



The effects of licence disqualification on drink-drivers: Is it the same for everyone?



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ABSTRACT

Drink-driving remains a major road safety concern that creates a significant social burden. Licence disqualification continues to play a key role in drink driving deterrence and sanctions together with police enforcement to address the problem in most motorised countries. However, on-going questions remain regarding the differing effect of licence disqualification periods between first time and repeat offenders, and between other sub-groups of offenders. As a result, this study aimed to determine whether: (a) differences exist in re-offence rates of convicted drink-drivers between: the period between committing the drink-driving offence and licence disqualification (pre-licence disqualification), during the period of licence disqualification, and after being re-licensed (post-licence restoration); and (b) differential effects of offence rates are evident based on Blood Alcohol Content (BAC), gender, age, repeat offender status and crash involvement at the time of offence. The sample consisted of 29,204 drink-driving offenders detected in Victoria, Australia between 1 January 1996 and 30 September 2002. The analysis indicated that licence disqualifications were effective as drink-driving offenders had a significantly lower rate of offending (both drink-driving and other traffic offences) during licence disqualifications compared to pre-licence disqualification and post-licence restoration periods. The influence of licence disqualification appeared to extend beyond the disqualification period, as offence rates were lower during post-licence restoration than during pre-licence disqualification. Interestingly, the highest rate of offending (both for drink-driving and other traffic offences) was during the pre-licence disqualification period, which suggests offenders are particularly vulnerable to drink and drive while waiting to be sanctioned. A consistent pattern of results was evident across genders and age groups. Additionally, those who were involved in a crash at the same time as their index offence had lower offence rates (compared to those who were not involved in a crash) for all periods, although for general traffic offences, the offence rate was highest in the post-licence restoration period for those who had a crash at index offence. This indicates that being involved in a crash may deter these offenders, at least in the short-term. The implications of the results for managing both first time and repeat offenders are discussed.

1. Introduction

Drink-driving continues to be a serious and persistent problem in all motorised jurisdictions, as alcohol-related crashes result in substantial fatalities, injuries and property damage. Alcohol-related crashes are one of the leading causes of death on the roads, for example in Victoria, Australia 32% of driver fatalities between 2008 and 2011 had a Blood Alcohol Concentration (BAC) over zero. In fact, 28% of driver fatalities had an illegal BAC ($\geq .05$) and 10% had a BAC over .2. Nearly 23% of motorcyclist fatalities had a BAC over zero (18% of motorcyclist fatalities had an illegal BAC ($\geq .05$) and 4% had a BAC over .2)

(Coroners Prevention Unit, 2013). The legal BAC limit in Victoria is less than .05. Of particular concern is the proportion of repeat drink-driving offenders, for example within Victoria 30% of detected drink-drivers had a previous drink-drive conviction (Boorman, 2012). In regards to crashes, research has also demonstrated that repeat offenders are disproportionately represented in crash statistics (Beirness et al., 1997; Brewer et al., 1994).

The gravity of the problem is reflected in the enormous amount of literature that has focused on the personal and economic cost of drink-driving, as well as the development and implementation of various countermeasures to reduce the prevalence of the offending behaviour

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(Beirness et al., 1997). Countermeasures to address drink-driving vary across different jurisdictions, although licence disqualification has historically formed the foundation of many legislative responses to such offending behaviours. The application of licensing sanctions has consistently proven an effective general and specific deterrent (Peck, 1991; Ross, 1991), although questions remain as to whether the sanction improves general driving behaviour for offenders post relicensing. *General* and *specific* deterrence stem from the Classical Deterrence Doctrine, which remains the mostly widely cited model for the study of sanctions effect(s) within road safety (Freeman et al., 2015). *Specific deterrence* is the process whereby an individual who has been apprehended and punished for a criminal act refrains from further offending behaviour for fear of incurring additional punishment (Homel, 1988). This phenomenon will remain the primary focus of the current study, in particular, the effect of licence disqualification.

While there has been considerable focus on the impact of sanctions (Wagenaar, & Maldonado-Molina, 2007), there has been limited consideration as to whether apprehended drink-drivers re-offend during the period of time between apprehension and application of sanction, despite waitlisting times to appear in court often being long (e.g. six to twelve months on average). However, it is noted that some preliminary research has focused on the positive impact of changes to administrative suspension laws that has resulted in a reduction in the penalty application timeframe (McArthur, and Kraus, 1999; Voas et al., 2000). What is known is that drink-drivers are not a homogenous group (Nochajski and Wieczorek, 2000), as research has demonstrated that first time and repeat offenders often differ in both characteristics and treatment needs (Stewart et al., 2004). These two groups display a tendency to respond differently to the application of sanctions (Ferguson et al., 1999; Freeman, 2004), in particular, Northern American research has demonstrated that the application of licence sanctions on repeat offenders (in isolation) is relatively ineffective (Beirness et al., 1997; Coben and Larkin, 1999).

An important consideration for the current study was to not only identify the effectiveness of licence disqualification, but also to assess the impact of this approach on different groups of offenders. Currently, questions also remain regarding the impact of licence disqualification periods on gender, age and BAC level at time of apprehension. That is, whether motorists respond differently to the sanction depending on their gender, age and level of alcohol consumption. Therefore, the project focuses on drink-driving outcome data and also considers the general demographics of the population (e.g., age, sex, drink-driving history). Without such a comprehensive investigation, a deeper understanding into the specific impact of licence sanction on re-offence rates cannot be achieved. This project considers all facets in order to maximise the potential to obtain large safety gains through the ongoing sanctioning of drink-drivers.

The aims of this study were to determine whether:

- drink-drivers differ in re-offence rates during the licence period between offence incidence and licence disqualification (pre-licence disqualification), during the period of licence disqualification, and after being re-licensed (post-licence restoration); and
- effects of licence disqualification on offence rates are differential based on BAC, gender, age, repeat offender status and crash involvement at the time of offence.

2. Method

Drivers and riders convicted of a drink-driving offences committed between 1 January 1996 and 30 September 2002 (inclusive) were considered eligible persons for analysis (N = 29,204). The time period was determined as part of a larger project to coincide with a period prior to alcohol ignition interlocks coming into effect. This was so that the unique effect of licence disqualification (without the influence of interlocks) could be assessed. Data files relating to all offences, licence

status changes, disqualifications from driving, licence conditions, and driver and rider demographics were provided from the VicRoads Driver Licensing System (DLS).

For each offender, the index drink-driving offence between 1 January 1996 and 30 September 2002 (the first drink-driving offence recorded) was identified. Offence rates were calculated for the period between the index offence and the licence disqualification (pre-licence disqualification period), the licence disqualification period, and the post-licence restoration period. The rates of offences (drink-driving and other traffic offences) were calculated per thousand person-years for all the licence/sanction periods. This approach was based on previous research by Siskind (1996) to account for the different length of disqualification periods for offenders (i.e. as a form of exposure control). Other offences included speeding, unlicensed driving, using a mobile phone while driving, violations of road rules and red-lighting running. In order to test for statistical significant differences in these rates across the different licence/sanction periods, rate ratios were calculated separately for drink-driving and general traffic offence rates for:

- Licence disqualification versus pre-licence disqualification;
- Licence disqualification versus post-licence restoration; and
- Post-licence restoration versus pre-licence disqualification.

In order to determine the statistical significance of the rate ratios, confidence intervals for all rate ratios were calculated as follows:

$$95\% \text{ Lower confidence level} = \text{Exp}(\ln(\text{Rate Ratio}) - 1.96 \times SE)$$

$$95\% \text{ Upper confidence level} = \text{Exp}(\ln(\text{Rate Ratio}) + 1.96 \times SE)$$

$$\text{Where: } SE = \sqrt{\left(\frac{1}{X_1} + \frac{1}{X_2}\right)}$$

Where: X_1 = Number of offences in period 1 and X_2 = Number of offences in period 2.

Statistical significance was determined by the confidence interval not including 1.

Rate ratios were calculated and compared for each period by index offence BAC level category (Low-range – between .001 and .070; Mid-range – between .071 and .149; High-range – .150 and above), gender, age group (16–24, 25–49, 50+), repeat offender status (at index) and involvement in a crash at index offence.

The weighted mean of the rate ratios across the strata (e.g., male versus female) was calculated using the Cochran-Mantel-Haenzel for incidence rates. The rate ratios for each variable stratum were then compared to the Cochran-Mantel-Haenzel rate ratio using a Chi-square test for homogeneity. The formula is as follows:

$$\frac{\sum a_i(PY_{oi})/PY_i}{\sum c_i(PY_{ei})/PY_i}$$

Where: a_i is the number of offences/crashes for period 1 and c_i is the number of offences/crashes in period 2, PY_{oi} and PY_{ei} are the person-years in each period and PY_i is the total person-years for the stratum.

Then this average (pooled) rate ratio was used to calculate a Chi-square test for homogeneity to determine if the rate ratios differ across strata. The formula for this was as follows:

$$\chi^2 = \sum \frac{(R_i - \hat{R})^2}{V_i}$$

Where R_i = stratum specific rate ratio; \hat{R} = estimated pooled rate ratio; and V_i = the variance ($V_i = \sum \frac{1}{x_i}$) with x_i = number of offences in the stratum. The Chi-square was then assessed at a significance level of .05.

3. Results

The characteristics of the drink-driving offenders in the licence period are outlined in Table 1. The majority of offenders were male.

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