SUBMISSION ON THE ISSUES PAPER "DEVELOPING TECHNOLOGY-NEUTRAL ROAD RULES FOR DRIVER DISTRACTION"

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Summary

This submission intends to offer emergent evidence that could help to increase the understanding of the issues surrounding distracted driving. Specifically, we want to provide comments and Australian evidence in response to questions 3, 5, and 8.

Types of Driver Distraction

Comments on Question 3: How could a distinction between manageable and unmanageable levels of driver distraction be used to inform the way distraction is regulated? What evidence-based distinctions could be considered?

Comment 1: Emergent research on behavioural addiction to technology indicates that phone use while driving might cannot be self-managed by groups of the population

According to the 2017 Mobile Consumer Survey (Deloitte, 2017), approximately 88 per cent of Australians own a smartphone, thus making Australia one of the foremost adopters of such technology worldwide. According to Billieux (2012), some individuals use their smartphone heavily without this use being problematic or infringing upon their life in some way. However, when it does become problematic, this specific type of behaviour is generally assumed to be located on the addictive behaviours spectrum (Billieux, 2012).

In Australia, recent CARRS-Q research by Oviedo-Trespalacios, Nandavar, Newton, Demant, and Phillips (2019) found that there is a direct relationship between problematic mobile phone use in routine life and mobile phone use while driving. Problematic phone use in routine life considers issues involving tolerance, withdrawal, craving, negative life consequences (e.g., social, financial), and escaping from other problems. The results from this research confirmed that handheld mobile phone use (e.g., texting or browsing) and hands-free mobile phone use (e.g., conversations using the Bluetooth speaker) increase with problematic mobile phone use in routine life. Therefore, we consider that it is important to recognise that some users might be unable to recognise risks of injury or police prosecution because of being unintentionally absorbed with their phones. This is likely to have ongoing implications for driving since this same study also confirmed that problematic phone use has been increasing in Australia.

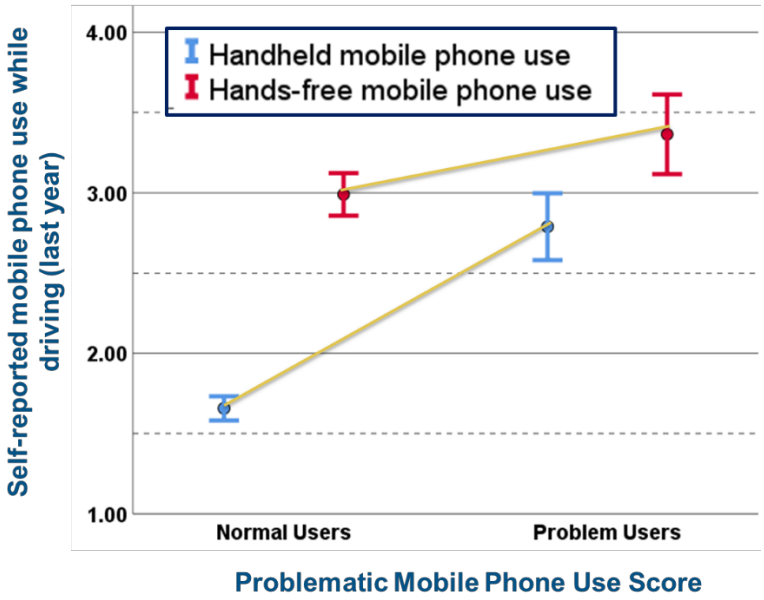

Figure 1. The relationship between problematic phone use and mobile phone use while driving

Responsibility for Distraction

Comment on Question 5: Can you provide examples of effective non-regulatory approaches to driver distraction that assist drivers to self-regulate their behaviour in a dynamic driving environment?

Comment 2: Acknowledge the limited evidence that self-regulation might reduce crash risk particularly among young novice drivers

A recurrent issue in the distracted driving literature is that, under certain circumstances, distracted drivers' behaviour seems to be intended to mitigate safety threats. These alleged safe driving behaviours include reduced speed (Choudhary & Velaga, 2017; Fitch, Toole, Grove, Soccolich, & Hanowski, 2017; Oviedo-Trespalacios, Haque, King, Washington, 2017ab), increased headway (Saifuzzaman, Haque, Zheng, & Washington, 2015), and hard braking (Haque, Oviedo-Trespalacios, Debnath, & Washington, 2016), among many others. Additionally, empirical research has shown that drivers engaged in mobile phone distraction could prioritise their driving task over use of the mobile phone (Oviedo-Trespalacios, Haque, King, & Demmel 2018). Although some studies in India, the US and Australia have identified potential safety benefits of self-regulation (Li, Oviedo-Trespalacios, Rakotonirainy, & Yan, 2018; Choudhary & Velaga, 2017; Fitch, Toole, Grove, Soccolich, & Hanowski, 2017), there is little confirmation that self-regulation of mobile phone use while driving could decrease crash risk/injury severity or compensate for distraction (Oviedo-Trespalacios, Haque, King, Washington, 2016). Also, CARRS-Q research has demonstrated that drivers who use these behaviours also engage in phone use while driving more often (Oviedo-Trespalacios, 2018). This increased exposure might weaken any potential benefit of self-regulation on crash risk.

Recent research has shown that the effectiveness of self-regulation is affected by drivers' individual differences and beliefs/risk perception (Oviedo-Trespalacios, Haque, King, Washington, 2017ab; 2019). CARRS-Q's research has identified that drivers who have a

strong belief in their ability to successfully self-regulate their mobile phone use might find themselves in more risky circumstances while performing lawful tasks such as hands-free conversations. Also, novice young drivers are worse at self-regulating compared to more experienced drivers (Oviedo-Trespalacios, Haque, King, Washington, 2018).

Technologies that can assist with (and distract from) the driving task

Comment on Question 8: Can you provide examples of effective strategies for ensuring that new in-vehicle technology and mobile apps minimise driver distraction?

Comment 3: Consider that mobile phone manufacturers and developers of applications have a key role in the prevention of mobile phone use while driving, particularly through applications to prevent phone use

Given the limited success of current approaches to distraction, leading authorities such as the U.S. National Highway Traffic Safety Administration (2016) have encouraged the development of technologies dedicated to reducing driver workload associated with distractions to increase safety. In recent years, smartphone applications have been designed to provide distraction-free driving when voluntarily implemented by drivers. These applications use phone sensors to detect motion and disable mobile phone features such as audio, text, social media, and browsing while driving. For example, the app 'Do Not Disturb While Driving', which now comes preinstalled on all iOS mobile phones, disables a variety of phone functions (e.g., texting) when it is detected that the car is in motion. Reducing off-road glances while in control of a vehicle is very positive in terms of safety, given that sharing visual attention between mobile phone tasks and driving has been associated with crashes and impaired vehicle control (Oviedo-Trespalacios, Haque, King, Washington, 2016). A recent CARRS-Q study conducted by Oviedo-Trespalacios, Truelove, Vaezipour & King (2019) showed that current applications to prevent mobile phone use while driving might not fully prevent visual-manual interactions such as in-car streaming music interfaces or GPS devices, which is not always compatible with driving. Australian drivers have a strong intention to use music and GPS phone functions while driving (Oviedo-Trespalacios, King, Williamson, Under Review). Also, smartphone apps to block distraction such as "Do not disturb while driving" for Apple iOS have had limited acceptance among drivers (Oviedo-Trespalacios, Truelove, Vaezipour & King, 2019; Delgado, McDonald, Winston, Halpern, Buttenheim, Setubal, Huang, Saulsgiver, & Lee, 2018).

Lastly, it is very encouraging that more stakeholders are systematically collaborating in the design and development of technology to prevent distracted driving. The role of mobile phone manufacturers and application designers in preventing mobile phone distracted driving has tended to be overlooked. Mobile phone companies are often seen as complacent about their responsibility (Galitz, 2018).

Comment 4: Advancements in roadside advertising could result in unmanageable distractions among drivers

Advertising signs directed at road users are designed to communicate messages to the driving public. For the advertising industry, roadsides are sought-after, well-established and increasingly profitable locations for advertising signs. Although the industry acknowledges the importance of safety, advertisers are not accountable for road safety and efficiency or the prevention of road trauma. Nonetheless, roadside advertising is a legitimate business, and public policy needs to manage the risks, not prohibit the activity. Commercial and community interest in roadside advertising is growing. Government road agencies also use roadside advertising signs for road safety campaigns and to communicate information about severe weather events and critical safety alerts (for example, child abductions). A Safe System approach to distraction necessitates consideration of the potential negative impact of roadside advertising on road safety.

In Australia, a recent CARRS-Q systematic review by Oviedo-Trespalacios, Truelove, Watson, and Hinton (2019) found there is a need for ongoing monitoring of the risks associated with emergent technologies because roadside advertising technologies are constantly evolving. For example, an advertising company has recently created a sign which tailors its advertisements based on how heavy the traffic is (Adweek, 2018). Specifically, this roadside advertising sign has been used to advertise restaurants, where simple images of food items are presented in fast-flowing traffic with the purpose of stimulating drivers' appetite. Meanwhile, in heavy traffic, the advertisement changes to the words 'stuck in a jam? There's light at the end of the tunnel' with a picture of the restaurant logo. Also, some advertising companies are considering creating personalised messages on roadside advertising signs for specific individuals via number plate recognition (Global Marketing Alliance, 2018) or new delivery modes such as turning other vehicles' windows into video billboards (Kumparak, 2018). Therefore, continued monitoring of roadside technologies and generation of safety data is necessary. Legislation in some jurisdictions such as the US has not progressed as fast the roadside advertising technology (Sharpe, 2011). Also, although roadside advertising should naturally be driven by road safety concerns, some other policy direction such as scenic beauty and clutter, should be considered as well.

The review by Oviedo-Trespalacios et al. (2019) also found that the degree of changeability in the information conveyed by the roadside advertising signs appears to have a persistent negative effect on driver behaviour. The degree of changeability refers to the amount of information displayed by the roadside advertisement and can vary considerably from static signs to those that can display multiple images successively or video. Static roadside advertisements are passive since they convey a single image. In contrast, changeable signs are more active since they convey a collection of images that change at predetermined times. The most active form of changeable sign technology is video advertising, which can show multiple images at great speed. It is important to consider that changeable signs (including digital, electronic or roller bar signs) are simplified versions of video advertising signs as they present a limited number of images that change at specified times (remaining in passive mode the majority of the time). When comparing the effect of different types of roadside advertising signs on driver task demands, it has been demonstrated that changeable (i.e., digital with multiple advertising signs) roadside advertising signs represent a greater distraction to drivers than static signs. Finally, the appearance of billboards (graphics vs text, text size, colours,

etc.) and the content itself (taboos, negative vs positive/neutral contents, etc.) of the billboard interact with driving behaviour. As a result, this is a subject that should be explored further to develop good practice, policy and guidelines.

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