

Distracted Driving White Paper

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CCMTA's Distracted Driving Task Force was established to help reduce distracted driving as a contributing factor to motor vehicle collision fatalities and serious injuries in Canada. A significant role of the Task Force was to provide guidance to the development of CCMTA's Distracted Driving Action Plan. The *Distracted Driving White Paper* is an important key deliverable of this Action Plan.

CCMTA gratefully acknowledges the contributions of the Distracted Driving Task Force members and their colleagues to the White Paper's structure, content development and for their review of the final document.

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Contents

- 1.0 Executive Summary.....1**
- 2.0 Introduction.....4**
 - 2.1 Purpose of the Distracted Driving White Paper.....4*
 - 2.2 Definition of Distracted Driving.....4*
 - 2.3 Background.....5*
 - 2.4 Roles and Responsibilities of Governments.....5*
- 3.0 Measuring Distracted Driving.....6**
 - 3.1 Risk of Collision.....6*
 - 3.2 Collision Data.....7*
 - 3.2.1 Canadian Collision Data.....7*
 - 3.2.2 International Collision Data.....8*
 - 3.3 Observational Roadside Surveys.....9*
 - 3.3.1 Canadian Roadside Surveys.....9*
 - 3.3.2 International Roadside Surveys.....10*
 - 3.4 Naturalistic Driving Studies.....11*
 - 3.5 Public Opinion Surveys.....12*
 - 3.5.1 Canadian Public Opinion Surveys.....12*
 - 3.5.2 International Public Opinion Surveys.....13*
- 4.0 Distracted Driving Legislation.....15**
 - 4.1 Canada’s Administrative Approaches to Distracted Driving.....15*
 - 4.2 Sanctions for Distracted Driving in Other Countries.....16*
 - 4.3 Distracted Driving Legislation: Language and Terminology.....17*
 - 4.3.1 Canada’s Distracted Driving Legislation17*
 - 4.3.2 International Distracted Driving Legislation19*
 - 4.4 Evaluation of Administrative Sanctions.....20*
- 5.0 Distracted Driving and Target Populations.....21**
 - 5.1 Young and Novice Drivers.....21*
 - 5.2 Commercial Drivers.....23*
 - 5.2.1 “Grey Fleet” Drivers.....24*
- 6.0 Distracted Driving Enforcement.....24**
 - 6.1 Road Safety Enforcement Responsibilities in Canada.....25*
 - 6.2 Targeted Distracted Driving Enforcement Campaigns.....26*

6.3 Distracted Driving Enforcement Techniques.....	28
6.3.1 Undercover Police Enforcement.....	29
6.3.2 Elevated Vantage Points.....	29
6.3.3 Textalyzer.....	30
6.3.4 Frequency-Detecting Devices.....	30
6.3.5 Camera Scopes.....	30
6.3.6 Stationary Roadside Cameras.....	31
6.4 Barriers to Distracted Driving Enforcement.....	31
6.5 Distracted Driving Convictions.....	32
6.5.1 Canadian Distracted Driving Convictions.....	32
6.5.2 International Enforcement Activity.....	33
7.0 Distracted Driving Public Awareness Campaigns.....	34
7.1 Canadian Public Awareness Campaigns.....	34
7.2 International Public Awareness Campaigns.....	35
8.0 Distracted Driving Education and Training.....	37
8.1 Young and Novice Drivers Distracted Driving Training.....	37
8.1.1 Role of Parental Engagement.....	38
8.2 Commercial Drivers Distracted Driving Training.....	39
9.0 Workplace Policies to Address Distracted Driving.....	39
10. Distracted Driving and Emerging Technology.....	41
10.1 Hands-Free Communication Devices.....	41
10.2 Built-in Vehicle Technologies.....	42
10.3 Legislation, Guidelines and Regulations to Address Technologies.....	43
10.4 Automated Driver Assistance Systems and Automated Vehicles.....	44
10.5 Do Not Disturb Features.....	45
10.6 Radiocommunication Signal Blockers.....	45
10.7 Wearable Technologies.....	46
11. Evaluation of Technology and Distracted Driving.....	46
12. Multi-sector Partnerships/Collaboration/Linkages.....	47
References.....	48
Appendices.....	53

1.0 Executive Summary

Distracted driving is a priority area for CCMTA federal, provincial and territorial members who recognize that it is a serious and growing threat to road safety in Canada.

Distracted driving is when a driver's attention is diverted from the driving task by secondary activities (e.g., eating, talking to passengers, talking or texting on electronic communication devices (ECDs) such as cell phones and smart phones) (Road Safety Strategy 2025). Although there are many forms of 'distracted driving', much of the reported evidence available is related to electronic communication device use.

The purpose of this *Distracted Driving White Paper* is to provide information and knowledge to members as they develop policy and legislation to address distracted driving. The paper summarizes work carried out to date on distracted driving and identifies gaps in knowledge. This work will support and inform the jurisdictions as they look at their own efforts to address distracted driving.

Measurement and collection of distracted driving both nationally and internationally is complex and challenging and there is room for improvement. There are different sources of data, different measurements and definitions, and different permissible devices and behaviours that make measurement complex. Furthermore, contributions of various distractions to an overall distracted driving measure are difficult to ascertain. We cannot determine with certainty the degree to which each individual distracting factor (e.g. eating, drinking, electronic communication device use, texting, talking, etc.) contributes to distracted driving overall, nor which factors present the greatest threat to road safety.

Data from the National Collision Database (2015) reveal that 22.5% of serious injuries (i.e. individual hospitalized at least overnight) in Canada involved some type of distracted driving. Distracted driving includes all forms of distraction or inattention, such as talking to passengers, using an electronic communication device, eating or drinking.

From an international perspective, Canadian distracted driving administrative sanctions are among the most progressive sanctions identified to date. Although distracted driving laws may differ between jurisdictions, all provinces and two territories have distracted driving legislation and penalties in place which can include:

- Escalating fines to substantive financial amounts
- Introducing insurance premium penalties
- Varying lengths of licence suspensions for first, second and subsequent offences
- Driver improvement programs
- Vehicle impoundment
- Increased demerit points

Between 2017 and 2018, at least eight jurisdictions have made significant changes to their administrative sanctions. While it is too early to tell how effective some of these more recent changes will be in changing driver behaviour, it is vital to monitor distracted driving before and after implementation of changes to determine the impact of the various penalties.

Notably, there is much variation around the world when it comes to the wording of distracted driving laws and penalties. In some cases, the language used in distracted driving laws may not be broad enough to cover new and emerging technologies and their applications. It is impractical for governments to pass a new bill each time a new technology or use of a device is developed and as a result, jurisdictions attempt to comprehensively word their legislation. The dominant approaches to

comprehensive wording seem to focus on technology/devices (communication device, smartphone, Bluetooth, MP3, audio entertainment device, earbud, hands-free, mounted) and/or behaviours (using, holding, touching, texting, talking, looking, listening).

Effectiveness of legal sanctions not only depend on the wording of the sanctions, the type of penalties (individual components) and the severity of the penalty but also upon the perceived risk of being apprehended and convicted. Enforcement agencies in Canada and around the world use a variety of techniques to identify distracted drivers including undercover police enforcement such as roadside workers or plainclothes officers observing at roadside; elevated vantage points like buses, SUVs, or overpasses; and the use of technologies such as frequency detecting devices, camera scopes and stationary roadside cameras. Many of the techniques used have been successful in catching distracted drivers and law enforcement continues to identify new and creative approaches. Evidence suggests that high visibility enforcement operations can improve public awareness and curb distracted driving behaviour, but it is not known how long the effects last and how frequently campaigns should occur in order to sustain awareness.

Canadian jurisdictions devote significant resources to distracted driving public education and awareness. Ten of thirteen provinces and territories have conducted media campaigns that have included public service announcements and paid advertisements, and eleven of thirteen have had web-based educational awareness campaigns and outreach. A coordinated approach to the timing of public education and awareness campaigns with enforcement campaigns that are dedicated to distracted driving could leverage resources, strengthen messaging, increase reach, and motivate drivers to take action.

Education and awareness alone may be insufficient to change driver behaviour, but it can be an integral approach to a multifaceted intervention strategy. Gathering more information about the effectiveness of campaigns to change behaviour to further inform future campaign development is needed.

Workplace policies to address distracted driving may be an effective way for employers to reduce work-related distracted driving vehicle crashes and collisions. For workplace policies to be effective, they need to be practical, applicable to the work environment and circumstances, clearly communicated and understood by employees.

Driver training programs that specifically address distracted driving are another tool to educate drivers about distracted driving. Most driver training programs focus on young and novice drivers and contain a distracted driving component, although an intervention program that specifically targets repeat distracted driving offenders is a novel approach. Distracted driving simulators, role modeling, monitoring at home, and parental and peer engagement are additional training interventions with potential to reduce distracted driving. More information about the effectiveness of driver training interventions is needed to inform future best practices.

The issue of distracted driving is further complicated by the rapid growth and development of new technologies. Cellular phones have transformed to smartphones, and other information and communication devices such as wearable technologies. Newer vehicles are purchased with built-in and automated technologies, onboard sensing devices, video displays, infotainment units and other instruments to provide drivers with information and improve safety. Aftermarket technologies can be brought into vehicles and integrated with vehicles. Newer technologies such as automated driver assistance systems, 'Do Not Disturb Features', and radiocommunication signal blockers are examples of technologies that can support drivers in performing driving tasks and help drivers manage electronic devices while driving. These new and emerging technologies may hold promise to curb distracted driving and improve road safety.

To address the distracted driving issue in Canada, collaboration among road safety stakeholders is vital. Collaboration between governments, non-governmental organizations and other road safety partners is necessary to identify gaps, share information, leverage knowledge, share resources, learn from experiences, and to identify activities to address distracted driving.

A systematic approach to distracted driving is critical. Addressing one single issue will not create a solution; rather combined efforts using a multi-pronged approach to address all aspects of distracted driving are needed.

2.0 Introduction

2.1 Purpose of the Distracted Driving White Paper

The purpose of the *Distracted Driving White Paper* is to provide information and knowledge to members about distracted driving in Canada and internationally, as they develop policy and legislation to address distracted driving. The paper summarizes work carried out to date on distracted driving and identifies gaps in knowledge. It will help to inform the next steps of the distracted driving action plan and provide CCMTA members with a better understanding of the Canadian and international landscape as well as any best practices and approaches to distracted driving from a legislative, education, enforcement, research and technology standpoint. This work will support and inform the jurisdictions as they look at their own efforts to address distracted driving.

To inform the development of the *Distracted Driving White Paper*, CCMTA has engaged stakeholders, conducted environmental scans of national and international information and conducted surveys.

The *Distracted Driving White Paper* includes evaluations of interventions, best practices, and approaches. It addresses:

- The magnitude of the distracted driving problem, trends in distracted driving and current data collection methods
- Identified approaches to legislation, regulation and policy - both in Canada and internationally
- Approaches to enforce distracted driving laws
- Public education and awareness campaigns
- Driver education and training to mitigate distracted driving - with an emphasis on novice, young and commercial drivers
- Technologies aimed at minimizing distraction

2.2 Definition of Distracted Driving

Distracted driving occurs when the driver's attention is drawn to some other activity or event inside or outside of the vehicle rather than focusing on the driving task. Distractions outside the vehicle can include advertising and billboards, construction, collision scenes or emergency vehicles. Inside the vehicle distractions can include eating or drinking, grooming, looking to the back seat, talking to passengers, changing the channel on the radio, looking at a GPS device, and talking or texting on electronic communication devices (ECDs) such as cellular and smart phones, regardless of whether they are hand-held or hands-free. Any competing activity that takes the driver's attention away from the road is considered distracting.

For the purposes of this paper, the definition of distracted driving is when a driver's attention is diverted from the driving task by secondary activities (e.g., eating, talking to passengers, talking or texting on electronic communication devices (ECDs) such as cell phones and smart phones). (Road Safety Strategy 2025).

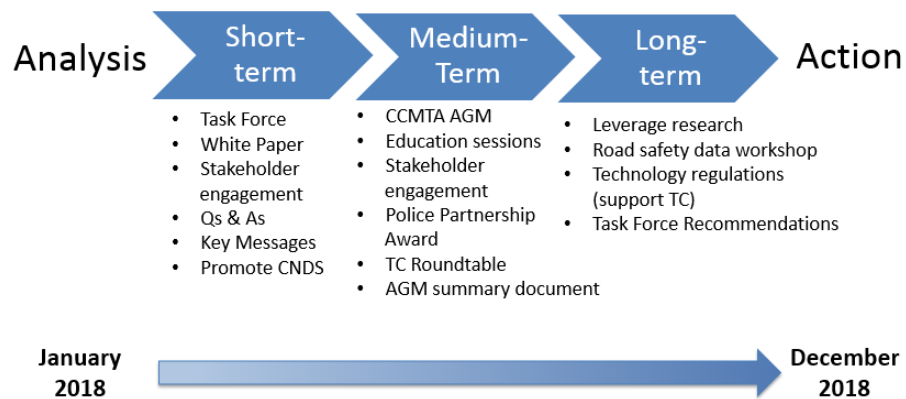
2.3 Background

In September 2017, the Council of Deputy Ministers Responsible for Transportation and Highway Safety requested that the Canadian Council of Motor Transport Administrators (CCMTA) develop an action plan on distracted driving to:

- Summarize work carried out to date by each organization to address distracted driving
- Identify gaps in knowledge regarding distracted driving; and
- Identify potential activities that can be undertaken to tackle distracted driving

Between September and December, CCMTA consulted with its members and developed a distracted driving action plan. In January 2018, the action plan was presented to and received approval from the Ministers Responsible for Transportation and Highway Safety.

Figure 1: Distracted Driving Action Plan



The action plan includes a series of short-, medium- and long-term activities to be undertaken between January and December 2018. Each stage of the plan builds on the previous phase and drives the activities moving forward.

The objective of the action plan is to produce a final document that outlines the elements of a model distracted driving framework that jurisdictions can adapt or adopt.

The *Distracted Driving White Paper* is an important foundational short-term activity of the distracted driving action plan.

2.4 Roles and Responsibilities of Governments

Distracted driving is a priority area for CCMTA federal, provincial and territorial members who recognize that it is a serious and growing threat to road safety in Canada.

The road safety roles and responsibilities of governments in Canada encompass legal, regulatory, enforcement, awareness, education and road infrastructure.

The Federal Government of Canada's roles and responsibilities include:

- The *Criminal Code of Canada (CCC)*, administered by Justice Canada, includes sections addressing driving while impaired

- Under the *Motor Vehicle Safety Act*, Transport Canada (TC) is responsible for the regulation of motor vehicle safety standards and their enforcement, as well as original equipment in new or imported vehicles
- Under the *Motor Vehicle Transport Act*, TC is responsible for the regulation of extra-provincial motor carrier safety

There are currently no federal standards or regulations that restrict or prescribe the provision of telematic devices as original equipment in vehicles. However, Transport Canada's Canadian Motor Vehicle Safety Standards include regulations for displays and controls in vehicles.

Canadian provinces and territories are responsible for:

- driver and vehicle licensing
- highway infrastructure
- enforcement and the administration of justice (i.e., CCC and Highway Traffic Acts)
- the regulation of intra-provincial motor carriers
- enforcement of extra-provincial motor carriers
- developing road safety programs which combine legislative, regulatory, enforcement, awareness/education, and road infrastructure measures
- specific to distracted driving, provinces and territories are responsible for the conduct of drivers on roadways and the installation of equipment in vehicles after purchase

3.0 Measuring Distracted Driving

Using data and information that is available, it is accurate to say that distracted driving is a serious road safety issue. Studies examining driver behaviour in a simulator show that numerous distractions affect driving performance. Observational and naturalistic surveys that observe and record driver behaviour provide evidence that drivers engage in distracting behaviours and that these behaviours can result in collisions and near miss incidents. Crash-based or collision-based data from police reports and other sources indicate that distractions are a contributing factor to fatal and serious-injury collisions. It should also be noted that although there are many forms of 'distracted driving', much of the reported evidence available is related to electronic communication device use.

The quantity and quality of distracted driving data available in Canada and internationally does not allow for a comparison of this issue between countries, nor the ability to precisely state with confidence the true magnitude of distracted driving. We cannot determine with certainty the degree to which each individual distracting factor (e.g., eating, drinking, electronic communication device use, texting, talking, etc.) contributes to distracted driving overall, nor which factors present the greatest threat to road safety. The evidence referenced in this paper provides enough information to confirm that distracted driving is an important and growing issue in Canada and around the world.

3.1 Risk of Collision

Several studies have examined the risk of being involved in a collision while using an ECD. Analysis of crash-only data from the US naturalistic driving study – a study examining drivers in a real-world setting – found that all distractions doubled the odds of a collision but using an ECD increased the odds by 3.6 times (Dingus et al, 2016).

A culpability analysis found that cell phone use by drivers increased the risk of an at-fault collision by 1.70 times (Asbridge et al, 2013). A culpability analysis uses data collected from police or traffic engineering reports to assign responsibility to the drivers involved in a crash.

A meta-analysis of six studies of crash risk while driving and using an ECD found that ECD use increased the odds of a crash by 2.86 (Elvik, 2011).

While the size of the risk estimate associated with cell phone use while driving varies between the studies (1.7 to 3.6 times) depending on the methodology used, findings indicate that a significant risk of collision does exist.

3.2 Collision Data

Crash or collision data are used to understand how and where people are hurt or fatally injured when traveling on roadways. Collision data can be obtained from police crash reports, collision reporting centers, self-reported information and in some cases public insurance.

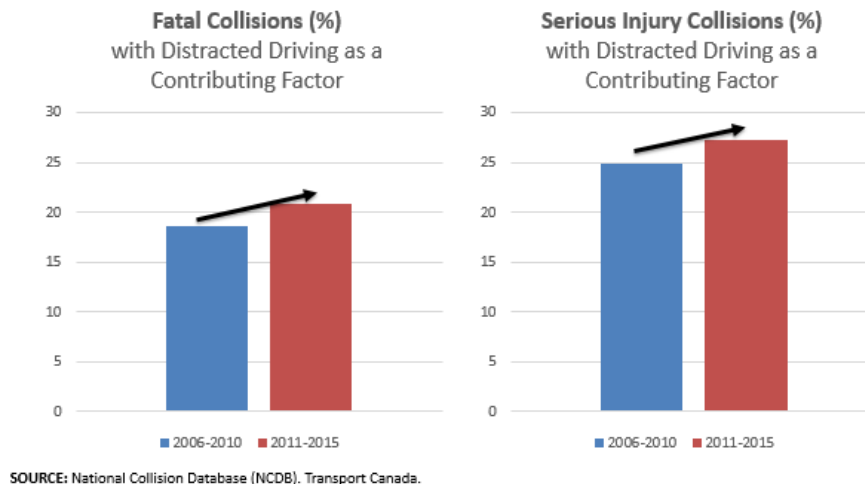
3.2.1 Canadian Collision Data

In Canada, the provinces and territories collect police-reported motor vehicle collision data. The data are reported annually to Transport Canada and are maintained in the National Collision Database (NCDB). The database is a source of fatal and serious-injury collisions with distracted driving as a contributing factor (See Appendix A: Number and Percentage of Distracted Driving Fatalities and Serious Injuries in Canada 2002-2015).

Data from the NCDB (2015) reveal that 22.5% of fatalities and 28.2% of serious injuries (i.e., individual hospitalized at least overnight) in Canada involved some type of distracted driving. Distracted driving includes all forms of distraction or inattention, such as talking to passengers, using an electronic communication device, eating or drinking. Over time, the percentage of fatalities and serious injuries involving distracted driving has been increasing in Canada (See Figure 2: Magnitude of the problem).

Figure 2: Magnitude of the problem

Magnitude of the problem



In looking at ECD use specifically, currently, only four Canadian jurisdictions include police reporting on whether use of an ECD by a driver was a contributing factor to the collision. Extrapolating from these jurisdictions to Canada as a whole, it is estimated that during the period 2010-2014, 1.7% of fatal

collisions and 1.9% of injury collisions involved drivers using ECDs. It must be noted that there were many assumptions used in the development of this estimate and it has several limitations including the likelihood of underestimation of ECD use as a contributing factor.

The data indicate that there has been a relative increase in fatalities and serious injuries involving distracted driving over the past 15 years in Canada.

In order to provide a more accurate measure of ECD use as a contributing factor in collisions nationally, collection and reporting of this data from all jurisdictions would be required.

3.2.2 International Collision Data

Internationally, distracted driving data are not uniformly collected and reported. National Highway Traffic Safety Administration (NHTSA)'s Distracted Driving Global fact sheet states: "One of the most dangerous driver behaviours is the spreading epidemic of distracted driving, which has increased with the proliferation of cell phones and increasing mobilization of people across the globe". There are no actual numerical figures provided to substantiate the spreading epidemic, however, the following table presents available international data and clearly shows that distracted driving is an issue of global concern.

Table 1: International Collision Data	
Country	Magnitude of Distracted Driving
United States	During 2016 in the United States, 6% of driver fatalities involved distracted driving and 1.3% involved cell phone use (NHTSA, 2018). Using 2015 collision data, it was estimated that 16% of injuries involved distraction and 0.8% involved in cell phone use.
France	A study undertaken in 2010 estimated that 10% of injury crashes could be attributed to phone use while driving (ITF, 2014).
Spain	The 2016 Main Road Traffic Accident figures found distracted driving was responsible for 25% of collisions in 2016 and 31% of traffic fatalities (ITF, 2017).
Sweden	A study by the Swedish Traffic Accident Data Acquisition using data from the years 2013 to mid-2016, concluded that about 0.5% of personal injury collisions with motor vehicles involved persons who stated that mobile phones or other communication equipment were used at the time of the collision (Hedlund and Fredlund, 2017).
Switzerland	Distraction or lack of attention was cited in 28% of fatal crashes in 2016 (ITF, 2017).
Austria	In 2015, about 38% of all road traffic crashes and 31% of all road fatalities were attributed to inattentiveness or distraction as the main cause of the crash (ITF, 2017).
Italy	In 2012, it was estimated that distraction was a contributing factor in 17% of injury crashes (ITF, 2014).

3.3 Observational Roadside Surveys

Roadside observational surveys can be used to measure the prevalence of driver behaviour (e.g. eating, drinking, using an electronic communication device, talking to passengers, wearing a seatbelt) in a real-world setting. Generally, trained investigators are posted at pre-determined intersections or locations to observe and record distraction-related activities and demographic characteristics of vehicle occupants. Regular surveying allows for monitoring changes in behaviour over time.

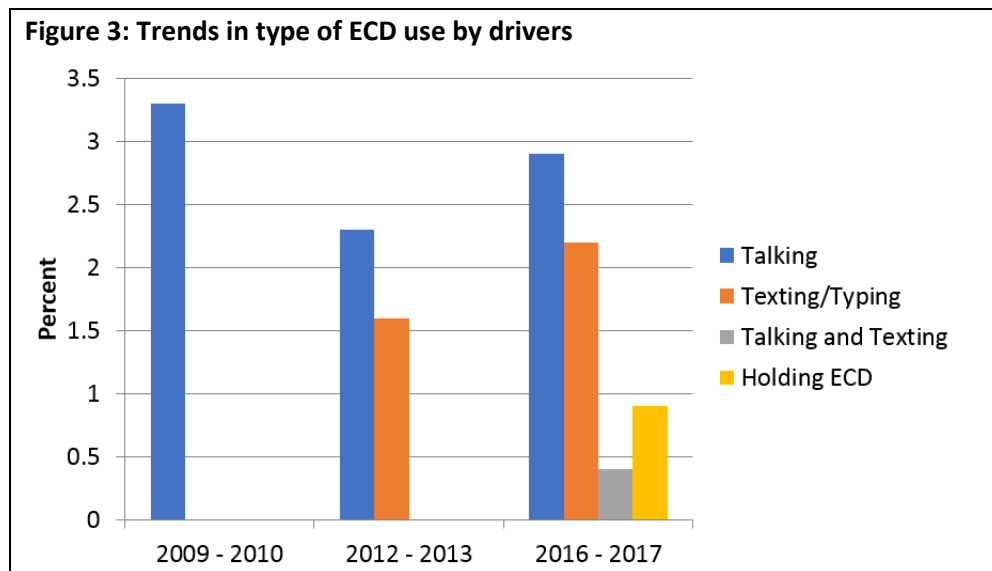
3.3.1 Canadian Roadside Surveys

Observational surveys of drivers' use of hand-held ECDs have been conducted every several years in Canada since 2006, with urban surveys being carried out one year and rural surveys the next. The most recent surveys were conducted in 2016-2017 observing approximately 125,000 drivers (CCMTA, 2018). Other types of distraction were not measured in this survey.

Highlights from the 2016-2017 survey include:

- 7.2% of drivers were using ECDs while stopped at intersections
- 7.9% of drivers in urban areas and 3.0% of drivers in rural areas were using ECDs
- Drivers under 25 were more likely to be observed using ECDs (11.6%) compared to those 25-49 (6.8%) or 50 and over (3.4%), though, notably, ECD use was observed among all ages of drivers
- Female drivers were somewhat more likely to be using ECDs (7.0%) than male drivers (6.3%)
- Drivers were more likely to be talking on an ECD (2.9%) than typing or texting (2.2%)
- Unbelted drivers used ECDs more often (9.6%) than those wearing seat belts (6.5%)

As ECD technology has changed, the observations made of drivers' use of these devices has changed. The following figure depicts the measures of ECD use over the various survey cycles. In 2009-10 only drivers use of ECDs for talking was measured, whereas in 2016-17, use of ECDs for talking, texting/typing, talking and texting, and holding the ECD were measured.



Comparing 2016-2017 findings to previous years reveals that ECD use by drivers in urban and rural areas of Canada continues to be an issue.

- ECD usage by drivers for talking increased from 2.3% in 2012-2013 to 2.9% in 2016-2017, an increase of 26%
- Typing or texting on ECDs increased from 1.6% in 2012-2013 to 2.2% in 2016-2017, an increase of 38%
- Combining talking and texting/typing, drivers’ ECD usage increased from 3.9% in 2012-2013 to 5.1% in 2016-2017, an increase of 31%

Observational surveys in Canada clearly indicate that the overall use of ECDs by drivers (including talking, texting, or holding the device) has increased over time. It is important to note that over time the use of devices has shifted. Whereas early technology was used exclusively for talking, current modes of communication are used for multiple functions.

3.3.2 International Roadside Surveys

Roadside surveys indicate that around 1% to 11% of drivers use telephones while driving (European Road Safety Observatory, 2015). The table below provides information on roadside surveys conducted in various countries and the findings from these surveys. It does not include the different laws or initiatives within each jurisdiction and any variations. While surveys have not all used similar methodologies and as a result usage rates are not necessarily comparable to Canada, the table shows that distracted driving is a global concern.

United States	<p>A 2016 national observational survey in the US found that:</p> <ul style="list-style-type: none"> • 3.3% of drivers were holding a hand-held cell phone to their ear, presumably talking on it, which was a decrease from 3.8% observed in a 2015 survey (NHTSA, 2016). • In addition, 2.1% of drivers were visibly manipulating the device, presumably texting or typing, which did not differ from the 2.2% usage observed in a 2015 survey. • In total 5.4% of drivers were using hand-held electronic devices in 2016. <p>A 2017 survey of about 20,000 drivers in California determined that 3.6% were using a cell phone in some manner which was lower than in earlier surveys in that state (Bommer, 2017).</p> <p>A survey in Alabama observed 5.1% of drivers were distracted by one or more things and about half of these distracted drivers were talking or typing/texting on phones (Huisingh et al. 2014).</p>
Australia	<p>A 2009 survey in South Australia found that only 0.6% of 11,524 drivers were using cell phones (Wundersitz, 2014).</p>
Belgium	<p>In a 2013 road-side survey in Belgium, 2% of drivers were talking on hand-held phones while another 1.2% held the phone. Drivers of vans and trucks were significantly more often observed with hand-held devices than car drivers (Riguelle and Roynard, 2014).</p>
The Netherlands	<p>A 2017 observational study by the Ministry of Infrastructure and the Environment (Broeks and Bijlsma-Boxum, 2017) found that between 7 and 8% of drivers used hand-held mobile phones or smartphones while driving.</p>

Czech Republic	In 2011, it was estimated that 2.7% of drivers were using a mobile phone while driving.
England and Scotland	In 2014, 1.6% of all drivers in England and Scotland were observed using a hand-held mobile phone while driving (UK Department for Transport, 2015). Drivers were more likely to be observed with a mobile phone in their hand (1.1%) rather than holding it to their ear (0.5%). A significantly higher proportion of male drivers were observed using hand-held mobile phones than female drivers (1.7% vs 1.3%). A 2009 London survey indicated that the overall level of use was 2.7% with a greater proportion of car, van and taxi drivers using hands-free rather than hand-held phones. The use amongst van drivers was nearly twice as high as for car drivers. The use of hands-free phones for taxi drivers was almost nine times as high as the use of hand-held phones (Narine, et al, 2010).
Greece	According to an observational study by the National Technical University of Athens (NTUA) in 2009, 9% of passenger-car drivers used mobile phones while driving (ITF, 2017).
Hungary	According to a roadside survey from 2015, more than 5% of drivers regularly use a hand-held mobile phone while driving (ITF, 2017).
France	In 2012, a roadside survey showed that at any given time, 2% of car drivers were using a hand-held phone while driving (ITF, 2014).
Germany	A 2016 observational study of almost 12,000 drivers found that 13% of drivers appeared distracted and 8.4% of drivers used a phone (1.7% hands-free, 2.2% had the phone at the ear, and 4.5% looked at phone and held it).
Ireland	A 2013 observational survey of drivers' mobile phone use when driving was found that 4% of drivers used a hand-held mobile phone while driving. The 2016 Mobile Phone survey found that out of the 14,450 drivers observed, 6% were observed using a mobile phone (372 held at ear, 506 in hand) (ITF, 2017).
Italy	During 2009-2011, observed cases of car drivers using mobile phones while driving represented around 9%. The observation surveys were limited to selected cities (ITF, 2014). In 2015-2016 it was estimated that 5.1% of drivers use their phones without a headset while driving (IFT, 2017).
Spain	A 2014 observational survey in Spain indicates that around 20% of drivers engage in a secondary task while driving, with about 2% using their mobile phone while driving (Prat et al, 2015).

3.4 Naturalistic Driving Studies

Naturalistic driving studies (NDS) of drivers’ behaviour have been carried out in several locations in the US and in the Saskatoon area in Canada. These studies use technology to measure vehicle speed and acceleration, and cameras to observe the driver’s behaviour, as well as forward and rear environment around the driver. Observed secondary tasks engaged by drivers include eating; interacting or talking with passengers; and talking, viewing, or manipulating cell phones. In the Canadian study, 2.4% of drivers were observed to be using a cell phone, compared to 6.6% in the US study (Klauer and Perez, 2018).

An analysis of crash-only US naturalistic driving data found that 68.3% of drivers involved in a collision were engaged in some form of observable distraction (e.g., eating, talking to passengers, changing radio channel, using cell phone). Drivers were engaging in distracting activities more than half of the time, resulting in a crash risk that is 2.0 times higher than model driving. By contrast, interacting with a

handheld cell phone occurred 6.4% of the time, resulting in a crash risk that was 3.6 times higher than model driving (Dingus, 2016).

3.5 Public Opinion Surveys

Public opinion surveys provide the best way to understand public views and perceptions. Surveys on distracted driving from Canada and other countries consistently show that despite the fact individuals consider ECD use while driving to be a risky or unacceptable behaviour, many continue to self-report engaging in the behaviour. It should be noted that self-report surveys may underestimate ECD use while driving as people may be reluctant to report engaging in this behaviour.

3.5.1 Canadian Public Opinion Surveys

A 2014 CCMTA public opinion survey (Forum, 2014) found:

- 30% of individuals self-reported that they talk on an ECD at least sometimes
- 25% said that they text at least sometime
- 70% believed that talking on an ECD while driving was very dangerous
- 89% said that texting was very dangerous
- 73% thought that texting had increased considerably in the last five years
- 54% thought that talking on hand-held devices had increased considerably

A survey conducted in 2015 for the Ministry of Transportation of Ontario (Pollara 2015) found:

- 80% of respondents believed it was completely unacceptable to use a hand-held mobile phone while driving
- 26% reported that they frequently (6%) or occasionally (20%) read or sent text messages while driving
- 11% said that they frequently (4%) or occasionally (7%) held a cellphone/smartphone to their ear while talking and driving

A 2011 national survey by the Traffic Injury Research Foundation (TIRF) (Marcoux, et al., 2012) found:

- 4% of drivers reported they often talk on a hand-held cell phone and 4.8% reported that they often text, with both percentages being somewhat lower than survey findings in 2010
- 36.3% of respondents stated they had used their phone while driving in the last 7 days, which was comparable to findings in 2006 and 2010 surveys
- Of those using their phone in the last week, about two-thirds said they had used the phone while driving for less than 10 minutes, a lower level of usage than in a 2001 survey; and
- About two-thirds of respondents rated driving while using a cell phone as a very or an extremely serious problem which was similar to earlier surveys

Other public opinion surveys in Canadian jurisdictions confirm the above findings. For example, in October 2017, a BC public opinion survey of drivers confirms that while a majority of drivers believe that texting and talking are risky behaviours, many (38%) use their hand-held devices at least once in every 10 trips. A December 2017 survey of Ontarians revealed that most (90%) respondents know texting and using a hand-held device is an offence. The majority (90%) feel it is dangerous to send/read a text message or use a hand-held device while driving and perceptions of these dangers have increased since 2015 (85%). Surveys from Edmonton (2016) and Alberta Motor Association (2014) also show drivers know the risks but yet engage in the behaviour.

3.5.2 International Public Opinion Surveys

The following table of international public opinion surveys of ECD use and driving again confirms that ECD use while driving is a global issue and trends are similar to Canadian results.

Table 4: International Public Opinion Surveys of ECD Use and Driving	
United States	<p>A 2015 survey in the US by the NHTSA determined that:</p> <ul style="list-style-type: none"> • 42% of drivers reported answering their cell phone when driving at least some of the time (Schroeder, et al., 2018). • More than half of drivers (56%) answering their phones while driving continue to drive while finishing the conversation. • About a third of drivers (34%) said that they are willing to make a cell phone call while driving at least sometimes. • About one in 10 respondents reported sending text messages or e-mails while driving at least sometimes. • Also, 8% of the respondents said that they use Smartphone Apps (e.g., music/radio, Facebook, internet, but not navigation apps). • If the respondents were passengers in a vehicle, 86% of them said that they would feel very unsafe if the driver was sending text messages or e-mails. • Only 54% of respondents believed it was likely that a driver who regularly uses an electronic device for talking would be ticketed by the police and 56% thought that such a driver would be ticketed for typing/texting. • About three-quarters of respondents supported state laws banning talking on electronic devices while 92% were in favour of laws prohibiting typing/texting. • During the past year, 7% of respondents reported being involved in a collision and of those drivers, 14% said that they had been distracted (i.e., 1% of all respondents).
Australia	<p>A 2015 mobile consumer survey, which asked 1600 Australian smartphone owners about their mobile phone usage habits, found that 25% reported using smartphones while driving at least sometimes and the statistics were identical when respondents were asked if they had used their phone while crossing the road (Deloitte, 2015).</p>
Germany	<p>A survey of 2500 people by market research firm Kantar TNS in August 2017 found that 61% of car drivers said they would probably use the phone while driving in certain situations (52% in a traffic jam and 30% at a red light), even though 92% said they considered it dangerous to use the phone while driving (Runter Vom Gas, 2017).</p>
Netherlands	<p>A 2017 survey reported that:</p> <ul style="list-style-type: none"> • 51% of Dutch motorists sometimes use the phone while driving in a way that is prohibited (i.e., hand-held). • The most common reason was for navigation (31%), followed by texting (36%), calling (21%), or playing music (19%). • 82% of drivers said using the phone while driving negatively impacted their driving ability (Een Vandaag Opinion Panel, 2017).

South Korea	<ul style="list-style-type: none"> According to a 2015 study by Hyundai Insurance Research Center (HIRC), 90% of South Koreans surveyed admitted to texting while driving (The Korea Times, 2015).
Spain	A 2016 survey found 94% of drivers classified mobile phone use while driving as a dangerous activity, but 25% of respondents admitted to doing it without a hands-free device and 18% of respondents admit they respond to messages while driving (Director General of Traffic, 2017).
Sweden	A 2017 survey found 70% of Swedish drivers admit to reading or sending text messages while driving, up from 24% in 2013. A 2004 survey among Swedish drivers showed that mobile phone use while driving had increased in the past 10 years with 30% of all drivers with mobile phones reportedly using them daily while driving (Thulin and Gustafsson, 2004).

Most of these surveys indicate that while the majority of respondents recognized that using an ECD while driving is dangerous, about a quarter to a third of people say they do it at least some of the time.

Greater consistency in the way that distracted driving is defined, data are collected, and more detail about the various distractions would help to provide comparable data across Canadian jurisdictions and other countries.

Key Points

- Over time, the percentage of fatalities and serious injuries involving distracted driving has been increasing in Canada, which could threaten road safety gains made over the last 60 years
- Measurement and collection of distracted driving both nationally and internationally is complex and challenging. There are different sources of data, different measurements and definitions, and different permissible devices and behaviours that make measurement complex
- The quality and comprehensiveness of data obtained from different methods varies and there is no identified gold standard for evaluating or measuring distracted driving
- While not all methods of measuring distracted driving allow for equal or comparative analysis, and some methods may be more accurate than others, the data obtained can provide valuable insights
- Contributions of various distractions to an overall distracted driving measure are difficult to ascertain
- Only four Canadian jurisdictions report on the involvement of ECDs in collisions
- It is important to monitor the prevalence of distracted driving over time to measure change
- Research, data collection, surveillance, monitoring and evaluations of measures to reduce distracted driving require resources: human, financial, and systems to support and house the data

4.0 Distracted Driving Legislation

4.1 Canada's Administrative Approaches to Distracted Driving

Canadian distracted driving administrative sanctions are among the most progressive sanctions identified to date. Although distracted driving laws may differ between jurisdictions, all provinces and two territories have distracted driving legislation and penalties in place that at the very least prohibit some hand-held phone use (See Table 5: Distracted Driving – Legislation and Penalties for Fully Licensed Drivers (non-GDL) in Canada). Nunavut has passed legislation which will come into effect in December 2018 (See Appendix B: Distracted Driving Legislation– Prescribed Devices and Behaviours for fully licensed drivers (non-GDL) in Canada). In all but one province, drivers are prohibited from holding an electronic device or cell phone, even if they are not operating it.

Table 5: Distracted Driving - Legislation and Penalties for Fully Licensed Drivers (non-GDL) in Canada

	Legislation Date	Update	Fines	Demerit Points	Administrative License Suspensions	Vehicle Impoundment
BC	Jan-10	Mar-18	\$368	4	see note ¹	
AB	Sep-11	Jan-16	\$287	3		
SK	Jan-10	2014, 2017	\$280	4		v ²
MB	Jul-10	Jul-15, Jun-18	\$672	5	v ³	
ON	Oct-09	Jan-18	\$300-1000 (set fine \$490)	3	see note ⁴	
QC	Apr-08	2018	\$300-600 ⁵	5	v ⁵	
NB	Jun-11		\$172.50	3		
NS	Apr-08	Feb-15, Oct-18 ⁶	\$237.50 - 582.50	4		
PE	Jan-10	2015	\$500-1200	5		
NL	Apr-03	2016, 2018	\$300-\$1000 ⁷	4 ⁷	See note ⁷	
NT	Jan-12	May-16	\$322-644	3	v ⁸	
YT	Apr-11	May-18	\$500	3		
NU	Dec-18 ⁹					

¹ Using Electronic Devices is identified as High Risk Driving under the Driver Improvement Program. Fully licensed drivers who receive two tickets in a year will have their driving record reviewed by the Superintendent of Motor Vehicles, and face a potential license prohibition of 3 to 12 months. For drivers in the Graduated Licensing Program this occurs after a single ticket. As of March 2018 drivers pay a premium for 2 or more convictions in a three year period, for a total payment as high as \$2000.

² Vehicle impoundment occurs on the second or subsequent offence within a year, or third or subsequent offence of 'without due care and attention' within one year.

³ Distracted driving convictions are used as input factors to determine if Driver Improvement and Control intervention is warranted. The Drivers and Vehicles Amendment and Highway Traffic Amendment Act was passed on June 4, 2018 and came into force on November 1, 2018. Amendments to the Highway Traffic Act include an automatic three-day license suspension for drivers using an ECD while driving and 7-day suspension for subsequent occurrence within a 10-year time period. Suspended drivers must immediately surrender their driver's license. Police officers issue temporary driving permits to valid driver's license holders that are valid until the end of the next day, at which time the suspension takes effect. Amendments to the Drivers and Vehicles Act make careless driving a reportable offence requiring police

to immediately report charges to the Registrar of Motor Vehicles. The Register will review the driver's record to determine if additional driver improvement and control measures are necessary. Careless driving demerits have also increased from two to five.

⁴ On December 12, 2017: Ontario passed Bill 174, Cannabis, Smoke-Free Ontario and Road Safety Statute Law Amendment Act, 2017. The bill further strengthens existing distracted driving penalties by increasing fines to at least \$500, with a maximum of \$2000 and a maximum of \$3000 upon second and third conviction, as well as 6 demerit points, and administrative license suspensions of 3, 7, and 30 days for first, second and subsequent convictions. These changes will come into force January 1st, 2019.

⁵ A bill to amend the Highway safety code was passed on April 18th, 2018 and came into force June 30th, 2018. \$300-600 for a first offence and for repeat offence (within 2-year period) fines are double the minimum or \$600. Immediate license suspension in the case of a repeat offence (within a 2-year time period) of 3 days (first repeat offence), 7 days (second repeat) and 30 days (third repeat offence)

⁶ On October 3, 2018, NS introduced a new Traffic Safety Act (TSA). It will clarify the definition of distracted driving to adapt for modern technology. The TSA will change the penalties associated with a violation and consider aggravating factors for all violations.

⁷ Amendments to the Highway Traffic Act were introduced in December 2017 and came into effect June 2018. A new offence for driving without due care and attention or without reasonable consideration for other persons causing bodily harm or death was added, carrying the following penalties: \$2,000 (minimum) to \$20,000 (maximum) fine or up to two years imprisonment, or both; licence suspension of not more than five years; and six demerit points.

⁸ Allows for administrative license suspensions for 2nd, 3rd and 4th distracted driving offences in a 2-year period (24 hour, 7-day, and 30-day suspensions respectively.)

⁹ New Traffic Safety Act was assented to on June 8, 2017. The Traffic Safety Act comes into force the earlier of December 31, 2018 or a day to be fixed by order of the commissioner. Electronic devices are addressed in the new Traffic Safety Act.

When distracted driving laws were first introduced in Canada (2003-2012), the fines were lower than current levels, and most jurisdictions did not include a demerit penalty. However, since initial implementation, distracted driving laws have been substantially strengthened in Canada. Most provinces have raised their fines at least once and have added or increased demerit points. Two jurisdictions with public insurance systems provide additional disincentives in the form of increased premiums for distracted driving convictions, which can amount to hundreds of dollars. Increased fines for specific locations, such as school or construction zones, is another approach that is used by some Canadian jurisdictions.

Between 2017 and 2018, at least eight jurisdictions have made significant changes to their administrative sanctions including:

- Escalating fines to substantive financial amounts
- Introducing insurance premium penalties
- Varying lengths of licence suspensions for first, second and subsequent offences
- Driver improvement programs
- Vehicle impoundment
- Increased demerit points

One jurisdiction has increased fines for a distracted driver involved in a collision. Ontario's most recent legislation which come into effect on September 1, 2018 introduces laws such that careless drivers (including those who were distracted by hand-held and *hands-free* devices) and caused death would be fined \$2,000-\$50,000 and six demerit points, receive a license suspension of up to 5 years, and receive up to two years jail time.

It is too early to tell how effective some of these more recent changes will be in changing driver behaviour, but it is vital to monitor distracted driving before and after implementation of changes to determine the impact of the various penalties.

4.2 Sanctions for Distracted Driving in Other Countries

Internationally, fines and demerits are the most widely used administrative measure to address distracted driving. The sanctions for violating laws prohibiting the use of ECDs by drivers vary among

countries (See: Appendix C: Distracted Driving – Legislation and Penalties for fully licensed drivers (non-GDL) – International). Of the countries examined, some notable similarities and differences are summarized below:

- International fines range from as little as \$32 CAD in South Carolina and \$69 CAD in Japan, to \$610 CAD in Sweden, and \$960 CAD in Singapore
- Demerit points are not as widely used internationally as they are across Canada
- Canada is one of the few countries to institute license suspensions
- The UK has a 6-month suspension for a second distracted driving offense within a 3-year period
- In some jurisdictions, distracted driving is treated as a criminal offense and can result in jail time
 - In Utah, there can be a penalty of up to 6 months in jail for a second offence within a 3-year period
 - In Singapore, both a fine and a jail term of as much as 6 months can be administered for a first offense, and 12 months for a second offense

Of the countries examined, most have increased their fines at least once since 2010. Additionally, some countries leave it to the courts to set a fine which is influenced and determined by the case itself. Note that in countries where the courts are permitted to set the fine, there is usually a set maximum.

Some countries also have escalating fines for repeat offenders and/or a higher fine if a collision occurred. In Germany, hand-held use of a phone while driving is punishable by a \$155 CAD fine, but with endangerment (i.e. there was a collision) the fine is \$233 CAD, and if there is property damage, it is \$210 CAD.

In the UK, while fines are often given at the roadside, a summons to court with a conviction will receive a harsher fine of up to \$1750 CAD and imprisonment may result if cell phone use contributed to a serious crash where someone was seriously hurt or killed.

There were no published evaluations found that measure the effectiveness of various penalties on distracted driving behaviour.

4.3 Distracted Driving Legislation: Language and Terminology

There is much variation around the world when it comes to the wording of distracted driving laws and penalties (See Appendix B: Distracted Driving Legislation– Prescribed Devices and Behaviours for fully licensed drivers (non-GDL) in Canada and Appendix C: Distracted Driving – Legislation and Penalties for Fully Licensed Drivers (non-GDL) -- International).

In some cases, the language used in distracted driving laws may not be broad enough to cover new and emerging technologies and their applications. It is impractical for governments to pass a new bill each time a new technology or use of a device is developed and as a result, jurisdictions attempt to comprehensively word their legislation. The dominant approaches to comprehensive wording seem to focus on technology/devices (communication device, smartphone, Bluetooth, MP3, audio entertainment device, earbud, hands-free, mounted) and/or behaviours (using, holding, touching, texting, talking, looking, listening).

4.3.1 Canada’s Distracted Driving Legislation

Hand-held ECD use while driving is considered a primary offense in all Canadian jurisdictions – meaning enforcement can pull a driver over for an observed distracted driving violation. In each jurisdiction, legislation is typically worded to prohibit “use” of a distracting device, and most jurisdictions cover a

wide range of behaviours by expanding the definition of “use” to include behaviours such as manipulating, operating, communicating or viewing the device or screen.

To avoid complexities that can arise from vague definitions of “use”, many provinces have updated their legislation to specify that a driver may not even hold the device while driving, while others specify that it may not be held “in a position in which it may be used” and Quebec’s legislation states that “a driver who is holding a device is presumed to be using it”.

Provincial and territorial laws typically include an exemption for the definition of “use,” such that using the device in a hands-free manner is allowed if it is configured and equipped to be used as a hands-free device. Some could argue that there are highly distracting behaviours that do not require the use of one’s hands such as watching a video. In Saskatchewan, Manitoba, Alberta, British Columbia, and New Brunswick, viewing or looking at the screen of a hand-held device is specifically prohibited. Although, in some cases looking at the device for navigation purposes is permitted which can create confusion when it comes to identification of offenders and enforcement.

In looking at prohibited types of electronic devices, there is wide variation in the specificity of legislation across Canada. Technology has evolved and the main purpose of a modern “smartphone” is no longer the telephone function, which has introduced complexities. To address this, most provinces specifically ban “hand-held devices that *include* a telephone function,” or “hand-held wireless communication devices”, and list specific functions that the device may have (e.g. ability to send or receive text messages). However, there are some hand-held ECDs (e.g. MP3 players, e-readers, tablet computers, or smartwatches) which may not include a telephone or other prescribed function and would not be covered under these laws. Some jurisdictions only prohibit viewing of television screens which might lead to complexities regarding the true definition of “television” in this modern era of smartphones, tablets, and internet videos.

Earpieces are another example of variation in the specificity of legislation across Canada. For example, Quebec, British Columbia, and Manitoba prohibit the wearing of earphones (go inside the ears) and/or headphones (go over the ears) while driving, as these may interfere with the ability of a driver to hear important environmental sounds or cues and affect road safety. While Manitoba only specifies that headphones are prohibited, Quebec specifies that both headphones and earphones are prohibited. There may also be confusion with wearing devices on or over one or both ears. British Columbia and Manitoba specify wearing of headphones or earphones on/in both ears, whereas Quebec does not make this distinction. Additionally, in British Columbia there is an exemption for motorcyclists.

One of the most comprehensive laws is found in New Brunswick, where all “hand-operated electronic devices” are prohibited, which is broad enough to include:

- cellphones
- GPS devices
- entertainment and infotainment devices
- laptops
- portable DVD players
- e-readers
- tablets
- smartwatches

The definition of to “use” for New Brunswick includes holding the device, operating its functions, communicating by means of the device, or looking at the device’s display. There is an exemption for hands-free use, and for looking at the display for GPS navigation. Display screens are also generally

banned for anyone other than taxis or commercial drivers, and built-in display screens are prohibited when used for any purpose other than navigation, weather, and vehicle or safety information.

Laws that are not clear can result in legal challenges and more cases being referred to the court system. In 2015 in Nova Scotia, a man was accused of distracted driving for holding his phone in his hand to use the iPhone voice-control application known as "Siri". The provincial court ruled that he was not technically using his phone, and the Supreme Court eventually upheld the decision. In his 25-page ruling, Justice Jamie Campbell said the definition of the word "use" under the legislation is difficult for people to understand and does not provide a precise description of what is not allowed (R. v. Ikede, 2015 NSSC 264 (CanLII), <<http://canlii.ca/t/gltxh>>, retrieved on 2018-05-10).

Development of legislation to address electronic communication device use by drivers and distracted driving is a challenge. Legislation that focuses on technology and devices may not apply to many new and emerging technologies (e.g. wearable technologies) and, in focusing on the behaviour, the law may inadvertently permit certain activities.

4.3.2 International Distracted Driving Legislation

There are also differences found in the wording of laws to address distracted driving among other countries, either in the inclusion or exclusion of specific devices and technologies or their 'uses'.

Most national and international jurisdictions make a distinction between hand-held devices and hands-free devices, and specifically give exemptions for the use of electronic devices if used in a hands-free manner. Portugal is the only jurisdiction to completely ban the use of all cell phones, even when used in a hands-free manner.

In February 2018, Sweden passed legislation to alter their distracted driving laws. Previously, cell phone use was only prohibited if it could be proven that it was a detriment to the driver's handling of the vehicle. Now, the legislation specifically bans the holding of a cell phone while driving. Sweden's Minister for Infrastructure, Anna Johansson gave two reasons for their new ban on hand-held usage, with the first being that Sweden should live up to the Vienna Convention on traffic safety, and the second being that a clearer rule could mean that more people would follow it.

Most US states only ban texting while driving, leaving many distracting behaviours as technically legal (dialing a phone, watching a video, using a GPS, or using social media) - unless the behaviour results in a collision and can be proven to have contributed to the collision. While 47 US states have texting while driving bans, in 4 of these states distracted driving is considered a secondary offense – meaning the driver can only be charged with distracted driving after they have already been stopped for another driving violation. Only 15 states ban the use of all hand-held cell phones and in all cases these restrictions are considered primary offenses.

Japan prohibits the holding of all wireless communication devices to engage in conversation, holding an image display device, or fixing one's eyes on an image display device while the vehicle is in motion. Careful development of Japan's law ensures that it covers a multitude of potential devices and their uses, as well as a wide range of behaviours (e.g. looking, holding, and behaviours that fall under communication such as emailing, texting, and calling).

Some cities in Japan prohibit listening to loud music or a loud phone call if it prevents the driver from safely driving the vehicle (i.e. if the driver is unable to hear horns or emergency vehicle sirens). As a result, the use of headphones when taking a call could be an offense if the judge determines the driver was unable to hear external sounds.

Laws in Australia and New Zealand specifically ban mobile phones and portable televisions, but do not address laptops and tablets.

Unlike all Canadian provinces and territories, Japan, South Korea and the Netherlands allow drivers to use their hand-held devices when the vehicle is not in motion, including at stop signs and red lights

Key Points

- It is challenging to draft clear distracted driving laws due to the complexities in the number of and types of devices and the increasing functionality of these devices. Many laws were written as much as a decade ago and may need updating to keep pace with current technology
- Clearer laws are important not only to ensure that the public understands what is and is not allowed, but to ensure that the law is taken seriously, and that there are not too many opportunities to challenge tickets in courts and impede the judicial process
- There is a need to identify evidence-based best practice legislative countermeasures to curb distracted driving

4.4 Evaluation of Administrative Sanctions

Despite changes to distracted driving administrative sanctions in Canada, data show an overall increase in the number and percentage of collisions related to distracted driving (all distractions) between 2002-2010 and 2011-2015. Findings from NHTSA show an increase in the percentage of collisions related to ECD use from 2015 to 2016. Further, a 2010 study looking at rates of insurance claims found no decrease in collisions after a hand-held phone ban was introduced in four US states (Highway Loss Data Institute, 2010). Explanations for these findings might include:

- that the ban on hand-held cell phone use may have influenced use of equally distracting hands-free cell phones, or
- that the act of trying to hide a cell phone to avoid being caught could result in even greater distraction than holding it up within plain view

In looking at the effects of administrative sanctions on driver behaviour in general, international research suggests that fines and demerit systems can be an effective method for changing driver behaviour (Izquierdo et al, 2011; Alonso et al, 2013; Zambon et al, 2008).

CCMTA's observational surveys of ECD use by drivers showed a 58% decrease in observed use of ECDs for talking between 2006-2007 and 2012-2013 (CCMTA, 2013) when ECD use laws were first passed. Eight jurisdictions had lower ECD use following the introduction of sanctions to prohibit their use. However, based on CCMTA's recent observational surveys of urban and rural ECD use in 2016-2017, there has been an overall 31% increase in ECD use by drivers since 2012-2013 (CCMTA, 2018). Potential explanations for the increased use, despite the introduction of escalating penalties and fines include:

- Increases in cell phone ownership, use, and functionality between study periods
- Lack of resources or effectiveness of current enforcement efforts
- Lack of public awareness of risks and penalties, particularly in the youth population
- Addictive technologies and the business of consumer engagement in technologies

It should be noted that additional administrative sanctions introduced between 2017 and 2018, have not been evaluated to date and the impact of additional administrative sanctions is currently unknown.

Studies that have found reductions in collisions following introduction of distracted driving sanctions, find that the effect is stronger when accompanied by effective enforcement. An analysis of US states with texting and driving bans found that states with strong, primary enforcement showed an 8% percent reduction in fatal single-occupancy, single-vehicle collisions, and while this effect rebounded several months following the ban, it was prolonged in states with universal bans on all types of hand-held cell phone use (Abouk and Adams, 2013). While distracted driving laws have been somewhat effective in the past, the recent increases in prevalence, and the trends associated with collision rates are troubling.

A US study suggests that individuals who use cell phones while driving are more likely to engage in other risky behaviours such as speeding and frequent lane changes, indicating that decreased ECD use by these individuals may not necessarily decrease crash risk (Zhao et al, 2013). This finding is supported by CCMTA's 2016-2017 observational survey of ECD use by drivers, which found that individuals who do not use a seat-belt were more likely to engage in ECD use while driving.

Features of smartphones and other technology such as app notifications, 'likes', tones, and alerts can compel individuals to constantly watch or check devices and feel the urgency to immediately respond. One study found that in a sample of drivers aged 19-30, even hearing a cell phone ringtone, particularly one that was familiar to the individual, had a significant effect on complex reaction time (Zaidel et al, 2013). The 2016 General Social Survey of Canadians reveals that 76% of Canadians owned a smartphone in 2016, with 94% aged 15 to 34 years, 69% aged 35 to 64 years, and 18% aged 65 years or older (Statistics Canada, 2016). More Canadians, particularly at younger ages, are owning and using digital devices, and the continuous design and introduction of features to keep individuals engaged may explain the observed rates of use of devices by drivers. Fines and penalties alone may not be enough to deter drivers from interacting with potentially addictive technologies. Measured penalties coupled with incentives that change driver attitude and behavior may help to further mitigate distracted driving.

Key Points

- Better understanding of jurisdictional rationale for changes/revisions to distracted driving laws is required
- More research needs to be conducted to evaluate administrative sanctions and better understand the effectiveness of individual sanctions on changing or influencing behaviour
- Observational studies, public opinion surveys, rates of fatal and serious injury collisions involving distracted driving and ECD use in particular, are needed to assess the effectiveness of individual components associated with administrative sanctions and legislative change

5.0 Distracted Driving and Target Populations

Distracted driving is an issue for all road users, however, a few populations have been identified who may be at an elevated risk of motor vehicle crashes, near crashes or unintentional lane diversions due to distracted driving.

5.1 Young and Novice Drivers

Young drivers engage in distracting behaviours that increase their crash risk. Potential reasons for the elevated risk include driving inexperience, high adoption of communication technology, and tendency to take risks (Buckley et al, 2014).

One study of teen drivers indicates approximately 65% self-report reading or sending a text while driving in the past 30 days and 30% have checked a website or social media account while driving (Ehsani et al, 2015). In CCMTA's observational surveys of ECD use by drivers, young drivers (aged 25 and under) were more likely to be observed using an ECD than older drivers (CCMTA, 2018). The naturalistic teen driving study found that texting, dialing, answering, locating a phone, and other non-driving tasks were associated with a higher crash risk in novice teen drivers in the US (Simons-Morton et al, 2015).

Graduated Drivers Licensing (GDL) programs impose restrictions on novice drivers, most of whom are young (i.e. under 25 years of age), for a specific period before they are given a full driving licence. These programs are in place due to the high crash risk associated with young drivers which is related to underdeveloped skills in attention and focus during the operation of a motor vehicle.

In most Canadian jurisdictions, there are restrictions on the number of passengers that a novice driver can have in the vehicle. While this is partly due to peer pressure and instigation towards reckless driving, it is also partially related to driver distraction. Studies indicate that young drivers are considerably more distracted by their passengers than older drivers, making them potentially less attentive (Heck and Carlos, 2008). GDL programs have been shown to be effective in reducing fatality risk for novice drivers, particularly the restrictions related to night driving and passengers (Foss and Goodwin, 2003).

While many GDL programs have been developed to mitigate distracted driving among novice drivers through restrictions on cellular phone use, there are no published studies examining the effects of GDL programs specifically as they relate to distracted driving and cell phone use.

British Columbia, Saskatchewan, Yukon, 39 of 50 US states, and Australia all prohibit cell phone use (including hands-free devices) by novice drivers, and in some cases prohibit the manipulation of other distracting electronic devices such as GPS or MP3 players. In Ontario, a novice driver convicted of distracted driving has their license suspended for 30-days, increasing to 90-days with a second conviction, and upon a third conviction, the driver is removed from the GDL program. In British Columbia, one infraction for a novice driver could result in a 1- to 6-month suspension or longer, for subsequent infractions.

While the UK does not have a general GDL program like those found in North America and Australia, newly licensed drivers face the strict penalty of having their license revoked, and therefore having to retake the test if they are caught using a cell phone while driving within their first two years of driving.

One study found that mobile phone laws alone had little effect on the use of electronic devices by young drivers in North Carolina, and the authors recommended that laws be combined with public education campaigns implemented in an evidence-based manner (Foss et al, 2009).

In another study, laws banning hand-held cell phone alone use was associated with lower self-reported hand-held cell phone conversations among teens, but laws banning texting and driving alone were not associated with lower texting and driving behaviour. This suggests that perhaps among adolescents, texting is a much more difficult behaviour to change than talking on a cell phone (Rudisill and Zhu, 2017).

A 2014 survey of more than 5,400 Canadian students in grades 4 to 11 found that 90% of the oldest students owned a cellphone. Among students 9 and 10 years of age, one quarter reported having their own device (Steeves, 2014). Communication devices are used and introduced at younger ages and many years before reaching driving age.

Adolescent technological socialization while driving has become the norm, and with teens being overrepresented in fatal distraction related crashes, this is a particularly pressing factor to consider (Buckley et al, 2014). Legislative efforts, public awareness campaigns and other efforts to reduce

distracted driving among targeted populations are an important strategy in preventing and curbing distracted driving behaviours. There may also be a need to look at behaviour change programs that target young and novice populations.

Key Points

- Legislative efforts, public awareness campaigns and other efforts to reduce distracted driving among youth and novice drivers are important tactics but may not result in behaviour change
- Early technological socialization and high crash risk underscore the need to look further at distracted driving behaviour change programs that target young and novice populations

5.2 Commercial Drivers

Distracted driving among commercial drivers has been a topic of discussion among governments, industry, enforcement and road safety experts. Commercial drivers in Canada are subject to provincial and territorial distracted driving laws.

In a self-reported survey of drivers of large trucks weighing 4,500 kg, as well as tractor-trailers, 6.7% of drivers reported driving while distracted (TIRF 2010). In a survey of truck drivers in 2005, 56% self-reported using a cell phone while driving and 48% reported experiencing a close call when using a device (Llaneras et al, 2005). In naturalistic studies in the United States, it was found that in 71% of crashes, and 60% of safety critical events, drivers of large trucks were engaged in non-driving related tasks (Olson et al, 2009). The size and weight of large transport vehicles; the turning radius, large blind spots, tendency to carry hazardous materials, and the greater length of time required to stop, make these vehicles particularly dangerous in the event of driver inattention. Efforts to more fully understand the contributing factors to collisions involving commercial vehicles are important.

According to Federal Motor Carrier Safety Administration (FMCSA), research shows that the odds of being involved in a safety-critical event (e.g., crash, near-crash, unintentional lane deviation) are 23.2 times greater for commercial motor vehicle drivers who text while driving than for those who do not (FMCSA).

In the U.S., hand-held cell phone use by commercial drivers is broadly banned by the FMCSA and can result in fines of up to \$2,750 USD for the driver and up to \$11,000 USD for employers who allow or require drivers to use a hand-held communication device while driving, disqualifications, and being out-of-service for up to 120 days. Laws in North America and abroad do not restrict the use of hands-free communication devices for commercial vehicles.

In the UK, fines for distracted driving can be as high as \$4380 CAD if one is driving a bus or a transport truck. The UK government states generally that it is a criminal offence for someone to “cause or permit” a driver to use a hand-held mobile phone while driving, making it illegal for managers to require a commercial driver to use a hand-held phone. If the driver is involved in a crash, the employer may be investigated under health and safety laws.

Citizens band (CB) radios and other similar devices are generally exempt from distracted driving laws in most North American and international jurisdictions, whereas devices such as walkie talkies have more regulation. Legislation in Newfoundland and Labrador applies to a “device that is held to the ear” whereas, in Alberta, CB radios are included in cell phone bans when used purely for recreational purposes. Ontario is continually monitoring the issue. Their CB radio exemptions for commercial drivers were renewed in January 2018 and will be reviewed again in 2021.

In a study of commercial truck drivers, those using a CB radio or talking on a hand-held cell phone had a lower risk of safety-critical events compared to a visual-manual task such as dialing a cell phone. The mean length of time spent looking away from the roadway was less for a talking-task than for a visual-manual task (Hickman and Hanowski, 2012). Other studies indicate that having a phone conversation while driving, whether it is hand-held or hands-free, can be highly cognitively distracting which may be similar to how CB radios are often used (Caird et al, 2018).

Professional drivers often need to keep in contact while driving, either to provide updates or receive instructions from the carrier, or to coordinate with and give safety information to other drivers. For individuals who drive trucks in long shifts, across the country, talking with family and friends over the phone can be a mental health necessity. There have been a few studies indicating that phone conversations can be a safety benefit to long-haul truck drivers because it can help them remain alert and awake (Pylkkonen et al, 2015). Other studies indicate that for some drivers, some degree of entertainment, such as an audiobook, on particularly boring routes, can aid in overall cognitive awareness (Nowosiekowski et al, 2018). These issues present distinct challenges in regulating cell phone and distracting technology use by commercial drivers. Further research on the possible protective effects of certain tasks for commercial drivers is necessary and that these early findings are not applicable to drivers of passenger vehicles.

5.2.1 “Grey Fleet Drivers”

In British Columbia, ‘grey fleet drivers’ have been identified as a target population. Grey fleet drivers are individuals who drive their own vehicles for work purposes and conduct work in their vehicles (e.g. salespeople, tradespeople, realtors, etc.). Research in BC indicates that the drivers may be at greater crash risk from distracted driving than is generally recognized.

Key Points

- It is important to understand the causative and contributing factors relating to commercial vehicle collisions to identify strategies to prevent future occurrences
- It is important to note the conditions of use differ considerably between city driving and highway driving for both passenger vehicles and long-haul trucking
- The size and weight of large transport vehicles, the turning radius, large blind spots, tendency to carry hazardous materials, and the greater length of time required to stop, make consequences of crashes and collisions more catastrophic
- Similar to the general public, commercial drivers engage in distracting activities while driving and self-report that they use electronic communication devices

6.0 Distracted Driving Enforcement

Adherence to distracted driving laws can depend on motivation to engage in the behaviour, individual personalities, as well as societal and group norms. Drivers who believe they will be caught and that there is a consequence to their action, are more likely to adhere to the legislation.

Policing agencies, with varying roles and responsibilities carry out distracted driving enforcement in three main ways:

- incidentally by law enforcement performing an array of duties (i.e. if police see distracted driving, they enforce the law but are not looking specifically for distracted drivers)

- as a component of a broad road safety enforcement campaign targeting impaired driving, non-belt use, speeding, etc.; and
- as part of a targeted distracted driving enforcement campaign

To gain further insights into distracted driving enforcement in Canada, in May 2018 CCMTA conducted a survey of police/enforcement traffic safety departments across the country. The anonymous survey was disseminated through the Canadian Association of Chiefs of Police Traffic Safety Committee and one individual in each traffic safety department was asked complete the questionnaire. Twenty responses were received through the survey and responses related to distracted driving campaigns, techniques, barriers and challenges across Canada are included in subsequent related sections.

6.1 Road Safety Enforcement Responsibilities in Canada

In Canada, there are different enforcement agencies at municipal, provincial and federal levels with differing roles and responsibilities who carry out distracted driving enforcement.

In Newfoundland and Labrador, Ontario, and Quebec, provincial forces (the Ontario Provincial Police, the Sûreté du Québec, and the Royal Newfoundland Constabulary), play a large role in the enforcement of traffic laws. In these provinces, distracted driving enforcement campaigns are often led by the provincial police in cooperation with local police forces. For instance, the OPP plays a major role in the investigation of collisions in Ontario, with more than 2/3 of inattentive driving fatalities in Ontario having been investigated by the OPP in 2016. In other provinces, the RCMP play a greater role in the enforcement of distracted driving laws. In the territories, the Royal Canadian Mounted Police (RCMP) is the sole territorial police force, and thus carry out such campaigns.

Many distracted driving enforcement strategies involve the cooperation of multiple police forces. A one-day enforcement blitz in March 2016 in the National Capital Region involved the Ottawa police, the Gatineau police, the OPP, the RCMP, and military police and resulted in 79 drivers being ticketed.

In Alberta, Integrated Traffic Units (ITUs) are units of RCMP Traffic Services and Sheriff Highway Patrol officers who collaborate on education and awareness initiatives as well as enforcement. In 2016, ITUs issued 6,051 distracted driving tickets out of 24,665 total tickets issued (Alberta Government, 2017).

Since 2003, British Columbia has had the Enhanced Traffic Enforcement Program (ETEP) in place. This program is a collaborative initiative between the Policing and Security Branch of the Ministry of Public Safety and Solicitor General, ICBC, and the RCMP E Division. In 2015/2016, ETEP's budget was \$35,371,447 (ETEP Annual Report, 2015). ETEP delivers enhanced traffic enforcement through Integrated Road Safety Units (IRSUs) and provides provincial overtime traffic funding through the Enhanced Road Safety Initiative (ERSEI). The IRSUs focus solely on conducting strategic traffic enforcement, and are made up of full-time, dedicated traffic enforcement officers from the RCMP and municipal police forces. The Enhanced enforcement program, through both IRSU enforcement and ERSEI overtime, was responsible for issuing 27% of the province's distracted driving violation tickets in 2015.

Since 2012, Manitoba Public Insurance has been providing enhanced enforcement funding to participating police agencies in Manitoba, including RCMP-Manitoba and local police agencies. The program has evolved over time, initially facilitating a single one-month blitz dedicated to distracted driving, evolving to two months, and now three separate months across the year, as of this fall. The collaboration and partnerships among and between the enforcement agencies sharing of resources, strategies and efficiencies provide for better outcomes in addressing distracted driving.

6.2 Targeted Distracted Driving Enforcement Campaigns

Enforcement campaigns, in combination with public awareness campaigns to educate drivers about the consequences of distracted driving and the penalties associated with violations, is a common approach used by enforcement agencies to address distracted driving. Increasing the perceived risk of apprehension is one of the few proven tactics for reducing use of hand-held ECDs. This follows the same principle as that used for alcohol impaired driving: it is important to support enforcement campaigns with public awareness initiatives that convince drivers of the likelihood that they will be caught. Drivers need to believe that the police are regularly and covertly able to spot ECD usage on the roads.

Far fewer resources are required for police to carry out distracted driving enforcement incidentally (i.e. performing regular duties) rather than as part of a targeted campaign, however, relying on incidental enforcement alone can be ineffective. Drivers are likely to put their device away if they see police officers and it can be difficult for police officers to spot distracted drivers if they have other more pressing tasks at hand.

Similarly, a broad road safety enforcement campaign that focuses on broader road safety (not just distracted driving) is likely to be less effective in detecting distracted drivers than a targeted distracted driving campaign. Law enforcement will not be searching specifically for distracted drivers and are less likely to be employing the distracted driving techniques described later under “Enforcement Techniques”.

In the 2018 CCMTA survey of police/enforcement traffic safety departments across Canada, all respondents indicated that they conduct periodic enforcement campaigns for distracted driving. Most responded that these campaigns target electronic communication devices specifically, and that these campaigns are undertaken in partnership with other organizations such as government organizations, non-government organizations, other police agencies or other road safety stakeholders. Campaigns included:

- Those conducted as part of routine patrols
- Special enforcement campaigns that span several days (such as a Distracted Driving week); and
- Regular multi-day enforcement campaigns throughout the year

Most respondents said that awareness campaigns are conducted prior to and/or during enforcement campaigns to inform the public that officers are out on the road looking for distracted drivers, and that these campaigns are considered very important.

During Thanksgiving Weekend 2017, the OPP partnered with local officers for “**Operation Impact**,” a national road safety campaign that targets impaired driving, seatbelt and moving violations, distracted driving and speeding. The OPP in Ottawa issued 84 tickets for speeding, 18 for hazardous moving violations, nine for not wearing seatbelts, laid two criminal charges for driving while impaired, but only issued two tickets for distracted driving. Comparatively, in November 2017, the Ottawa Police Service Traffic Unit charged 39 drivers with distracted driving during a 3-hour blitz. Clearly, it is easier for law enforcement to identify and ticket distracted drivers when it is their sole focus.

While incidental enforcement may not be the most effective method, it may be useful when used in addition to these more targeted efforts, and when practiced strategically. For instance, In Australia, officers of all duty types are mandated to target specific traffic offenses such as mobile phone use to maximize police efforts and improve effectiveness.

Some jurisdictions have a distracted driving enforcement campaign every year during the same month, while others have no set “Distracted Driving Month,” but carry out distracted driving enforcement

campaigns throughout the year. Campaigns can last anywhere from one day to multiple months. During a campaign, additional resources are allocated to distracted driving enforcement. The campaign may be carried out by a single police force or as a joint effort between municipal, provincial and/or federal agencies. The campaign may be accompanied by an education and awareness campaign. Enforcement campaigns often follow changes in legislation (or changes to penalties such as increased fines). Often in these cases, there would be an awareness campaign to provide information about the legislative change and an enforcement would follow the introduction of the new law.

Canada Road Safety Week is an annual **High Visibility Enforcement (HVE)** initiative led by the Canadian Association of Chiefs of Police (CACCP)'s Traffic Safety Committee. It is designed to increase public compliance with safe driving measures in order to save lives and reduce injuries on Canada's roadways. The campaign is focused on behaviours that put drivers, passengers, pedestrians and other vulnerable road users most at risk. The campaign takes place the third week of May, to coincide with Canada's May long weekend. In 2018, each day of the week was dedicated to a different road safety risk factor, with Wednesday dedicated to distracted driving. Enforcement agencies and road safety stakeholders across the country are encouraged to actively participate in the campaign.

The British Columbia Association of Chiefs of Police (BCACP) organizes traffic safety campaigns throughout the year. These campaigns involve local police and the RCMP as well as volunteers. Distracted driving campaigns take place in March and September. The September 2017 enforcement campaign was accompanied by an ICBC public awareness campaign which included radio and video public service announcements and earned media.

In the U.S., community **High-Visibility Enforcement (HVE)** campaigns have been carried out in states such as New York, Connecticut, Delaware, and California. Evaluations of these campaigns used observational distracted driving studies to determine the rates of cell phone use during a campaign in one city compared to rates determined in a control city where a campaign had not taken place. These campaigns involve HVE coupled with heavy media coverage, emphasizing the penalties associated with getting caught. One of the first evaluations took place in Hartford, Connecticut between 2010 and 2011, with drivers' cell phone use dropping by 57% in Hartford compared to 15% in a control city. (Cosgrove et al, 2011).

Another enforcement campaign during 2013 and 2014 in Connecticut and Massachusetts (Retting, et al., 2017) used various methods to enforce texting laws including spotters, stationary and roving patrols, uniformed and plainclothes officers, and marked and unmarked vehicles of various types (i.e., SUVs, vans, pickups, motorcycles). Officers logged 7,300 hours of enforcement, resulting in 8,700 citations. Earned media was used to raise public awareness of the enforcement campaign. Pre-planning and officer training were important to ensure smooth operation of the campaign. Observational surveys of drivers' use of ECDs before and after each of the four waves of enforcement activity found that there was no overall effect on use. However, during the second wave of enforcement, there was a significant reduction in hand-held phone use among male drivers and during the fourth wave, texting decreased significantly among female drivers. Surveys also revealed that the program had little impact on public awareness of the enforcement activity, suggesting a need for more earned and paid media coverage. Overall, it seems that these kinds of high-visibility campaigns can increase public awareness under certain circumstances and reduce observed cell phone use immediately afterwards; however, the long-term effects of these campaigns are unknown.

A variety of other campaigns also recommend high-visibility operations. For instance, **Operation Radar** UK used a high visibility enforcement campaign and advertisement on a targeted driving route and found that while cell phone use was not reduced overall, it was reduced among women and younger drivers aged 17-29. A suggested explanation for the lack of overall effect is that drivers were hiding their cell phone out of the study observer's sight. Anecdotally, police officers stated that while there were many violations at the beginning of the campaign, over time it became increasingly difficult to find drivers using their cell phone (Walter, 2009). In Australia, the high-visibility campaign, "**Operation Compliance**" found the use of motorcycle units to be critical in sustaining a high perception of enforcement among the public (Hartley, 2007).

The overall goal of these high-visibility techniques is to ensure that drivers are aware that enforcement efforts are going on around them, whether that is through highly visual cues such as motorcycles or billboards, or whether it is through radio, television, and social media advertisement reminding people of the more covert enforcement techniques.

Key Points

- Effectiveness of legal sanctions not only depends on the type of penalties (individual components) and the severity of the penalty but also upon the perceived risk of being apprehended and convicted
- Enforcement agencies have limited resources and many competing demands. Coordinated efforts to align campaigns to the same time-period allows for leveraged resources (coordinated campaign messaging, timing, more reach, etc.)
- High visibility enforcement operations can improve public awareness and curb distracted driving behaviour, but it is not known how long the effects last and how frequently campaigns should occur in order to sustain awareness
- There is a lack of available research on the effectiveness of enforcement campaigns and the strategies used, particularly in Canada. Evaluations of this kind are needed to identify best practices as well as sustainable and efficient use of police resources going forward

6.3 Distracted Driving Enforcement Techniques

In Canada, uniformed police officers will issue tickets to drivers who are in violation of distracted driving laws. In most jurisdictions, police officers must view a driver using an ECD before they can pull them over to issue a ticket, however, it is not always easy to make these observations. The officer can observe a driver who is weaving while driving on the roadway, traveling more slowly than traffic or failing to move once the light has turned green. This would be sufficient justification for the officer to pay closer attention to the driver's behaviour (e.g., only one hand on steering wheel, ECD held on wheel, driver looking down, light from ECD illuminates the inside of the vehicle at night, etc.).

Several challenges to enforcing distracted driving legislation have been identified including: concerns about violations of personal rights and beliefs that communication devices are targeted more than other distracting activities. There is also difficulty in detecting and enforcing electronic device use by drivers. For example:

- It is difficult for police officers to determine whether distraction is a causative factor in a crash
- Distractions related to a collision often leave no observable evidence for law enforcement officers
- Drivers are reluctant to admit to being distracted following a crash

- Cell phones that are “integrated devices” (that is, connected to the vehicle in some fashion) can be exempt from laws
- It can be difficult for police officers to determine whether and in what way drivers are using ECDs (i.e., talking or typing on them)

Most drivers will put their phone away if they see a police cruiser or officer in uniform – although this is not always the case. In November 2017, Ottawa officers in full uniform, standing beside the road in full view of drivers ticketed 39 drivers for cellphone use. Police forces utilize a variety of innovative techniques to identify distracted drivers.

In the CCMTA survey of police traffic safety departments, the most common distracted driving enforcement techniques include:

- Watching for erratic driving behaviour
- Watching for behaviour of the driver within the vehicle (e.g. holding an ECD, looking down repeatedly, having only one hand on the wheel)
- Traveling in higher vehicles such as SUVs, large trucks, or city buses to look down at drivers; and
- Standing on the median wearing plainclothes or other non-identifying apparel to identify ECD use by drivers

Less common were the use of motorcycles to allow the officer to see into the driver window, the use of binoculars and telescopes, and observing drivers from overpasses.

6.3.1 Undercover Police Enforcement

The most straightforward, widely-used method by enforcement is police officers dressed in plainclothes, standing at intersections observing distracted drivers. Officers have also disguised themselves as construction workers or window washers to issue tickets to distracted driving offenders. One controversial technique to identify distracted drivers was officers dressed as homeless individuals. In spring 2016 in Manitoba, an officer in a black hoodie stood at an intersection holding a cardboard sign that read “I’m not homeless. RCMP Police looking for distracted drivers.” A driver using an electronic device behind the wheel would be shown the officer’s badge and the sign, and a ticket was issued. In 2014, Toronto Police conducted a similar initiative, with an officer dressed in a jacket and jeans carrying a sign asking for money walking among vehicles coming off the highway. Driver’s in violation of the law would be shown the officer’s badge and a sign that read said “Hello I’m a police officer. If you are reading this, you are about to get a cellphone ticket.” This technique has not been without controversy from those saying that not only is it deceptive but could lead to public distrust.

6.3.2 Elevated Vantage Points

One problem faced by law enforcement trying to enforce distracted driving legislation is that drivers hide their phones in their laps to avoid detection. A police officer in a cruiser or outside on a street corner may see a driver look down but cannot definitively identify that the driver is looking at a phone or another electronic device. To combat this, officers will use an elevated vantage point, like standing on an overpass, a pedestrian walkway, or use a bucket truck to identify distracted drivers. Elevated vehicles, such as pickup trucks, commercial trucks, or buses have been used by enforcement agencies in British Columbia, Saskatchewan, Manitoba, Ontario, Quebec and New Brunswick. Officers on buses observe drivers using their phone and pass along the make, model and license plate information to other officers waiting downstream. Sometimes, spotters in these types of campaigns can observe more distracted drivers than police are able to ticket because they lose sight of the vehicle or because of

congested traffic. Other bus riders have indicated they are supportive of these types of initiatives by enforcement agencies.

In a five-day blitz by the OPP from December 11 – 15th 2017, officers patrolled Ontario’s highways in transport trucks to identify distracted commercial vehicle drivers. As part of the 5-day blitz, a helicopter and infrared camera technology were used as well. This allowed police in the helicopter to zoom in close enough to spot a driver using their phone and send a signal to officers on the ground to stop the vehicle.

6.3.3 Textalyzer

While it is not currently used in any jurisdictions thus far, one innovative technology in development to solve enforcement challenges are devices that have been coined “textalyzers”. The textalyzer is a road side device that plugs into a driver’s phone to determine whether it was used during driving, or, during the time of the crash. In Canada, officers cannot require that drivers provide cell phones for inspection during a traffic stop. Proponents of the textalyzer argue that the device is not considered an invasion of privacy because it simply lets the officer know whether the driver was touching the screen of the phone immediately prior to the crash, not the contents of the phone, or what application was used. The device could be useful for enforcement of laws that prohibit touching of all electronic communication devices but would not be useful for laws that permit devices to be used for navigation or other non-communication purposes. Other versions of the textalyzer are in development that may allow the officers to see which apps were used and when, which could present privacy concerns.

Another challenge associated with the textalyzer device is the difficulty in pin-pointing the exact time of the crash. For instance, it is common for drivers to use their phones to call or text immediately following a crash to notify family members, and the approximate time of the crash can usually only be estimated.

Although lawmakers in other jurisdictions have expressed interest, only the state of New York is in the process of studying a bill to authorize police to use a textalyzer device. In 2015-2016, “Evan’s Law”, a bill that would allow police to use the textalyzer device in enforcement, was introduced to the New York Legislature. The bill would also stipulate that refusal to submit to the textalyzer, like the breathalyzer, would result in loss of driver’s license privileges. The bill has since entered the New York Senate, and is being vigorously debated amongst stakeholders and the public at large.

6.3.4 Frequency-Detecting Devices

Another device developed by a technology company for the purpose of distracted driving enforcement is a speed-radar like device, which detects cell phone frequencies coming from a vehicle. Interestingly, texting, calling, and data transferring emit a distinct frequency, allowing the device to distinguish between certain behaviours. Some of the advantages of this kind of device over the textalyzer would be the potentially less invasive nature of the device, as well as the ability to detect the behaviour from the road-side, before having to pull over the vehicle. Potential limitations of the device could be the pin-pointing of a specific cellphone frequency among many in a high-traffic area, distinguishing between driver cell phone use and passenger use, and distinguishing between frequencies emitted via hands-free behaviours such as voice-to-text. Previous developments of this type of device began circa 2014, when it was said that the device was close to production, but little has been written about its implementation since then.

6.3.5 Camera Scopes

Law enforcement can use photographic proof of the driver engaged in a distracted behaviour as evidence, eliminating disagreement about whether the offence took place. Camera scopes are used in

enforcement and police in BC have been using them since 2016 and can take a picture from up to 1.2 km away. A pilot project is planned for spring 2018 to test a Bluetooth-enabled version of this scope, which would allow images to be instantly shared with other officers and shown to the distracted driver. In PEI, it has been reported that police officers simply stand on the side of the road and take photographs of drivers.

6.3.6 Stationary Roadside Cameras

An emerging technology that is so far unique to Australia is a stationary road-side traffic camera that can detect cell phone use and automatically issue tickets like a speed camera. A prototype was tested in Melbourne, Victoria in 2017, and detected 272 distracted drivers in a 5-hour test on one lane of a freeway. On March 6, 2018, legislation was introduced to amend the previous Road Safety bill that received Royal Assent on May 9, 2018 and will allow the use of this camera-based technology to enforce mobile phone offences, as well as allowing the use of photographic evidence alone in the enforcement of distracted driving laws.

Key Points

- Many of the distracted driving techniques described above have been successful in catching distracted drivers and law enforcement continues to try new and creative approaches
- While there is no shortage of enforcement techniques, there is a lack of research examining the efficacy and efficiency of these techniques
- More information is needed on investigation of collisions where distraction is suspected, for example how to obtain records, etc.

6.4 Barriers to Distracted Driving Enforcement

In the 2018 CCMTA survey of Canadian enforcement agencies, several barriers or challenges to enforcement of distracted driving laws were identified. The most common responses were that there are police resourcing challenges, difficulty capturing the infraction visually due to the use of tinted windows, drivers hiding devices in their lap, not being able to observe device use at night and cars going too fast to observe.

The CCMTA survey also identified challenges within the justice system as barriers to enforcement. When asked how difficult it was to get a conviction for distracted driving if it goes to court, most reported that it was 'somewhat' difficult and when asked to explain further, some of the responses included:

- Lack of understanding and acknowledgement by the judiciary of the scope and seriousness of the issue
- Judges not wanting to convict
- Lack of consistency from judge to judge
- Failure of judge to accept officer testimony
- Difficult to prove beyond a reasonable doubt that the device was in use.
- Photographic evidence difficult to capture
- Officer cannot gain access to cell phone records without a warrant

Key Point

- Too many challenges to enforcing the laws can make law enforcement officers reluctant to enforce distracted driving legislation

6.5 Distracted Driving Convictions

6.5.1 Canadian Distracted Driving Convictions

There is variation between Canadian jurisdictions regarding the number of convictions for distracted driving; however, most have seen a rise in distracted driving convictions immediately following the introduction of legislation (see Table 6: Number of distracted driving convictions in Canadian jurisdictions by year).

	2008 (QC law came into force April 1)	2009	2010 (SK, MB, BC. laws came into force Jan 1, PEI law Jan 23)	2011 (AB law came into force Sept 1)	2012	2013	2014	2015	2016
British Columbia*			21,000	37,000	48,000	53,000	55,000	49,000	43,000
Alberta** (Source; MOVES Enforcement Research Files (Generation 317))				5,438	26,173	29,742	31,889	32,897	29,634
Saskatchewan (source)				3,458	4,019	4,287	4,299	3,650	3,134
Manitoba*** (source)				4,130	5,517	5,231	5,585	4,734	5,249
Quebec (source)	18,254	48,835	50,647	59,155	62,608	67,907	64,641	51,333	46,369
Prince Edward Island (source)			80	150	258	215	308	327	
*Convictions for BC rose between 2010 and 2014, peaked in 2014, and declined in 2015 and 2016. It is possible this decline was due to increased public knowledge (including knowledge of how to avoid being caught), although, of course, there are many confounding variables. **Alberta statistics are for the calendar year. ***For MB 2016, only an estimate was available.									

Jurisdiction	Number of convictions (2015)		Number of convictions (2016)	
	Total	Per 10,000 inhabitants	Total	Per 10,000 inhabitants
British Columbia (source)	49,000	104	43,000	90
Alberta (Source: MOVES Enforcement Research Files (Generation 317))	32,897	77	29,643	69
Manitoba (source)	4,473	35	~4,800	36
Saskatchewan (source)	3,650	32	3,134	27
New Brunswick (source)			12,00	16
Quebec (source)	55,043	67		
Northwest Territories* (source)	250	57		
Prince Edward Island (source)	327	22		

*Number of convictions between April 2015 and May 2016. The “per 10,000 inhabitants” rate was adjusted to be for one year.

6.5.2 International Enforcement Activity

Internationally, the number of fines issued for distracted driving also varies significantly between countries and is likely a reflection of differences in resources put toward enforcement of distracted driving. In Sweden, on average only 80 people a year are fined for distracted driving. The low number can be somewhat attributed to low enforcement, as well as the fact that until 2018, cell phone use while driving was only illegal in Sweden if it could be determined that it was a detriment to the safe handling of the vehicle. Comparatively, Denmark has roughly half the population of Sweden but fined 40,947 drivers for distracted driving in 2015. In Spain, with a population of 46 million, there were 94,986 distracted driving tickets in 2015. In Germany, with 82 million, there were 363,000 mobile phone violations in 2015.

There are also variations in whether there has been an increase or decrease in the number of violations for distracted driving over time. In the Netherlands, there were a total of 59,815 fines imposed in 2016, compared to 33,084 in 2015. In Germany, there were 363,000 mobile phone violations in 2015, compared to 443,000 in 2011. Spain also saw a decrease, while South Korea and Denmark saw an increase. It is unclear why some countries have seen an increase and others a decrease. Further analysis is required.

It is reasonable to say that the number of fines issued corresponds far closer to enforcement efforts than to actual incidences of distracted driving. Countries with more citations of cell phone use while

driving have more officers allocated to distracted driving initiatives and not more people using their phones while driving.

Key Points

- The number of fines issued in a particular jurisdiction may be indicative of the strength of their enforcement efforts
- The number of warnings given out compared to the number of full fines issued should be recorded to potentially shed light on officer's reluctance to issue full fines

7.0 Distracted Driving Public Awareness Campaigns

Public awareness campaigns are an important component in tackling the distracted driving issue. When it comes to the effectiveness of road safety campaigns, the best practices have been studied. For example, a European meta-analysis of 67 studies evaluating the effectiveness of road safety campaigns (Philips and Ulleberg, 2011) recommended that road safety campaigns:

- Involve personal communications
- Be combined with mass media
- Be proximal in space and time to targeted behaviour
- Accompany enforcement campaigns
- Involve a combination of emotional and rational messages; and
- Ideally, keep messages updated and "top of mind" while still being financially sustainable

7.1 Canadian Public Awareness Campaigns

Canadian jurisdictions devote significant resources to distracted driving public education and awareness. Ten of thirteen provinces and territories have conducted media campaigns that have included public service announcements and paid advertisements, and eleven of thirteen have had web-based educational awareness campaigns and outreach.

Quebec has had multifaceted public service campaigns annually since 2011, after studies showed that the number of people found guilty of a distracted driving related offense had been rising since 2008. These ads include television commercials, online messages, social media campaigns, radio and Spotify ads, window decals, and a mobile app that restricts incoming messages and calls. Their 2017 ad campaign's slogan was "Text or drive. You decide.". Slogans are updated annually which may be beneficial in keeping the message fresh in the public's mind; preventing the impact from dissipating.

British Columbia runs campaigns twice annually, coinciding with their police enforcement campaigns. These initiatives involve social media outreach, advertisements in movie theatres as well as TV commercials. Year round they distribute thousands of window decals throughout the province to encourage peer to peer communication.

Alberta's Office of Traffic Safety conducts targeted public education and outreach campaigns on a variety of traffic related safety themes which are based on the Traffic Safety Plan Calendar. Each year, two months of the calendar are dedicated to distracted driving. An internationally recognized campaign in 2013 titled "**Crotches Kill**" targeted drivers who text and drive and included billboards, radio, social media, online display ads and a website.

The Ministry of Transportation in Ontario launched a distracted driving public education campaign ***It Happens Fast: Put Down the Phone*** in the summer of 2016 which included a 30 second TV ad, a 60 second ad in movie theatres, radio, life-hack ad and digital/social media outreach. To further support the distracted driving campaign, Ministry staff engaged the public through attendance at road-show events such as the Honda Indy, International Plowing Match, and the Toronto International Auto Show.

Manitoba Public Insurance (MPI) uses annual surveys to measure recall of their road safety campaign messages and whether they were influential in changing driving behaviour. These surveys are conducted before and after the campaign, with surveys at six month and two month intervals following the campaign (Johnson, 2013). As part of Manitoba's road safety strategy, data collection and program evaluations are emphasized.

Leave the Phone Alone is a national awareness campaign that encourages Canadians to make a public pledge via the *Leave the Phone Alone* website, to avoid distractions caused by talking, texting or using a hand-held electronic device while driving. It was initiated by Transport Canada and currently, the LeaveThePhoneAlone.ca website and oversight of the campaign is managed by CCMTA. Communication tools include a free car window sticker, posters, bookmarks, and other shareable online information. The goal of the campaign is to increase peer-to-peer communication and the development of social norms. The slogan and advertisements are also used by police services such as the Ottawa Police service, the OPP, and the RCMP, as well as by other organizations such as IBC, CAA, and the CRTC.

Another important initiative for public education and awareness includes police partnerships. Police services have partnered with high schools and community groups to engage members of the community, often teens, and attempt to change beliefs and social norms.

While significant efforts have been made towards implementing these distracted driving campaigns and reaching out to communities, evaluations of the effectiveness of public awareness campaigns for distracted driving in Canada seem to be extremely limited.

7.2 International Public Awareness Campaigns

Many other countries, such as Spain, South Korea, Japan, Denmark, and Germany, have instituted distracted driving awareness campaigns through advertisements on TV, radio, and social media. These campaigns have included both solo efforts and various partnerships featuring police, auto-makers, non-governmental organizations, and the government. However, these efforts have not been evaluated.

Internationally, the 2007 **"THINK!"** campaign in the UK was launched following a change in legislation to increase fines and penalties for the use of hand-held mobile phones while driving. This campaign included a combination of T.V. and radio ads. An evaluation of public awareness and general attitudes towards cell phone use while driving was conducted, but there were no studies of observed cell phone use before and after the campaign to provide evidence of whether the campaign influenced behaviour (Angle et al, 2009).

A few months after the THINK! campaign launch, approximately half of respondents stated that the T.V. ad "sticks in their mind." The shocking, emotional T.V. commercial depicting a middle-aged male driver being called by his wife was more impactful to women, and less impactful to young people, suggesting the need for different strategies for different target groups. The radio ad, which was less shocking and emotionally impactful, prompted only 25% of people to say that it "sticks in their mind." Respondents were more likely to strongly agree that texting and driving was dangerous if they had seen or heard the ads. Women, and respondents aged 55 and over were more likely to strongly agree that talking on a cell phone while driving was likely to impair concentration, and more likely to result in a crash.

Notably, awareness of the THINK! Campaign saw a steady decline after the initial survey, despite subsequent waves in 2008 and 2009. Recall of the T.V. ad decreased from 31% in 2008 to 19% in 2009. A few months after the campaign launch in 2007, 35% of respondents thought they were likely to be caught using a mobile phone while driving, while in 2009, only a quarter of people surveyed thought they were likely to be caught. The emotionally impactful T.V. ad remained the most memorable compared to the radio ad, and those who had seen the T.V. ad continued to find it shocking from 2008 to 2009. Overall, the report indicated that the strength of the campaign hinged on high saturation as well as high impact messages.

In 2015, the Netherlands Ministry of Transport launched a campaign called ***Attention to the Road***. The campaign encouraged drivers to turn off their phone before driving and included radio and TV ads. The campaign's slogan was 'On the way I am offline'. TeamAlert had a follow-up campaign '**@The Wheel**' where young drivers were challenged to stop using social media while driving for a week. The campaign was repeated in 2016. A report of the campaign's impact was released in 2016, which indicated that familiarity of the slogan rose since 2015, with 9 out of 10 drivers surveyed saying they knew it.

Since 2013, Sweden has conducted an ongoing campaign consisting of four films; shown mainly in digital channels like Spotify, Transport Agency web, podcasts, blogs and YouTube, a radio commercial, and in cinemas. Evaluations of the campaign indicate that it had an effect on behaviour, but to sustain long-term effects requires the repetition of the message over time. The evaluations carried out under the campaign show about 95 percent of respondents recalled the correct message and more than 70 percent thought the campaign was credible, serious, informative and entertaining (Swedish Transport Agency, 2017).

In Norway, Trygg Trafikk, a non-governmental organization, launched the campaign "**Hold Fokus**" in 2015 to remind Norwegians of the dangers of distracted driving. The campaign included an interactive video on social media, as well as videos on television and ads in newspapers. In November 2015, it was reported the campaign reached 29.5 million, and 1 in 3 Norwegians exposed responded in a poll that it changed their attitude toward mobile use in cars (Kvanvik, 2015).

Although the public may be very aware of distracted driving as an issue, and are even highly concerned about it, awareness alone may be insufficient to change driver behaviour. At the same time, it can be an integral approach to a multifaceted intervention strategy. Therefore, gathering information about the effectiveness of existing campaigns could serve to identify successful approaches for conveying the risks of distracted driving to the driving public.

The combination of sustained public awareness and tough enforcement may help to maintain decreases in use, but one challenge is the difficulty in maintaining public awareness while also being cost-effective. For example, the approximate costs of television, radio, and online advertising for the city of Sacramento, California for 1 week were \$300,000 USD, and NHTSA's five-year federal campaign has a budget of \$5 million.

There may be a potential way to address this through "maintenance" level advertising that could be implemented in a cost-effective manner after the initial awareness push. The ease and low expense of social media messages throughout the year can greatly assist in raising awareness, and occasional highly visible platforms (outdoor billboard advertising) may ensure the message is received.

A major gap in data exists regarding how effective campaigns have been in changing drivers' perceptions, attitudes, and distracted driving behaviours *long term* and how often campaign awareness should be maintained to prolong/strengthen short term effects. It would also be interesting to look at the best ways to communicate the rules to drivers to obtain the best level of compliance.

Key Points

- A coordinated approach to the timing of public education and awareness campaigns with enforcement campaigns that are dedicated to distracted driving could leverage resources, strengthen messaging, increase reach, and motivate drivers to take action
- Awareness alone may be insufficient to change driver behaviour, but it can be an integral approach to a multifaceted intervention strategy
- Gathering more information about the effectiveness of campaigns to instruct the best practices for future campaign development is needed
- Awareness campaign messaging needs to resonate with the target audience as ‘one size does not fit all’

8.0 Distracted Driving Education and Training

Driver distraction is discussed in driver education courses across North America and most, if not all, driver education manuals feature some aspects of distracted driving information in their curricula. The amount of time spent discussing in-car distractions, providing in-class education and hands-on training modules varies across jurisdictions. As with legislation, driver training and education is targeted to specific population groups, namely: young, novice drivers and commercial drivers.

8.1 Young and Novice Drivers Distracted Driving Training

Most driver training programs in Canada focus on young and novice drivers. Elements of training and education programs can differ between jurisdictions and can include in-class education modules, virtual or simulator training, in-vehicle training, curriculum material for teachers and schools, and distracted driving speakers to speak to and emotionally engage with students on the impacts distracted driving can have on their lives.

Manitoba Public Insurance, a public crown corporation providing driver licensing services as well as insurance, uses the distraction virtual reality simulator “**DRIVR-X: Choose Your Reality**” in high schools and at community events to educate students about the dangers of distracted driving. Distracted driving simulators are generally common in Canada. It seems that these simulators, as well as some other aspects of distracted driving education may be considered advanced techniques not taught in basic driver training, rather in private driver’s education schools, and through youth education campaigns by insurance providers, telephone, and car companies. There is a shift towards training of drivers to include skills such as driver awareness and monitoring of the driving environment as well as training in skills related to vehicle handling. Saskatchewan’s SGI is also using simulator technology to address distracted driving among young and novice drivers.

Not only can driving simulators be used as a tool in training novice drivers, there is potential to provide additional knowledge through research and data collection on the effects of distracted driving on young drivers, and the public.

An example of another alternative program is the Young Drivers of Canada training module called **Cognifit**[®]. This cognitive brain training module offers memory training and other cognitive methods to address both distracted driving and the associated addictions that many believe disproportionately affect young drivers. This program is offered in British Columbia, New Brunswick, Newfoundland, Nova Scotia and Ontario.

Most driver training programs in Canada focus on young and novice drivers. One attempt towards introducing driver education to the general public was an initiative in BC in December 2017 which took

place over two days and involved enforcement. Officer's identified and pulled over distracted drivers and give them the option to either accept the approximately \$500 fine, penalty charge, and demerit points, or choose to enroll in a 3-hour interactive Restorative Justice seminar on the dangers of distracted driving. Thirty-two of 42 people ticketed chose the educational option. This workshop involved hands-on driving simulations as well as information sessions.

Internationally, an interesting development in the UK is the requirement for novice drivers to show proficiency on a navigation device (i.e. GPS) while driving before passing their drivers' training course.

8.1.1 Role of Parental Engagement

In addition to driver's education programs, an integral aspect of young driver's development during training, graduated licensing programs, and beyond, is parental engagement and communication. In many provinces, parents decide which driving school an adolescent will attend if it is not offered in the public high school curricula. Parents decide how much time they themselves devote to one-on-one in-car training, and what they choose to focus on, as well as how they communicate their attitudes about distracted driving behaviours.

A 2014 study reported that 90% of young drivers engaged in distracted driving behaviour regularly, and that their behaviour was strongly influenced by whether their parents engaged in distracted driving behaviours (Carter et al, 2014). In a study of on-board monitoring technologies for novice drivers, the use of the device decreased risky events by 60%, but unsafe behaviours that young drivers engage in on purpose did not sustain a decrease once the monitoring device was removed (Carney et al, 2010).

A 2017 Virginia Tech Transportation Institute study of 90 teenaged novice drivers examined whether having a device which provides feedback installed in their vehicle would have an effect on behaviour (Klauer et al, 2017). Real time feedback was provided as beeps and audible notifications of risky-events such as hard breaking or lack of lane keeping due to driver inattention. The feedback was also available to teens as an online program which their parents could also access. The study took place over 7 months, with 6 months of monitoring, and one final month of monitoring and no feedback. The study found that risky driving behaviours only decreased when parents were able to access feedback information and presumably communicate with their child about their driving behaviour.

One of the top three contributing factors to crash or near crash risk in the Virginia Tech study was distraction, and interestingly, this behaviour decreased when parents had access to their child's feedback information. Approximately half of the distracted driving incidents included handling a cell phone in some way. Behaviours returned to baseline rates when the feedback was removed, indicating that six months of feedback was not sufficient, and that parent engagement with their young driver as they progress through graduated driver licensing is of utmost importance, and should continue for as long as possible. The researchers note there is a lack of data on parental communication and what it looks like as it relates to influencing driving behaviours such as distracted driving. Interestingly, another study indicated that adopting authoritative parenting styles with respect to supervising new drivers can reduce cell phone use up to 30% (Ginsburg et al, 2009). These findings taken together highlight the importance of parental engagement and communication, both in the context of parental monitoring through on-board vehicle technologies, as well as through parental role modelling of behaviour. Carter et al noted that young drivers were also influenced by how often their peers engaged in distracted driving behaviours.

Key Points

- Most driver training programs for distracted driving focus on young and novice drivers, although an intervention program targeting all offenders in the general population is a novel approach
- Efforts to implement realistic distracted driving simulators may engage young drivers and help them experience the potential consequences
- There may be potential to reduce distracted driving behaviour in young drivers through parental role modeling and monitoring at home
- Distracted driving behaviours such as texting and driving can quickly become a habit for young drivers, so early intervention is necessary
- Gathering more information about the effectiveness of distracted driver training to inform best practices for future training development is needed

8.2 Commercial Drivers Distracted Driving Training

In Canada, the testing and licensing of new commercial drivers is managed by the provinces and territories. Driver education and training is often provided by third parties, and there is little information about the integration of distracted driving education within these courses. To date, it seems that some companies have implemented education initiatives that include distracted driving simulators. Others educate family members, suppliers, and customers about the dangers of contacting an employee while driving or offer family safety events and provide distracted driving simulators (Canadian Occupational Safety Council, 2016). Some companies have coordinated with enforcement on distracted driving awareness campaigns.

The Ontario government has recently implemented a universal entry level truck driver training program that must be completed prior to testing for a commercial license. It involves four to six weeks of training and includes performance elements such as “maintaining attention and avoiding sources of distraction while driving.” Other jurisdictions are looking at introducing entry level commercial driver training programs.

WorkSafe BC, which is an occupational health and safety rehabilitation and insurance organization, provides information, advice, and awareness campaigns such as television advertisements aimed directly at reducing distracted driving incidences on the job.

There is also potential for training to occur efficiently through workplace monitoring, identification and implementation. For instance, DriveCam technology (addressed under Workplace Policies to Address Distracted Driving) provides immediate feedback and institutes a training program for those drivers who trigger the device.

9.0 Workplace Policies to Address Distracted Driving

Workplace policies are an effective way for employers to reduce work-related distracted driving vehicle crashes and collisions. Drivers of high mileage company cars have crash and casualty rates 50% higher than the average driver (Broughton, 2003), with driver distraction due to work pressure and communication being identified as key factors (Downs 1999).

Importantly, safety policies and practices within an organization have a direct impact on driver performance (Newman, Watson, and Murray, 2002). In recognition of this, in October 2009, US President Obama issued an executive order banning all government employees in the United States from texting while driving on official business or while using a government-issued mobile phone. In

2010, the UN Secretary General, Ban Ki-Moon, issued prohibitions to UN and affiliated employees on using any electronic devices while driving UN vehicles. In Canada, public sector employers such as MPI, Ministry of Transportation of Ontario, the Government of New Brunswick and Transport Canada have rules in place to restrict the use of cell phones and other electronic devices while operating a company vehicle or their own vehicle while on company business. These policies can play a role in shaping behaviour among agency employees.

Large, private companies in the US. and Canada increasingly report bans on both hand-held and hands-free devices, with coinciding internal communication campaigns. Often these company policies instruct drivers to pull over to a safe location if the driver is required to contact dispatch, while some will lock on-board technologies when the vehicle is in motion.

Internationally, most companies in the UK have policies restricting cell phone use while driving, with many providing hands-free mounting devices to their drivers. Some UK companies have gone so far as to ban hands-free devices based on findings from the Transport Research Laboratory in 2002. This research suggested that a hands-free phone conversation inhibits driver performance as much or more than driving at the UK legal limit of alcohol intoxication (0.08) (Burns et al, 2002).

The Royal Society for the Prevention of Accidents (ROSPA) developed guidelines in 2004 for companies, suggesting that drivers completely avoid using a mobile phone in their vehicle, and that employers record and investigate incidents, provide training, liaise with police, and continually monitor compliance to distracted driving policies.

The “Fleet Safety Benchmarking Tool” website allows organizations to compare their distracted driving policies with others, and to promote compliance with legal requirements and standards. A recent study showed that companies with clear policies that prohibit texting and driving had fewer drivers engaging in such activities than companies that lacked these policies (Swedler et al, 2015).

Certain workplace environments do not allow for direct supervision and therefore, it is difficult for managers to implement and ensure that employees adhere to workplace policies. Conversely, employers are in a uniquely powerful position to reduce distracted driving related crashes on our roads.

Driver-facing-cameras are increasingly being installed by both North American and international commercial vehicle fleets, to allow employers of drivers to ensure the highest level of compliance with company distracted driving policies. The most prominent example of driver-facing cameras is the DriveCam technology patented by Lytx Inc, which monitors 650,000 drivers in various industries. A small, unobtrusive black box is installed on the windshield and when a sudden stop is detected, the camera records 5 seconds before and 5 seconds after the event.

Some US government agencies are welcoming this kind of monitoring including the San Diego Municipal Transportation Agency buses and Waste Management garbage trucks, US Department of State, Washington Metropolitan Transit Authority, and the US General Services Administration. Additionally, the California Attorney General has ruled that driver-facing cameras will be permitted for the purpose of taking disciplinary action against drivers. A study by VTTI suggested that the device could reduce collisions by up to 20% (Hickman et al, 2009). There have been challenges to this technology. In September 2017 it was banned in Quebec, with the Quebec Superior Court ruling that there were “other, less intrusive” methods of ensuring safe driving after protest from commercial vehicle drivers that this was an invasion of privacy.

Other technologies that may mitigate driver distraction in the workplace, include the same technologies that are indicated to be useful for the public, such as telematics, lane-departure warnings, forward collision warnings, inattention warnings, automated emergency braking, autonomous lane keeping,

among others. There are many challenges associated with implementing these types of interventions, including the lack of cost-benefit analyses, guidelines, regulatory and compliance issues. It is important to consider the immense potential costs to test and upgrade technology for an entire commercial fleet as well as costs associated with loss of employees who may dislike the new technologies. These costs must be considered against the cost of collisions including injury to the driver, lost productivity due to road closures, and costs associated with negative publicity surrounding collisions. The rate of collisions caused by commercial vehicles as a result of distracted driving requires further study.

It is important to note that neither policies, regulations, nor legislation, will be easily implemented in a one-size-fits-all approach. Within industry there is a high degree of variability in the type of goods that are transported, the distance traveled, the number of drivers per vehicle, the hours of service, the type of roads travelled, the size of the fleet and the budget of the company itself. More and consistent data collection, evaluation, and sharing of workplace distracted driving mitigation policies, as well as challenges and limitations learned from experience, are needed. Evaluation of the effectiveness of initiatives and interventions to address distracted driving are needed to help develop workplace policies.

It is also important to note that for workplace policies to be successful, they need to be practical, applicable to the work environment and circumstances, clearly communicated and understood by employees.

10. Distracted Driving and Emerging Technology

The issue of distracted driving is further complicated by the rapid growth and development of new technologies. Cellular phones have transformed to smartphones, and other information and communication devices such as wearable technologies. Newer vehicles are purchased with built-in and automated technologies, onboard sensing devices, video displays, infotainment units and other instruments to provide drivers with information and improve safety. Aftermarket technologies can be brought into vehicles and integrated with vehicles. Some devices and instruments are touted to mitigate distractions, while others may be unintentionally contributing to distracted driving, further complicating the distracted driving issue.

10.1 Hands-free Communication Devices

Hands-free methods of operating cellular communication devices have evolved since the earliest introduction of cell phones, in part to mitigate highly distracting visual/manual interaction while driving and using the device, and in part due to changes in technology towards more personal assistant-like devices.

Hands-free devices include speakerphones, wired earphones, or Bluetooth in-ear pieces. These types of devices allow a driver to communicate hands-free, to push a single button to accept or end a call, as well as voice-activated methods of dialing, texting, music selection, and navigation control. The interface may occur exclusively through a smartphone device, or it may involve connecting a smartphone to a built-in interface that allows the automotive operating system to pair with the device (e.g. Android Auto, Apple Car Play, etc.).

Early research on the use of cellphones while driving suggests that hands-free alternatives were potentially problematic (Redelmeier and Tibshirani, 1997; McEvoy et al, 2005). However, results from these early studies must be interpreted with caution. Technology has changed so significantly in the past 20 years and the types of technology examined in these studies is not what is used today. A 2013 study indicated that voice powered text-to-speech technology may be just as distracting as texting while driving because drivers visually check the accuracy of the message before sending, and that use was

emotionally distracting because the many errors associated with the technology could lead to agitation (Yager, 2013). While this research was informative at the time and helpful in identifying issues, the functionality of these devices has dramatically improved and therefore this data is not applicable to the currently available technology.

A recent meta-analysis concluded that conversations, whether they are had on a hand-held or hands-free phone, *are* associated with driving performance costs such as increased reaction time, and decreased stimulus detection (Caird et al, 2018). Visual/manual tasks such as dialing a phone, or physically texting, are still the most dangerous, but a major component of the analysis of hands-free methods is the associated cognitive workload involved with using the devices and the overall task duration. Speech based/voice-activated systems often increase the length of time to complete a task (Burns et al, 2010).

Recent research indicates that there are differences in the various devices available from different manufacturers that may result in safer use. For instance, in a comparison of the voice-activated personal assistants available from Apple, Google, and Microsoft, while all systems increased cognitive workload substantially, the Google system was associated with a lower cognitive demand because it had fewer system errors, shorter time to complete an action, and a lower complexity/greater sense of intuitiveness (Strayer et al, 2015).

Organizations such as the Canadian Association of Emergency Physicians (Huang et al, 2010), and the National Safety Council (National Safety Council, 2015) have recommended a full ban on electronic device use (including hands-free) while driving, but it is difficult to quantify just how distracting these devices are, especially when the technology is being updated daily. It is important to quantify to what degree they can mitigate overall distraction if designed effectively.

Almost no jurisdiction bans hands-free use of communication devices (Portugal is the only jurisdiction to completely ban the use of cell phones, even when used in a hands-free manner). As a result, drivers may assume that hands-free is always a safe alternative to handheld devices. Additionally, if a system is extremely intuitive, or perceived to be very easy to use, the use of such devices may be greatly increased, and potentially result in driver inattention.

Devices can now be used with purpose-designed interfaces that are part of the vehicle, allowing for a well-designed human-machine interface (HMI). Not only is this an improvement to concerns with in-ear Bluetooth earpieces or poorly secured electronic devices falling and needing to be retrieved, but because it allows for lock out functions that disallow certain activities while the vehicle is in motion. These lock-out features can potentially mitigate distraction and improve road safety.

10.2 Built-in Vehicle Technologies

One of the major developments in motor vehicle technology is the in-car user experience. Manufacturers strive to offer the best safety, convenience and service features. Vehicles can be built with on-board infotainment systems that include innovative voice-powered text and email, navigation systems, designed to provide internet, radio, Facebook and Twitter updates. Bluetooth technology allows drivers to connect their smartphone to their vehicle. Some vehicle manufacturers are rolling out new products, services and updates to existing software every other week.

Multifunctional entertainment and vehicle control systems, while allowed in most jurisdictions, may encourage distraction because of the integration of entertainment and communication, with necessary functions such as navigation and safety features. Preliminary studies of current in-vehicle technologies indicate that drivers might use these devices if they had them at their disposal. For example, the Tesla

model X comes equipped with a 17-inch internet connected touch screen in the centre console and a study of Tesla drivers found browser activity peaked during typical commuting times (Prateepvanich and Lo, 2014).

Studies indicate that some functions of infotainment technology can require drivers to take their eyes off the road and hands off the wheel for dangerously long periods of time. Researchers in Utah examined infotainment systems in thirty vehicles and asked participants to conduct four types of tasks while driving: make a telephone call, send a text message, tune the radio, and program navigation (Strayer, 2017). The most distracting task was using the navigation system – a task which took an average of 40 seconds to complete. Voice-based and touch-screen technology tasks took more than 24 seconds to complete. Research from NHTSA indicates that a driver taking their eyes off the road for just two seconds doubles the risk of a crash. Design of these devices to limit the overall amount of time to complete a task, and the amount of time spent looking away from the road, is an extremely important aspect of their safety.

There is indication that newer versions of these devices are being designed with safety concerns in mind. For example, some of these technologies are equipped with a lock-out function to disallow certain activities while the vehicle is in motion (e.g. programming a GPS device). However, in the same study of over thirty vehicles mentioned above, it was found that 23 out of 30 vehicles had either a high or a very high overall demand score, including high levels of cognitive and visual demand, and long interaction times, indicating that more progress may be necessary to continue to improve the safety of these systems.

10.3 Legislation, Guidelines and Standards to Address Technologies

Overall, there is limited regulation governing the design and use of in-vehicle technologies. The technologies in this area evolve rapidly and it is difficult to write regulations to address their design. Instead, there are several groups who have developed guidelines, standards and best practices documents to be used for these changing technologies. The goal of these documents is to provide researchers, designers and original equipment with information taking into account driver limitations and capabilities.

A recent example is the *Human Factors Design Guidance for Driver-Vehicle Interfaces* (Campbell et al, 2016) which is based on the current best available scientific research and literature. There are a number of International Organization for Standardization (ISO) documents that provide procedures for assessing distraction associated with in-vehicle device use. The Society of Automotive Engineers (SAE) is active in this area as well.

In 2013, NHTSA issued voluntary safety guidelines, with Transport Canada participation, to the automotive industry to address dashboard technology. The guidelines recommend that automakers lock-out certain in-vehicle tasks like the ability to program a navigation system while the vehicle is in motion. The guidelines also contain in-vehicle device recommendations to limit and reduce their potential for distraction. Specifically, it is recommended that automakers reduce task complexity, limit time spent looking away from the road, and/or time spent with hands off the wheel. Note that these guidelines are voluntary and not mandatory safety standards or regulations.

Some manufacturers offer the latest most advanced infotainment services, while conforming to safety guidelines by integrating telematics and usage-based insurance (UBI) options to dissuade or even penalize drivers when they are too distracted by the technology at their disposal. UBI programs provide an opportunity for insurers to customize insurance to customers' individual driving behaviours and vehicle usage patterns. UBI typically involves the use of technology (for example installment of a device

in a customer's vehicle or an app that is downloaded to the driver's smartphone) to monitor drivers (for example distance driven, driving behavior, etc.) and allows auto insurance costs to better reflect driving patterns. UBI provides an opportunity to incentivize safer driving habits and a potential technical solution to counter the negative effects of distracted driving. The provision of the latest technologies coupled with safety features in a vehicle may give the impression to drivers that they can train themselves to use infotainment in a safe way. NHTSA reports that 53% of drivers assume that if manufacturers put "infotainment" dashboards and hands-free technology in vehicles, they must be safe. The use of UBI coupled with technology allows for drivers to regularly see information about their driving performance and how it is affecting their auto insurance premiums.

The European Transport Safety Council (ETSC) suggests that car manufacturers publish test results to indicate their vehicles comply with EU's "statement of principles" on human machine interface (HMI) design, stipulating that vehicles "should not give rise to potentially hazardous behaviour".

Transport Canada, in consultation with the provinces and territories, is developing draft guidelines to limit distraction from in-vehicle video displays units. This work is in response to the Transportation Safety Board's investigation of a collision between a bus and train in 2016. The investigation identified that visual distraction from a video monitor onboard the bus as well as cognitive distractions were likely contributing factors to the crash. The Board recommended that TC, in consultation with the provinces, develop comprehensive guidelines for the installation and use of in-vehicle video monitor displays to reduce the risk of driver distraction. At this time, comments and feedback solicited from the provinces and territories are being integrated into the guidelines.

10.4 Automated Driver Assistance Systems and Automated Vehicles

Automated driver assistance systems (ADAS) are additional electronic devices in vehicles to help support and assist the driver in performing driving tasks. ADAS technologies may provide a distracted driving solution for drivers who continue to engage in distracting behaviours while driving, despite laws, enforcement, and education and awareness initiatives.

Some ADAS technologies can warn a driver of an outcome of their inattention (e.g. lane departure warning). Others such as forward collision warning (FCW) with auto emergency brake (AEB) can help drivers avoid a collision caused by another driver's distraction.

The effectiveness of ADAS in preventing traffic injuries (and collisions) is complex and it is constantly changing due to continuous feature improvements and technology changes. These new crash avoidance technologies offer greater overall protection for drivers. Effectiveness may not be fully realized when drivers turn off certain features, for example when warnings are considered too frequent.

Many industry analysts feel that the benefits of ADAS systems outweigh the concerns (given the unique challenges of distracted driving) and that several features should be promoted 'now' vs. later (particularly forward collision warning with automatic emergency braking) given that vehicles currently last approximately 10 years. Forward collision warning with automated emergency braking will become standard in new vehicles in 2022 (NHTSA, 2015).

Automated vehicle technologies (e.g., with lane-keeping and following-distance features) may be useful in preventing crashes and fatalities associated with driver inattention, however there will be a period between the increased incorporation of these vehicle technologies, and the full, safe, and reliable automation of vehicles.

An important challenge moving forward will be to mitigate the belief by drivers of automated vehicles that they can pay less attention to the driving task. We know there is a tendency for people to engage in

distracting activities and solutions to best protect individuals without encouraging distraction are also needed. A systems approach to road safety that includes a vehicle-road-traffic environment that safely accounts for human error could provide solutions.

Questions have also been raised as to what automated vehicle manufactures should be legally allowed to promise in their advertisements and what should be permitted as a pre-installed feature. There may be a requirement for regulations related to the amount advanced warning provided to a driver of a safety-critical event should the car require driver intervention. The time required to shift attention between tasks is an area of research that is currently under active investigation.

According to a TIRF public opinion survey, while 4% of respondents self-reported currently engaging in distracted driving behaviours, 17% said they would engage in distracting behaviours if their vehicle was semi-autonomous (Robertson et al, 2016). Meanwhile in another Canadian self-report survey, 73% of respondents said they would use anti-texting technology in their vehicles if it was made available to them (Aviva Canada, 2017), perhaps indicating that drivers do view these technologies as encouraging a behaviour that is difficult to control without the aid of strict regulations or more direct discouragement inside their vehicle.

10.5 Do Not Disturb Features

A study by the insurance company EverQuote, indicated that the notification-silencing “Do Not Disturb While Driving” (DND) feature on the iPhone reduced distracted driving in a subset of users (EverQuote, 2018). The study was somewhat limited in that study subjects were recruited from the approximately 500,000 users of the EverQuote smartphone app, and only iPhone users were included in the analysis. The study found that 70% of iPhone-user participants kept the DND feature enabled, while 27% disabled the feature. Of those who used the DND feature, phone use while driving was decreased by 8%. When looking at users with all kinds of smartphones (iPhone, Android, and others), only 30% used the DND while driving feature, while 41% did not know that their phones had this type of feature, and only 32% reported that if Apple and Android did not offer this feature pre-installed, they would download a similar third-party application on their own. Insurance companies have looked to incentivize drivers who use these types of features while driving. Although drivers can opt-out or turn-off this type of a feature, its potential use to mitigate technology use while driving needs to be further explored.

Additional apps exist outside of cellphone manufacturer provided apps, which may also be used to block or limit cell phone use by drivers, particularly when paired with telematics. A disadvantage of these apps may be associated costs.

10.6 Radiocommunication Signal Blockers

A radiocommunication jamming device, also known as a signal silencer, blocker or disabler, is a radiocommunication transmitter designed to interfere with, disrupt, or block radiocommunication signals and services. Although most jamming devices are manufactured to disrupting the functioning of wireless cellular networks and low-power communication devices (cordless telephones and cameras, Wi-Fi networks and reception of GPS signals), they can also prevent communication to emergency services (9-1-1, ambulance, fire, police, etc.). Industry Canada bans universal radiocommunication signal blockers for use by individuals other than enforcement and public safety officials.

Although banned in Canada, there have been radiocommunication signal blocker devices designed to limit ECD use while driving. One example is a device that is fixed above the driver’s seat, either inside or outside a vehicle, and designed to block incoming and outgoing cell phone signals in the space below.

Another version of this kind of blocking technology requires the user to install an app on their phone. The blocking device communicates with the app when it detects the car in motion.

ICBC is partnering with the police and the BC government to launch two pilot projects to explore various technological solutions to distracted driving. One project involves testing cell phone blocking devices in a cohort of 200 customers. While it is not known at this time to what degree ICBC might lower premiums for drivers that install these devices, findings from the project will be used to inform future decisions related to distracted driving prevention and enforcement, as well as changes to improve the fairness of how insurance rates are set.

A challenge associated with restricting the integration of technologies to block cell phone signals inside the vehicle is that it could prevent the use of Federally mandated safety information from reaching drivers. In April 2017, the Canadian Radio-television and Telecommunications Commission (CRTC) announced a regulatory policy directing wireless service providers to implement wireless public alerting capability by April 2018. Alerts sent to a mobile device will warn Canadians about dangers to life and property in a timely manner (e.g. amber alerts, extreme weather, etc.). This announcement further complicates the issue of blocking electronic devices in vehicles.

10.7 Wearable Technologies

Wearable technologies or wearable gadgets are a class of electronic devices that are portable and worn (often as accessories) by users. Wearables use advanced sensors and wireless connectivity to interact between the individual and their environment. Smartwatches and glasses that allow users to capture digital images, use apps and scan the internet are examples of wearable technologies.

According to a small research study in Texas (20 individuals), wearable technologies (e.g. smartwatches) and heads-up displays (e.g. Google Glasses) may provide a marginal safety benefit above manual texting, however the touted safety benefits may encourage greater use, thereby negating their safety features (He et al, 2018). The study found that driving and texting with a wearable device is just as dangerous as driving texting with a cell phone.

11. Evaluation of Technologies and Distracted Driving

A methodological approach towards rating the level of distraction (cognitive, emotional, audio-visual, tactile) of various technology devices and technologies is one significant area of interest for researchers moving forward, particularly because there is no agreed upon criterion for assessing the level of cognitive distraction associated with a certain device (Scipione et al, 2018). At least one study has attempted to develop a tool to evaluate the level of distraction caused by various interactions with technology and the ways in which drivers are distracted (e.g. Strayer, 2015). To date, evaluation type tools have not been properly validated.

Local vehicle manufactures in Australia have obtained federal funding for a research centre on advanced automotive technology with one of the goals being to develop and refine vehicle technologies that limit driver distraction through effective ergonomic design (Regan, 2007). Research to develop technologies that limit driver distraction and evaluation the distraction level of existing and emerging technologies is desperately needed.

Key Points

- Development of legislation, guidelines, standards and regulations to keep abreast of rapidly changing technology is a challenge. Other tools that allow for flexibility and timely responses to changes in technology may be needed
- More research is needed to evaluate technology and the level of distraction or potential to mitigate distraction
- Advancements and innovations in technology may play a key role in addressing distracted driving
- User-based insurance may offer a technical solution to counter the negative effects of distracted driving

12. Multi-sector Partnerships/Collaborations/Linkages

Collaboration among road safety stakeholders is vital to addressing distracted driving and achieving greater gains in the collective objective of improved road safety. Collaboration between governments, non-governmental organizations and other road safety partners is necessary to identify gaps, share information, leverage knowledge, share resources, learn from experiences, and to identify activities to address distracted driving.

A systematic approach to distracted driving is critical. Addressing one single issue will not create a solution, rather combined efforts using a multi-pronged approach to address all aspects of distracted driving are needed.

Lessons learned from the Global Road Safety Partnership:

- Commitment from all stakeholders at the outset is important
- Systemic approach is critical – addressing one issue will not create a solution. There must be combined efforts on creating safer road infrastructure, traffic laws, safety mechanisms, training, education and enforcement
- Sensitivity and awareness to local conditions or specific targets is critical for success
- Identify sectors to be engaged in planning: private, NGO, etc.

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APPENDICES

Appendix A: Number and Percentage of Distracted Driving Fatalities and Serious Injuries In Canada 2002-2015.

Year	Number of Fatalities	% of Fatalities Involving Distracted Driving	Number of Serious Injuries*	% of Serious Injuries Involving Distracted Driving
2002	484	16.6%	3,186	20.0%
2003	490	17.6%	3,123	20.7%
2004	426	15.6%	3,453	22.2%
2005	507	17.5%	3,680	23.3%
2006	511	17.8%	3,891	24.3%
2007	472	17.1%	3,387	23.5%
2008	483	19.9%	3,181	24.8%
2009	421	19.0%	3,079	25.8%
2010	424	19.0%	2,971	25.2%
Average 2002-2010	469	17.8%	3,328	23.3%
2011	416	20.6%	2,772	25.3%
2012	457	22.0%	2,999	27.0%
2013	396	20.3%	2,989	28.0%
2014	367	19.8%	3,023	29.0%
2015	418	22.5%	3,036	28.2%
Average 2011-2015	411	21.0%	2,964	27.5%
% Change from 2002-2010 to 2011-2015	-12.3%	18.3%	-10.9%	18.2%

Source: Transport Canada, National Collision Database

Notes:

1. Adjusted for jurisdictions that do not provide contributing factors or did not provide over entire period observed.
2. Serious injuries were adjusted to account for underreporting in some jurisdictions.

Appendix B: Distracted Driving Legislation– Prescribed Devices and Behaviours for fully licensed drivers (non-GDL) in Canada

Province	Prohibited Devices*	Prohibited Behaviours	Permitted Devices/Behaviours	Unspecified Devices/Behaviours
BC	Hand-held electronic device (cellular telephones, electronic devices that include a telephone function, and/or is capable of transmitting or receiving electronic mail or other text-based messages, hand-held audio players, hand-held GPS devices; hand-held electronic devices, one of the purposes of which is to process or compute data), television screens unrelated to assisting the driver in the safe operation of the vehicle. Headphones/earphones are prohibited when used for listening to a hand-held audio player. The sound must come from the vehicles speakers.***	“Holding the device in a position in which it may be used, operating one or more of the device’s functions, communicating orally with another person with the device, watching the screen of an electronic device.”	An electronic device that is configured and equipped to allow hands-free use in a telephone function (securely fixed to the vehicle or worn securely on one’s body, is within easy reach of the driver, and does not obstruct the driver’s view), and is used in a hands-free manner (voice-activated or requires only one touch). An earpiece may only be worn in one ear and must be placed before driving begins (motorcyclists may have an earpiece in both ears).***	Comprehensive. (In-car entertainment systems such as Tesla’s internet accessed touch screens would be illegal to use?)
AB	Hand-held cellular telephones, radio communication devices, and other communication devices that are capable of receiving or transmitting telephone communication, electronic data, electronic mail or text messages, other hand-held electronic devices, or wireless electronic device, display screens of television, computers, or other prescribed devices	“Holding” or “viewing” or “manipulating,” as well as “engaging in personal grooming or hygiene, or “reading or viewing printed material other than instruments and gauges” or “writing, printing, or sketching”	Cellular telephone or radio communication devices used in hands-free mode, viewing GPS display screens in hands-free mode (programmed before operating vehicle, or used in a voice-activated manner).	Does not specify whether entertainment can be viewed on a cell phone screen so long as it is used in a hands-free manner?
SK	Hand-held electronic communication equipment (cell phones), television sets, video screens, computer screens unrelated to driving, and any other prescribed electronic devices	“Using or “Holding” or “viewing” or “manipulating” “Using” – refers to making a phone call, texting, talking, emailing, surfing or accessing the internet, or any other prescribed purpose	Hands-free cell phones as long as they are mounted on the dash, clipped to the visor, or in a cradle, and are only used by one touch or voice commands.	Mp3 players?

MB	Hand-operated electronic devices including cellular telephones, all electronic devices with telephone functions, that are normally held in the user's hand or requires one's hand to operate its functions, or is capable of transmitting or receiving email or text messages, or any other prescribed electronic device, also cannot listen to radio or recordings through headphones***	"Holding device in a position it may be used, operating any of the device's functions, communicating with another person or device, looking at the device's display, or any other prescribed uses. "	A cellular telephone or other electronic device with a telephone function, that is configured and equipped to allow hands-free use as a telephone and is used in a hands-free manner.	Mp3 players? Can you look at the device's display if your phone or display screen is mounted in a hands-free manner? For entertainment?
ON	Hand-held wireless communication device or any other device capable of receiving or transmitting telephone communications, electronic data, mail, or text message, and any hand-held electronic entertainment device or other prescribed device that is used for a purpose unrelated to the safe operation of the motor vehicle, as well as television screens unrelated to driving information that are in the driver's view	"Holding" or "using" – not further defined	Any electronic device used in hands-free mode.	Fairly all-encompassing.
QC	Cellular phone or any other portable device designed to transmit or receive information or to be used for entertainment purposes, or to make use of a display screen. It is forbidden to manipulate an MP3 player. The wearing of headphones or earphones in both ears while driving is prohibited***	A driver who is holding, or in any other way, a portable electronic device is presumed to be using it.	Cell phones or other portable electronic devices that are used in hands-free mode.	
NL	Hand-held wireless communication devices or other prescribed devices capable of receiving or transmitting telephone communications, electronic data, email, or text messages.	"Holding" or "using" – not further defined	Hand-held wireless communication devices or other prescribed devices can be used in hands-free mode.	Display screens on portable DVD players, programming an mp3 player?
NS	Hand-held cellular telephone, or any communication device with text messaging capabilities, and any television viewer, screen, or means of visually receiving a television broadcast	"Using" - includes GPS and apps, calling, or texting (according to police).	Not specified.	Does television screen refer to laptops, tablets, DVD players? Are mp3 players banned?
NB	Hand-operated electronic device (cellular telephone, two way radio, GPS, entertainment device), or any other electronic device that includes a telephone	"Use" – includes holding the device in a position in which it may be used, operating any of the	Hand-operated electronic devices configured and equipped to be used as a hands-free telephone, used in a hands-free	This is one of the most all-encompassing laws; including mp3 players, laptops, and cars that have display screens that

	function, or is capable of transmitting or receiving email or text messages, and is normally held in the user's hand during its use or requires the user to use his or her hand to operate its functions. Display screens are banned if they are visible to the driver and not used by a taxi or for commercial purposes. Built-in display screens are allowed only if they function as GPS devices, or display information on road or weather conditions, or information about the vehicle.	device's functions, communicating by means of the device with another person or device, or looking at the device's display	manner, and used exclusively by voice commands or one-touch activation. Two-way radios may be used for commercial purposes, or if one has a radio operator certificate. GPS display may be looked at for navigational purposes.	are built into the vehicle for entertainment and not information.
PE	Hand-held wireless communication device or other prescribed device that is capable of receiving or transmitting telephone communications, electronic data, email, or text messages.	"Holding" or "using" – not further defined	"Hands-free mode" – not further defined.	
YT	A device that is either or both of a cellular telephone or another device that includes a telephone function, and/or a device that is capable of transmitting or receiving electronic mail or other text-based messages.	"Use" – holding the electronic device in a position in which it may be used, operating any function of the electronic device, communicating by means of the electronic device.	"If an electronic device is configured and equipped to allow hands-free use in a telephone function."	Devices without the capability of talking, texting, or emailing, such as an mp3 player or a portable DVD player?
NT	"Restricted electronic device" – portable electronic device including a cellular telephone, device for sending and receiving data, device for playing audio or video recordings, and handheld GPS devices.	"Use" – includes operating, holding, or touching the device	"Permitted if using a designated hands-free device and it is used in a hands-free manner."	Fairly all-encompassing except that a device for playing audio or video recordings could be used in a hands-free manner (watching a video on a phone, laptop, tablet, etc.)?
NU****	"Hand-held electronic device" and "a screen directly or indirectly visible to driver"	"Holding" or "using" – not further defined	May use, but not hold, a device in hands-free mode. May view screens built into the vehicle by the manufacturer, as well as back-up screens and GPS systems.	Hand-held electronic device is not further defined at this time.

*The definition of "electronic device" can be expanded by regulations made by the Lieutenant Governor in Council or Minister in most jurisdictions, as can the definition of "use."

**All provinces and territories prohibit merely holding an electronic device, with the exception of NS.

***BC, MB, and QC all ban the wearing of one or more headphones and/or earphones while driving a motor vehicle or bicycle.

****Traffic Safety Act was assented to on June 8, 2017. The Traffic Safety Act comes into force the earlier of December 31, 2018 or a day to be fixed by order of the commissioner. Electronic devices are addressed in the new Traffic Safety Act.

Appendix C: Distracted Driving – Legislation and Penalties for fully licensed drivers (non-GDL) -- International

Country	Law	Fines/Demerits	Legislation Date	Updates
Australia	Use of a hand-held mobile phone is prohibited. Use of a GPS that requires touching a keypad or screen is also prohibited.	\$400 (\$391 CAD) and 3 demerit points	2001	2016
Denmark	Use of a hand-held mobile phone while driving is prohibited. If the driver holds the phone at any point while driving, they have broken the law.	1500 Kr (\$304 CAD)	1998	
Germany	Use of a hand-held electronic communication device is prohibited.	100 Euros (\$152 CAD)	2001	
Japan	Using a hand-held mobile phone or other communication device while driving is prohibited. The driver is also prohibited from looking at the screen of such a device.	50,000 Yen (\$586.45 CAD) and 1 demerit point	1999	
Singapore	Prohibit holding of a mobile communication device in one or more hands, while also using any function of the mobile communication device such as making phone calls, paging, receiving a call, surfing the internet, playing games, or sending SMS messages.	1000 Singapore dollars (\$960.80 CAD), 2000 Singapore dollars (\$1921.63 CAD) for a second offense	2017	
The Netherlands	Use of a hand-held mobile phone is prohibited, as is holding the phone while driving.	230 Euros (\$349 CAD)	2002	
Norway	Use of hand-held mobile phones while driving a motor vehicle is prohibited.	A maximum of 2300 Krone with a typical fine being 1650 Krone (\$257 CAD)	2000	
South Korea	Use of a hand-held mobile phone while driving is prohibited.	60,000 Won (\$71 CAD) and 15 demerits	2001	
Spain	Use of a hand-held mobile phone or other communication device is prohibited. Use of headphones (including hands-free devices that attach to the ear) is also prohibited.	200 Euros (\$307 CAD) and 3 demerits		

Portugal	Hand-held mobile phone use and hands-free use is prohibited.	120-600 euros (\$186.61-932.98 CAD)		
Sweden	Prohibited from using a mobile phone in such a way that he or she holds it in his or her hand.	Amount determined by the court, can be up to 4000 SEK (\$610 CAN).	2013	2018
United States	The 50 States, D.C., and Puerto Rico set their own distracted driving laws. 15 States, Puerto Rico, and D.C. prohibit the use of hand-held cell phones while driving. 47 States, D.C., and Puerto Rico prohibit texting while driving.	Fines in states that have distracted driving laws range from \$25 (\$26 CAD) in South Carolina to a maximum fine of \$500 (\$638 USD) in Alaska.	2001 (NY being the first state to ban)	
United Kingdom	Use of a hand-held mobile phone or other hand-held interactive communication device is prohibited.	£200 (\$349) and 6 demerit points. £1000 for second offense	2003	2017