



Young driver risky behaviour and predictors of crash risk in Australia, New Zealand and Colombia: Same but different?



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ABSTRACT

Young drivers remain overrepresented in road crashes around the world, with road injury the leading cause of death among adolescents. In addition, the majority of road traffic crashes, fatalities and injuries occur in low- and middle-income countries. All young drivers are at risk due to a breadth of age- and inexperience-related factors; however it is well recognised that young drivers may also intentionally engage in risky driving behaviours which increase their crash risk. The aim of this paper is to examine the self-reported risky driving behaviour of young drivers in Australia, New Zealand (high-income countries), and Colombia (middle-income country), and to explore the utility of a crash risk assessment model in these three countries. Young drivers aged 16–25 years completed the Behaviour of Young Novice Drivers Scale (BYNDS), in addition to self-reporting crash involvement and driving offences. A hierarchical segmentation analysis via decision trees was used to study the relationship between self-reported crashes and risky driving. Young drivers in Colombia reported more risky driving than young drivers in New Zealand, and considerably more risky driving than young drivers in Australia. Significant differences among and across countries in individual BYNDS items were found, and 23.5% of all participants reported they had been involved in a road crash. Handheld mobile phone usage was the strongest predictor of crashes, followed by driving after drinking alcohol, and carrying friends as passengers. Country of origin predicted mobile phone usage, with New Zealand and Colombia grouped in the same decision tree branch which implies no significant differences in the behaviour between these countries. Despite cultural differences in licensing programs and enforcement, young drivers reported engaging in a similar breadth of risky behaviours. Road crashes were explained by mobile phone usage, drink driving and driving with passengers, suggesting interventions should target these three risk factors. Whilst New Zealand and Australia have implemented graduated driver licensing programs, are geographical neighbours, and are high-income countries, the finding that behaviours of young drivers in New Zealand and Colombia were more similar than those of young drivers in New Zealand and Australia merits further investigation.

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1. Introduction

The overrepresentation of young drivers in road trauma is a persistent global safety problem. Worldwide in 2012, road traffic injuries were the leading cause of death among 15–29 year olds

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resulting in almost 350,000 fatalities (WHO, 2015). The impact of road crashes was considerably higher than the impact of other major public health issues for teens, including suicide and HIV/AIDS (WHO, 2015). Additionally, the lack of reliable and comprehensive fatal and non-fatal injury data suggest that the road safety problem may be even worse (conservative estimations reach 20–50 million non-fatal injuries worldwide yearly (Oviedo-Trespalcacios and Haworth, 2015)). Young drivers in Queensland, Australia accounted for 13.19% of the road crash fatalities in 2014 (Department of Transport and Main Roads (DTMR), 2015), while in New Zealand

they represented the 15.7% of the total deaths in 2014 (Ministry of transport New Zealand, 2015). Unfortunately, in middle-income countries, such as Colombia, information regarding crash fatalities is not always available, and consistent with other indices of risk, the death profile in the young driver cohort is likely to be similar or even higher.

The overrepresentation of young drivers in road trauma has a multidimensional impact on society including material losses and social costs. To date the focus in injury prevention research has been on the measurement of fatalities; however, it is noteworthy that non-fatal injuries exert a considerable socio-economic burden through premature death and/or life-long disability (Ivers et al., 2014; Nguyen et al., 2013). In Australia, all road crashes were conservatively estimated to cost \$27.12 billion in 2006 alone, while the associated enormous and enduring social burden cannot be estimated. Recent estimates in New South Wales, Australia, found that young adults' car crashes were estimated to cost the health sector at least A\$14.6 million between 2001 and 2007 (Chen et al., 2012), while the government of New Zealand estimates of crashes, where 15–24 years had the primary responsibility (Ministry of transport, 2015), have a social cost of nearly \$718 million. All this reinforces the importance of considering the breadth of young driver crash outcomes. Moreover, the lack of data of non-fatal injury and disability as a result of road crashes is also unavailable in many developing nations like Colombia, serving as a major barrier for a comprehensive understanding of the health burden in young drivers worldwide.

Notably, road trauma is not equally distributed worldwide: High income countries have reported decreasing trends in death on their roads when compared with low- and middle-income countries which report increasing rates of road crash death (Oviedo-Trespalcacios and Haworth, 2015, Parkkari et al., 2015). The persistent overrepresentation of young drivers in road crashes in low- and middle-income countries in particular means that the formulation of policies and interventions for protecting youth from road trauma is a priority in these regions. However, in such developing countries constraints in resources and capacity can restrict and/or prevent intervention efforts. Furthermore, a breadth of limitations in data (e.g., quality, accuracy) and research (with a predominance of research from western, developed countries, Scott-Parker and Senserrick (2013)) prevent middle and low income nations from effectively targeting these individuals via evidence-based practice in their road safety strategies (Vecino-Ortiz and Hyder, 2015). Hence, in countries such as Colombia, a middle-income country in which there is no well-defined road safety strategy and in which there is an urgent need for intervention strategies for young drivers, young driver-focused road safety research is vital (Tasciotti et al., 2015; Gómez-Salazar et al., 2015).

While, arguably, young drivers around the world are at increased crash risk due to well-recognised age-related and inexperience-related factors (e.g., see Williams (2006)), the consistency of (and, conversely, the differences within) the nature of young driver behaviours, and the factors contributing to crash risk, may differ due to context-specific factors (Scott-Parker et al., 2015). As such, young driver behaviour within and across jurisdictions requires investigation. To date, research efforts to identify similarities – and differences – between jurisdictions have been undertaken from a socio-economic perspective (e.g., Hua et al. (2010), studied the direct and indirect effects of corruption on motor vehicle crash deaths) or road safety management (e.g., Oviedo-Trespalcacios and Haworth (2015), developed the road safety maturity index to model fatality patterns in south-east Asia). In this way, comparative behavioural studies among nations can provide important insight into the relevance of, potential for, and factors considered important within both regional and

global road safety strategies, in addition to facilitating knowledge transfer from high-income nations such as Australia and providing guidance to policy makers regarding driving risks on a truly global scale. Thus, this paper presents a multi-jurisdiction study among two similar developed nations (Australia, New Zealand) and one developing nation (Colombia) in order to identify differences and similarities among young driver populations. Consistent with other cross-national comparison road safety-related information, comparable information is unavailable for Colombian young drivers, speaking to the larger need for studies such as the current multi-country investigation. In addition, this research will elucidate predictors of crash risk for all young drivers (that is, for the young drivers in all three jurisdictions), thereby informing a multi-nation young driver intervention agenda.

2. Method

Three young driver populations were sampled as part of three different research projects (Ethics numbers: Colombia 123-3-MAR-2015, Australia and New Zealand F23836).

2.1. Participants

A total of 1094 young drivers participated in the survey. The age of the study population was divided in two groups: 16–18 years ($n=424$, 38.8%), and 19–24 years ($n=669$, 61.2%); female $n=593$, 54.2%.

Australia: A total of 378 (34.6%) young drivers participated in the survey (female $n=261$, 70.1%); 16–18 years $n=271$, 71.7%; 19–24 years $n=107$, 28.3%.

New Zealand: A total of 324 (29.6%) young drivers participated in the survey (female $n=161$, 49.7%); 16–18 years $n=115$, 35.5%; 19–24 years $n=209$, 64.5%.

Colombia: A total of 392 (35.8%) young drivers participated in the survey (females $n=167$, 42.6%); 16–18 years $n=38$, 9.7%; 19–24 years $n=353$, 90.3%.

Significant differences were found among countries in the gender distribution (Chi-square = 126; $p < 0.01$) and in the age group distribution (Chi-square = 62; $p < 0.01$) of the sample.

2.2. Data collection

Australia: The questionnaire was administered via internet (*Key Survey*) and took approximately 20 min to complete. This data was collected as part of a major longitudinal research project exploring the behaviours and attitudes of young novice drivers. The invitations to participate were issued by the state licensing authority on behalf of the research team (due to Privacy restrictions). Further information regarding the project can be found in Scott-Parker et al. (2013a).

New Zealand: The questionnaire was administered via telephone interview, and took approximately 15 min to complete. Participants were recruited by an external agency via direct dialling. Further information regarding the project can be found in Scott-Parker and Proffitt (2015).

Colombia: The questionnaire was administered via internet using Google Forms™, and took approximately 25–35 min to complete. The survey was disseminated using electronic mail through Universidad del Norte mailing lists, with a brief advertisement providing an overview of the study, a link to an on-line informed consent form and a link to the survey.

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