

**Use of Electronic Communication Devices (ECD) by Canadian  
Drivers in Urban Areas**

**SUMMARY REPORT**

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## 1.0 Executive Summary

The use of electronic communication devices (ECDs) such as cell phones, smart phones, and tablets by drivers has been found to increase the likelihood of motor vehicle crashes in a number of epidemiological studies. In Canada, the use of cell phones has been measured as part of a national seat belt use survey in the past. The last time that cell phone use was observed, an estimated 3.6% of drivers were talking on cell phones in rural areas in 2009 and 3.3% were using them in urban areas in 2010. Given that most Canadian jurisdictions have passed legislation prohibiting the use of hand-held devices by drivers, the Canadian Council of Motor Transport Administrators (CCMTA) was interested in whether there has been a change in the use of these devices. An observational survey was conducted at 286 urban sites across Canada during September 2012. A total of 70,686 drivers of light duty vehicles were observed while they were stopped at a traffic light or a stop sign. Whether they were using an ECD was recorded as well as the type of usage (i.e., speaking, typing, both), driver age and gender, number of passengers in the vehicle, and type of vehicle. The data was weighted to obtain estimates of ECD use, the percentage of drivers using ECDs, and the type of use. These are presented nationally, by jurisdiction, and by various subgroups (i.e., age, sex, etc.). The national urban survey results show that an estimated 4.6% ( $\pm 0.5$ ) of the drivers used an ECD, varying by jurisdiction from 1.3 to 7.0%. ECD use was more frequent among young drivers (<25 years of age), drivers of light trucks, drivers without passengers, and somewhat more by female drivers. ECDs were used for talking by 2.3% of drivers and for typing by 1.7% of drivers. Nationally, the use of hand-held ECDs for talking was 61% lower in 2012 than that observed in 2007. A detailed analysis of drivers talking on ECDs before and after laws prohibiting their use came into effect indicated that usage was significantly lower after the law in nine jurisdictions.

## 2.0 Background

The use of ECDs such as cell phones, smart phones, and tablets has increased by about 33% between 2007 and 2012, although it is not clear how many of these are hand-held versus hands-free [1]. The use of these devices has expanded from speaking to sending e-mails and to text messaging. Many of these ECDs are being used by drivers while they are operating their vehicles and research has indicated that the use of ECDs while driving increases the risk of collisions [2, 3, 4]. While some drivers are moving to hands-free ECDs in the belief that they are safer, there is a growing body of evidence that these ECDs are distracting as well given that the cognitive engagement in the driving task is just as important, if not more important, than the physical manipulation of the ECD [5]. Clearly, the use of ECDs by drivers is a road safety risk which should be monitored.

The last time cell phone use by Canadian drivers was observed in 2010, an estimated 3.6% of drivers were talking on hand-held cell phones in rural areas in 2009 and 3.3% were talking on them in urban areas in 2010 [6]. From 2002 to 2011, the National Highway Traffic Safety Administration has consistently found that 5% of drivers were holding cell phones to their ear based on an annual

observational survey of about 40,000-50,000 drivers at about 1,400 urban, suburban, and rural locations throughout the United States [7]. However, typing on these devices has increased from 0.6 to 1.3% from 2009 to 2011. A recent observational survey [8] in Massachusetts found that 7.0% of drivers were using ECDs, of which 5.6% were talking and 1.4% were typing. ECD use was higher among females and teenagers, among drivers of SUVs, drivers without passengers, on weekdays, and after 3pm.

In order to address the risks associated with using ECDs, most Canadian jurisdictions have passed laws prohibiting the use of hand-held ECDs while driving. In order to determine whether driver use of hand-held ECDs has changed since the introduction of these laws, a survey was conducted at urban sites in September 2012. The current survey does not address the use of hands-free ECDs by drivers which may have increased as a result of the bans on the use of hand-held devices.

Given the increase in the use of cell phones for texting and the use of smart phones and tablets for sending e-mails, the current survey examined for the first time in Canada, typing on the ECD as well as talking.

## **3.0 Method**

The methodology used in the current survey was very comparable to that used in the earlier seat belt use surveys that included the use of cell phones except the current survey did not include seat belt use.

### **3.1 Sampling**

Drivers of non-commercial light duty vehicles (i.e., passenger cars, minivans/sport utility vehicles (SUV), light trucks) were observed by Forum Research while the vehicles were stopped at intersections controlled by a traffic light or stop sign to determine their use of hand-held ECDs. A total of 286 primary sites in urban areas (i.e., population over 10,000) were sampled using a multi-stage sampling design which included three stratification levels (jurisdiction, economic region and population size (of the community strata) and two stages of sampling (selection of the intersections and selection of the periods of observations). Sites were selected for each combination of jurisdiction, economic region and population size strata. Each of these sites had a replacement site in the same area in case the primary sample could not be used (e.g., construction, collision at the intersection). Further information about the survey sampling can be found in [9].

The survey was conducted primarily during the weeks of September 15-28, 2012, although there were 70 sites which were observed during the following several weeks. Observations were conducted on all days of the week between 07:30am and 6:30pm at each site for two hours. A total of 70,686 drivers were observed.

### **3.2 Survey Procedure**

The variables observed were the following: driver use of ECD (Yes, No), type of ECD use (Talking, Typing, Both), vehicle type (Passenger car, Minivan/SUV, Light truck), driver sex (Male, Female), estimated

driver age (<25, 25-49, 50+), and number of passengers (None, One, Two or more). One observer counted the number of vehicles passing through the intersection that were going in the same direction as the vehicles being observed. These traffic counts were used to weight the data so that sites with more traffic had more impact on the usage estimate. A second person observed the drivers of the stopped vehicles. If the site was particularly busy, a third observer was assigned to the site. This third person either observed drivers in vehicles in a different lane or observed drivers in alternating vehicles in the same lane (i.e., one person observed the first, third, and fifth vehicles, and the second person observed the second, fourth, and six vehicles, etc.)

The observers were trained initially in a classroom setting regarding the purpose of the survey, the information to be collected, and how to carry out the observations. Prior to conducting the survey observations, observers performed a number of practice observations on site while being supervised by the survey team leader.

### 3.3 Pilot Study

It was not certain that observers could accurately make a distinction between talking and typing on ECDs by drivers. Also, it has been suggested that ECD use may be different for drivers stopped at intersections compared to those who are moving in traffic and that conducting observations at intersections would not be representative. Therefore, a pilot study was conducted to address these two issues prior to carrying out the main survey.

A pilot study was carried out at five urban sites (three in Burlington, Ontario and two in Oakville, Ontario) to address the accuracy of ECD use observations and compare intersection versus midblock observations of ECD. These sites were two lane roads with a maximum speed limit of 50 kilometres per hour to facilitate the observation of the drivers in moving vehicles. The observation period for each site was one hour and fifteen minutes. In total, there were 430 observations of stopped vehicles for each of the two observers at intersections and 662 observations of vehicles in motion for each of the two observers who were located mid-block.

To address the issue of reliability of determining ECD use and type of ECD use, two survey team members observed the same driver either at an intersection or midblock. Inter-rater reliability for ECD use was 99.5% for midblock and 98.4% for intersections and for type of ECD use it was 95% and 84.6% for midblock and intersections, respectively. While the reliability for type of ECD use was somewhat lower for intersections, it was still considered to be acceptable for the main survey.

The observations of ECD use at midblock and intersection locations were compared and it was found that ECD usage was identical at 3.0%. Although these results cannot be generalized to all of Canada, they do suggest that the use of intersection sites would not bias the results. Since it was important that the methodology for the current survey be comparable to previous surveys, it was decided to continue to use sites at intersections.

## 4.0 Survey Results

The survey data were analyzed to determine the use of ECD and type of ECD use nationally and for each jurisdiction. The ECD use data were also analyzed by type of vehicle, driver age and sex, and the presence of passengers. It should be noted that the percentages presented by these subgroups do not necessarily add up to the national ECD usage because of missing data for age, gender, etc. The results of the 2012 survey are also compared with those from the 2007 and 2010 urban surveys to determine if drivers' hand-held cell phone use has changed in terms of talking.

The CCMTA would like to thank Jean-Francois Lécuyer of the Road Safety Directorate, Transport Canada for conducting the data analyses for this project.

### 4.1 ECD Usage by Drivers

Driver ECD usage is presented in Table 1 nationally and by jurisdiction. Nationally, the use of ECDs by drivers was estimated to be 4.6% with a measurement error of  $\pm 0.5\%$ . Usage ranged from a high of 7.0% in the Yukon to a low of 1.3% in Manitoba and the Northwest Territories.

| <b>Jurisdiction</b>     | <b>ECD Usage</b> | <b>Number of Observations</b> | <b>Measurement Error</b> |
|-------------------------|------------------|-------------------------------|--------------------------|
| Newfoundland & Labrador | 5.5%             | 1,938                         | 3.8%                     |
| Prince Edward Island    | 3.8%             | 604                           | 0.9%                     |
| Nova Scotia             | 3.8%             | 2,400                         | 0.5%                     |
| New Brunswick           | 2.4%             | 2,629                         | 1.1%                     |
| Quebec                  | 4.8%             | 14,168                        | 0.5%                     |
| Ontario                 | 5.1%             | 21,845                        | 1.2%                     |
| Manitoba                | 1.3%             | 3,152                         | 0.1%                     |
| Saskatchewan            | 1.9%             | 3,664                         | 0.4%                     |
| Alberta                 | 2.6%             | 9,310                         | 0.4%                     |
| British Columbia        | 5.4%             | 9,026                         | 0.8%                     |
| Yukon                   | 7.0%             | 1,265                         | 1.0%                     |
| Northwest Territories   | 1.3%             | 685                           | 0.8%                     |
| <b>Canada</b>           | <b>4.6%</b>      | <b>70,686</b>                 | <b>0.5%</b>              |

#### 4.1.1 ECD Usage by Vehicle Type

In the survey, 54.5% of the vehicles were passenger cars, 30.5% were minivans and SUVs, and 15.0% were light trucks. Table 2 shows drivers' ECD usage by vehicle type for each jurisdiction and nationally. ECD usage was higher for drivers of light trucks (5.9%) than drivers of passenger cars (4.6%) or passenger vans/SUVs (4.9%). This vehicle type difference was found for British Columbia, Northwest Territories, Ontario, Quebec, New Brunswick, Nova Scotia and Prince Edward Island.

| <b>Jurisdiction</b>     | <b>Passenger cars</b> | <b>Minivans &amp; SUVs</b> | <b>Light Trucks</b> |
|-------------------------|-----------------------|----------------------------|---------------------|
| Newfoundland & Labrador | 7.1%                  | 2.3%                       | 3.6%                |
| Prince Edward Island    | 3.4%                  | 3.7%                       | 5.3%                |
| Nova Scotia             | 2.5%                  | 2.1%                       | 7.9%                |
| New Brunswick           | 2.3%                  | 2.3%                       | 2.7%                |
| Quebec                  | 5.3%                  | 4.8%                       | 6.3%                |
| Ontario                 | 5.2%                  | 6.1%                       | 7.0%                |
| Manitoba                | 0.7%                  | 1.5%                       | 1.1%                |
| Saskatchewan            | 2.2%                  | 1.6%                       | 2.2%                |
| Alberta                 | 2.3%                  | 2.8%                       | 2.7%                |
| British Columbia        | 5.2%                  | 5.8%                       | 6.6%                |
| Yukon                   | 7.4%                  | 7.4%                       | 6.4%                |
| Northwest Territories   | 1.4%                  | 0.5%                       | 1.9%                |
| <b>Canada</b>           | <b>4.6%</b>           | <b>4.9%</b>                | <b>5.9%</b>         |

#### 4.1.2 ECD Usage by Gender

In the survey, 59.1% of the drivers were males and 40.9% were females. ECD usage by gender for each jurisdiction is presented in Table 3. Nationally, ECD usage was 0.5% higher among female drivers than male drivers. This gender difference was observed for five of the jurisdictions, particularly in Ontario.

| <b>Jurisdiction</b>     | <b>Male</b> | <b>Female</b> |
|-------------------------|-------------|---------------|
| Newfoundland & Labrador | 5.3%        | 2.8%          |
| Prince Edward Island    | 3.1%        | 5.1%          |
| Nova Scotia             | 3.2%        | 3.0%          |
| New Brunswick           | 2.4%        | 2.3%          |
| Quebec                  | 5.2%        | 5.2%          |
| Ontario                 | 5.3%        | 6.4%          |
| Manitoba                | 0.8%        | 1.3%          |
| Saskatchewan            | 1.9%        | 2.2%          |
| Alberta                 | 2.6%        | 2.6%          |
| British Columbia        | 5.5%        | 5.6%          |
| Yukon                   | 5.6%        | 8.9%          |
| Northwest Territories   | 1.8%        | 0.4%          |
| <b>Canada</b>           | <b>4.7%</b> | <b>5.2%</b>   |

#### 4.1.3 ECD Usage by Driver Age

In the survey, 15.1% of the drivers were under 25 years old, 59.9% were between 25 and 49 years old, and 25.0% were 50 years and older. ECD usage is shown by driver age for each jurisdiction in Table 4. ECD usage was considerably higher (7.1%) among young drivers (<25 years of age) than it was for those 25-49 (5.5%) or those 50+ (2.4%). This age difference was observed for ten of the jurisdictions.

| <b>Jurisdiction</b>     | <b>Under 25</b> | <b>25 to 49</b> | <b>50 and over</b> |
|-------------------------|-----------------|-----------------|--------------------|
| Newfoundland & Labrador | 16.2%           | 2.9%            | 0.6%               |
| Prince Edward Island    | 7.5%            | 4.4%            | 1.2%               |
| Nova Scotia             | 5.3%            | 3.5%            | 1.3%               |
| New Brunswick           | 0.1%            | 3.1%            | 1.8%               |
| Quebec                  | 9.2%            | 5.7%            | 2.1%               |
| Ontario                 | 7.1%            | 6.7%            | 2.9%               |
| Manitoba                | 0.7%            | 1.4%            | 0.8%               |
| Saskatchewan            | 4.6%            | 1.7%            | 1.0%               |
| Alberta                 | 4.3%            | 2.8%            | 0.8%               |
| British Columbia        | 8.0%            | 5.9%            | 3.5%               |
| Yukon                   | 18.2%           | 7.8%            | 1.2%               |
| Northwest Territories   | 4.4%            | 1.5%            | 0.0%               |
| <b>Canada</b>           | <b>7.1%</b>     | <b>5.5%</b>     | <b>2.4%</b>        |

#### 4.1.4 ECD Usage by Driver Age and Gender and by Vehicle Type

Given that men and women, and drivers of different ages drive different types of vehicles, multivariate analyses of the ECD use data were conducted. Table 5 shows ECD use by gender and type of vehicle jointly. It can be seen that ECD use was higher among male light truck drivers whereas it was higher among female drivers of minivans/SUVs.

| <b>Gender</b> | <b>Passenger cars</b> | <b>Minivans &amp; SUVs</b> | <b>Light Trucks</b> |
|---------------|-----------------------|----------------------------|---------------------|
| Male          | 4.5%                  | 4.2%                       | 6.1%                |
| Female        | 4.7%                  | 6.2%                       | 4.2%                |
| <b>Total</b>  | <b>4.6%</b>           | <b>4.9%</b>                | <b>6.0%</b>         |

ECD use by age group and vehicle type appears in Table 6. Among drivers under 25, ECD use was higher among drivers of passenger cars while for those 25-49, use was higher among drivers of light trucks. For those 50 and over, drivers of light trucks were slightly more likely to use ECDs.

| <b>Age</b>   | <b>Passenger cars</b> | <b>Minivans &amp; SUVs</b> | <b>Light Trucks</b> |
|--------------|-----------------------|----------------------------|---------------------|
| Under 25     | 7.1%                  | 6.5%                       | 4.8%                |
| 25 to 49     | 5.0%                  | 5.7%                       | 7.3%                |
| 50 and over  | 2.3%                  | 2.2%                       | 3.2%                |
| <b>Total</b> | <b>4.7%</b>           | <b>5.0%</b>                | <b>6.0%</b>         |

#### 4.1.5 ECD Usage by Presence of Passengers

In the survey, 64.7% of the drivers had no passengers, 27.3% had one passenger, and 8% had two or more passengers. ECD usage is shown in Table 7 by the number of passengers present in the vehicle for each jurisdiction. It can be seen that ECD usage was higher if there were no passengers. This pattern of ECD use was found for eight of the jurisdictions.

| <b>Jurisdiction</b>     | <b>None</b> | <b>One</b>  | <b>Two or more</b> |
|-------------------------|-------------|-------------|--------------------|
| Newfoundland & Labrador | 5.1%        | 5.6%        | 0.0%               |
| Prince Edward Island    | 4.4%        | 2.4%        | 0.0%               |
| Nova Scotia             | 3.2%        | 3.0%        | 0.7%               |
| New Brunswick           | 2.9%        | 1.2%        | 0.3%               |
| Quebec                  | 5.6%        | 3.7%        | 4.2%               |
| Ontario                 | 7.1%        | 3.2%        | 2.3%               |
| Manitoba*               | 0.6%        | 0.4%        | 4.3%               |
| Saskatchewan            | 1.9%        | 1.7%        | 2.2%               |
| Alberta                 | 2.9%        | 1.8%        | 1.6%               |
| British Columbia        | 7.6%        | 2.3%        | 0.5%               |
| Yukon                   | 8.2%        | 4.1%        | 4.5%               |
| Northwest Territories   | 1.3%        | 1.0%        | 2.8%               |
| <b>Canada</b>           | <b>5.8%</b> | <b>2.9%</b> | <b>2.4%</b>        |

\* It would appear that some observers in Manitoba included drivers in the passenger count. However, when correcting for this problem, the results changed only slightly.

## 4.2 Type of Drivers ECD Usage

Observers indicated whether the driver was talking on the ECD or typing/texting on it. The type of usage is shown in Table 8. It can be seen that nationally, talking on the ECD was more frequent (2.3%) than typing or texting (1.7%). This was the case for all jurisdictions except Prince Edward Island, Ontario, and the Yukon, where talking and texting were equal, and Saskatchewan where typing was somewhat more frequent. It should be noted that combining the percentage of drivers talking with that for typing does not add to the total ECD usage noted above because in a few cases the observers indicated that the driver appeared to be both typing and talking and in others they said that they were unsure whether the driver was talking or typing. These cases were not included in the analysis.

| <b>Jurisdiction</b>     | <b>Talking on ECD</b> | <b>Measurement Error</b> | <b>Typing on ECD</b> | <b>Measurement Error</b> |
|-------------------------|-----------------------|--------------------------|----------------------|--------------------------|
| Newfoundland & Labrador | 3.1%                  | 2.2%                     | 0.9%                 | 0.3%                     |
| Prince Edward Island    | 1.5%                  | 0.4%                     | 1.4%                 | 1.0%                     |
| Nova Scotia             | 2.7%                  | 0.4%                     | 0.9%                 | 0.3%                     |
| New Brunswick           | 1.8%                  | 0.7%                     | 0.4%                 | 0.3%                     |
| Quebec                  | 2.8%                  | 0.2%                     | 1.7%                 | 0.3%                     |
| Ontario                 | 2.3%                  | 0.5%                     | 2.3%                 | 0.8%                     |
| Manitoba                | 0.8%                  | 0.0%                     | 0.2%                 | 0.0%                     |
| Saskatchewan            | 0.3%                  | 0.2%                     | 0.8%                 | 0.1%                     |
| Alberta                 | 1.4%                  | 0.3%                     | 0.3%                 | 0.1%                     |
| British Columbia        | 3.0%                  | 0.5%                     | 2.0%                 | 0.3%                     |
| Yukon                   | 3.4%                  | 0.4%                     | 3.5%                 | 0.5%                     |
| Northwest Territories   | 0.8%                  | 0.5%                     | 0.0%                 | 0.0%                     |
| <b>Canada</b>           | <b>2.3%</b>           | <b>0.2%</b>              | <b>1.7%</b>          | <b>0.3%</b>              |

#### 4.2.1 Type of Driver ECD Usage by Vehicle Type

The type of ECD use is presented by type of light-duty vehicle for each jurisdiction in Table 9. Overall, talking was more frequent for drivers of light trucks (3.6%) than it was for passenger cars (2.3%) or minivans/SUVs (2.5%). This pattern of ECD use by vehicle type occurred in seven jurisdictions but particularly in Nova Scotia, Quebec and Ontario. Typing on an ECD was slightly more common among drivers of minivans/SUVs and light trucks than among drivers of passenger cars, particularly in Ontario and British Columbia.

| <b>Jurisdiction</b>     | <b>Talking</b>        |                            |                     | <b>Typing</b>         |                            |                     |
|-------------------------|-----------------------|----------------------------|---------------------|-----------------------|----------------------------|---------------------|
|                         | <b>Passenger Cars</b> | <b>Minivans &amp; SUVs</b> | <b>Light Trucks</b> | <b>Passenger Cars</b> | <b>Minivans &amp; SUVs</b> | <b>Light Trucks</b> |
| Newfoundland & Labrador | 4.0%                  | 1.1%                       | 2.0%                | 0.9%                  | 1.1%                       | 1.4%                |
| Prince Edward Island    | 1.3%                  | 1.8%                       | 2.0%                | 1.4%                  | 0.5%                       | 3.3%                |
| Nova Scotia             | 1.6%                  | 1.0%                       | 6.0%                | 0.7%                  | 1.0%                       | 1.8%                |
| New Brunswick           | 1.2%                  | 2.1%                       | 2.2%                | 1.0%                  | 0.1%                       | 0.2%                |
| Quebec                  | 2.9%                  | 3.1%                       | 4.7%                | 2.0%                  | 1.4%                       | 1.1%                |
| Ontario                 | 2.4%                  | 2.5%                       | 3.9%                | 2.4%                  | 3.0%                       | 3.0%                |
| Manitoba                | 0.3%                  | 1.3%                       | 1.1%                | 0.0%                  | 0.2%                       | 0.0%                |
| Saskatchewan            | 0.6%                  | 0.3%                       | 0.2%                | 0.8%                  | 0.7%                       | 0.8%                |
| Alberta                 | 1.4%                  | 1.8%                       | 2.0%                | 0.3%                  | 0.4%                       | 0.2%                |
| British Columbia        | 3.0%                  | 3.1%                       | 3.0%                | 1.7%                  | 2.2%                       | 3.0%                |
| Yukon                   | 2.2%                  | 4.7%                       | 3.7%                | 5.0%                  | 2.3%                       | 2.7%                |
| Northwest Territories   | 1.0%                  | 0.0%                       | 1.2%                | 0.0%                  | 0.0%                       | 0.0%                |
| <b>Canada</b>           | <b>2.3%</b>           | <b>2.5%</b>                | <b>3.6%</b>         | <b>1.8%</b>           | <b>2.0%</b>                | <b>2.0%</b>         |

#### 4.2.2 Type of Driver ECD Usage by Gender

Table 10 displays the type of ECD use by gender for each jurisdiction. Female drivers were equally as likely to be talking (2.3%) on the ECD as typing (2.4%), but male drivers were more likely to be talking (2.6%) than typing (1.6%). Typing was a little more common than talking among women in Ontario and Yukon. Female drivers were more likely to be typing on the ECD than males. Male drivers were more likely to be talking than typing in all jurisdictions except Saskatchewan.

| Jurisdiction            | Talking     |             | Typing      |             |
|-------------------------|-------------|-------------|-------------|-------------|
|                         | Male        | Female      | Male        | Female      |
| Newfoundland & Labrador | 3.3%        | 1.8%        | 0.8%        | 1.0%        |
| Prince Edward Island    | 1.4%        | 2.0%        | 1.0%        | 2.2%        |
| Nova Scotia             | 2.6%        | 1.5%        | 0.6%        | 1.2%        |
| New Brunswick           | 2.1%        | 1.2%        | 0.1%        | 1.1%        |
| Quebec                  | 3.2%        | 2.5%        | 1.6%        | 2.2%        |
| Ontario                 | 2.6%        | 2.6%        | 2.4%        | 3.3%        |
| Manitoba                | 0.8%        | 0.7%        | 0.0%        | 0.2%        |
| Saskatchewan            | 0.4%        | 0.4%        | 0.7%        | 1.0%        |
| Alberta                 | 1.7%        | 1.7%        | 0.3%        | 0.4%        |
| British Columbia        | 3.3%        | 2.5%        | 1.7%        | 2.7%        |
| Yukon                   | 3.1%        | 3.7%        | 2.1%        | 5.2%        |
| Northwest Territories   | 1.3%        | 0.0%        | 0.0%        | 0.0%        |
| <b>Canada</b>           | <b>2.6%</b> | <b>2.3%</b> | <b>1.6%</b> | <b>2.4%</b> |

#### 4.2.3 Type of Driver ECD Usage by Age

Table 11 exhibits the type of driver ECD usage by age for each jurisdiction. Both talking and typing on the ECD was more frequent for drivers under 25 than for older drivers. This was the case for talking on the ECD in eight jurisdictions and for typing in seven jurisdictions.

| Jurisdiction            | Talking  |          |      | Typing   |       |      |
|-------------------------|----------|----------|------|----------|-------|------|
|                         | Under 25 | 25 to 49 | 50+  | Under 25 | 25-49 | 50+  |
| Newfoundland & Labrador | 6.4%     | 1.7%     | 0.5% | 4.1%     | 1.1%  | 0.0% |
| Prince Edward Island    | 0.0%     | 2.4%     | 0.0% | 5.9%     | 1.3%  | 0.6% |
| Nova Scotia             | 4.0%     | 2.2%     | 1.1% | 1.4%     | 1.1%  | 0.1% |
| New Brunswick           | 0.0%     | 2.1%     | 1.7% | 0.1%     | 0.8%  | 0.0% |
| Quebec                  | 6.0%     | 3.2%     | 1.2% | 2.3%     | 2.1%  | 0.4% |
| Ontario                 | 3.6%     | 3.0%     | 1.4% | 3.2%     | 3.2%  | 1.4% |
| Manitoba                | 0.7%     | 1.0%     | 0.6% | 0.0%     | 0.0%  | 0.2% |
| Saskatchewan            | 0.5%     | 0.5%     | 0.1% | 1.9%     | 0.7%  | 0.4% |
| Alberta                 | 2.4%     | 1.8%     | 0.7% | 1.2%     | 0.2%  | 0.0% |
| British Columbia        | 3.5%     | 3.3%     | 2.8% | 4.1%     | 2.1%  | 0.4% |
| Yukon                   | 5.6%     | 4.0%     | 1.2% | 12.6%    | 3.6%  | 0.0% |

| Table 11 - Type of Driver ECD usage by age and jurisdiction |             |             |             |             |             |             |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Jurisdiction  | Talking     |             |             | Typing      |             |             |
|   | Under 25    | 25 to 49    | 50+         | Under 25    | 25-49       | 50+         |
| Northwest Territories                                       | 2.2%        | 1.0%        | 0.0%        | 0.0%        | 0.0%        | 0.0%        |
| <b>Canada</b>   | <b>3.8%</b> | <b>2.8%</b> | <b>1.4%</b> | <b>2.7%</b> | <b>2.2%</b> | <b>0.7%</b> |

#### 4.2.4 Type of ECD Usage by Driver Age and Gender and by Vehicle Type

As was done for overall ECD use, talking and typing on ECDs was analyzed by driver age and gender for each vehicle type. Table 12 indicates that for males, talking was more frequent among drivers of light trucks while for females, it was more common among those driving minivans/SUVs. For typing by males, there was not much difference by vehicle type but for females, typing was more frequent among drivers of minivans/SUVs.

| Table 12 - Electronic Communication Devices Usage for <u>Talking</u> or <u>Texting</u> by Drivers by Light-Duty Vehicle Type and Gender, Urban Canada, 2012 |                |                 |              |                     |                |                 |              |                     |
|---|----------------|-----------------|--------------|---------------------|----------------|-----------------|--------------|---------------------|
| Gender  | Talking        |                 |              |                     | Typing         |                 |              |                     |
|   | Passenger Cars | Minivans & SUVs | Light Trucks | Total, L-D Vehicles | Passenger Cars | Minivans & SUVs | Light Trucks | Total, L-D Vehicles |
| Male  | 2.6%           | 2.4%            | 3.8%         | 2.6%                | 1.5%           | 1.5%            | 2.0%         | 1.6%                |
| Female  | 2.1%           | 2.8%            | 1.9%         | 2.3%                | 2.2%           | 2.8%            | 2.1%         | 2.4%                |
| <b>Total</b>  | <b>2.4%</b>    | <b>2.5%</b>     | <b>3.6%</b>  | <b>2.5%</b>         | <b>1.8%</b>    | <b>2.0%</b>     | <b>2.0%</b>  | <b>1.9%</b>         |

Table 13 shows the type of ECD usage by age group for each vehicle type. Drivers under 25 were more likely to have been talking if they were driving a passenger car, while drivers 25-49 talked on an ECD more frequently if they were driving a light truck. Drivers 50 and over were slightly more likely to have been driving a light truck. Drivers under 25 typing on an ECD were slightly more likely to have been driving a minivan/SUV, but drivers 25 and over were slightly more likely to have been driving a light truck. None of these differences were very large.

| Table 13 - Electronic Communication Devices Usage for <u>Talking</u> or <u>Texting</u> by Drivers by Light-Duty Vehicle Type and Age, Urban Canada, 2012 |                |                 |              |                     |                |                 |              |                     |
|--|----------------|-----------------|--------------|---------------------|----------------|-----------------|--------------|---------------------|
| Age  | Talking        |                 |              |                     | Typing         |                 |              |                     |
|  | Passenger Cars | Minivans & SUVs | Light Trucks | Total, L-D Vehicles | Passenger Cars | Minivans & SUVs | Light Trucks | Total, L-D Vehicles |
| Under 25   | 4.0%           | 2.6%            | 2.5%         | 3.8%                | 2.5%           | 3.0%            | 1.8%         | 2.7%                |
| 25 to 49   | 2.4%           | 3.0%            | 4.4%         | 2.8%                | 2.1%           | 2.2%            | 2.5%         | 2.2%                |
| 50 and over  | 1.4%           | 1.2%            | 2.1%         | 1.4%                | 0.6%           | 0.9%            | 1.1%         | 0.7%                |
| <b>Total</b>   | <b>2.4%</b>    | <b>2.6%</b>     | <b>3.6%</b>  | <b>2.5%</b>         | <b>1.8%</b>    | <b>2.0%</b>     | <b>2.1%</b>  | <b>1.9%</b>         |

#### 4.2.5 Type of Driver ECD Usage by Number of Passengers

Type of driver ECD usage is shown in Table 14 by the number of passengers present in the vehicle for each jurisdiction. Overall, it is evident that if the driver is alone, then they are more likely to be talking or typing on an ECD than when there are passengers present. This was the case in eight of the jurisdictions for talking on the ECD and eight for typing on the ECD.

| Jurisdiction            | Talking     |             |             | Typing      |             |             |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                         | None        | One         | Two+        | None        | One         | Two +       |
| Newfoundland & Labrador | 3.5%        | 2.3%        | 0.0%        | 1.4%        | 0.2%        | 0.0%        |
| Prince Edward Island    | 1.8%        | 1.1%        | 0.0%        | 1.8%        | 0.6%        | 0.0%        |
| Nova Scotia             | 1.9%        | 2.8%        | 0.7%        | 1.1%        | 0.1%        | 0.0%        |
| New Brunswick           | 2.2%        | 0.8%        | 0.0%        | 0.5%        | 0.4%        | 0.3%        |
| Quebec                  | 3.2%        | 2.0%        | 2.4%        | 2.0%        | 1.1%        | 1.5%        |
| Ontario                 | 3.1%        | 1.6%        | 1.2%        | 3.5%        | 1.3%        | 0.7%        |
| Manitoba                | 0.5%        | 0.1%        | 3.8%        | 0.0%        | 0.3%        | 0.0%        |
| Saskatchewan            | 0.2%        | 0.7%        | 0.5%        | 0.7%        | 0.7%        | 1.5%        |
| Alberta                 | 1.8%        | 1.4%        | 1.1%        | 0.4%        | 0.1%        | 0.0%        |
| British Columbia        | 4.2%        | 1.2%        | 0.2%        | 2.8%        | 0.6%        | 0.0%        |
| Yukon                   | 3.6%        | 2.9%        | 2.2%        | 4.5%        | 1.2%        | 0.0%        |
| Northwest Territories   | 1.0%        | 0.5%        | 0.0%        | 0.0%        | 0.0%        | 0.0%        |
| <b>Canada</b>           | <b>3.0%</b> | <b>1.6%</b> | <b>1.4%</b> | <b>2.4%</b> | <b>0.9%</b> | <b>0.7%</b> |

#### 4.3 Trends in Cell Phone Usage by Drivers

In the current survey, the usage of ECDs by drivers who were either talking or typing on them was observed. Previous Canadian urban surveys conducted in 2010 and 2007 included only talking by drivers on hand-held cell phones [6, 10]. Talking on ECDs in the current survey was compared to previous urban surveys nationally and by jurisdiction, and the results appear in Table 15. Nationally, it can be seen that in 2007, an estimated 5.9% of drivers were talking on cell phones, but in 2010 this percentage had dropped to 3.3% and in 2012 it dropped further to 2.3%. This decline from 2007 to 2012 was evident in 11 of the jurisdictions. Nationally, talking on cell phones by drivers has declined by 61% from 2007 to 2012.

| Jurisdiction            | 2007  | 2010 | 2012 |
|-------------------------|-------|------|------|
| Newfoundland & Labrador | 5.6%  | 4.4% | 3.1% |
| Prince Edward Island    | 3.4%  | 3.6% | 1.5% |
| Nova Scotia             | 2.2%  | 4.4% | 2.7% |
| New Brunswick           | 2.9%  | 2.2% | 1.8% |
| Quebec                  | 3.2%  | 3.2% | 2.8% |
| Ontario                 | 7.4%  | 3.2% | 2.3% |
| Manitoba                | 5.1%  | 1.3% | 0.8% |
| Saskatchewan            | 2.8%  | 1.3% | 0.3% |
| Alberta                 | 11.7% | 5.2% | 1.4% |

| <b>Table 15 - Percentage of drivers talking on hand-held cell phones by jurisdiction and urban survey year</b> |                   |                   |                   |
|--|-------------------|-------------------|-------------------|
| <b>Jurisdiction</b>  | <b>2007</b>       | <b>2010</b>       | <b>2012</b>       |
| British Columbia   | 4.2%              | 3.3%              | 3.0%              |
| Yukon  | 4.2%              | 2.4%              | 3.4%              |
| Northwest Territories  | 3.4%              | 2.1%              | 0.8%              |
| <b>Canada</b>  | <b>5.9% ± 0.4</b> | <b>3.3% ± 0.2</b> | <b>2.3% ± 0.2</b> |

Appendix A shows the change in the percentage of drivers talking on hand-held ECDs from 2007 to 2012 and the confidence intervals around these percentages for each jurisdiction. The effective dates for the laws prohibiting the use of hand-held devices by drivers are shown for each jurisdiction. The percentages of drivers talking on ECDs, which are bolded, are those obtained after the law came into effect. If the confidence interval is bolded, it means that the difference between talking on the ECD for the two years was statistically significant (i.e., interval does not include 0). The results of this analysis indicate that talking on hand-held ECDs was lower post-legislation for the following jurisdictions: PEI, NB, QC, ON, MB, SK, AB, BC, and NT. Since NL's law came into effect before the first survey measuring talking on hand-held ECDs, it is not possible to determine whether there has been a change.

## 5.0 Conclusions

The national 2012 urban survey of drivers' ECD use is the first time that ECD use by drivers of light duty vehicles has been observed for both talking and typing on the devices. As was found in earlier surveys of talking on cell phones [6, 10], the total ECD usage in the current survey (i.e., talking or typing) was more common among drivers under 25 and drivers of light trucks. However, women were somewhat more likely to be using ECDs than men. Talking on the ECD was more frequent by drivers than was typing. However, women talked and typed about equally on ECDs whereas males were more likely to be talking than typing. Female drivers were more likely than male drivers to be typing. Male drivers were more likely than female drivers to be talking on the ECD which is consistent with earlier surveys.

In addition, it was found that drivers with passengers were less likely to be using an ECD either for talking or typing, a result that has been observed elsewhere [8]. This passenger effect may be due to the driver talking with the passenger rather than using an ECD, or it could mean that the presence of the passenger inhibits the use of ECDs which is now illegal in most jurisdictions, or at least is considered to be inappropriate.

A comparison of talking on hand-held ECDs by drivers in urban surveys conducted in 2007 and 2010 with this behaviour in the current 2012 survey indicates that such behaviour has been declining over these three surveys. A comparison of talking on hand-held ECDs before and after the effective dates of jurisdictional laws prohibiting the use of these devices found that usage was lower after the laws went into effect for nine jurisdictions suggesting that the laws have been effective in reducing talking on hand-held ECDs. However, it cannot be determined whether typing on ECDs has changed or whether the use of hands-free ECDs has increased as a result of the prohibition.

## 6.0 References

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## Appendix A: Hand-held ECD Usage for Talking by Drivers by Province or Territory, Urban Canada in 2007, 2010 and 2012

| Jurisdiction | Effective Date of Law | ECD Usage for Talking |             |             | Difference in ECD Usage for Talking |           |           | Confidence Interval for the Difference |                       |                        |
|--------------|-----------------------|-----------------------|-------------|-------------|-------------------------------------|-----------|-----------|--|-----------------------|------------------------|
|              |                       | 2007                  | 2010        | 2012        | 2007-2010                           | 2010-2012 | 2007-2012 | 2007-2010                              | 2010-2012             | 2007-2012              |
| NL           | 04/2003               | 5.6%                  | 4.4%        | 3.1%        | -1.2%                               | -1.3%     | -2.5%     | (-2.3%, 0.03%)                         | (-3.6%, 0.9%)         | (-4.9%, 0.1%)          |
| PE           | 01/2010               | 3.4%                  | <b>3.6%</b> | <b>1.5%</b> | 0.2%                                | -2.1%     | -1.9%     | (-0.3%, 0.7%)                          | <b>(-2.7%, -1.5%)</b> | <b>(-2.4%, -1.4%)</b>  |
| NS           | 04/2008               | 2.2%                  | <b>4.4%</b> | <b>2.7%</b> | 2.2%                                | -1.7%     | 0.5%      | <b>(1.3%, 3.1%)</b>                    | <b>(-2.7%, -0.8%)</b> | <b>(0.02%, 0.9%)</b>   |
| NB           | 06/2011               | 2.9%                  | 2.2%        | <b>1.8%</b> | -0.7%                               | -0.4%     | -1.1%     | <b>(-1.4%, -0.02%)</b>                 | (-1.4%, 0.5%)         | <b>(-1.9%, -0.3%)</b>  |
| QC           | 04/2008               | 3.2%                  | <b>3.2%</b> | <b>2.8%</b> | 0.0%                                | -0.4%     | -0.4%     | (-0.7%, 0.6%)                          | (-1.0%, 0.3%)         | <b>(-0.7%, -0.2%)</b>  |
| ON           | 10/2009               | 7.4%                  | <b>3.2%</b> | <b>2.3%</b> | -4.2%                               | -0.9%     | -5.1%     | <b>(-5.0%, -3.4%)</b>                  | <b>(-1.4%, -0.3%)</b> | <b>(-5.9%, -4.1%)</b>  |
| MB           | 07/2010               | 5.1%                  | <b>1.3%</b> | <b>0.8%</b> | -3.8%                               | -0.5%     | -4.3%     | <b>(-5.1%, -2.4%)</b>                  | <b>(-0.8%, -0.2%)</b> | <b>(-5.5%, -2.9%)</b>  |
| SK           | 01/2010               | 2.8%                  | <b>1.3%</b> | <b>0.3%</b> | -1.5%                               | -1.0%     | -2.5%     | <b>(-1.8%, -1.2%)</b>                  | <b>(-1.2%, -0.7%)</b> | <b>(-2.7%, -2.2%)</b>  |
| AB           | 09/2011               | 11.7%                 | 5.2%        | <b>1.4%</b> | -6.5%                               | -3.8%     | -10.3%    | <b>(-8.2%, -4.9%)</b>                  | <b>(-4.1%, -3.4%)</b> | <b>(-12.0%, -8.6%)</b> |
| BC           | 01/2010               | 4.2%                  | <b>3.3%</b> | <b>3.0%</b> | -0.9%                               | -0.3%     | -1.2%     | <b>(-1.3%, -0.4%)</b>                  | (-0.8%, 0.2%)         | <b>(-1.8%, -0.6%)</b>  |
| YK           | 04/2011               | 4.2%                  | 2.4%        | <b>3.4%</b> | -1.8%                               | 1.0%      | -0.8%     | (-3.6%, 0.1%)                          | (-0.5%, 2.4%)         | (-2.1%, 0.5%)          |
| NT           | 01/2012               | 3.4%                  | 2.1%        | <b>0.8%</b> | -1.3%                               | -1.3%     | -2.6%     | <b>(-2.1%, -0.4%)</b>                  | <b>(-2.0%, -0.7%)</b> | <b>(-3.4%, -1.7%)</b>  |
| Canada       |                       | 5.9%                  | 3.3%        | 2.3%        | -2.6%                               | -1.0%     | -3.6%     | <b>(-4.0%, -1.2%)</b>                  | <b>(-1.2%, -0.7%)</b> | <b>(-5.0%, -2.2%)</b>  |