

Benchmarking distracted driving against other key risky driving behaviours

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Abstract

Speeding, drink driving, drug driving, distracted driving, and fatigued driving are the most significant behavioural contributors to road trauma worldwide, yet little is known about the differences in crash risks and prevalence between each of these behaviours. This study invited international road safety experts to be part of a semi-quantitative risk assessment process considering the perceived crash risk associated with these behaviours, population factors, group exposure, and individual exposure. From this, insights into the relative importance of these behaviours were obtained.

Background

There is growing concern about the dangers of distracted driving on the road. However, the relative risks of these behaviours, and how they compare to other risky driving behaviours such as speeding, drink driving, drug driving and fatigued driving, are still unknown. Hence, this study aimed to develop an understanding of the relative importance of risky driving behaviours in road trauma, considering population factors (i.e. age group), group exposure (i.e. the proportion of drivers engaging in risky driving behaviours), and individual exposure (i.e. exposure to the behaviour while driving).

Method

A semi-quantitative approach to risk assessment based on the Analytical Hierarchy Process (AHP; Saaty, 2008) was utilised to quantify experts' (n=32) judgements relating to risk and the driving behaviours. The AHP is considered a very flexible methodology used in different disciplines (Holgado et al., 2016). In addition to this, experts were asked about crash risk, the percentage of drivers who engage in these behaviours, and percentage of time spent engaged in these behaviours. Experts considered two populations: young (18-25 years) and mature (26-65 years) drivers. The experts were recruited via email through CARRS-Q's international network of collaborators.

Results

The expert responses to the AHP were analysed following the Saaty (2008) methodology. The results demonstrated the relative importance of behaviours in the following order: driving while looking at phone for more than two seconds (28%), fatigue/sleepiness while driving (22%), drink driving (12%), drug (marijuana) driving (10%), speeding (9%) and talking on a phone (9%), and driving while using music (5%) or GPS applications (5%). Other expert responses are reported in Table 1.

Table 1. Experts' opinions about relative risk of crashing of risky driving behaviours, percentages of drivers who engage in these behaviours and time spent engaged

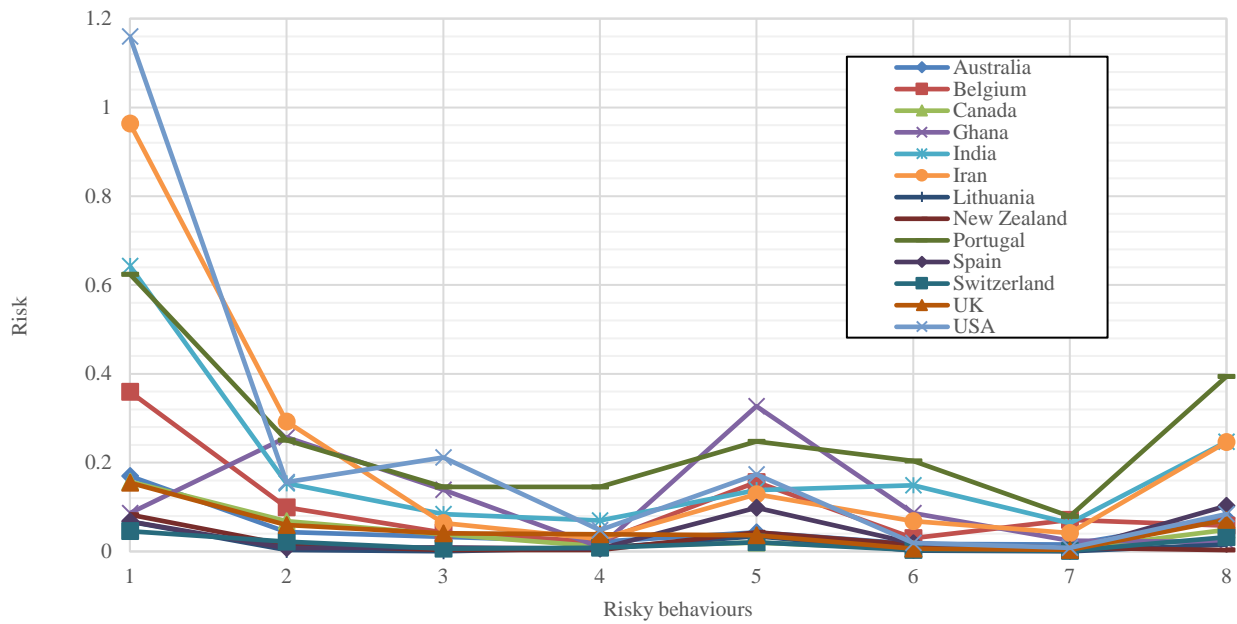
Risky Behaviours	Relative risk of crashing				Percentage of drivers who engage in the behaviour				Percentage of driving time spent engaged			
	Young Drivers		Older Drivers		Young Drivers		Older Drivers		Young Drivers		Older Drivers	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Drive while using a mobile phone for tasks that require holding the phone and looking at the screen continuously for more than 2 seconds	3.80	1.06	3.41	1.17	60%	25%	57%	23%	37%	28%	34%	26%
Drive while undertaking a conversation on a mobile phone (either hands-free or handheld)	2.89	1.00	2.57	1.00	63%	26%	62%	25%	41%	30%	42%	28%
Drive while using music apps and changing songs	2.66	1.13	2.52	1.17	71%	24%	56%	26%	45%	31%	34%	26%
Drive while looking at a GPS or map application	2.65	1.16	2.39	1.22	59%	29%	58%	24%	37%	28%	36%	26%
Speed more than 10 km/h over the limit	2.88	1.15	2.65	1.20	60%	29%	61%	28%	44%	29%	43%	26%
Drive after consuming 3 alcohol standard drinks	3.41	1.15	3.20	1.18	30%	22%	34%	22%	21%	20%	23%	20%
Drive after smoking marijuana	3.16	1.29	3.09	1.27	28%	21%	23%	19%	19%	18%	17%	19%
Drive while having problems in maintaining wakefulness (Being close to falling asleep)	3.62	1.33	3.69	1.19	44%	25%	46%	20%	25%	17%	33%	22%

The results from the AHP and expert responses were utilised to calculate a risk index through the following equation:

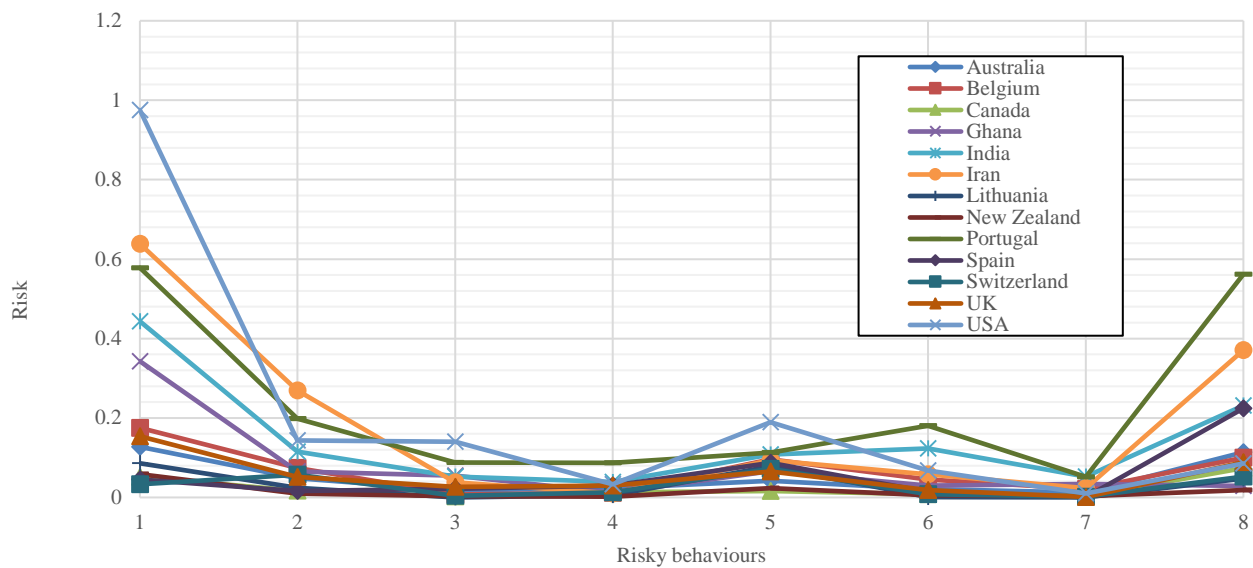
$$\text{Risk index} = \text{Crash risk} * \text{percentage of drivers who engage in the behaviour} * \text{percentage of driving time spent engaged}$$

Figure 1 illustrates the results of the risk index. Experts considered driving while looking at the phone for more than two seconds as the main concern among the risky driving behaviours, with younger drivers being at an increased risk than older drivers. Based on the expert ratings, older drivers seem to be at a higher risk of the behaviour of fatigue and sleepiness while driving compared to young drivers. Other risky behaviours such as speeding and alcohol and drug driving had similar risk indexes between young and older drivers.

(a)



(b)



Note: (1) Drive while using a mobile phone for tasks that require holding the phone and looking at the screen continuously for more than 2 seconds, (2) Drive while undertaking a conversation on a mobile phone (either hands-free or handheld), (3) Drive while using music apps and changing songs, (4) Drive while looking at a GPS or map application, (5) Speed more than 10 km/h over the limit, (6) Drive after consuming 3 alcohol standard drinks, (7) Drive after smoking marijuana, and (8) Drive while having problems in maintaining wakefulness (Being close to falling asleep)

Figure 1. (a) Risk index of young drivers by country across the risky driving behaviours, and (b) Risk index of older drivers by country across the risky driving behaviours

Conclusions

- The AHP methodology is useful in prioritising risky driving behaviours using expert knowledge. Such information is required for decision making by policy makers worldwide (Oviedo-Trespalcacios et al., 2015)
- The risk assessment suggests that driving distracted is one of the most critical issues in road safety today followed by fatigued driving. Specifically, visual-manual mobile phone interactions, such as texting and browsing, were associated with increased crash risk and safety-critical events. This is consistent with the literature (Oviedo-Trespalcacios et al., 2016; Dingus et al., 2016).
- More distracting driving interventions are required as young drivers are overrepresented in the risk scores.

Acknowledgement

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