Reduction in the Legal Blood Alcohol Limit from 0.08 to 0.05: Effects on Drink Driving and Alcohol-Related Crashes in Adelaide

AJ McLean*, CN Kloeden*, RA McColl** and R Laslett***

* NHMRC Road Accident Research Unit, The University of Adelaide, South Australia 5005, Australia
** Traffic Intelligence Service, South Australia Police
*** Breath Analysis Section, South Australia Police

ABSTRACT

The legal blood alcohol limit for drivers in South Australia was lowered from 0.08 to 0.05 g/100mL on 1 July 1991. The effects of this change on late night drink driving were assessed in the Adelaide metropolitan area by reviewing the results of a series of roadside breath alcohol surveys and by a comparison of the rate of alcohol involvement in crashes over a 15 year period. There was a short lived reduction in the percentage of late night drivers with a blood alcohol level at or above 0.08 at about the time of the introduction of random breath testing by the police in the early 1980s. This has been followed by a steady downward trend in this percentage from the mid 1980s. The blood alcohol levels of fatally injured drivers, as measured by the above criterion, have followed a similar downward trend to that observed in the roadside surveys. However, there have been negligible changes in the distribution of drivers' blood alcohol levels above 0.08 in the fatally injured group and in accident-involved drivers who were breath tested at the scene by the police. There was no marked change in the downward trend in the percentage at or above 0.08 in any of these groups of drivers following the reduction in the legal blood alcohol limit. This does not necessarily mean that the change in the legal limit had no effect because the reasons for the continuing decrease in both drink driving and the involvement of alcohol in crashes since the mid to late 1980s are far from clear.

INTRODUCTION

The legal blood alcohol limit for drivers in South Australia was changed from 0.08 to 0.05 g/100mL on July 1, 1991. In this paper, the reduction in the legal limit is related to trends over time in the blood alcohol levels (BALs) of the general population of drivers on the roads late at night and to the rate of involvement of alcohol in crashes.

METHOD

The procedure used to obtain breath samples from a representative sample of Adelaide car drivers was first used in 1979 (Holubowycz, McLean and McCaul, 1991). Twenty intersections controlled by traffic signals were visited by two teams of research assistants.
from the NHMRC Road Accident Research Unit on a rostered basis between 10pm and 3am. 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). The sex of the driver was recorded, together with his or her estimated age group (under 21 years / 21-29 / 30-50 / over 50).

The BAL distributions were weighted on a daily and hourly basis to allow for varying traffic flows. A correction was also made to allow for the estimated BALs of drivers who refused to provide a breath sample (about 5 per cent), using a method developed by Carlson (Wolfe, 1973; Carlson, 1979). All roadside survey percentages presented in this paper have been weighted and corrected in this manner.

Information on the role of alcohol in crashes was obtained for fatally injured drivers and for drivers who were breath tested by the police at the scene of an accident. In both cases, the accident data were for a similar region to that covered by the roadside surveys. The fatality data were for full calendar years, at all hours of the day. The police breath testing data were for 10pm to 3am, on the nights that the roadside surveys were conducted in 1991, before the introduction of 0.05, and in 1993.

RESULTS

Time Trends in Late Night Drink Driving

Figure 1 shows the percentage of drivers at or above 0.08 in the roadside surveys conducted by the NHMRC Road Accident Research Unit since 1979. It can be seen that there has been a steadily decreasing trend in this percentage since 1983 (although it should be noted that no roadside survey was conducted between 1983 and 1987), with the negative slope of the trend line becoming slightly greater after 1989. Two comparatively low percentages, with respect to the trend line, are for the 1981 and 1982 surveys which were conducted six months before and six months after the introduction of random breath testing by the police. The highest percentage of drivers at or above 0.08, in 1979, is much less reliable than those for the subsequent surveys because it is based on a relatively small number of cases drawn from a 24 hour roadside survey (all of the other surveys had sample sizes of several thousand drivers). However, it is thought that there was a real, and major, reduction in illegal drink driving during the year before the introduction of random breath testing, possibly due in large part to a vigorous debate in the media about the advisability of random testing.

There was a relative reduction of 21 per cent in late night drink driving during the two months immediately following the change to a legal limit of 0.05 in 1991. However, in the second half of that survey, which was conducted in the last quarter of the year, the percentage of drivers at or above 0.08 had returned to about the level which was recorded before the change.

The point in time at which the legal limit was changed from 0.08 to 0.05 is not readily discernable from inspection of the trend line in Figure 1. It may be that the steady decrease in driving with a BAL at or above 0.08 would not have continued beyond 1991 had there not been such a change but that remains conjecture at this stage.
Time Trends in Blood Alcohol Levels of Accident Involved Drivers

**Blood alcohol levels in fatally injured drivers**

Figure 1 also shows the percentage of fatally injured drivers who had a blood alcohol level at or above 0.08 from 1979 to 1994. The degree of variability is much greater than for the roadside survey data, primarily because of the relatively small annual numbers (from 20 to 42) of drivers fatally injured in the study area but the three year moving average line shows a similar decreasing trend from 1988 to 1993. There is also a dip in the trend line for the fatally injured drivers at about the time of introduction of random breath testing by the police in the early 1980s, similar to the dip for the non accident involved drivers. As before, with the trend line for late night drinking drivers, it is not readily apparent from either the line for the actual percentage of fatally injured drivers who were at or above 0.08 or from the line for the three year moving average that there was a meaningful intervention in 1991. There was also no change in the percentage of fatally injured drivers who had a BAL of at least 0.15 among those who were at or above 0.08 from 1986 to 1990 and from 1991 to 1994 (both 79 per cent).
**Breath tested drivers involved in accidents**

Police in the Adelaide metropolitan area attend all road accidents to which an ambulance is called and a proportion of those in which a vehicle has to be towed from the scene or there is some other need for police to be present. Drivers who are involved in an accident and who remain at the scene (and hence do not require ambulance transport) are breath tested by the police. If they are found to have a BAL above the legal limit they are then required to submit to an evidential breath test, after being kept under observation for at least 20 minutes. The results of these evidential breath tests on drivers involved in accidents between 10pm and 3am on the nights covered by the roadside survey in 1991, before the introduction of the 0.05 limit, and in 1993 are shown in Figure 2. Note that the BAL distributions start from 0.08 for each year. This is because the aim here is to compare the BAL distributions of drivers who were found, on the evidentiary test, to be at or above 0.08 in the two time periods. Even though the legal limit was, of course, 0.05 in 1993 there was only one driver who had a BAL in the range from 0.05 to 0.07 whereas there were 60 drivers at or above 0.08. In 1991 the corresponding numbers of drivers were 12 and 82.

![Figure 2: BALs of Drivers ≥ 0.08 Breath Tested by Police at Accident Sites, Adelaide Metropolitan Area: 10pm - 3am, 1991* and 1993*](image)

The comparison of particular interest in Figure 2 is of the cumulative percentage curves for the BAL distributions for the two years. Note that the cumulative curve for 1993 lies to the left of that for 1991, indicating that there was a general reduction in the blood alcohol levels of these drivers in 1993. However, the reduction was very small, being equivalent on average to a BAL of about 0.01, but it was consistent with the decreasing trends observed in the percentage of fatally injured drivers at or above 0.08 and the similar trend in drivers tested on the roads late at night in the roadside surveys. Sixty per cent of these drivers at or
above 0.08 in 1991 had a BAL of at least 0.15, compared to 56 per cent in 1993. Note that these percentages are considerably less than those for the fatally injured drivers (79 per cent).

CONCLUSIONS

It is not possible from the data presented to demonstrate that the reduction in the legal blood alcohol level from 0.08 to 0.05 in mid 1991 had any meaningful effect in the Adelaide metropolitan area on late night drink driving at blood alcohol levels of 0.08 or above, nor could any such effect be discerned among drivers involved in accidents. This does not necessarily mean that the change in the legal limit had no effect because the reasons for the continuing decrease in both drink driving and the involvement of alcohol in crashes since the mid to late 1980s are far from clear.

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REFERENCES

