

CELL PHONE USAGE AND MOTOR VEHICLE ACCIDENTS

At its May 2009 meeting, WorkSafeBC's Board of Directors ("BOD") was provided with the attached document on cell phone usage and motor vehicle accidents that examines:

- laws governing driver cell phone use in BC and other jurisdictions;
- statistics indicating the role of cell phone use in motor vehicle collisions;
- key research relating to the impact of cell phone use on driving performance; and
- approaches for addressing cell phone use by drivers.

The BOD supported the conclusion of the document.

CELL PHONE USAGE AND MOTOR VEHICLE ACCIDENTS

1. TITLE

Cell Phone Use and Motor Vehicle Accidents

2. ISSUE

This is an overview of the issue of cell phone involvement in motor vehicle accidents by examining:

- laws governing driver cell phone use in BC and other jurisdictions;
- statistics indicating the role of cell phone use in motor vehicle collisions;
- key research relating to the impact of cell phone use on driving performance; and
- approaches for addressing cell phone use by drivers.

3. BACKGROUND

A number of studies have shown that cell phones can distract drivers and contribute to an increased risk of motor vehicle crashes. While many sources of distraction exist for drivers, particular attention is paid to the use of cell phones while driving due to the rise in cell phone ownership in recent years. According to the Canadian Wireless Telecommunications Association, there were less than 100,000 cell phone subscribers in 1987; by the end of 2007, there were 19.9 million cell phone subscribers in Canada.¹ This represents an increase of almost 20,000% over the past 20 years. Data from BC Stats indicates that the percentage of cell phone owners is rapidly approaching the percentage of vehicle owners, and the majority of vehicle owners likely also own a cell phone.²

This rapid growth in cell phone ownership has not been accompanied by regulations governing their use either in the general population or in the workplace.³ This gives rise to concerns about the potential impact of cellular phone use on collision risk. Cell phones can distract drivers and contribute to motor vehicle crashes by drawing their attention away from the road and surrounding environment, causing a delayed reaction to a hazard or possibly a failure to detect it all.⁴

Despite safety concerns, the availability of a cell phone in a vehicle offers a number of benefits; for workers, the availability of a cell phone may offer increased productivity and efficiency, as well as increased responsiveness to clients and co-

¹ Canadian Wireless Telecommunications Association

² Insurance Corporation of British Columbia (2007)

³ Pratt, S.G. (2003) at 56

⁴ Canadian Automobile Association at

workers.⁵ The benefits of having a cell phone have transformed vehicles into secondary work environments. This has resulted in legitimate concerns regarding the risk of motor vehicle accidents, as research has provided evidence of the negative consequences of performing secondary tasks, such as using a cell phone, while driving.

3.1 Law in British Columbia

3.1.1 Occupational Health and Safety Legislation

Neither the Occupational Health and Safety Regulation (“OHSR”) or the *Workers Compensation Act* (“WCA”) addresses the issue of cell phone use by workers while operating a motor vehicle. However, section 2.2 of the OHSR does contain a general duty clause, which states:

Despite the absence of a specific requirement, all work must be carried out without undue risk of injury or occupational disease to any person.

The WCA also contains general duty provisions for employers and workers. Section 115(1) of the WCA states:

Every employer must ensure the health and safety of all workers working for that employer, and any other workers present at a workplace at which that employer's work is being carried out.

Section 116(1) of the WCA states:

Every worker must take reasonable care to protect the worker's health and safety and the health and safety of other persons who may be affected by the worker's acts or omissions at work.

With regards to operating a motor vehicle, the general duty provisions listed above might require a worker to refrain from, and the employer to ensure the worker refrains from, doing anything that prevents the worker from operating the vehicle in a safe manner.

3.1.2 Motor Vehicle Act

Currently in BC, there is no legislation which prohibits or restricts the use of cellular phones while operating a motor vehicle. However, section 144 of the *Motor Vehicle Act* (“MVA”) does make it an offence for a person to operate a motor vehicle on a highway without due care and attention or without reasonable consideration for other persons using the highway. Drivers who are observed driving dangerously or who cause a collision

⁵ Lissy, K.S. et al. (2000) at 46
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while using a cellular phone can be charged under this section of the MVA. Those convicted under this charge are subject to a fine anywhere from \$100 to \$2,000, to imprisonment for up to 6 months, or to both.

4. DISCUSSION

4.1 Statistics

The following section provides statistics related to the prevalence of cell phone use by drivers and the involvement of cell phones in motor vehicle collisions.

4.1.1 Driver Cell Phone Use in the General Population

- (a) The Traffic Injury Research Foundation (“TIRF”) conducted telephone surveys in 2001 and 2006 to determine how often Canadians use cell phones while driving. From these surveys, the TIRF concluded that Canadians’ use of cell phones appears to be growing. The TIRF’s 2001 survey on driver distraction found that 20.5% of drivers reported using their cell phone while driving in the past seven days. In its 2006 survey, the TIRF found that the number had risen to 37% of drivers. This translates into approximately 8.2 million Canadian drivers using a cell phone while driving each week.⁶

The TIRF also concluded that, despite the rise in cell phone use while driving, there seems to be a trend towards lower usage time. In the 2006 survey, almost 70% of drivers stated that they used their cell phone while driving for less than 10 minutes per week; in 2001, only 57.6% of drivers reported using their phones for less than 10 minutes per week.⁷ The percentage of drivers using their phones for between 10 and 30 minutes per week, on the other hand, decreased from 23.4% in 2001 to 14.7% in 2006.⁸

- (b) Transport Canada conducted observational surveys in September 2006 and September 2007 to measure cell phone use by drivers in rural and urban Canada.⁹ In total, 133,577 vehicles and drivers were observed at 519 sites across Canada. Results from the surveys showed that approximately 5.5% of Canadian drivers were using a hand-held cell phone. In BC, approximately 4.0% of drivers were using a hand-held cell phone. The rates of cell phone use by drivers would have been higher if observers had been able to determine

⁶ Vanlaar, W. et al. (2007) at 12

⁷ Vanlaar, W. et al. (2007) at 13

⁸ Vanlaar, W. et al. (2007) at 13

⁹ Transport Canada (2008)

usage of hands-free phones as well. The study concluded that hand-held cellular phone use by drivers is common behaviour.

- (c) The Insurance Corporation of British Columbia (“ICBC”) recently conducted a study which involved observing more than 69,000 private and commercial light vehicles. The study found approximately 5.8% of drivers were using a cell phone and that usage was highest on weekdays and during mid-morning (9 am to 11 am) and late afternoon (3 pm to 6 am). The study also found that cell phone use is the number one secondary activity engaged in by drivers.¹⁰

The results of ICBC’s study are consistent with studies of driver cell phone usage conducted in other jurisdictions, such as the United States. The National Highway Transportation Safety Authority estimates driver cell phone use through its National Occupant Protection Use Survey (“NOPUS”). The 2006 NOPUS found that 5% of drivers are using a hand-held cell phone at any given daylight moment; this translates into 745,000 vehicles on the road being driven by someone talking on a hand-held phone.¹¹

4.1.2 Driver Cell Phone Use While Driving for Work

There are currently no data available that estimate the number of workers who possess a cell phone or that estimate worker cell phone usage while driving. The Network of Employers for Traffic Safety (“NETS”), however, did conduct a national survey in the United States to determine the percentage of drivers who engage in any distracting activity while driving and the proportion who do so while driving for work. The NETS survey found that 94% of drivers reported having engaged in activities that are potentially distracting while driving; 51% of these drivers reported using a cell phone while driving. Of particular importance is that 39% of respondents reported that they engaged in distracted driving activities primarily while driving for work.¹² NETS did not, however, specify how many of these respondents reported using a cell phone as the specific distracting activity engaged in while driving for work.

4.1.3 Text Messaging while Driving

In addition to conversing on cell phones while driving, a significant number of drivers admit to using cell phones to send and retrieve text messages. A 2004 Australian study found that 58% of drivers, aged 17-29, admitted

¹⁰ Insurance Corporation of British Columbia (2007)

¹¹ Glassbrenner, D. & Ye, T.J. (2007) at 1

¹² Network of Employers for Traffic Safety (2007)

to regularly reading text messages while driving. Thirty-seven percent also admitted to regularly sending text messages while driving.¹³

In 2008, the RAC Foundation reported that 45% of United Kingdom drivers admitted to texting while driving. These drivers were divided into three categories of texting drivers: 21% who read and send text messages regardless of traffic flow; 19% who read and/or send text messages while stuck in a traffic jam; and 5% who read text messages while driving but would not send them.¹⁴

4.1.4 Motor Vehicle Collisions

Statistics on cell phone involvement in motor vehicle collisions are controversial, because cell phone use is difficult to detect. Existing statistics, which indicate that cell phone use is a factor in less than 1% of collisions, are not considered to be truly indicative of the problem.¹⁵ The actual contribution of cell phone use in motor vehicle collisions is difficult to quantify as drivers are not likely to report they were using a cell phone to investigators.¹⁶ As a result, all published statistics on the involvement of cell phones in motor vehicle collisions, including those provided below, are believed to under-represent the actual contribution of cell phones in motor vehicle collisions.

- (a) In 2003, ICBC conducted a review of its claims data to determine the role of cell phones in motor vehicle crashes. The review documented approximately 523 incidents (0.5% of total claims for that year) which occurred as a direct result of driver cell phone use. Of these 523 claims, 124 involved an injury and 399 were property damage claims.¹⁷
- (b) Police in BC began tracking cell phone use as a factor in casualty (personal injury or fatality) collisions in 2004. Data on cell phone use as a contributing factor in collisions is reported in the BC *Traffic Collision Statistics* under the category of “use of communication/video equipment.” According to ICBC, it is likely that almost all of these are cell phone use as ICBC’s observational surveys find very low use of any other type of equipment.

According to the *Traffic Collision Statistics* for 2004, 46 injuries and 1 fatality resulted from collisions in which the use of

¹³ Telstra (2004)

¹⁴ Reed, N. & Robbins, R. (2008) at 3

¹⁵ Sundeen, M. (2005)

¹⁶ Utter, D. (2001) at 1

¹⁷ Insurance Corporation of British Columbia (2007)

communication/video equipment was a contributing factor.¹⁸ In 2005, there were 55 injuries and 1 fatality resulting from crashes in which the use of communication/video equipment was a contributing factor.¹⁹ In 2006, 53 injuries and 2 fatalities resulted from crashes with a contributing factor of communication/video equipment.²⁰ Out of all contributing factors listed in the *Traffic Collision Statistics*, the use of communication/video equipment was found to account for less than 0.15% of factors listed for police reported casualty collisions.

- (c) In 2003, Saskatchewan Government Insurance published a report examining 16,183 police-reported collisions where inattention or distraction was cited as a contributing factor. Driver distraction accounted for 17% (or 2,751) of the collisions. Of these distraction collisions, cell phone use was found to account for only 1% (or 27) of the incidents.²¹

4.1.5 WorkSafeBC Claims Statistics

Currently, WorkSafeBC does not have statistics related to cell phone involvement in worker motor vehicle accidents. Claim files do not indicate whether or not a cell phone was being used at the time of the accident.

4.2 Literature Review

Cell phone use by drivers is both widespread and rapidly increasing. In response to the growing use of cell phones by drivers, a large number of studies have been conducted which examine the impact of cell phone use on collision risk and driving performance. This paper attempts to provide an overview of some of the key research relating to cell phone use by drivers.

More detailed summaries of the research studies referenced in this section can be found in Appendix A.

4.2.1 Cell Phone Use and Collision Risk

Researchers have employed a variety of research methodologies in an attempt to quantify the exact risk posed by driver cell phone use. While a causal link between cell phone use and motor vehicle collisions has not been proven, several studies have concluded that cell phone use is associated with an increased risk of motor vehicle collision.

¹⁸ Insurance Corporation of British Columbia (2004) at 13

¹⁹ Insurance Corporation of British Columbia (2005) at 13

²⁰ Insurance Corporation of British Columbia (2006) at 13

²¹ Canadian Council of Motor Transport Administrators (2006) at 4

A 1997 Canadian study found that the risk of a motor vehicle collision resulting in substantial property damage was four times higher when using a cell phone than when a cell phone was not being used.²² This study only examined property damage crashes; however, another study showed that cell phone use is also associated with a fourfold increase in the risk of motor vehicle collisions resulting in serious injury to the driver.²³ Both of these studies found the increase in collision risk to be consistent among groups of drivers (i.e., gender and age group did not affect the likelihood of crashing while using a cell phone).

The collision risk associated with cell phone use (fourfold increase) has been found to be similar to that associated with driving with a blood alcohol concentration at the legal limit (0.08%).^{24, 25, 26} While cell phone drivers and intoxicated drivers display different driving behaviours – cell phone drivers display sluggish driving behaviour and intoxicated drivers display aggressive driving behaviour – both sets of drivers show equivalent levels of impairment.²⁷

Despite the findings of the aforementioned studies, there is a lack of consensus in the academic literature on the impact of cell phone use on collision risk. Some studies suggest that the finding of a fourfold increase is an overstatement of the risk involved with driver cell phone use.

Studies which have linked cell phone use with an increased risk of collision have been criticized for relying on samples of drivers who have been involved in accidents, as these samples are disproportionately composed of individuals with large usage effects (i.e., careless drivers).²⁸ The finding of an increased collision risk, therefore, could be due to drivers engaging in generally unsafe or careless driving rather than an effect of cell phone use.²⁹ Current estimates of the impact of cellular phones on accidents could be artificially high, as it is difficult to separate the effects of careless driving from the potential effects of cell phones.³⁰

In contrast to the finding of a fourfold increase in collision risk, some studies suggest that the risk involved with driver cell phone use is minimal.^{31, 32} Furthermore, increases in call volume have been shown to

²² Redelmeier, D.A. and Tibshirani, R.J. (1997) at 456

²³ McEvoy, S.P. et al. (2005) at 3

²⁴ Redelmeier, D.A. and Tibshirani, R.J. (1997) at 456

²⁵ Strayer, D.L., Drews, F.A. & Crouch, D.J. (2006) at 388

²⁶ Burns, P.C. et al (2002) at 23

²⁷ Strayer, D.L., Drews, F.A. & Crouch, D.J. (2006) at 388

²⁸ Hahn, R.W. & Prieger, J.E. (2006) at 2

²⁹ Wilson, J. et al. (2003) at 51

³⁰ Wilson, J. et al. (2003) at 51

³¹ Bhargava, S. & Pathania, V. (2007) at 40

³² Hahn, R.W. & Prieger, J.E. (2006) at 29

result in no measurable increase in motor vehicle crashes, suggesting that driver cell phone use does not cause a rise in crashes.³³

4.2.2 Impact of Cell Phone Use on Driving Performance

Studies have shown that using a cell phone while driving impairs driving performance. Specifically, cellular phone use has been found to impair:

- maintenance of lane position,
- maintenance of an appropriate and predictable speed,
- maintenance of appropriate following distances,
- reaction times to changes in the driving environment,
- judgment and acceptance of safe gaps in traffic, and
- situational awareness.³⁴

Phone use affects driving performance by distracting drivers from the primary task of operating the motor vehicle. The distraction caused by a cell phone can be both physical and cognitive.³⁵

Physical Distraction

Cellular phones act as a physical distraction by causing drivers to take their hands off the steering wheel and their eyes off the road in order to retrieve the phone and either dial a phone number or answer a call.³⁶ Hand-held phones involve the further distraction of causing drivers to drive one-handed, while holding the phone with their other hand. Handling a cell phone can, therefore, interfere with the manual dexterity required to steer the vehicle, resulting in poor steering control.^{37, 38}

Cognitive Distraction

Cell phone conversations are a significant source of cognitive distraction for drivers. These conversations impair driving performance by diverting attention from the driving task to the phone conversation.^{39, 40} Studies have shown that there is a limit on the amount of attention that can be divided across multiple tasks; therefore, the ability to process driving-

³³ Bhargava, S. & Pathania, V. (2007) at 2

³⁴ Royal Society for the Prevention of Accidents (2002) at 7

³⁵ Direct Line Motor Insurance (2002) at 9

³⁶ Direct Line Motor Insurance (2002) at 9

³⁷ Brookhuis, K.A., de Vries, G., & de Waard, D. (1991) at 321

³⁸ Horrey, W.J. and Wickens, C.D. (2004) at 2304

³⁹ Just, M.A., Keller, T.A., & Cynkar, J. (2008)

⁴⁰ Strayer, D.L., Drews, F.A., & Johnston, W.A. (2003) at 26

related information is reduced when attention is directed towards the processing of a cell phone conversation.^{41, 42}

When drivers are engaged in a cell phone conversation, they can fail to see objects in the driving environment, even when looking directly at them, because their attention is focused on the cell phone conversation.⁴³ This “inattention blindness” impairs the ability of drivers to attend to information in the driving environment and has a negative impact on driver behaviour and vehicle control; this is evidenced by the fact that cell phone drivers show changes in visual behaviour, a higher incidence of hard braking, slower response times and decreased stopping accuracy.^{44, 45}

The greatest impairment in driving performance occurs when drivers are engaged in an intense or complex conversation, as these conversations are more mentally demanding.^{46, 47} Work-related calls, which tend to be of a more complex and demanding nature, can therefore be particularly detrimental to driving performance.⁴⁸

The impairment associated with cell phone conversation is also more pronounced when driving conditions are bad. Drivers may fail to adjust driving behaviour to account for potentially dangerous road conditions when their attention is engaged by a cell phone conversation.⁴⁹

4.2.3 Hand-Held vs. Hands-Free Cellular Phones

A number of studies have found that the impairments in driving performance associated with cell phone use are unaffected by the type of phone used; that is, both hand-held and hands-free cell phones result in significant impairments in driving performance. Furthermore, performance impairments are equivalent for both types of cell phone. These findings suggest that the primary source of the impairments associated with driver cell phone use is from the cognitive demands of the conversation rather than the manual aspects of holding the phone.^{50, 51}

A hands-free cell phone may eliminate the physical distraction involved with manually handling a cell phone which could be beneficial in situations

⁴¹ Just, M.A., Keller, T.A., & Cynkar, J. (2008)

⁴² Harbluk, J.L., Noy, Y.I., & Eizenman, M. (2002) at 21

⁴³ Strayer, D.L., Drews, F.A., & Johnston, W.A. (2003) at 30

⁴⁴ Harbluk, J.L., Noy, Y.I., & Eizenman, M. (2002) at 20

⁴⁵ Hancock, P.A., Lesch, M., and Simmons, L. (2003) at 511

⁴⁶ Wood, C. & Hurwitz, J. (2005) at 208

⁴⁷ McKnight, J. & McKnight, A.S. (1991)

⁴⁸ McKnight, J. & McKnight, A.S. (1991)

⁴⁹ ICBC Transportation Safety Research (2001) at 7

⁵⁰ Horrey, W.J. and Wickens, C.D. (2004) at 2307

⁵¹ Brace, C.L., Young, K.L., & Regan, M.A. (2007) at 10

requiring a high amount of manual steering input.⁵² However, a hands-free model will not ameliorate the more significant cognitive interference caused by the cell phone conversation.⁵³ As such, hands-free cell phones do not resolve the performance impairments associated with driver cell phone use.⁵⁴ Researchers have concluded, therefore, that hands-free cell phones do not offer safety advantages over hand-held models.⁵⁵

4.2.4 Text Messaging

Using a cell phone to send and/or retrieve text messages can be a significant source of physical, visual and cognitive distraction for drivers.⁵⁶ Studies have shown that reading and writing text messages while driving significantly erodes driver performance and has a detrimental effect on a number of safety critical driving maneuvers.^{57, 58}

When texting, the ability of drivers to maintain a safe road position is impaired. Texting drivers show increased variability in lateral lane position, are more likely to depart from their lane, and have poorer control over vehicle speed.^{59, 60} These impairments have significant implications for a driver's ability to control a vehicle in normal traffic flows.⁶¹

Attention to the driving environment is also impaired when drivers send and retrieve text messages. Drivers are slower to respond to hazards in the driving environment when texting. Drivers are also more likely to completely fail to detect or respond to hazards.⁶² These performance impairments could be due to the finding that drivers spend up to 400% more time with their eyes off the road when they are texting than when they are not.⁶³

The impairments associated with texting while driving have been found to be greater than those associated with other forms of impairment. Drivers who are text messaging display slower reaction times and poorer steering control than both drivers at the legal limit for alcohol consumption and those under the influence of cannabis.⁶⁴ This finding has led researchers

⁵² Horrey, W.J. and Wickens, C.D. (2004) at 4

⁵³ Strayer, D.L., Drews, F.A. & Crouch, D.J. (2006) at 388

⁵⁴ Lamble, D. et al. (1999) at 622

⁵⁵ Redelmeier, D.A. and Tibshirani, R.J. (1997) at 456

⁵⁶ Direct Line Motor Insurance (2002) at 9

⁵⁷ Reed, N. & Robbins, R. (2008) at 44-45

⁵⁸ Hosking, S., Young, K., & Regan, M. (2006) at 22

⁵⁹ Reed, N. & Robbins, R. (2008) at 44-45

⁶⁰ Hosking, S., Young, K., & Regan, M. (2006) at 20-21

⁶¹ Reed, N. & Robbins, R. (2008) at 45

⁶² Reed, N. & Robbins, R. (2008) at 44

⁶³ Hosking, S., Young, K., & Regan, M. (2006) at 20

⁶⁴ Reed, N. & Robbins, R. (2008) at 46-47

to conclude that drivers may present a greater risk of accident when they are texting than when they have a blood alcohol concentration at the legal limit or when they are under the influence of cannabis.⁶⁵

4.2.5 Comparison to Other Distractions

Cell phones are not the only possible distraction for drivers. A number of other distractions, both inside and outside the vehicle, can take attention away from the driving task.

A study by the AAA Foundation for Traffic Safety examined the role of various driving distractions in traffic crashes. The results show that cell phones are not a frequently reported source of distraction, as compared to other distractions.⁶⁶

Table 1. Role of specific driver distractions in collisions

Driver Distraction	Percentage of drivers involved in collision
Outside person, object, event	29.4
Adjusting radio/cassette/CD	11.4
Other occupant	10.9
Moving object in vehicle	4.3
Other device/object	2.9
Vehicle/climate controls	2.8
Eating, drinking	1.7
Using/dialing cell phone	1.5
Smoking related	0.9
Other distraction	25.6
Unknown distraction	8.6

The most frequently reported source of driver distraction was an outside person, object or event. This finding is consistent with that from a study by the TIRF that external distractions are a more frequently reported cause of driver distraction than internal ones.⁶⁷ Approximately twice as many Canadians admitted to having to brake or steer to avoid a collision as a result on a distraction outside the vehicle versus a distraction from inside the vehicle.⁶⁸

⁶⁵ Reed, N. & Robbins, R. (2008) at 1

⁶⁶ Stutts, J.C. et al. (2001) at 11

⁶⁷ Vanlaar, W. et al. (2007) at 14

⁶⁸ Vanlaar, W. et al. (2007) at 14

Given the number of other distractions to which drivers are vulnerable, the potential benefits of cell phone bans have been called into question. Researchers have cautioned that any potential reduction in risk resulting from a cell phone ban could be offset by these other distractions.⁶⁹

4.2.6 Effectiveness of Cell Phone Bans

Although a number of jurisdictions have introduced hand-held cell phone bans, there is little information available to indicate whether these bans are effective in reducing the number of collisions involving cell phone use or in reducing the rate of hand-held cell phone use among drivers.

Collision Rates

The effect of cell phone bans on crash rates has not yet been determined. While a number of jurisdictions have enacted hand-held cell phone bans, very little data has been published to indicate whether these bans have reduced crash rates. It has been suggested that these bans may actually have very little effect on crash rates; many drivers will simply switch to using a hands-free cell phone which can pose as great a safety risk as a hand-held phone.⁷⁰

The only published statistics on crash rates before and after introduction of a hand-held cell phone ban are from Japan. Japan's statistics show a significant reduction in accidents, injuries, and fatalities involving mobile phone use following introduction of the law prohibiting hand-held phone use while driving.⁷¹

Table 2. Motor Vehicle Accidents and Casualties involving cell phones before and after introduction of Japan's ban on driver hand-held cell phone use

Incidents involving mobile phone use	12 months before enforcement	12 months after enforcement	% change
Traffic Accidents	2,830	1,351	-52.3%
Injuries	4,118	1,925	-53.3%
Fatalities	25	20	-20.0%

⁶⁹ Redelmeier, D.A. and Tibshirani, R.J. (1997) at 457

⁷⁰ Hedlund, J., Simpson, H. & Mayhew, D. (2006) at 9

⁷¹ Royal Society for the Prevention of Accidents (2002) at 19

Compliance

Laws banning hand-held cell phone use by drivers have been shown to have a substantial short-term effect on use of these devices by drivers. Observed use of hand-held cell phones among drivers declined significantly immediately following the introduction of hand-held cell phone bans in both New York State and Washington, DC.^{72, 73}

The decline in hand-held cell phone use by drivers in New York was not maintained in the longer term, however. Sixteen months after the law was introduced, observed hand-held cell phone use by drivers had risen back up to pre-law levels, indicating that many drivers were no longer complying with the ban.⁷⁴

DC's ban, on the other hand, was found to have a more lasting effect. The observed rate of hand-held cell phone use by drivers 15 months after the law took effect was still significantly lower than pre-law use rates.⁷⁵ Unlike drivers in New York, drivers in DC were found to be complying with the state's cell phone ban in the long-term.

The difference in effectiveness of New York's ban versus DC's ban has been attributed to the DC's efforts to enforce and publicize the ban.⁷⁶ Experience with other traffic safety laws has shown that continued and vigorous enforcement and publicity are needed to achieve widespread and long-term compliance.⁷⁷ Where publicized enforcement of a hand-held cell phone ban does not occur, therefore, the ban will likely have little to no effect on driver usage rates.

4.3 Other Jurisdictions

This section provides an overview of laws related to driver cell phone use in jurisdictions other than British Columbia.

4.3.1 Occupational Health and Safety Legislation

As is the case in BC, no other jurisdiction in Canada, the United States, Australia, or the United Kingdom has a provision in its occupational health and safety legislation that prohibits or restricts workers from using a cell phone while operating a motor vehicle.

⁷² McCartt, A.T. & Geary, L.L. (2004) at 11

⁷³ McCartt, A.T. & Hellinga, L.A. (2007) at 201

⁷⁴ McCartt, A.T. & Geary, L.L. (2004) at 12

⁷⁵ McCartt, A.T. & Hellinga, L.A. (2007) at 201

⁷⁶ McCartt, A.T. & Hellinga, L.A. (2007) at 203

⁷⁷ McCartt, A.T., Hellinga, L.A. & Bratiman, K.A. (2006) at 101

4.3.2 Cell Phone and Related Laws

A number of jurisdictions in Canada, the United States, and internationally have enacted cell phone bans in order to address the dangers associated with driver cell phone use. Almost all of these bans prohibit drivers from using hand-held cell phones only; the use of hands-free cell phones is still permitted despite research indicating conversations are distracting even if conducted on a hands-free phone. While experimental evidence suggests that hands-free phones do not offer safety advantages over hand-held phones, laws banning all types of cell phone use by drivers are generally not enacted. A possible reason for this is that a total ban on driver cell phone use would be difficult to enforce and therefore not likely to be complied with.⁷⁸

Canada

Each jurisdiction in Canada has legislation to prohibit careless or imprudent driving, similar to BC's careless driving law. Drivers can be charged under these provisions if they drive unsafely or cause an accident while using a cell phone.

Currently, three provinces prohibit the use of a hand-held cell phone while operating a motor vehicle on a highway: Newfoundland, Nova Scotia, and Quebec. Newfoundland's ban on hand-held phones has been in effect since April 1, 2003 while Nova Scotia and Quebec's bans only recently came into effect, on April 1, 2008. The use of a hands-free cellular phone is legal in all of three of these provinces.

In the fall of 2008, the Governments of Ontario and Manitoba tabled legislation that would ban hand-held cell phone use, text messaging and e-mailing while driving. Neither government has yet passed this legislation.

In Prince Edward Island, instructional permit holders and newly licensed drivers are prohibited from using a hand-held cellular telephone or any other hand-held electronic device while driving.

In Manitoba, taxi drivers are prohibited from using both hand-held and hands-free cell phones while transporting passengers except in the event of a medical emergency or a mechanical breakdown.

A summary of cell phone laws in Canada is provided in Appendix B.

⁷⁸ McCartt, A.T., Hellinga, L.A. & Bratiman, K.A. (2006) at 101

United States

Twenty-seven jurisdictions in the United States have enacted legislation to govern cell phone use while driving (Appendix C). Seven states have instituted state-wide bans on the use of hand-held cell phones while driving: Connecticut, New Jersey, New York, Utah, the District of Columbia, California and Washington.

Several states have enacted complete cell phone bans (hand-held and hands-free) for certain groups of drivers, such as school bus drivers and new drivers. No state completely bans all types of cell phone use while driving.⁷⁹

International

In addition to Canada and the US, there are approximately 49 other countries which have introduced cell phone bans (Appendix D). The majority of these countries ban the use of hand-held cell phones; the only jurisdiction which completely bans the use of cell phones, both hand-held and hands-free, while driving is the city of New Delhi, India.⁸⁰

Countries which have enacted legislation to prohibit the use of hand-held cell phones while driving include Australia and the United Kingdom.

- (a) The use of hand-held cellular phones, or any other communication device which can transmit and receive data, while driving has been banned in the United Kingdom since 2003 under the Road Vehicles (Construction and Use) Regulations.⁸¹ The penalty for contravening this legislation is a fine of £60 and 3 penalty points on the offender's license.⁸² Although the use of a hands-free cell phone is permitted in the United Kingdom, drivers can be prosecuted for using a hands-free device if they fail to retain proper control of the vehicle.

Under the Road Vehicles (Construction and Use) Regulations, it is also an offence to cause or permit any other person to drive a motor vehicle on a road while using a hand-held cellular phone or other hand-held communication device.⁸³ Employers who require or allow employees to make or receive cell phone calls while driving can be charged under this section.⁸⁴

⁷⁹ Insurance Institute for Highway Safety (2009)

⁸⁰ Cellular-news (2008)

⁸¹ Road Vehicles (Construction and Use) Regulations, S.I. 1986/1078, s. 110.

⁸² *Road Safety Act 2006*, c.49, s. 26.

⁸³ Road Vehicles (Construction and Use) Regulations, S.I. 1986/1078, s. 110(2).

⁸⁴ UK Department for Transport

- (b) Australia banned the use of hand-held cell phones by drivers in 1999 with the adoption of the *Australian Road Rules* (“ARR”). Under the ARR, drivers are prohibited from using a hand-held mobile phone unless the vehicle is legally parked and the engine is turned off.⁸⁵ Drivers of emergency vehicles and police vehicles are exempt from this rule.

In addition to the hand-held cell phone ban, four Australian jurisdictions prohibit new drivers from using any type of mobile phone (either hand-held or hands-free): New South Wales, the Northern Territory, Queensland, and Victoria. In Queensland, passengers in a vehicle driven by a novice driver are also prohibited from using a cell phone in loudspeaker mode while the car is moving or is stationary but not parked.⁸⁶

4.4 Approaches for Addressing Cell Phone Use by Drivers

According to a 2008 survey, there is widespread support for a ban on hand-held cell phone use by drivers among Canadians; most Canadians feel that such a ban would lead to safer roads and highways across the country.⁸⁷ However, non-regulatory measures are also considered important tools for influencing the attitudes of drivers and effecting change.⁸⁸

4.4.1 Awareness and Education Campaigns

Awareness and education campaigns are increasingly being directed towards the issue of driver distraction, including the issue of cell phone use by drivers. The goal of these campaigns is to increase understanding about distracted driving, raise its priority as a traffic safety issue, and encourage safe driving behaviours.⁸⁹ Awareness and education campaigns are used to address the attitudes and mind-sets that lead drivers to use cell phones while driving and can help drivers to make informed choices about what to attend to while driving.⁹⁰ Information disseminated in these campaigns can be tailored for specific audiences in order to increase their impact and effectiveness.

Resources on distracted driving and cell phone use have been developed by both government and industry. ICBC, Transport Canada, the Canadian Centre for Occupational Health and Safety, and the Canadian Automobile Association, among others, all publish material to raise awareness about

⁸⁵ *Australian Road Rules*, s. 300(1).

⁸⁶ Transport Operations (Road Use Management – Driver Licensing) Regulation 1999, s. 22C.

⁸⁷ Angus Reid Strategies (2008)

⁸⁸ Transport Canada (2005) at 17

⁸⁹ Hedlund, J., Simpson, H. & Mayhew, D. (2006) at 6

⁹⁰ Transport Canada (2003) at 12

the safety risks associated with driving distracted and to educate the public on effective strategies for reducing driver distraction. A list of awareness and educational materials on this issue is provided in Appendix E.

While there are no known studies of the effects of these distracted driving campaigns on attitudes, behaviour, or crash rates, education and awareness campaigns have successfully been used to address other traffic safety issues, such as seatbelt use and drunk driving.⁹¹

4.4.2 Employer Initiatives

Motor vehicle accidents involving workers can result in substantial costs to employers due to an increase in workers' compensation premiums, additional assessments, and impacts to the employers experience rating.⁹² Furthermore, in several US cases,⁹³ employers have been found liable for motor vehicle accidents caused by an employee who was driving while using a cell phone; in these cases, the cell phone had been provided by the employer or the use of a cell phone was necessary or encouraged as part of the job.⁹⁴

As a result, a number of employers have opted to develop internal cell phone policies. These policies lay out restrictions and guidelines for employees' use of cell phones while driving. The policy may entirely prohibit cell phone use by employees who are operating a motor vehicle or may lay out rules for employees to follow when they must answer or place a call while driving. Guidelines for the development of an employer cell phone policy, developed by the Coalition for Cell Phone Free Driving, are provided in Appendix F.

A cell phone policy can be tailored to meet the needs of the employer and can benefit employers by allowing them to be proactive in controlling crash risks.⁹⁵ Employer cell phone policies play an important role in promoting driver safety by educating employees and encouraging responsible driving habits.⁹⁶ These policies also assist employees to overcome the attitude that they must be connected (to the office, to clients, etc.) at all times.⁹⁷ A

⁹¹ Transport Canada (2005) at 17

⁹² Marchione, D. (2007)

⁹³ Young Ki Yoon, Personal Representative of Naeun Yoon, Deceased v. Jane L. Wagner, et al., C.L. 24892 (Loudoun County, Virginia, 2001); Leroy G. Roberts, Administrator of the Estate of Michael L. Roberts v. Smith Barney, Inc., and James Tarone, No. 97-CV-2727 (E.D. PA, 1997); Tielle v. Keystone Concrete Block and Supply Company, No. 2001-CV-3396 (Lackawanna County, PA, 2001)

⁹⁴ Braun Consulting Group (2002)

⁹⁵ Network of Employers for Traffic Safety

⁹⁶ Canadian Council of Motor Transport Administrators (2006) at 11

⁹⁷ Alberta Infrastructure and Transportation (2007) at 21

formal cell phone policy will encourage safety by alleviating any pressure employees might feel to conduct business while driving.⁹⁸

Organizations that have developed and implemented a cell phone policy to prohibit employees from using a cell phone while driving for work include AMEC, Enform, Finning Canada, Imperial Oil, and UPS. An example of an employer cell phone policy is provided in Appendix G. AMEC surveyed its employees one year after its corporate cell phone policy was implemented; the results of the survey showed that 95% of employees did not feel that productivity decreased as a result of the ban on using wireless devices while driving for work.⁹⁹

5. CONCLUSION

Driver cell phone use is widely believed to pose a safety risk; as a result, a number of jurisdictions outside of BC have opted to enact bans on hand-held cell phone use by drivers. In each of these jurisdictions, the cell phone ban was introduced in highway safety (or similar) legislation, such as Newfoundland's *Highway Traffic Act* or Quebec's *Highway Safety Code*. Jurisdictions see this as a broader public safety issue.

There is a lack of consensus in the literature on the impact of cell phone use on collision risk.

Research has shown that any cell phone ban must be vigorously enforced in order to achieve widespread compliance. A cell phone ban in the OHSR is virtually unenforceable by Board officers.

A more effective measure to address worker cell phone use while driving could be to participate in a campaign to educate drivers about the safety risks associated with distracted driving, including cell phone use. As cell phone use is a contributing factor in a relatively small number of motor vehicle collisions, any such campaign would need to educate drivers about all forms of driver distractions.

⁹⁸ Canadian Council of Motor Transport Administrators (2006) at 11

⁹⁹ AMEC (2006)

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LITERATURE REVIEW ON CELL PHONE USE AND MOTOR VEHICLE ACCIDENTS

Wilson, J. et al study, 2003

Researchers from the Insurance Corporation of British Columbia undertook a study to measure and understand the relationship between the use of cell phones while driving and collision risk. The researchers conducted an observational survey between August 18, 1999 and November 2, 1999. Observations were made at 42 different locations in the Greater Vancouver Regional District between the hours of 7am and 6pm. Drivers observed using cell phones were identified and compared to drivers observed at similar times and locations who were not using cell phones (the control group).

Using the driver's license numbers of the cell phone users and nonusers in the sample, the researchers were able to determine which drivers had been involved in a police-reported collision between January 1, 1996 and December 31, 2000. A total of 452 of the study sample drivers were found to have been involved in 513 police-attended collisions. In order to determine if the collisions involving the cell phone users differed from those involving the non-users, the 513 reported collisions were examined with respect to contributing factors, primary collision occurrence, collision configuration, time of day, and collision location.

The results of the study showed that drivers who use cell phones have a higher risk of collision than drivers who do not use a cell phone or have lower usage. The increased risk associated with driver cell phone use was, however, found to be relatively minor. The study did not find any evidence that using a cell phone while driving increases the likelihood of committing traffic violations related to inattention (i.e., running a red light, disobeying traffic signals, improper turning, or failure to yield the right-of-way).

Although the results of the study suggest that using a cell phone while driving increases accident risk, the authors warn that the results should be interpreted with caution for the following reasons:

- Although cell phone users in the study did have more total collisions than the nonusers, it is not known whether the drivers were using a cell phone at the time of the collision.
- The study found that cell phone users had higher counts of violations (i.e., speeding, alcohol, failure to use seat belts, nonmoving offences, and aggressive driving violations) over the past 4 years. This indicates that drivers who make frequent use of cell phones appear to be higher risk takers. It is difficult to separate the risk due to generally unsafe driving from the potential effects of cell phone use on collision.

Redelmeier, D.A. & Tibshirani, R.J. study, 1997

Redelmeier and Tibshirani used a case-crossover design to evaluate potential association between cell phone use and the risk of a motor vehicle collision. The authors studied 699 Toronto drivers who had cell phones and who were involved in motor vehicle collisions resulting in substantial property damage but no personal injury. The subjects were asked to complete a questionnaire about their personal characteristics and the features of the collision. The authors also obtained each person's cell phone billing records and analyzed all phone activity on the day of the collision and the preceding seven days. Particular attention was paid to the time, duration, and direction of each call.

The authors compared the time of the collision with a comparable period on a day preceding the collision. In this way, each subject served as his or her own control. Case-crossover analysis was used to determine if there were more cell phone calls immediately before the collision than would be expected solely on the basis of chance.

The results of the study showed that use of a cell phone was associated with a quadrupling of the risk of a motor vehicle collision. The authors found the relative risk associated with cell phone use to be similar to the hazard associated with driving with a blood alcohol level at the legal limit. The risk was consistent among all groups of drivers (i.e., young and old, male and female), at different times of the day and week, and for each phone type (i.e., hand-held and hands-free). The authors found the increase in risk to be greatest for calls made near the time of collision (relative risk of 4.8); the increase in risk was not statistically significant for calls made more than 15 minutes before the collision (relative risk of 1.3).

The authors caution against using this study to conclude that cellular phones are harmful and that their use should be restricted. They stress that the study merely shows an association between cell phone use while driving and a motor vehicle collision; the study does not prove a causal relationship.

McEvoy, S.P. et al study, 2005

This study examined the role of driver cell phone use in motor vehicle collisions which resulted in hospital attendance between April 2002 and July 2004. For each of the 456 study subjects, the authors examined the driver's cell phone use at the estimated time of the collision and on trips at the same time of day in the week before the crash.

The results of the study showed that 9% of subjects used a cell phone in the 10 minutes preceding the collision. The authors concluded that cell phone use within in the 10 minutes before collision was associated with a fourfold increase in the likelihood of a collision resulting in hospital attendance. Gender, age, and the use of a hands-free device were not found to influence the likelihood of a crash.

Strayer, D.L., Drews, F.A., & Crouch, D.J. study, 2006

The authors compared the driving performance of cell phone drivers with that of drivers with a blood alcohol concentration of 0.08% in order to determine the relative impairment associated with conversing on a cell phone while driving. Participants in the study were asked to drive in a driving simulator (which simulated daytime interstate driving conditions) while intoxicated and while using a cell phone.

In the alcohol condition, participants drank enough alcohol to achieve a blood alcohol level of 0.08%. In the cell phone condition, participants were asked to drive while conversing on a hand-held phone and on a hands-free phone. The real-time driving performance of each participant was measured using the following performance variables: total accidents, brake reaction time, maximum braking force, speed, mean following distance, standard deviation of following distance, time to collision, and half recover time.

Results showed that driving performance was impaired in both the cell phone and alcohol conditions as compared to baseline driving performance. The specific impairments shown across the conditions were, however, different

The study found that, when compared to baseline performance, drivers conversing on either a hand-held or hands-free cell phone:

- were involved in more rear-end collisions;
- were slower (by 9%) to respond to vehicles braking in front of them;
- showed increased variability (of 24%) in following distance; and
- took longer (19%) to recover speed lost during braking.

By contrast, in the alcohol condition, neither accidents rates, reaction time to vehicles braking in front, or recovery of lost speed were found to differ significantly from baseline. However, drivers in the alcohol condition were found to exhibit a more aggressive driving style, including an increase in hard braking and an increased frequency of time to collision values below 4 seconds. The authors stated that these driving behaviours are predictive of increased accident rates over the long term.

Based on the results of the study, the authors concluded that the impairments associated with cell phone drivers may be as great as those observed with intoxicated drivers.

Burns et al study, 2002

Direct Line Motor Insurance commissioned the Transport Research Laboratory to conduct research on the dangers of driving while using a cell phone. The purpose of the study was to quantify the distraction from cell phone conversations to the decline in driving performance caused by alcohol impairment. The authors wanted to compare driving performance while using a cell phone to an activity which is generally accepted as dangerous, namely driving while impaired by alcohol.

Using a driving simulator, participants were asked to complete a test drive composed of four different segments: (1) a motorway with moderate traffic; (2) maintaining a safe distance while following another vehicle; (3) attempting to negotiate a bend in the road; and (4) driving on a dual carriageway with traffic lights. Participants drove the test route as they normally would (control), while talking a hand-held phone, while talking on a hands-free phone, and after consuming enough alcohol to be over the legal limit.

The authors measured driving performance in each condition and found that there was a clear trend for significantly poorer driving performance when talking on a cell phone than in the other conditions. The key findings from the study are presented below:

- Drivers performed the best when driving under normal conditions, without the influence of alcohol or cell phones.
- When under the influence of alcohol, drivers performed significantly worse than when driving under normal conditions; however, the performance of drivers impaired by alcohol was found to be significantly better than that of drivers using a cell phone.
- The reaction times of cell phone drivers were 30% slower than those of intoxicated drivers and 50% slower than under normal conditions.
- Cell phone drivers were less able to maintain a constant speed and found it more difficult to maintain a safe distance from the car in front.
- Drivers using a cell phone missed significantly more traffic signs than when drunk.
- Hand-held cell phone use had the greatest impact on driving performance. Drivers using hand-held cell phones took a half second longer to react than normal and a third of a second longer to react compared to when they were drunk.
- Driver performance when using a hands-free phone was still worse than performance when driving under the influence of alcohol.

The authors caution against using the results of this study to conclude that drivers are at greater risk of being involved in motor vehicle collision when talking on a cell phone than when impaired by alcohol. They state that alcohol may impair driving performance differently than driver distraction. Furthermore, alcohol impairs driver judgment while cell phone use does not.

Hahn, R.W. & Prieger, J.E. study, 2006

Hahn and Prieger conducted a study to measure the potential benefits of a cell phone ban by estimating the relationship between cell phone use while driving and accidents. The authors hypothesized that cell phone use would not increase accident risk equally for all drivers and that the same amount of cell phone usage would increase some drivers' risk more than others.

The authors explored data from an Internet survey of over 7000 individuals. Respondents to the survey were asked to provide data on their cell phone usage and driving accidents for the years 2001 and 2002. Respondents were asked whether they had an accident and asked to indicate for how long they typically talked on their cell phone while driving. The survey also collected information on the type of vehicle driven, driving patterns, annual miles, commute duration, and type of driving (i.e., urban vs. rural and freeway vs. surface street).

From the results of the survey, the authors concluded that the impact of cell phone use on accidents varies across the population, and studies which use only a sample of drivers who have had accidents overestimate average cell phone effects in the population (i.e., other factors, besides cell phone use, may put these drivers at greater risk of a motor vehicle accident). The authors also suggested that previous estimates of the impact of cell phone use on accident risk may be overestimated by 36%.

Bhargava, S. & Pathania, V. study, 2007

In order to investigate the causal link between cell phone usage and crash risk, the authors examined whether an increase in phone usage corresponds to an increase in risk of crashing. The study exploited a feature of many cell phone plans, which transition to off-peak pricing after 9pm on weekdays. The authors documented that call volume increases after 9pm and put forward that, if cell phone use does cause crashes, then the risk in call volume should be associated with a corresponding rise in crash rates.

The study found that the rise in call volume after 9pm was not associated with a rise in crash rates, leading the authors to conclude that cell phone use while driving does not increase crash risk. This study implies lower crash rates than suggested by earlier studies, such as that of Redelmeier and Tibshirani.¹⁰⁰ The authors suggest that the difference in results between this study and that of the Redelmeier and Tibshirani study could be due to Redelmeier and Tibshirani relying on an unrepresentative sample of those involved in a recent crash.

¹⁰⁰ Redelmeier, D.A. and Tibshirani, R.J. (1997). "Association between cellular telephone calls and motor vehicle collisions." *The New England Journal of Medicine* 336(7): 453-458.

Brookhuis, K.A., de Vries, G., & de Waard, D. study, 1991

This study examined the effects of operating cell phones (both hand-held and hands free) while engaging in real traffic in three different situations: in light traffic on a quiet motorway, in heavy traffic on a four-lane ring road, and in city traffic. The effects of telephoning on driving performance were measured in all three traffic situations. Effect on driving performance was assessed by measuring changes in amplitude of steering wheel movements, lane-keeping ability, and the ability to follow the maneuvers of a car in front.

The authors concluded that the experiment provided empirical evidence for the statement that using a cell phone while driving may decrease traffic safety, depending on the circumstances. This conclusion was based on the following findings:

- Telephoning while driving delayed both adaptation to the speed of the car in front and reaction time to the brake signal of the car in front.
- Subjects showed elevated and violent steering wheel movements when telephoning while driving in the city. Dialing a phone manually, in particular, had a substantial effect on steering wheel amplitude.

Horrey, W.L. & Wickens, C.D. study, 2004

Horrey and Wickens conducted a meta-analysis¹⁰¹ of 16 separate dual-task driving studies to explore the costs associated with cell phone use while driving. Upon examining all of the studies collectively, the authors found that there is a large, significant cost of cell phone use on driving performance.

The authors identified the following five variables that might influence the costs of cell phone use on driving performance and determined effect size for each variable:

- Measures of driving performance: The meta-analysis showed definite costs on driving performance associated with cell phone use while driving. The authors found that cell phone use had a significant effect on response time to critical road hazards or stimuli.
- Hand-held versus hands-free: Costs in driving performance were found to be roughly equivalent for both phone types. The authors suggested this could be because the costs are mainly due to the cognitive aspects of conversation rather than the manual aspects of holding the phone.

¹⁰¹ Meta-analysis is a technique where the results of several different research studies examining the same questions are combined to obtain an overview of the topic.

- Conversation versus information-processing: Greater costs in driving performance were found to be associated with conversation than with information-processing tasks. However, the costs associated with each were still significant.
- In-vehicle versus remote conversations: The costs associated with in-vehicle, passenger conversations were found to be roughly equivalent to those associated with talking on a cell phone.
- Simulator versus field studies: The costs to driving performance exhibited in field studies were found to be similar to those exhibited in field trials, suggesting that the results from simulator studies may be useful in generalizing to real-world driving situations.

Just, M.A., Keller, T.A., & Cynkar, J. study, 2007

The authors in this study used brain imaging (fMRI) to investigate the effects of performing an auditory language comprehension task while simultaneously performing a simulated driving task. Brain activity was measured during simulation driving in an MRI scanner.

Participants were required to steer the car (using a trackball or mouse) along a winding virtual road at a fixed speed. In the dual-task condition, participants had to steer while listening to general knowledge sentences and verifying them as true or false. Performance on the comprehension task was measured in terms of reaction time and accuracy of responses; performance in the simulated driving task was measured in terms of road maintenance errors and deviation from an ideal path (lateral position).

The central findings from the study were that the sentence listening task:

- degraded driving performance – participants showed more road maintenance errors and larger deviations from an ideal path in the driving while listening condition; and
- resulted in decreases in activation in key regions of the brain – brain imaging showed a decrease in activation in brain areas that underpin the driving task, indicating that processing spoken language draws attentional/brain resources away from the task of driving.

The authors found that the results of the study were consistent with the hypothesis that a simulated cell phone conversation disrupts driving performance by diverting attention away from the driving task. They interpret this finding as reflecting a capacity limit on the amount of attention or resources that can be distributed across the two tasks (conversing on a cell phone and driving). This study provides a biological account for the deterioration in driving performance that occurs when a driver is also processing language.

Strayer, D.L., Drews, F.A., & Johnston, W.A. study, 2003

The purpose of this study was to determine whether cell phone conversations impair driving performance by withdrawing attention from the external driving environment (i.e., the visual scene). The authors conducted a series of experiments to assess the effects of cell phone use on detection of and reaction to the braking of the car in front; recognition memory for objects in the driving scene; and visual scanning of the driving scene.

The results of the experiments showed that:

- conversing on a cell phone impaired driving performance in that drivers were slower to react to a car braking in front when talking on a cell phone than when they were not;
- participants were more likely to be involved in a traffic accident (i.e., rear-ending the pace car) when talking on a cell phone in high density driving conditions;
- conversing on a cell phone impaired recognition memory for objects in the driving environment; and
- conversing on a cell phone disrupted attention to the visual environment.

The authors concluded that cell phone conversation disrupts performance by diverting attention away from the external environment associated with the driving task to the engaging internal context associated with a cell phone conversation, resulting in a form of inattention blindness.

Harbluck, J.L. & Noy, Y.I. (Transport Canada) study, 2002

This Transport Canada study investigated the impact of cognitive distraction (i.e., use of a hands-free communication device) on driving behaviour in a real world setting. Participants were asked to complete a series of tasks while operating a motor vehicle; the tasks were relayed over a hands-free cell phone. Three types of driver behaviour were measured to assess the impact of cognitive tasks on driving: visual behaviour; vehicle control (i.e., braking behaviour); and drivers subjective assessments of workload, safety, and distraction.

The results of the study indicated that the performance of a demanding cognitive task while driving produced changes in all three types of driver behaviour measured. Specifically, the study found that:

- drivers made significantly fewer saccadic eye movements¹⁰² as the cell phone task increased in cognitive demand, which is indicative of a reduction in glance frequency and less exploration of the driving environment;

¹⁰² Saccades are high-speed ballistic eye movements that facilitate exploration of the visual field.

- drivers spent more time looking straight ahead when performing demanding cognitive tasks and less time looking to the periphery, which indicates a narrowing of the visual inspection area;
- drivers spent less time looking at the vehicle instruments and mirrors as the task difficulty increased;
- there was an increase in the number of hard braking events when driving while performing an additional task;
- drivers who showed the greatest change in visual behaviour as a result of performing the additional task braked harder and more often; and
- as the complexity of the cognitive task increased, drivers' perception of workload increased, they rated their driving as less safe, and they reported increasing distraction.

The authors concluded that fewer resources are available for processing driving-related information when attention is directed towards the processing of distracting information (i.e., a cell phone conversation).

Hancock, P.A., Lesch, M. & Simmons, L. study, 2003

The authors hypothesized that the distractive effects of cell phone use on safe driving would be most dangerous in a situation involving maximum driving demand. To test this hypothesis, the authors conducted a study to assess the effects of cell phone use during a critical driving maneuver, specifically making a crucial stopping decision.

Participants drove the test track and were presented with either the distraction task (cell phone), the stopping task (responding to a changing traffic light), or both simultaneously. In order to assess control of the vehicle, the authors measured each participant's brake response time, stopping time (the period between a driver's first activation of the brake after the red light came on and the time at which the vehicle stopped), stopping distance (the distance from the front of the car to the intersection's stopping line), and stopping accuracy (the percentage of occasions upon which the driver successfully complied with the change in light status).

The results showed that the presence of the distracter eroded the safety margin provided by a driver who is fully aware and responsive. This was evidenced by the fact that:

- drivers displayed slower brake response times in the presence of the distracter (0.71 seconds) than in its absence (0.52 seconds);
- stopping time was faster in the presence of the distracter (2.23 seconds) than in its absence (2.57 seconds), which the authors took as evidence of harder braking intensity by distracter drivers;

- drivers stopped closer to the stopping line when the distracter was present (5.13 feet) than when it was not (9.8 feet); and
- stopping accuracy was greater (94.64%) without the distraction than with it (80.35%).

Wood, C. & Hurwitz, J. study (2005)

Research has shown that in-vehicle passengers ease driver workload by modulating conversation in response to the driving environment and that drivers must be actively engaged in a cell phone conversation in order to display the effects of higher workload from a cell phone conversation. In response to these findings, Wood and Hurwitz conducted this study to determine whether suspending cell phone conversations during demanding driving situations would improve driver performance and lessen subjective workload.

The authors used a driving simulator to evaluate driver performance during a car-following task. Participants were instructed to drive around the simulated test track while maintaining a speed of between 45-65 miles per hour. Drivers were also instructed to follow the lead car but not pass it. The lead car was programmed to decelerate occasionally.

Participants were periodically required to answer and converse on a hands-free cell phone. Participants were engaged in both an intense conversation and a neutral conversation. Each participant made two trips around the simulated track. Conversation was suspended during the deceleration event on one trip but not suspended on the other.

Results from this study provided support for the hypothesis that conversation intensity has significant effects on driver workload. When engaged in a demanding conversation during the deceleration event, drivers showed smaller increases in forward velocity and delays in releasing the accelerator, applying the brake, and decelerating. The results also showed that suspending conversation has a positive effect on driver performance.

Furthermore, participants reported that driving while engaged in an intense conversation was more mentally and temporally demanding than driving while engaged in a neutral conversation. Participants reported that it required more effort and was more frustrating to drive when engaged in the intense conversation.

McKnight, J. & McKnight, A. S. study, 1991

McKnight and McKnight's study was designed to assess the effect of cellular phone use on a driver's ability to respond to the demands of the highway traffic environment and to determine if the effect of cell phone use is related to the complexity of the phone

conversation. The effect of cell phone use on driver attention was studied by confronting participants with simulated highway and traffic situations and comparing their responses under normal conditions with their responses when using a cell phone.

Participants were confronted with five potentially distracting conditions: (1) no distraction, (2) placing a call, (3) casual conversation, (4) intense conversation, and (5) tuning a radio. Driver responses to situations in the highway traffic environment were measured for each condition; specifically, the authors measured response occurrence (whether or not the driver responded) and response time (how long it took the driver to respond). Distraction was measured as the difference between responses when no distraction was present and the responses occurring under each of the four distraction conditions.

The results of the study showed that drivers were significantly more likely to fail to respond to situations in the highway traffic environment when performing any of the three tasks associated with using a cell phone (placing a call, casual conversation, and intense conversation). The greatest degree of performance decrement was found when participants were involved in an intense conversation, followed by tuning the radio. Placing calls and carrying on casual conversations yielded the least interference. Placing a call, however, was found to be almost as great an interference as complex conversations when it came to response time.

From the results, the authors concluded that complex, intense conversations were the most distracting, as these conversations led to the greatest increases in likelihood of failing to respond to significant highway traffic conditions and in the time to respond to such conditions. Casual conversations were found to have less of an impact on a driver's ability to notice and respond to highway traffic demands.

Insurance Corporation of British Columbia study, 2001

Researchers from the Insurance Corporation of British Columbia conducted closed-course driving experiments to test the impact of cell phone use on driving performance. In particular, the study was designed to examine the impact of cell phone use on performance in situations requiring drivers to make critical choices and whether crash risk could increase as a result.

The study subjects were presented with three different driving tasks:

- (1) a traffic signal task, where an amber light was triggered from one of two vehicle positions (one close to the stop line and one further from the stop line);
- (2) a pop-up target task, where offset pop-up targets were activated (once with a short weave space and once with a longer weave space between targets); and

- (3) a left-turn task, were subjects were required to press the accelerator (of an immobilized vehicle) to indicate which gaps in the approaching traffic stream they would accept.

Subjects were required to respond verbally to taped messages played in the vehicle as they were driving. The messages were triggered to sometimes coincide with the physical driving task activations and sometimes not.

The results showed that, for the traffic signal task, the effect of the messages was to produce a more conservative response by the subject drivers. However, for the more demanding tasks (the pop-up target and left-turn tasks), the effect of the messages was to produce riskier driving behaviour by the subjects. In the pop-up target task, subjects made significantly less speed adjustments and drove substantially faster through the weave maneuver in the message condition. In the left-turn task, the message condition was associated with shorter gap acceptances by subjects; the researchers found that drivers adjusted their gap acceptance decision-making for wet conditions when not exposed to the message task but did not do so when attending to the messages.

The authors concluded that listening and responding to complex messages (i.e., using a hands-free phone to conduct business) significantly degraded driving performance. The degradation was more pronounced for more complex driving maneuvers. The authors suggested that the additional mental demand required for complex maneuvers was impaired by the attention required to listen and respond to messages. The authors also concluded that the impairments in driving performance associated with distraction from the driving task were made worse by adverse driving conditions in that attention to the secondary message task prevented drivers from adjusting their decision-making to reflect road conditions.

Lamble, D. et al. study, 1999

This study investigated a driver's ability to detect the deceleration of a car in front while doing mobile phone related tasks. Participants were required, while driving, to perform a task which simulated dialing a phone number and a task which simulated the non-visual cognitive load associated with phone conversations. The authors hypothesized that both conditions would produce significant declines in detection performance when compared to driving without the visual or non-visual distraction.

Participants were required to drive behind a lead car in normal traffic. During each trial, the lead car would decelerate while the participant looked at the car in front (control), continuously dialed a series of three random numbers on a keypad (visual task), or performed a memory and addition task (non-visual cognitive task).

The results showed that both the phone-dialing task and the cognitive task had a significant effect on driver ability to detect the deceleration of the car in front. Brake

reaction time was impaired by 0.48 seconds in the phone dialing task and by 0.50 seconds in the non-visual cognitive task, while time-to-collision was impaired by 0.62 seconds for the phone dialing task and by 0.95 seconds for the non-visual cognitive task. Based on these results, the authors concluded that a hands-free phone does not remove the problem of driver performance impairment when using a cell phone while driving.

Reed, N. & Robbins, R. (Transport Research Laboratory) study, 2008

This study was conducted to assess the impact of text messages on driver performance. The authors examined the effect of reading and writing text messages on reaction times, car following ability, lateral lane control, and speed. The results of the study showed that participants' driving behaviour was impaired by concurrent text message tasks. Greater impairments were created by writing text messages than by reading them. The study found that, when reading or writing a text message while driving:

- reaction times to trigger stimuli were higher;
- participants' were significantly more likely to fail to respond to stimuli;
- drivers tended to reduce their speed;
- drivers showed larger increases in variability of lane position resulting in many more lane departures; and
- participants were less able to maintain a constant distance behind a lead vehicle and showed increased variability in lateral lane position when following that vehicle.

The authors concluded that the impairments associated with reading and writing text messages while driving (poorer control of vehicle speed, lateral position, and increased reaction times) increase the likelihood of collision in real world traffic situations.

The results of this study were then compared to three earlier studies by conducted by the Transport Research Laboratory in order to measure the impairments in driver performance associated with text messaging against those associated with driving while using a cell phone, while at the legal limit for alcohol consumption, and while under the influence of cannabis. The authors compared reaction times, speed, and variation in lateral lane position for each of the impairment conditions and found that:

- the increase in reaction times associated with texting (34.7%) was greater than that found when drivers were at the legal limit for alcohol (12.4%), under the influence of cannabis (21%), or talking on a hands-free cell phone (26.5%);
- participants drove slower when texting than when using a hand-held or hands-free mobile phone; and
- participants showed greater deviation in lateral lane position (91.4%) when writing a text message than when under the influence of high does of cannabis (35%).

By comparing the performance impairments associated with text messaging while driving against known dangerous driving behaviour (i.e., driving while under the influence of alcohol or cannabis), the authors were able to show that texting while driving poses a real safety concern.

Hosking, S., Young, K., & Regan, M. (Monash University Accident Research Centre) study, 2006

Researchers at the Monash University Accident Research Centre used a driving simulator to evaluate the effects of text messaging on the driving performance of young novice drivers. Twenty participants with six months or less of driving experience drove on a simulated roadway; the simulated driving scenario involved eight critical driving events, including a changing traffic light, a car following episode, a pedestrian emerging from between parked cars, lane changing, and cars turning right in front of the driver. Participants were required to retrieve and read and to reply to and send text messages intermittently while driving.

Driving performance was measured for the critical driving events in both the distraction (text messaging) and non-distraction (no text messaging) conditions. The results showed that retrieving and, in particular, sending text messages had a detrimental effect on a number of safety critical driving measures. The key findings of the study revealed that text messaging while driving impacted the ability of drivers to maintain lateral lane position, detect hazards, and to detect and appropriately respond to traffic signals. In addition, drivers spent up to 400% more time with their eyes off the road when text messaging. The results also showed that drivers did increase their following distance when text messaging but did not reduce their speed. Each of the findings could impact crash risk and affect the ability of drivers to avoid a collision.

McCarrtt, A.T. & Geary, L.L. study, 2004

New York State introduced a law banning hand-held cell phone use by drivers in 2001. It was found that, in the months immediately following the introduction of the ban, there was a substantial decline in drivers' use of hand-held cell phones.¹⁰³ In order to determine if this decline was sustained in the longer term, McCarrtt and Geary conducted this second observational study of driver hand-held cell phone use 16 months after the ban was introduced.

Driver hand-held cell phone use was observed and recorded one month before the ban took effect (pre-law), immediately after the law took effect (short-term), and 16 months

¹⁰³ McCarrtt, A.T., Braver, E.R., Geary, L.L. (2003). "Drivers' use of handheld cell phones before and after New York State's cell phone law." *Preventive Medicine* 36: 626-35.

after the law took effect (follow up). The observed rates of hand-held cell phone use during these three periods were as follows:

Percentage hand-held cell phone use		
Pre-law	Short-term	Follow up
2.3	1.1	2.1

The results showed that the rate of driver hand-held cell phone use declined significantly immediately after the law took effect; however, the use rate rose during the following year, to a level significantly higher than the short term compliance rate and not significantly different than then pre-law rate.

The authors attributed the results to the finding that the initial publicity surrounding the law dissipated soon after its introduction and that there was no statewide intensive enforcement campaign targeting cell phone use violations. The authors concluded that publicized enforcement campaigns appear necessary to achieve longer term compliance with bans on cell phone use by drivers.

McCarrtt, A.T. & Hellinga, L.A. study, 2007

McCarrtt and Hellinga conducted this study to assess the long term effectiveness of Washington, DC’s law banning hand-held cell phone use by drivers. A study conducted shortly after introduction of the law reported a substantial decline in hand-held cell phone use by among drivers in DC.¹⁰⁴ McCarrtt and Hellinga were interested in determining if this substantial short-term decline was sustained a year after introduction of the ban.

Information on hand-held cell phone use was collected several months before the law took effect, 3 months after the law took effect, and 15 months after the law took effect:

Percentage hand-held cell phone use		
Pre-law	Short-term	Follow up
6.1	3.5	4.0

The results of the study showed that hand-held cell phone use by drivers declined significantly immediately following introduction of the ban. In the year following the introduction of the law, the use rate rose slightly; however, the rate was still significantly lower than the pre-law rate of 6.1%.

This study found a more lasting effect of DC’s law banning hand-held cell phone use by drivers, as opposed to the situation in New York. The authors theorized that the larger

¹⁰⁴ McCarrtt, A.T., Helling, L.A., Geary, L.L. (2006). “Effects of Washington, D.C. law on drivers’ hand-held cell phone use.” *Traffic Injury Prevention* 7: 1-5.

effect of DC's law may have been due to DC's reputation for strong enforcement of traffic laws as well as the continuing media attention in DC to the dangers of using a cell phone while driving.

CELL PHONE LAWS IN CANADA

JURISDICTION	LEGISLATION	RESTRICTION
Manitoba	Taxicab Regulation	Under section 30(3), taxi drivers are prohibited from using both hand-held and hands-free cell phones while transporting passengers except in the event of a medical emergency or a mechanical breakdown
	<i>Highway Traffic Act</i>	Manitoba recently introduced proposed amendments to the <i>Highway Traffic Act</i> to prohibit drivers from using a hand-held cell phone or similar device.
Ontario	<i>Highway Traffic Act</i>	Ontario recently introduced proposed amendments to the <i>Highway Traffic Act</i> to prohibit drivers from using or viewing a hand-held cell phone, smartphone, electronic entertainment devices, laptop computers, or DVD players.
Quebec	<i>Highway Safety Code</i>	Section 439.1 prohibits drivers from using a hand-held device that includes a telephone function. Drivers of emergency vehicles in the performance of their duties are exempt from this prohibition.
Nova Scotia	<i>Motor Vehicle Act</i>	Section 100D prohibits drivers from using a hand-held cell phone or engaging in text messaging on any communications device. Persons using a hand-held cell phone or other communications device to report an emergency are exempt.
Prince Edward Island	Graduated Driver Licensing Regulations	Section 6 prohibits Stage 1 and newly licensed drivers from using a hand-held cell phone, headphones, mp3 players, or any other hand-held electronic device while operating a motor vehicle.
Newfoundland & Labrador	<i>Highway Traffic Act</i>	The use of a hand-held cellular phone while driving a motor vehicle on the highway is prohibited by section 176.

US JURISDICTIONS WHICH HAVE ENACTED CELL PHONE BANS

State	Hand-Held Ban	Complete Ban (Hand-held and Hands-free)	
		School Bus Drivers	New/Young Drivers
Arizona		<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	
Arkansas		<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	
California	<ul style="list-style-type: none"> all drivers prohibited from using a hand-held cellular phone 	<ul style="list-style-type: none"> transit and school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	<ul style="list-style-type: none"> drivers younger than 18 are prohibited from using all cellular phones (hand-held and hands-free)
Colorado			<ul style="list-style-type: none"> learner's permit holders are prohibited from using all cellular phones (hand-held and hands-free)
Connecticut	<ul style="list-style-type: none"> all drivers are prohibited from using a hand-held cellular phone 	<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	<ul style="list-style-type: none"> learner's permit holders and drivers younger than 18 are prohibited from using all cellular phones (hand-held and hands-free)
Delaware		<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	<ul style="list-style-type: none"> learner's permit and intermediate license holders are prohibited from using all cellular phones (hand-held and hands-free)
District of Columbia	<ul style="list-style-type: none"> all drivers are prohibited from using a hand-held cellular phone 	<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	<ul style="list-style-type: none"> learner's permit holders are prohibited from using all cellular phones (hand-held and hands-free)
Georgia		<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	
Illinois	<ul style="list-style-type: none"> no state-wide ban, however all drivers in Chicago are prohibited from using a hand-held cellular phone 	<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	<ul style="list-style-type: none"> learner's permit holders and drivers younger than 19 are prohibited from using all cellular phones (hand-held and hands-free)

State	Hand-Held Ban	Complete Ban (Hand-held and Hands-free)	
		School Bus Drivers	New/Young Drivers
Kentucky		<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	
Louisiana		<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	<ul style="list-style-type: none"> novice drivers are prohibited from using all cellular phones (hand-held and hands-free)
Maine			<ul style="list-style-type: none"> learner's permit holders and intermediate license holders are prohibited from using all cellular phones (hand-held and hands-free)
Maryland			<ul style="list-style-type: none"> learner's permit holders and intermediate license holders are prohibited from using all cellular phones (hand-held and hands-free)
Massachusetts	<ul style="list-style-type: none"> no state-wide ban, however all drivers in Brookline are prohibited from using a hand-held cellular phone while driving 	<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	
Michigan	<ul style="list-style-type: none"> no state-wide ban, however all drivers in Detroit are prohibited from using a hand-held cellular phone while driving 		
Minnesota		<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	<ul style="list-style-type: none"> learner's permit and provisional license holders (during the first 12 months of licensing) are prohibited from using all cellular phones (hand-held and hands-free)
Nebraska			<ul style="list-style-type: none"> learner's permit and intermediate license holders younger than 18 are prohibited from using all cellular phones (hand-held and hands-free) or other wireless communication devices

State	Hand-Held Ban	Complete Ban (Hand-held and Hands-free)	
		School Bus Drivers	New/Young Drivers
New Jersey	<ul style="list-style-type: none"> all drivers are prohibited from using a hand-held cellular phone and from text messaging 	<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	<ul style="list-style-type: none"> learner's permit and intermediate license holders are prohibited from using all cellular phones (hand-held and hands-free)
New Mexico	<ul style="list-style-type: none"> no state-wide ban, however all drivers in Santa Fe are prohibited from using a hand-held cellular phone while driving 		
New York	<ul style="list-style-type: none"> all drivers are prohibited from using a hand-held cellular phone 		
North Carolina		<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	<ul style="list-style-type: none"> drivers younger than 18 are prohibited from using all cellular phones (hand-held and hands-free)
Ohio	<ul style="list-style-type: none"> no state wide ban, however all drivers in Brooklyn, North Olmstead, and Walton Hills are prohibited from using a hand-held cellular phone 		
Oregon			<ul style="list-style-type: none"> learner's permit and intermediate license holders are prohibited from using all cellular phones (hand-held and hands-free)
Pennsylvania	<ul style="list-style-type: none"> no state-wide ban, however all drivers in Conshohocken, Lebanon and West Conshohocken are prohibited from using a hand-held cellular phone 		
Rhode Island		<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones 	<ul style="list-style-type: none"> drivers younger than 18 are prohibited from using all cellular phones (hand-held and hands-free)
Tennessee		<ul style="list-style-type: none"> school bus drivers are prohibited from using all cellular phones (hand-held and hands-free) 	<ul style="list-style-type: none"> learner's permit and intermediate license holders are prohibited from using all cellular phones (hand-held and hands-free)

State	Hand-Held Ban	Complete Ban (Hand-held and Hands-free)	
		School Bus Drivers	New/Young Drivers
Texas		<ul style="list-style-type: none"> bus drivers are prohibited from using all cellular phones (hand-held and hands-free) when a passenger age 17 or younger is present 	<ul style="list-style-type: none"> intermediate license holders are prohibited from using all cellular phones (hand-held and hands-free) for the first six months
Utah	<ul style="list-style-type: none"> all drivers are prohibited from using a hand-held cellular phone; only an offence if the driver commits some other moving violation 		
Virginia			<ul style="list-style-type: none"> intermediate license holders are prohibited from using all cellular phones (hand-held and hands-free)
Washington	<ul style="list-style-type: none"> all drivers are prohibited from using a hand-held cellular phone and from text messaging 		
West Virginia			<ul style="list-style-type: none"> learner's permit and intermediate license holders are prohibited from using all cellular phones (hand-held and hands-free)

COUNTRIES WHICH HAVE ENACTED CELL PHONE BANS

COUNTRY	CELL PHONE RESTRICTIONS
Australia	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving. New South Wales, the Northern Territory, Queensland and Victoria prohibit the use of all cell phones (hand-held and hands free) by novice drivers.
Austria	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Bahrain	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Belgium	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving. Hand-held cell phones can be used when the car is stationary, but not while in traffic.
Brazil	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Chile	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
China	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving. Covered by general “good driving practice” legislation.
Czech Republic	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Denmark	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Egypt	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Finland	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
France	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Germany	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving. A cell phone can be used without a hands-free device only when the vehicle’s engine has been switched off.
Greece	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Hong Kong	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Hungary	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
India	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving. City of New Delhi bans the use of all cell phones (hand-held and hands-free) while driving.
Ireland	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving. Only loud speaking hands-free devices are allowed. Portable hands free kits (i.e. earpiece connected by wire to handheld phone) are not permitted.
Isle of Man	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Israel	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Italy	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Japan	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.

COUNTRY	CELL PHONE RESTRICTIONS
Jersey	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Jordan	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Kenya	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Malaysia	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Mexico	<ul style="list-style-type: none"> Mexico City bans the use of hand-held cell phones while driving.
Netherlands	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Norway	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Pakistan	<ul style="list-style-type: none"> City of Islamabad bans the use of hand-held cell phones while driving.
Philippines	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Poland	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Portugal	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Romania	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Russia	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Singapore	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Slovak Republic	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Slovenia	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
South Africa	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
South Korea	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Spain	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Sweden	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Switzerland	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Taiwan	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Thailand	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Turkey	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
Turkmenistan	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.
UK	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving. Can be prosecuted for using hands-free device while driving if proper control of the vehicle is not retained. Also an offence to cause or permit any other person to use a hand-held cellular phone while driving a motor vehicle.
Zimbabwe	<ul style="list-style-type: none"> Bans the use of hand-held cell phones while driving.

AWARENESS AND EDUCATIONAL RESOURCES ON CELL PHONE USE AND DISTRACTED DRIVING

SOURCE	RESOURCES
Canadian Automobile Association	<p>The CAA operates a website, entitled <i>Driven to Distraction</i>. This site was developed to help motorists understand the full range of driving distractions and provide information on what motorists can do to make the roads safer for everyone.</p> <p>The site includes information on:</p> <ul style="list-style-type: none"> • the nature and effects of distracted driving; • cell phones on safety; • improving driver safety; and • steps all road users can take to eliminate driver distraction (this includes advice for employers). <p>http://www.caa.ca/driventodistraction/home.html</p>
Transport Canada	<p>Transport Canada provides information on cell phones and driving on its website. Transport Canada provides a Q&A document which references the risks associated with driving while using a cell phone and also provides safety tips to help motorists use cell phones safely and responsibly. Through these documents, Transport Canada strongly recommends that drivers not use a cell phone while driving.</p> <p>http://www.tc.gc.ca/roadsafety/tp/tp2436/rs200106/q-a.htm</p> <p>http://www.tc.gc.ca/roadsafety/tp/tp2436/rs2436/rs200106/tips.htm</p>
Insurance Corporation of British Columbia	<p>ICBC publishes a two-page fact sheet, entitled <i>Safe Cell Phone Use – It’s Your Call</i>, which discusses the dangers associated with cell phone use and provides safety tips for drivers.</p> <p>http://www.icbc.com/road_safety/roadsafety_tips.asp</p> <p>ICBC also advises drivers not use a cell phone and provides strategies for staying focused on the driving task in the <i>RoadSense for Drivers</i> manual, a reference and study manual for all BC motorists.</p> <p>http://www.icbc.com/licensing/lic_utility_resman_drivers.asp</p>

SOURCE	RESOURCES
Canadian Centre for Occupational Health and Safety	<p>CCOHS provides driving tips for using cellular telephones and other devices on its website. In addition to providing tips for safe driving, the document also discusses some of the dangers associated with cell phones and provides advice for employers to combat driver distraction.</p> <p>http://www.cchois.ca/oshanswers/safety_haz/cellphone_driving.html</p>
Coalition for Cell Phone Free Driving	<p>The Coalition produces a number of resources to educate the public about the safety risks involved with driving while using a cell phone. Resources include:</p> <ul style="list-style-type: none"> • a two-page fact sheet that outlines the data and research pertaining to the dangers of driving while using a cell phone; • a one-page tip sheet that provides practical strategies for avoiding cell phone use while driving in a work setting; • a 20 minute video that describes the dangers of driving while using a cell phone; • a six minute video that portrays the impact of an injury caused by driving while using a cell phone, including the impact on the individual, emergency and health care, rehabilitation, family, and friends; • a PowerPoint presentation on the issue of cell phone use while driving; and • an interactive exercise to demonstrate the effect of distractions while operating a motor vehicle. <p>http://www.cellphonefreedriving.ca/resources.aspx</p>
Network of Employers for Traffic Safety	<p>NETS created the <i>Distracted Driver Tool Kit</i>, a training kit which provides techniques to minimize driver distraction to keep employees focused on driving. The Tool Kit provides employers with a training program to enable their employees to identify potential distractions while driving and develop techniques and strategies to better manage these distractions. The Tool Kit contains a video highlighting eight scenarios of in-vehicle distractions, a Leader's Guide, a Rate-Your-Risk Quiz, incentives and other useful tools and information.</p> <p>http://www.trafficsafety.org/distracted.asp</p>

What Cellphone Call is Worth a Life?

The Coalition for Cellphone-Free Driving

THE FOLLOWING GENERIC POLICY CAN BE ADAPTED BY COMPANIES TO SUIT THEIR SPECIFIC NEEDS:

1. Company employees are not permitted to use a cellphone, either hand-held or hands-free, while operating a motor vehicle on company business and/or on company time.
2. While driving, calls cannot be answered and must be directed to voicemail.
3. If an employee must make an emergency call (911), the vehicle should be parked in a safe location before making the call.
4. All employees will be made aware of the company policy and will be expected to comply with it.

A Good Cellphone Policy Will Contain These Components:

- A clear policy statement outlining the corporate value regarding absolutely no cell phone use while driving a motor vehicle on company business.
- A well planned communication strategy leading up to the implementation of the cellphone policy.
- An escalating disciplinary approach. Employees will only be given two warnings. The third time an employee is found to be talking on a cellphone while operating a motor vehicle on company business and/or company time may be grounds for immediate dismissal.

Company Name

Employee Name

Company President / CEO

Date



Driving and Cellular Phone Use Policy

Purpose

There are a few basic reasons for this policy: (1) your personal safety; (2) the safety of others on the road – drivers and pedestrians; and (3) Enform can be held liable for your accident.

There are two dangers associated with driving and cell phone use:

First, drivers must take their eyes off the road while dialing, answering or reading the call display.

Second, people can become so absorbed in their conversations that their ability to concentrate on the act of driving is severely impaired, jeopardizing the safety of vehicle occupants and pedestrians.

There has been a debate as to the exact nature and degree of this hazard. At first experts focused on the problem as part of a larger one of driver distractions in general. These can include anything that reduces driver concentration on road hazards from drinking coffee to talking with another passenger. Now there is increasing evidence that the dangers associated with cell-phone use far outweigh those of other distractions. Safety experts also acknowledge that the hazard posed by cell phone conversations is not eliminated, and may even be increased, by the use of hands-free sets.

Company Policy

Due to the latest research on the use of cellular phones while driving, Enform prohibits employee use of cellular phones for business purposes while driving.

- This policy applies to personal and company-issued cell phones.
- This policy also includes personal use of a company-issued cell phone.
- This policy applies to hands-free devices as well as handheld phones.
- This policy applies any time an employee is driving and wishes to use a cell phone for business purposes.

While Driving:

While a vehicle is in motion, calls may not be answered by the driver and must be directed to voicemail or a passenger.

If an employee driving a vehicle must make a phone call, the vehicle must be in a safe location and in park (P).

If making an emergency call (911), the vehicle should be parked in a safe location before making the call.


Wallace E. Baer
President/CEO
Enform

November 15, 2007
Date