

# Observed Driver Phone Use Rates in Canada

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## Abstract

Little is currently known about the actual nature and amount of phone use while driving on Canadian roads. The present study tried to quantify this by collecting data on observed driver phone use across Canada. Transport Canada's annual seatbelt survey was modified to record driver hand-held phone use, along with the traditional variables of belt use, driver age, gender and vehicle type. The observational survey recorded driver phone use rates at 2.8% for rural areas and 5.9% for urban areas. Phone use varied widely by urban community, with Alberta being highest (11.7%) and Nova Scotia the lowest (2.2%). Phone use is a common behaviour on Canadian roads, despite the risks and public concern. These results highlight the need for further countermeasures to reduce this behaviour. The present data provide baseline rates on which to evaluate the impact of legislative, and other, countermeasures.

## Résumé

Actuellement, on connaît bien peu de choses sur la nature et les chiffres réels de l'utilisation des cellulaires sur les routes du Canada. La présente étude visait à quantifier cette utilisation en collectant, au Canada, des données en observant l'utilisation des cellulaires au volant. L'enquête annuelle de Transports Canada concernant les ceintures de sécurité a été modifiée afin d'enregistrer l'utilisation des cellulaires au volant, au même titre que les variables habituelles sur le port de la ceinture de sécurité, l'âge et le sexe du conducteur, et le type de véhicule. Lors de l'enquête, on a constaté une utilisation des cellulaires au volant de 2,8 % dans les zones rurales et de 5,9 % dans les zones urbaines. L'utilisation des cellulaires varie largement d'une communauté urbaine à l'autre, l'Alberta étant la plus grande utilisatrice (11,7 %) et la Nouvelle-Écosse la plus petite (2,2 %). L'utilisation des cellulaires est courante sur les routes du Canada malgré les risques et la préoccupation publique. Ces statistiques soulignent la nécessité d'adopter d'autres mesures préventives afin de réduire ce comportement. Les présentes données servent de taux de référence à partir desquels on peut évaluer l'impact de mesures législatives et autres mesures de prévention.

## INTRODUCTION

The consensus from an extensive international body of experimental and epidemiological research is that using a cell phone impairs driving performance and significantly increases the risk of collision [1-5]. Canadians appear to be somewhat aware of this scientific evidence; the majority (66%) think that cell phone use while driving is a very serious road safety problem [6]. However, this awareness of risk does not seem to have had a large impact on behaviour. Reported cell phone use while driving has been increasing steadily. A 2006 survey by the Traffic Injury Research Foundation found that 37% of drivers reported using a cell phone while driving in the past week [6]. People in the same survey also reported that using cell phones was

the most commonly seen behaviour from a list of nine possibly unsafe driving behaviours (e.g., tailgating, failing to signal, speeding). This pervasive use of cell phones is not surprising now that two-thirds of Canadian households have access to a wireless phone [7], however the real extent of this problem remains unclear.

Little is currently known about the actual nature and amount of phone use while driving on Canadian roads. Several interview surveys have investigated the self-reported frequency of phone use, but no data currently exist on actual use. At a given moment, how many people on Canadian roads are using their phones while they drive? The present study tried to answer this question by collecting data on observed driver phone use across Canada. Data on cell phone use by drivers were collected, as supplementary information, during the observational seat belt use surveys carried out in rural areas of Canada in September 2006, and urban areas in the same week in September of 2007. It was hypothesized that observed driver cell-phone use rates would be consistent with the general trends of phone use spreading through the Canadian population.

## METHOD

The National Seat Belt Survey uses trained observers, stationed at various controlled intersections across the country, to observe the light duty vehicles stopping at the intersection [8]. They make the following observations: 1) whether the vehicle is a passenger car, minivan/SUV or pickup truck; 2) whether the driver is wearing a seat belt or not; 3) whether front and back seat passenger(s) are wearing belts, child restraint or no restraint; 4) sex of the driver; 5) age of the driver within three categories: under 25 years, 25-49 years and 50 years+; 6) whether their view was obstructed by tinted windows; and 7) whether the driver is using a cell phone, or not. Observations were made during daylight hours.

The survey population consisted of all private vehicles with Canadian licence plates, including passenger vehicles, minivans/ sport utility vehicles (SUVs) and pickup trucks (but excluding heavy trucks, campers, government and police vehicles) travelling over the appropriate road type during the observation period.

This report is based on the results from two National Seat Belt Surveys. The first survey was conducted for rural areas of Canada in September 2006. Rural includes towns with a population of fewer than 10,000, but more than 1,000 inhabitants that are located outside any census metropolitan area or census agglomeration. The second survey was conducted for urban areas of Canada in September 2007. Urban includes communities with a population over 10,000, plus those communities with a population of less than 10,000 that are located within a census metropolitan area.

The rural survey, which occurred over the week of September 15 to 21, 2006, involved 249 sites. Each observation period was two hours long and took place during daylight hours (between 7:30 a.m. and 18:30 p.m.). A total of 41,137 vehicles and drivers were observed during the course of the survey.

The urban survey, which was conducted over the week of September 15 to 21, 2007, involved two separate observation periods at each of 270 sites. Each observation period was one hour

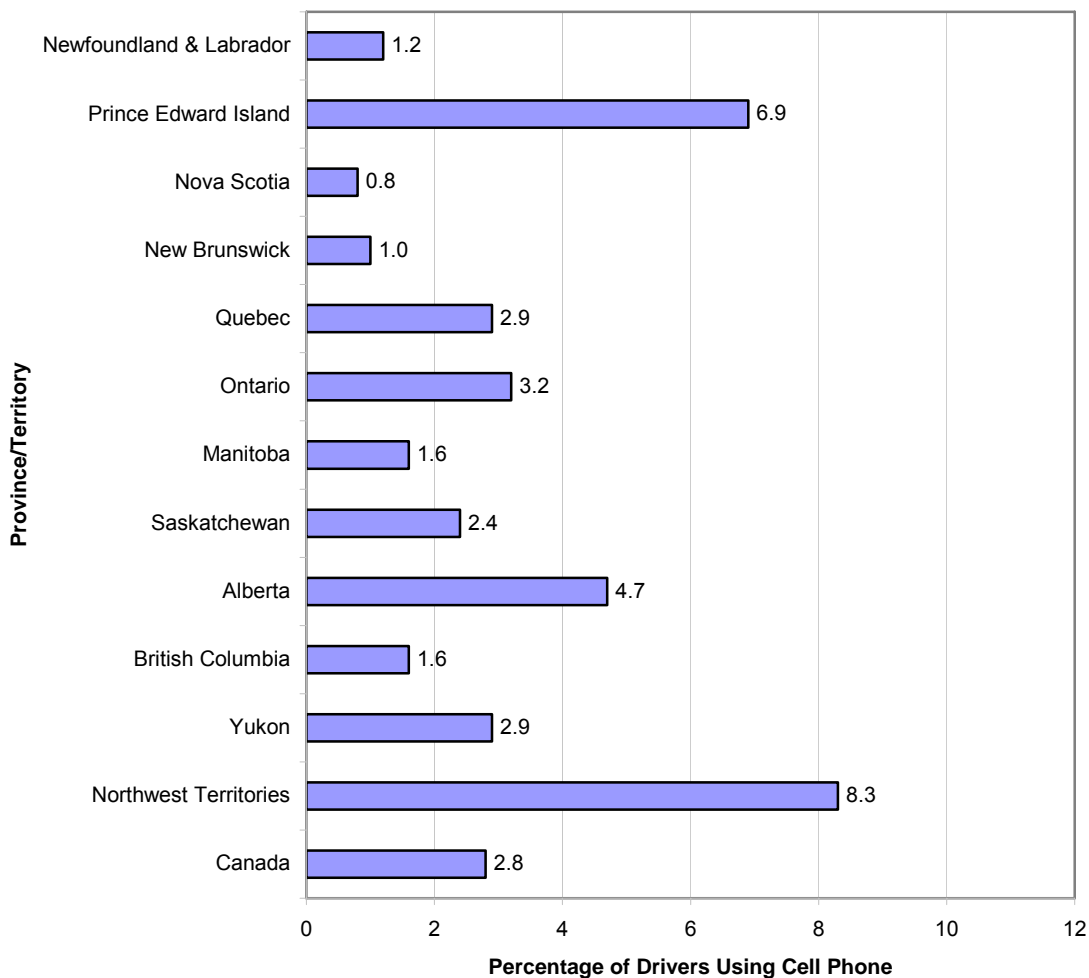
long and took place during daylight hours (between 7:30 a.m. and 18:30 p.m.). A total of 92,440 vehicles and drivers were observed during the course of the study.

For the two surveys, a total of 133,577 vehicles and drivers were observed at 519 sites across Canada. No data were collected in Nunavut.

## RESULTS

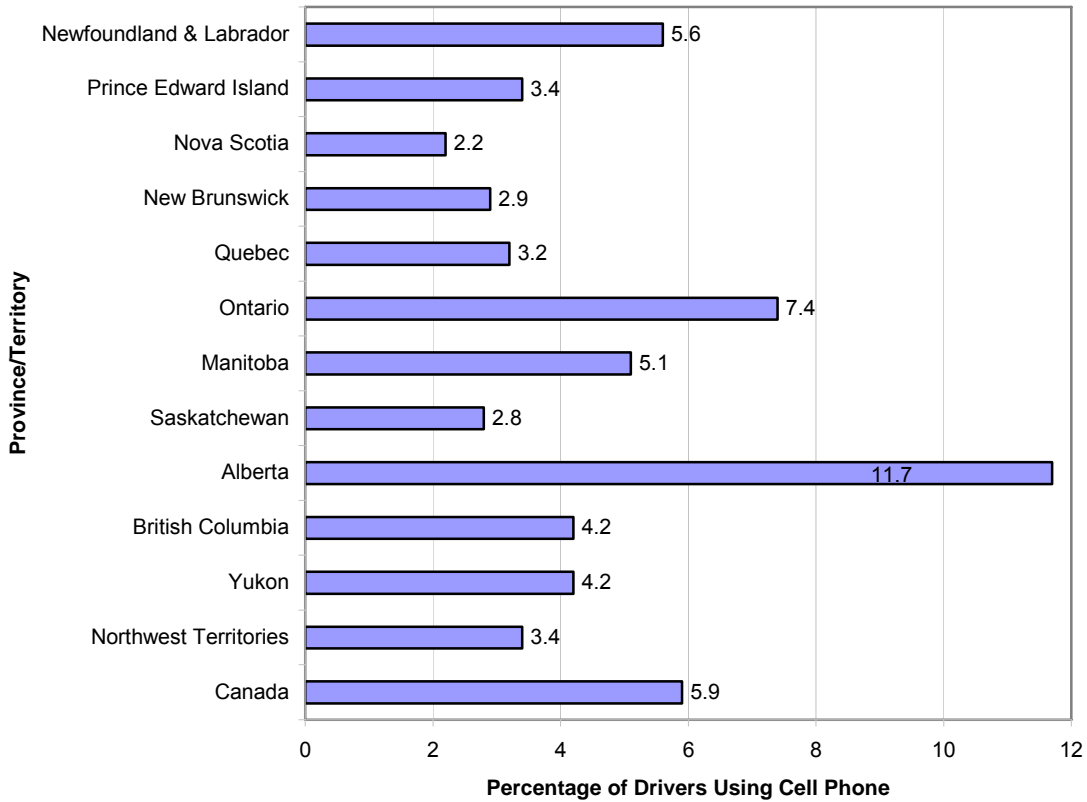
### Driver Cell Phone Use by Jurisdiction

Figure 1 shows that an estimated 2.8% ( $\pm 0.2\%$ ) of drivers in rural communities were using a cell phone in 2006. Prince Edward Island, Quebec, Ontario, Alberta, the Yukon and the Northwest Territories were at or above the national average.



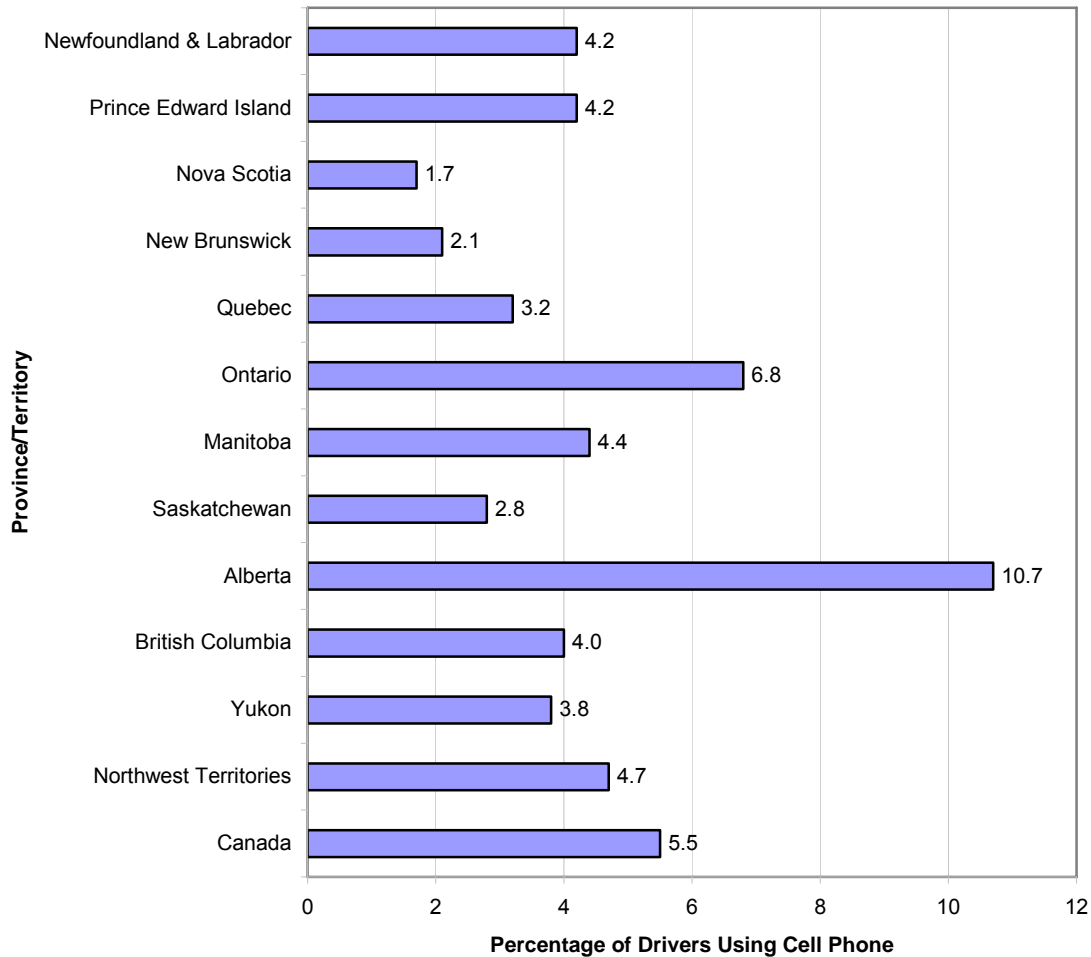
**Figure 1 - Rural Canada, driver cell phone use by province/territory - 2006**

Figure 2 shows that in 2007 an estimated 5.9% ( $\pm 0.4\%$ ) of drivers in urban communities were using a cell phone. Ontario and Alberta were at or above the national average.



**Figure 2 - Urban Canada, driver cell phone use by province/territory - 2007**

Figure 3 shows an estimated 5.5% ( $\pm 0.3\%$ ) of drivers in Canada were using a cell phone. Ontario and Alberta were above the national average.



**Figure 3 - Rural and Urban Canada, driver cell phone use by province/territory - 2006-2007**

### Cell phone use and age of the driver

Contingency tables and Pearson's  $\chi^2$  test of independence were used to analyze the relationship between cell phone use and the following five variables: age of the driver, gender, seat belt use by the driver, vehicle type and area (urban or rural road).

Table 1 shows that drivers aged 50 years and older (2.4%) were much less likely to use a cell phone while driving than drivers 25 to 49 years old (4.5%) and drivers under 25 years (6.7%). The difference in the use of cell phone while driving between these age groups is significant at  $\alpha = 5\%$  criterion ( $\chi^2 = 560.06$ ,  $df = 2$ ,  $p\text{-value} < 0.0001$ ). Moreover, among drivers not using a cell phone while driving, those aged under 25 years represent only 11.05% of the drivers, while those aged 25 to 49 years old and 50 years and older represent respectively 59.86% and 29.09%. Among drivers using a cell phone while driving, these three age groups represent 18.42%, 65.04% and 16.54% respectively.

	Age			Total	
	Under 25 years old	25 to 49 years old	50 years and older		
Cell phone	Used	1002 (6.7%)	3538 (4.5%)	900 (2.4%)	5440
	Not used	13923	75446	36659	126028
	Total	14925	78984	37559	131468

**Table 1 - Distribution of the drivers by cell phone use and age of the driver**

## Cell phone use by gender

Table 2 shows that there were a slightly greater proportion of women (4.5%) than of men (4.0%) using a cell phone while driving. Based on Pearson's  $\chi^2$  test of independence, the difference was found to be significant at  $\alpha = 5\%$  criterion ( $\chi^2 = 22.64$ ,  $df = 1$ ,  $p\text{-value} < 0.0001$ ). However, men represent a higher proportion, both among drivers using a cell phone (57.91%) and drivers not using a cell phone (61.11%), even though the gap is smaller for drivers using cell phone.

	Gender		Total	
	Male	Female		
Cell phone	Used	3181 (4.0%)	2312 (4.5%)	5493
	Not used	77007	49007	126014
	Total	80188	51319	131507

**Table 2 - Distribution of the drivers by cell phone use and gender**

## Cell phone use and seat belt use

Cell phone users are more likely to be unbelted (10.8%) than those who are not using a cell phone while driving (8.1%). The difference is significant at  $\alpha = 5\%$  ( $\chi^2 = 51.52$ ,  $df = 1$ ,  $p\text{-value} < 0.0001$ ).

	Seat belt use		Total	
	Belted	Unbelted		
Cell phone	Used	4901	596 (10.8%)	5497
	Not used	115550	10216 (8.1%)	125766
	Total	120451	10812	131263

**Table 3 - Distribution of the drivers by cell phone use and seat belt use**

The correlation between seat belt use and cell phone use by drivers was also calculated using the Phi coefficient. First, it was calculated for all drivers, and then for the following groups separately: male drivers, female drivers, drivers under 25 years old, drivers between 25 and 49

years old, drivers 50 years and older, passenger car drivers, minivans and SUV drivers, light trucks drivers, drivers in urban communities and drivers in rural communities. The overall correlation coefficient was  $-0.02$  ( $df = 1$ ,  $p$ -value  $< 0.0001$ ) and the coefficients for the different subgroups were between  $-0.015$  ( $df = 1$ ,  $p$ -value  $< 0.0001$ ) and  $-0.028$  ( $df = 1$ ,  $p$ -value  $< 0.0001$ ). Even though these associations are statistically significant, the association is weak.

## Cell phone use and vehicle type

Observed cell phone use is also higher among light trucks and minivans/ SUVs (respectively 5.0% and 4.8%) than in passenger cars (3.6%). The difference is significant at  $\alpha = 5\%$  ( $\chi^2 = 121.39$ ,  $df = 2$ ,  $p$ -value  $< 0.0001$ ). Moreover, drivers of passenger car represent the highest proportion, followed by drivers of minivans and SUVs, both for drivers using a cell phone while driving (cars 48.87%, SUV/ minivans 29.16% and light trucks 21.97%) and drivers not using a cell phone (cars 56.34%, SUV/ minivans 25.37% and light trucks 18.30%).

	Vehicle type			Total	
	Passenger cars	Minivans/ SUVs	Light trucks		
Cell phone	Used	2705 (3.6%)	1614 (4.8%)	1216 (5.0%)	5535
	Not used	71501	32194	23225	126920
	Total	74206	33808	24441	132455

Table 4 - Distribution of the drivers by cell phone use and vehicle type

## Cell phone use and area

Cell phone use is much higher in urban communities (4.9%) than in rural communities (2.5%). The difference is significant at  $\alpha = 5\%$  ( $\chi^2 = 121.39$ ,  $df = 1$ ,  $p$ -value  $< 0.0001$ ). The values in this table are unweighted, so they differ slightly from the weighted percentages shown in Figures 1-3.

	Area		Total	
	Urban	Rural		
Cell phone	Used	4535 (4.9%)	1037 (2.5%)	5572
	Not used	87905	40100	128005
	Total	92440	41137	133577

Table 5 - Distribution of the drivers by cell phone use and area

## DISCUSSION

The results of these surveys provide a snapshot of driver phone use in Canada. The behaviour appears to be widespread. Average driver cell phone use was significantly higher in urban areas (5.9%) than in rural areas (2.8%). Urban Alberta had the highest rate of phone use at 11.7%, which was twice the national average for urban areas. Nova Scotia had the lowest rates of phone use for both rural (0.8%) and urban areas (2.2%). As predicted, the prevalence of cell phones seems to be symptomatic of usage rates on the road. Alberta has the highest number of households with access to a wireless phone [7] and the highest rates of driver phone use.

The survey results also gave some indication of the patterns of phone use. Phone use varied significantly by age, gender, and vehicle type. Drivers aged 50 years and older (2.4%) were much less likely to use a cell phone than drivers 25 to 49 years old (4.5%) and drivers under 25 years (6.7%). A slightly greater proportion of women (4.5%) were on the phone than of men (4.0%). Phone use was higher among light trucks (5.0%) and minivans/ SUVs (4.8%) than in passenger cars (3.7%). There was even a slight tendency for drivers using their phones to be less often wearing their seatbelt.

There have been other observational surveys of driver phone use; for example, a study done in British Columbia found a relationship between observed phone use on city streets and riskier driving records [9]. A similar seatbelt survey, conducted in the United States in 2004, observed 5% of drivers using phones [10]. In addition, a multi-year observational study that was carried out in the state of Michigan, found that driver hand-held phone use had more than doubled between 2001-2005, from 2.7% to 5.8% [11]. They estimated that average phone use rates would continue to increase in Michigan. It would be reasonable to assume that the rates in Canada will also increase.

There are several potential limitations to this study that should be addressed. One limitation is the observations were restricted to daylight hours; consequently, if phone use differs at other times of day, this would not have been captured. Also, the vehicles were observed as they stopped at intersections, so it is possible that the drivers used this as an opportunity to make their calls. Phone use probably varies as a function of road type and location. Lower usage rates in rural areas may be attributed to poorer cellular network coverage and national usage might have increased somewhat from 2006, when the rural observations were made, to 2007 when the urban study was done.

It should also be noted that different teams of observers were used at the different sites, consequently, some of the regional differences might be attributed to features of the locations and observers, although standard training and site selection procedures were used to limit these potential confounds. Lastly, the observations were limited to hand-held phones because there was no effective means for observing hands-free phone use. Actual phone use, including both hand held and hands-free, would likely be higher. It has been estimated that 3% of motorists use hands-free phones [10]. This would make the national average closer to 9 percent. Nevertheless, despite these potential limitations, it is very clear from the results of this study, that phones use is becoming an increasingly significant road safety issue in Canada.

The data from the present study suggest that a significant percentage of Canadian drivers are using their phones. During the observation period, more than 1 in 10 drivers were observed using a phone in some urban communities. Drivers need to stay focused on the driving task.

The use of cell phones, and other distractions, impairs the driver's ability to safely control their vehicle and effectively monitor and respond to events occurring in the road traffic environment. These events are often unpredictable; they could be anything from a changing traffic signal, to a sudden appearance of a pedestrian or bicyclist, to another vehicle stopping directly ahead. There is no safe time for distractions while driving. This impairment increases the risk of collision, and as wireless communication becomes even more common, a greater number of collisions will occur on Canadian roads. Given that there is little tolerance for more road trauma in Canada, effective countermeasures are needed.

There are no simple remedies for driver distraction from cell phones, however there are a variety of potential countermeasures. These countermeasures include driver education and awareness, information management systems that control the flow of information to drivers, lockouts that disable access to cell phones in certain situations, corporate policies on employee cell phone use, legislation and enforcement. A more detailed discussion of these countermeasures is available in a report from the Canadian Council of Motor Transport Administrators' (CCMTA) Strategy on Distracted Driving Task Force [12].

At the time of the survey, Newfoundland and Labrador was the only province that had legislated a ban on hand-held cell phones. Quebec and Nova Scotia instituted a ban on hand held cell phones starting April 1, 2008, and other provinces and territories are actively considering similar legislation. Newfoundland and Labrador had one of the lowest rates of driver phone use during the 2006 rural survey (1.2%), but the rates were almost at the national average during the urban survey in 2007 (5.6%). Since historical data on cell phone use do not exist, any trends showing increased or decreased usage cannot be determined at this time. As the data are collected in future seat belt use surveys, trend lines will develop. The data presented above, on cell phone use by drivers of light duty vehicles in 2006 and 2007 in Canada, will become the foundation for comparison of future data. It could provide a baseline on which to evaluate the impact of legislative, and other, countermeasures. The next seatbelt survey is planned for September 2009.

Transport Canada recommends against using any type of cell phone while driving.

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