

The majority of internet respondents had been breath tested for alcohol in the previous 12 months and only a small proportion of those had blown over the legal BAC limit. The majority also thought it was 'somewhat likely' or 'very likely' that they would be breath tested for alcohol in the next 12 months, and roadside testing for alcohol was well supported. Most respondents agreed that drug driving was a significant road safety issue in New Zealand, though there was less support for roadside testing for drugs than there was for alcohol. This may be because respondents have very little knowledge of what roadside testing for drug impairment might involve compared to breath testing for alcohol. Education and awareness campaigns could include information about the drug testing process in order gain wider support for potential enforcement programmes. Working with the media to disseminate information about the road side drug testing programme before it begins could also be beneficial.

8. Discussion

Drug driving has been a growing concern in New Zealand culminating in the introduction of the Land Transport Amendment Bill (No.4)⁷ to parliament in 2007. The proposed legislation intends to reduce drug driving by strengthening enforcement. Much international research has demonstrated that driving under the influence of drugs is a road safety concern, however little research has been done in New Zealand to assess the level of the drug driving problem on our roads. The prevalence of drug driving in the general driver population is yet to be thoroughly investigated, and drug driving among drug user groups should also be examined. Community attitudes and knowledge around drug driving and feelings around roadside testing for drug impairment also need to be better understood. The current research aimed to begin to fill gaps in local research evidence around these issues. The review of international research literature provides insight into what is already understood about drug driving and how it might apply to the New Zealand context. Key experts working in New Zealand in industries relating to drug use, education, driving and health were interviewed to gain a 'coal face' perspective of the issue. The internet survey gathered data on drug driving attitudes and behaviours of a considerable sample of New Zealanders. Together this information can guide the development of countermeasures to reduce drug driving on New Zealand roads. This final chapter of the report will summarise key findings from these studies and their potential implications.

8.1 Limitations of current research

There are several limitations of the current research. The literature review aimed to provide an overview of what is already understood about drug driving from international research. The conclusions drawn from the literature are based on the available evidence, but should only be considered an indication of what we know so far. There are many areas of drug driving yet to be thoroughly examined, and new developments emerge as we learn more about ways of preventing drug driving. The literature review provides a good background to issues examined in key expert interviews and the internet survey, but should not be considered a complete picture of the drug driving issue.

Key experts were selected based on their involvement in organisations where drug driving might be a relevant issue. A wide variety of experts were selected and invited to be

⁷ Now known as the Land Transport Amendment Act 2009

involved, with most accepting and participating in an interview. A small number chose not to participate. The sample of key experts should not be interpreted as a representative sample of expert opinion. Likewise, key experts provided *personal and professional opinion* around the drug driving issue only, and their statements should not be considered evidence of any drug driving related issue. It would be unreasonable to use expert opinion from this research as the basis of any policy or practice around drug driving.

The results from the internet survey should also be interpreted within the context of the limitations of the survey methodology. A survey such as this is susceptible to sampling biases for several reasons. Only those who are aware of the internet survey are able to choose to participate, certain people may have had more interest or motivation to participate in the study (e.g. people who use drugs), and only people with access to the internet could complete the survey.

Like any voluntary survey study the sample was self-selecting, resulting in the over-representation of respondents from various demographic groups. Compared to the New Zealand general population, the sample was relatively well educated, well employed, with an over-representation of Pakeha, females, and city dwellers in Auckland and Wellington. Over a third of the sample (35.6%) worked in health or government departments. People who use drugs were also over-represented in the sample, however this allowed for more robust statistical analysis of drug users' driving behaviours and attitudes. The over-representation of people who use drugs means that the prevalence of drug driving within the entire sample is likely to be higher than that of the general population. For these reasons, **the internet sample should not be considered representative of the New Zealand general population, and therefore are not indicative of drug driving on New Zealand roads.**

An issue that limited the size of the internet survey sample was the length to the survey. The sample size decreased from 1450 to 1166 after screening, largely due to incomplete data. The survey took up to 20 minutes to complete, and despite being informed of the survey's length prior to starting, many participants quit mid way through the survey, likely due to the repetitive nature of questions about each substance and driving. More advanced software is available that shortens the survey by screening out unnecessary questions for each participant; however the cost was prohibitive for the current project.

Another limitation for the internet survey centers on respondents' interpretations of terms used in survey questions, such as 'under the influence' or 'drug driving'. Like much drug driving research, it was not possible to define 'under the influence' as the term depends on variables such as dose, individual factors, and time between use and driving. When the terms 'under the influence' or 'drug driving' were used in the survey it was left up to each respondent to interpret what that meant. This may have resulted in variations in responding due to different interpretations of the questions. Where possible the use of these terms were avoided and most questions asked about driving 'within three hours of use' of substances.

A final limitation of the internet survey is the different ways in which respondents were asked if they had driven under the influence of alcohol and other drugs. For alcohol, respondents were asked whether they had driven while they felt they were over the legal limit allowed to drive. For other drugs, respondents were asked whether they had driven within three hours of use. It is possible that there were qualitative differences between

these two forms of question, and reported rates of drink driving and drug driving may not be directly comparable. However, both questions were intended to tap into driving while impaired by each substance, and it is likely that respondents interpreted these questions as such with the understanding that the purpose of the survey was to examine drug driving. Further, the 'within three hours of using' criterion has been used previously, and has been established as a suitable timeframe to capture the majority of impairment for the drugs surveyed (Mallick et al., 2007). It is acknowledged that a driver might be impaired while under the legal BAC limit, however this is the limit that society has chosen as acceptable for driving, and was therefore the appropriate indicator of impairment for the current study. These differences in measurement of impairment between alcohol and other drugs should be born in mind when interpreting the results of the internet survey.

The following section summarises the key findings and their implications for the development of prevention programmes or future research. These will be presented by chapter.

8.2 Prevalence

Key findings

1. The substance most commonly driven under the influence of is cannabis:
 - Drug users were overrepresented in the internet survey sample, meaning that rates of drug driving in this study should not be generalised to the general driver population of New Zealand.
 - Nearly a quarter (24.5%) of driver respondents reported driving under the influence of cannabis in the previous 12 months
 - Driving under the influence of cannabis (24.5%) was reported more often than drink driving (21.4%) (global margin of error at 95% confidence interval was 2.9%).
 - Polydrug driving was also reported by 11.6 percent, and cannabis and alcohol combinations were most common (51.5%). Polydrug combinations always involved alcohol.
2. Driving under the influence of drugs is relatively common among drug user groups:
 - Considering the prevalence of drug driving in countries like Australia, paired with New Zealand's rates of drug use in the general population and the small amount of local evidence available, there is likely to be a small but significant number of road users driving under the influence of drugs in New Zealand
 - Alcohol users were least likely to drive under the influence (23.6%)
 - Driving under the influence of drugs was relatively common among people who use drugs in the sample, and was reported by 87.5 percent of methadone users, 70.3 percent of prescription stimulant users and 67.1

percent of cannabis users. These respondents were more likely to drive within three hours of drug use. Cannabis driving is of primary concern as there is both a high rate of use and a high rate of driving under the influence. (Small numbers of methadone and prescription stimulant users in the sample mean these prevalence rates should be interpreted with caution).

3. Drug drivers tended to be characteristically different from people who use drugs that did not drive under the influence:
 - Drug drivers tended to be male. Males were significantly more likely to drive under the influence of alcohol, cannabis, and drug combinations.
 - People who use drugs who reported driving under the influence tended to be younger than people who use drugs who did not, though the difference was only significant for alcohol. Methadone users who drove under the influence were significantly older than those who did not.
 - Drug drivers tended to use drugs more frequently than people who use drugs who did not report driving under the influence. This might be an indication that people who use drugs with dependence issues are more likely to drive after drug use.

Implications

1. Drug driving was relatively prevalent among people who use drugs in the sample, indicating drug driving is likely to be a road safety issue in New Zealand. Prevention initiatives to reduce drug driving appear to be justified and necessary.
2. More research is required to gain an accurate assessment of drug driving prevalence in New Zealand. General driver population data from random roadside testing, crash injury data and fatality data from New Zealand research will provide a more complete picture of drug driving prevalence in New Zealand.
3. Cannabis use is prevalent in the New Zealand general population (Wilkins & Sweetsur, 2008) and in the current study cannabis was the drug most commonly driven under the influence of, indicating that cannabis driving should be a priority area for both enforcement and public education, as well as treatment initiatives.
4. Driving under the influence of alcohol and other drug combinations was also relatively common and is high risk behaviour due to increased impairment. This should also be a priority area for enforcement and public education initiatives.
5. As more frequent drug use is correlated with increased likelihood of drug driving, the dependence issues of some drug drivers should be acknowledged and addressed by any future prevention initiatives.

8.3 Impairment

Key findings

1. International research has demonstrated that drugs cause driving impairment and that driving while under the influence of drugs is a threat to road safety:
 - While there is conflicting evidence around the nature and extent of the impairing effects of some drugs, there is increasing evidence to suggest that driving under the influence of drug combinations, alcohol along with cannabis, and benzodiazepines pose significant risks to road safety.
2. Drug drivers' perceptions the last time they drove under the influence were generally of minimal impairment, but varied depending on the substance used:
 - All polydrug drivers reported that their driving was 'a lot worse' the last time they drove under the influence of a drug combination.
 - Overall the majority of drug drivers perceived that their driving was not affected or only slightly worse for all the other substances.

Implications

1. Awareness of drug driving impairment for those engaged in the behaviour is low. This presents a challenge for drug driving education campaigns, as messages that are not consistent with the target audience's experiences have the potential to be dismissed by them as incorrect.
2. Further research into the experiences of drug drivers and the reasons for their perceptions of impairment could provide valuable information for use in the development of education campaigns that could be more likely to be accepted by the target audience.

8.4 Risk perception, knowledge and understanding of drug driving

Key findings

1. Attitudes toward drug driving appear to predict drug driving behaviour:
 - Previous research has found that the more harm or risk an individual perceives around drug driving the less likely they are to engage in the drug driving behaviour, and vice versa.
 - Attitudes were related to drug driving behaviour for internet survey respondents. People who use drugs who had driven under the influence of drugs perceived the risks of drug driving to be lower than drug users who had not driven under the influence.
2. All drugs were perceived to be dangerous when driving under the influence, though some were perceived to be safer than others:
 - Cannabis was perceived to be the least dangerous drug for driving under the influence, while alcohol was perceived to be most dangerous.
3. There was a general lack of knowledge around the effects of drugs on driving:

- Respondents reported knowing ‘nothing’ or ‘very little’ about the effects of most substances on driving ability.
- Substances for which respondents felt they knew the most were alcohol and cannabis. The sources of this information are likely to be different. Alcohol knowledge might be gained via road safety education campaigns, where cannabis knowledge might be gained from personal experiences and exposure to use in the community.
- With the exception of alcohol, most internet respondents reported that they ‘didn’t know’ how long a driver should wait after drug taking before ‘safe’ driving was possible.

Implications

1. The literature demonstrates that public education campaigns around drug driving should highlight the risks of apprehension over the risks to personal safety. The actual risk of apprehension also needs to increase for the education campaign to be effective. The introduction of roadside drug testing in New Zealand and the publicity around it should encourage an increase in the perceived risks of apprehension. In the current research people who use drugs were primarily influenced not to drive by their perceived driving impairment. Risk of apprehension is likely to become a more powerful deterrent as the actual risk of being caught drug driving increases.
2. Understanding the differences in perceptions of risk for people who use drugs who do and do not drive under the influence could be key to the development of messages for prevention campaigns. Further research should investigate why some people who use drugs choose to drive under the influence while others do not.
3. Driving under the influence of cannabis is again highlighted as a potential priority for prevention initiatives. While the literature shows that cannabis is an impairing substance, internet respondents perceived it to be the least dangerous drug for driving under the influence. They also reported being knowledgeable about cannabis relative to other drugs. This indicates a level of misinformation around cannabis and driving which should be targeted as a priority in any future countermeasures.

8.5 Countermeasures

Key findings

1. According to the research literature the most effective drug driving prevention initiatives include both enforcement and public education aspects:
 - Increasing the perceived risk of apprehension while simultaneously increasing the actual risk of apprehension is the most effective deterrent for drug drivers.

- New Zealand is in the process of introducing legislation that will increase the actual risk of drug driving apprehension, while the associated publicity should increase the perceived risk of apprehension for drug drivers.
 - Internet respondents who had used drugs reported that the last time they made the decision not to drive under the influence, the primary reason was that they felt their driving ability was negatively affected. Being apprehended by police was not a major concern.
2. There is a dearth of evidence around the efficacy or the SFST for drug impairment:
- Limited research evidence has reported that the SFST generates high rates of false positives for THC impairment, and is unable to identify drivers under the influence of amphetamines. However the New Zealand drug driving enforcement programme employs the added requirement of ‘good cause to suspect’ drug impairment prior to impairment testing, providing another layer protection against misidentification of impairment. Further, the addition of tests for pupil size and responsiveness in New Zealand’s CIT may improve the efficacy of the impairment test.
 - An alternative to the SFST is saliva testing, which is used extensively in Australia. Saliva testing is also an imperfect measure; it offers the advantage of greater objectivity, but cannot indicate whether a driver is impaired by a substance or not, is currently too unreliable to be employed for roadside testing, can only detect a select group of substances, and would breach the New Zealand Bill of Rights Act on the grounds of ‘unreasonable search and seizure’ and ‘unjustified detention’.
3. Internet respondents reported getting their knowledge of drug driving from a variety of sources and preferred to get future information from impersonal sources:
- The media, friends and personal experience most often provided respondents with their drug driving information in the past.
 - Respondents preferred to get future information about drugs and driving from sources that did not require person to person interaction, such as the media, the internet, or pamphlets.
4. Road side testing is seen as an effective method of improving road safety:
- The profile of breath alcohol testing was relatively high among internet respondents with the majority reporting that it was ‘somewhat likely’ or ‘very likely’ they would be breath tested in the next 12 months. Respondents also expressed support for roadside breath alcohol testing with the majority ‘totally agreeing’ or ‘somewhat agreeing’ that it improves road safety.
 - The majority of internet respondents reported that they ‘totally agreed’ or ‘somewhat agreed’ that drug driving was a significant road safety issue in

New Zealand. The majority also 'totally agreed' or 'somewhat agreed' that roadside drug testing would improve road safety.

Implications

1. Drug driving prevention initiatives should focus on increasing both the perceived and actual risks of apprehension for drug drivers. People who use drugs who reported deciding not to drive under the influence were not concerned about being caught by police. There may be a sub-group of drug drivers who would also decide not to drive under the influence if they felt the risks of apprehension were higher.
2. Further research on the CIT is essential. Ongoing assessment of the proposed new enforcement programme should evaluate rates of false positives and its impact on the community to ensure the CIT is an adequate tool for the purpose. If large numbers of drivers suspected of impairment after a CIT are later cleared by blood test, use of the CIT should be re-evaluated.
3. Those responsible for drug driving enforcement should monitor the development of saliva testing technology. This objective measure of drug presence might be useful for New Zealand drug driving enforcement once advancements in accuracy, cost and speed of processing have been made. However the costs and benefits of a zero tolerance, rather than impairment focused, enforcement programme will need to be given serious consideration. And whether or not saliva testing can be accommodated under the New Zealand Bill of Rights Act is also an important issue.
4. Internet respondents' preference for impersonal sources of drug driving information is likely due to the illegal nature of many drugs. Public education campaigns should focus on these impersonal media so that drivers can access drug driving information anonymously. Drug-using populations will need to be targeted specifically. The information contained in an education campaign needs to be realistic and in line with best evidence in order for people who use drugs to take the messages seriously. They should focus on drug driving as the risk behaviour and avoid conveying messages of judgment of drug use in general. Any public education campaign should be evaluated to ensure its effectiveness.
5. If internet respondents' support for roadside testing is reflected in the general community then the introduction of roadside testing for drug impairment should be acceptable to the public of New Zealand. Ongoing support for the testing programme will depend on the efficacy of the testing process. If the CIT proves to be unreliable and significant numbers of unimpaired drivers are inconvenienced by blood tests and having their cars impounded, the programme will not be tolerated by the community, and its effectiveness will be undermined. However, there will be no random roadside testing using the CIT, and drivers will only be subject to impairment testing if an officer has 'good cause to suspect' impairment based on observed driver behaviour. This should act as an additional screening process, so that only drivers with obvious signs of impairment undergo the CIT. Ongoing evaluation of the enforcement programme will be essential.