DRIVE IN THE MOMENT

TECHNICAL SUMMARY

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NRMA RACV RACQ RAA RAC RACT

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GLOSSARY

Table 1. Key definitions in the context of this research

Attitude	means a person's general evaluation of the act of using a smartphone while driving. It involves a subjective judgement on their part about how good/bad, safe/unsafe and favourable/unfavourable using a smartphone while driving is.
Behaviour of Young Novice Drivers Scale (BYNDS; Transient Driving Behaviours subscale)	refers to the propensity of drivers to engage in transient driving violations such as speeding, doing illegal U-turns and talking on a smartphone.
Cognitive Capture	means that drivers report having been captured by their smartphone in the past for longer than is optimal and/or at the expense of the primary driving task or critical components of it.
Descriptive Norm	means the extent to which (1) friends and peers, (2) parents / guardians, and (3) everybody in their age group actually use their smartphone while driving.
Intention	is a product of people's self-reported intent, willingness and likelihood to engage in specific in-vehicle smartphone use.
Moral Norm	means the extent to which a person believes it is against their principles or it would be morally / ethically wrong for them to use a smartphone while driving.
Perceived Behavioural Control	means the extent to which a person believes they have complete control over whether or not they use their smartphone while driving and how easy it is for them to do so.
Subjective Norm	means a person's perceptions about those people important to them and those people whose opinions they value. It involves a subjective judgement on their part about the extent to which these significant others approve or disapprove of them using their smartphones while driving.
Theory of Planned Behaviour	iys a theoretical framework that helps predict people's intentions to engage in smartphone use while driving

OVERVIEW OF DISTRACTED DRIVING RESEARCH PROJECT

In its report on international road safety, the World Health Organisation (2015) identified mobile phone use as a key factor contributing to road trauma. Mobile phone use while driving is a problem because of the high level of task demand and types of resources that are also required for driving (i.e., cognitive, physical, and visual) and the negative impact that mobile phones can have on driving performance.

In addition, the growing functions of smartphones (e.g., ability to send and receive emails, access the internet, use maps) have increased the range of demanding activities that can be carried out while driving. These additional functions similarly demand attentional resources which result in increased driver error (Westlake & Boyle, 2012). Mobile phone use while driving considerably and negatively affects driving performance (Oviedo-Trespalacios, Haque, King, & Washington, 2016).

It is in this context that in 2018 the Australian Automobile Association (AAA) partnered with the New Zealand Automobile Association (NZAA) and successfully applied for a Fédération Internationale de l'Automobile (FIA) Road Safety Transformation Grant to commission research to build an evidence-based toolkit of intervention resources aimed at reducing young drivers' in-vehicle mobile phone use.

The AAA then commissioned the Centre for Accident Research and Road Safety – Queensland (CARRS-Q) at the Queensland University of Technology in Brisbane, Australia, to investigate smartphone use while driving. The program of research featured three goals: (i) understand the addictive nature of smartphones for young drivers; (ii) use the research to develop effective messaging and resources for the use of mobility clubs; and (iii) begin a national discussion about smartphone addiction interplay with distraction and crashes, and offer solutions.

To address these goals, three interconnected streams of research were undertaken, the aims of which were to (i) investigate a possible link between addiction and smartphone use while driving and strategies one may use to reduce/prevent smartphone use (Research Stream 1); (ii) examine existing naturalistic and simulator studies to quantify the impact of smartphone use on driving, and compare this to other risky driving behaviours (Research Stream 2); and (iii) develop a methodology that can be applied internationally to track perception and attitudes about smartphone use while driving (Research Stream 3).

This research as well as the broader body of literature in which it rests, has directly informed the development of the toolkit. This research summary describes how that has been accomplished.

2. PURPOSE

PURPOSE OF THIS RESEARCH SUMMARY

In 2020 CARRS-Q provided the AAA with three comprehensive technical academic reports covering research streams 1-3. These reports are available by request, visit: www.aaa.asn.au/research

This summary has been prepared to document the key research results, conclusions, impact and differences between the expected outcomes and the actual outcomes of the research. It primarily focuses on young Australian drivers and draws on the research reports.

HOW AND WHY YOUNG DRIVERS USE SMARTPHONES

INTRODUCTION

In Australia, young drivers are both more accepting of technology and more likely than any other age group to use a mobile phone while driving, particularly a smartphone and its additional functions.

Young drivers are therefore at an increased risk of road trauma from smartphone use. Reducing mobile phone use while driving is a “wicked” problem that has been the subject of extensive research and policy attention worldwide. To date, research into mobile phone use has largely focused on the social purposes for which phones are used while driving (e.g. calling and texting) and the psychosocial factors (psychological and social factors) motivating such behaviours. This program of research extends the body of research by also focusing on other ways people engage with their phones while driving such as listening to music and using navigation apps. Several theories and related concepts have been used to explore the factors that influence smartphone use while driving including the Theory of Planned Behaviour (TPB). The TPB (including its limitations) is discussed here in some detail because it is central to understanding the research, its results and its application in the design of the toolkit.

3.1 THEORETICAL CONTEXT

The TPB emerged from the social psychology literature. The concept was proposed by Icek Ajzen and it built on gaps in earlier theories to improve the ways behaviours could be predicted (Azjen, 1991; Orbell, Hodgkins, & Sheeran, 1997). It assumes human beings act rationally and that behaviour can be considered to be a consequence of 'a series of conscious decision-making processes' (Chan, Wu, & Hung, 2010, p. 1549).

When initially devised, the TPB linked three 'conceptually independent determinants' (defined in the context of this research below), namely: attitude; subjective norm; and perceived behavioural control (Orbell et al., 1997, p. 945). It posited that 'the more favourable the person's attitude and subjective norm regarding the behaviour and the greater the person's perceived behavioural control, the more likely it is that a person will intend to perform the behaviour' (Orbell et al., 1997, pp. 945-946). Attitude, subjective norm and perceived behavioural control influence intentions to perform a behaviour which in turn influences whether a person will actually perform the behaviour or not (Azjen, 1991). In this model, the intention to perform a behaviour is a product of attitude, subjective norm and perceived behavioural control.

The stronger the intention to perform a behaviour, the more likely the behaviour will actually be performed (Elliott & Armitage, 2006; Orbell et al., 1997; Rivis & Sheeran, 2003). This is underpinned by beliefs; beliefs about consequences (attitudes), beliefs about the expectations and behaviours of others (subjective norms) and beliefs about facilitating or inhibiting behaviours (perceived behavioural control) (Ajzen & Sheikh, 2013, p. 155).

In addition to intention, it is posited that perceived behavioural control can have a direct influence on behaviour. Figure 1 below depicts the TPB (Azjen, 1991).

Since its inception, and where theoretically justified, other factors that also influence a person's intention to perform a behaviour (additional predictors) have been used to supplement the standard constructs within the TPB. Relevant to the distracted driving project, these include moral norm and descriptive norm (Ajzen & Sheikh, 2013; Gauld, Lewis, White, Fleiter, & Watson, 2017; Godin, Conner, & Sheeran, 2005; Rivis & Sheeran, 2003).

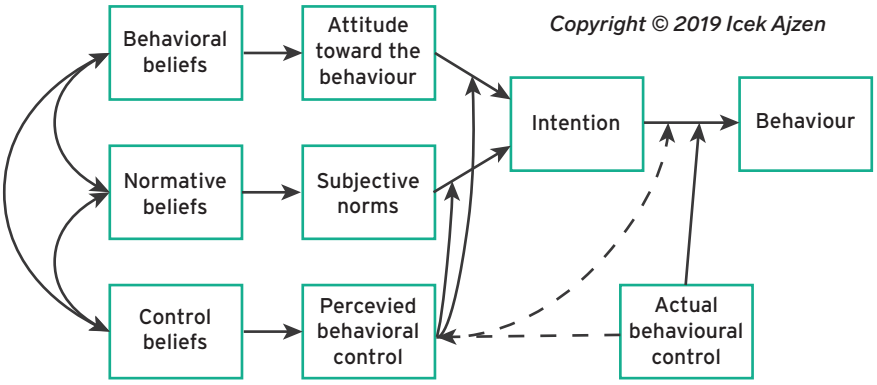
The extended TPB 'incorporates both social influences and personal factors as predictors' of behaviours (Rivis & Sheeran, 2003, p. 218). The determinants of the TPB vary in their relative importance in different situations.

Critics of the initial and extended TPB argue that it does not explain all variance and that forming implementation intentions is an important practical step in translating the intentions to perform a particular behaviour into actually performing the behaviour (Elliott & Armitage, 2006; Orbell et al., 1997; Rivis & Sheeran, 2003). Discussed later in this report, the TPB and the concepts of implementation intentions (or volitional interventions) underpin a key element of the toolkit: the Plan Builder tool.

In addition to the TPB, other theories and related constructs used to study mobile phone distracted driving that have been used in this research are:

- cognitive capture – the concept that when an individual becomes overly focussed on a secondary task (e.g., their smartphone), meaning they are not cognitively present with their primary task (e.g. driving)
- risky driving history – measured through the Behaviour of Young Novice Drivers (Transient Violations Sub-Scale)
- problematic smartphone use in general life – measured through the Mobile Phone Problem Use Scale.

Figure 1. Theory of Planned Behaviour while driving



3.2 SUMMARY OF METHODS

This first stream of research was exploratory in nature. It set out to understand the who, what, when, how and why of smartphone use while driving. It also set out to understand the role that "addiction" to smartphones could be playing in influencing in-vehicle use. Initially focussed on young drivers in Australia, the research opportunistically expanded to include older drivers in Australia and both young and older drivers in New Zealand.

3.2.1 FOCUS GROUPS

The research started by holding 10 focus groups with 30 young drivers in Australia. These focus groups explored the nature and extent of participants' smartphone use in general life and while driving. Participants' perceptions of the extent to which others' actions and beliefs influenced their smartphone use as well as their thoughts about whether they consider their own (or others') smartphone use behaviour to be an addiction were also explored. Individuals' thoughts as to appropriate and inappropriate contexts to use one's phone while driving, and why, were also discussed. Participants were asked about whether they may have tried to reduce their phone use at some stage and, if so, why and what strategies had they used. Focus group participants also completed a short survey.

The findings were used to help develop and design a larger survey with a much larger target audience. Importantly, the focus groups began to question if "addiction" to smartphone use in general life was the right way to be thinking about the problem of in-vehicle use.

3.2.2 SURVEYS

In both Australia and New Zealand[1], surveys were deployed at two time points (Time 1 and Time 2 – a week apart).

The Time 1 survey focused on:

- understanding the demographics of the study's participants (e.g. age, gender, licence type and the sorts of roads on which they usually drive)
- understanding the prevalence and nature of individuals' smartphone use while driving, considering the wide range of purposes for which they are used and the different apps that enable these uses
- identifying the psychosocial factors influencing individuals' intentions to use, and self-reported smartphone use while driving (supplemented by cognitive capture, risky driving history and problematic smartphone use in general life)
- exploring the strategies that individuals have used to reduce smartphone use while driving, and how effective they believe these strategies are at reducing their smartphone use while driving.

The Time 1 survey was designed to collect data about smartphone use in two driving scenarios: when driving a moving vehicle and while driving in stop-start traffic or when fully stopped (including at traffic lights).

The Time 2 survey focused on participants actual smartphone use while driving in the previous week.

A total of 1,289 people responded to the Time 1 survey. In Australia 754 people participated and of these, 249 people went on to participate in the Time 2 survey. (It is common for studies collecting data from the same individuals across two or more time points to experience attrition and, in this regard, the level of attrition in the current study with two data collection points over a period of one week was consistent with other research of this type.)

CARRS-Q conducted several statistical tests to analyse the survey data for descriptive and explanatory purposes. Results were provided to the AAA as they became available.

3.3 KEY RESEARCH RESULTS AND LEARNINGS

3.3.1 FINDING A LINK TO SMARTPHONE ADDICTION

For both young Australian and young New Zealand drivers the research did not find a link between smartphone "'addiction'" in general life and smartphone use while driving[2]. However, the research has identified new ways of understanding the problem, talking about it and tackling it. In designing the toolkit, learnings have been taken from addiction experts and the addiction literature; e.g. helping people understand the risk, planning to change, getting support to change and preparing for relapses.

Discussed next, the findings of the research do identify that for young drivers in both Australia and New Zealand, there are complex interplays between their intention to use their phones while driving and their actual use while driving (what they do and when they do it). Understanding these interplays is important because it enables a more granular targeting of strategies.

1. Adjustments were made to the survey for its deployment in New Zealand to ensure local relevance. See also section 5 of this report.
2. When considered as individual samples

3.3.2 PREVALENCE

Several studies in Australia and internationally have identified the prevalence of smartphone use while driving. These studies show divergence rather than convergence.

Drawing from this research, there are different ways prevalence of in-vehicle phone use can be displayed and understood. This includes how young drivers engage with their phones (whether through holding it or using other means), how they engage with their phones in hand held mode (which is illegal in Australia), what they are doing, what apps they are using, and when they are doing it.

The researchers have cautioned about using these sorts of prevalence data as part of educational and campaign material. This is because it could act to normalise the behaviour. We should not normalise the behaviour by suggesting lots of people use their phones while driving. Instead we need to highlight that it is in-fact done by the minority, but that these drivers are particularly dangerous.

This means being cautious about campaigns that focus on the percentage of young drivers who use their phones while driving. The toolkit of resources does not use prevalence data. Rather, the prevalence data help understand the context in which the toolkit is being deployed and how "normalised" the behaviours are in the Australian context. The prevalence data has influenced the design of the Plan Builder tool because it offers a broad range of options for young drivers to select the type of phone use that is most tempting to them.

This research has identified that more than half of the young drivers reported not engaging in any of the distracted driving behaviours (Table 2). Breaking usage down, in a typical week less than 50% of young drivers (46.1%) say they hold their phones to look at them (which is illegal in Australia) and 46.2% of young drivers say they use a cradle (device to hold the smartphone in the driver's field of view in the vehicle) while driving (which is legal in Australia). Fewer say they use vehicle controls such as steering wheel buttons (42%) to engage with their phones; and fewer again say they use voice commands (30.6%) to engage with their phones.

Table 2. Young drivers' engagement in four general distracted driving behaviours

General Distracted Driving Behaviour (in a typical week)	Percentage of Young Drivers
Looked at screen of a smartphone held in hand while driving	46.1%
Looked at screen of a smartphone kept in a cradle / phone holder while driving	46.2%
Used voice commands (e.g. Siri) to control phone while driving	30.6%
Used vehicle controls (e.g. steering wheel buttons and/or a head-up display to control phone while driving	42%

Table 3 shows the ways young drivers use their phones in hand-held mode. The research shows that usage is across the three types of engagement (call/text/message, social media, entertainment/relaxation), with the highest usage engagement with entertainment / relaxation apps. All three types of engagement increase when young drivers are in stop-start traffic or stopped at traffic lights. This suggests young drivers are moderating their behaviour and this could be related to some form of risk assessment.

Table 3. Young drivers' engagement with three types of phone use while driving using hand-held mode

Behaviour	Percentage of Young Drivers who use in Moving Traffic	Percentage of Young Drivers who use in Stop-Start Traffic or at Traffic Lights
Call / Text / Message	59%	75%
Use social media	12%	24%
Use entertainment / relaxation apps	74%	82%

Table 4 shows when young drivers engage with six specific distracted driving behaviours. It deepens our understanding of when and how young drivers engage with their phones. Except for participating in a chat via video, all other forms of mobile engagement while driving are much more pronounced when young drivers are stopped.

Table 4. Young drivers' engagement in six specific distracted driving behaviours

Specific Distracted Driving Behaviour	Percentage of Young Drivers who use in Moving Traffic	Percentage of Young Drivers who use in Stop-Start Traffic or at Traffic Lights
Created a post on social media	1.1%	2.3%
Scrolled through a social newsfeed	2.3%	4.6%
Participated in a chat (one to one or group)	10.3%	24.1%
Participated in a chat via video (one to one or group)	2.9%	2.9%
Watched videos	1.1%	4%
Used a photo messaging app	7.5%	19.5%

Table 5 shows when young drivers engage with different apps on their phone.

Music and driving apps are the most commonly used apps and there is a clear increase in the use of these apps when drivers are in stop-start traffic or stopped. Texting apps and picture or content sharing social media apps are close to three times more likely to be used when vehicles are stopped. This again highlights the potential for self-moderating behaviour.

Table 5. Young drivers' engagement with five types of phone apps while driving

Type of Apps	Percentage of Young Drivers who use in Moving Traffic	Percentage of Young Drivers who use in Stop-Start Traffic or at Traffic Lights
Texting only apps (e.g. Viber, iMessage, FB messenger, WhatsApp, and WeChat) or email apps	12.1%	31.2%
Picture or content sharing social media (e.g. Facebook, Instagram, Tumblr, or Snapchat)	4.6%	12.1%
Music apps (e.g. Apple music, Spotify, Pandora, Shazam) or podcasts or audiobooks	64.7%	75.1%
Video streaming (e.g. YouTube, Netflix, Stan)	2.9%	3.5%
Driving apps (e.g. Waze or others)	33.5%	38.2%

3.3.3 KEY INFLUENCING FACTORS

For the purposes of the toolkit design, the primary focus is prioritising interventions aimed at reducing the most dangerous behaviours. Of the two driving scenarios, using a smartphone while driving a moving vehicle is considered more dangerous (Oviedo-Trespalacios, Haque, King, & Washington, 2019). This is the primary focus of this next level of analysis.

The survey results indicate that young drivers' intention to use their smartphones while driving a moving vehicle is a very good predictor of their actual use. This is true for each of the three different types of engagement with smartphones (calling/texting/messaging, using social media, using entertainment/relaxation apps). This means, at a policy and practice level, strategies need to focus on breaking the nexus between young drivers' intention to use their smartphones while driving and their actual use. To do that, we need to understand what factors are the most influential (the most statistically significant) in how young drivers form their intentions to use their smartphones while driving. We can then target messaging / resources around those factors. We also need to understand other factors that are also good (and statistically significant) predictors of young drivers' actual in-vehicle smartphone use. For maximum effect, priority should be given to interventions aimed at (1) all three types of in-vehicle smartphone use, (2) those with the largest statistical significance, and (3) good indicators of actual use.

Two factors consistently influence intention to undertake all three three types of smartphone use while driving: moral norm and attitude. The toolkit of resources includes a focus on both. Those factors that influence some but not all three types of actual smartphone use while driving that are also a focus of the toolkit are the Behaviour of Young Novice Drivers Scale (because of the strength of its statistical significance on actual use of social media), cognitive capture (because of the strength of its statistical significance on intentions to use social media), descriptive norm (friends and peers) and descriptive norm (parents and guardians) because of the strength of their statistical significance on intention.

The following three figures highlight the relative importance of the most statistically significant factors influencing young Australian drivers' smartphone use in this study. They show an increasing complexity and interplay of factors that influence young drivers' engagement with their smartphones.

3.3.4 STRATEGIES USED TO REDUCE IN-VEHICLE SMARTPHONE USE

Figure 2. Most significant factors influencing young Australian drivers' use of entertainment / relaxation apps while driving

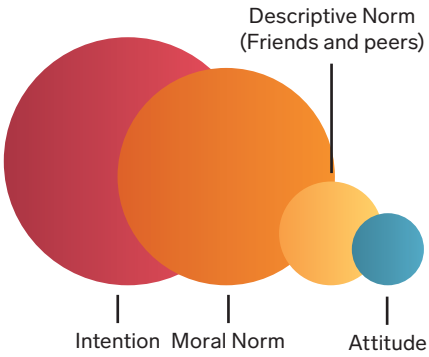


Figure 3. Most significant factors influencing young Australian drivers calling, texting and messaging while driving

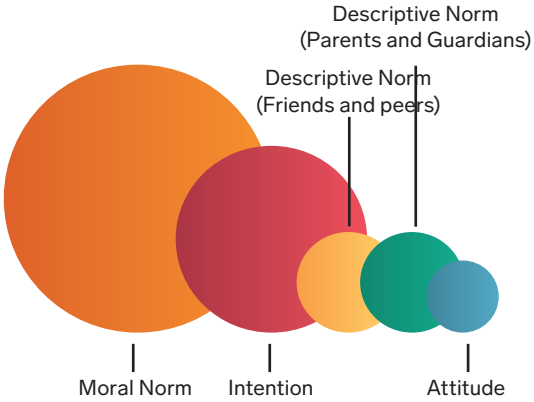
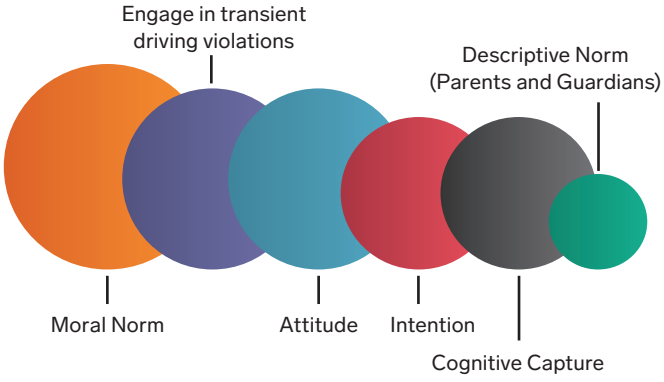
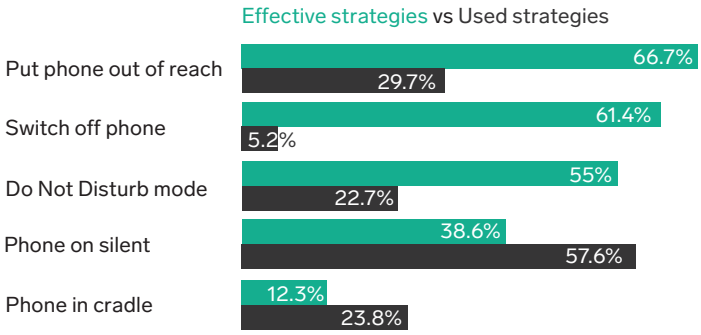


Figure 4. Most significant factors influencing young Australian drivers' use of social media while driving



Encouragingly, most young Australian drivers in this study (93%) have tried to reduce their in-vehicle smartphone use. However, as the study shows, the strategies they use are not always effective. Comparing the strategies that young drivers have tried with the strategies young drivers believe are effective shows a marked disconnect. Not enough young drivers are using the strategies they believe will be most effective.

Figure 5. Strategies used compared with effective strategies



This opens the space for us to think very differently about how to tackle the problem. We need to engage young drivers and help them find strategies that they will (a) use and (b) find effective. The toolkit does this by enabling young drivers to build a bespoke plan that they can practice, share and implement. Its focus is not to replace existing educational resources and campaigns but to think differently about how to tackle the problem.

COMPARING RISKY DRIVING BEHAVIOURS

4.1 RESEARCH CONTEXT

Within the context of road safety, previous research has identified risky driving behaviours that contribute to road deaths and serious injuries on the roads.

According to recent naturalistic data, the riskiest driving behaviours are speeding, driving under the influence of alcohol when over the legal blood alcohol concentration limit, driving under the influence of illegal drugs, driving while distracted or inattentive, and driving while fatigued (Dingus et al., 2016).

Driver behaviour is a multi-faceted problem, which makes it challenging to design and implement strategies to improve road user safety. Of concern, the complexity of driver behaviour is not always recognised by road safety management organisations. For instance, in a recent analysis of road safety strategies in Australian states and territories, it was argued that these strategies often refer to speed management as the primary issue, giving less importance to other risky driving behaviours such as distraction and fatigue (Hughes, Falkmer, & Anund, 2019). While addressing the problem of speeding undoubtedly remains critical, it's important to identify other current and emerging risks requiring attention. Thus, there is a need to better understand how risk from mobile phone distracted driving compares with other known and more socially unacceptable driving behaviours such as speeding and drink driving. This information can provide valuable insights for road safety management strategies and the organisations (i.e., advocacy groups, research centres, etc.) working to enhance road safety (Oviedo-Trespalacios & Haworth, 2015).

From a research and policy perspective, comparing risky driving behaviours is inherently difficult. A wide range of complex and unforeseen factors influence the degree of risk an individual may confront when on the roads. Therefore, analysing the risks associated with particular driving behaviours in the transport system requires information about population and exposure factors.

Previous studies that have compared the risk of different behaviours using case-control study data or driving simulators (e.g. Strayer, Drews, & Crouch, 2006; Williamson & Feyer, 2000) have typically only compared two behaviours (e.g., distracted driving vs drink driving; fatigue vs drink driving), thus reducing the scope of the conclusions that can be drawn across the behaviours. While naturalistic driving studies have made it possible to compare the crash risk associated with a wider range of behaviours, these studies have been mainly conducted in the U.S (Dingus et al., 2016). Therefore, there is no guarantee that these findings are generalisable to other jurisdictions, as differences have been found in the pattern of risky driving across jurisdictions as a result of cultural, infrastructural, or policy factors (Oviedo-Trespalacios & Scott-Parker, 2017; Scott-Parker & Oviedo-Trespalacios, 2017).

In summary, little is known about how a range of well recognised risky driving behaviours compare with each other in terms of their contribution to crash risk overall and at a more granular level, for young novice drivers.

4.2 SUMMARY OF METHODS AND RESULTS

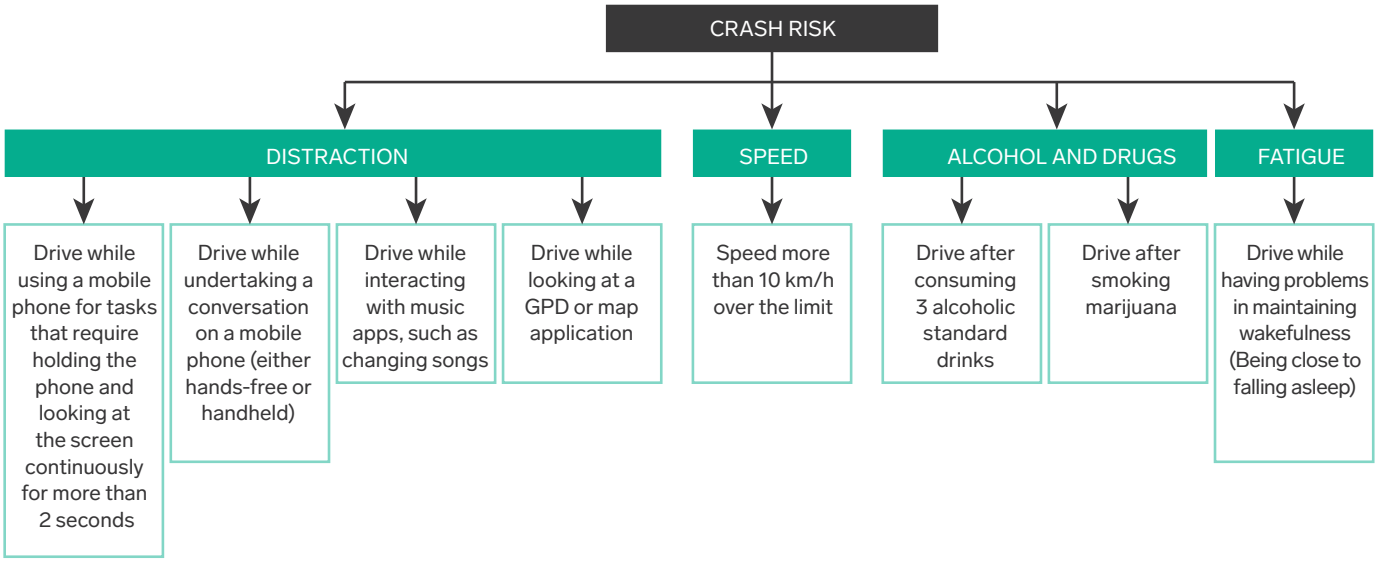
CARRS-Q surveyed 32 international road safety experts in 13 countries[3]. Most of the experts worked in universities, the government and public sector, and the not-for-profit sector. Their expertise covered the fields of road transport and road safety, human factors and ergonomics, and mobile phone distracted driving.

Among other things these experts were asked to estimate the crash risk associated with (1) young novice drivers' and (2) mature experienced drivers' engagement in eight different risky driving behaviours.

Specifically, the experts were asked how likely they think the average young driver, aged 17-25 years with up to one year driving experience, is to have a crash as a result of engaging persistently in each of the eight risky driving behaviours as opposed to a similar driver who does not engage in them.

The experts ranked the risk on a five-point scale (with quarter-point intervals), with one being no change in risk and five being five or more times the risk.

Figure 6: Risky driving behaviours



3 Australia (n=15), Belgium (n=1), Canada (n=1), Ghana (n=1), India (n=3), Iran (n=1), Lithuania (n=1), New Zealand (n=1), Portugal (n=1), Spain (n=1), Switzerland (n=1), United Kingdom (n=4), United States of America (n=1).

4.3 KEY RESEARCH RESULTS AND LEARNINGS

Table 6 shows the way experts view the risk of crashing for both cohorts of drivers when they persistently engage in eight risky driving behaviours (compared with similar drivers who do not). It shows that using a phone for tasks that take drivers' eyes off the road for more than two seconds is considered to elevate the risk of crashing by a factor of 3-4.

In terms of young novice drivers, these results show quite strong consensus among the experts in how they have ranked the majority of the risky behaviours. There is some disparity evident in their opinions about the increase in crash risk after smoking marijuana (SD=1.29) and driving while fatigued (SD=1.33) but these differences are relatively minor. This suggests the results are likely to resonate with other experts internationally.

Similarly, in terms of mature experienced drivers, these results show quite strong consensus among the experts. There is again some disparity in the experts' opinions about the increase in crash risk after smoking marijuana (SD=1.27). There are other relatively minor differences that again suggest the results are likely to resonate with other experts internationally.

The experts' responses to the survey enable the eight risky driving behaviours to be ranked independently in order of their crash risk for both cohort groups. This reveals that for both groups, mobile phone distracted driving is comparable in risk to other well-established risky driving behaviours

These particular research findings help frame conversations with young drivers, their parents and others about how the risk of mobile phone distracted driving compares with other well understood risky driving behaviours such as speeding. This is important because the body of research identifies that young drivers do not necessarily understand the dangers of mobile phone distracted driving. Discussed later in this report, these research findings underpin a key element of the toolkit; the Risk Rater tool. Helping young drivers recognise the risk of mobile phone distracted driving is an important first step in helping to motivate them to change their behaviour.

Experts were also asked their opinions about the percentage of young novice drivers and older more experienced drivers engaging in the behaviour in their countries of residence. As Tables 7 and 8 show, there was much greater variation in their responses, hinting at differences in opinions that are difficult to unpack but could relate to the different legal frameworks and different socio-cultural factors. This suggests the results are less likely to fully resonate with other experts internationally. With the toolkit designed for use beyond Australia and New Zealand, it is judicious to focus on areas of international consensus (such as crash risk).

Table 6. Experts' opinions about risk of crashing by risky driving behaviour - young novice drivers

Risky Behaviour		Type of Risk	Young Novice Drivers		Mature Experienced Drivers	
			Mean	Standard Deviation	Mean	Standard Deviation
1	Drive while using a mobile phone for tasks that require holding the phone and looking at the screen continuously for more than two seconds	Distraction	3.8	1.06	3.41	1.17
2	Drive while undertaking a conversation on a mobile phone (either hands-free or hand-held)	Distraction	2.89	1	2.57	1
3	Drive while interacting with music apps, such as changing songs	Distraction	2.66	1.13	2.52	1.17
4	Drive while looking at a GPS or map application	Distraction	2.65	1.16	2.39	1.22
5	Speed more than 10 km/h over the limit	Speed	2.88	1.15	2.65	1.2
6	Drive after consuming three alcoholic standard drinks	Alcohol and drugs	3.41	1.15	3.2	1.18
7	Drive after smoking marijuana	Alcohol and drugs	3.16	1.29	3.09	1.27
8	Drive while having problems in maintaining wakefulness (being close to falling asleep)	Fatigue	3.62	1.33	3.69	1.19

3.3.2 PREVALENCE

Table 7. Experts' opinions about engagement with risky driving behaviours — young novice drivers

Risky Behaviour		Percentage of Drivers who Engage in the Behaviour		Percentage of Driving Time Spent Engaged	
		Mean	Standard Deviation	Mean	Standard Deviation
1	Drive while using a mobile phone for tasks that require holding the phone and looking at the screen continuously for more than two seconds	60%	25%	38%	28%
2	Drive while undertaking a conversation on a mobile phone (either hands-free or hand-held)	64%	26%	42%	30%
3	Drive while interacting with music apps, such as changing songs	72%	25%	46%	31%
4	Drive while looking at a GPS or map application	60%	29%	37%	29%
5	Speed more than 10 km/h over the limit	60%	29%	44%	30%
6	Drive after consuming three alcoholic standard drinks	31%	23%	22%	21%
7	Drive after smoking marijuana	28%	22%	19%	19%
8	Drive while having problems in maintaining wakefulness (being close to falling asleep)	44%	25%	26%	18%

Table 8. Experts' opinions about engagement with risky driving behaviours — mature experienced drivers

Risky Behaviour		Percentage of Drivers who Engage in the Behaviour		Percentage of Driving Time Spent Engaged	
		Mean	Standard Deviation	Mean	Standard Deviation
1	Drive while using a mobile phone for tasks that require holding the phone and looking at the screen continuously for more than two seconds	58%	24%	35%	27%
2	Drive while undertaking a conversation on a mobile phone (either hands-free or hand-held)	62%	26%	43%	28%
3	Drive while interacting with music apps, such as changing songs	57%	27%	34%	27%
4	Drive while looking at a GPS or map application	58%	25%	37%	26%
5	Speed more than 10 km/h over the limit	61%	28%	43%	27%
6	Drive after consuming three alcoholic standard drinks	35%	22%	23%	21%
7	Drive after smoking marijuana	24%	19%	18%	19%
8	Drive while having problems in maintaining wakefulness (being close to falling asleep)	46%	21%	33%	22%

INTERNATIONAL BENCHMARKING TOOL

5.1 RESEARCH CONTEXT

Patterns of risky driving behaviours vary across jurisdictions as a result of cultural, infrastructural, or policy factors (Oviedo-Trespalacios & Scott-Parker, 2017; Scott-Parker & Oviedo-Trespalacios, 2017) .

In addition, laws about usage of mobile phones while driving, associated penalties and the risk of getting caught by law enforcement officers are different in different jurisdictions. Therefore, this final research stream involved the development of an evidenced-based benchmarking tool in the form of an online survey that can be tailored for deployment by mobility clubs worldwide. It builds on learnings from the surveys originally deployed in Australia and New Zealand and suggests ways that this tool may be adapted to complement existing benchmarking tools (such as Canada's Road Safety Monitor survey and the E-Survey of Road Users' Attitudes coordinated by the Vias Institute in Brussels).

The benchmarking tool is designed to determine in different jurisdictions: (1) the prevalence of smartphone use while driving; (2) the psychological factors that influence smartphone use while driving; (3) perceptions about smartphone use while driving, including the risk of being detected and the risk of being involved in a crash; and (4) the strategies being used by drivers to limit their in-vehicle smartphone use. This will enable mobility clubs to compare their trends (and the factors driving those trends) over time and with other jurisdictions.

Identifying and examining similarities and differences will offer insights into potential foci for policy interventions and opportunities for advocacy.

Deploying the surveys in New Zealand as part of this program of research enabled its international application to be tested. Learnings from its deployment in New Zealand have been built into the benchmarking tool.

5.2 KEY COMPONENTS OF THE BENCHMARKING TOOL

The benchmarking tool has been designed as a theoretically grounded comprehensive set of generic questions that measure:

- demographic information
- self-reported involvement in smartphone-related offences, crashes and near misses
- prevalence of smartphone use while driving
- psychosocial factors influencing drivers' intentions to use a smartphone while driving and related self-reported behaviour
- other potential influences on risky driving practices
- relevant risk perceptions relating to the use of smartphones while driving
- strategies to reduce or prevent smartphone use while driving
- attitudes and perceptions toward smartphone laws and enforcement.

The intention is that jurisdictions can build their own survey tool from the benchmarking tool's generic questions, focusing their attention on what is most relevant and important for them to benchmark.

It is important that questions be tailored for use in different jurisdictions, especially for issues such as terminology and legality. The research identifies important considerations to help jurisdictions select the right questions when building their own survey to maximise the value proposition for them.

Like the surveys deployed in Australia and New Zealand, the benchmarking tool has been designed to collect data at two time points (Time 1 and Time 2). It is recommended that the Time 1 survey be comprehensive and include the full range of relevant questions the jurisdiction is interested in benchmarking. The second survey is administered a week later and is designed to collect behavioural data that helps understand how the different psychological and other factors actually influence different types of smartphone use while driving in different driving scenarios.

Survey results will enable jurisdictions to understand the precise patterns of smartphone use while driving and their key influencing factors. This in turn enables them to identify policy and advocacy priorities. Deploying the survey in additional jurisdictions will also offer an opportunity to determine whether the toolkit of resources may need to be slightly re-focused for more effective use in subsequent jurisdictions and if and to what extent different messaging needs to be developed.

6. THE TOOLKIT OF RESOURCES

Drive in the Moment is aimed at reducing young drivers' in-vehicle mobile phone use.

The toolkit was developed as findings from the research became known and has the following key elements:

- Two new web tools known as the Risk Rater and Plan Builder
- A microsite for the project's messages, research resources and web tools
- [Planned] Printable in-class education resources/factsheets for students
- Four short (20 second) promotional videos for social media.

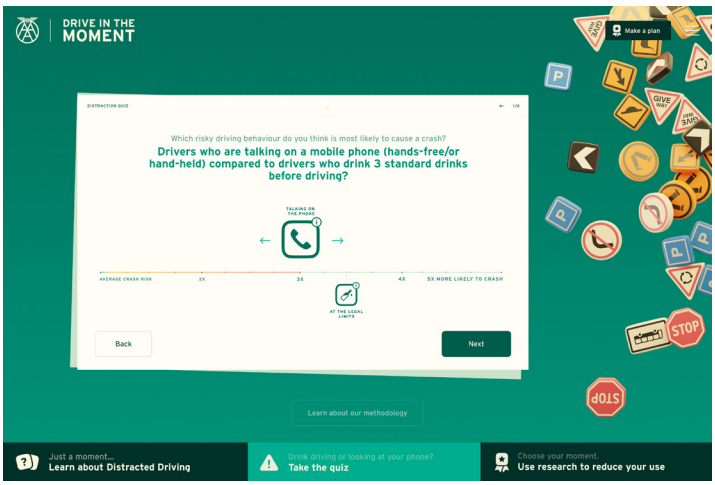
The Risk Rater tool prompts young drivers to rank the risk of mobile phone distracted driving against the experts' opinions to help them understand the crash risk. In doing so it contextualises the crash risk of mobile phone distracted driving with other well-established risky driving behaviours.

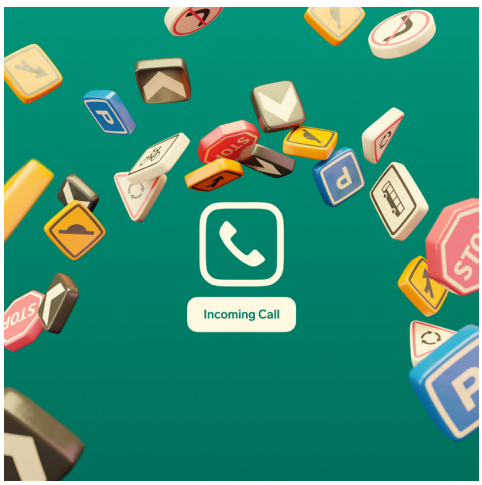
The Plan Builder tool prompts young drivers to build a bespoke plan to reduce their in-vehicle smartphone use. It does so by helping young drivers identify the ways and moments in which they are tempted to use their phone and to develop a "mental plan" of how they will better respond. It helps them manage relapses and helps enforce positive behaviour. The toolkit's Plan Builder has several options to help users identify what tempts them to use their phones when in stop-start traffic or when stopped at lights. This is important because the research has clearly shown that young drivers engage less with their phones in moving traffic than when in stop-start traffic. Having these options enables young drivers to focus on their specific patterns of using their smartphone while driving and make bespoke plans directly relevant to them.

The toolkit can be modified (including being re-branded) for use by other mobility clubs worldwide.

The effectiveness of the toolkit will be evaluated approximately six months after its launch in mid-2020.

BELOW: The interactive Risk Rater tool.
RIGHT: One of the promotional images for social media.





7. CONCLUDING COMMENTS

This program of research was originally premised on finding and understanding the links between smartphone 'addiction' in general life and problematic in-vehicle use.

However, the research found that there was no conclusive evidence about the role that smartphone "addiction" plays in distracted driving for young drivers[4]. What the research did find was a complex interplay of factors that influence how, when and why young drivers use their smartphones while driving in different driving scenarios.

The most important factor is young drivers' intention (or plan) to use their smartphones while driving. This is the first time such a picture has been able to be understood and documented. It means that interventions (including the toolkit) must engage with systematically addressing the psychological factors that influence young drivers' intentions to use their smartphones while driving. The research also helped us understand that changing societal norms and attitudes, i.e. how society views using a smartphone while driving, are also very important. While interventions can be targeted at young drivers' intentions about using their smartphones while driving, the contextual challenge is how to simultaneously make smartphone use while driving as socially unacceptable as other well understood and accepted risky driving behaviours, such as drink driving. This research also now helps us better understand that solutions should focus on influencing in-vehicle use of smartphones rather than seeking to influence smartphone use in general life (in much the same way that contemporary drink driving campaigns focus on discouraging people from driving after drinking alcohol, rather than focusing on reducing alcohol consumption in general).

This research sits in the context that it has been well established that people think they are good drivers compared with others. We also know from the existing body of research and from road safety experts that while people understand smartphone use while driving is dangerous, they still do it.

While people can see how others' mobile phone use while driving impairs driving performance (because they can see it firsthand), they do not necessarily recognise this in their own driving because they are paying attention to their device and not their driving. They might recognise it when they crash but may also see this as the fault of another road user. While people know using their phone while driving is wrong they are not necessarily aware of how risky it is. By comparing the crash risk associated with smartphone use while driving with other well-established risky driving behaviours, this research has helped quantify and contextualise that risk. Helping young drivers understand the risk of smartphone use while driving is a key element of the toolkit. Comparing the relative risk of mobile phone distracted driving with other well-established risky driving behaviours offers a new way of engaging with young drivers to help them understand the risk.

This research has highlighted that most young drivers surveyed have tried to reduce their smartphone use while driving. Importantly it also identified a clear disconnect between what young drivers viewed as effective strategies and what they were trying. This reinforces that we need to find new ways of education, advocacy and campaigning that will help young drivers engage with strategies that will be effective for them. During this research, the AAA engaged extensively with Dr Mark Elliott whose field of expertise includes helping young drivers reduce their smartphone use. Dr Elliott has overseen the translation of his research into elements of the toolkit's Plan Builder. This addresses the gap identified in the literature about the TPB and the need to ensure a focus on implementation intentions.

We also know from the existing body of research that some people don't understand what "using" their phone while driving means. They understand hand-held phone calls, but not necessarily glancing at the phone or using navigation and/or music apps etc. Therefore, the Plan Builder includes a broad range of ways young drivers could engage with their phones while driving. This is designed to help ensure young drivers don't disengage from the toolkit thinking it does not apply to them.

We already know from the existing body of research that aspirational (rather than fear-based campaigns) are more likely to be successful. Generating fear itself is not useful. Rather, there must be a call to action for people to "do something" positive and build a sense of direction going forward – such as making a plan. In the toolkit this is the Plan Builder.

4. When samples considered individually.

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