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Medicine

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Key findings

- The prevalence of drug driving among PWID remained high across 2006-2011, whilst the frequency dropped more than threefold to a median of 24 occasions in a six month period (once a week).
- There were few significant predictors of drug driving. A higher frequency of heroin use, and having completed any courses after school, were positively associated with drug driving; whilst those who had recently suffered from drug induced psychosis were less likely to have engaged in drug driving.
- The use of cannabis prior to the last drug driving occasion decreased significantly from 2007-2011, whilst in 2011 the use of heroin increased.
- There was a downward trend in the use of all pharmaceutical drugs prior to driving, with significant declines observed for morphine, methadone and subutex.
- Across 2007-2011 the majority of drug drivers continued to report that the use of drugs prior to driving had no impact upon their driving ability. Participants who had used methamphetamine prior to driving were more likely to believe that this had improved their ability to drive, whilst those who had used heroin and subutex were more likely to report that their driving ability had impaired by the use of such drugs.
- Drink driving was comparatively low among PWID, with less than 10% of recent drivers reporting that they had driven whilst over legal blood alcohol concentration limit. Younger participants, and those that were male, were more likely to have engaged in drink driving.

Driving behaviours among people who inject drugs in South Australia, 2006-2011

Introduction

Motor vehicle accidents are a major cause of morbidity and mortality around the world. Alcohol consumption has long been known to contribute to such accidents by impairing driving performance (Moskowitz et al 2000). There is also evidence that cannabis and benzodiazepines increase accident risk (Bramness et al 2010; Darke et al 2004), however the link between other pharmaceutical and illicit drugs, and impaired motor skills, is less clear. Evidence surrounding the impact of opioids and stimulants is especially ambiguous, particularly in dependent patients (Byas-Smith et al 2005; Bernard et al 2009; Fishbain et al 2003; Galski et al 2000; Silby et al 2011)

However, whilst evidence surrounding the casual relationship between driving impairment and illicit drugs is yet to be established, there is concern regarding the increasing presence of such drugs in motor vehicle accidents. International studies have reported alcohol in excess of legal limits in 10–50% of accident involved drivers, and other drugs in 5-30% of cases (Darke et al 2004). Poly drug use is frequent in such cases, with cannabis generally being the most common drug detected in accident-involved drivers, followed by benzodiazepines, cocaine, amphetamines and opioids. In Australia, drug driving appears to have become increasingly common with the 2010 National Drug Strategy Household Survey reporting that, of those who had used illicit drugs in the past 12 months, 18% had driven a vehicle whilst under the influence of such drugs (AIHW 2011).

Investigations into sub-populations of illicit drug user groups and police detainees have revealed particularly high rates of drink and drug driving or risky behaviour associated with drugs and motor vehicles (Adams et al 2008; Darke et al 2004; Donald et al 2006). However, very little information is available on drug driving within the South Australian population, with

most studies seemingly based in NSW or Victoria. The profile of illicit drug use within South Australia (SA) is quite different to other jurisdictions, with Adelaide having no street-based drug culture; as such it may be likely that South Australian users rely more heavily on cars to obtain drugs (Donald et al 2006).

With this in mind, this paper aims to examine the driving behaviours of people who inject drugs (PWID) in South Australia over a six year period, from 2006-2011. More specifically, this paper will:

1. Examine the prevalence of drink and drug driving among PWID in South Australia, from 2006-2011.
2. Determine what factors are predictive of drink and drug driving among this population.
3. Analyse perceptions of impairment among drug drivers in South Australia, from 2007-2011.

Method

The Illicit Drug Reporting System (IDRS) is an annual monitoring system that has been conducted in every Australian capital city since 2000. It is funded by the Department of Health & Ageing, and acts as an early warning system for emerging illicit drug problems – primarily focusing on heroin, methamphetamine, cocaine and cannabis. The study uses a triangulation of three data sources including: a survey of current regular injecting drug users, a survey of key experts who work in the drug and alcohol field, and analysis of indicator data from health and law enforcement sectors. This paper will be focusing only on the South Australian data collected from interviews with PWID, across 2006-2011 (n=597).

The Injecting Drug Users Questionnaire covers a range of topics, and has traditionally included questions relating to risk behaviours such as overdose, injecting practices and sexual behaviours. In 2005, questions were included to gather information about driving risk behaviours among people who inject drugs. In 2006, this module changed slightly and has remained relatively consistent ever since. Analysis will therefore be limited to the years 2006-2011 to enable comparability.

Results

Driving remains a common practice among people who inject drugs in South Australia, with the majority of participants reporting that they had driven a vehicle in the preceding six months (see Table 1). The prevalence of driving remained relatively stable across 2006-2010, before declining significantly in 2011. Although the 58% prevalence rate reported in 2011 is the lowest in the history of the SA IDRS, it remains higher than the national prevalence of 46 percent.

Table 1: 'Recent' driving (past six months) among PWID, 2006-2011

Year	Total number of participants	Driven past six months (%)
2006	100	75
2007	100	68
2008	100	67
2009	100	73
2010	97	76
2011	100	58*

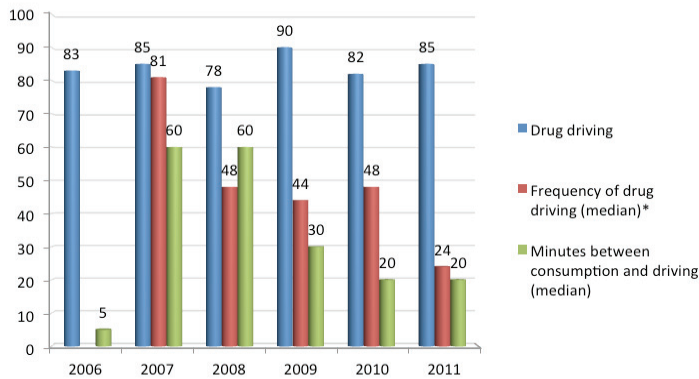
*p<0.05

Drug Driving

For the purpose of this paper, drug driving refers to operating a motor vehicle whilst under the influence of any illicit drug, and will be treated a separate issue to drink driving. With this in mind Figure 1 shows that, of those who had driven a vehicle in the preceding six months ('recent drivers'), the large majority reported that they had driven after consuming an illicit substance. However, whilst the prevalence of drug driving has remained high across 2006-2011, the frequency has decreased more than three-fold. That is, the number of times that participants had driven after consuming an illicit substance (within a six month period) dropped from a median of 81 occasions in 2007 (approx 3 times per week) to 24 occasions in 2011 (once a week).

Participants who had recently engaged in drug driving were also asked about the duration of time between consumption and operation of a motor vehicle. Despite various fluctuations over the years, participants have consistently reported driving within an hour of consuming an illicit substance (see Figure 1, range 5-60 minutes). Surprisingly, poly drug use was not particularly common in this context, with participants invariably reporting that they had only used a median of one drug prior to driving (range 1-6).

Figure 1: Drug driving among 'recent drivers', 2006-2011



*not asked in 2006

In contrast to previous research, it was found that there were few significant predictors of drug driving. Chi square analyses revealed that those who had a higher frequency of heroin use were more likely to have reported drug driving in the preceding six months ($p=0.034$), as were those who had completed any courses after leaving school ($p=0.027$). Inversely, participants who reported suffering from drug induced psychosis within the past 12 months were less likely to have driven after consuming illicit drugs ($p=0.017$).

As mentioned earlier, the level of impairment upon driving ability varies depending on the drug being consumed. As such, it is important to determine the types of drugs that are involved in drug driving episodes. Participants who had engaged in drug driving were therefore asked what drugs they had consumed prior to driving in the past six months; and from 2007 onwards they were also asked what drugs they had used prior to their *last* drug driving occasion. The results from this question will be divided into two parts: illicit drugs and illicit (i.e. un-prescribed) pharmaceuticals.

Figure 2 shows that heroin and cannabis have been the most common drugs used prior to driving, followed by the various forms of methamphetamine. This is consistent with the overall drug use patterns of the sample, and is comparable with previous studies (Darke et al 2004). The use of ecstasy, LSD and inhalants in this context was virtually negligible and have therefore not been presented.

As would be expected, the drugs used prior to the most recent drug driving occasion generally mirror the patterns observed in Figure 2. However, there are some notable differences, with a significant decline in cannabis use prior to driving being observed from 2007-2011 ($p=0.041$). In addition, the prevalence of heroin use prior to driving increased significantly in 2011 ($p=0.03$).

Figure 2: Illicit drugs involved in drug driving episodes (past 6 months), 2006-2011

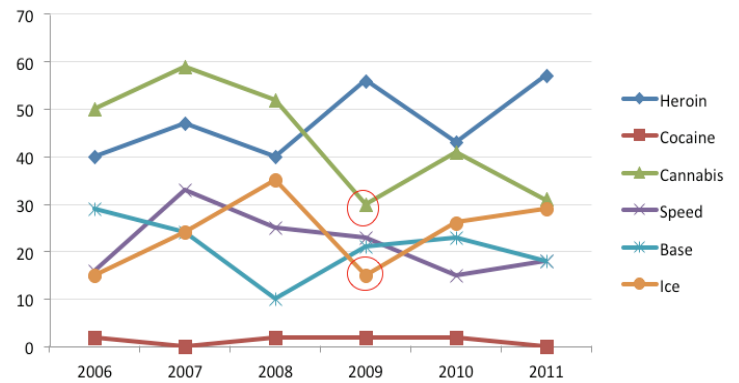
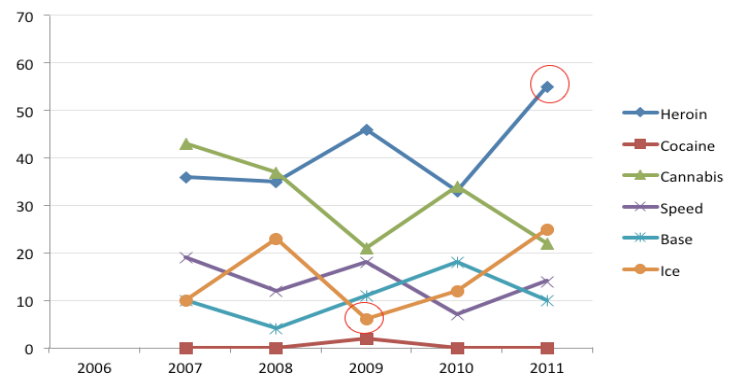
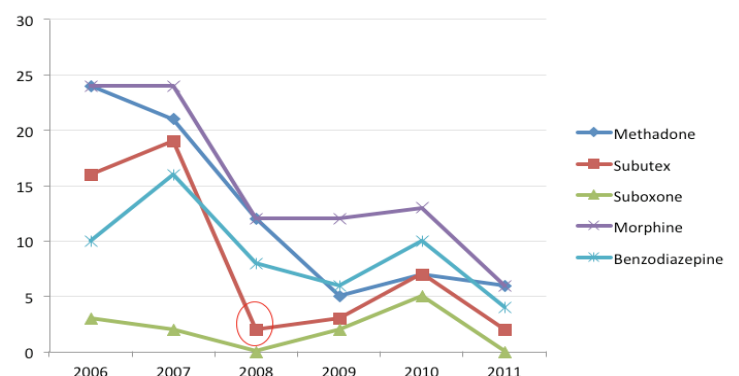


Figure 3: Illicit drugs involved in most recent drug driving episode, 2007-2011



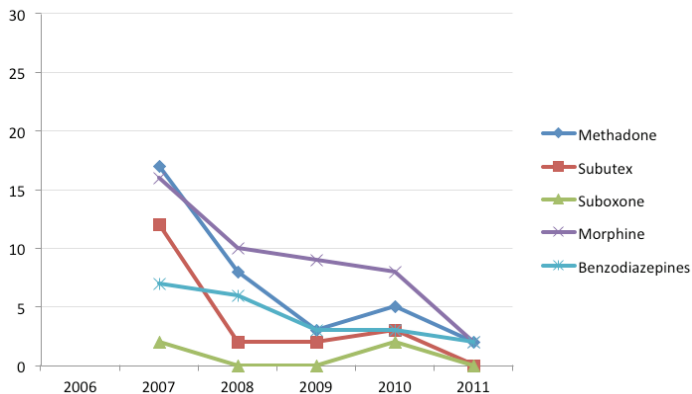
In relation to pharmaceutical drugs it appears that, despite the various fluctuations observed in Figure 4, there has been an overall downward trend for all drugs between 2006-2011. In particular, the use of morphine ($p=0.02$), methadone ($p=0.02$) and subutex ($p=0.03$) prior to driving all decreased significantly from 2006-2011; however, these figures should be viewed with caution due to the small numbers ($n<10$).

Figure 4: Pharmaceutical drugs involved in drug driving episodes (past 6 months), 2006-2011



The trends observed in Figure 5 generally mirror those observed in Figure 4. Again, there appears to have been a downward trend in the use of all pharmaceutical drugs (prior to the most recent drug driving occasion), with significant decreases being observed for morphine ($p=0.04$), methadone ($p=0.02$) and subutex ($p=0.03$). Again, due to the small numbers, these figures should be viewed with caution.

Figure 5: Pharmaceutical drugs involved in last drug driving episode, 2007-2011



Drug testing

In 2007, participants were asked if they had ever been tested for drug driving by the police roadside drug testing. This question was added after legislation to introduce driver drug testing into South Australia became operative on 1 July, 2006. A trial was established for a 12 month period and continued to be expanded in the years afterwards. This is reflected in Table 2, with the number of participants who reported being tested for drug driving steadily increasing. As the prevalence of drug testing has gone up, so too has the proportion of participants testing positive.

Table 2: Roadside drug testing among recent drivers, 2007-2011

Year	% ever random saliva tested	% positive on most recent test (of those tested)
2007	5	0
2008	14	14
2009	23	18
2010	43*	19
2011	57	30

* $p<0.05$

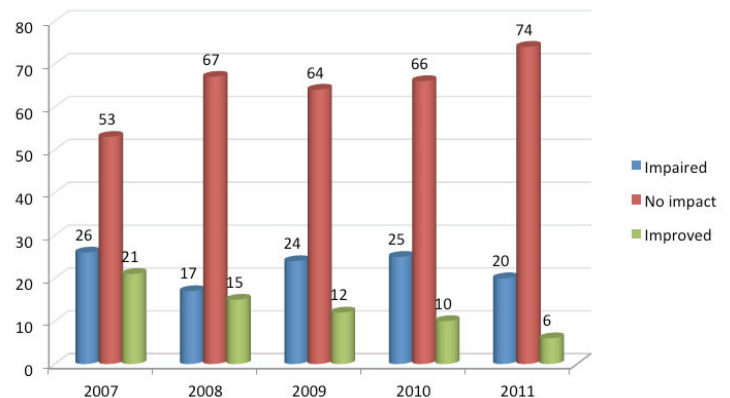
It is, of course, important to note that roadside drug testing only tests for the presence of drugs, rather than impairment. Critics have argued that the link between the 'presence'

approach and road safety is tenuous, since the detection of an illicit drug in a person's saliva does not indicate whether that person is fit to drive or not. Advocates, on the other hand, maintain that the real power of random testing is in sending the message that drug driving is dangerous (NOVA 2006).

Perceptions of impairment

Participants who had recently engaged in drug driving were asked how they thought the use of drugs had impacted upon their ability to drive. Interestingly, the majority of participants believed that their use of drugs had had no impact on their driving ability and this increased significantly from 2007-2011 ($p=0.035$). The proportion of participants who believed that their driving had been impaired by their drug use has remained relatively stable, whilst there has been a downward (although non-significant) trend in the proportion of participants who believed that the use of drugs had improved their driving ability.

Figure 6: Perceptions of impairment among recent drug drivers, 2007-2011



Previous studies have shown that perceptions about driving risk vary depending on drug type (Donald et al 2006). Table 3 shows those drugs that were significantly associated with perceptions of impairment. As can be seen, those who had used methamphetamine ($p=0.000$) prior to their most recent drug driving episode were more likely to think that this had improved their driving ability, whilst those who had used heroin ($p=0.000$) and subutex ($p=0.021$) were more likely to believe that their driving ability had been impaired by the use of such drugs. Drug drivers who had used cannabis prior to their most recent drug driving episode were less likely to think that this had had no impact upon their ability to drive.

Those who had been arrested in the preceding six months ($p=0.036$), had a mental health disorder ($p=0.037$) and who lived in unstable housing ($p=0.039$) were also significantly

more likely to believe that the use of drugs impaired their ability to drive and less likely to believe that it had no impact. Inversely, those who had completed additional courses after leaving school were significantly less likely to believe that drug use impaired their driving ability ($p=0.029$).

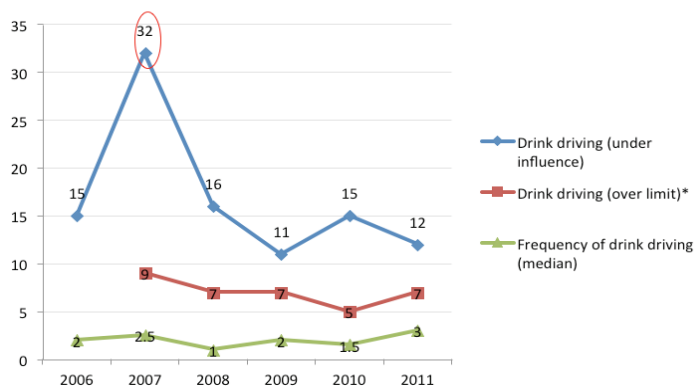
Table 3: Perceptions of impairment according to drug type

Drug used prior to most recent drug driving episode	Impaired (%)	No Impact (%)	Improved (%)
Methamphetamine:			
No	26	68	7
Yes	18	58	24
Heroin:			
No	19	60	21
Yes	28	70	2
Subutex:			
No	22	66	13
Yes	55	27	18
Cannabis:			
No	19	71	10
Yes	31	50	19

Drink driving

Comparatively speaking, the prevalence of drink driving is quite low among PWID, with less than 10% of recent drivers consistently reporting that they had driven over the legal blood alcohol concentration (BAC) limit of 0.05 g% for full licence holders and 0.00 g% for learner/probationary licence holders. The prevalence of driving under the influence of alcohol was a little higher (i.e. driving after consuming any amount of alcohol), with a significant peak occurring in 2007 ($p=0.02$). However, this had dropped by the following year and has remained relatively stable ever since. The frequency of drink driving has also remained low, ranging from a median of 1-3 occasions within a six month period.

Figure 7: Drink driving among PWID, 2006-2011



*not asked in 2006

The predictors of driving under the influence, and over the limit, of alcohol are shown in Table 4.

Table 4: Predictors of driving under the influence, and over the limit, of alcohol among PWID: 2006-2011

	Under influence		Over limit	
	No	Yes	No	Yes
Age	39	35.5*	37	28.5*
Male (%)	60	67	56	88*
Ecstasy (% past six months)	16	34**	34	42
Alcohol (% past six months)	49	99***	100	96
Buprenorphine (% past six months)	24	26	38	8*
Prescription stimulants (% past six months)	4	17***	22	13
Arrest (% past year)	28	44*	36	46
Crime (% past month)	32	45*	42	50

*** $p<0.001$ ** $p<0.01$ * $p<0.05$

As can be seen, those who reported driving under the influence of alcohol in the preceding six months were more likely to: be younger; have been arrested in the preceding 12 months; have engaged in criminal activity in the past month; and to have recently used ecstasy, alcohol or prescription stimulants. Participants who had driven over the legal BAC limit were more likely to be younger, male and less likely to have recently used buprenorphine.

Conclusion

Drug driving remains a widespread and fairly entrenched practice among people who inject drugs in Adelaide. The high prevalence of such behaviours across 2006-2011 gives cause for concern; and whilst the frequency of drug driving has decreased threefold, participants are still driving under the influence of drugs on a median of 24 occasions (once a week). However, having said that, it is important to keep in mind that the data collected from the IDRS does not give an indication of the level of intoxication at the time of driving, which can be subject to factors such as dosage, route of administration, and the onset of action and duration of effects. This, combined with the ambiguous evidence surrounding the effects of opioids and stimulants on driving ability, makes it difficult to determine the extent to which this should be viewed as a pressing public health concern.

Interestingly, there were few significant predictors of drug driving, which is at odds with previous research. Males and females were equally likely to drug drive, whilst participants who had a higher frequency of heroin use and had completed courses after school were more likely to have engaged in drug

driving. Inversely, those who had suffered from self-reported drug-induced psychosis within the preceding 12 months were less likely to drive after consuming an illicit substance.

It was also found that the use of cannabis prior to the last occasion of drug driving decreased significantly across 2007-2011, whilst in 2011 the use of heroin increased. This is particularly interesting given that cannabis still continues to be the most prevalent drug used by PWID in SA, and could be a reflection of the fact that roadside drug testing can detect cannabis, methamphetamine and MDMA, but not heroin.

The majority of PWID continue to hold the belief that the use of drugs does not impact upon their ability to drive a motor vehicle. This varies by drug type, with those who had used methamphetamine prior to their last drug driving episode more likely to believe that this had improved their ability to drive. Inversely, those who had used heroin and subutex were more likely to report that their driving had been impaired by the use of such drugs. This is largely consistent with other research that has been done in this area (Donald et al 2006).

Comparatively speaking, drink driving is low among PWID in SA, with less than one in ten participants (in each year from 2006-2011) reporting that they had driven over the legal blood alcohol concentration limit. This is somewhat surprising given the relatively high levels of alcohol use among this sample. Indeed, these figures are much lower than have been observed in other studies of drug users in SA, with Donald et al (2006) reporting that 69% of their sample had driven under the influence of alcohol; albeit within a 12 month period.

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