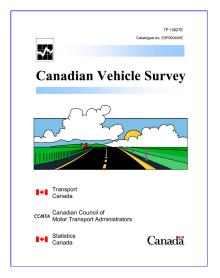




Canadian Vehicle Survey

Second quarter 2004





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Statistics Canada

Transportation Division

Canadian vehicle survey

Second quarter 2004

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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Symbols

The following symbols are used to indicate the quality of the estimates in this publication:

- . 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^{S} value rounded to 0 (zero) where there is a meaningful distintion between
 - true zero and the value that was rounded
- p preliminary
- r revised
- x suppressed to meet confidentiality requirements of the Statistics Act
- A excellent
- B very good
- C good
- D acceptable
- E use with caution
- F too unreliable to be published

The quality of estimates not accompanied by a quality symbol is "good or better".

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1.	Introdu	ction	8
2.	Survey	overview	8
	Survey		
3.	Concept	ts and definitions	9
	3.1 The	e population of interest	9
		finitions of variables in tables	
		finitions of vehicle characteristics	
	3.4 Def	finitions of vehicle usage characteristics	10
4.	Method	ology	11
	4.1 Sur	vey design	11
	4.1.1	Survey population	
	4.1.2	Sample design	
	4.1.3	Estimation	
	4.1.4	Sample size	
	4.2 Dat	ta collection and processing	
	4.2.1	Data collection	
	4.2.2	Edit and imputation	
	4.2.3	Estimation	13
5.	Data qu	ality	14
	5.1 Sou	urces of errors	14
		npling error	
		n-sampling errors	
	5.3.1	Coverage errors	
	5.3.2	Response errors	
	5.3.3	Nonresponse errors	
	5.3.4	Processing errors	
	5.4 Me	asuring quality	
	5.4.1	Response rates	
	5.4.2	Relative imputation rates	
	5.4.3	Coefficient of variation	
	5.4.4	Quality indicator	
	5.5 Not	tes for historical comparison	
6.	Glossar	V	20

List of tables

1.	Number of vehicles on the registration lists by type of vehicle and jurisdiction	21
2.	Number of vehicles on the registration lists by jurisdiction and vehicle model year for vehicles up to 4.5 t	
3.	Number of vehicles on the registration lists by jurisdiction and vehicle model year for trucks 4.5 t - 14.9 t	23
4.	Number of vehicles on the registration lists by jurisdiction and vehicle model year for trucks 15 t or more	24
5.	Estimates of the number of vehicles in scope by type of vehicle and jurisdiction	
6.	Estimates for Canada of the number of vehicles in scope by type of vehicle and vehicle model year	26
7.	Estimates for Canada of the number of vehicles in scope by type of vehicle and vehicle body type	27
8.	Estimates for Canada of the number of vehicles in scope by type of vehicle and type of fuel	28
9.	Estimates of the vehicle-km by type of vehicle and jurisdiction	
10.	Estimates of the passenger-km by type of vehicle and jurisdiction	
11.	Estimates for Canada of vehicle-km by type of vehicle and vehicle model year	31
12.	Estimates of the provincial total of passenger-km by type of vehicle and vehicle model year	
13.	Estimates for Canada of vehicle-km by type of vehicle and vehicle body type	
14.	Estimates of the provincial total of passenger-km by type of vehicle and vehicle body type	
15.	Estimates for Canada of vehicle-km by type of vehicle and type of fuel	
16.	Estimates of the provincial total of passenger-km by type of vehicle and type of fuel	36
17.	Estimates of the provincial total of vehicle-km by type of vehicle and day of the week	
18.	Estimates of the provincial total of passenger-km by type of vehicle and day of the week	
19.	Estimates of the provincial total of vehicle-km by type of vehicle and driver age group	
20.	Estimates of the provincial total of passenger-km by type of vehicle and driver age group	
21.	Estimates of the provincial total of vehicle-km by type of vehicle and sex of driver	41
22.	Estimates of the provincial total of passenger-km by type of vehicle and sex of driver	42
23.	Estimates of the provincial total of vehicle-km by type of vehicle and time of day	
24.	Estimates of the provincial total of passenger-km by type of vehicle and time of day	
25.	Estimates of the provincial total of vehicle-km by type of vehicle and carrying dangerous goods	
26.	Estimates of the provincial total of passenger-km by type of vehicle carrying dangerous goods	46
27.	Estimates of the provincial total of vehicle-km by type of vehicle and type of day	47
28.	Estimates of the provincial total of passenger-km by type of vehicle and type of day	
29.	Estimates of the provincial total of vehicle-km by type of vehicle and road type	
30.	Estimates of the provincial total of passenger-km by type of vehicle and road type	50
31.	Estimates of the provincial total for vehicles up to 4.5 t: passenger-km by passenger age group	
32.	Estimates of the provincial total for vehicles up to 4.5 t: vehicle-km and passenger-km by part of the driver's job	
33.	Estimates of the provincial total for vehicles up to 4.5 t: vehicle-km by origin and destination of trip	53
34.	Estimates of the provincial total for vehicles up to 4.5 t: passenger -km by origin and destination of trip	
35.	Estimates of the provincial total for trucks 4.5 t or more: vehicle-km by vehicle group and trip purpose	
36.	Estimates of the provincial total for trucks 4.5 t or more: passenger-km by vehicle group and trip purpose	
37.	Estimates of the provincial total of vehicle-km by type of vehicle, type of day and time of day	
38.	Estimates of the provincial total of passenger-km by type of vehicle, type of day and time of day	
39.	Estimates of the provincial total of vehicle-km by type of vehicle, driver age group and sex of driver	
40.	Estimates of the provincial total of passenger-km by type of vehicle, driver age group and sex of driver	
41. 42.	Estimates of the provincial total of vehicle-km by type of vehicle, type of fuel and vehicle body type	
42. 43.	Estimates of the provincial total of fuel consumed by type of vehicle, type of fuel and vehicle body type	
	Estimates of the provincial total of number of vehicles in scope by type of vehicle and activity type	
44. 45.	Estimates of the provincial total for trucks 4.5 t – 14.9 t: vehicle-km and passenger-km by activity type	
45. 46.	Estimates of the provincial total for trucks 15 t or more: vehicle-km and passenger-km by activity type Estimates of the provincial total for trucks 4.5 t – 14.9 t: vehicle-km and passenger-km by trip type	
	Estimates of the provincial total for trucks 4.5 t – 14.9 t: venicle-km and passenger-km by trip type	
47.	Estimates of the provincial total for flucks 15 t of more, vehicle-kill and passenger-kill by trip type	67

Highlights

- Over 18.2 million vehicles were in-scope for the Canadian Vehicle Survey during this quarter.
- Between April 1 and June 30, 2004, these vehicles travelled an estimated 80.3 billion kilometres.
- During this quarter, vehicles weighing less than 4 500 kilograms were driven an average of 4 100 kilometres while the largest of the trucks (trucks with gross weight 15 000 kilograms or more) were driven an average of 20 350 kilometres.

1. Introduction

Road vehicles dominate passenger travel and freight traffic. However, prior to the Canadian Vehicle Survey (CVS), no measures of total vehicle-kilometres or passenger-kilometres were available. 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 sex 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.

This document describes concepts, employed methods and discusses data quality. The reference period for all the information presented in this document is the second quarter of 2004.

2. Survey overview

The CVS is a voluntary vehicle-based survey that provides quarterly and annual estimates of road vehicle activity (vehicle-kilometres and passenger-kilometres) of vehicles registered in Canada. A quarterly sample of vehicles is drawn from vehicle registration lists provided by the provincial and territorial governments.

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. If respondents cannot be contacted by phone, the trip log is mailed out with a short questionnaire to collect some of the information normally collected during the CATI.

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.

Survey collection began on February 1, 1999. Only eight provincial / territorial vehicle registration lists were received in time to be included in the sample at that time, but over the remainder of 1999, the other lists were received. Starting October 1, 1999, vehicles from all provinces and territories were included in the survey.

Users who require additional information from Statistics Canada can obtain it from the Transportation Division upon request by phoning 1 866 500-8400 or e-mailing transportationstatistics@statcan.ca.

3. Concepts and definitions

3.1 The population of interest

The *in-scope vehicles* for the CVS include all motor vehicles, except buses (buses were included in the survey prior to 2004), motorcycles, off road vehicles (e.g., snowmobiles, dune buggies, amphibious vehicles) and special equipment (e.g., cranes, street cleaners, snowplows and backhoes), registered in Canada anytime during the survey reference period, that have not been scrapped or salvaged.

The *population of interest* consists of vehicle-days, composed from the in-scope vehicles and the days within the survey reference period.

3.2 Definitions of variables in tables

<u>Vehicle-kilometres</u> is the distance traveled by vehicles on roads.

<u>Passenger-kilometres</u> is 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. Light vehicles (see the *Vehicle type* definition in section 3.3) report the number of passengers for each trip (see the *Trip* definition in section 3.4). The number of passengers in heavy vehicles with gross vehicle weight of 4.5 tonnes or more is calculated as the average of the number of passengers at the beginning of each trip and the number of passengers at the end of each trip (see the *Trip* definition in section 3.4).

<u>Fuel consumed</u> is the amount of fuel used to operate vehicles. This variable is derived for each vehicle using the reported fuel purchases and distance driven.

<u>The number of vehicles on the registration lists</u> is the average number of the registered vehicles in the registration lists at the beginning and at the end of the reference period.

<u>The number of vehicles in scope</u> is an estimate of the average number of vehicles registered during the quarter based on the lists from jurisdictions and the survey responses. This number slightly differs from the previous one because we incorporate into it all our findings from the survey. Note that this number includes vehicles used and not used on the roads during the reference period.

3.3 Definitions of vehicle characteristics

<u>Vehicle type</u> is the weight classification created for the CVS, based on the information available on the vehicle registration lists. The vehicles are divided into three weight types: <u>light vehicles</u> with gross vehicle weights below 4.5 tonnes, <u>heavy vehicles</u> with gross vehicle weights of <u>4.5 tonnes or more and less than 15 tonnes</u>, and <u>heavy vehicles</u> with gross vehicle weights of <u>15 tonnes or more</u>.

The respondent determines <u>vehicle body type</u>. The respondent is asked to choose among: car, station wagon, van, sport utility vehicle, pick-up, straight truck, truck-tractor, and other. Missing or unusual responses are verified against registration lists, if possible.

<u>Fuel type</u> is based on the information provided by the respondent or from the registration lists. All vehicles are divided into three classes: vehicles powered by gasoline, vehicles powered by diesel fuel and vehicles powered by other energy sources.

<u>Vehicle model year</u> is derived based on the information available on the registration lists.

3.4 Definitions of vehicle usage characteristics

The CVS definition of a <u>trip</u> determines the trip characteristics. The definition of what delimits a trip depends on the <u>vehicle type</u>:

A new trip is reported for *light vehicles* if any of the following events happen:

- the driver gets in the car
- a passenger gets in or out of the car

A new trip is reported for *heavy vehicles weighing 4.5 tonnes or more* if any of the following events happen:

- a stop of more than 30 minutes
- a change of driver
- a change of purpose or use
- a change in the truck configuration
- a change in the status of the load from loaded to unloaded or the reverse

For each trip, the respondent provides the following information:

- Beginning and end times and dates of the trip that are used to determine the <u>time of day</u> and <u>day of week</u> the trip takes place.
- *Driver age group* and *driver sex*.
- Trip origin and destination for light vehicles.
- <u>Trip purpose</u> for heavy vehicles, as determined by the respondent. If there were several purposes for the trip, the respondent is asked to indicate the main purpose of the trip. Multiple trip purposes are not allowed.
- If <u>dangerous goods</u> (as defined by the Transportation of Dangerous Goods Act) are carried by heavy vehicles.
- Number of kilometres traveled on roads with posted speed limit of 80 km/h or more
- Age group (Under 5 years, 5 to 14, 15 to 19, 20 to 34, 35 to 54, 55 to 64, 65 to 74, 75 to 84, 85 years and over) of passengers and the number of passengers within each group, to calculate passenger-kms. Passenger age information is collected only for light vehicles (see section 3.2). We collect the total number of passengers only for heavy vehicles.
- <u>Truck configuration</u> for heavy vehicles.
- Total cost, unit cost and quantity of *fuel purchased*.

4. Methodology

The CVS has been designed as a quarterly survey. The survey design also allows the calculation of annual estimates based on the data collected during the four quarters.

4.1 Survey design

4.1.1 Survey population

The survey population of vehicles was derived from the 13 jurisdiction vehicle registration lists (ten Provincial and three Territorial Governments) created three months before the reference period. The sample of vehicles for this quarter was drawn from lists of motor vehicles with valid registrations in any province or territory available in January 2004. Buses, motorcycles, off-road vehicles (e.g., snowmobiles, dune buggies, amphibious vehicles) and special equipment (e.g., cranes, street cleaners, snowplows and backhoes) are excluded from the survey. This population differs from the population of interest of vehicles; e.g., vehicles that were registered after January 2004 are not included.

The thirteen incoming lists underwent a thorough preparation procedure:

- First, out-of-scope vehicles are removed (buses, trailers, motorcycles, construction equipment, parade vehicles, motor homes, etc.) from each list.
- Second, vehicles with expired registrations are removed from each list.
- Then, records with duplicate Vehicle Identification Numbers (VIN) within each list are removed leaving only the record that had been updated most recently.
- Last, records in each file with irregular data are verified.

The last set of processed lists, before the beginning of the reference period, consisted of the thirteen lists provided in January 2004 to Statistics Canada for the CVS. This set of prepared vehicle lists and the set of days within the second quarter of 2004 constitute the survey population of vehicle-days.

4.1.2 Sample design

The CVS uses a two-stage sample design. At the first-stage, a sample of vehicles is selected, while at the second-stage, a sample of consecutive days within the quarter is selected.

To select the first-stage sample, all vehicles from the survey population were first stratified (grouped) into 78 strata. The vehicles were stratified into three vehicle types (see section 3.3) and 13 jurisdictions (ten provinces and three territories). Then, in order to improve the precision of the estimates, the vehicles were further divided into two vehicle-age strata of newer and older vehicles.

Next, the vehicles were sorted within each stratum, using the first three characters of the postal code of the owner's address. Then, a systematic sample of vehicles (first stage sample) was selected from the survey population. Systematic sampling was used to spread the sample over all regions and to avoid heavy burden on owners of multiple vehicles. To minimize respondent burden, no vehicle is selected more than once during any consecutive four quarters for provinces and two consecutive quarters for territories.

In the second stage, a first reporting day within the quarter was randomly assigned to each vehicle selected in the first stage. Within each stratum, the first reporting day was evenly spread over the quarter to ensure a uniform number of responses over time and for each day of the week. This step was not applied to the vehicles registered in the three territories since only odometer readings are collected (see section 2).

4.1.3 Estimation

Since the sample was selected in two stages, the sampling weight (see section 6 for definition) was also calculated in two steps. The first-stage sampling weight was calculated for each vehicle in the first-stage sample. Then the second-stage sampling weight was calculated for each vehicle-day selected from all days within the reference period. Finally, these two weights were multiplied together to obtain the final weight for a vehicle-day. The weighted values are obtained by multiplying the final weights and the collected values. They were aggregated to produce the estimates.

4.1.4 Sample size

A total of 5,374 vehicles out of 18,344,312 from the survey population were drawn for the ten provinces. Another 2,745 vehicles out of 51,128 were included in the sample for the three territories.

4.2 Data collection and processing

4.2.1 Data collection

The data collection for the vehicles sampled in the ten provinces is different from the one for the vehicles sampled in the territories.

Provincial collection

The registered owners of the sampled vehicles were telephoned and interviewed (Computer Assisted Telephone Interview, or CATI). During the CATI, the following information is collected about each sampled vehicle: vehicle type, fuel type used, distance driven the previous week, some information about anticipated vehicle usage during the following six weeks, current odometer reading, some vehicle maintenance questions and some questions on the household characteristics. Then the respondent was asked to complete a trip log. If the respondent agreed, personal information, such as name and address, were obtained in order to mail out the trip log for the vehicle.

The log type depended on the type of vehicle. There were two types of logs: a light vehicle log and a heavy vehicle log.

Respondents receiving a light vehicle log were requested to record information for 20 consecutive trips made in the selected vehicle, beginning on the assigned *first reporting day*. Respondents receiving a heavy vehicle log were requested to record information for all the trips made in the selected vehicle over the assigned seven-day period.

The collected data included information about each trip:

- Start and stop dates and times
- Start and stop odometer readings
- origin and destination (light vehicle log) or trip purpose (heavy vehicle log)
- number and age group of passengers (light vehicle log) or number of passengers at the start and end of the trip (heavy vehicle log)
- sex and age group of the driver
- fuel purchases
- distance traveled on roads with posted speed limit of 80km/h or more.
- truck configuration (heavy vehicle log only)
- dangerous goods (heavy vehicle log only)

Starting in 2004, the respondents were also asked to continue to record their fuel purchases until they reported two fill-ups or five fuel purchases or until the 28-day reporting period is over.

If the respondent could not be contacted by phone, a trip log with a short additional questionnaire (to collect some of the information normally collected during the CATI) was mailed out.

To increase the number of responses, respondents were contacted a second time, either by phone or by mail. On the first or second day of the log, an attempt was made to phone each vehicle owner, who agreed during the CATI to fill out the log, to answer any questions the respondent might have. Later, an attempt was made to contact by phone or mail everyone who did not return logs. (Some companies with large vehicle fleets have special arrangements to lower their response burden. There is no follow-up done with these companies.)

Territorial collection

The registered owners of the selected vehicles were mailed questionnaires and asked to provide two odometer readings, one at the beginning of the quarter and another at the beginning of the next quarter. Information was also collected on the vehicle status (owned, sold, scrapped), body style (car, SUV, pick-up, etc.) and type of fuel used.

4.2.2 Edit and imputation

Once all necessary information for the survey was collected, a series of verifications took place to ensure that the records were consistent and that collection and capture of the data did not introduce errors. Reported data were examined for completeness and consistency using automated edits coupled with manual review. Outliers, i.e., respondents reporting extremely large values, were processed manually.

Missing values and data found in error were imputed by another automated system. The system imputed the data using different imputation rules depending on the vehicle, available information and the type of data to be imputed. For example, the data can be imputed based on other responses for the same vehicle or by using data from a similar vehicle. The imputed data were then again examined for completeness and consistency.

A complete description of the procedures applied to the survey data is available upon request from the Transportation Division of Statistics Canada.

4.2.3 Estimation

Since the survey population differs from the population of interest, several corrections were done to assure that the estimates correspond (as closely as possible) to the population of interest. The sampling weights derived from the sample design were adjusted and improved using updated registration lists. This was possible because, during the passage of time since the sample was selected, new sets of prepared vehicle lists were obtained for the beginning and for the end of the reference quarter. To improve the estimates for the vehicles registered in the ten provinces, all the days were further stratified into working days and holidays (or non-working days, including weekends). Second stage sampling weights were adjusted so that every day of vehicle activity within the same stratum contributed with equal weight to the total estimate. The final set of weights reflected as closely as possible the characteristics of the vehicle population during the reference period.

The following estimates of totals are available:

- vehicle counts by jurisdiction and vehicle type;
- vehicle-kilometres by jurisdiction and vehicle type;
- passenger-kilometres by province and vehicle type;
- fuel consumed, by vehicle type and fuel type;
- cross tabulations of vehicle-kilometers and passenger-kilometers by a number of variables (described in Concepts and Definitions), such as body type, driver characteristics, time of day, day of week, etc.

5. Data quality

This section describes factors that affect the data quality and why they should be considered when using the CVS estimates.

5.1 Sources of errors

While considerable effort is put forth to ensure that a high standard is maintained throughout all survey operations, the resulting estimates are inevitably subject to a certain degree of error. The total survey error is defined as the difference between the survey estimate and the true value for the population, at which the survey estimate aims. The total survey error consists of two types of errors: sampling and non-sampling errors.

5.2 Sampling error

When a sample is selected from a population, estimates based on the sample data may not be exactly the same as what would be obtained from a census of that population. The two results will likely differ since only data for sampled units are used. In the case of a census, there is no sampling error.

The difference between the estimates from a sample survey and a census conducted under the same conditions is referred to as the sampling error of a survey estimate. Factors such as the sample size, the sample design, the variability of the population characteristic under study and the estimation method affect the sampling error. If the population is very heterogeneous like the population of registered motor vehicles, a large sample size is needed to obtain reliable estimates.

The sampling error is measured by a statistical quantity called the standard error. This quantity reflects the expected variability of the survey estimate of a particular population characteristic if repeated sampling is carried out. The true value of the standard error is, of course, not known but can be estimated from the sample. The estimated standard error is used, in this publication, in terms of a relative measure called the coefficient of variation (or CV). This measure is simply the estimated standard error expressed as a percentage of the value of the survey estimate. Therefore, a smaller CV indicates better reliability of the estimate.

5.3 Non-sampling errors

The sampling error is only one component of the total survey error. All other errors arising from all phases of a survey are called non-sampling errors. As the sample size becomes closer to the population size, the sampling error component of the total survey error is expected to decrease. However, this is not necessarily true for the non-sampling error component. For example, this type of error can arise when a respondent provides incorrect information or does not answer certain questions, when a unit in the population of interest is omitted or covered more than once, when a unit that is out-of-scope for the survey is included by mistake or when errors occur in data processing, such as coding and capture errors.

Some non-sampling errors will cancel over a large number of observations, but systematically occurring errors (i.e. those that do not tend to cancel) will contribute to a bias in the estimates. For example, in the case of the CVS, if individuals that use their vehicles more than an average person consistently tend not to respond to the survey, then the resulting estimate of the total vehicle-kilometres will be below the true population total. Any such biases are not reflected in the estimates of standard error.

The non-sampling error as a whole is only one part of the total survey error but its contribution may be important. To minimize the effect of this type of error, a quality assurance program is carried out for each survey. For instance,

follow-ups of nonrespondents can be conducted to obtain information from the total nonrespondents or to complete partially unanswered questionnaires for questions that are deemed essential. Various quality assurance procedures can be exercised at the data capture step. The data editing procedures can identify some inconsistencies in the data structure and the imputation procedures can then correct the identified inconsistencies.

In general, non-sampling errors are difficult to quantify. Special studies must be conducted to estimate them. However, certain measures such as response and imputation rates are easily obtained and can be used as indicators of the non-sampling errors. Different types of non-sampling errors are discussed below.

5.3.1 Coverage errors

Coverage errors arise when the survey population does not adequately cover the population of interest. As a result, certain units belonging to the population of interest are either excluded (undercoverage), or counted more than once (overcoverage). In addition, out of scope units may be present in the survey population (overcoverage).

The following sources of coverage errors for the CVS were observed:

- Errors in the classification variables of the survey may result in either under- or overcoverage of the registered vehicles.
- The sample is drawn from the list created three months prior to the beginning of the reference period. Thus the vehicles registered after the list was created and before the end of the reference period cannot be drawn into the sample.
- A vehicle list from any jurisdiction that was not created on time or did not arrive at all results in even larger undercoverage since an older list has to be used for sampling.
- A vehicle list created early causes overcoverage.
- A vehicle that has been scrapped or salvaged and remained on the list causes overcoverage.
- The survey population (see section 4.1.1) can contain vehicles with the same Vehicle Identification Number (VIN), for example, when a vehicle is on the registration file of more than one jurisdiction. Since every vehicle has a unique VIN, this is likely to cause some overcoverage and consequently overestimation.
- A vehicle that was registered and subsequently unregistered between two consecutive registration lists causes undercoverage.

Thus the CVS is subject to some degree of under and over coverage. The estimation procedure is designed to compensate for the part of the under- and over coverage that has been determined.

Since we assume that the respondent is right (unless we have hard evidence to the contrary), the corrections at the estimation stage are mostly based on the respondent statements.

5.3.2 Response errors

Response errors occur when a respondent provides incorrect information due to a misinterpretation of the survey questions or due to a lack of correct information, or when a respondent is reluctant to disclose the correct information. Large response errors are likely to be caught during editing. However, others may simply go through undetected.

Few response errors were discovered during editing of the data.

5.3.3 Nonresponse errors

Nonresponse errors can occur when a respondent does not respond at all (total nonresponse) or responds only to some questions (partial nonresponse). These errors can have a serious effect if the nonrespondents are systematically different in survey characteristics from the respondents and/or the nonresponse rate is high. See the response rate tables in section 5.4.1.

5.3.4 Processing errors

Apart from coverage, response and nonresponse errors described above, errors that occur during the processing of the data constitute another component of the non-sampling error. Processing errors can arise in data capture, coding, transcription, editing, imputation, outlier detection and treatment, and other types of data handling.

A coding error occurs when a field is coded erroneously because of a misinterpretation of the coding procedures or a bad judgment. A data capture error occurs when the data are misinterpreted or keyed incorrectly. For example, an odometer reading of 53467 could be keyed as 54367.

Once data are coded and captured, they are subject to editing and imputation of missing or erroneous values. The quality of the data used in the estimation depends on the amount of imputation and the difference between the imputed and the true, but unknown, values. The imputation system could result in bias of the estimates. This can happen due to wrong assumptions or due to inability to impute. For example, in the CVS, it is impossible to detect, for vehicles that travel only a small distance during the reported period, fuel purchases that are missing or entered in error.

5.4 Measuring quality

This section presents some indicators of the data quality of the CVS estimates.

5.4.1 Response rates

The response rate is a function of the number of vehicles that responded to the survey. This rate is defined as the number of vehicles for which respondents gave complete or partial (vehicle-kilometers only) answers to the survey divided by the total number of in-sample vehicles.

Vehicle response rates by province and vehicle type

PROVINCES	Nfld. Lab.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
Light vehicles	62%	65%	63%	59%	71%	62%	74%	71%	63%	61%
Heavy vehicles 4.5t – 14.9t	63%	61%	60%	69%	71%	64%	74%	65%	64%	61%
Heavy vehicles 15t or more	65%	55%	68%	60%	70%	70%	68%	70%	55%	64%

Vehicle response rates by territory and vehicle type

TERRITORIES	Y.T.	N.W.T.	Nvt.
Light vehicles	20%	13%	9%
Heavy vehicles 4.5t – 14.9t	15%	12%	6%
Heavy vehicles 15t or more	10%	17%	4%

The low level of response may lead to biased results if the characteristics of interest of the nonrespondents are different than those of the respondents.

5.4.2 Relative imputation rates

The relative imputation rate is defined as the proportion of the corresponding published estimate that is accounted for by imputed data. For example, if the total published estimate is 25 million, composed of 20 million from non-imputed data and 5 million from imputed data, then the relative imputation rate is .2 (5 million divided by 25 million) or 20%. The lower the relative imputation rates are, the more reliable the published estimates are.

The relative imputation rates were calculated for each of the estimates and used to establish a quality indicator for each estimate. The relative imputation rates for estimates could be obtained from the Transportation Division of Statistics Canada upon request.

5.4.3 Coefficient of variation

As a measure of the sampling error of the estimates, the estimated coefficients of variation (CV) were calculated. CV's for estimates may be obtained from the Transportation Division of Statistics Canada upon request. Note that the calculated CV estimates take into account the variability due to sampling and the variability due to non-response and imputation.

5.4.4 Quality indicator

To assist the user in evaluating the potential effect of nonresponse, imputation and sampling error, an all-embracing quality indicator accompanies every estimate. The quality indicator is a function of the CV, which takes into account the variability due to sampling and the variability due to non-response and imputation.

Quality Symbol	C.V. equivalent	Explanation of estimate quality
A	Less than 5%	Excellent
В	5% to 9.9%	Very good
C	10% to 14.9%	Good
D	15% to 19.9%	Acceptable
E	20% to 34.9%	Use with caution
F	35% or more	Too unreliable to be published

The quality of counts (direct from registration lists) not accompanied by a quality symbol is good or better.

5.5 Notes for historical comparison

Beginning with Quarter 1, 2004, the following changes were made and may affect comparability with previous quarters:

- Buses are excluded from the survey
- Rather than estimates of the quantity of fuel purchased, the survey now produces estimates of the quantity
 of fuel consumed.
- The light vehicle log is based on 20 trips rather than reporting all trips for 7 days. Depending on vehicle usage, some respondents will report more than 7 days worth of trips while others will report less than 7 days.
- The definition of a trip for light vehicles has changed so that a new trip is now reported every time a driver gets in the vehicle or a passenger gets in or out of the vehicle. This change will mean that what was previously reported as one trip could now be reported as two, three or even more trips if there is a change in driver and/or multiple passengers are picked up or dropped off at different locations. This new definition will produce more accurate estimates of passenger-kilometres for light vehicles.

Beginning with Quarter 2, 2003, vehicles that were insured but not registered were removed from the registration lists for Manitoba. As a result, some estimates for Manitoba may be lower than the estimates from previous quarters.

Beginning with Quarter 4, 2001, vehicles that were registered but did not have license plates were removed from the registration lists for Quebec. As a result, some estimates for Quebec may be lower than the estimates from previous quarters.

Beginning with Quarter 1, 2001, the following changes were made and may affect comparability with previous quarters:

- Prior to this quarter, duplicate records found within the same list and duplicate records found in more than one list were removed. Starting in this quarter, duplicate records were removed from within each list only. This change may cause some overcoverage and, consequently, overestimation.
- Type of fuel used and body type are collected for the territories. Consequently, the four tables (pages: 27, 28, 33, 35) now include the territories.
- The heavy vehicle logs were changed in 2001 in order to collect passenger information for heavy vehicles. This change means that passenger-kilometres are now estimated for all vehicles, except urban transit buses, for all the provinces (but not for territories).
- The heavy vehicle logs were also changed in 2001 in order to collect distance traveled on roads with posted speeds of 80 kilometres per hour or more. This change means that this information is now estimated for all vehicle types in all provinces (but not for the territories).

The following change was made in the third quarter of 2000 and may affect comparability with previous quarterly results:

Owners of buses and heavy vehicles registered in the territories are now sent two short questionnaires to
record odometer readings at the start and end of the quarter. This process was always used for light vehicles
in the territories and replaces the previous method of sending only one questionnaire at the end of the
quarter and requesting that bus and heavy vehicle owners rely on maintenance records to provide odometer
readings for the start of the quarter.

The following changes were made in the first quarter of 2000 to improve the quality of the survey by diminishing non-sampling errors.

- The changes that affect comparability with 1999 results:
 - The trip purpose choices (for all vehicle types) were changed. The purpose is now based on the destination of the trip. Thus the results from 2000 and 1999 are not comparable for this item.
 - Passenger-kilometers were not collected for heavy vehicles in 2000.
- The changes that may affect comparability with the 1999 results:
 - A new log was developed for survey year 2000 for all heavy vehicles. In 1999 heavy vehicles with gross vehicle weights of 4.5 tonnes or more and less than 15 tonnes had a different log than heavy vehicles with gross vehicle weights of 15 tonnes or more.
 - The fuel purchased question was attached to each trip for the 2000 survey year for heavy vehicles. Previously it was recorded separately from the trips.

6. Glossary

Population of interest: the collection of all units (e.g., vehicle-days) for which the information is required.

Survey Population: the collection of all units (e.g., vehicle-days) for which the information can be realistically provided to the survey. The survey population may differ from the population of interest due to the operational difficulty of identifying all the units that belong to the population of interest. A list of all units in the survey population with their classification information (e.g., geographical, vehicle characteristics, date) is used for sample design, selection and estimation.

Stratification: a non-overlapping partition of the survey population into relatively homogeneous groups with respect to certain characteristics such as geographical classification, size, etc. These groups are called strata and are used for sample allocation and selection.

Sampling weight: a raising factor is attached to each sampled unit (vehicle-day) to obtain estimates for the population from a sample. The basic concept of the sampling weight can be explained by using the representation rate. For example, if 2 units are selected out of 10 population units at random, then each selected unit represents 5 units in the population including itself, and is given the sampling weight of 5. A survey with a complex sample design like the CVS requires a more complicated way of calculating the sampling weight. However, the sampling weight is still equal to the number of units in the registration lists the sampled unit represents.

Editing: the application of checks that identify missing, invalid or inconsistent entries or that point to data records that are potentially in error. Some of these checks involve logical relationships that follow directly from the concepts and definitions. Others are more empirical in nature or are obtained as a result of the application of statistical tests or procedures.

Imputation: the process used to resolve problems of missing, invalid or inconsistent responses identified during editing. This is done by changing some of the responses or missing values on the record being edited to ensure that a plausible, internally coherent record is created. Some problems are eliminated earlier through contact with the respondent or through manual study of the questionnaire. It is generally impossible to resolve all problems at these early stages due to concerns of response burden, cost and timeliness. Imputation is then used to handle remaining edit failures, since it is desirable to produce a complete and consistent file containing imputed data. Although, imputation can improve the quality of the final data by correcting for missing, invalid or inconsistent responses, some methods of imputation do not preserve the relationships between variables or can actually distort underlying distributions.

Number of vehicles on the registration lists by type of vehicle and jurisdiction

		Vehicle	e type	
	Vehicles up to 4.5t	Trucks 4.5t to 14.9t	Trucks 15t and over	Total
Jurisdiction				
Newfoundland and Labrador	251 652	3 950	2 668	258 270
Prince Edward Island	74 645	1 635	2 612	78 892
Nova Scotia	506 716	8 125	6 060	520 901
New Brunswick	440 292	7 133	3 801	451 226
Quebec	4 162 064	55 061	35 751	4 252 876
Ontario	6 674 595	85 116	107 432	6 867 143
Manitoba	613 857	10 024	14 642	638 523
Saskatchewan	640 043	38 732	24 208	702 983
Alberta	2 137 009	96 106	67 682	2 300 797
British Columbia	2 285 271	78 639	13 817	2 377 727
Yukon Territory	23 603	1 433	1 133	26 169
Northwest territories	19 475	587	975	21 037
Nunavut	2 689	157	98	2 944
Total - Canada	17 831 911	386 698	280 879	18 499 488

Number of vehicles on the registration lists by jurisdiction and vehicle model year for

vehicles up to 4.5t

							Jurisdictio	1						
	Newfound- land and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatche- wan	Alberta	British Columbia	Yukon Territory	Northwest Territor- ies	Nunavut	TOTAL
Vehicle Model Year														
Earlier then 1987	7 492	3 969	24 504	18 388	130 257	280 981	54 378	99 029	236 459	258 774	3 922	1 932	201	1 120 286
1987	2 576	1 405	7 138	6 486	55 415	84 256	13 406	16 518	44 953	65 490	791	347	45	298 826
1988	5 214	2 268	11 296	10 858	93 001	142 188	18 094	21 735	64 311	83 404	1 032	571	89	454 061
1989	6 379	2 782	13 896	13 152	112 771	180 597	20 417	23 424	74 587	98 062	1 126	607	80	547 880
1990	7 048	3 394	16 985	15 874	144 594	223 683	24 759	26 148	85 999	114 783	1 171	698	87	665 223
1991	9 030	3 543	19 066	18 407	174 090	249 473	27 968	28 564	92 402	116 484	1 120	724	107	740 978
1992	11 184	4 541	23 893	23 348	218 773	307 963	31 165	30 228	94 154	122 073	1 077	689	138	869 226
1993	13 650	4 723	25 445	22 897	212 786	314 671	29 369	28 506	89 238	114 737	1 072	643	150	857 887
1994	15 033	4 988	28 078	24 910	212 680	337 604	29 942	31 105	95 430	111 311	1 085	770	160	893 096
1995	14 731	5 327	29 746	26 524	230 503	374 134	33 240	33 441	102 302	115 572	1 149	789	156	967 614
1996	11 514	4 455	25 656	22 263	188 454	322 512	29 752	28 017	87 729	92 906	879	664	120	814 921
1997	15 633	5 401	32 510	27 421	237 557	419 608	39 416	37 283	119 726	120 424	1 212	990	169	1 057 350
1998	18 157	5 530	36 036	30 731	261 858	464 781	41 377	38 067	134 670	120 833	1 108	1 095	159	1 154 402
1999	17 947	5 037	34 022	28 668	258 202	450 513	36 196	31 511	115 314	108 834	1 004	1 137	180	1 088 565
2000	21 119	5 632	39 652	34 867	317 623	550 278	40 653	36 454	131 195	126 714	1 024	1 422	193	1 306 826
2001	20 629	3 259	32 551	28 519	309 898	493 554	36 114	33 796	135 756	123 750	1 165	1 589	206	1 220 786
2002	24 217	3 680	40 733	34 613	382 312	575 718	43 919	39 295	163 861	152 773	1 335	1 809	218	1 464 483
2003	24 641	3 268	41 096	35 093	407 169	593 161	44 473	40 223	173 987	153 974	1 637	2 262	200	1 521 184
2004	5 432	1 369	21 886	16 592	206 280	296 937	18 608	16 490	91 735	81 549	662	717	28	758 285
2005	4	72	2 525	678	7 016	11 983	610	211	3 202	2 823	34	19	1	29 178
Unknown	22	0	0	4	823	0	0	0	0	0	0	0	0	849
TOTAL	251 652	74 643	506 714	440 293	4 162 062	6 674 595	613 856	640 045	2 137 010	2 285 270	23 605	19 474	2 687	17 831 906

Number of vehicles on the registration lists by jurisdiction and vehicle model year for

trucks 4.5t - 15t

		Jurisdiction												
	Newfound- land and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatche- wan	Alberta	British Columbia	Yukon Territory	Northwest Territor- ies	Nunavut	TOTAL
Vehicle Model Year														
Earlier then 1987	841	839	1 881	907	10 627	6 686	2 875	28 688	34 944	13 716	489	132	31	102 656
1987	128	68	294	142	2 307	1 835	305	451	1 835	1 559	35	14	10	8 983
1988	195	81	340	177	3 010	2 523	347	448	2 487	2 390	53	21	11	12 083
1989	172	87	333	183	2 515	2 588	336	399	2 569	2 691	61	19	6	11 959
1990	183	58	360	192	2 578	2 939	452	546	2 840	3 035	55	29	7	13 274
1991	183	46	256	203	1 728	2 107	414	486	2 208	2 414	37	18	5	10 105
1992	156	36	249	247	1 633	2 200	364	444	2 166	2 474	43	16	5	10 033
1993	144	39	279	282	1 854	2 806	404	510	2 229	2 971	31	14	7	11 570
1994	193	57	287	347	2 363	3 553	415	540	2 675	3 289	51	20	8	13 798
1995	253	64	495	402	3 121	4 745	550	708	3 384	3 821	31	36	16	17 626
1996	138	31	287	297	1 966	3 498	386	436	2 356	2 695	32	22	4	12 148
1997	194	38	389	381	2 044	4 848	486	660	3 873	3 614	54	27	10	16 618
1998	173	22	392	393	2 617	5 006	403	623	3 639	3 134	42	21	4	16 469
1999	223	50	521	547	3 633	7 606	496	608	4 502	4 066	64	41	8	22 365
2000	199	30	407	380	3 047	6 667	362	527	3 988	3 747	48	42	8	19 452
2001	168	23	335	442	2 388	6 734	403	752	5 954	4 535	61	29	5	21 829
2002	206	24	345	428	2 239	6 548	370	688	5 112	4 974	80	33	4	21 051
2003	164	27	406	726	2 773	7 660	412	817	5 994	8 444	104	31	6	27 564
2004	32	13	241	447	1 984	4 361	228	396	3 264	5 003	58	21	2	16 050
2005	0	0	24	10	237	206	17	3	88	69	0	0	0	654
Unknown	5	0	0	0	396	0	0	0	0	0	0	0	0	401
TOTAL	3 950	1 633	8 121	7 133	55 060	85 116	10 025	38 730	96 107	78 641	1 429	586	157	386 688

Number of vehicles on the registration lists by jurisdiction and vehicle model year for

trucks 15t or more

							Jurisdiction	າ						
	Newfound- land and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatche- wan	Alberta	British Columbia	Yukon Territory	Northwest Territor- ies	Nunavut	TOTAL
Vehicle Model Year														
Earlier then 1987	261	1 081	717	728	1 020	6 459	1 719	8 501	17 723	2 745	223	162	13	41 352
1987	75	196	195	253	469	2 564	335	876	1 376	417	15	15	2	6 788
1988	102	184	201	221	631	2 740	345	950	1 993	496	30	24	0	7 917
1989	122	145	222	192	541	2 942	333	805	1 810	488	27	28	3	7 658
1990	90	137	158	227	523	2 854	295	817	1 978	792	35	27	2	7 935
1991	85	83	94	120	329	1 852	199	563	1 487	445	20	27	6	5 310
1992	86	46	112	88	506	1 875	232	533	1 219	588	33	26	3	5 347
1993	72	61	166	155	748	2 662	427	822	1 758	556	27	23	3	7 480
1994	120	85	273	189	1 443	3 984	653	1 071	2 726	690	40	45	6	11 325
1995	194	137	385	253	2 273	6 813	784	1 443	3 476	763	50	63	6	16 640
1996	161	91	294	153	1 639	5 019	748	1 025	2 771	674	57	55	7	12 694
1997	144	36	267	128	1 743	5 330	703	1 021	3 320	731	52	53	4	13 532
1998	223	65	430	206	3 213	9 249	1 121	1 340	4 671	732	79	68	6	21 403
1999	208	78	509	219	3 731	10 990	1 210	1 000	3 738	674	67	71	14	22 509
2000	237	72	608	187	4 860	12 664	1 493	974	3 823	585	100	74	4	25 681
2001	115	38	308	118	3 013	7 853	925	782	3 699	595	85	62	3	17 596
2002	103	11	225	91	1 987	5 459	616	449	2 964	540	62	42	3	12 552
2003	142	33	397	134	3 518	7 816	1 151	577	3 163	595	64	45	9	17 644
2004	119	32	389	117	2 896	7 275	1 168	630	3 507	624	58	61	4	16 880
2005	6	2	109	23	637	1 030	184	28	480	86	7	2	0	2 594
Unknown	2	0	0	0	29	0	0	0	0	0	0	0	0	31
TOTAL	2 667	2 613	6 059	3 802	35 749	107 430	14 641	24 207	67 682	13 816	1 131	973	98	280 868

Estimates of the

number of vehicles in scope by type of vehicle and jurisdiction

		Vehicle type										
	Vehicles up to 4.5t	Vehicles up to 4.5t			Trucks 15t and over		Total					
Jurisdiction												
Newfoundland and Labrador	248 988	А	3 155	С	2 349	Е	254 492	A				
Prince Edward Island	74 645	В	1 373	D	2 221	Е	78 239	В				
Nova Scotia	500 279	А	6 610	С	5 962	С	512 852	А				
New Brunswick	428 320	А	5 375	С	4 022	В	437 716	А				
Quebec	4 078 743	А	47 813	В	35 665	Α	4 162 221	А				
Ontario	6 600 861	А	80 595	В	103 653	В	6 785 108	А				
Manitoba	609 449	А	8 627	D	14 069	В	632 145	А				
Saskatchewan	631 083	А	38 943	В	21 814	С	691 840	А				
Alberta	2 116 927	А	82 998	В	65 998	В	2 265 922	А				
British Columbia	2 275 767	А	67 120	В	12 577	В	2 355 464	А				
Yukon Territory	23 053	А	1 147	В	1 124	Α	25 324	А				
Northwest territories	19 337	А	564	В	1 107	В	21 008	А				
Nunavut	2 830	А	140	Е	98	А	3 068	А				
Total - Canada	17 610 283	А	344 459	А	270 658	Α	18 225 399	А				

Estimates for Canada of the

number of vehicles in scope by type of vehicle and vehicle model year

			Ve	hicle	e type			
	Vehicles up to 4.5t	Trucks 4.5t to 14.9t	Trucks 15t and over	Total				
Vehicle model year								
Later than 2001	2 996 924	А	51 421	С	52 640	В	3 100 986	А
1999 - 2001	4 232 964	А	65 898	В	59 353	В	4 358 215	А
1995 - 1998	4 447 157	А	64 739	С	67 340	С	4 579 236	А
1991 - 1994	3 205 652	В	55 779	С	35 971	D	3 297 402	В
Earlier than 1991	2 727 585	В	106 623	В	55 353	С	2 889 561	В
Total	17 610 283	А	344 459	А	270 658	Α	18 225 399	А

Estimates for Canada of the

number of vehicles in scope by type of vehicle and vehicle body type

			Ve	hicle	e type			
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t	Trucks 4.5t to 14.9t			Total	
Vehicle body type								
Car	9 463 111	А		F			9 463 579	А
Station wagon	357 556	D					357 556	D
Van	2 994 441	В	8 482	Е			3 002 923	В
Sport utility vehicle	1 363 139	В		F			1 363 175	В
Pickup	3 361 982	В	26 837	D			3 388 818	В
Straight truck		F	290 012	А	106 096	В	440 427	В
Tractor trailer				F	164 562	В	175 505	В
Bus				F				F
0ther		F	7 680	Е				F
Total	17 610 283	А	344 459	Α	270 658	Α	18 225 399	А

Estimates for Canada of the

number of vehicles in scope by type of vehicle and type of fuel

		Vehicle type							
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total		
Fuel type									
Gasoline	16 963 152	А	105 114	В		F	17 071 423	А	
Diesel	533 715	С	227 961	В	267 148	Α	1 028 824	В	
Other		F	11 384	Е		F	125 153	E	
Total	17 610 283	А	344 459	Α	270 658	Α	18 225 399	А	

Estimates of $\label{eq:condition} % \begin{center} \begin{center$

			Ve	hicle	e type			
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Jurisdiction								
Newfoundland and Labrador	1 061.7	D	10.0	Е	23.5	Е	1 095.2	С
Prince Edward Island	270.1	С		F		F	277.7	С
Nova Scotia	2 096.1	С	38.0	Е	50.5	Е	2 184.6	С
New Brunswick	1 838.0	В	24.5	Е	29.5	Е	1 891.9	В
Quebec	18 237.7	В	328.7	D	949.8	С	19 516.2	В
Ontario	27 162.5	В	581.8	D	2 276.3	С	30 020.5	А
Manitoba	2 175.4	В	29.0	Е	376.1	D	2 580.5	В
Saskatchewan	2 608.6	С	90.3	D	265.1	D	2 964.0	В
Alberta	8 737.5	В	521.2	D	1 329.6	D	10 588.3	В
British Columbia	8 452.9	В	383.8	D		F	8 994.0	В
Yukon Territory	91.0	В	7.6	Е	25.5	Е	124.1	В
Northwest territories	56.1	С		F	20.0	Е	79.1	С
Nunavut	5.2	D		F		F	5.8	D
Total - Canada	72 792.8	А	2 020.2	В	5 509.0	В	80 322.0	А

Estimates of passenger-km ('000 000) by type of vehicle and jurisdiction

		Vehicle type							
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total		
Jurisdiction									
Newfoundland and Labrador	1 854.4	D		F	33.6	E	1 898.9	D	
Prince Edward Island	465.3	D		F		F	473.2	D	
Nova Scotia	3 831.2	D	39.1	Е	58.2	Е	3 928.5	D	
New Brunswick	3 308.6	С	38.3	Е	37.1	Е	3 384.1	С	
Quebec	30 226.1	В	365.3	D		F	31 737.4	С	
Ontario	42 943.3	В	896.6	D	2 533.3	С	46 373.1	В	
Manitoba	3 815.1	С	35.3	Е	417.3	D	4 267.7	С	
Saskatchewan	4 584.3	С	104.7	Е	281.6	Е	4 970.6	С	
Alberta	14 403.1	С	619.3	Е	1 481.0	D	16 503.4	В	
British Columbia	14 907.4	С	505.1	Е		F	15 612.2	С	
Total - Provinces	120 338.7	А	2 616.7	В		F	129 149.1	А	

Due to rounding, the numbers may not add up and may differ slightly among the tables. All passenger-km estimates exclude the territories.

Estimates for Canada of

vehicle-km ('000 000) by type of vehicle and vehicle model year $\,$

		Vehicle type									
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t	Trucks 4.5t to 14.9t			Total				
Vehicle model year											
Later than 2001	15 403.6	В	654.2	D	1 859.6	С	17 917.5	В			
1999 - 2001	19 678.9	В	469.6	С	1 463.3	С	21 611.8	В			
1995 - 1998	17 877.6	В	349.7	D	1 610.5	D	19 837.8	В			
1991 - 1994	11 055.2	В	244.3	Е	366.0	Е	11 665.5	В			
Earlier than 1991	8 777.5	С	302.4	Е	209.6	Е	9 289.4	С			
Total	72 792.8	А	2 020.2	В	5 509.0	В	80 322.0	А			

Estimates of the provincial total of

passenger-km ('000 000) by type of vehicle and vehicle model year $\,$

		Vehicle type									
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total				
Vehicle model year											
Later than 2001	26 657.7	В	880.6	D	2 046.3	С	29 584.6	В			
1999 - 2001	31 704.8	В	603.9	D	1 617.7	D	33 926.5	В			
1995 - 1998	29 574.1	В	420.8	Е		F	31 860.3	С			
1991 - 1994	18 389.8	С	337.1	Е		F	19 170.0	С			
Earlier than 1991	14 012.2	D	374.2	Е	221.3	Е	14 607.7	D			
Total	120 338.7	А	2 616.7	В		F	129 149.1	А			

Due to rounding, the numbers may not add up and may differ slightly among the tables. All passenger-km estimates exclude the territories.

Estimates for Canada of

vehicle-km ('000 000) by type of vehicle and vehicle body type $\,$

			Ve	hicle	e type			
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Vehicle body type								
Car	38 596.0	А					38 596.0	А
Station wagon	1 651.4	Е					1 651.4	Е
Van	12 186.1	В		F			12 240.2	В
Sport utility vehicle	5 479.7	С		F			5 479.8	С
Pickup	14 370.6	В	219.4	Е			14 590.0	В
Straight truck		F	1 687.9	В	829.8	D	2 700.9	В
Tractor trailer				F	4 679.2	В	4 695.2	В
Bus				F				F
Other		F		F				F
Total	72 792.8	А	2 020.2	В	5 509.0	В	80 322.0	А

Estimates of the provincial total of

passenger-km ('000 000) by type of vehicle and vehicle body type $% \left(1\right) =\left(1\right) \left(1\right) \left($

			Ve	hicle	e type			
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Vehicle body type								
Car	58 948.9	В					58 948.9	В
Station wagon	2 787.0	Е					2 787.0	Е
Van	27 026.3	С		F			27 107.2	С
Sport utility vehicle	8 864.7	D					8 864.7	D
Pickup	22 007.8	С	299.9	Е			22 307.8	С
Straight truck		F	2 172.8	Е	1 006.2	Е	3 410.6	С
Tractor trailer				F		F		F
Bus				F				F
Other		F		F				F
Total	120 338.7	А	2 616.7	В		F	129 149.1	А

Due to rounding, the numbers may not add up and may differ slightly among the tables. All passenger-km estimates exclude the territories.

Estimates for Canada of

vehicle-km ('000 000) by type of vehicle and type of fuel

		Vehicle type								
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total			
Fuel type										
Gasoline	69 758.5	А	456.0	D		F	70 218.8	A		
Diesel	2 605.3	D	1 530.8	В	5 495.5	В	9 631.6	В		
Other		F		F		F		F		
Total	72 792.8	А	2 020.2	В	5 509.0	В	80 322.0	А		

Estimates of the provincial total of

passenger-km ('000 000) by type of vehicle and type of fuel

		Vehicle type								
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total			
Fuel type										
Gasoline	115 822.9	А	618.0	Е		F	116 445.3	А		
Diesel	3 920.0	Е	1 936.9	С		F	12 041.7	Е		
Other		F		F		F		F		
Total	120 338.7	А	2 616.7	В		F	129 149.1	А		

Due to rounding, the numbers may not add up and may differ slightly among the tables. All passenger-km estimates exclude the territories.

vehicle-km ('000 000) by type of vehicle and day of week

			Vel	hicle	e type			
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Day of the week								
Sunday	8 931.8	В	129.2	Е	386.1	С	9 447.2	В
Monday	9 791.0	В	366.3	С	840.0	В	10 997.3	В
Tuesday	10 434.0	В	333.8	С	926.8	В	11 694.6	В
Wednesday	10 577.7	В	454.2	D	1 045.4	В	12 077.3	В
Thursday	11 623.0	С	343.1	С	981.0	С	12 947.1	С
Friday	12 412.1	В	302.6	С	879.5	В	13 594.2	В
Saturday	8 870.8	С	79.8	Е	404.8	D	9 355.3	В
Total	72 640.4	А	2 009.1	В	5 463.5	В	80 113.0	А

passenger-km ('000 000) by type of vehicle and day of week

			Ve	hicle	e type			
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Day of the week								1
Sunday	17 697.3	В	149.2	Е		F	18 302.6	В
Monday	14 727.6	В	496.8	С		F	16 171.7	В
Tuesday	15 890.4	В	432.0	С		F	17 352.1	В
Wednesday	16 558.6	В	592.9	D		F	18 361.6	В
Thursday	18 392.3	С	453.6	С	1 099.2	Е	19 945.1	С
Friday	19 960.8	С	385.0	С		F	21 337.0	В
Saturday	17 111.7	В	107.2	Е	460.0	Е	17 678.9	В
Total	120 338.7	А	2 616.7	В		F	129 149.1	А

vehicle-km ('000 000) by type of vehicle and driver age group $% \left(1\right) =\left(1\right) \left(1\right$

			Ve	hicle	e type			
	Vehicles up to 4.5t T		Trucks 4.5t to 14.9t		Trucks 15t and over	Total		
Age of driver								
Under 20 years		F	75.1	Е		F		F
20 - 24 years		F		F		F	2 915.9	Е
25 - 34 years	7 739.8	Е	391.0	D		F	9 133.7	Е
35 - 44 years	16 056.3	D	665.4	D		F	18 006.3	С
45 - 54 years	19 149.2	С	446.5	D	2 042.7	Е	21 638.4	С
55 - 64 years	16 000.3	С	317.9	Е		F	17 232.4	С
65 years and over	10 322.7	Е		F		F	10 449.7	Е
Total	72 640.4	В	2 009.1	В	5 463.5	В	80 113.0	В

			Ve	hicl	e type			
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Age of driver								
Under 20 years		F	148.7	Е		F		F
20 - 24 years	5 072.9	Е		F		F	5 289.5	Е
25 - 34 years	12 809.2	Е	533.6	Е		F	14 486.0	D
35 - 44 years	30 973.5	С	787.8	D		F	33 232.4	С
45 - 54 years	27 958.3	С	582.1	D	2 386.4	Е	30 926.8	С
55 - 64 years	24 377.2	С	427.4	Е	972.7	Е	25 777.4	С
65 years and over	17 926.7	Е		F		F	18 067.5	D
Total	120 338.7	В	2 616.7	С		F	129 149.1	В

vehicle-km ('000 000) by type of vehicle and sex of driver

	Vehicle type											
	Vehicles up to 4.5t	Vehicles up to 4.5t Tr		Trucks 4.5t to 14.9t		Trucks 15t and over						
Sex of driver												
Male	49 215.2	В	1 985.7	В		F	56 660.2	В				
Female	23 425.2	С		F		F	23 452.8	С				
Total	72 640.4	В	2 009.1	В	5 463.5	В	80 113.0	В				

passenger-km ('000 000) by type of vehicle and sex of driver $% \left(1\right) =\left(1\right) \left(1\right)$

	Vehicle type											
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total					
Sex of driver												
Male	82 279.4	В	2 583.4	С		F	91 052.3	В				
Female	38 059.2	С		F		F	38 096.8	С				
Total	120 338.7	В	2 616.7	С		F	129 149.1	В				

vehicle-km ('000 000) by type of vehicle and time of day

			Vel	hicle	e type			
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t	Trucks 4.5t to 14.9t			Total	
Time of day								
00:00 - 05:59	1 836.6	E		F		F	2 498.7	Е
06:00 - 11:59	25 678.6	В	893.0	В	1 923.3	Е	28 494.9	В
12:00 - 17:59	31 330.8	В	937.6	В		F	34 182.4	В
18:00 - 23:59	13 794.4	С	133.5	Е		F	14 937.0	С
Total	72 640.4	В	2 009.1	В	5 463.5	В	80 113.0	А

passenger-km ('000 000) by type of vehicle and time of day

			Vel	e type				
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t	Trucks 4.5t to 14.9t		Trucks 15t and over		
Time of day								
00:00 - 05:59	2 880.1	E		F		F	3 639.9	E
06:00 - 11:59	40 855.0	В	1 137.7	С		F	44 159.6	В
12:00 - 17:59	51 902.5	В	1 273.1	С		F	55 348.4	В
18:00 - 23:59	24 701.1	В	155.4	Е		F	26 001.2	В
Total	120 338.7	В	2 616.7	В		F	129 149.1	В

vehicle-km ('000 000) by type of vehicle and carrying dangerous goods $% \left(1\right) =\left(1\right) \left(1$

			Vehicle type			
	Trucks 4.5t to 14.9t	Trucks 15t and over	Total			
Carrying dangerous goods						
Declared - yes		F	360.3	Е	414.5	Е
Declared - no	1 954.9	С		F	7 058.0	Е
Total	2 009.1	С	5 463.5	В	7 472.6	В

passenger-km ('000 000) by type of vehicle and carrying dangerous goods $% \left(1\right) =\left(1\right) \left(1\right) \left($

			Vehicle type			
	Trucks 4.5t to 14.9t	Trucks 15t and over	Total			
Carrying dangerous goods						
Declared - yes		F	369.7	Е	423.8	E
Declared - no	2 562.5	С		F	8 386.5	Е
Total	2 616.7	С		F	8 810.4	Е

vehicle-km ('000 000) by type of vehicle and type of day

	Vehicle type										
	Vehicles up to 4.5t	Vehicles up to 4.5t Tr		Trucks 4.5t to 14.9t		Trucks 15t and over					
Type of day											
Weekends and holidays	20 696.1	В	280.1	D	986.1	С	21 962.3	В			
Weekdays	51 944.4	А	1 728.9	В	4 477.4	В	58 150.7	А			
Total	72 640.4	А	2 009.1	В	5 463.5	В	80 113.0	А			

passenger-km ('000 000) by type of vehicle and type of day

		Vehicle type										
	Vehicles up to 4.5t	/ehicles up to 4.5t Tru		Trucks 4.5t to 14.9t			Total					
Type of day												
Weekends and holidays	39 557.2	В	337.5	D		F	41 020.2	В				
Weekdays	80 781.5	В	2 279.2	В		F	88 128.9	В				
Total	120 338.7	А	2 616.7	В		F	129 149.1	А				

vehicle-km ('000 000) by type of vehicle and road type

			Ve	hicl	e type			
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Road type								
Road with posted maximum speed of 80km/h or more	37 935.1	В	977.9	С	3 961.2	E	42 874.2	В
Other roads	34 705.4	С	1 031.1	С		F	37 238.8	С
Total	72 640.4	В	2 009.1	В	5 463.5	В	80 113.0	В

passenger-km ('000 000) by type of vehicle and road type

			Ve	hicle	e type			
	Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Road type								
Road with posted maximum speed of 80km/h or more	64 083.9	В	1 234.4	С	4 406.7	E	69 725.0	В
Other roads	56 254.8	С	1 382.3	С		F	59 424.1	С
Total	120 338.7	В	2 616.7	В		F	129 149.1	В

vehicles up to 4.5t: passenger-km ('000 000) by passenger age group

	Estimates for	
	Vehicles up to 4.5t	
Passenger age		
Under 5 years	4 341.6	D
5 - 14 years	7 932.3	D
15 - 19 years	2 725.9	Е
20 - 24 years	4 446.8	Е
25 - 34 years	12 729.0	С
35 - 54 years	47 972.7	В
55 - 64 years	22 735.6	В
65 - 74 years	12 615.2	D
75 - 84 years	4 183.7	Е
85 years and over		F
Total	120 338.7	А

vehicles up to 4.5t: vehicle-km and passenger-km by part of the driver's job

	Es	timat	tes of				
	vehicle-km ('000 000	passenger-km ('000 000)					
Part of job							
Yes	14 810.9	В	21 098.6	С			
No	57 829.6	В	99 240.1	В			
Total	72 640.4	Α	120 338.7	В			

vehicles up to 4.5t: vehicle-km ('000 000) by origin and destination of trip

					Destination					
	Driver's home		Driver's regular workplace		Shopping centre / ba / other place of personal business		Leisure / entertain / recreational faci / restaurant		Other	
Origin										
Driver's home	15 147.5	С	6 499.8	E		F		F	8 767.1	D
Driver's regular workplace	5 865.6	Е	2 481.7	Е		F		F		F
Shopping centre / bank / other place of personal business		F		F		F		F		F
Leisure / entertainment / recreational facility / restaurant		F		F		F		F		F
Other	8 045.0	D		F		F		F	6 352.0	Е

vehicles up to 4.5t: passenger-km ('000 000) by origin and destination of trip

					Destination					
	Driver's home		Driver's regular workplace	Driver's regular			Leisure / entertain / recreational faci / restaurant			
Origin										
Driver's home	24 755.1	С	8 093.6	Е		F	5 331.4	Е	15 872.3	С
Driver's regular workplace	7 109.4	Е	4 529.7	Е		F		F		F
Shopping centre / bank / other place of personal business		F		F		F		F		F
Leisure / entertainment / recreational facility / restaurant		F		F		F		F		F
Other	14 015.3	D		F		F		F	12 328.5	D

trucks 4.5t or more: vehicle-km ('000 000) by vehicle group and trip purpose

		Ve	hicle	type	
		Trucks 4.5t to 14.9t		Trucks 15t and over	•
Vehicle group	aight truck Driving to or from service call Carrying goods or equipment Empty Other work purpose Non work purpose Total Driving to or from service call				
Straight truck	Driving to or from service call		F		F
	Carrying goods or equipment	1 420.4	Е	513.7	Е
	Empty		F		F
	Other work purpose		F		F
	Non work purpose		F		F
	Total	1 993.1	С	819.3	E
Other over 4.5t	Driving to or from service call		F		F
	Carrying goods or equipment		F		F
	Empty		F	476.9	E
	Other work purpose				F
	Non work purpose		F	229.2	E
	Total		F	4 644.2	В
Total	Driving to or from service call		F		F
	Carrying goods or equipment	1 426.3	С		F
	Empty		F	519.3	Е
	Other work purpose		F		F
	Non work purpose		F	261.3	E
	Total	2 009.1	С	5 463.5	В

trucks 4.5t or more: passenger-km ('000 000) by vehicle group and trip purpose

		Ve	hicle	type	
		Trucks 4.5t to 14.9t		Trucks 15t and over	•
Vehicle group	ight truck Driving to or from service call Carrying goods or equipment Empty Other work purpose Non work purpose Total				
Straight truck	Driving to or from service call		F		F
	Carrying goods or equipment	1 873.8	Е	601.2	E
	Empty		F		F
	Other work purpose		F		F
	Non work purpose		F		F
	Total	2 599.6	Е	1 006.2	Е
Other over 4.5t	Driving to or from service call		F		F
	Carrying goods or equipment		F		F
	Empty		F	476.9	Е
	Other work purpose				F
	Non work purpose		F	298.4	Е
	Total		F		F
Total	Driving to or from service call		F		F
	Carrying goods or equipment	1 879.7	D		F
	Empty		F	522.6	E
	Other work purpose		F		F
	Non work purpose		F	330.6	E
	Total	2 616.7	С		F

vehicle-km ('000 000) by type of vehicle, type of day and time of day $% \left(1\right) =\left(1\right) \left(1$

				Ve	hicle	e type			
		Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Type of day	Time of day								
Weekends and	00:00 - 05:59		F		F		F		F
holidays	06:00 - 11:59	6 582.8	С	130.6	D	333.2	Е	7 046.6	С
	12:00 - 17:59	9 174.7	С	120.4	D	326.9	Е	9 622.1	С
	18:00 - 23:59	4 381.1	D		F		F	4 603.2	С
	Total	20 696.1	В	280.1	D	986.1	С	21 962.3	В
Weekdays	00:00 - 05:59	1 472.7	Е		F		F	2 022.7	Е
	06:00 - 11:59	19 095.8	В	762.4	С		F	21 448.4	В
	12:00 - 17:59	22 156.1	В	817.2	С		F	24 560.4	В
	18:00 - 23:59	9 413.3	С	115.9	Е		F	10 333.8	С
	Total	51 944.4	В	1 728.9	В	4 477.4	В	58 150.7	В
Total	00:00 - 05:59	1 836.6	Е		F		F	2 498.7	Е
	06:00 - 11:59	25 678.6	В	893.0	В	1 923.3	Е	28 494.9	В
	12:00 - 17:59	31 330.8	В	937.6	В		F	34 182.4	В
	18:00 - 23:59	13 794.4	С	133.5	Е		F	14 937.0	С
	Total	72 640.4	В	2 009.1	В	5 463.5	В	80 113.0	А

passenger-km ('000 000) by type of vehicle, type of day and time of day $% \left(1\right) =\left(1\right) \left(1\right) \left($

				Ve	hicle	e type			
		Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Type of day	Time of day								
Weekends and holidays	00:00 - 05:59		F		F		F	831.8	E
nolidays	06:00 - 11:59	12 251.9	С	155.1	Е	381.3	Е	12 788.2	С
	12:00 - 17:59	17 823.8	В	153.7	Е		F	18 357.9	В
	18:00 - 23:59	8 781.6	С		F		F	9 042.3	С
	Total	39 557.2	В	337.5	D		F	41 020.2	В
Weekdays	00:00 - 05:59	2 180.2	Е		F		F	2 808.1	Е
	06:00 - 11:59	28 603.1	В	982.6	С		F	31 371.4	В
	12:00 - 17:59	34 078.7	В	1 119.4	С		F	36 990.5	В
	18:00 - 23:59	15 919.5	С	135.0	Е		F	16 958.9	С
	Total	80 781.5	В	2 279.2	В		F	88 128.9	В
Total	00:00 - 05:59	2 880.1	Е		F		F	3 639.9	Е
	06:00 - 11:59	40 855.0	В	1 137.7	С		F	44 159.6	В
	12:00 - 17:59	51 902.5	В	1 273.1	С		F	55 348.4	В
	18:00 - 23:59	24 701.1	В	155.4	Е		F	26 001.2	В
	Total	120 338.7	В	2 616.7	В		F	129 149.1	В

vehicle-km ('000 000) by type of vehicle, driver age group and sex of driver

				Vel	hicle	e type			
		Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Age of driver	Sex of driver								
Under 25 years	Male		F	129.7	E		F		F
	Female		F		F		F		F
	Total	3 372.2	Е	129.7	Е		F	3 652.5	Е
25 - 54 years	Male	26 290.6	С	1 489.7	С		F	32 106.2	С
	Female	16 654.7	D		F		F	16 672.2	D
	Total	42 945.2	В	1 502.9	С		F	48 778.3	В
55 years and over	Male	21 374.0	С	366.3	Е	982.7	Е	22 723.0	С
	Female	4 949.0	Е		F		F	4 959.2	E
	Total	26 323.0	С	376.4	Е	982.7	Е	27 682.2	С
Total	Male	49 215.2	В	1 985.7	В		F	56 660.2	В
	Female	23 425.2	С		F		F	23 452.8	С
	Total	72 640.4	В	2 009.1	В	5 463.5	В	80 113.0	В

passenger-km ('000 000) by type of vehicle, driver age group and sex of driver

				Ve	hicle	e type			
		Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Age of driver	Sex of driver								1
Under 25 years	Male		F	213.5	Е		F		F
	Female		F		F		F		F
	Total	6 293.7	Е	213.5	Е		F	6 658.9	Е
25 - 54 years	Male	44 462.7	В	1 880.3	С		F	51 339.5	В
	Female	27 278.4	D		F		F	27 305.7	D
	Total	71 741.0	В	1 903.4	С		F	78 645.3	В
55 years and over	Male	35 293.9	С	489.6	Е	1 041.2	Е	36 824.7	С
	Female	7 010.0	Е		F		F	7 020.1	Е
	Total	42 303.9	С	499.8	Е	1 041.2	Е	43 844.9	С
Total	Male	82 279.4	В	2 583.4	С		F	91 052.3	В
	Female	38 059.2	С		F		F	38 096.8	С
	Total	120 338.7	В	2 616.7	С		F	129 149.1	В

vehicle-km ('000 000) by type of vehicle, type of fuel and vehicle body type

		Vehicle type							
		Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Vehicle body type	Fuel type								
Car	Gasoline	37 701.6	А					37 701.6	A
	Diesel		F						F
Station wagon	Gasoline	1 645.0	D					1 645.0	D
	Diesel								
Van	Gasoline	11 965.2	В		F			11 981.4	В
	Diesel		F		F				F
Sport utility vehicle	Gasoline	5 408.0	В					5 408.0	В
venicie	Diesel		F						F
Pickup	Gasoline	12 504.9	В		F			12 543.5	В
	Diesel	1 522.2	Е	178.1	E			1 700.4	D
Straight truck	Gasoline	65.6	Е	370.5	Е		F	440.4	Е
	Diesel		F	1 280.0	С	814.9	D	2 211.1	В
Tractor trailer	Gasoline								
	Diesel				F	4 639.7	В	4 655.6	В
Bus	Gasoline								ļ
	Diesel				F				F
Other	Gasoline		F		F				F
	Diesel				F				F
Total	Gasoline	69 616.0	А	453.0	Е		F	70 073.3	А
	Diesel	2 596.2	D	1 522.7	В	5 454.6	В	9 573.6	В

Due to rounding, the numbers may not add up and may differ slightly among the tables. This table does not include other fuel types (natural gas, propane, ethanol, etc.).

fuel consumed ('000 000 litres) by type of vehicle, type of fuel and vehicle body type

		Vehicle type							
		Vehicles up to 4.5t		Trucks 4.5t to 14.9t		Trucks 15t and over		Total	
Vehicle body type	Fuel type								
Car	Gasoline		F						F
	Diesel		F						F
Station wagon	Gasoline		F						F
	Diesel								
Van	Gasoline		F		F				F
	Diesel		F		F				F
Sport utility vehicle	Gasoline		F						F
	Diesel		F						F
Pickup	Gasoline		F		F				F
	Diesel		F	38.7	E				F
Straight truck	Gasoline		F		F		F		F
	Diesel		F	309.9	С	249.9	D	573.5	В
Tractor trailer	Gasoline								ļ
	Diesel				F	1 511.8	В	1 518.3	В
Bus	Gasoline								
	Diesel				F				F
Other	Gasoline		F		F				F
	Diesel				F				F
Total	Gasoline	7 224.5	Е	91.4	Е		F	7 317.5	Е
	Diesel		F	367.2	С	1 761.7	В	2 432.4	С

Due to rounding, the numbers may not add up and may differ slightly among the tables. This table does not include other fuel types (natural gas, propane, ethanol, etc.).

number of vehicles in scope by type of vehicle and activity type

	Vehicle type				
	Trucks 4.5t to	14.9t		Trucks 15t and over	
Activity type					
For-hire trucking	37	638	С	131 482	В
Owner operator trucking	61	651	С	58 332	С
Private trucking	183	920	В	57 698	С
Other	59	398	С	20 817	D
Total	342	608	Α	268 329	Α

trucks 4.5t - 14.9t: vehicle-km and passenger-km by activity type

	Estimates of				
	vehicle-km ('000 000))	passenger-km ('000 00	0)	
Activity type					
For-hire trucking	261.7	Е	337.1	E	
Owner operator trucking	401.6	Е	536.2	Е	
Private trucking	951.4	Е	1 189.6	Е	
Other	394.3	Е	553.9	Е	
Total	2 009.1	С	2 616.7	С	

trucks 15t and over: vehicle-km and passenger-km by activity type

	Estimates of				
	vehicle-km ('000 000)	passenger-km ('000 00	0)	
Activitiy type					
For-hire trucking	3 413.4	В		F	
Owner operator trucking	1 279.6	D		F	
Private trucking	592.9	Е	638.7	Е	
Other	177.7	Е		F	
Total	5 463.5	В		F	

trucks 4.5t - 14.9t: vehicle-km and passenger-km by trip type

	Estimates of				
	vehicle-km ('000 000))	passenger-km ('000 000	0)	
Trip type					
Within province	1 811.1	С	2 371.1	С	
Between provinces		F		F	
Across CAN-US border		F		F	
Outside Canada		F		F	
Total	2 009.1	С	2 616.7	С	

trucks 15t and over: vehicle-km and passenger-km by trip type

	Estimates of				
	vehicle-km ('000 000))	passenger-km ('000 000	0)	
Trip type					
Within province	2 558.4	D	2 695.9	D	
Between provinces		F		F	
Across CAN-US border		F		F	
Outside Canada		F		F	
Total	5 463.5	В		F	

For Further Reading

Selected Publications from Statistics Canada

	Series and the series of the s
Catalogue	
53-223-XIE	Canadian Vehicle Survey – Annual. English.
53-223-XIF	Canadian Vehicle Survey – Annual. French.
50-002-XIB	Surface and Marine Transport - Service Bulletin. Bilingual.
51-004-XIB	Aviation - Service Bulletin - Bilingual.
51-203-XIB	Air Carrier Traffic at Canadian Airports - Annual. Bilingual.
51-204-XIE	Air Passenger Origin and Destination: Domestic Report - Annual. English.
51-204-XIF	Air Passenger Origin and Destination: Domestic Report - Annual. French.
51-206-XIB	Canadian Civil Aviation - Annual. Bilingual.
51-207-XIB	Air Charter Statistics - Annual. Bilingual.
52-001-XIE	Railway Carloadings – Monthly. English.
52-001-XIF	Railway Carloadings - Monthly. French.
52-216-XIB	Rail in Canada - Annual. Bilingual.
53-215-XIB	Passenger Bus and Urban Transit Statistics - Annual. Bilingual.
53-222-XIB	Trucking in Canada - Annual. Bilingual.
54-205-XIB	Shipping in Canada - Annual. Bilingual.
66-001-PPB	International Travel, Advance Information (Touriscope) - Monthly. Bilingual.
66-201-XIB	International Travel - Annual. Bilingual.
87-003-XIB	Travel Log - Quarterly. Bilingual.

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