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The impact of increased drink-driving penalties on recidivism rates in NSW

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This bulletin examines the implementation and deterrent effect of legislation that increased the statutory penalties for drink-driving offences in NSW in 1998. Examination of drink-driving offences brought before the Local Court in 1997 and 1999 showed that, after the legislation was enacted, there was a significant increase in the severity of penalties drink-drivers received on conviction. Comparisons of drink-drivers sentenced before and after the legislative amendments also revealed a significant reduction in reoffending after these penalties were increased. This reduction in recidivism was, however, confined to offenders who resided outside of the Sydney metropolitan area.

INTRODUCTION

In Australia, since the early 1980s, there have been substantial declines in both the number and the proportion of motor vehicle fatalities that are alcohol-related. In 1981, the proportion of fatally injured drivers recording a Blood Alcohol Concentration (BAC) of 0.05g/100ml or greater was 44 per cent. By 1998, this had reduced to just 26 per cent (Australian Transport Safety Bureau 1998). Despite this considerable reduction, alcohol still remains one of the primary causes of road fatalities and contributes significantly to non-fatal road injuries in Australia. Chikritzhs et al. (2000) report that 418 persons died from a road injury attributable to alcohol in Australia in 1997 and 7,789 persons had to be hospitalised. This translates to just over 17,000 person-years of life lost from alcohol-related road fatalities and almost 45,000 bed-days required for alcohol-related road injuries. The extent of injury and death resulting from alcohol-related road accidents indicates that drink-driving and related problems remain important priorities for public policy.

Recognising the importance of drink-driving as a major public health issue, the NSW State Government increased statutory penalties for drink-driving offences in September 1998.[1] For almost all drink-driving offences the maximum penalties were doubled for both the first offence and any subsequent drink-driving offence. These harsher penalties included doubling the maximum gaol terms for mid-range (BAC 0.08g/100ml to less than 0.15g/100ml) and high-range (BAC 0.15g/100ml and higher) drink-driving offences, as well as doubling the *maximum* licence disqualification periods and the maximum monetary fines for all drink-driving offences. Other amendments included the introduction of mandatory three-month minimum licence disqualifications for special-range (BAC 0.02g/100ml to less than 0.05g/100ml)[2] and low-range (BAC 0.05g/100ml to less than 0.08g/100ml) drink-driving offences and the doubling of *minimum* licence disqualifications for mid-range and high-range drink-driving offences (see the Appendix for more detail on drink-driving penalties in NSW).[3]

The aim of these legislative amendments was to "enhance the deterrent effect of our road penalties and … help to improve road safety" (Mr Scully, Minister for Transport, and Minister for Roads; 2nd Reading of Traffic Amendment (Penalties and Disqualifications) Bill to Legislative Assembly, 21/05/98). This bulletin investigates the effectiveness of the increased statutory penalties in achieving the first of these aims, by examining reoffending rates of drink-drivers before and after the legislation was enacted.

A threshold question when examining the effect of changes to sentencing law on recidivism is whether the legal changes resulted in any increase in the severity of penalties actually imposed by the courts. If they did not affect sentencing practice, any change in recidivism cannot be attributed to the specific deterrent effect of the new laws. In addition to sentencing practice it is also important to consider whether the legislation had any negative impact on the prosecution of drink-driving offences.

Table 1: Drink-driving offences prosecuted in NSW Local Courts, 1997 and 1999

	1997	*1999*	*% change*
Total prosecutions (n)	19,237	23,285	+21.0
Average time to finalisation (days)	72.9	71.5	-1.9
Offences with a guilty plea (%)	91.2	88.1	-3.4
Offences proven (%)	97.9	98.2	+0.3

Table 2: Penalties imposed for drink-driving offences in NSW Local Courts, 1997 and 1999

Penalty type		*1997*	*1999*	*% change*
Gaol	% gaoled	1.7	1.8	+5.9
	Average (mths)	4.3	5.1	+18.6
Fine	% fined	73.9	71.6	-3.1
	Average ($)	513.2	752.5	+46.6
Licence disqualification	% disqualified	82.2	80.0	-2.7
	Average (mths)	12.3	14.3	+16.3

Circumvention of the more severe penalties could reduce the perceived certainty of punishment and subsequently diminish any impact the sentencing policy may hope to have in deterring offenders. We begin, then, by looking at the implementation of the new policy.

POLICY IMPLEMENTATION

There are essentially five ways in which the intended deterrent effects of the new sentencing laws for drink-drivers could have been undermined once enacted; (1) a reduction in drink-driving charges brought before the courts, (2) an increase in court delay, (3) a reduction in guilty pleas, (4) a reduction in proven offences or (5) no subsequent change to the severity of drink-driving penalties imposed by the courts (MacCoun 1993; Nagin 1998). The following section examines each of these issues by comparing all drink-driving offences prosecuted in the NSW Local Courts in 1997 with those prosecuted in 1999.

As shown in Table 1, both the number of drink-driving prosecutions and the proportion of these that were proven in court increased after the penalties were raised. There was also no significant change in the average time from the offence being committed to the matter being finalised in the Local Court. A significant decrease from 1997 to 1999 in the proportion of offenders who pleaded guilty for a drink-driving offence was apparent. However this decrease was mostly due to more offenders not turning up before the court to submit a plea rather than an increase in the proportion of offenders pleading not guilty.[4] Taken together, these data provide no evidence to suggest that the new legislation was undermined by a reduction in prosecution or conviction rates.

More importantly, as can be seen from Table 2, the legislative changes did have the intended effect on the severity of the penalties that convicted drink-driving offenders received. The average gaol term, average fine and average licence disqualification period imposed by the courts for drink-driving offences increased after the implementation of the new legislation in 1998. Statistical tests showed all these increases in penalties to be significant.[5]

The magnitude of the rise in penalties was not uniform across the State (see Table 3). In Sydney metropolitan courts, the average gaol term rose by 28 per cent, the average fine by 51 per

Table 3: Penalties imposed for drink-driving offences in NSW Local Courts broken down by court location, 1997 and 1999

		Sydney courts			*Non-Sydney courts*		
Penalty type		*1997*	*1999*	*% change*	*1997*	*1999*	*% change*
Gaol	% gaoled	1.2	1.3	+8.3	2.2	2.4	+9.1
	Average (mths)	4.6	5.9	+28.3	4.2	4.6	+9.5
Fine	% fined	76.5	75.5	-1.3	71.6	67.1	-6.3
	Average ($)	520.5	788.0	+51.4	506.1	707.0	+39.7
Licence disqualification	% disqualified	85.0	83.0	-2.4	79.6	76.5	-3.9
	Average (mths)	12.8	14.0	+9.4	11.8	14.6	+23.7

cent and the average licence disqualification period by nine per cent. For non-Sydney courts, the average gaol term did not change significantly from 1997 to 1999 but the average fine increased by 40 per cent and the average licence disqualification period increased by 24 per cent.[6] Since licence disqualification is generally regarded as the most effective sanction for deterring drink-driving (Nichols & Ross 1990; Zaal 1994), the greater rise in the duration of licence disqualification periods evident in the non-Sydney courts is an important outcome to consider in the recidivism analysis.

The only trend toward greater leniency was a statistically significant, but small, decrease in the *proportion* of offenders who received a licence disqualification in 1999.[7] There was also a concurrent increase in the proportion of offenders whose conviction was dismissed under section 10 of the *NSW Crimes (Sentencing Procedure) Act 1999*. Further analyses demonstrated that this increase in s10 dismissals was most apparent for offences that had minimum licence disqualification periods introduced in 1998, that is low- and special-range drink-driving offences. There was little change between 1997 and 1999 in the imposition of s10s for those convicted of a mid- or high-range offence, offences that already had prescribed minimum licence disqualifications prior to the current legislative amendments.[8]

In summary, the 1998 legislation resulted in a significant increase in the average penalties imposed for drink-driving offences without having any negative impact on the prosecution of drink-driving offences. The only setback in terms of the deterrence aims of the legislation was a statistically significant, but small, decrease in the proportion of offenders being disqualified from driving. Four out of every five drink-driving offenders convicted in 1999 did receive a licence disqualification, which, on average, was longer in duration than licence disqualifications given to their 1997 counterparts. Since evidence suggests that longer periods of licence disqualification can have a specific deterrent effect on drink-driving offending (Blomberg, Preusser & Ulmer 1987; Mann et al. 1991; Siskind 1996), the 1998 legislative amendments still had the potential to reduce recidivism rates in NSW.

METHODOLOGY

To assess the impact of the penalty changes on recidivism, the reoffending rates of two offender cohorts were compared; one group consisting of individuals convicted of a Prescribed Concentration of Alcohol (PCA) offence[9] during the period 1 January 1997 through 31 December 1997 and the other consisting of individuals convicted of a PCA offence during the period 1 January 1999 through 31 December 1999.[10] The follow-up period, over which reoffending was measured, commenced from the date of the first PCA conviction and continued for at least 36 months post-conviction. For the 1997 cohort, the cut-off date for the reoffending data was 31 December 2000 and for the 1999 cohort, 31 December 2002. For offenders convicted earlier in the year of interest, the actual follow-up period exceeded 36 months. A three-year follow-up period has previously been estimated to capture approximately 60 per cent of offenders eventually reconvicted for a PCA offence (Homel 1980).

Court appearances for a new drink-driving offence were used to index recidivism. Self-reported drink-driving episodes, an alternative measure of offending, could not be used in the present analysis because of the retrospective nature of the study design. Involvement in alcohol-related accidents was also not considered a suitable reoffending measure because the Blood Alcohol Concentration (BAC) of drivers is not reliably recorded for non-fatal accidents in NSW. This leaves court appearance rates as the most appropriate indicator of reoffending.[11]

Two comparisons between the offender cohorts were conducted. Firstly, the likelihood of reappearing for a drink-driving offence within three years of conviction was compared across offender groups using logistic regression techniques. In this analysis the offender was the unit of analysis and the outcome was a binary variable, coded for whether or not the offender reappeared within three years following the reference offence. A dummy variable was included in the model to designate whether an offender was sentenced prior to or after the penalties were increased. Other variables which were controlled for when examining differences between offender groups, included age, gender, prior criminal history (any PCA conviction, as well as a conviction for any other offence in the previous two years), Aboriginality, area of residence, offence type (high-range PCA v. other) and the number of concurrent offences finalised during the reference appearance.

Secondly, a survival analysis was conducted to compare the two groups in terms of their time to first new appearance for a drink-driving offence. Survival analysis provides an estimate of the likelihood of reappearing at any given time during the follow-up period. If the increased statutory penalties for drink-driving offences have the effect of reducing recidivism, then it should take longer, on average, for the 1999 offender cohort to be convicted of a new drink-driving offence than the 1997 offender cohort. The two samples were compared using Cox proportional hazard models. This method examines the proportion of each group reappearing for a drink-driving offence at various points or intervals of time following the original court appearance, adjusting for *a priori* differences between groups.

The marginal increase in the severity of drink-driving penalties after the sentencing policy was implemented was greater for offenders residing outside of the Sydney metropolitan area than was the case for their city counterparts. These harsher penalties imposed on non-Sydney offenders could impact on their perceptions of the costs associated with drink-driving and therefore have a greater impact on their offending behaviour. Furthermore, with less access to alternative forms of transport, people living outside of major cities are heavily reliant on motor vehicles and thus may be more likely to perceive licence disqualification as a relatively

Table 4: Comparison of offender characteristics for drink-driving offenders included in the 1997 and the 1999 cohorts

	1997		1999		
Offender characteristics	*No.*	*%*	*No.*	*%*	*Significance*[i]
Gender					
Male	15,521	86.1	17,661	85.1	p=0.003*
Female	2,496	13.9	3,098	14.9	
Aboriginality					
Non-Aboriginal	13,632	75.7	18,391	88.6	p<0.001*
Aboriginal	1,264	7.0	1,294	6.2	
Unknown	3,121	17.3	1,074	5.2	
Age					
<25	5,322	29.5	6,035	29.1	p=0.535
25-29	3,232	17.9	3,730	18.0	
30-34	2,531	14.0	2,846	13.7	
35-39	2,155	12.0	2,516	12.1	
40-49	2,860	15.9	3,404	16.4	
50+	1,875	10.4	2,221	10.7	
Unknown	42	0.2	7	0.1	
Area of residence					
Sydney metropolitan area	8,614	47.8	11,054	53.2	p<0.001*
Rest of NSW	8,480	47.1	8,831	42.5	
Other[ii]	923	5.1	874	4.2	
Offence type					
High-range PCA	5,455	30.3	5,360	25.8	p<0.001*
Other	12,562	69.7	15,399	74.2	
PCA convictions in previous 2 yrs					
0	17,067	94.7	20,118	96.9	p<0.001*
1	922	5.1	629	3.0	
2	28	0.2	12	0.1	
Convictions for any other offence in previous 2 yrs					
0	15,365	85.3	18,041	86.9	p<0.001*
1	1,876	10.4	1,933	9.3	
2	523	2.9	501	2.4	
3+	253	1.4	284	1.4	
Concurrent offences					
0	13,348	74.1	16,054	77.3	p<0.001*
1	2,750	15.3	2,736	13.2	
2+	1,919	10.7	1,969	9.5	
Total	**18,017**	**100.0**	**20,759**	**100.0**	

* *Significant at the 0.05 level*

[i] *See note 13.*

[ii] *See note 14.*

severe sanction. Given the effect of licence disqualification in deterring offenders, a greater reduction in reoffending rates for offenders residing in country and regional areas would be anticipated. The logistic regression and survival analyses therefore also included an interaction term for year of conviction by area of residence in order to examine the differential effect of the sentencing policy across different areas of NSW.

RESULTS

CHARACTERISTICS OF THE DRINK-DRIVING OFFENDER COHORTS

In total, 18,017 persons were convicted of at least one drink-driving offence in 1997 and 20,759 persons were convicted of at least one drink-driving offence in 1999. Another 697 offenders were excluded from the 1999 cohort because they had previously appeared in 1997 for a drink-driving offence. Table 4 presents descriptive data on the characteristics of offenders included in each cohort. These data show that the 1997 offender group, that is those convicted under the old penalty system, were more likely to be male, Aboriginal,[12] reside outside of the Sydney metropolitan area, be convicted of a high-range PCA offence, have a previous conviction for a drink-driving offence (as well as for other offences) and to have concurrent offences finalised at the time of conviction in comparison to their 1999 counterparts. These differences in offender characteristics across the two cohorts underline the need to take into account *a priori* differences between the groups when examining reoffending rates.

PROBABILITY OF REAPPEARING FOR A DRINK-DRIVING OFFENCE

The first measure of offending considered in this analysis is the probability of reappearing in the Local Court for a drink-driving offence within three years of the initial drink-driving conviction. The percentage of drink-drivers appearing before the courts for a new drink-driving offence by area of residence[15] and year of conviction is shown in Table 5. The most notable feature of this table is that the vast majority of drink drivers, regardless of where they lived or when they were convicted, did not reappear for a drink-driving offence during the follow-up period. In fact, about 90 per cent of persons in all four groups had no new appearances for drink-driving within three years of the reference offence.

From Table 5 it can also be seen that there is little difference between Sydney offenders convicted in 1997 and Sydney

Table 5: Number and percentage of drink-driving offenders who reappeared for a drink-driving offence during the 3-year follow-up by offender group and area of residence

	Sydney				*Non-Sydney*			
	1997		*1999*		*1997*		*1999*	
New PCA appearance	***No.***	***%***	***No.***	***%***	***No.***	***%***	***No.***	***%***
No	7,831	90.9	10,062	91.0	7,576	89.3	7,929	89.8
Yes	783	9.1	992	9.0	904	10.7	902	10.2
Total	**8,614**	**100.0**	**11,054**	**100.0**	**8,480**	**100.0**	**8,831**	**100.0**

offenders convicted in 1999, in terms of the percentage who reappeared for a drink-driving offence within three years of conviction. The difference between 1997 and 1999 in the proportion reappearing, was slightly greater for offenders residing elsewhere in NSW but statistical tests showed this to be non-significant.[16] However, as described previously, the differences in offender characteristics apparent between the two offender cohorts mean that a direct comparison of these percentages could be biased. Thus logistic regression techniques were applied to compare adjusted differences in reoffending rates across groups.

The main effects model from the logistic regression analysis is shown in Table 6. It shows that offender group, area of residence, gender, Aboriginality, age, prior convictions for non drink-driving offences[17] and concurrent offences are predictive of reappearing for a drink-driving offence within the three-year follow-up period. The type of drink-driving offence (high-range v. other) and prior convictions for a drink-driving offence are not independently predictive of reappearing and therefore these variables were excluded from the final model.

Table 6: Odds ratios for risk of appearing for a new drink-driving offence – Main effects model

		95% Confidence Intervals		
Variable	***Odds ratio***	***lower***	***upper***	***p***
Offender group				
1999 v. 1997	0.88	0.82	0.94	< 0.001
Area of residence				
Non-Sydney residence v. Sydney	1.14	1.06	1.22	< 0.001
Gender				
Female v. male	0.75	0.67	0.84	< 0.001
Aboriginality				
Aboriginal v. non-Aboriginal	1.31	1.16	1.48	< 0.001
Age				
25-29 v. <25	0.76	0.68	0.84	< 0.001
30-34 v. <25	0.81	0.73	0.91	< 0.001
35-40 v. <25	0.77	0.69	0.87	< 0.001
40-49 v. <25	0.75	0.67	0.84	< 0.001
50+ v. <25	0.50	0.43	0.58	< 0.001
Convictions for any other offence in previous 2 yrs				
1 (other) prior v. none	1.46	1.32	1.62	< 0.001
2 (other) priors v. none	1.61	1.35	1.91	< 0.001
3+ (other) priors v. none	1.53	1.21	1.93	< 0.001
Concurrent offences				
1 v. none	1.13	1.03	1.25	0.012
2+ v. none	1.22	1.09	1.36	< 0.001

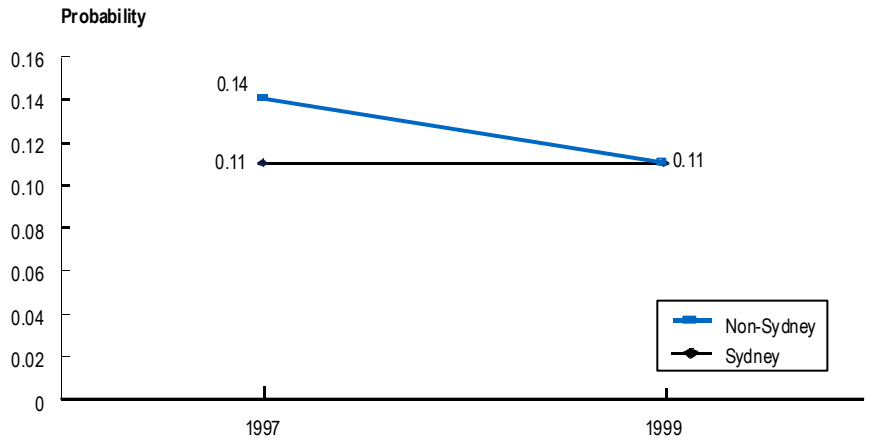
When an interaction term was included in the logistic regression model, it was found that, controlling for other confounding variables, there is a significant interaction between offender group and area of residence (p=0.037). Table 7 shows the odds ratios for this interaction effect adjusted for the covariates presented in Table 6. For offenders residing in the Sydney metropolitan area there is no significant difference in the odds of reappearing for a new drink-driving offence when comparing drink-drivers convicted in 1997 with those convicted in 1999. However, the odds of reappearing do decrease for the non-Sydney drink-drivers who received the more severe penalties. The odds for non-Sydney drink-drivers convicted in 1997 were 23 per cent higher than Sydney drink-drivers convicted in the same year, but by 1999, non-Sydney drink-drivers had the same odds of reappearing as the Sydney drink-drivers convicted in 1997.

These differences across offender cohorts can be more clearly understood

Table 7: Adjusted odds ratios for risk of appearing for a new drink-driving offence – Interaction model

		95% Confidence Intervals	
Variable	*Odds ratio*	*lower*	*upper*
Sydney 1999 v. Sydney 1997	0.95	0.86	1.04
Non-Sydney 1997 v. Sydney 1997	1.23	1.11	1.37
Non-Sydney 1999 v. Sydney 1997	1.00	0.91	1.11

Figure 1: Probability of reappearing for a new drink-driving offence by offender residence and year of conviction; male, non-Aboriginal, aged<25, with no prior or concurrent offences



by comparing the probability of reappearing for a new drink-driving offence. Odds ratios are not a direct measure of relative risk. In order to calculate the impact of the penalty change on the likelihood of reoffending it is necessary to specify a base case for comparison. The base case used here is that of a male, non-Aboriginal offender who is aged less than 25 years and has no prior convictions or concurrent offences. Figure 1 displays the probability of reappearing before the court for a new drink-driving offence, by area of residence and year of conviction, for this set of offender characteristics. As can be seen from this figure, the probability of a young, male, non-Aboriginal first offender from outside of the Sydney metropolitan area reappearing for a new drink-driving offence is three percentage points lower after the penalty increase than before (14% in 1997 v. 11% in 1999). In other words there was a reduction of 21 per cent in the probability of reappearing for a drink-driving offence after the statutory penalties were increased.

TIME TO FIRST REAPPEARANCE FOR DRINK-DRIVING

Time to first reappearance for a drink-driving offence is the second measure of reoffending used in this analysis. Survival time, for non-recidivists, is calculated as the number of days from the finalisation date of the reference drink-driving offence until the cut-off date specified for the relevant offender groups (i.e. 31st December 2000 for the 1997 cohort and 31st December 2002 for the 1999 cohort). In the case of recidivists, survival time is the number of days from the finalisation date of the reference drink-driving offence until court finalisation of the new drink-driving offence. Calculating survival time in this way gives rise to the following mean times[18] to first offence for Sydney and non-Sydney drink-drivers:

- Sydney drink-drivers convicted in 1997: 1,370 days
- Sydney drink-drivers convicted in 1999: 1,370 days
- Non-Sydney drink-drivers convicted in 1997: 1,357 days
- Non-Sydney drink-drivers convicted in 1999: 1,361 days

Log-rank tests of equality for the survival functions of the two offender cohorts (i.e. 1997 and 1999) showed no significant differences in the time to first drink-driving reappearance for both drink-drivers residing in the Sydney metropolitan area and offenders residing elsewhere in NSW.[19]

At this point, other explanatory variables related to offending have not been controlled for. In order to take account of *a priori* differences between offender groups, a Cox proportional hazards model was used to fit data on time to first drink-driving reappearance. The main effects model, presented in Table 8, shows significant effects for offender group, area of residence, gender, Aboriginality, age, prior convictions for a non drink-driving offence, prior convictions for a drink-driving offence and concurrent offences. Current conviction for a high-range PCA offence was not significant and was therefore excluded from the final model.

Inclusion of an interaction term in the proportional hazards model revealed evidence of a significant interaction effect between offender group and area of residence (p=0.011). Table 9 shows the hazard ratios for this interaction effect after adjusting for the covariates presented in Table 8. These hazard ratios indicate that, controlling for other confounding variables, non-Sydney drink-drivers had a decreased risk of reappearing for a new drink-driving offence after the penalties were increased. Non-Sydney offenders who were convicted in 1997 had a reappearance rate that was 21 per cent higher than Sydney drink-drivers

convicted in the same year. However, there was no significant difference between non-Sydney drink-drivers convicted in 1999 and Sydney drink-drivers convicted in 1997. The reappearance rate of Sydney offenders did not differ significantly across offender cohorts.

Figures 2 and 3 display the survival curves, adjusted for the explanatory variables included in the Cox regression model, for Sydney and non-Sydney offenders, respectively.[20] To calculate the relevant survival functions for each group, once again we use as a base case a male, non-Aboriginal drink-driver aged less than 25 years who has no prior convictions and no concurrent offences. As can be seen from these figures, offenders who reside outside of the Sydney metropolitan area and who were convicted of drink-driving in 1999 generally remained offence-free for longer than non-Sydney drink-drivers convicted of an offence in 1997. In contrast, there was almost no difference in the time to first new drink-driving offence for Sydney drink-drivers convicted after the penalties were raised compared to those convicted prior to the legislative amendments.

DISCUSSION

In 1998 the NSW State Government raised statutory penalties for all drink-driving offences in an attempt to deter drink-drivers and improve road safety. The current study provides some evidence of a beneficial effect of this sentencing policy on drink-driving recidivism. Non-Sydney drink-drivers sentenced before the statutory penalties were increased, had higher odds of reappearing for a new offence, and reoffended sooner, than non-Sydney drink-drivers sentenced after the penalties were raised. But this effect was not apparent for Sydney drink-drivers.

Prima facie these results suggest that harsher penalties decrease rates of drink-driving reoffending, for offenders in country and regional areas. However, three other explanations for this effect need to be discounted before such a conclusion can be reached.

The first of these is changes to drink-driving enforcement practice during the follow-up period. If the perceived risk of apprehension was greater after the penalties were increased then this could account for the observed reduction in recidivism. Examining the number of breath tests conducted by police at and around the time of the penalty changes did show an increase in testing for the later years of the study period (i.e. 2001 and 2002). However, the overall number of breath tests in the first year of

Table 8: Hazard ratios for time to new appearance for a drink-driving offence – Main effects model

		95% Confidence Intervals		
Variable	*Hazard ratio*	*lower*	*upper*	*p*
Offender group				
1999 v. 1997	0.90	0.85	0.96	0.001
Area of residence				
Non-Sydney residence v. Sydney	1.11	1.05	1.19	< 0.001
Gender				
Female v. male	0.73	0.66	0.81	< 0.001
Aboriginality				
Aboriginal v. non-Aboriginal	1.25	1.12	1.39	< 0.001
Age				
25-29 v. <25	0.78	0.71	0.85	< 0.001
30-34 v. <25	0.81	0.73	0.89	< 0.001
35-40 v. <25	0.77	0.69	0.85	< 0.001
40-49 v. <25	0.77	0.70	0.84	< 0.001
50+ v. <25	0.51	0.44	0.58	< 0.001
PCA convictions in previous 2 yrs				
Prior PCA v. none	1.15	1.01	1.32	0.032
Convictions for any other offence in previous 2 yrs				
1 (other) prior v. none	1.38	1.27	1.51	< 0.001
2 (other) priors v. none	1.54	1.33	1.78	< 0.001
3+ (other) priors v. none	1.42	1.16	1.73	< 0.001
Concurrent offences				
1 v. none	1.10	1.01	1.20	0.026
2+ v. none	1.20	1.09	1.32	< 0.001

Table 9: Adjusted hazard ratios for time to new appearance for a drink-driving offence – Interaction model

		95% Confidence Intervals	
Variable	*Hazard ratio*	*lower*	*upper*
Sydney 1999 v. Sydney 1997	0.98	0.90	1.07
Non-Sydney 1997 v. Sydney 1997	1.21	1.11	1.33
Non-Sydney 1999 v. Sydney 1997	1.01	0.93	1.11

Figure 2: Time to new appearance, Sydney drink-drivers

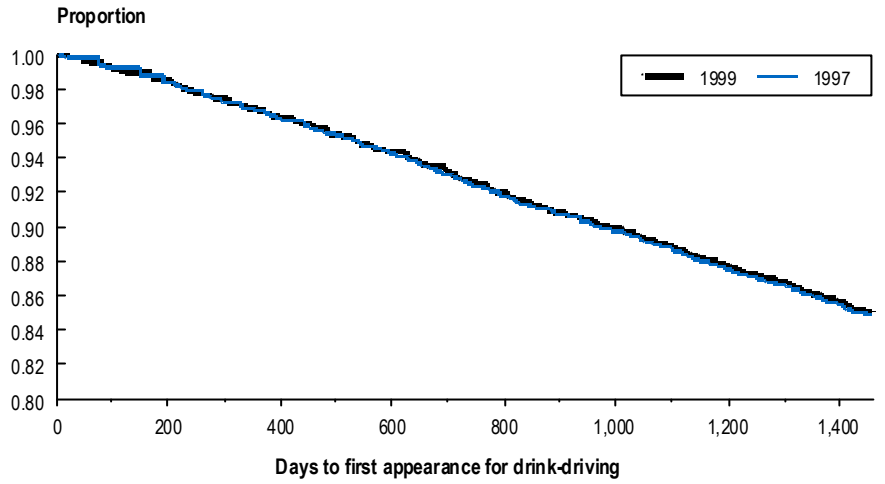
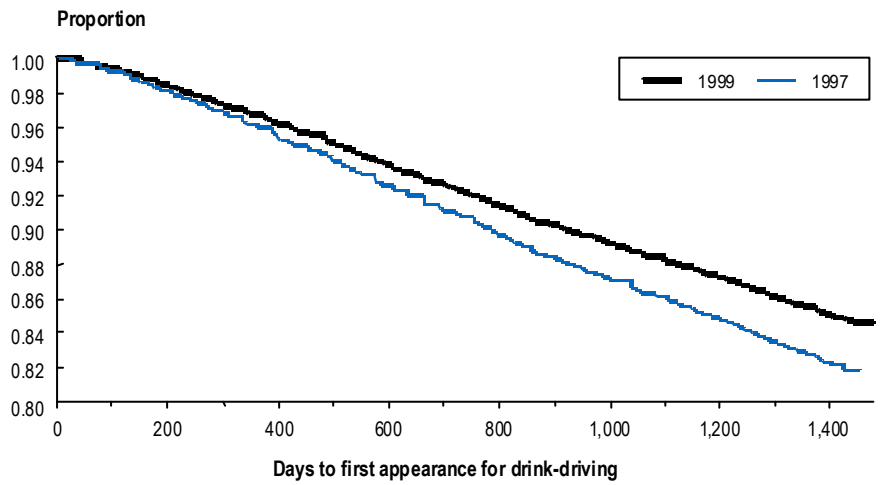


Figure 3: Time to new appearance, non-Sydney drink-drivers



follow-up for the 1999 cohort was still at a slightly lower level in comparison to the first year of follow-up for the 1997 cohort (1,961,448 v. 2,077,334 tests). Restricting the outcome used in the logistic regression analysis to any reappearance within the first 12 months after conviction (instead of 3 years) resulted in the same conclusion that non-Sydney drink-drivers from the 1999 cohort had reduced odds of reoffending. The total number of drink-driving charges recorded by NSW police also jumped up after the penalties were increased in 1998. However, this increase was more apparent in the Sydney area, where there was no evidence for a reduction in drink-driving recidivism.

A second possible explanation for the current findings is that the reduction in reoffending observed for drink-driving offences simply reflects a secular downward trend in all offending rather than a specific deterrent effect created by the penalty increase. In order to investigate this possibility, additional logistic regression and survival analyses were conducted for offenders convicted of a property or violence offence in 1997 and 1999.[21] For violent offenders convicted in 1999 compared to those convicted in 1997, there was a significant reduction in the odds of reappearing for a new offence within three years of conviction, as well as a significant increase in the time to reoffend. However, unlike drink-driving offences this reduction in reoffending did not vary by an offender's area of residence. No significant differences in reoffending across offender cohorts were apparent for persons convicted of property offences.

Finally it could be argued that the observed increase in time to reoffend for the 1999 offender cohort stemmed, not from a deterrent effect, but rather from an incapacitation effect. That is, drink-drivers convicted in 1999 took longer to reappear before the court for a new drink-driving offence than their 1997 counterparts because they were sentenced to longer custodial terms. However, using proportional hazard models to fit data on time to first offence *excluding* offenders who were imprisoned confirmed the significant interaction effect between year of conviction and area of residence, controlling for other explanatory variables.

The present findings lend support to one of the central tenets of deterrence theory, that is increasing the formal costs associated with an offence will reduce the rate of offending. However, when considering the importance of these findings it needs to be noted that the overall effect of the increased penalties on recidivism rates was relatively small, with the probability of a drink-driver reoffending being reduced by just three percentage points in non-Sydney locations. Given such a small effect size from what was essentially a doubling of the statutory penalties for all drink-driving offences, and keeping in mind the associated costs with administering the new penalty regime, the efficiency of this strategy in controlling crime remains questionable. In comparison, strategies

that have increased the perceived risk of apprehension, such as RBT, have had substantial and enduring influences on offending rates. For example, in NSW the introduction of RBT coincided with a 19 per cent reduction in all serious accidents, a 48 per cent reduction in fatalities and a 26 per cent decline in single-vehicle night-time accidents (Henstridge, Homel & Mackay 1997). Since road accidents are the extreme end of the drink-driving problem, the effect RBT had on the incidence of drink-driving would be even greater than these figures suggest. Focusing efforts on maintaining a high level of enforcement of drink-driving offences may therefore be a better use of resources when targeting offending of this nature.

Having said this however, the impact of the 1998 legislation could have been greater if licence disqualifications were more systematically applied for drink-driving offences. In addition to doubling the maximum penalties for all drink-driving offences the 1998 legislation also introduced mandatory minimum licence disqualifications for special- and low-range PCA offences. Minimum periods of licence disqualification already existed for all other drink-driving offence types. While the legislative amendments had the effect of increasing the average licence disqualification for drink-driving offences across the State, 20 per cent of guilty offenders still escaped licence disqualification on being found guilty of a drink-driving offence (via a s10 dismissal) despite the existence of these mandatory minima. Ensuring that almost all offenders are recipients of a licence disqualification once found guilty for a drink-driving offence could have increased the potential returns on investment that are reported here (see Moffatt, Weatherburn & Fitzgerald 2004).

Further, there is some suggestion that RBT may have less of a deterrent effect in regional or country areas than it does in major urban centres (Baum 1999). Fewer police are available to target drink-driving in country and regional locations and those that are available have to cover a much larger region than their city counterparts. These factors would reduce the perceived certainty of apprehension as people come to believe that they can elude RBT by avoiding major roads and arterials and thus diminishing the deterrent efficacy of RBT. The superior effect of raising statutory penalties found for offenders residing in non-Sydney metropolitan locations is, therefore, an important outcome in terms of addressing drink-driving and related issues in country and regional areas.

While reducing recidivism is undoubtedly an important result, the primary goal of drink-driving countermeasures is to lessen the number of people being injured and killed on our roads. Further research examining road accident rates in NSW, before and after the rise in statutory penalties, will thus provide the ultimate test as to whether the 1998 legislation has been successful in achieving its aims.

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NOTES

1 See the *NSW Traffic Amendment (Penalties and Disqualifications) Act 1998*.

2 Special-range drink-driving offences apply to Learner or P1 licence holders, drivers who have been licensed for less than three years and who are under the age of 25, bus drivers, taxi drivers, hire car drivers, heavy motor vehicle drivers and drivers of vehicles carrying dangerous goods.

3 A small minority of drink-driving offences such as occupying a seat next to a learner driver while intoxicated were not subject to the penalty changes.

4 Time to finalisation (t=0.72, df=42,519, p=0.47);

offences with a guilty plea (χ^2=123.74, df=2, p<0.001);

offences proven (χ^2=5.57, df=2, p=0.02).

5 Gaol (t=-3.43, df=737, p<0.001);

Fine (t=-57.04, df=30,279, p<0.001);

Licence Disqualification (t=-13.36, df=33,736, p<0.001).

6 Variations across localities in the average licence disqualification period were still apparent when differences in the type of drink-driving offences prosecuted in these courts (i.e. high, mid, low or special range PCA) were taken into account.

7 χ^2=8.00, df=1, p=0.005.

8 Special range PCA (χ^2=8.36, df=1, p=0.004);

Low range PCA (χ^2=13.65, df=1, p<0.001);

Mid range PCA (χ^2=3.45, df=1, p=0.063);

High range PCA (χ^2=1.04, df=1, p=0.307).

9 Prescribed Concentration of Alcohol (PCA) is the offence category for drink-driving in NSW.

10 For offenders who were convicted of more than one offence in the year of interest the first PCA conviction was designated to be the reference offence. These data were drawn from the NSW Bureau of Crime Statistics and Research Reoffending Database.

11 A limitation of recorded crime data is that it captures only offences that come to the attention of police and therefore, may underestimate the 'true' rate of offending. However, the current study is

investigating differences in the pattern of reoffending across the two offender cohorts. Therefore an estimate of the actual number of new offences committed by each offender is not necessary.

12 Care should be taken when comparing Aboriginality across cohorts since a greater proportion of offenders convicted in 1997 had missing information on this variable.

13 Gender (χ^2=8.95, *df*=1);
Aboriginality (χ^2=45.25, *df*=1);
Age (χ^2=4.10, *df*=5);
Area of residence (χ^2=117.85, *df*=2);
Offence type (χ^2=95.26, *df*=1);
PCA convictions in previous 2yrs (χ^2=118.78, *df*=2);
Convictions for any other offence in previous 2yrs (χ^2=23.70, *df*=3);
Concurrent offences (χ^2=56.117, *df*=2).

14 This category includes offenders who, at the time of conviction, were living interstate (92.5%), in a State institution (2.7%), overseas (1.3%) or who had no fixed abode (1.3%). It also included a small number of offenders for whom there was no information available on the area of residence (2.1%).

15 Persons residing interstate, in State institutions, overseas or who had no fixed abode were excluded.

16 Sydney offenders (χ^2=0.079, *df*=1, *p*=0.783);
Non-Sydney offenders (χ^2=0.922, *df*=1, *p*=0.345).

17 This variable excluded prior convictions for a PCA offence to avoid multicollinearity problems.

18 Median survival times could not be calculated because more than 50 per cent of offenders in each group had not reappeared for a drink-driving offence by the end of the follow-up period.

19 Sydney drink-drivers (log-rank: *p*=0.744);
Non-Sydney drink-drivers (log-rank: *p*=0.477).

20 The adjusted survival curves were estimated separately for Sydney and non-Sydney offenders.

21 Comparisons of reoffending rates for driving offenders could not be undertaken since statutory penalties for driving offences were increased at the same time as drink-driving penalties. Property and violence offences were chosen as the comparison since these offence types are less likely to be influenced by police practice. For practical reasons, offenders who appeared before the Local Courts on every third day, and were convicted of a property or violence offence, were considered here.

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APPENDIX

Table A1: Current penalties applicable to drink-driving offences in NSW*

PCA offence	*Penalties*	*First offence*	*Second and subsequent offences*
Special-range PCA (BAC .02 to < .05)	Maximum fine	$1,100	$2,200
	Licence Disqualification		
	- minimum	3 months	6 months
	- maximum	6 months	Unlimited
	- automatic**	6 months	12 months
Low-range PCA (BAC .05 to < .08)	Maximum fine	$1,100	$2,200
	Licence Disqualification		
	- minimum	3 months	6 months
	- maximum	6 months	Unlimited
	- automatic**	6 months	12 months
Mid-range PCA (BAC .08 to < .15)	Maximum fine	$2,200	$3,300
	Maximum gaol term	9 months	12 months
	Licence Disqualification		
	- minimum	6 months	12 months
	- maximum	Unlimited	Unlimited
	- automatic**	12 months	3 years
	Immediate suspension***	Yes	Yes
High-range PCA (BAC .15 & above)	Maximum fine	$3,300	$5,500
	Maximum gaol term	18 months	2 years
	Licence Disqualification		
	- minimum	12 months	2 years
	- maximum	Unlimited	Unlimited
	- automatic**	3 years	5 years
	Immediate suspension***	Yes	Yes

** Adapted from 'Drink-driving: Problem Definition and Countermeasure Summary', RTA, NSW, 2000.*

*** 'Automatic' is the disqualification period that applies in the absence of a specific court order*

**** Suspension of licence within 48 hours of being charged for this offence and until the charge is determined by the court*

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