bottle outlet licences has increased clubs from 452 to 565, the number of licensed restaurants from 269 to 448 and the number of other licences from 214 to 425.

There were 1,976 restaurants with permits permitting drinkers to bring their own alcohol and consume it with their meal in June 1987. This is approximately double the number in June 1976.

The result of this process has been that the nature of the readily available places to drink has changed. However, the total number of licensed premises has increased by 38 per cent.

Costs of alcohol

There are significant differences in the costs of drinking various kinds of alcoholic beverage. Packaged beer and spirits could be purchased in 1986 for 5-6 cents per gram of ethanol. Draught beer cost about 10 cents per gram of ethanol, and cask wine about 1.5 cents per gram.

It is generally believed within the liquor industry that the lower cost of wine, which reflects differential Government taxes to a considerable degree, has been an important reason for the increases in its per capita consumption. The price differential between packaged and draught beer reflects the higher capital value of premises licensed for on premise consumption, and has existed since 1975, when the Liquor Control Commission was prevented by the Trade Practices Act from requiring liquor licence holders to sell alcohol only at the recommended price (Nieuwenhuysen 1986). Packaged beer could then be sold at discount prices.

Over the 10 year period from 1977 to 1986, the cost per gram of ethanol has doubled for packaged beer, wine and spirits, and increased by about 240 per cent for draught beer. The consumer price index increased by 210 per cent over this period. Relative to other consumer goods, therefore, packaged beer, wine and spirits have become slightly cheaper over the 10 year period, and draught beer has become slightly more expensive (ABS Catalogue 4306).

The 'healthy lifestyles' movement

In recent years, health authorities have put a good deal of effort into mass media campaigns, and promotion of various kinds urging a healthy lifestyle which includes exercise, not smoking, and moderation in eating and drinking.

The increasingly 'cosmopolitan' nature of society has led to pressure to accept different recreational and drinking patterns. Recently, significant numbers of immigrants from Asia, particularly Vietnam and Cambodia, have settled in Victoria, and have had a significant influence on the culture.

Interaction Effects

The position is made even more complex by the possibility that some of these changes have been more effective when introduced together. In late 1978, a number of changes occurred:

- Penalties for drink driving were increased;
- In the August 1978 budget, the excise tax on beer was greatly increased; leading to a significant increase in the cost of beer;
- Paid television publicity of drink driving commenced; and
- Low alcohol beers were introduced and publicised.

The biggest drop in alcohol related fatal accidents took place between 1978 and 1979. It seems likely that it was this package of measures that caused a change in

drinking patterns, which then resulted in fewer alcohol related accidents.

Some measures, too, can only be effective if other measures have already been introduced. Coin-operated breath testers were trialled in licensed premises in 1977, but were a failure, due to insufficient demand. In 1987 the demand was sufficient to make them a commercial proposition. A similar pattern was evident with low alcohol beers.

Conclusions

The Victorian experience seems to indicate that it is possible to change drinking patterns, and thereby reduce alcohol involvement in accidents. These changes seem to be able to occur without dramatic effects on the amount of alcohol consumed per head. It is suggested that the crucial change is a decrease in the incidence of patterns of drinking that are more likely to result in an alcohol related accident. This experience would seem to be contrary to the proposition that average per capita consumption is related to the incidence of alcohol related problems (Bruun et al. 1975) at least in the area of drink driving.

The situation in Victoria is not as encouraging for those wanting to examine the effect of any one drink driving countermeasure, however. So many countermeasures have been in operation over the period when alcohol involvement in accidents dropped, that it is very difficult to separate their effects.

There is nevertheless clear evidence that random breath testing has been one of the important factors (Cameron & Strang 1982; Armour et al. 1985; Nieuwenhuysen 1986).

Hutchinson (1987) in a survey conducted in February 1987, asked drivers assessed as having driven with a BAC exceeding .05 g/100 mL at least once in the previous week if their drinking pattern had changed as a result of drink driving legislation. Forty-three per cent said that it had.

The strong reaction from the Australian Hoteliers Association to suggestions that have been made about the introduction of a zero blood alcohol limit for all drivers suggests that they believe such measures have a significant effect on drinking patterns.

Other factors mentioned may well have been important, but the evidence for this is not clear.

Insofar as the effect of these measures has been to change the patterns of drinking, it could be expected that there would be effects on other areas in which the nature of drinking patterns affects the incidence of alcohol related problems. Measures introduced to curb drink driving may have contributed to a 'spin off' benefit in other areas. If this is so, then closer relations between those working on the reduction of road accidents due to alcohol, and those involved with other alcohol problems, may be worthwhile.

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