

# Drink driving at night on Adelaide roads during the 1991 Australian Grand Prix

CN Kloeden and AJ McLean

NHMRC Road Accident Research Unit, The University of Adelaide 5005, AUSTRALIA

## ABSTRACT

In 1991, the NHMRC Road Accident Research Unit conducted a roadside breath alcohol survey of night-time Adelaide drivers. In the middle of the survey, the 1991 Australian Formula I Grand Prix was held and licensed premises were permitted to open 24 hours a day. Sampling of drivers continued during the Grand Prix when a total of 509 breath tests were obtained. These tests were then compared with a matched sample of 2621 drivers tested before and after the Grand Prix. It was found that late night drivers' blood alcohol levels were significantly elevated during the time of the Grand Prix.

**KEY-WORDS** (Index Medicus) : ALCOHOL, BLOOD-ALCOHOL-CONTENT, DRIVING, DRUNKENNESS, NIGHT

## INTRODUCTION

The NHMRC Road Accident Research Unit (RARU) has been carrying out late night roadside breath alcohol surveys in Adelaide since 1979 to monitor the rates of drinking and driving at both legal and illegal levels and to evaluate the effects of random breath testing by the police (McCaul and McLean, 1990; McLean, Kloeden and McCaul, 1991).

In the later half of 1991, a survey was conducted for 3 months as part of the on-going monitoring of the blood alcohol concentrations of Adelaide night time drivers (McLean and Kloeden, 1992). The primary aim of this survey was to examine the effect of the lowering of the legal limit for driving from 0.08 g/100mL to 0.05 on 1 July 1991. During this survey the Australian Formula I Grand Prix was held in Adelaide. While testing during this time was not included in the larger evaluation of the effect of lowering the limit, testing was conducted to examine the effect of the Grand Prix (and the associated 24 hour trading of licensed premises) on drinking and driving on Adelaide roads at night.

## METHOD

The procedure used to obtain breath samples from a representative sample of Adelaide drivers was the same as that which had been used in previous roadside breath alcohol surveys conducted by the NHMRC Road Accident Research Unit (Holubowycz, McLean and McCaul, 1991). Twenty intersections controlled by traffic signals were visited by two teams of Unit research assistants on a rostered basis. The first driver to stop at a red light was approached and asked to blow into a hand-held breath alcohol meter (a Lion Laboratories Alcolmeter SD-2 reading to the nearest 0.005g/100mL). The sex of the driver was also recorded, together with their estimated age group (under 21 years / 21-29 / 30-50 / over 50). Testing continued in this fashion for approximately 40 minutes after which the team would move to the next survey site. Sampling was conducted between the hours of 10pm and 3am, allowing each team to test drivers at five different survey sites per night.

The Grand Prix testing was performed on the Thursday, Friday, Saturday and Sunday nights of the Grand Prix (1 October 1991 - 3 November 1991) at the 10 (of the 20) intersections that were closest to the centre of Adelaide. The control sample was the subset of all other tests in the main survey conducted on Thursday, Friday, Saturday and Sunday nights and at the 10 locations used in the Grand Prix testing (8 August 1991 - 29 November 1991).

Although the legal limit for driving was lowered to 0.05 on 1 July 1991, before the study took place, a reading between 0.05 and 0.08 did not result in licence suspension. Readings at or above 0.08 did result in licence suspension, so results are presented separately for these two levels.

## RESULTS

During the 4 testing days of the Grand Prix, 535 drivers were approached and asked for a breath sample and 509 of these provided a sample (4.9% refusal rate). In the control period on the same days and at the same intersections, 2757 drivers were approached and 2621 provided a sample (4.9% refusal rate).

Table 1 shows the distribution of BACs for Adelaide drivers during the two testing periods. While more drivers had been drinking during the Grand Prix than during the control period (21.8% vs 18.2%), the difference was not quite statistically significant ( $X^2=3.64$ ,  $df=1$ ,  $p=0.057$ ). However, illegal drink driving (0.05 or above) was statistically significantly greater during the Grand Prix period compared to the control period (7.2% vs 4.3%;  $X^2=8.44$ ,  $df=1$ ,  $p=0.004$ ) as was drink driving at or above 0.08 (3.3% vs 2.0%;  $X^2=3.90$ ,  $df=1$ ,  $p=0.048$ ).

**Table 1: Comparing BAC Distributions Between the Control Period and During the Grand Prix**

BAC (g/100mL)	Period	
	Control	Grand Prix
zero	81.8%	78.2
.005-.045	13.9	14.5
.050-.075	2.3	3.9
.080-.145	1.7	2.9
.150+	0.3	0.4
<b>Total No.</b>	2621	509

Figure 1 shows the distribution of BACs of drivers by day of week during the control period and the Grand Prix period. It can be seen that during the control period illegal drink driving (at or above 0.05) in Adelaide decreased from Thursday to a low point on Sunday. Drink driving at or above 0.08 shows a similar pattern but with a slight peak on Friday. For the Grand Prix period all of the levels on all of the days were elevated compared to the Control period. Also Friday showed very high levels of drink driving both at or above 0.05 and at or above 0.08 with more than 10% of drivers tested driving illegally.

**Figure 1 : BAC Distributions by Day of Week for the Control Period and the Grand Prix Period**

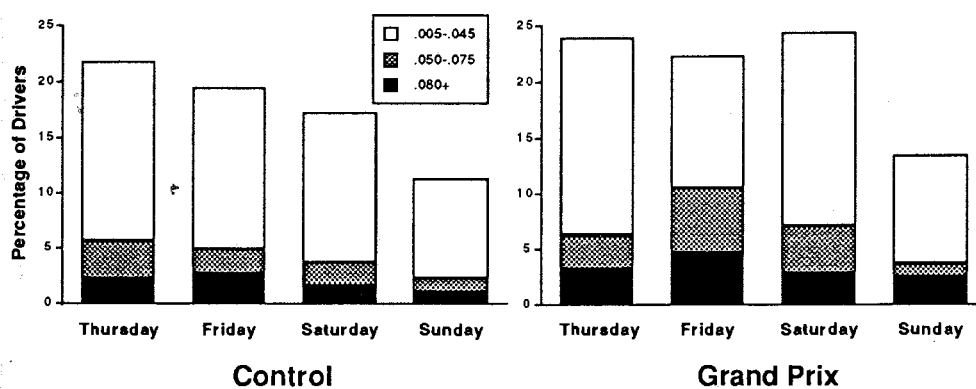


Figure 2 shows the distribution of BACs of drivers by time of day during the control period and the Grand Prix period. While drink driving tended to increase in the later hours of the night in both the control and Grand Prix periods, the levels of illegal drink driving were consistently

higher in the Grand Prix period. Also of note are the high proportion of drivers over 0.08 at 11pm and the peak of illegal drink driving at 1am during the Grand Prix period, one hour earlier than in the control period.

**Figure 2 : BAC Distributions by Time of Day for the Control Period and the Grand Prix Period**

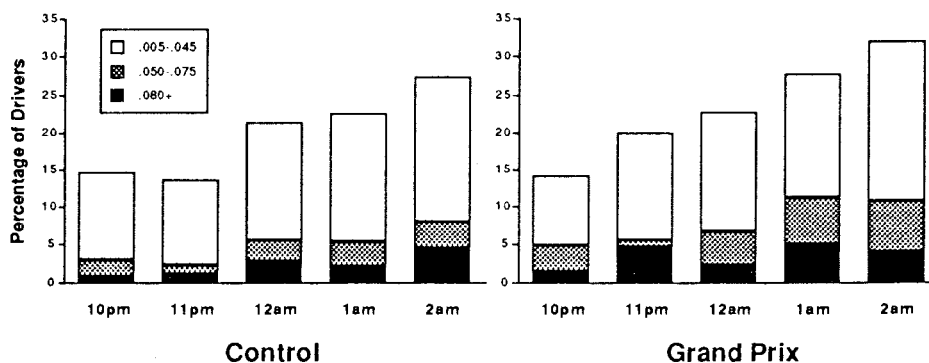


Figure 3 shows the distribution of BACs of drivers by the sex of the driver during the control period and the Grand Prix period. While in the control period, females had consistently lower levels of drink driving at all levels, this was not the case during the Grand Prix period. Illegal drink driving among females actually exceeded that of males. This is possibly due to drinking males getting their supposedly less intoxicated female partners to drive more often.

**Figure 3 : BAC Distributions by Sex of Driver for the Control Period and the Grand Prix Period**

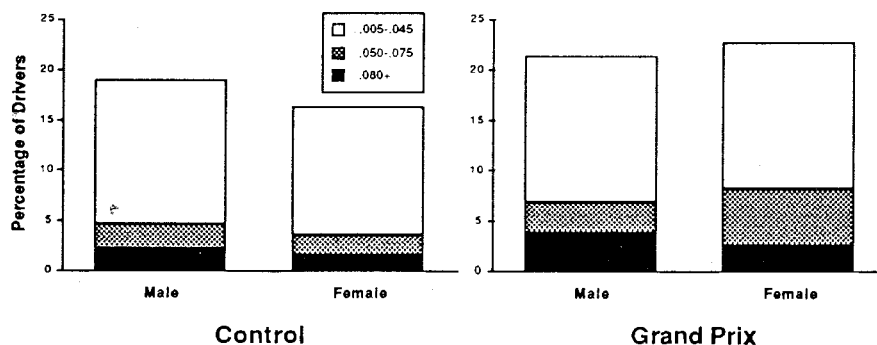
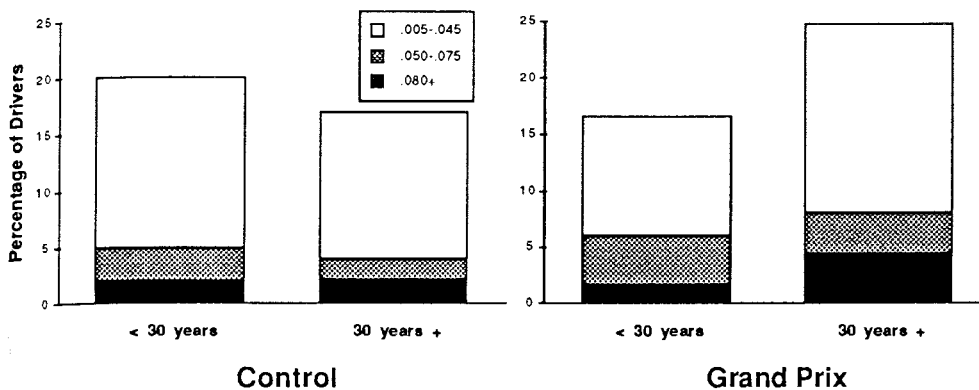


Figure 4 shows the distribution of BACs of drivers by the age of the driver during the control period and the Grand Prix period. While during the control period, drivers aged at or above 30 years presented less of a drink driving problem than their younger counterparts, the reverse was found to be the case during the Grand Prix. While those aged less than 30 years showed decreases in the proportion of drivers who were positive and those at or above 0.08 during the Grand Prix, those aged 30 or above showed marked increases in drink driving at all levels of

BAC.

Figure 4 : BAC Distributions by Age of Driver for the Control Period and the Grand Prix Period



## CONCLUSIONS

While the small sample size limits the conclusions that can be strictly drawn from this study a number of points and trends appeared.

The Grand Prix appears to be associated with:

- An increase in drink driving at legal and illegal levels
- Very high levels of illegal drink driving on Friday night
- A peak level of illegal drink driving at 1am
- A marked increase in drink driving among females
- A marked increase in drink driving among those aged 30 and above

These results suggest the need for particular attention to be paid to drink driving education and enforcement at events similar to the Grand Prix with particular emphasis on female and older drivers in contrast to the usual target group of younger male drivers.

## REFERENCES

Holubowycz OT, McLean AJ, McCaul KA. A new method of breath testing the general driving population. *Journal of Studies on Alcohol* 1991; 52: 474-477.

McCaul KA, McLean AJ. Publicity, police resources and the effectiveness of random breath testing. *Medical Journal of Australia* 1990; 152: 284-286.

McLean AJ, Kloeden CN, McCaul KA. Drink-driving in the general night-time driving population: Adelaide, 1989. Australian Journal of Public Health 1991; 15: 190-193.

McLean AJ, Kloeden CN. Reduction of the legal blood alcohol limit and late night drink driving in Adelaide. Adelaide: South Australian Department of Transport, Office of Road Safety, 1992; 23pp.