

“Fixies and frothies”: An examination of intoxicated cycling in Australia

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1 INTRODUCTION

Alcohol and illicit drugs (particularly cannabis and amphetamines) are major contributing factors to road trauma. In Australia, it is estimated that thirty percent of motor vehicle fatalities and nine percent of serious road injuries are associated with driving under the influence of alcohol, with many of these road users also affected by illicit substances [1-4]. These substances affect the ability to drive safely by causing a range of functional performance limitations including reduced ability to judge distance and speed, distorted perception of time and space, reduced visual acuity, reduced coordination and concentration, and increased likeliness to engage in risky behaviours [4]. Furthermore, drivers under the influence of alcohol and some illicit drugs have been found to be more likely to engage in other unsafe behaviours including driving fast for thrills, taking deliberate risks, driving over the speed limit and not wearing seatbelts [5, 6]. While the factors surrounding the use and impact of alcohol and illicit drugs have been extensively researched from the viewpoint of motor vehicle users, relatively few studies address these issues from the perspective of cyclists.

In Australia, cycling participation is increasing, however at the same time there has been an increase in the proportion of collisions involving cyclists [7] and it is recognised that in order to continue the growth in cycling participation cycling road safety issues must be addressed [8, 9]. Recent research undertaken in Victoria, Australia indicates that approximately one out of every 14 cyclists who present to hospitals are intoxicated [6]. A separate study reported that over 30 percent of cyclists involved in a collision with a motor vehicle in Adelaide recorded positive readings for alcohol or drugs, with alcohol present in 20.2 percent of cases and cannabinoids, the most common illicit substance, detected in 20.2 percent of cases [10].

Internationally, the issues of cycling under the influence of illicit drugs and alcohol have been investigated in greater detail, particularly in Nordic countries with high cycling mode share [11, 12]. Research indicates that in European countries cycling under the influence of alcohol is not uncommon [13]. In Denmark, cyclist intoxication was found to be an aggravating factor associated with cyclist injury severity while helmet usage was found to be a mitigating factor [11]. Swedish research has identified similar trends and also highlighted the lower tendency of intoxicated cyclists to wear helmets, with an associated increased risk of head and injury severity [12]. The aim of this study was to investigate on-road cycling under the influence of alcohol and/or illicit drugs in Australia. The study was exploratory in nature and has leveraged findings from a broader study looking at cycling in urban road environments in Australia [8].

2 METHOD

An online questionnaire was developed to explore the issue of alcohol and illicit drug use amongst cyclists in Australia. The questionnaire was developed to gain an understanding of cyclist perceptions of safety in regards to various factors of the urban road environment and included four discrete sections:

1. Participant demographics: including age, gender, nationality, employment and education.
2. Cyclist habits: including frequency of cycling, average weekly distance travelled, most common cycling times, and history of crash involvement over the past three years.
3. Cyclists use and attitudes towards for cycling infrastructure: Including questions on how frequently they used common cycling infrastructure and there perceived safety.
4. Cycling behaviours and attitudes relating to safe cycling: Including questions on the use of mobile phones, music devices and if they had previously ridden a bicycle under the influence of either alcohol or drugs.

Participants were 376 cyclists aged over 18 years throughout Australia. Participants provided informed consent to participate in the study. Participation in the study was voluntary, and there was no financial incentive provided. Ethics approval for the study was granted by the Monash University Human Research Ethics Committee (MUHREC).

Descriptive analysis was performed to examine the survey responses. Statistical analysis was conducted using STATA version 13.1 (Statacorp, College Station, TX, USA).

3 RESULTS

The majority of participants who completed the survey were male (71.8%), between 35 and 54 years of age (55.8%), had completed an undergraduate university degree (42.8%), were in full-time employment (70.2%) and held a full drivers licence (91.5%).

Participants were asked about their cycling habits and behaviours and attitudes relating to safe cycling. The majority of survey participants were regular cyclists riding at least twice a week (92.6%). There was a good distribution of average kilometres typically ridden per week, with the majority of participants riding between 101 and 200km per week (30.1%), closely followed by those riding between 51 and 100km (26.9%). The majority of participants had not been involved in a collision over the past three years which required medical attention (79.8%) and on average cyclist reported a high level of self-confidence when riding on-road ($M = 8.1$, $SD = 1.8$).

Participants were asked a number of behavioural and attitudinal questions regarding their cycling habits. Almost a third of participants reported occasionally riding their bicycle under the influence of alcohol or illicit drugs (32.7%), surprisingly fewer participants reporting using their mobile phone to make calls or send messages (14.9%) or receiving calls or checking text messages (19.7 %) compared to those who cycled under the influence. Roughly a third of participants also reporting cycling while using headphones to listen to music or similar (30.9%). Comparisons of the effect of a range of cyclist demographic characteristics had on self-reported cycling under the influence were undertaken and are presented below:

- No gender differences were observed between male and female survey participants regarding if they rode their bicycle under the influence of illicit drugs or alcohol ($\chi^2(1)=0.09$, $p=0.76$, $\phi_c= 0.02$).
- Younger cyclists (18-34 years) were more likely to report riding their bicycle after having consumed either drugs or alcohol (42.2%), compared with middle-aged cyclists (35-54 years) (31.8%) and older cyclists (55+ years) (16.7%). ($\chi^2(2)=10.36$, $p=0.01$, $\phi_c= 0.17$).
- Cyclists with an undergraduate or postgraduate degree were more likely to report riding their bicycle under the influence of drugs or alcohol compared with those without a tertiary degree (36.6% vs 19.1%) ($\chi^2(3)=9.2$, $p=0.03$, $\phi_c= 0.16$).
- No significant differences were observed when considering employment status ($\chi^2(3)=3.7$, $p=0.3$, $\phi_c= 0.1$) and driver's licence status ($\chi^2(1)=0.13$, $p=0.72$, $\phi_c= -0.02$) and self-reported alcohol and drug use while cycling.

When considering the associations between cycling behaviours, attitudes and habits and self-reported riding under the influence of alcohol and drugs, the following was found:

- Cyclists who rode fewer kilometres per week were more likely than those who rode longer distances (100kms per week) (61.8% vs 49.8%), ($\chi^2(1)=4.62$, $p=0.03$, $\phi_c=0.11$) to cycle under the influence
- No significant difference of having been involved in a crash as a bicycle rider that required medical attention was observed, ($\chi^2(1)=0.74$, $p=0.39$, $\phi_c=0.04$).
- Cyclists who reported riding under the influence were found to be more confident riding on-road with an average self-reported confidence level of 8.4 (1.7) compared to 8.0 (1.9) for participants who did not report riding under the influence ($t_{(372)}=2.195$, $p=0.03$, $d=0.24$).
- Cyclists who reported riding under the influence were also found to be more likely to make phone calls and send text messages ($\chi^2(1)=10.07$, $p=0.002$, $\phi_c=0.16$), and also receive calls or read text messages ($\chi^2(1)=11.75$, $p=0.001$, $\phi_c=0.18$), compared to cyclists who didn't ride under the influence. Further, they were also more likely to ride while listening to music (on similar) using headphones ($\chi^2(1)=4.64$, $p=0.03$, $\phi_c=0.11$).

4 DISCUSSION

Driving under the influence of alcohol and/or illicit drugs are major contributors to road casualties in Australia and throughout the world [1-3]. The issue of substance impaired road users is particularly important within an Australian context, with Australians exceeding the worldwide consumption averages for alcohol while the rates of recreation drug usage continue to increase [2, 14].

The findings of this study revealed that males represented the majority of survey participants and self-reported substance impaired cyclists. The gender bias towards male survey participants is likely a reflection of the gender split for cycling participation in Australia [15]. Despite the increased proportion of males in the sample, there were no significant differences between the proportion of self-reported drug and alcohol usage by gender.

Those aged between the 18 and 34 years of age had the highest self-reported rate of cycling under the influence (42.2%). These patterns of self-reported alcohol and drug consumption are very similar to research examining motor vehicle users, which typically shows that young males are at the highest risk of intoxicated driving and being involved in a collision while under the influence of illicit drugs or alcohol [2]. These findings also align with previous international research which identified higher rates of cycling under the influence amongst younger cyclists [16].

Cyclists who reported cycling under the influence of drugs and alcohol were also more inclined to exhibit other potentially dangerous and distracting behaviours and had higher levels of self-confidence when cycling on-road. The study highlights that injury prevention for cyclists should aim to alter cyclist views towards the dangers of cycling under the influence of alcohol or illicit substances.

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