



14 February 2018

Attn: Luis Gutiérrez  
Safety and Productivity Team  
National Transport Commission  
Level 3/ 600 Bourke Street  
MELBOURNE VIC 3000

Dear Mr Gutiérrez,

Please find enclosed RACV's submission to the NTC's Issues Paper for *Developing Technology-Neutral Road Rules for Driver Distraction*.

Elvira Lazar, Manager, Safety & Education is available to further discuss our submission with the Committee. She can be contacted on (03) 9790 2917 or [Elvira\\_Lazar@racv.com.au](mailto:Elvira_Lazar@racv.com.au).

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Bryce Prosser', is written over a light blue horizontal line.

**BRYCE PROSSER**  
**GENERAL MANAGER, PUBLIC POLICY AND CORPORATE AFFAIRS**

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## **Submission to Issues Paper for *Developing Technology-Neutral Road Rules for Driver Distraction***

RACV welcomes the NTC's review of the Australian Road Rules for regulating driver distraction and is grateful for the opportunity to provide our input to the Issues Paper.

As a prominent advocate for road safety and mobility issues for the Victorian community, RACV is supportive of a review of the Australian Road Rules for regulating driver distraction to determine whether they sufficiently address the key factors that cause driver distraction.

Driving is a complex task that requires the coordination of multiple skills. A myriad of studies has robustly shown that driver distraction and engagement in competing activities has a negative effect on many safety critical driving performance measures, such as the ability to control the speed of the vehicle, maintain control of the vehicle, reaction time, and the ability to monitor the dynamic environment around the driver (Young & Lenné, 2010).

RACV supports road safety policy being based on the Safe System approach that recognises the importance of safe road users, safe vehicles, and safe roads, with commitment from all levels of government to pursue all three. However, most countermeasures to driver distraction currently focus on a driver-centric approach to distraction and do not fully appreciate driver distraction as a multifaceted issue influenced by various factors spanning from the individual level to the societal one (Young & Salmon, 2015). Expanding these measures to adopt a more holistic, systems approach which considers all factors and their interactions as an integrated whole, will enhance the management of distractions in the regulatory and non-regulatory space (Young & Salmon, 2015). Doing so would also support the Australian Road Rules to become technology-neutral to address driver distraction.

### **Defining the driving task**

#### **1. Does the proposed definition include all the key functions required to safely perform the driving task?**

The proposed definition states that the driving task is *a complex multi-task activity that involves the following functions: route finding, route following, lateral motion control, longitudinal motion control, monitoring the driving environment, manoeuvre planning, responding to objects or events, making other road users aware of the driver's presence, and complying with road rules.*

The proposed definition of the driving task considers the key operational and tactical functions of the driving task. However, as it stands, it does not encapsulate the expectation of the driver to manage their attention and therefore the mental workload required to drive safely.

The definition of the dynamic driving task and the definition of driver distraction seem to sit on two opposing ends of the spectrum, such that the more involved the driver is with a distracting task, the less involved they are with the dynamic driving task, and vice versa. When a driver is distracted to the extent that they can no longer allocate sufficient attention to the driving task, their driving performance is compromised (Young & Regan, 2007). Thus, what drives this change in involvement in either task is how the driver's attention is distributed between these competing tasks.

Therefore, the definitions of the driving task and driver distractions need to be considered concurrently, as they are integrated concepts underpinned by the distribution of attention.

## A common definition of driver distraction

### 2. Does the proposed definition capture all the behaviours that lead to driver distraction and a reduction in driving performance?

The proposed definition of driver distraction is the *voluntary or involuntary diverting of attention, in a visual, manual, auditory or cognitive sense, away from the driving task to focus on a competing secondary activity.*

RACV agrees with the inclusion of visual, manual and auditory types of distractions. With the development of a technology-neutral law that encompasses distractions of various sources, the definition of what a distraction can be needs to be broad enough to include any non-driving task that might take a driver's attention away from the driving task at hand. Some definitions of the different categories of distractions can be modified or added, including:

#### Manual Distraction

The given definition for manual distraction in the Issues Paper is stated as “tasks that require the driver to take a hand (or both hands) off the steering wheel and manipulate a device” (p. 13, National Highway Traffic Administration, 2010). There are however, motor actions, that do not require the manipulation of a device.

The Australian Naturalistic Driving Study (Young et al., 2018), for example, identified secondary tasks such as personal hygiene, passenger interactions which could include hand gestures, attending to a pet. Furthermore, the term “device” here tends to elicit connotations of technological gadgets, such as mobile phones, GPS, and in-vehicle visual display units. As it stands, the current definition does not fully appreciate the pervasiveness of distractions caused by non-technological actions while driving.

#### Visual Distraction

Regarding visual distraction, a distinction needs to be made between visual cues that are necessary for the driving tasks (E.g. traffic signages) and cues that are not necessary for the driving tasks (E.g. billboards, advertising, an event on/by the roads such as a traffic incident). This is because different strategies are likely to be needed to not only make driving-essential visual cues less distracting, but also to minimise distraction emerging from visual cues irrelevant to the driving task.

#### Inclusion of Emotional Distractions

It may be worth considering emotional distractions separately from cognitive distractions, as this might aid in the formation of different countermeasure strategies to tackle the self-regulation of these distractions. Cognitive distractions – defined in the Issues Paper as the mental workload associated with a task that involves thinking about something other than the driving task – decrease one's capacity to pay attention to the driving task. While most distracting thoughts are emotionally neutral and introduce additional, competing mental workload through cognitive processes such as memory, some thoughts with emotionally negative or positive content have been shown to be more distracting and a significant risk factor for distraction.

Though the terms cognition and emotion are distinct, they are highly interdependent processes (Pessoa, Padmala, Kenzer, & Bauer, 2012; Storbeck & Clore, 2007). Fundamentally, cognition and emotion are inherently integrated, such that affect potentially moderates different cognitive operations, such as attention and perception (Storbeck & Clore, 2007). Human

performance is altered when an individual is experiencing an emotional state. As much as cognitive distractions in the form of thoughts introduce additional pressure on the mental workload due to competing cognitive processes, the content and degree of emotionality of the thoughts is also important to consider in determining its impact of driving (Galera et al., 2012; Lemerrier et al., 2014).

There is considerable research studying the relationship between emotions and driving performance. Emotional stimuli, whether aroused internally (E.g. emotional mind-wandering) or externally (E.g. visual cues from billboards, audio cues from radio), are suggested to take up attentional resource, and can therefore modulate attention and decision-making abilities. This in turn can lead to a higher risk of driver distraction (Chan & Singhal, 2013; Pecher, Lemerrier, & Cellier, 2009).

Similarly, a review of relevant research (Cunningham & Regan, 2016) also suggested that life stressors, such as financial or interpersonal issues, can affect one's driving and increase driving errors and crash risk. The review also reported a relationship between longer-term emotional states in the form of mental health concerns, such as anxiety and depression, and increased lapses in attention and memory, and observational errors while driving.

Furthermore, in a dynamic driving situation, emotions play a complex role such that it is insufficient to consider emotions as a binary (i.e. positive and negative emotions). For example, negative emotions of anger and frustration have been showed to lead to aggressive behaviour (i.e. faster speeds, extreme use of brake and accelerator), whereas sadness and depression – which are also negative emotions – conversely brought about more passive driving approaches (E.g. attentional shift to the self from driving, longer reaction times; Pecher et al., 2009).

For these reasons, it might be worth investigating emotional distractions and its inclusion as a separate form of driver distraction. This would inform future strategies to tackling the different forms of driver distraction.

### **Types of driver distraction**

#### **3. How could a distinction between manageable and unmanageable levels of driver distraction be assessed to inform the way distraction is regulated? What evidence-based distinctions could be considered?**

For a distinction between manageable and unmanageable driver distraction levels to inform the way distraction is regulated, there needs to first be a way to measure distraction, whether quantitatively or qualitatively. Measuring distraction would allow a determination of a threshold of distraction, above which the distraction is considered unmanageable. However, a strategy to measure distraction would not be without its own issues, in terms of practicality and contextual specificity. Furthermore, as vehicle and technological designs improve and evolve, how we driver distractions are assessed and regulated will also have to change.

In the case where certain types of distractions are deemed as unmanageable for the general driving population, exemptions from the relevant driver distraction regulations should not be made for commercial or emergency drivers for the sake of accommodating business operations.

As raised in the Issues Paper, drivers of heavy vehicles and buses work in high-stress working environments characterised by high workloads and conflicting demands. They often require additional devices to perform their jobs that might potentially be distracting while driving, which

might also be the case with on-demand transport drivers and taxi drivers. Similarly, emergency and police vehicles are also currently exempt to ensure they can legally use devices to perform their jobs. Considering these work situations, compared to the general driving population, these drivers face a more pressuring task of driving and are surrounded by an equal, if not increased, amount of potential distractions.

Thus, RACV does not support any road rule exemptions that potentially imposes higher risk and decreases safety for commercial drivers. It would be more appropriate that the regulatory focus is shifted from road rule exemptions that accommodate the use of occupational equipment, onto the requirement of job tasks, equipment and vehicles to be safely designed to minimise driver distraction and comply with road rules. Ideally, drivers of commercial, emergency and police vehicles would benefit from reduced distraction through improved technologies and design and a requirement to comply with the rules.

### **Clear and consistent approach in the Australian Road Rules**

#### **4. Should conventional and technology-based causes of distraction be treated equally in the Australian Road Rules? Why?**

RACV believes that conventional and technology-based causes of distraction should be treated equally in the Australian Road Rules if they are shown to pose the same amount of risk to a driver. Furthermore, moving towards technology-neutral road rules for driver distraction, it would logically follow that the distinction between conventional (i.e. non-technological) and technological causes is not made legislatively or regulatorily.

In practice, a more important distinction that should be made would be between driver distractions that are easily enforceable (E.g. mobile phone use) and some that are more difficult to do so (E.g. eating, talking to passengers). Moreover, a degree of distraction a secondary task can have on a driver's performance, depends not only on the intensity and duration of the task, but also the varying ability of individual drivers to continue allocating sufficient attention to drive safely and maintain driving performance. For these reasons, it might be beneficial to consider a performance-based approach instead a prescriptive approach. This would allow for a distinction to be made between driving while performing certain secondary tasks that have been found to be significantly distracting for the driver and driving while impaired by distraction.

An example of such a distinction in practice would be that of drug driving laws. In Victoria, some drug driving offences includes (1) failing a roadside drug test; and (2) driving while impaired by a drug. For a driver to be charged with failing a roadside test, they must have tested positive on oral fluid drug tests. On the other hand, the charge for driving while impaired is based upon physical impairment factors such as their behaviour, balance and coordination. While one charge is based on the presence of illicit drugs, the other charge focuses on the capability of the driver to drive in a safe manner. A similar distinction can be made between the performing of certain distracting tasks and impairment due to distraction, which would aid the implementation of a performance-based approach that is more practically enforceable.

### **Responsibility for distraction**

#### **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?**

As indicated in the Issues Paper, there are multiple difficulties with a legal enforcement approach for driver distraction. It was also suggested that enforcement alone will not effectively manage distracted driving, despite a large input of resources into regulatory approaches.

Non-regulatory approaches that promote and assist self-regulation of driver behaviour may be more beneficial in tackling driver distraction. Currently, drivers generally underestimate the risk of distracted driving. A study by Oviedo-Trespalacios et al. (2017) highlighted that while typical phone interactions such as texting and calling were low in prevalence, sub-tasks involving phone interactions (with equal or more risk) such as locating and answering a ringing phone were highly reported. In some cases, these tasks were erroneously assessed as less risky, which was interpreted as a lack of safety literacy among drivers. This could contribute to a false sense of security for distracted drivers.

RACV is committed to providing road safety education, information and independent advice to all Victorians. Thus, we believe that educating the public about distracted driving is a key non-regulatory approach to counter unsafe attitudes towards driver distraction and encourage drivers to self-regulate their driving behaviour. A CARRS-Q (Kaye, Lewis, Gauld, & Nandavar, 2018) study which evaluated the effectiveness of a road safety intervention to alter Queensland drivers' attitudes towards hand-held mobile phone use while driving, found that across experimental conditions, merely being exposed to images of drivers using hand-held mobile phones led to safer attitudes and lesser intentions towards hand-held mobile phone use while driving. This highlighted the potential for interventions, such as advertising campaigns, to challenge driver's favourable attitudes and perceived behavioural control and capability of driver distractions.

Besides public education, the promotion of mobile driving apps that eliminate or decrease driver distraction could also increase their use and assist drivers to self-regulate. RACV recently undertook research to investigate the potential of voluntary apps to reduce mobile phone use while driving (Oviedo-Trespalacios, King, Truelove, & Kelly, 2019). These apps are designed to stop certain distracting phone interactions while driving. An important insight from the study was that drivers who reported more visual-manual interactions with their phone while driving were more willing to install and activate voluntary mobile applications to reduce driver distraction. This emphasised the potential for a widespread acceptance of mobile driver apps and a desire among drivers (especially those more susceptible to distraction) to self-regulate driver distraction. However, it was also noted that these apps have to be reliable and high performing in terms of design and function for drivers to be willing to continue using them.

### **Shared responsibility**

#### **6. Can you provide examples of strategies successfully implemented by other international jurisdictions and industries (for example, aviation) that could be applicable to driver distraction?**

The RACV does not have any specific examples to provide. However, we believe that any strategy implemented should be a multi-pronged approach that addresses various factors that might lead to driver distraction and its consequences on driving performance in tandem.

For example, the Haddon Matrix has been used to identify and manage distractions in a work-related setting (Murray & Faulks, 2006). The matrix is a conceptual model used to systematically explore countermeasures for road traffic injuries and provides an integrated approach to injury control and prevention (Murray & Faulks, 2006). It investigates human,

agent/vehicle and environmental factors across a temporal dimension of pre-event, event and post-event phases.

By first identifying these factors, it is then possible to methodically evaluate if each factor allows for driver distraction and to what degree. It is by doing so that researchers and practitioners can start to understand the impact that issues such as road design, vehicle safety, societal factors can have on driver distraction. Adopting a safe system approach and utilising conceptual tools such as the Haddon Matrix to analyse the factors that contribute to driver distraction will lead to a holistic safety culture-based risk assessment-led approach could be used to improve road safety.

### **The concept of chain of responsibility**

#### **7. Are there other parties besides the vehicle driver who can influence the risk of driver distraction? If so, are there mechanisms to ensure those parties are doing all that is reasonably practicable to ensure safety?**

Adopting a safe systems approach to tackling the risk of driver distraction, it is important to acknowledge factors influencing distraction that are external to the driver.

Firstly, the road environment can introduce driver distractions. Therefore, planning authorities need to ensure that all roads, driving-relevant cues such as road signages, and driving-irrelevant cues such as roadside billboard advertising, are designed to keep the risk of driver distraction to a minimum.

Corporations and employees can also influence the risk of driver distraction across their fleets. Fleet operators should promote and enforce policies and practices that value road safety. This would include encouraging employees and contractors to minimise driver distraction and maintain attention on the driving task, and only using technology and cars that are compliant with design guidelines.

The design of the vehicle and in-vehicle technology (E.g. equipment used by commercial drivers) can also impact the risk of driver distraction. RACV agrees with the NTC that there may be potential for new technologies to minimise driver distraction through improved system integration and interface and device design. It would be preferable that manufacturers and designers are required ensure that the design of vehicles and in-vehicle technology comply with applicable rules surrounding these technological aspects that keep driver ergonomics in mind and minimise or eliminate driver distraction.

The factors outlined above are just some examples of parties that can influence driver distraction. Adopting a holistic, systems approach can identify key parties that play a role in influencing the risk of driver distraction, enhance the management of distractions and ensure that all parties are doing all that is reasonably practicable to ensure safety (Young & Salmon, 2015).

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

#### **8. Can you provide examples of effective strategies for ensuring that new in-vehicle technology and mobile apps minimise driver distraction?**

Currently, the most common strategy amongst manufacturers is to limit the functionality of certain attention-intensive activities whilst the vehicle is in motion. For example, some

manufacturers require the vehicle to be completely stationary and in park for Bluetooth devices to be paired to the vehicle. Such interlocks have long been a common strategy to deal with driver distraction, and even the requirement for the vehicle to be in park and the foot on the brake prior to starting the vehicle could be considered another common and successful example.

Additionally, RACV 's recent report regarding voluntary apps highlighted the potential of such apps to reduce mobile phone use while driving. The research indicated that while participants understood the purpose of the voluntary app to restrict distracting phone interactions while driving and were willing to have some functions restricted, they also wanted to maintain some form of control over their phone for certain features. Interviews with road safety experts and app development specialists noted that the blocking function preventing the driver from performing visual-manual functions would lead drivers to feel frustration and a lack of control over their phones, and thus decrease use of the app.

Overall, the research indicated that there is value in promoting the benefits of voluntary app use to prevent driving while distracted by a mobile phone. However, only voluntary apps that function reliably, and provide a satisfactory level of integration with the vehicle and the functions that drivers use, are likely to be accepted by drivers.

Therefore, to ensure that mobile apps are used by drivers to effectively minimise driver distraction, it is paramount that these apps are reliable, well-integrated and strikes a fine balance between drivers need for a sense of control and preventing distracting phone interactions. This would involve a focus on the development of current technology to improve reliability and usability.

## **Transition towards automation**

### **9. Can you provide examples of effective strategies to ensure that users of partially automated vehicles are fully informed about their responsibilities, and the limitations of their vehicle's technology?**

Currently, the most obvious strategy to ensure driver responsibility and understand of the limitations of partially automated vehicles is in the form of in-vehicle warnings. Existing driving **systems** involving driver interaction (E.g. navigation systems) are typically delivered with a general warning to alert the driver of the risks associated with operating these systems actively while the vehicle is in motion. These warnings will often require the driver to acknowledge that they have read and understood them prior to the warning being dismissed. It is unlikely, however, that these warnings are effective as drivers can take little note of their content.

As vehicles become increasingly automated, more sophisticated safety strategies will undoubtedly be required. In partially automated vehicles, there will be tasks that will require the driver to move from a less attentive state to one of complete control of the vehicle as the vehicle transitioned from an automated to an increasingly manual mode. Currently, automated systems such as Intelligent Cruise Control and Lane Keep Assist are being rolled out in partially automated vehicles. Vehicles equipped with such technology tend to employ a progressive system of increasingly obvious warnings as the need for the driver to intervene becomes more pressing. This might typically range from a visual warning flashed in a display, to various forms of aural and haptic warnings, and in some systems, the vehicle ultimately intervening to bring itself to a safe stop. It is likely that manufacturers will continue with this gradual escalation approach as these technologies continue to be improved and installed. These safety-critical systems in vehicles will need to be actively promoted not only by



manufacturers of automated vehicles, but also by the relevant road and vehicle safety organisations.

The implementation of safety-critical systems in vehicles should work in tandem with driver education to ensure driver responsibility and understanding of the limitations of their partially automated vehicles. Drivers need to be educated of the implications and possibility of distraction while operating a highly or fully automated vehicle. Information about safe operation of automated vehicles and the limitations of the vehicles' technology should also be readily available for drivers to educate them about their responsibilities and the risk of driver distraction when driving an automated vehicle.

## **Prescriptive and performance-based approach to regulation**

### **10. What evidence is available in support of a performance-based approach or a prescriptive approach for managing the risks of driver distraction?**

RACV believes that a performance-based approach is preferable for managing the risks of driver distraction. As distractions can arise from a non-exhaustive list of technological and non-technological sources, a prescriptive approach would not account for all driver distractions, especially those that are difficult to quantify, are not currently included in the Road Rules, or are not currently existing (i.e. future in-vehicle technology that has yet to be developed).

A performance-based approach, on the other hand, is flexible enough to accommodate for a wider range of distractions and future changes in technology. We acknowledge that this approach is not without its own issues, as it might appear vague to drivers in terms of what actions and devices are permissible, and what are not. Thus, any performance-based regulations and the corresponding enforcement practices should be easily understood by the public and have clear enforcement.

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