

The incidence and characteristics of illicit drug related driver fatalities in Western Australia, 2000-2012

Peter G. Palamara

Curtin-Monash Accident Research Centre, Curtin University, Perth, Western Australia

Abstract

Background

Evidence continues to accumulate of the impairing nature of illicit drugs on driving and the prevalence of use among crash and non-crash involved drivers. The prevalence of illicit substances among drivers varies with the type of substance and whether the driver was involved in a crash. For example, illicit substances of all types have been detected in up to 33% of fatally injured drivers with cannabis being the most frequently detected substance (Beasley, Beirness & Porath-Waller, 2011). Among non-crash involved drivers, between 4%-18% self-report having driven after using illicit drugs (AIHW, 2011), while up to 3.5% of drivers subject to a roadside oral fluids test in one Australian state have tested positive (Davey, Davies, French, Williams & Lang, 2005). Research has also identified that certain drivers have a higher risk of illicit drug-driving, including males (e.g., Blencowe, Pehrsson, Mykkanen, Gunar & Lillsunde, 2012), younger age persons (e.g., Clarke, Ward, Bartle & Truman, 2010) and those that engage in other on-road risk behaviours such as failing to wear a seat-belt (e.g., Beasley et al., 2011), drink-driving (Ashbridge, Poulin & Donato, 2005), and unlicensed driving (e.g., Boorman & Owens, 2009). Annual reporting of illicit drug driving in Western Australia (which commenced in 2008) is limited to fatally injured drivers and general descriptors such as the type of substance, age and gender of driver, road user status, and day of week. Unfortunately the reports fail to provide a detailed understanding of the trend and pattern of illicit drug involvement over time and associated driver and crash risk factors. This paper reports on the selected findings of a recent in-depth investigation of illicit drug-driving in Western Australia during the period 2000-2012. The findings of two of the study's objectives to be considered in this presentation are:

- To document the incidence, trend and characteristics of illicit drug related motor vehicle driver and motorcycle rider fatalities, and,
- The multivariate modelling of driver/rider and crash risk factors for an illicit drug driver/rider fatality.

Method

WA Police crash records of drivers and motorcycle riders fatally injured on Western Australia roads 2000-2012 were linked with WA ChemCentre toxicology records to identify the presence and nature of illicit drugs, alcohol and other drugs among drivers/riders. A total of n=1,375 linked records were extracted for analysis, representing approximately 90% of the n=1,523 motor vehicle drivers and motor cycle riders reportedly killed during the period on Western Australian roads. Univariate analyses were undertaken of all crash, driver, and drug variables. The main outcome variables were the binary classification of the fatality as illicit drug related and the annual rate (per 100,000 motor vehicle driver licences issued) of illicit drug related fatalities. An illicit drug-related fatality was defined as one where toxicology records for the fatally injured driver/rider confirmed the presence of one of the three illicit drugs prescribed in Section 64AC of the WA Road Traffic Act 2000 - Cannabis (showing as THC), methylamphetamine, MDMA (ecstasy) - or any other substance the ChemCentre subsequently advised to be 'illegal' or prohibited. Multivariate binary

logistic regression was also undertaken to model the risk factors for fatally injured drivers who tested positive for an illicit drug.

Results

Approximately 23% (n=312) of fatally injured drivers/riders tested positive for one or more illicit drugs during the period 2000-2012 at a rate of 22.46 per 100,000 licensed motorcar drivers/riders. The annual illicit drug related fatality rate per 100,000 licensed drivers (Figure 1) did not significantly vary over the period 2000-2012 ($F(1,11)=0.54$, $p=.477$; unstandardized slope -0.025 ; $t=-.736$, $p=0.477$) though there is some evidence of a general decline in the rate post 2007.

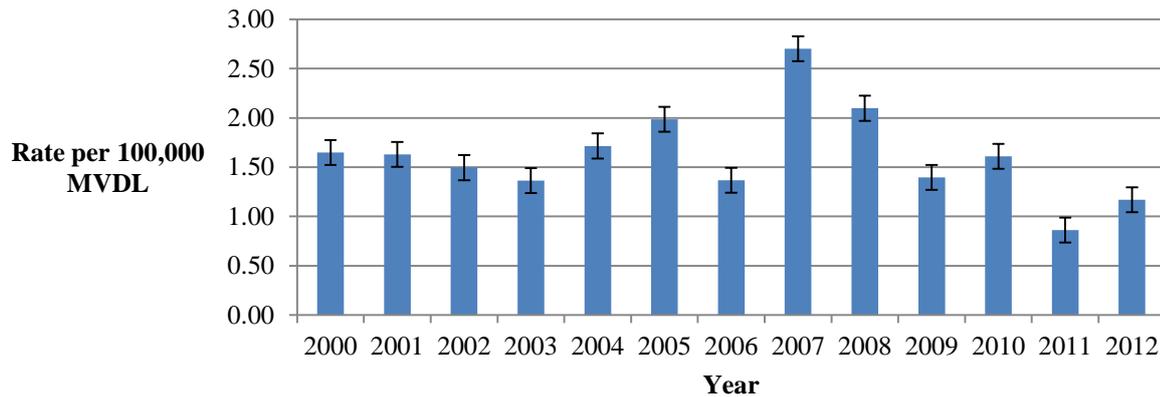


Figure 1. Annual rate of detection of an illicit drug among fatally injured drivers/riders per 100,000 Motor Vehicle Driver Licences issued; Western Australia 2000-2012

A total of n=383 positive tests for illicit substances were recorded for the n=312 illicit drug related driver/rider fatalities. Approximately 62% of driver/riders who tested positive did so for THC (cannabis) alone. The next most common detections were methylamphetamine alone (14.7%), and THC and methylamphetamine in combination (13.6%). Approximately 6% of drivers/riders who tested positive did so for MDMA.

Univariate analyses revealed statistically significant variation in the proportion of fatality injured drivers/riders testing positive for illicit drugs for driver gender and age; driver licence status, Blood Alcohol Concentration level and the presence of selected pharmaceuticals; region and police district of crash, and type and time of day of crash. Multiple logistic regression using the preceding variables returned significantly greater adjusted odds of testing positive for an illicit drug when the fatally injured driver/rider was male (OR=1.56), under 40 years of age (OR=4.13), had no authority to drive (OR=2.80), returned a BAC level between 0.050-0.079gm% (OR=2.10) and 0.080-0.140gm% (OR=2.01), and tested positive for benzodiazepine use alone (OR=2.71) and in combination with opioids (OR=3.45).

Discussion

This study has highlighted the potential contribution of illicit drugs, alone and in conjunction with alcohol and other drugs, in the fatal injury of Western Australian drivers/riders. Cannabis was confirmed as the most frequently detected illicit substance among crash involved drivers, with males, younger age persons, and those who are unlicensed and driving under the influence of alcohol as persons most at risk of illicit drug driving resulting in a fatality. There was some evidence to suggest, subject to further in-depth analysis, that the annual rate of illicit drug driving fatalities was trending downward post 2007 in association with the introduction of the roadside oral fluid testing program. These findings and those of the larger study (Palamara, Broughton &

Chambers, 2014) resulted in a number of recommendations being proposed, including an increase in the annual number of roadside oral fluid tests conducted - particularly in the non-metropolitan area of Western Australia – and a change in policing to follow up a selection of drivers who initially test positive for alcohol with an oral fluid test for illicit drugs as per the program that was recently introduced in Victoria.

References

- Ashbridge, M., Poulin, C., & Donato, A. (2005). Motor vehicle collision risk and driving under the influence of cannabis: Evidence from adolescents in Atlantic Canada. *Accident Analysis and Prevention*, 37, 1025-1034.
- Australian Institute of Health and Welfare [AIHW]. (2011b). *Drugs in Australia 2010 - Tobacco, alcohol and other drugs*. Canberra, ACT: Author.
- Beasley, E. E., Beirness, D. J., & Porath-Waller, A. J. (2011). *A comparison of drug and alcohol involved motor vehicle driver fatalities*. Ottawa, ON: Canadian Centre on Substance Abuse.
- Blencowe, T., Pehrsson, A., Mykkänen, S., Gunnar, T., & Lillsunde, P. (2012). Cannabis findings in drivers suspected of driving under the influence of drugs in Finland from 2006 to 2008. *Forensic Science International*, 217, 107-112.
- Boorman, M., & Owens, K. (2009). The Victorian legislative framework for the random testing drivers at the roadside for the presence of illicit drugs: An evaluation of the characteristics of drivers detected from 2004 to 2006. *Traffic Injury Prevention*, 10, 16-22.
- Clarke, D. D., Ward, P., Bartle, C., & Truman, W. (2010). Killer crashes: Fatal road traffic accidents in the UK. *Accident Analysis and Prevention*, 42, 764-770.
- Davey, J., Davies, A., French, N., Williams, C., & Lang, C. P. (2005). Drug driving from a user's perspective. *Drugs: Education, Prevention, and Policy*, 12, 61-70.
- Palamara, P.; Broughton, M. & Chambers, F. (2014). *Illicit drugs in driving: An investigation of fatalities and traffic offences in Western Australia*. Perth, Western Australia: Curtin-Monash Accident Research Centre. RR 13-001.