LARGE AND SMALL PASSENGER VEHICLE USE IN CANADA

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Introduction

Road vehicles dominate passenger travel and freight traffic. However, prior to the introduction of the Canadian Vehicle Survey (CVS), no measures of total vehicle-kilometres or passenger-kilometres were available. The CVS is a unique source for a wide variety of information on vehicle use and fuel consumption for on-road motor vehicles registered in Canada. Using the rich array of data available from the CVS, this paper explores a number of key themes including differences in use by driver age and gender, region, income and fuel efficiency.

Data Source for the Study

The CVS was developed at the request of **Transport Canada** to fill this data gap. The survey provides quarterly and annual estimates of the amount of road travel, broken down by types of vehicles and characteristics, such as age and gender of driver, time of day and season. The results are the prime source of road vehicle use information for researchers and interested members of the public.

Prior to 2004, the survey was sponsored by Transport Canada. Since then, the survey has been co-sponsored by Transport Canada and

Natural Resources Canada. They plan to combine the survey data with other data to improve road safety, monitor fuel consumption and deal with the impact of vehicle usage on the environment

The provincial component of the survey consists of two steps. The first step is a computer assisted telephone interview (CATI) with the registered owners of the sampled vehicles. This interview is used to collect some general information on the usage of the vehicle as well as to ask the respondent to complete a trip log specific to his/her vehicle type. The trip log is then mailed out as a second step.

The territorial component of the survey consists of two short questionnaires. One is mailed to the respondents at the beginning of the quarter and the other is mailed at the end of the quarter. The first questionnaire asks respondents to record the odometer reading at the beginning of the first day of the quarter. All those returning the first questionnaire are mailed a second questionnaire asking them to record the odometer reading at the beginning of the first day of the next quarter. These two odometer readings allow the calculation of the distance the vehicle was driven during the quarter.

Light vehicles (weighing less than 4.5 tonnes) can be broadly broken into two categories: small passenger body styles including cars and station wagons; and larger body styles including vans, sport utility vehicles (SUV) and pickup trucks. This paper explores the evolution of driving activity in Canada for these two categories using the Canadian Vehicle Survey.

While the overall distance travelled in Canada has grown slowly but steadily in the eight years since the survey began, the underlying characteristics of the driving activity have transformed in a number of ways.

Overall Driving Activity, 2000-2007

In order to provide some context to the discussion of large and small passenger vehicle use, let's first look at overall driving trends since the beginning of the survey period.

Overall, light vehicles travelled 6.5% further in 2007 than they had in 2000, an annual average increase of just under one percent (Table 1).

The number of vehicles on the road increased more than twice as fast. The number of light vehicles in scope for the survey increased by 14.2% from 2000 to 2007 (Table 1).

The combined effect of small increases in the kilometres driven with bigger increases in the number of vehicles on the road was that the average distance driven per vehicle declined by nearly 7% since 2000 (Table 1). Light vehicles were driven 15,797 kilometres each on average in 2007, down from 16,944 kilometres in 2000.

Table 1: Vehicle kilometres, number of vehicles in scope and average kilometres for light vehicles, Canada

	Vehicle-kilometers (millions)	Number of vehicles in-scope	Average kilometers per vehicle
2000	281,985	16,642,140	16,944
2001	283,380	16,790,536	16,877
2002	290,320	17,299,423	16,782
2003	286,803	17,561,291	16,332
2004	285,164	17,782,719	16,036
2005	289,717	18,134,739	15,976
2006	296,871	18,536,955	16,015
2007	300,203	19,003,427	15,797

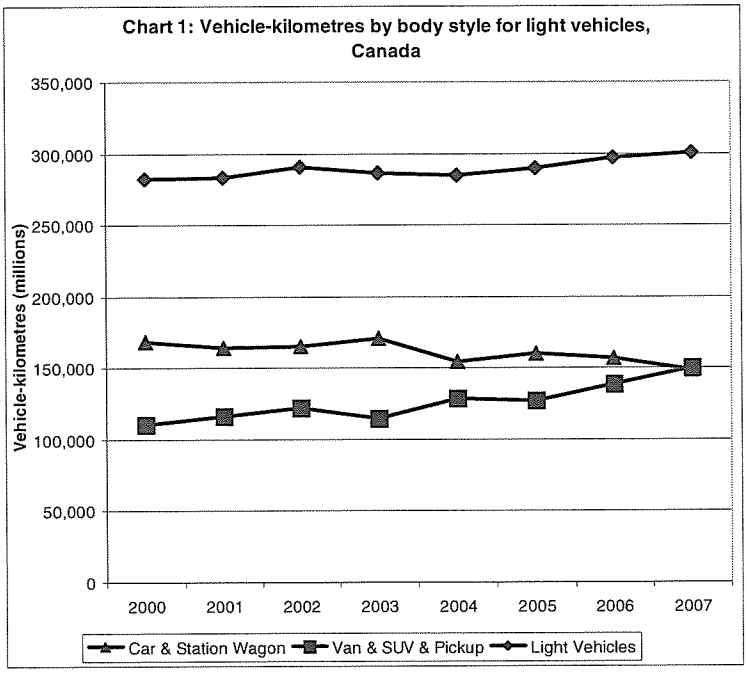
Source: Statistics Canada, Canadian Vehicle Survey, CANSIM 405-0056, 405-0058.

Large and Small Passenger Styles

A closer look at the driving characteristics of the large (vans, SUV and pickup trucks) and small (cars and station wagons) passenger styles provides plenty of interesting information regarding the use and evolution of these two very distinct vehicle categories.

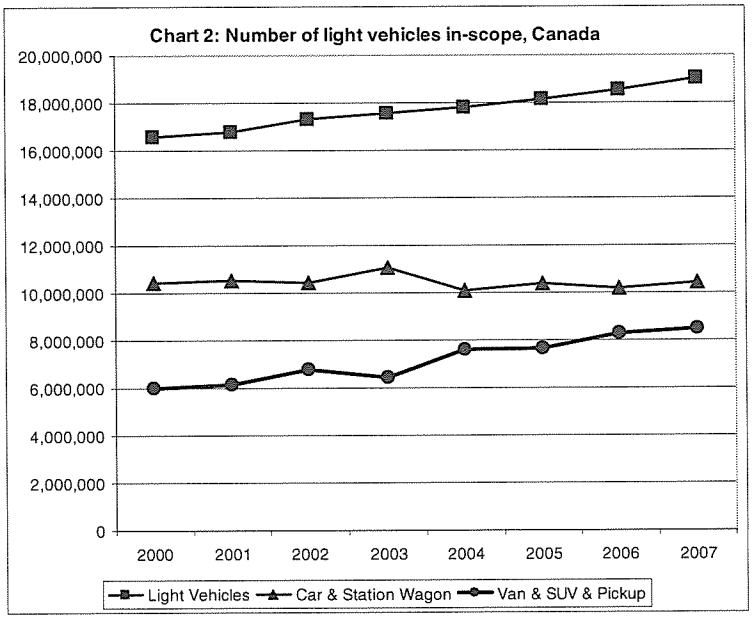
Chart 1 shows the total kilometres driven by small and large styles. The number of kilometres driven by small styles was down 12% from 2000 to 2007. The use of large styles, on the other hand, increased by 36% during that time. As the chart shows, the kilometres driven by the two styles progressively converged. In 2000, cars and station wagons contributed 61% of all kilometres driven by light vehicles. By 2007, small and large styles each represented half of the total driving for light vehicles.

The scope of this paper does not allow for a detailed look at the quarterly data available from the survey, but it is worth noting that the most recent quarters from the survey in 2008 have shown that Canadians have been reducing their use of the large styles – possibly in response to the rising fuel prices in early 2007 and then much of 2008. Overall kilometres driven in the large styles have been down when comparing to the same quarter the previous year in four of the last five published quarters up to and including the third quarter of 2008.



Source: Statistics Canada, Canadian Vehicle Survey, CANSIM 405-0063.

The number of vehicles in each category covered by the survey shows that the vans, SUVs and pickups were increasing rapidly from 2000 to 2007, while cars and station wagons remained virtually unchanged (Chart 2). There were 41% more of the larger styles in Canada in 2007 compared to 2000, and a very small decline in the smaller types over that time (-0.1%).



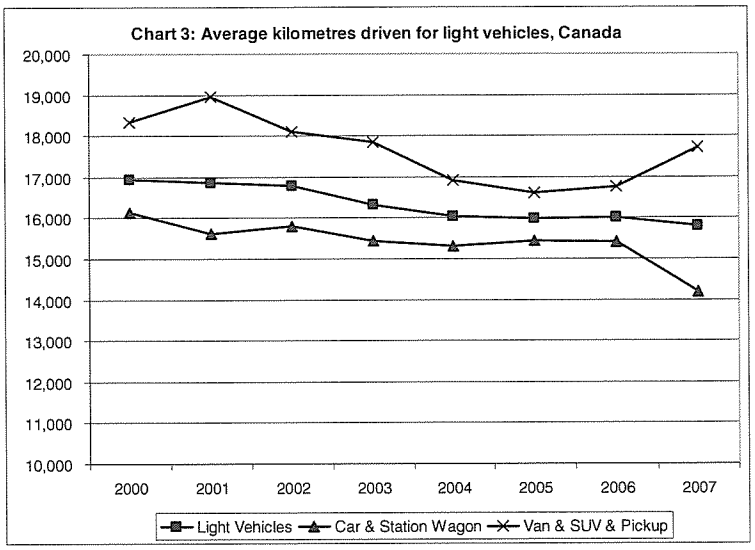
Source: Statistics Canada, Canadian Vehicle Survey, CANSIM 405-0064.

These two factors combined have created a situation where the average distance driven annually per vehicle has decreased three times more for the smaller body styles than it has for the larger ones (Chart 3). In part due to large swings in 2007, the average has dropped by 12.0% for cars and station wagons, and 3.4% for vans, SUVs and pickups since the survey began.

During the 2000 to 2007 time frame, while Canadians drove overall only a little more each year, they shifted more and more of their driving to their newly acquired vans, sport utility vehicles and pickup trucks.

It is again worth noting that the most recent quarterly data suggests that this trend has at least temporarily been reversing. While the

average distance driven per vehicle for the larger styles has decreased in each of the three available quarters for 2008, it has increased in two of the three for the smaller styles.



Source: Statistics Canada, Canadian Vehicle Survey, CANSIM 405-0063, 405-0064.

Characteristics[1]

The CVS provides a rich source of data that go beyond simply measuring distance travelled by motor vehicles. The vehicle log allows users to analyse driving behaviour from a number of angles such as age of driver, age of vehicle, gender of the driver, household income for the vehicle owner, etc. This section will take a deeper

[1] Note that all the data presented in this section represent driving in Canada's provinces only. The vehicle log is not used in the territories, therefore more detailed breakdowns of driving behaviour are not available.

look at some of the key driver and vehicle characteristics available for both small and larger passenger styles.

Driver age

Overall, the Canadian Vehicle Survey has shown a steady decline in the proportion of kilometres driven by people younger than 35 years old. As Table 2 shows, in 2000 they accounted for 22% of all kilometres driven, and by 2007 that was down to 12%. This same trend has occurred for both large and small vehicle styles.

On the other hand, drivers 55 years or older have gone in the opposite direction. In 2000, they accounted for 23% of the driving activity, and rose to 41% in 2007. Note that these shifts are considerably more pronounced than are the overall changes in demographics for the country. Between 2000 and 2006, for example, the population 55 years and over increased 19%. As was the case with drivers under 35 years of age, the upward trend is similar for both body styles.

Table 2 – Percent of light vehicle-kilometres driven by age of driver, Canada excluding territories

		Less than 35 years	35 to 54 years	55 years and over
Overall	2000	22%	55%	23%
	2004	17%	51%	32%
	2007	12%	47%	41%
Small	2000	24%	51%	25%
	2004	18%	46%	36%
	2007	14%	43%	42%
Large	2000	20%	60%	20%
	2004	15%	57%	28%
	2007	10%	51%	39%

Source: Statistics Canada, Canadian Vehicle Survey, special tabulations.

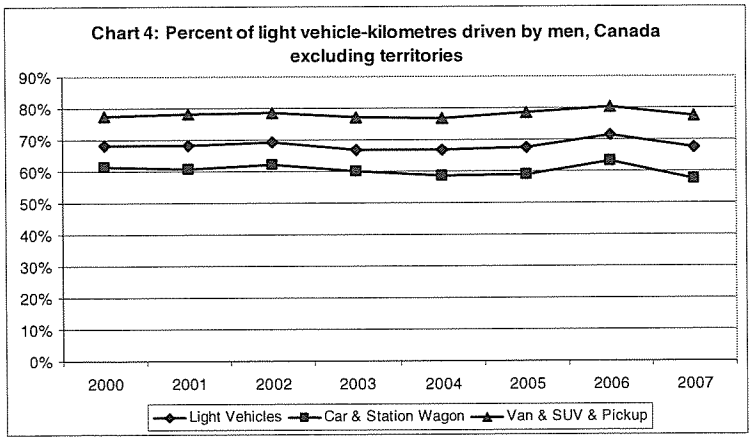
There are also some important similarities and differences for the two styles among the age groups. Both the younger (less than 35 years

old) and older (over 55) age groups have reasonably similar use of the small and large body styles. The middle group (35 to 54), however, use large styles much more frequently. This is probably not surprising, given that this is the group most likely to have larger families to move around.

Gender of Driver

Men are the principal drivers in Canada. Overall, they have typically driven approximately 68% of light vehicle kilometres, a proportion that has varied reasonably little throughout the history of the survey. With regard to body type, men are more likely to be behind the wheel of the larger styles. Since the survey began, the percentage of kilometres driven by men in vans, SUVs and pickups has hovered around 77%-78%.

For the smaller styles, while men are still the dominant drivers, they drive them less than they do the bigger vehicles. They have typically represented around 60% of all kilometres driven for vans, SUVs and pickups.

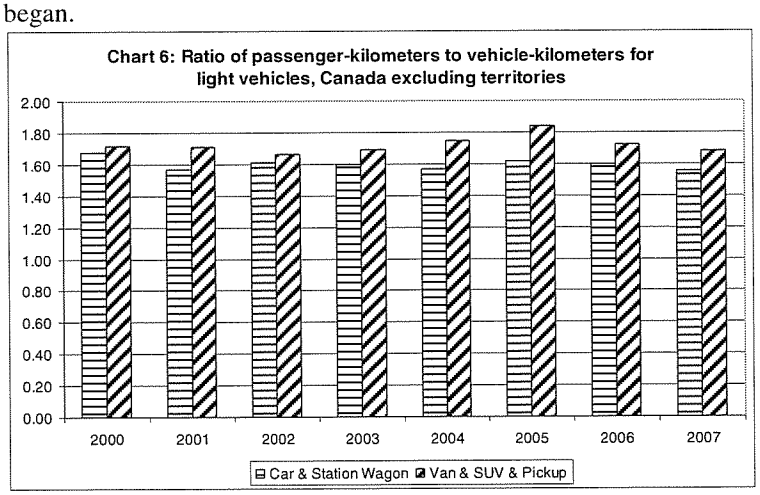


Source: Statistics Canada, Canadian Vehicle Survey, special tabulations.

Passengers

Among the myriad of reasons people would say contribute to their choice of which vehicle to drive, greater cargo and passenger space would logically be among the reasons for choosing a van, SUV or pickup truck. Therefore, we would expect to see that the larger body styles carry more passengers.

The ratio of passenger-kilometres[2] to vehicle-kilometres is slightly higher for the larger passenger vehicles. Larger passenger vehicles have generally seen around 1.7 passenger-kilometres for every vehicle-kilometre the last few years whereas small types have shown around 1.6 passenger-kilometres for every vehicle-kilometre. Both styles have shown a small increase in their ratios since the survey began.



Source: Statistics Canada, Canadian Vehicle Survey, special tabulations.

Given their size, it is perhaps surprising that the passenger ratio difference between the small and large styles is as small as it is.

[2] Passenger-kilometres are the sum of the distances traveled by individual passengers (the driver being considered as one of the passengers). For example, for a vehicle with three passengers (the driver being one of them) that is driven on a distance of 10 kilometres, the number of passenger-kilometres will be 30.

Provincial use

Drivers in the western provinces use larger passenger vehicles more than those in central Canada or the East (Table 3). Vans, SUVs and pickup trucks were used in close to two-thirds of all light vehicle driving activity in Saskatchewan and Alberta in 2007, and close to 60% in British Columbia. Drivers in Québec, on the other hand, drove their big vehicles the least at 40% of all kilometres driven by light vehicles.

Table 3: Percent of light vehicle-kilometres driven by large body styles, Canada excluding territories

	2000	2004	2007
Newfoundland and Labrador	42%	50%	46%
Prince Edward Island	31%	41%	49%
Nova Scotia	36%	42%	47%
New Brunswick	45%	44%	48%
Quebec	31%	36%	40%
Ontario	37%	36%	49%
Manitoba	47%	49%	48%
Saskatchewan	44%	52%	65%
Alberta	53%	63%	67%
British Columbia	47%	49%	57%

Source: Statistics Canada, Canadian Vehicle Survey, special tabulations.

Income

The 2007 reference year represents the first time the Canadian Vehicle Survey has household income information. This can therefore be combined with vehicle characteristics and driving behavior.

There are a number of important differences between the two body styles where household income is concerned. First, three times more driving is done for business purposes[3] for the larger group. This is understandable given how many vans and especially pickup trucks are used by businesses.[4] Second, households earning less than $20,000 are half as likely to be driving a van, SUV or pickup. The higher price tag makes the larger styles less accessible to lower income earners.

There are also smaller differences showing for households with annual incomes between $20,000 and $79,999. Both income categories within that range reported using cars and wagons more frequently than larger body styles. There was virtually no difference, however, in the proportion of driving done by the $80,000 or more income group in each of the two body styles.

Table 4: Percentage of light vehicle-kilometres driven by household income range, 2007 (Canada excluding territories)

	Car & Station Wagon	Van & SUV & Pickup
Vehicle Business Use Only	8%	25%
Up to $20,000	6%	3%
$20,000-$49,999	33%	25%
$50,000-$79,999	24%	19%
$80,000 - and over	29%	28%
Total	100%	100%

Source: Statistics Canada, Canadian Vehicle Survey, special tabulations.

[3] The CVS does not ask about household income for respondents who say their vehicle is used solely for business purposes.

[4] In 2007, 8% of small passenger style driving was part of the driver's job. It was 28% for the larger styles.

Fuel efficiency

Another area where there is a clear difference between the two vehicle styles is, not surprisingly, fuel efficiency[5]. Larger vehicles consume more fuel to cover the same distances, in general, than do smaller vehicles. It is worth noting that both vehicle groups have shown small improvements in fuel efficiency from 2004-2007.

Table 5: Fuel efficiency (L/100km) for light vehicles, Canada excluding territories

	2004	2005	2006	2007
Car & Station Wagon	9.3	9.1	9.1	9.0
Van & SUV & Pickup	13.3	12.6	12.9	12.8

Source: Statistics Canada, Canadian Vehicle Survey, special tabulations.

Conclusion

Concerns over the environment are typically among the top concerns expressed by Canadians in opinion polling. Given that road transportation is a large contributor to greenhouse gas emissions, it is important to understand driving behaviour. The Canadian Vehicle Survey provides a unique source for understanding how Canadian drivers use their vehicles. This report focused on how Canadian drivers use their large and small passenger vehicles.

We have seen that there are a number of both similarities and differences in the way drivers in Canada use their cars and wagons

[5] Due to changes in the way in which the survey collects fuel information, comparisons are only possible from 2004 to 2007.

compared to their vans, SUVs and pickup trucks. In terms of similarities, for example, while there is a large gap in driving activity between men and women, it is roughly the same for small and large styles. Also, large styles carry more passengers, but perhaps not as many more as one might expect.

The two groups differ in that vans, SUVs and trucks are more popular when the vehicle is used for business purposes only, and they are used less by households in the lowest income group. We have seen that larger passenger vehicles are driven proportionally more in the Western Provinces compared to the rest of the country. Finally, fuel efficiency is very different in the small body styles compared to the bigger group.

Note

I would like to thank Gord Baldwin, Bruce Meyer, Ed Hamilton, and Sean Fagan of Statistics Canada as well as Shane Norup and Amandeep Garcha of Natural Resources Canada for their valuable comments and criticisms as this paper evolved. I retain all responsibility for any remaining errors.