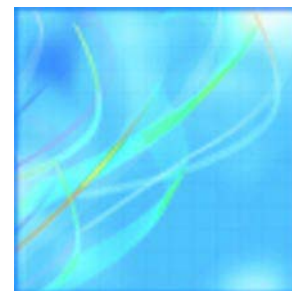


## Technical paper

Environment Accounts and Statistics Analytical and  
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# Personal Use Vehicles in Canada: Fuel Consumption Profile and Comparative Analysis of the 2007 Canadian Vehicle Survey Results



by Chris Birrell

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# Personal Use Vehicles in Canada: Fuel Consumption Profile and Comparative Analysis of the 2007 Canadian Vehicle Survey Results

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### Symbols

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- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0<sup>s</sup> value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- p preliminary
- r revised
- x suppressed to meet the confidentiality requirements of the *Statistics Act*
- E use with caution
- F too unreliable to be published

Other symbols used in this publication:

- A Excellent, coefficient of variation is 0.01% to 4.99%
- B Very good, coefficient of variation is 5.00% to 9.99%
- C Good, coefficient of variation is 10.00% to 14.99%
- D Acceptable, coefficient of variation is 15.00% to 24.99%

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## ***Abstract***

The Canadian Vehicle Survey (CVS) is a voluntary, vehicle-based survey that provides quarterly and annual estimates of road vehicle activity. This includes vehicle-kilometres and passenger-kilometres as well as a number of other elements related to the trip such as gender of driver, time of day and season.

In 2007, the sample size of the CVS was increased in order to address a data gap regarding consumption of fuel for personal use. The CVS was seen as a possible solution to getting better insight into the household component of fuel consumption. By differentiating between types of vehicle use the CVS can provide estimates of fuel consumed for personal and business purposes.

The aims of this report are twofold. The first is to present a national profile of annual vehicle fuel consumption by type of use. The second is to compare the fuel quantity estimates of the CVS with other data sources, especially those data generated by Statistics Canada. This data comparison will provide grounding for future work using these data. Explanations are offered to account for discrepancies between the data.

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# **Personal Use Vehicles in Canada: Fuel Consumption Profile and Comparative Analysis of the 2007 Canadian Vehicle Survey Results**

by Chris Birrell

## **1 Introduction**

The Canadian Vehicle Survey (CVS) is a voluntary, vehicle-based survey that provides quarterly and annual estimates of road vehicle activity. This includes vehicle-kilometres and passenger-kilometres as well as a number of other elements related to the trip such as gender of driver, time of day and season (see "References" section no. 2, Statistics Canada, 2008).

In 2007, the sample size of the CVS was increased in order to address a data gap regarding consumption of fuel for personal use. The CVS was seen as a possible solution to getting better insight into the household component of fuel consumption. By differentiating between types of vehicle use the CVS can provide estimates of fuel consumed for personal and business purposes.

The distinction between the type of vehicle use could potentially pave the way for a number of improvements to existing statistics that use household fuel consumption data:

1. total household energy use and total greenhouse gas emissions;
2. household use of transportation fuels;
3. analysis of trends in the household component of total greenhouse gas emissions.

This report aims to present a national profile of annual vehicle fuel consumption by type of use –personal or business. More importantly, the analysis focuses on the comparison of the fuel quantities estimated via the CVS and other known data sources that produce similar types of information, particularly other data sources within Statistics Canada. The data comparison will provide further validation and foundation for future work using the CVS datasets on fuel consumption by type of vehicle use.

## **2 Canadian Vehicle Survey 2007: personal or business vehicle use and fuel consumption data**

### **2.1 Survey overview and additional questions for 2007**

The CVS is a cross-sectional sample based survey. The survey consists of two steps. The first step is a computer assisted telephone interview (CATI) with the registered owners of the sampled vehicles. The 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 or her vehicle type. The vehicle log asks detailed information about vehicle trips, distance driven, vehicle type, fuel consumption, as well as demographic profile of drivers and other related information.<sup>1</sup>

1. A complete copy of the questionnaire "Canadian Vehicle Survey – L" can be seen at the Integrated Metadatabase (IMDB) survey number 2749 ([http://www.statcan.gc.ca/imdb-bmdi/instrument/2749\\_Q2\\_V7-eng.pdf](http://www.statcan.gc.ca/imdb-bmdi/instrument/2749_Q2_V7-eng.pdf)).

In 2007, respondents driving vehicles less than 4.5 tonnes (light vehicle category) were asked if the vehicle was for personal or business use. This was consistent with the general notion that personal use vehicles fall primarily in the light vehicle category and that only a very small portion of overall fuel consumption would be attributable to people driving very large vehicles for personal use. The following question was added to the CATI portion of the survey in order to determine if trips were for personal or business use:

Is this vehicle used for business only, personal use only or a combination of business and personal use?

Respondents who stated that the vehicle was used for a combination of personal and business use were asked a follow-up question to assign a percentage of use.

Driving for business purposes was defined to include the following activities: service calls, sales calls, deliveries and pick ups, as well as business trips. Taxis are also in this group.<sup>2</sup> If the trip was part of the driver's job, then the trip was understood to be classified under business use. Therefore, driving for personal use could be interpreted as any type of driving that cannot be connected directly with work purposes. Vehicle use to commute to and from work is not considered business use (driving as part of the job).

## 2.2 Scope of report and survey highlights

In 2007, the CVS had a sample of 26,987 vehicles drawn from ten provinces. Another 11,693 vehicles were included in the sample for the three territories. Provincial response rates ranged from 53% in Alberta to 69% in Prince Edward Island (see "References" section no. 2, Statistics Canada, 2008, pages 32 and 37). All motor vehicles except buses, motorcycles, off-road vehicles and special equipment were included in the CVS sample.

The 2007 CVS estimated that 0.34% of the total vehicle population is fuelled by something other than gasoline or diesel.<sup>3</sup> Given such a small proportion, the CVS estimates for the quantity of fuel consumed by these types of vehicles are not reliable. The focus of the comparison between the CVS and other sources will, therefore, concentrate only on vehicles fuelled by gasoline and diesel.

Table 1 illustrates the overall estimates of fuel consumption by vehicle type. In 2007, vehicles consumed 42,694 megalitres (ML) of gasoline and diesel with 76% of this total coming from light vehicles (less than 4.5 tonnes) and the rest from heavy vehicles (4.5 tonnes and over).

**Table 1**  
**Fuel consumption by size of vehicle, Canada excluding territories, 2007**

	Gasoline		Diesel		Total	
	megalitres	percent share	megalitres	percent share	megalitres	percent share
<b>Total, all vehicles</b>	<b>31,624.8</b>	<b>100</b>	<b>11,068.9</b>	<b>100</b>	<b>42,693.7</b>	<b>100</b>
Vehicles up to 4.5 tonnes	31,305.0	99	1,292.1	12	32,597.1	76
Trucks 4.5 tonnes to 14.9 tonnes	315.8	1	1,557.9	14	1,873.7	4
Trucks 15 tonnes and over	F	F	8,218.8	74	8,218.8	19

**Note(s):** This table does not include other fuel types (natural gas, propane, ethanol, et cetera).

**Source(s):** Statistics Canada, CANSIM table 405-0115, accessed December 16, 2008.

Canadians driving light vehicles used 32,597 ML of fuel, 75% of which was identified as personal use while the remaining 25% was for business use (Table 2).

2. *Ibid.*

3. Special calculation, Statistics Canada, 2007 Canadian Vehicle Survey – count of vehicles by type of fuel purchased.



**Table 2**  
**Fuel consumption for light vehicles by type of use and province, 2007**

	Personal		Business		Total
	megalitres	percent	megalitres	percent	
<b>Canada</b>	<b>24,452<sup>A</sup></b>	<b>75</b>	<b>8,145<sup>B</sup></b>	<b>25</b>	<b>32,597</b>
Newfoundland and Labrador	339 <sup>B</sup>	78	95 <sup>E</sup>	22	434
Prince Edward Island	107 <sup>B</sup>	78	31 <sup>E</sup>	22	138
Nova Scotia	798 <sup>B</sup>	77	241 <sup>D</sup>	23	1,038
New Brunswick	607 <sup>B</sup>	75	200 <sup>E</sup>	25	807
Quebec	5,223 <sup>A</sup>	79	1,393 <sup>C</sup>	21	6,615
Ontario	9,524 <sup>A</sup>	77	2,898 <sup>C</sup>	23	12,422
Manitoba	1,022 <sup>B</sup>	82	226 <sup>D</sup>	18	1,248
Saskatchewan	929 <sup>B</sup>	69	420 <sup>C</sup>	31	1,349
Alberta	3,010 <sup>B</sup>	64	1,715 <sup>C</sup>	36	4,725
British Columbia	2,894 <sup>B</sup>	76	927 <sup>C</sup>	24	3,821

**Note(s):** Canadian Vehicle Survey data only includes light duty vehicles. Personal and business split is done by percentage of use. Fuel includes gasoline and diesel.

**Source(s):** Statistics Canada, Transportation Division, Canadian Vehicle Survey 2007 (survey number 2749).

Across the country, Ontario had the highest share of total transportation fuel consumption (38%) for light vehicles, followed by Quebec (20%), Alberta (14%) and British Columbia (12%). This is to be expected, as these were the provinces with the greatest numbers of vehicles (see "References" section no. 2, Statistics Canada, 2008).

### 3 Comparing the CVS to other data sources on fuel consumption

In order to use this new data effectively going forward, comparing the CVS data to other sources that collect and publish similar types of data was deemed to be important. This comparison will set the stage for future analytical work that will be conducted using the CVS, including the personal or business split, as a data source.

Aside from the retail pump sales data from the *Monthly Refined Petroleum Products Survey*,<sup>4</sup> a common limitation on the comparability of the CVS data with other data used in this report is that CVS data uses 2007 as the reference period. For the other sources against which the CVS data are compared, only 2006 or earlier data are available. However, it should be noted that there has been relatively small changes in fuel consumption over the years. For example, from 2006 to 2007, the CVS showed a 1.5% increase in gasoline consumption by light vehicles to 31,305 ML. Since 2004, there has only been a 2% overall increase in gasoline consumption by light vehicles.

#### 3.1 Retail pump sales, 2007

The *Monthly Refined Petroleum Products Survey*<sup>5</sup> publishes annual estimates of provincial retail pump sales in Canada. When comparing these data to the CVS, it is important to note that this survey reports fuels distributed at retail locations.

The overall totals for diesel and gasoline produced by the two surveys appears to be very close. Table 3 shows that the overall estimate for the consumption of gasoline and diesel for the retail pump sales figures is 1 percent more than the total volume of gasoline and diesel produced by the CVS. Although not perfectly comparable, as explained below, the comparison seems to indicate promising results in terms of the CVS estimates.

4. Statistics Canada, CANSIM Table 128-0010 and *Monthly Refined Petroleum Products* (survey number 2150).

5. *Ibid.*

**Table 3**  
**Difference between Retail pump sales and Canadian Vehicle Survey estimates including heavy vehicles, 2007**

	Retail pump sales			Difference from Canadian Vehicle Survey <sup>1</sup>	Canadian Vehicle Survey total difference from Retail pump sales
	Gasoline	Diesel	Total		
	megalitres				percent
<b>Total</b>	<b>37,572</b>	<b>5,692</b>	<b>43,264</b>	<b>-570</b>	<b>-1</b>

1. Canadian Vehicle Survey data includes all vehicles. Refer to total in table 1 "Fuel consumption by size of vehicle, Canada excluding Territories, 2007".  
**Source(s):** Statistics Canada, CANSIM tables 128-0010 and 405-0115, accessed December 16, 2008.

For the purpose of comparing the CVS with respect to personal fuel use, it is necessary to look only at light vehicles. This type of vehicle cannot readily be excluded from the retail pump sales data. There are vehicles such as heavy vehicles, buses, motorcycles and off-road vehicles that use these retail pumps. There are also many examples of other types of special equipment that would fill up at retail locations including: boats, lawnmowers, snow blowers, gas lawn trimmers etc. These vehicles and implements are not in the population of interest for the CVS.

Because of some basic differences in scope, when the heavy vehicles are excluded from the CVS, it is expected that retail pump sales will report substantially higher volumes of fuel than those estimated by the CVS where only light vehicles are included. Excluding heavy vehicles, the difference between CVS fuel estimates and the retail pump sales data shows that the retail pump sales data are 33% higher than the CVS.

### 3.2 Comparing CVS data to the Environment Accounts and Statistics Division (EASD) fuel estimates

Environment Accounts and Statistics Division produces data on energy use by sector and fuel type. The most recent year of available data is 2004. It contains values on gasoline and diesel consumption by household, business and non-business sectors.

An attempt was made to compare the personal use CVS data to the household component of the EASD figures. While there is a definite spread between the years of data available, this comparison does provide a useful perspective for looking at the personal component of transportation fuel.

To produce energy consumption estimates for the household sector, EASD applies the personal or business fuel consumption allocation from the Input-Output Accounts. This allocation is applied to the retail pump sales data in order to assign an appropriate amount of motor gasoline and diesel fuel to the household sector.<sup>6</sup>

The business component of transportation fuel consumption is not readily available through these data because of non-transportation uses of fuel that are captured by the data set. For example, agricultural production activities such as harvesting grain are captured by EASD but not by the CVS.

The values produced by EASD are for all sectors regardless of how the fuel is being consumed while the CVS is concerned only with fuel consumption for transportation purposes. For instance, the consumption of diesel by a diesel generator or in agricultural production would be captured by the EASD figures, whereas the CVS would not measure this number. Because few people have diesel generators, and most fuel consumption at the household level is for transportation purposes, the data sources should be comparable for the household sector.

Table 4 illustrates that in 2004 the household sector, was responsible for 28,860 ML of gasoline and diesel as measured by EASD. This total is 11% lower than the 2007 CVS total quantity for gas and diesel of 32,597 ML.

6. Retail pump sales include both business and household use of fuel. The household proportion of these sales is based on data from the annual Survey of Household Spending.

**Table 4**  
**Fuel consumption by sector**

	Business sector	Non-business sector	Household sector	Total
	megalitres			
1990	27,862	1,326	21,789	50,976
1991	26,430	1,218	21,197	48,845
1992	26,333	1,291	21,670	49,294
1993	27,267	1,255	22,404	50,926
1994	29,011	1,280	23,207	53,497
1995	30,164	1,322	23,077	54,563
1996	31,203	1,320	23,384	55,907
1997	32,139	1,424	23,996	57,559
1998	32,455	1,585	24,914	58,954
1999	33,592	1,651	25,498	60,741
2000	34,649	1,703	25,520	61,873
2001	33,753	1,670	26,320	61,743
2002	32,864	1,834	27,494	62,193
2003	34,022	1,931	28,150	64,103
2004 P	35,486	2,030	28,860	66,376

**Note(s):** Conversion of originally reported terajoules of energy to megalitres used the following conversion factor: Gasoline 35 TJ/ML, Diesel 38.3 TJ/ML (see "References" section no. 1, Environment Canada, April 2008, p. 436).

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008, special tabulation.

For a more accurate comparison, it is the value for the 2007 CVS personal component of light duty gasoline and diesel consumption (24,452 ML) which more closely aligns with the concept that is being captured by the EASD value. This means the values produced by EASD are 18% higher than the comparable 2007 CVS values. A simple linear regression to project the values that EASD would likely produce for household fuel consumed based on the past trend showed the EASD value to be estimated at 22% higher (29,832 ML) than the CVS, if the projected values are accurate.

Taking into account the difference in reference years and the yearly increases in fuel consumption since 2004, would narrow down the difference. Conceptually, these two sources are the closest to one another, of all those compared in this study. The main difference is the amount of gasoline consumed by households operating private boats, off-road vehicles and gas-powered equipment which are captured in the EASD estimates but not in the CVS. However, these amounts represent a relatively small proportion of overall total, hence the estimates from EASD's energy use accounts would be slightly higher than the CVS estimates for total gas and diesel use.

### 3.3 Comparison of CVS with non-fuel quantity data: Survey of Household Spending and fuel price data

Another method used to compare the CVS data was to estimate fuel consumption through average provincial fuel prices and reported expenditures on fuel at the household level.

Average household level expenditures on gasoline and other fuels for owned and leased automobiles and trucks/vans is available yearly through the *Survey of Household Spending* (SHS survey no. 3508). In the SHS, people are asked for their expenses in relation to automobile expenditures. They are asked to report annual expenditures for transportation fuel.

The monthly price for regular unleaded gasoline and diesel fuel at full service and self-service fuel stations by urban area is available through CANSIM Table 326-0009 (Average retail prices for gasoline and fuel oil, by urban centre, monthly).

In order to calculate a provincial average yearly fuel cost, monthly fuel price data was used to calculate the yearly average for each urban centre available. This yearly average was then converted into a provincial average based on the urban areas reporting in each province.

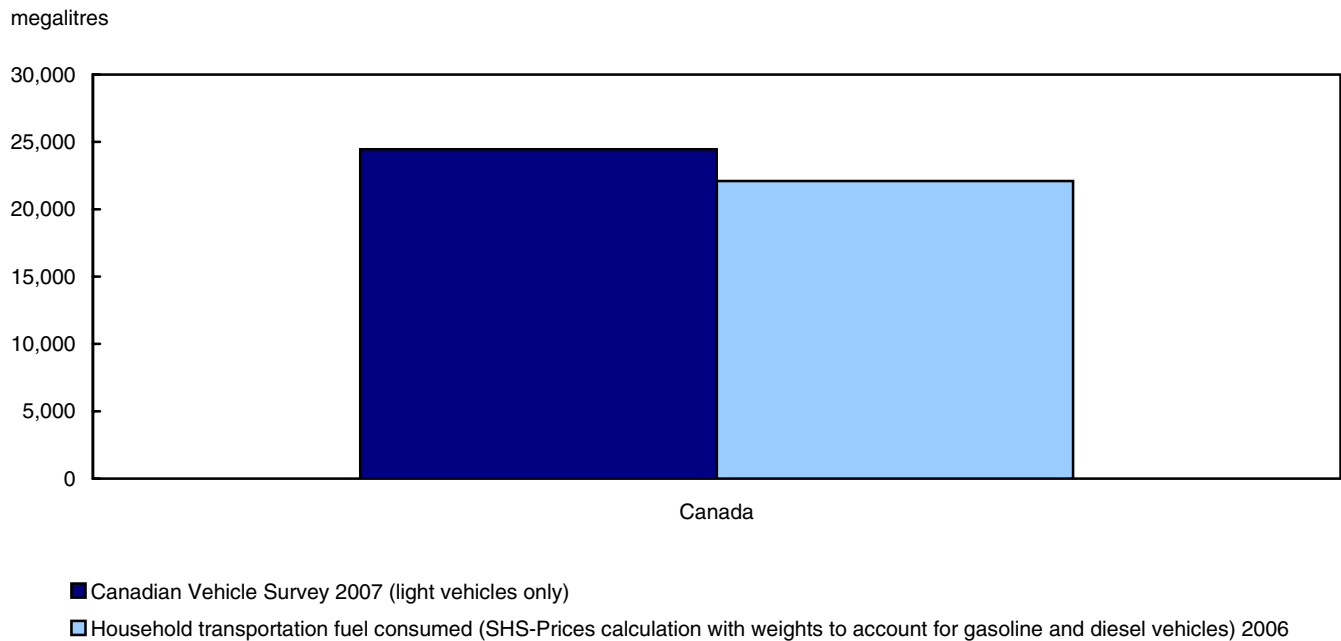
Total litres of fuel was then calculated for each province by using the following formula:

$$L = \left( H * W^g * \frac{E}{P^g} \right) + \left( H * W^d * \frac{E}{P^d} \right), \text{ where}$$

- L = Total litres of fuel*
- H = Total number of households*
- W<sup>g</sup> = Gasoline weight*
- E = Average expenditure on fuel per household*
- P<sup>g</sup> = Average full service gasoline price*
- W<sup>d</sup> = Diesel weight*
- P<sup>d</sup> = Average full service diesel price*

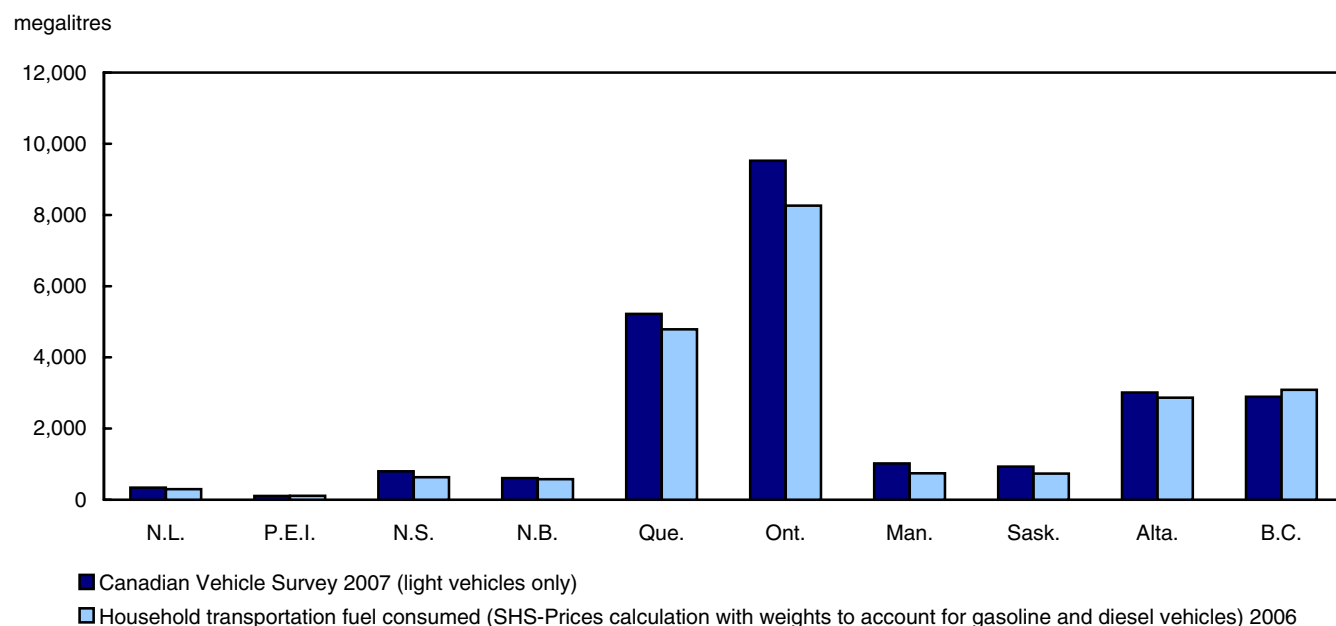
Gasoline and diesel weights were calculated for each province using provincial vehicle counts for the 2007 CVS. These are composed of the ratio of the number of gasoline vehicles to the total vehicle count and the number of diesel vehicles to the total vehicle count. The weight was then used as a proxy to estimate the proportion of households that spent money on gasoline vis-à-vis diesel.

**Chart 1**  
**Comparing Canadian Vehicle Survey personal level fuel consumption with household level estimates produced using Survey of Household Spending and fuel price data**



**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008.

**Chart 2**  
**Comparing Canadian Vehicle Survey fuel consumption for personal use with household level estimates produced using Survey of Household Spending and fuel price data by province**



**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008.

**Table 5**  
**Survey of Household Spending and fuel price data, 2006**

	Fuel consumed	Difference from Canadian Vehicle Survey 2007 <sup>1</sup>	Survey of Household Spending - Prices calculation difference from Canadian Vehicle Survey
	megalitres		percent
<b>Canada</b>	<b>22,100</b>	<b>-2,352</b>	<b>-10</b>
Newfoundland and Labrador	297	-42	-13
Prince Edward Island	111	4	4
Nova Scotia	631	-167	-21
New Brunswick	577	-30	-5
Quebec	4,787	-435	-8
Ontario	8,262	-1,262	-13
Manitoba	745	-277	-27
Saskatchewan	734	-195	-21
Alberta	2,869	-140	-5
British Columbia	3,086	192	7

1. Canadian Vehicle Survey data only includes light duty vehicles. Refer to total in Table 2 "Fuel consumption for light vehicles by type of use and province, 2007".

**Note(s):** This table uses the weighted values for gasoline and diesel consumption.

**Source(s):** Statistics Canada, CANSIM tables 203-0007 and 326-0009 (accessed December 16, 2008), special tabulation.

This method provides an estimate of fuel consumption at the household level, separate from business consumption. The estimates produced are 10 % lower at the national level than the personal use estimates produced by the CVS with half of the difference between the two data sets coming from Ontario (Table 5).

### 3.4 Comparison of CVS to National Inventory Report 1990 – 2006: Greenhouse Gas Sources and Sinks in Canada

The National Inventory Report (NIR) is produced by Environment Canada and was submitted to the United Nations Framework Convention on Climate Change in April, 2008. The report contains a component that estimates greenhouse gas emissions (CO<sub>2</sub>) in Canada by vehicle type and province. This estimate is produced by applying a conversion factor<sup>7</sup> to a fuel consumption value by vehicle type in order to estimate greenhouse gas emissions.

Fuel consumption is calculated using the following formula:

$$\text{Fuel consumption} = \text{Population} * \text{Vehicle-kilometres-traveled} * \text{Fuel consumption}^8$$

Fuel consumption – Gasoline and diesel consumption is estimated first by using the population, vehicle kilometres and fuel consumption ratios. This amount is then adjusted based on top-down estimates from Statistics Canada's *Report on energy supply and demand* (RES<sup>9</sup>). If the amount from the model calculation is greater than the amount of fuel reported in the RESD, then the two amounts are averaged.

Population – Light duty vehicle and truck populations for 1990 to 2002 were obtained from the Canadian Vehicles in Operation Census, maintained by DesRosiers Automotive Consultants Inc. From 2003 to 2006 the number of light duty vehicles and trucks were estimated based on observed trends.

Vehicle-kilometres traveled – This is an annual measure of kilometres traveled for a vehicle. Odometer readings are estimated for the country based on emissions monitoring tests from Ontario in 2004.

Fuel consumption ratio (FCR) – Average provincial FCRs by vehicle class and model year are estimated using provincial vehicle sales. These fuel consumption ratios are adjusted to be 25% higher than the laboratory ratings figures to account for real life driving conditions.

The main difference between the two data sources is that the CVS is a sample based survey whereas the NIR compiles information from several different sources in order to model emissions based on fuel consumption values.

Another difference between these two sources is that each defines light vehicles differently. The CVS defines light vehicles as those vehicles with a gross vehicle weight rating (GVWR) below 4.5 tonnes, whereas in the NIR, light vehicles are those with a GVWR below or equal to 3.9 tonnes. Given that the CVS has a higher threshold for defining light vehicles, it may be expected that there is also a corresponding higher estimate for fuel consumed by light vehicles in the CVS. This is not the case, as will be shown later.

Data tables received from Environment Canada show that the overall total is 11% higher than what is produced by the CVS (Table 6).

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7. For a breakdown of the conversion factors incorporated see Appendix Table A.

8. An overview of the components for the model is provided here. For the full detailed explanation see "References" section no. 1, Environment Canada, April 2008, pages 278 to 281.

9. The RESD derives its fuel estimates from the *Monthly Refined Petroleum Products Survey*, the same source that produces the retail pump sales data.

**Table 6**  
**Fuel inputs for greenhouse gas model received from Environment Canada**

	Transportation mode				Total	Difference from Canadian Vehicle Survey 2007 <sup>1</sup>	National Inventory Report difference from Canadian Vehicle Survey
	Light duty diesel truck	Light duty diesel vehicle	Light duty gasoline truck	Light duty gasoline vehicle			
	megalitres					percent	
<b>Canada</b>	<b>850</b>	<b>159</b>	<b>18,788</b>	<b>16,456</b>	<b>36,253</b>	<b>3,656</b>	<b>11</b>
Newfoundland and Labrador	8	0	320	235	564	130	30
Prince Edward Island	4	1	103	89	197	59	43
Nova Scotia	23	7	577	524	1,132	93	9
New Brunswick	21	4	530	434	989	181	22
Quebec	164	63	3,454	4,353	8,033	1,418	21
Ontario	184	53	7,244	6,691	14,172	1,751	14
Manitoba	46	3	754	492	1,295	47	4
Saskatchewan	100	3	794	450	1,348	-2	0
Alberta	279	9	2,981	1,506	4,775	50	1
British Columbia	20	17	2,031	1,682	3,749	-71	-2

1. Canadian Vehicle Survey data only includes light duty vehicles. Refer to total in Table 2 "Fuel consumption for light vehicles by type of use and province, 2007".  
**Note(s):** In the National Inventory Report emissions from fuel ethanol are reported within the gasoline transportation sub-categories. In the values reported in this table, ethanol is excluded.

**Source(s):** Environment Canada, April 2008, *National Inventory Report: Greenhouse Gas Sources and Sinks in Canada, 1990-2006* (Model inputs received direct from Environment Canada), (accessed November 18, 2008).

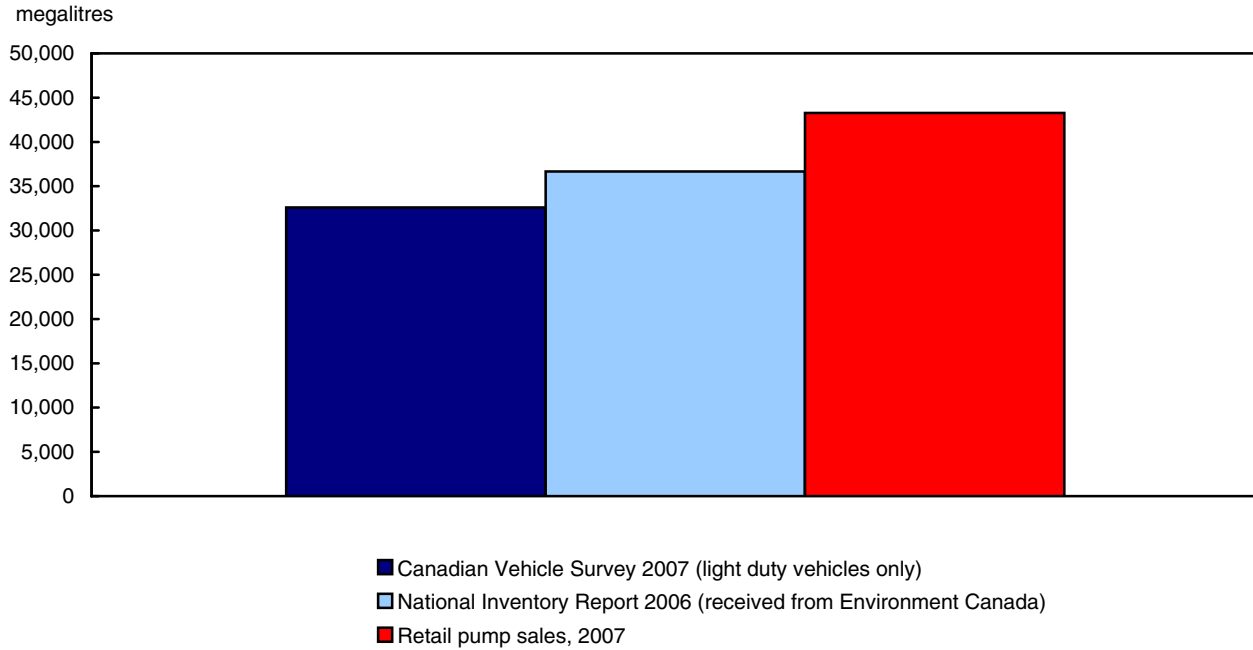
## 4 Conclusion

Each of the data sets used for comparison had differences stemming from various definitions, methods, and scope of the source. The direction of the differences between estimates is generally consistent across the provinces for all of the data comparison methods chosen.

Larger differences are evident between the CVS, excluding heavy vehicles, and the retail pump sales data. In no case is there a higher fuel quantity reported by the CVS than the retail pump sales. This is to be expected because of the broader population coverage by the retail pump sales.

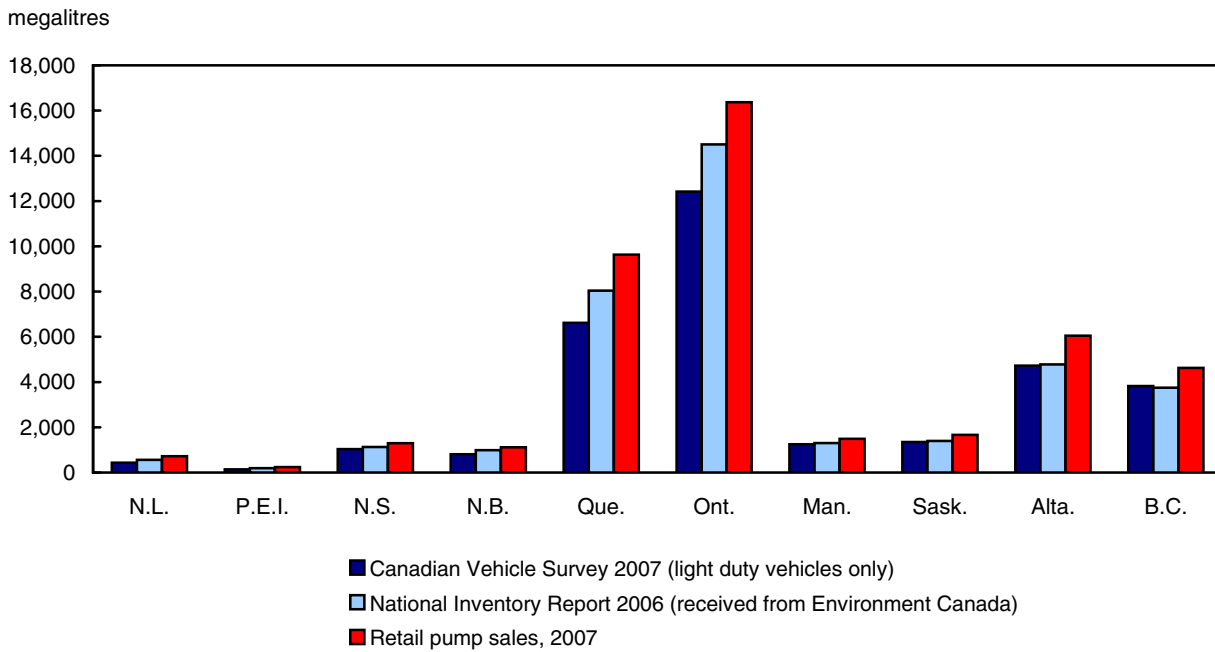
Given the different population definitions and the differences in methodology used by the various sources, the data collected through the CVS do not appear to be unreasonably out of line and could be considered to be at least as accurate as any other estimate.

**Chart 3**  
**Fuel consumption by data source, Canada**



Source(s): Statistics Canada, Environment Accounts and Statistics Division, 2008.

**Chart 4**  
**Fuel consumption by data source and province**



Source(s): Statistics Canada, Environment Accounts and Statistics Division, 2008.



## Appendix

**Table A**  
**National Inventory Report conversion factors**

	Conversion factor
	grams per litre
<b>Vehicle type</b>	
Light duty gasoline vehicles	2,289
Light duty gasoline trucks	2,289
Light duty diesel vehicles	2,663
Light duty diesel trucks	2,663
Propane and natural gas vehicles	1,510

**Source(s):** Environment Canada, April 2008, *National Inventory Report: Greenhouse Gas Sources and Sinks in Canada, 1990-2006* (accessed November 18, 2008).

**Table B**  
**Household transportation fuel consumed, estimated through Survey of Household Spending and fuel price data**

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	megalitres									
<b>Canada</b>	<b>20,211</b>	<b>21,857</b>	<b>22,878</b>	<b>21,731</b>	<b>20,852</b>	<b>24,180</b>	<b>22,388</b>	<b>23,104</b>	<b>22,583</b>	<b>22,100</b>
Newfoundland and Labrador	267	288	314	278	304	323	306	316	305	297
Prince Edward Island	120	116	135	128	103	132	122	124	114	111
Nova Scotia	603	651	726	668	655	710	642	682	650	631
New Brunswick	594	638	668	630	602	667	556	570	598	577
Quebec	4,594	4,630	4,744	4,704	4,399	5,292	4,979	4,967	4,844	4,787
Ontario	7,545	8,446	9,060	8,680	8,242	9,658	9,064	9,564	8,885	8,262
Manitoba	723	836	787	757	799	894	793	813	800	745
Saskatchewan	770	779	795	721	709	749	702	713	694	734
Alberta	2,344	2,666	2,800	2,530	2,540	2,913	2,689	2,590	2,674	2,869
British Columbia	2,651	2,808	2,849	2,635	2,498	2,842	2,534	2,765	3,019	3,086
Yukon	0	0	0	..	0	..	0	..	0	..
Northwest Territories	0	0	0	..	0	..	0	..	0	..
Nunavut	..	..	..	..	..	..	..	..	..	..

1. Statistics Canada, CANSIM tables 203-0007 and 326-0009 (accessed December 16, 2008), special tabulation.

2. Weights were applied under the assumption that the changes to the composition of the vehicle fleet between years is relatively stable. The same weights for gasoline and diesel counts were applied for each year.

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008, special tabulation.

**Table C**  
**Canadian Vehicle Survey compared with other data sources reference table**

	Canadian Vehicle Survey (CVS) 2007	Retail pump sales 2007	National Inventory Report (NIR) - Fuel quantities received from Environment Canada 2006
<b>In scope vehicles</b>			
Data available	All motor vehicles except: buses, motorcycles, off road vehicles and special equipment	Anything filling up at retail pumps	Light duty diesel vehicle; light duty diesel truck; light duty gasoline vehicle, light duty gasoline truck; propane; natural gas and motorcycles
Included in comparative analysis	Gasoline and diesel light duty automobiles	Anything filling up at retail pumps	Gasoline and diesel light duty automobiles
<b>Light vehicles weight</b>	Light truck 4.5 tonnes	Not applicable	Light truck 3.9 tonnes
<b>Fuel type available in data</b>	Gas, diesel, natural gas, propane, ethanol and 'other'	Gas, diesel	Gas, diesel, natural gas, propane
<b>Vehicle population</b>	Registered in Canada anytime during survey reference period	Anything filling up at retail pumps	Light duty vehicle and truck population 2003 to 2006 based on observed trends which are based on 1990 to 2002 vehicles in operation census

**Source(s):** Statistics Canada, Environment Accounts and Statistics Division, 2008.

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## **References**

1. Environment Canada, April 2008, *National Inventory Report: Greenhouse Gas Sources and Sinks in Canada, 1990-2006*.
2. Statistics Canada, 2008, *Canadian Vehicle Survey: Annual, 2007*, Catalogue no. 53-223-X.
3. Statistics Canada, 2009, *Report on Energy Supply and Demand in Canada, 2006*, Catalogue no. 57-003-X.