Indigenous status and risk of motor vehicle crash: the DRIVE study

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Background
There is a substantial body of evidence that highlights the stark contrast between health status of Indigenous and non-Indigenous Australians. Indigenous Australians die about 15 years younger than non-Indigenous Australians and the proportion of time lived with disability is greater than that in the total population (13% compared with 10%) [1]. The Indigenous community is also over-represented in injury data: the injury hospitalisation rate is about double that for the rest of the population [2] and the relative risk ratio for disability adjusted life years due to non-intentional injury is approaching 3 times that of the rest of the population [1].

Despite limitations in data on Indigenous status in road crash data collections, reports have found that the Indigenous people in Australia are involved in fatal transport related crashes at about three times the rate of the non-Indigenous population [3]. However, although much is known about the overrepresentation of young drivers in car crashes in Australia, to our knowledge there has been no prior research published in risk factors for young driver crash in Indigenous drivers in Australia. Better understanding both the burden, and risk factors for young driver road traffic related crash and injury is important for development of effective interventions, which may go some way towards closing the gap in health differentials between Indigenous and non-Indigenous Australians.

This paper aims to describe driving related factors in a sample of young Indigenous drivers recruited into the DRIVE study, a large cohort study of novice drivers in NSW. While this cohort is not representative of all NSW drivers, little is known about the learn-to-drive experience or driving related risk factors of young Indigenous people and so this study aims to inform further debate and research.

Methods
The DRIVE Study is a cohort study of young drivers in the state of New South Wales (NSW), Australia, for which detailed methods have been previously reported [4,5]. Briefly, all drivers resident in NSW aged 17-24 holding a first-stage provisional motor vehicle licence between June 2003 and December 2004 were invited to participate in the study; 15.9% of all invited agreed to participate. Crash records were obtained for the 10-year period, 1 January 1996 to 31 December 2005. The DRIVE Study questionnaire contained multiple questions including demographic information, including the standard Indigenous identification question used by the ABS. That is, participants were asked “Are you of Aboriginal or Torres Strait Islander” with yes or no as the available responses. The questionnaire also included questions about driving experience and training on the learner licence, ratings of driving ability and average weekly driving hours (the main measure of driving exposure). The questionnaire also included 14 items regarding risky driving behaviours and 10 regarding risk perceptions, adapted from previous research. Differences in descriptive data were established using the chi-square statistic. To examine risk of crash, data were analysed using Poisson regression models to determine relative risks (RR) and 95% CI. Indigenous is used interchangeably for Aboriginal and Torres Strait Islander throughout this paper.

Results
In total, 20,822 young drivers completed the baseline survey (with 95% completed online) and gave consent for data linkage. The majority (74.6%) of the study population was aged 17-18 years; 54.6% were female. During an average follow-up of two years, 92.8% had no police-recorded crashes as a driver, 6.8% had one such crash, 0.3% had two crashes and 0.01% had three crashes. Of the 20,822 participants, 2.7% had crashes recorded prior to joining the study.
There were 271 people (1.31%) who indicated that they were of Aboriginal or Torres Strait Islander origin; 133 (0.6%) did not answer the question. Of these 271 people, 157 (58%) were female and 114 (42%) male. A higher proportion of Indigenous respondents lived in rural and regional areas (31%, 11%) and in areas with low socioeconomic status (SES)(39%) than non-Indigenous (rural 21%, regional 5%; low SES 24%) (P<0.001).

Although a similar proportion of Indigenous (92%) and non-Indigenous (94%), drivers reported having lessons with parents or other non professional instructors during the learner period, fewer Indigenous (72%) than non-Indigenous (81%) drivers reported having had professional driving lessons (p<0.001). A higher proportion (61%) of Indigenous drivers reported having less than 6 hours of professional lessons in the learner phase compared to 47% of non-Indigenous drivers (p<0.001). Indigenous participants reported more hours of driving experience with parents or other supervising drivers during the learner phase, with 32% of Indigenous driver reporting having completed more than 70 hours with a parent compared to 23% of non-Indigenous drivers, although length of time spent on learner license was similar.

Indigenous driver reported more driving exposure at the time of the survey, with 48% reporting driving 10 or more hours per week compared to 32% of non-Indigenous drivers; 46% of Indigenous drivers reported driving “very often” on major roads with a parent or other non-professional supervisor during the learner period compared to 37% of non-indigenous drivers, similar to what was reported for driving on major roads (24% for Indigenous reported “very often” compared to 15% for non-Indigenous drivers). Similar proportions of young Indigenous and non-Indigenous drivers scored in the “high” category on risk perception and risky driving scales (p>0.05). Of participants, 21 (7.8%) Indigenous drivers had a police reported crash compared to 1470 (7.2%) of non-Indigenous drivers (p>0.05).

**Discussion and Conclusions**

This paper has described the characteristics of Indigenous drivers recruited into a large cohort study of young drivers in NSW and highlighted some comparisons with non-Indigenous drivers. Key findings are that young Indigenous drivers report less hours of supervised lessons with professional instructors during the learner phase, and report greater driving exposure, both in the learner phase with supervising drivers, and after licensure. The proportion of Indigenous drivers who crashed was the same as for non-Indigenous drivers, although given the small number of Indigenous participants this may be due to inadequate statistical power to detect a difference.

Indigenous drivers in this study were significantly more likely to live in areas with low socioeconomic status rankings and in regional or rural areas than non-Indigenous respondents. Drivers in remote areas are at increased risk of serious crash [6], and previous research from this study has highlighted an increased risk of single vehicle crash for young drivers in rural or regional areas [7], as well as an increased risk of crash for young drivers living in areas with low socioeconomic status [8]. Young Indigenous drivers in this study therefore reported high exposure to a range of risk factors with significant associations with crash, suggesting that they are likely to be at increased risk of crash.

The increased driving exposure of young Indigenous drivers in this study may be linked to place of residence, with a high proportion of Indigenous drivers in the study reporting living in regional and rural areas. Areas of low SES may have less public transport infrastructure also increasing the need for increased driving; additionally, there may be other factors related to low SES impacting on driving safety including poorer quality roads and vehicles with fewer safety features.

Although there is little research evidence to suggest which is the best form or combination of driving experience in the learner phase (professional and parent supervised), it seems likely that the reduced hours with professional instructors in the Indigenous respondents indicates less access to professional lessons. While it is unclear what impact this may have on crash risk, with recent changes to licensing laws requiring 120 hours of supervised driving practice, care must be taken to ensure that insurmountable barriers to licensing are not created for young Indigenous drivers. However, it is likely that such access is associated...
with disadvantage rather than specifically with Indigenous status, and this issue requires more research to better understand who is most at risk.

Whilst this is the first study to report on driving related factors for young Indigenous drivers in Australia, there are several limitations to this data. Firstly, the DRIVE study is not representative of young drivers in NSW. As a cohort study, it was established to report on associations between risk factors and outcomes, not to report on prevalence of risk factor on the general population. Although the population does appear to have similar characteristics to the population of young people in NSW on a number of factors, it also differs on others. For example, 39% of study participants reported drinking at hazardous levels, comparable to figures reported previously [9], but a higher proportion (32.6%) seemed to be at high or very high risk of psychological risk compared with the 16.3% found in the 2001 National Health Survey [10]. The proportion of Indigenous participants was 1.3% in the study, about half of what is reported nationally [11]. As Indigenous status is not collected in licensing data in NSW, there is no representative data available on young Indigenous drivers in NSW or elsewhere in Australia with which to compare this data.

This study provides valuable information about young Indigenous drivers where little is currently known. Whilst there is a need for further research with bigger representative samples, this research highlights some key risk factors that impact on Indigenous drivers such as driving exposure and lack of access to professional lessons. The results highlight the need for Government to focus on equity of access in novice driver licensing programs, particularly for those living outside high SES and urban areas.

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References