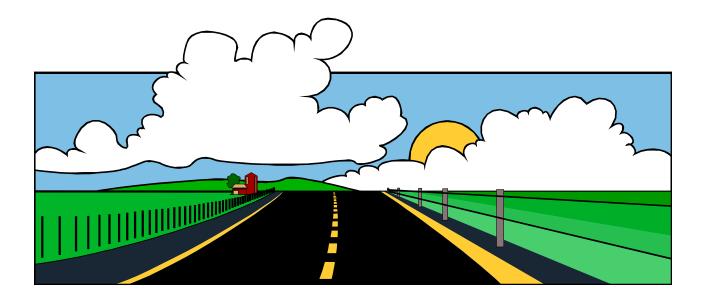


# Canadian Vehicle Survey

Quarter 1, 2000



Transport Canada

CCMTA Canadian Council of Motor Transport Administrators





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Statistics Canada

Transportation Division

# Canadian Vehicle Survey

Quarter 1, 2000

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#### Note of appreciation

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- x confidential to meet secrecy requirements of the Statistics Act.

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# Canadian Council of Motor Transport Administrators and Provincial and Territorial Registrars of Motor Vehicles

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## **HIGHLIGHTS**

- Almost 17 million vehicles were in-scope for the Canadian Vehicle Survey during this quarter.
- These vehicles travelled an estimated 69.8 billion kilometres between January 1 and March 31, 2000.
- Vehicles weighing less than 4 500 kilograms were driven an average of 3 800 kilometres while the largest of the trucks (trucks with gross weight 15 000 kilograms or more) were driven an average of 23 300 kilometres.

#### 1. INTRODUCTION

Canadian transport activity statistics were inadequate due to the lack of any routine measurement of road vehicle activity. While road vehicles dominate passenger travel and freight traffic, no measures of total vehicle-kilometres or passenger-kilometres were available.

The Canadian Vehicle Survey (CVS) was developed at the request of Transport Canada to fill this data gap. The survey provides 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 will be the prime source of road vehicle use information for researchers and interested members of the public.

Transport Canada plans to combine survey data with other data to use 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 first quarter of 2000.

## 2. SURVEY OVERVIEW

The CVS is a voluntary vehicle-based survey that provides 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 stages. The first stage 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 seven-day trip log. The trip log is then mailed out. 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 postcards. 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 postcard asks respondents to record the odometer reading at the beginning of the first day of the quarter. All those returning the first postcards are mailed second postcards 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.

The CVS provides annual and quarterly estimates of road activity for vehicles registered in Canada. The estimates are provided by type of vehicle and other variables, such as driver and vehicle characteristics, time of day and season.

Users who require additional information from Statistics Canada can obtain it from the Transportation Division upon request by phoning 613-951-2486, e-mailing laroque@statcan.ca, or faxing: 613-951-0579.

#### 3. CONCEPTS AND DEFINITIONS

#### 3.1 THE POPULATION OF INTEREST

The *in-scope vehicles* for the CVS include all motor vehicles except 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

Vehicle-kilometres is the distance traveled by vehicles on roads.

<u>Passenger-kilometres</u> is the sum of the distances traveled by individual passengers. Trucks with gross vehicle weight of 4.5 tonnes or more (see the *Vehicle type* definition below) and urban buses were not required to report passengers. Therefore, these passengers are not included in the estimates of passenger-kilometres. Also the number of passengers 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 below) plus the driver.

<u>Fuel purchased</u> is the amount of fuel purchased to operate vehicles. This includes purchases for the off-road operation of the vehicle. However, these purchases are considered negligible.

*The number of vehicles on the registration lists* 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 classification created for CVS based on the information available on the vehicle registration lists. There are four vehicle types. <u>Buses</u> are identified first. The remaining vehicles are then divided into three weight types: <u>light vehicles</u> with gross vehicle weights below 4.5 tonnes, <u>trucks</u> with gross vehicle weights of <u>4.5 tonnes or more and less than 15 tonnes</u>, and <u>trucks</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, bus and other. Missing or unusual responses are verified against registration lists, if possible.

<u>Fuel type</u> is derived based on the information available on 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 source.

<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>:

For *buses*, if any of the following events happened:

- a stop of more than 30 minutes
- a change of driver
- a change in the type of bus service
- all the passengers have been dropped off and another passenger trip begins (does not apply to scheduled urban buses)

For *light vehicle*, if any of the following events happened:

- a stop of more than 30 minutes
- a change of driver
- a change in the main trip purpose

For <u>vehicles (trucks) weighing 4.5 tonnes or more</u> if any of the following events happened:

- 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.
- The <u>trip purpose</u> 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. The choice of purpose is specific to the vehicle type.
- If <u>dangerous goods</u> are carried (as defined by the Transportation of Dangerous Goods Act). Does not apply to buses.
- <u>Number of kilometres traveled on roads with posted speed limit of 80 km/h or more</u> (does not apply to trucks).
- <u>Age group (0 4, 5 14 and 15 years and over) of passengers and the number of passengers within each group</u> to calculate passenger-km (Applies to light vehicles and buses only with an exception of urban buses. Only light vehicles collect passenger age information. See 3.2).
- <u>Truck configuration</u> for vehicles (trucks) weighing 4.5 tonnes or more.
- Cost (for light vehicles and buses) or quantity (for trucks and buses) of *Fuel purchased*.

#### 4. METHODS

CVS has been designed as a quarterly survey. The first quarter of 2000 is the second quarter the results for all Canadian provinces and territories are available. 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 was derived from the 13 jurisdiction vehicle registration lists (ten Provincial and three Territorial Governments) created three months before the reference period. The sample for this quarter was drawn from motor vehicles with valid registrations in any province or territory in October 1999. 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; e.g., vehicles that were registered after October 1999 are not included.

The incoming lists underwent thorough preparation procedure:

- First, out-of-scope vehicles are removed (trailers, motorcycles, construction equipment, parade vehicles, etc.).
- Second, vehicles with expired registration are removed.
- Then, records with duplicate Vehicle Identification Numbers (VIN) within each list are removed leaving the one updated most recently.
- Next, records with duplicate Vehicle Identification Numbers (VIN) among all lists are removed leaving the one with the most recent update.
- Last, records with irregular data are verified.

The last set of processed lists, before the beginning of the reference period consisted of twelve lists provided in October 1999 to Statistics Canada for the CVS. A list created in January 1999 was used for the Yukon. This set of prepared vehicle lists and the set of days within the first quarter of 2000 constitute the survey population.

#### 4.1.2 Sample design

All vehicles from the survey population were stratified (grouped) into 104 strata. First, the vehicles were stratified into four vehicle types (buses, light vehicles, and two groups of trucks, see 3.3) and 13 jurisdictions (ten provinces and three territories). Then, for efficiency of estimates, they were further divided into two vehicle-age strata of newer and older vehicles.

Next, a sample of vehicles (first stage sample) was selected from the survey population. A sample from each stratum was selected. To minimize respondent burden, no vehicle is selected more than once during any consecutive four quarters for provinces (two consecutive quarters for territories) and the three characters of the postal code were used to spread the sample over all regions.

Subsequently, seven consecutive days starting within the quarter were randomly assigned (second stage) to each vehicle selected at 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 2.).

Since the sample was selected in two stages, the sampling weight (see 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.

#### 4.1.3 Sample size

A total of 5,025 vehicles out of 17,498,869 from the survey population were drawn for the ten provinces. Another 2,373 vehicles out of 45,745 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 interview the following information is collected about each sampled vehicle: vehicle type, fuel type used, distance driven last week, some information about anticipated vehicle usage during the following six weeks, current odometer reading, and passenger capacity for buses. Then the respondent was asked to complete a seven-day trip log. If the respondent agreed to complete a trip log, personal information such as name and address were obtained in order to mail out a trip log for the vehicle.

The log type depended on the type of vehicle. There were three types of logs: a bus log, a light vehicle log and a log for the two remaining vehicle types (trucks). In all cases, the respondents were requested to record information about all the trips made in the selected vehicle over the assigned seven-day period. The collected data included information about each trip: time and date of the beginning and the end, length, purpose, number and age group of passengers, sex and age group of the driver, fuel purchases, if dangerous goods were carried, number of kilometres traveled on roads with posted speed limit of 80km/h or more, and for trucks, their configuration.

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 of the large fleets of vehicles with several vehicles in the sample had special arrangements to lower their response burden.

#### Territorial collection

The registered owners of the selected vehicles were mailed postcards and asked to provide two odometer readings, one at the beginning of the quarter and another at the beginning of the next quarter and information about the vehicle status (owned, sold, scrapped).

#### 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. At the end of this process, every vehicle had seven days of trips.

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 to assure that the estimates correspond (as closely as possible) to the population of interest several corrections were done. 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, a set of prepared vehicle lists was 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 province and territory;
- vehicle-kilometres by province and territory;
- passenger-kilometres by province;
- fuel purchased, Canada level only;
- cross tabulations of vehicle-counts, vehicle-kilometers and passenger-kilometers by a number of variables (described in Concepts and Definitions), such as body type, truck configuration, driver characteristics, time of day, day of week, etc. by province.

# 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 was made to ensure a high standard 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 population value for which the survey estimate aims at. 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 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 are conducted to obtain information from the total nonrespondents or to complete partially unanswered questionnaires for questions that are deemed essential. Various quality assurance procedures are exercised at the data capture step. The data editing procedures identify some inconsistencies in the data structure and the imputation procedures 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 CVS were observed:

- Errors in the classification variables on 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 under coverage since an older list has to be used for sampling.
- A vehicle that has been scrapped or salvaged and remained on the list causes overcoverage.
- A vehicle that was registered and subsequently unregistered between two consecutive registration lists causes undercoverage.

Thus 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. The rates of out-of-scope vehicles among all units sampled for the reference period is in the table in section 5.4.1.

Since we assume that respondent is right (unless we have hard evidence that is not) 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 lack of correct information, gives wrong information by mistake, or 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 table 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 (e.g. errors in commodity coding). A data capture error occurs when the data are misinterpreted or keyed incorrectly.

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 missing or entered in error fuel purchases for vehicles that travel only a small distance during the reported week.

#### 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. Several response rates are provided in the table below. This rate is defined as the number of vehicle-days for which respondents gave complete or partial (vehicle-kilometers only) answers to the survey divided by the total number of in-sample and in-scope vehicle-days.

PROVINCES		-kilometres eteristics re	-		ele-kilometr	Vehicles out of	Contact made but	
Y . 1 . 1 . 1	All	0km	Non 0km	All	0km	Non 0km	scope	no data
Light vehicles	42%	16%	26%	30%	3%	27%	4%	3%
Trucks 4.5t – 15t	46%	35%	12%	12%	4%	8%	9%	7%
Trucks 15t or more	47%	33%	15%	21% 4% 179		17%	11%	10%
Buses	46%	25%	21%	1%	0%	1%	5%	38%

TERRITORIES		-kilometres eteristics re	-	Vehicle-	-kilometres	Vehicles out of	Contact made but	
	All	0km	Non 0km	All	0km	Non 0km	scope	no data
Light vehicles	N/A	N/A	N/A	23%	2%	20%	8%	6%
Trucks 4.5t – 15t	N/A	N/A			12%	18%	16%	3%
Trucks 15t or more	N/A	N/A	N/A	28%	8%	20%	10%	2%
Buses	N/A	N/A	N/A	25%	6%	19%	10%	1%

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 and percentage of vehicle days imputed

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.

With the data collected during the CATI interview (past vehicle usage), the relative imputation rate of the data coming out of the imputation process was lower for vehicle-km, and much higher for other vehicle usage characteristics.

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.

The relative imputation rate is usually directly linked to the response rates and the quality of estimates. A high imputation rate usually leads to the underestimation of sampling error and may also cause a bias.

The percentage of vehicle-days imputed (reported) is defined as the proportion of vehicle-days that are imputed (reported) to total number of vehicle days:

PROVINCES	Vehi	cle days rep	orted	Vehicle days imputed					
PROVINCES	All	22% 3 59% 2 48% 2	Non 0km	All	0km	Non 0km			
Light vehicles	58%	22%	36%	42%	5%	37%			
Trucks 4.5t – 15t	79%	59%	20%	21%	7%	14%			
Trucks 15t or more	69%	48%	22%	31%	6%	24%			
Buses	98%	52%	45%	2%	0%	2%			

TERRITORIES	Veh	icle km rep	orted	Vehicle km imputed					
TERRITORIES	All	9% 40% 29%	Non 0km	All	0km	Non 0km			
Light vehicles	100%	9%	91%	N/A	N/A	N/A			
Trucks 4.5t – 15t	100%	40%	60%	N/A	N/A	N/A			
Trucks 15t or more	100%	29%	71%	N/A	N/A	N/A			
Buses	100%	25%	75%	N/A	N/A	N/A			

#### 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 compensate partially for the fact that some of the data were imputed.

#### 5.4.4 Quality indicator

The CV and the relative imputation rate should be considered simultaneously to make an assessment of the reliability of an estimate. 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 takes into account simultaneously the CV and the relative imputation rate.

<b>Quality Indicator</b>	C.V. equivalent	Explanation of estimate quality
A	Less than 5 %	Excellent
В	5 % to 10 %	Very good
C	10 % to 15 %	Good
D	15 % to 25 %	Acceptable
${f E}$	25 % to 35 %	Use with caution
•••	35 % or more	Figures not appropriate or not applicable
	N / A	Amount to small to be expressed
N	N / A	Administrative data

#### 5.5 NOTES FOR HISTORICAL COMPARISON

This is the second quarter of published estimates from CVS. It is also second year of the survey. Several changes were made to improve quality of the survey, namely to diminish non-sampling errors.

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

					Vehicle type					
	Vehicles up to 4.	Vehicles up to 4.5t		Trucks 4.5t - 15t		Trucks 15t or more			Total	
Jurisdiction:										
Newfoundland	243,736	N	3,994	N	2,612	N	1,398	N	251,740	N
Prince Edward Island	71,537	N	2,006	N	2,497	N	51	N	76,091	N
Nova Scotia	509,206	N	9,931	N	7,247	N	1,842	N	528,226	N
New Brunswick	425,239	N	9,408	N	3,506	N	2,562	N	440,715	N
Quebec	3,751,186	N	44,941	N	29,173	N	15,602	N	3,840,902	N
Ontario	6,226,452	N	76,382	N	96,211	N	26,502	N	6,425,547	N
Manitoba	573,986	N	9,486	N	10,530	N	3,502	N	597,504	N
Saskatchewan	601,558	N	45,418	N	22,871	N	3,851	N	673,698	N
Alberta	1,891,644	N	108,445	N	61,125	N	11,629	N	2,072,843	N
British Columbia	2,182,347	N	58,738	N	13,789	N	8,201	N	2,263,075	N
Yukon Territory	21,783	N	1,224	N	910	N	231	N	24,148	N
Northwest Territories	17,614	N	531	N	760	N	67	N	18,972	N
Nunavut	2,189	N	240	N	113	N	14	N	2,556	N
Canada total	16,518,477	N	370,744	N	251,344	N	75,452	N	17,216,017	N

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Number of vehicles in scope by vehicle type and jurisdiction

					Vehicle type					
	Vehicles up to 4.	Vehicles up to 4.5t		t	Trucks 15t or more		Buses		Total	
Jurisdiction:										
Newfoundland	243,736	A	3,230	В	2,227	В	1,398	А	250,591	A
Prince Edward Island	69,482	А	1,797	В	2,304	В	46	В	73,629	А
Nova Scotia	490,963	А	7,527	В	6,648	Α	1,842	А	506,980	А
New Brunswick	416,278	А	7,198	В	3,056	В	1,754	С	428,286	А
Quebec	3,715,258	А	38,237	В	27,964	Α	15,603	А	3,797,063	А
Ontario	6,193,617	А	65,135	Α	96,211	Α	26,456	Α	6,381,419	А
Manitoba	569,473	А	8,691	А	10,365	Α	3,502	А	592,031	А
Saskatchewan	590,048	А	44,061	А	20,993	Α	3,742	Α	658,844	А
Alberta	1,879,367	А	85,825	В	59,655	Α	11,630	Α	2,036,478	А
British Columbia	2,141,108	А	45,290	В	17,454	Α	8,201	Α	2,212,053	А
Yukon Territory	21,903	А	1,164	А	951	А	231	А	24,250	А
Northwest Territories	17,671	А	505	В	857	А	67	А	19,100	А
Nunavut	2,178	А	213	С	113	А	14	А	2,518	А
Canada total	16,351,082	А	308,874	А	248,798	А	74,487	Α	16,983,241	А

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Passenger-km ('000 000) by vehicle type and jurisdiction

	Vehicle type												
	Vehicles up to 4.5t		Trucks 4.5t - 15t		Trucks 15t or more		Buses		Total				
Jurisdiction:													
Newfoundland							166.5	С					
Prince Edward Island	395.5	D							396.7	D			
Nova Scotia	2 797.6	С					165.7	D	2 963.3	С			
New Brunswick	2 751.5	С					357.8	D	3 109.3	С			
Quebec							2 526.9	D	25 497.0	D			
Ontario	39 169.0	В					3 618.9	Е	42 787.8	В			
Manitoba	3 804.5	D					246.7	D	4 051.2	D			
Saskatchewan	4 454.6	D					213.6	D	4 668.2	D			
Alberta							791.5	D	11 386.4	D			
British Columbia	11 790.1	С							12 658.8	С			
All provinces	100 796.5	В					8 957.5	D	109 754.1	В			

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<sup>-</sup> ALL PASSENGER-KM ESTIMATES EXCLUDE BUS URBAN TRANSIT.

<sup>-</sup> FOR THE REFERENCE YEAR 2000 ALL TRUCKS ARE EXCLUDED FROM PASSENGER-KM ESTIMATES.

Vehicle-km ('000 000) by vehicle type and jurisdiction

					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more		Buses		Total	
Jurisdiction:										
Newfoundland	1 213.8	С	6.6	D	21.6	E	6.5	С	1 248.5	С
Prince Edward Island	260.3	С			21.0	Е			284.1	С
Nova Scotia	1 641.7	В	33.3	D	141.6	D	10.0	D	1 826.6	В
New Brunswick	1 655.6	В	26.2	Е			14.4	С	1 715.5	В
Quebec	13 668.5	В	169.0	D	752.0	С	127.1	С	14 716.7	В
Ontario	23 817.0	А	335.1	D	2 816.7	В	196.8	D	27 165.6	А
Manitoba	2 314.5	С	23.1	D	197.0	D	17.8	D	2 552.3	В
Saskatchewan	2 641.4	С			227.7	D	17.7	С	2 955.5	С
Alberta	7 372.7	В	231.9	D	1 204.4	С	58.6	С	8 867.6	В
British Columbia	7 700.9	В	204.9	D	374.3	С	68.8	D	8 348.9	В
Yukon Territory	65.4	В	2.5	Е	15.1	D	1.8	Е	84.8	В
Northwest Territories	43.0	С			12.8	D			56.6	В
Nunavut	5.1	D							5.7	D
Canada total	62 400.0	А	1 105.3	В	5 803.7	В	519.5	В	69 828.5	А

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

					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Fuel type										
Gasoline	16,141,422	N	204,091	N	41,476	N	20,402	N	16,407,391	N
Diesel	308,418	N	155,500	N	208,929	N	50,439	N	723,286	N
Other	55,720	N	10,393	N	711	N	4,500	N	71,324	N
Unknown	12,936	N	775	N	245	N	127	N	14,083	N
Total	16,518,496	N	370,759	N	251,361	N	75,468	N	17,216,084	N

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Passenger-km ('000 000) by vehicle type and vehicle model year

				Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15t	Trucks 15t or more	)	Buses		Total	
Vehicle model year									
1998 and later	23 500.5	D						26 346.7	D
1995 - 1997	22 950.0	С				2 132.7	Е	25 082.8	С
1991 - 1994	24 806.7	С				2 325.1	D	27 131.8	С
1987 - 1990	19 238.7	D				1 314.6	D	20 553.3	D
1986 and earlier						339.0	E		
Total	100 796.5	В				8 957.5	D	109 754.1	В

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<sup>-</sup> FOR THE REFERENCE YEAR 2000 ALL TRUCKS ARE EXCLUDED FROM PASSENGER-KM ESTIMATES.

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

					Vehicle type					
	Vehicles up to 4.5	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Vehicle model year										
1998 and later	13 598.6	В	309.7	D	3 033.1	С	111.6	Е	17 052.9	В
1995 - 1997	14 087.4	В	303.6	D	1 617.7	С	130.8	D	16 139.5	В
1991 - 1994	16 265.3	В	269.3	D	459.4	D	151.1	D	17 145.1	В
1987 - 1990	11 796.2	В	161.3	D	439.1	Е	76.0	D	12 472.6	В
1986 and earlier	6 539.1	С	57.8	Е			48.0	D	6 871.4	С
Total	62 286.5	Α	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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Passenger-km ('000 000) by vehicle type and vehicle body type

				Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15t	Trucks 15t or more	9	Buses		Total	
Vehicle body type									
Car	50 184.7	В						50 184.7	В
Station wagon	3 031.1	Е						3 031.1	Е
Van	23 701.9	D				87.6	Е	23 789.5	D
Sport utility vehicle	6 556.6	D						6 556.6	D
Pickup	15 828.2	С						15 831.7	D
Straight truck									
Tractor trailer									
Bus						8 822.2	D	8 822.2	D
Other									
Total	100 796.5	В				8 957.5	D	109 754.1	В

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<sup>-</sup> FOR THE REFERENCE YEAR 2000 ALL TRUCKS ARE EXCLUDED FROM PASSENGER-KM ESTIMATES.

Vehicle-km ('000 000) by vehicle type and vehicle body type

					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	е	Buses		Total	
Vehicle body type										
Car	32 571.0	А							32 583.3	А
Station wagon	1 880.0	D							1 880.0	D
Van	11 282.4	С							11 332.4	С
Sport utility vehicle	4 351.3	С							4 353.1	С
Pickup	11 164.4	В	220.7	D					11 389.9	В
Straight truck			511.2	С	781.2	С			1 517.5	С
Tractor trailer					4 973.8	В			4 977.3	В
Bus							495.1	В	495.1	В
Other			317.4	D	19.3	D				
Total	62 286.5	А	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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Number of vehicles in scope by vehicle type and vehicle body type  $% \left( \frac{1}{2}\right) =\left( \frac{1}{2}\right) ^{2}$ 

					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Vehicle body type										
Car	9,285,478	А							9,286,320	А
Station wagon	495,949	С							495,949	С
Van	2,410,109	В	5,208	Е			2,958	Е	2,418,377	В
Sport utility vehicle	1,033,835	В							1,035,090	В
Pickup	2,895,977	В	62,592	С					2,959,115	В
Straight truck	122,842	Е	172,663	В	104,578	В			400,707	В
Tractor trailer					137,039	Α			140,549	А
Bus							68,362	А	68,936	А
Other			58,193	С	5,087	Е			132,331	D
Total	16,311,949	А	304,836	А	247,127	Α	73,461	Α	16,937,373	A

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

				Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15t	Trucks 15t or more	)	Buses		Total	
Fuel type									
Gasoline	97 231.6	В				857.1	D	98 088.7	В
Diesel	2 744.7	Е				7 833.5	D	10 578.2	D
Other	820.3	Α				267.0	А	1 087.2	А
Total	100 796.5	В				8 957.5	D	109 754.1	В

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<sup>-</sup> FOR THE REFERENCE YEAR 2000 ALL TRUCKS ARE EXCLUDED FROM PASSENGER-KM ESTIMATES.

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

					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	е	Buses		Total	
Fuel type										
Gasoline	59 720.2	А	187.9	D	25.2	Е	96.0	С	60 029.3	A
Diesel	1 904.7	D	849.5	С	5 750.4	В	413.8	В	8 918.4	В
Other	661.6	Α	64.4	А			7.7	А	733.7	А
Total	62 286.5	Α	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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

[									
				Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15t	Trucks 15t or more	9	Buses		Total	
Day of the week									
Sunday	13 505.5	С						14 033.2	С
Monday	13 922.1	В				1 631.3	D	15 553.4	В
Tuesday	13 371.0	В				1 483.6	D	14 854.5	В
Wednesday	15 044.9	D				1 507.0	С	16 551.9	D
Thursday	14 857.3	В				1 478.9	С	16 336.2	В
Friday	15 267.1	В				1 566.7	D	16 833.8	В
Saturday	14 828.7	В						15 591.0	В
Total	100 796.5	В				8 957.5	D	109 754.1	В

<sup>-</sup> THE LETTER BESIDE EACH ESTIMATE CLASSIFIES ITS QUALITY AS FOLLOWS: N - ADMINISTRATIVE DATA, -- - AMOUNT TOO SMALL TO BE EXPRESSED, A - EXCELLENT, B - VERY GOOD, C - GOOD, D - ACCEPTABLE, E - USE WITH CAUTION, ... - FIGURES NOT APPROPRIATE OR NOT APPLICABLE. - DUE TO ROUNDING THE NUMBERS MAY NOT ADD UP AND DIFFER SLIGHTLY AMONG THE TABLES.

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<sup>-</sup> FOR THE REFERENCE YEAR 2000 ALL TRUCKS ARE EXCLUDED FROM PASSENGER-KM ESTIMATES.

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

					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Day of the week										
Sunday	7 058.0	В	30.7	Е	388.2	D	21.9	Е	7 498.9	В
Monday	9 072.8	В	192.5	С	774.9	С	90.3	В	10 130.6	В
Tuesday	9 174.4	Α	197.6	С	1 056.6	С	88.9	В	10 517.5	А
Wednesday	9 222.7	В	193.7	С	1 093.6	С	89.0	В	10 599.0	А
Thursday	9 517.3	Α	197.3	С	1 111.0	С	89.8	В	10 915.4	А
Friday	9 723.8	Α	216.2	С	892.0	С	103.0	В	10 935.1	А
Saturday	8 517.3	В			459.2	D	34.7	D	9 085.0	В
Total	62 286.5	Α	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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Passenger-km ('000 000) by vehicle type and driver age group

				Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15t	Trucks 15t or more	9	Buses		Total	
Driver age									
Under 20 years	1 928.7	D						1 928.7	D
20 - 24 years	4 548.5	D						4 633.1	D
25 - 34 years						430.2	D		
35 - 44 years	31 804.6	С						35 251.3	С
45 - 54 years	21 979.2	В				3 557.2	D	25 536.4	В
55 - 64 years	16 255.7	D				1 331.4	Е	17 587.0	D
65 - 74 years	6 858.6	D						6 966.0	D
75 - 84 years	1 721.9	D						1 721.9	Е
85 years and over									
Total	100 796.5	В				8 957.5	D	109 754.1	В

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<sup>-</sup> FOR THE REFERENCE YEAR 2000 ALL TRUCKS ARE EXCLUDED FROM PASSENGER-KM ESTIMATES.

Vehicle-km ('000 000) by vehicle type and driver age group

					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Driver age										
Under 20 years	1 169.6	D							1 170.1	D
20 - 24 years	3 365.5	D							3 630.6	D
25 - 34 years	9 489.5	С	292.2	D			35.2	D	11 539.6	С
35 - 44 years	18 495.0	В	380.7	Е	2 001.0	D	182.2	D	21 058.8	В
45 - 54 years	14 360.1	В	198.3	D	965.2	D	207.8	С	15 731.5	В
55 - 64 years	9 860.1	С	137.6	Е			77.2	D	10 905.2	С
65 - 74 years	4 257.4	С							4 356.1	D
75 - 84 years	1 094.4	D							1 094.7	E
85 years and over										
Total	62 286.5	А	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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Vehicles up to 4.5t: Passenger-km ('000 000) by vehicle type and trip purpose (specific to vehicle type)

	Vehicle type	
	Vehicles up to 4.5t	
Trip purpose		
To go home	39 913.8	С
To go to work or school	11 666.9	В
To do shopping or errands	15 437.1	В
To go to a recreational or social activity	15 869.6	С
To go somewhere else	10 599.5	С
(Job) picking up or delivering goods		
(Job) to or from service call	2 098.1	D
(Job) other work purpose	2 605.2	D
Total	100 796.5	В

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Vehicles up to 4.5t: Vehicle-km ('000 000) by vehicle type and trip purpose (specific to vehicle type)

	Vehicle type	
	Vehicles up to 4.	5t
Trip purpose		
To go home	23 695.9	В
To go to work or school	9 096.8	В
To do shopping or errands	9 477.2	В
To go to a recreational or social activity	7 684.8	В
To go somewhere else	6 340.1	С
(Job) picking up or delivering goods		
(Job) to or from service call	1 667.0	D
(Job) other work purpose	1 943.4	D
Total	62 286.5	А

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Trucks 4.5t or more: Vehicle-km ('000 000) by vehicle type and trip purpose (specific to vehicle type)

	Vel	hicle	e type	
	Trucks 4.5t - 15	t	Trucks 15t or mor	е
Trip purpose				
Driving to or from service call	224.6	D	36.4	Е
Carrying goods or equipment	539.8	D	4 113.2	С
Empty	48.6	Е	953.3	D
Other work purpose			98.1	Е
Non-work purpose	240.0	D		
Total	1 101.8	В	5 775.6	В

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Buses: Passenger-km ('000 000) by vehicle type and trip purpose (specific to vehicle type)

	Vehicle type	
	Buses	
Trip purpose		
Scheduled intercity		
School School	5 451.2	С
Charter	418.5	Е
Other		
Total	8 957.5	D

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Buses: Vehicle-km ('000 000) by vehicle type and trip purpose (specific to vehicle type)

	Vehicle type	
	Buses	
Trip purpose		
Scheduled urban	100.5	D
Scheduled intercity	55.6	Е
School School	263.5	В
Charter	12.0	Е
Other	86.0	Е
Total	517.6	В

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

				Vehicle type					
	Vehicles up to 4.5	Vehicles up to 4.5t		Trucks 15t or more	)	Buses		Total	
Driver sex									
Male	71 625.7	В				6 045.5	D	77 671.2	В
Female	29 170.8	В				2 912.0	D	32 082.9	В
Total	100 796.5	В				8 957.5	D	109 754.1	В

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

					Vehicle type					
	Vehicles up to 4.5	Vehicles up to 4.5t		t	Trucks 15t or more	9	Buses		Total	
Driver sex										
Male	43 526.0	В	1 077.3	С	5 755.4	С	349.4	С	50 708.1	В
Female	18 760.5	В					168.1	С	18 973.3	В
Total	62 286.5	А	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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

					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 151	:	Trucks 15t or more	)	Buses		Total	
Time of day										
00:00 - 05:59	3 239.2	Е							3 504.9	E
06:00 - 11:59	29 674.4	В					4 047.1	D	33 721.5	В
12:00 - 17:59	46 994.0	В					3 769.6	D	50 763.6	В
18:00 - 23:59	20 888.9	С					875.2	E	21 764.2	С
Total	100 796.5	В					8 957.5	D	109 754.1	В

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

	Vehicles up to 4.5	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Time of day										
00:00 - 05:59	1 915.9	D	62.0	E	737.1	D			2 732.7	D
06:00 - 11:59	20 257.3	В	461.5	С	1 843.5	В	224.0	В	22 786.3	В
12:00 - 17:59	28 745.3	Α	473.2	С	2 164.7	С	219.9	В	31 603.0	А
18:00 - 23:59	11 368.0	В	105.1	D	1 030.2	С	56.1	D	12 559.4	В
Total	62 286.5	Α	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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Passenger-km ('000 000) by vehicle type and carrying dangerous goods

					Vehicle type					
	Vehicles up to 4.5	5t	Trucks 4.5t - 15t	:	Trucks 15t or more	)	Buses		Total	
Carrying dangerous goods										
Yes										
No	100 783.7	В					8 957.5	D	109 741.2	В
Total	100 796.5	В					8 957.5	D	109 754.1	В

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	Vehicles up to 4.5t		Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Carrying dangerous goods										
Yes					392.4	Е			498.2	E
No	62 279.7	А	1 002.7	В	5 383.1	С	517.6	В	69 183.2	А
Total	62 286.5	А	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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

		Vehicle type								
	Vehicles up to 4.5	Vehicles up to 4.5t			Trucks 15t or more	9	Buses	Total		
Day type										
Non-working days	28 404.8	В							29 689.6	В
Working days	72 391.8	В					7 672.7	С	80 064.5	В
Total	100 796.5	В					8 957.5	D	109 754.1	В

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

					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	)	Buses		Total	
Day type										
Non-working days	15 614.0	А	108.6	Е	860.2	D	56.5	D	16 639.2	А
Working days	46 672.5	А	993.2	С	4 915.4	С	461.1	В	53 042.2	А
Total	62 286.5	А	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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

	Vehicle type								
	Vehicles up to 4.5	up to 4.5t Buses							
Road type									
Road with posted maximum speed of 80km/h or more	53 857.6	В	4 071.6	D					
Other roads	46 939.0	Α	4 885.9	С					
Total	100 796.5	В	8 957.5	D					

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

	Vehicle type									
	Vehicles up to 4.	Buses								
Road type										
Road with posted maximum speed of 80km/h or more	31 731.8	В	197.2	С						
Other roads	30 554.7	А	320.4	В						
Total	62 286.5	А	517.6	В						

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Passenger-km ('000 000) by vehicle type and passenger age group

	Vehicle type					
	Vehicles up to 4.5t					
Passenger age						
Under 5 years	2 253.8	D				
5-14 years	9 075.3	D				
15 years and over	89 467.5	В				
Total	100 796.5	В				

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Vehicles up to 4.5t: Passenger-km ('000 000) by vehicle type, vehicle group and trip purpose

		Vehicle type	
		Vehicles up to 4.	.5t
Vehicle group	Trip purpose		
Car and Station wagon	To go home		
	To go to work or school	6 799.1	В
	To do shopping or errands	9 509.4	Е
	To go to a recreational or social activity	8 128.6	C
	To go somewhere else		
	(Job) picking up or delivering goods		
	(Job) to or from service call		
	(Job) other work purpose		Ţ.,
	Total	53 215.9	Е
Other below 4.5t	To go home		Ţ.,
	To go to work or school	4 867.9	C
	To do shopping or errands	5 927.7	C
	To go to a recreational or social activity	7 741.0	D
	To go somewhere else	4 407.0	0
	(Job) picking up or delivering goods		
	(Job) to or from service call	1 201.3	E
	(Job) other work purpose		
	Total	47 580.7	(

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Vehicles up to 4.5t: Vehicle-km ('000 000) by vehicle type, vehicle group and trip purpose  ${\sf Vehicle}$ 

		Vehicle type	
		Vehicles up to 4.	.5t
Vehicle group	Trip purpose		
Car and Station wagon	To go home	13 260.1	В
	To go to work or school	5 520.8	В
	To do shopping or errands	5 873.1	В
	To go to a recreational or social activity	4 445.3	С
	To go somewhere else	3 747.8	D
	(Job) picking up or delivering goods		
	(Job) to or from service call	656.7	Е
	(Job) other work purpose	614.2	Е
	Total	34 451.0	А
Other below 4.5t	To go home		
	To go to work or school	3 576.0	С
	To do shopping or errands	3 604.1	С
	To go to a recreational or social activity	3 239.4	D
	To go somewhere else	2 592.3	D
	(Job) picking up or delivering goods		
	(Job) to or from service call	1 010.3	Е
	(Job) other work purpose	1 329.1	E
	Total	27 835.4	В

<sup>-</sup> THE LETTER BESIDE EACH ESTIMATE CLASSIFIES ITS QUALITY AS FOLLOWS: N - ADMINISTRATIVE DATA, -- - AMOUNT TOO SMALL TO BE EXPRESSED, A - EXCELLENT, B - VERY GOOD, C - GOOD, D - ACCEPTABLE, E - USE WITH CAUTION, ... - FIGURES NOT APPROPRIATE OR NOT APPLICABLE. - DUE TO ROUNDING THE NUMBERS MAY NOT ADD UP AND DIFFER SLIGHTLY AMONG THE TABLES.

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

					Vehicle type					
		Vehicles up to 4.	5t	Trucks 4.5t - 15t	Trucks 15t or more	)	Buses		Total	
Day type	Time of day									
Non-working days	00:00 - 05:59	822.0	Е							
	06:00 - 11:59	7 503.5	В						7 933.7	В
	12:00 - 17:59	14 212.0	В						14 743.8	В
	18:00 - 23:59	5 867.3	D						6 137.8	D
	Total	28 404.8	В						29 689.6	В
Working days	00:00 - 05:59									
	06:00 - 11:59	22 170.9	В				3 616.9	С	25 787.8	В
	12:00 - 17:59	32 782.0	В				3 237.8	С	36 019.8	В
	18:00 - 23:59	15 021.6	С				604.8	Е	15 626.4	С
	Total	72 391.8	В				7 672.7	С	80 064.5	В
Total	00:00 - 05:59	3 239.2	Е						3 504.9	Е
	06:00 - 11:59	29 674.4	В				4 047.1	D	33 721.5	В
	12:00 - 17:59	46 994.0	В				3 769.6	D	50 763.6	В
	18:00 - 23:59	20 888.9	С				875.2	Е	21 764.2	С
	Total	100 796.5	В				8 957.5	D	109 754.1	В

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<sup>-</sup> ALL PASSENGER-KM ESTIMATES EXCLUDE BUS URBAN TRANSIT.

<sup>-</sup> FOR THE REFERENCE YEAR 2000 ALL TRUCKS ARE EXCLUDED FROM PASSENGER-KM ESTIMATES.

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

						Vehicle type					
		Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Day type	Time of day										
Non-working days	00:00 - 05:59	489.5	D			105.9	E			605.7	D
	06:00 - 11:59	4 593.2	В			270.0	D	17.2	Е	4 926.2	В
	12:00 - 17:59	7 647.1	В			308.2	D	23.9	D	8 024.2	В
	18:00 - 23:59	2 884.1	В			176.1	D	11.9	Е	3 083.1	В
	Total	15 614.0	А	108.6	Е	860.2	D	56.5	D	16 639.2	А
Working days	00:00 - 05:59	1 426.3	С	55.1	Е	631.3	D	14.2	Е	2 127.0	С
	06:00 - 11:59	15 664.1	А	415.8	С	1 573.5	В	206.7	В	17 860.1	А
	12:00 - 17:59	21 098.2	А	428.2	С	1 856.5	С	196.0	В	23 578.8	А
	18:00 - 23:59	8 483.9	В	94.1	D	854.1	D	44.2	D	9 476.3	В
	Total	46 672.5	А	993.2	С	4 915.4	С	461.1	В	53 042.2	А
Total	00:00 - 05:59	1 915.9	D	62.0	Е	737.1	D			2 732.7	D
	06:00 - 11:59	20 257.3	В	461.5	С	1 843.5	В	224.0	В	22 786.3	В
	12:00 - 17:59	28 745.3	А	473.2	С	2 164.7	С	219.9	В	31 603.0	А
	18:00 - 23:59	11 368.0	В	105.1	D	1 030.2	С	56.1	D	12 559.4	В
	Total	62 286.5	А	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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Passenger-km ('000 000) by vehicle type, driver age group and driver  $\ensuremath{\mathsf{sex}}$ 

					Vehicle type					
		Vehicles up to 4.	5t	Trucks 4.5t - 15t	Trucks 15t or more	9	Buses		Total	
Driver age group	Driver sex									
Under 25 years	Male	4 558.1	D						4 567.5	D
	Female	1 919.1	D						1 994.3	D
	Total	6 477.2	D						6 561.8	D
25 - 55 years	Male	46 567.6	В				4 869.7	D	51 437.3	В
	Female	22 557.1	В				2 564.5	D	25 121.5	В
	Total	69 124.7	В				7 434.2	D	76 558.9	В
55 years and over	Male	20 499.9	С				1 166.4	Е	21 666.4	С
	Female	4 694.7	D						4 967.0	D
	Total	25 194.7	С				1 438.7	Е	26 633.4	С
Total	Male	71 625.7	В				6 045.5	D	77 671.2	В
	Female	29 170.8	В				2 912.0	D	32 082.9	В
	Total	100 796.5	В				8 957.5	D	109 754.1	В

<sup>-</sup> THE LETTER BESIDE EACH ESTIMATE CLASSIFIES ITS QUALITY AS FOLLOWS: N - ADMINISTRATIVE DATA, -- - AMOUNT TOO SMALL TO BE EXPRESSED, A - EXCELLENT, B - VERY GOOD, C - GOOD, D - ACCEPTABLE, E - USE WITH CAUTION, ... - FIGURES NOT APPROPRIATE OR NOT APPLICABLE. - DUE TO ROUNDING THE NUMBERS MAY NOT ADD UP AND DIFFER SLIGHTLY AMONG THE TABLES.

<sup>-</sup> ALL PASSENGER-KM ESTIMATES EXCLUDE BUS URBAN TRANSIT.

<sup>-</sup> FOR THE REFERENCE YEAR 2000 ALL TRUCKS ARE EXCLUDED FROM PASSENGER-KM ESTIMATES.

Vehicle-km ('000 000) by vehicle type, driver age group and driver  $\ensuremath{\text{sex}}$ 

						Vehicle type					
		Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	е	Buses		Total	
Driver age group	Driver sex										
Under 25 years	Male	3 178.6	D							3 439.6	D
	Female	1 356.6	D							1 361.0	D
	Total	4 535.1	D							4 800.6	D
25 - 55 years	Male	28 160.0	В	849.6	С	4 668.7	С	271.0	С	33 949.3	В
	Female	14 184.6	В					154.1	D	14 380.6	В
	Total	42 344.6	В	871.2	С	4 688.9	С	425.1	В	48 329.9	В
55 years and over	Male	12 187.4	В	167.3	Е	890.1	Е	74.4	D	13 319.2	С
	Female	3 219.3	D					9.6	Е	3 231.7	D
	Total	15 406.7	В	170.1	D	890.1	Е	84.0	D	16 550.9	В
Total	Male	43 526.0	В	1 077.3	С	5 755.4	С	349.4	С	50 708.1	В
	Female	18 760.5	В					168.1	С	18 973.3	В
	Total	62 286.5	А	1 101.8	В	5 775.6	В	517.6	В	69 681.4	А

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Fuel ('000 000 litres) purchased by vehicle type and fuel type  $\ensuremath{\text{\text{type}}}$ 

		Vehicle type											
	Vehicles up to 4.5t		Trucks 4.5t - 15	Trucks 15t or more	Buses		Total						
Fuel type													
Gasoline	6 793.9	В	43.8	Е			31.2	С	6 883.5	В			
Diesel	217.3	Е	215.1	D	2 601.2	С	111.9	В	3 145.5	В			

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Vehicle type: Vehicles up to 4.5t

							Jurisdictio	n						
	Newfound- land	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														
1980 or earlier	3,345	1,887	14,751	7,845	49,745	146,361	30,663	53,953	145,036	139,407	2,241	1,182	81	596,497
1981	1,008	601	3,287	2,598	14,057	35,490	7,608	14,136	37,657	43,400	569	311	21	160,743
1982	733	358	2,606	1,785	8,405	26,784	6,867	12,413	29,554	28,964	365	266	24	119,124
1983	1,176	819	4,196	3,756	16,154	45,672	8,744	14,099	32,153	35,680	425	267	22	163,163
1984	2,600	1,683	9,085	8,175	48,598	95,318	15,962	20,968	52,119	58,774	678	460	53	314,473
1985	3,990	2,291	12,738	11,402	79,441	150,506	20,802	24,372	67,059	73,997	780	566	79	448,023
1986	6,122	3,072	18,321	15,714	121,251	223,462	28,554	31,589	90,061	104,749	1,091	688	83	644,757
1987	8,633	4,040	22,835	19,859	167,608	275,954	27,398	27,121	78,654	105,626	1,133	592	102	739,555
1988	15,775	5,816	32,060	28,438	238,965	383,975	33,319	32,544	101,304	124,451	1,362	910	145	999,064
1989	18,063	5,958	34,076	29,920	246,156	412,601	33,150	32,442	106,352	135,752	1,351	973	135	1,056,929
1990	16,898	6,007	34,298	29,565	252,181	406,414	35,498	33,464	110,794	146,394	1,370	989	147	1,074,019
1991	17,116	5,156	32,568	28,357	257,009	391,410	36,593	34,383	109,896	141,250	1,202	919	162	1,056,021
1992	17,515	5,644	35,100	30,707	285,883	417,132	37,054	34,542	105,927	141,795	1,169	818	135	1,113,421
1993	18,081	5,205	33,677	27,194	256,717	392,091	33,233	31,460	96,581	130,335	1,136	858	141	1,026,709
1994	18,009	5,042	34,303	27,254	242,149	388,265	32,189	33,143	101,021	123,442	1,133	997	160	1,007,107
1995	16,724	4,927	34,558	27,834	257,640	412,766	34,818	35,091	106,679	126,022	1,158	1,047	153	1,059,417
1996	12,694	3,653	28,405	22,388	205,532	339,336	29,938	28,851	89,770	99,579	865	875	115	862,001
1997	17,660	3,387	33,729	27,012	262,318	429,701	37,857	36,704	122,068	127,387	1,234	1,355	143	1,100,555
1998	21,686	2,837	39,833	32,984	319,918	506,758	40,800	37,553	142,528	130,837	1,145	1,421	139	1,278,439
1999	20,819	2,319	35,461	29,750	301,779	495,450	31,848	24,305	116,616	116,473	1,113	1,501	131	1,177,565
2000	5,077	834	13,288	12,661	119,435	250,327	11,071	8,374	49,403	47,878	266	609	23	519,246
2001	3	5	37	36	226	684	24	54	416	161	2	14	1	1,663
Unknown	15	0	0	12	22	0	0	1	0	0	0	1	0	51
TOTAL	243,742	71,541	509,212	425,246	3,751,189	6,226,457	573,990	601,562	1,891,648	2,182,353	21,788	17,619	2,195	16,518,542

<sup>-</sup> DUE TO ROUNDING THE NUMBERS MAY NOT ADD UP TO THE TOTALS AND DIFFER SLIGHTLY AMONG TABLES.

Vehicle type: Trucks 4.5t - 15t

						,	Jurisdictio	า						
	Newfound- land	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														
1980 or earlier	515	871	2,122	566	7,183	4,743	1,890	27,709	32,649	9,351	402	58	36	88,095
1981	96	103	235	122	1,039	1,069	256	1,436	3,797	1,970	50	21	2	10,196
1982	54	57	186	77	640	709	204	912	2,012	815	33	12	4	5,715
1983	75	49	178	67	452	709	143	702	1,441	616	15	10	4	4,461
1984	131	79	289	119	1,290	1,222	247	703	2,043	1,062	37	22	3	7,247
1985	178	87	377	204	1,860	2,095	347	722	2,732	1,431	51	24	9	10,117
1986	195	92	419	250	2,046	2,808	450	899	3,311	1,978	37	26	11	12,522
1987	208	85	489	255	2,559	3,316	381	682	2,128	1,847	32	15	18	12,015
1988	324	95	602	364	3,222	4,866	450	795	4,025	2,716	57	26	17	17,559
1989	246	93	568	310	2,464	4,315	434	664	3,810	2,960	55	33	15	15,967
1990	250	66	567	312	2,613	4,650	533	775	4,141	3,338	60	37	15	17,357
1991	219	49	355	313	1,863	2,984	442	650	3,969	2,444	42	26	9	13,365
1992	179	29	337	388	1,494	3,032	376	651	3,535	2,493	41	26	6	12,587
1993	189	37	374	555	1,632	3,703	414	960	3,906	2,945	27	19	9	14,770
1994	202	41	369	598	2,019	4,485	409	939	4,826	3,171	44	18	11	17,132
1995	255	54	551	723	2,695	5,590	560	1,098	5,304	3,848	44	40	30	20,792
1996	138	26	334	610	1,706	4,085	411	719	4,043	2,770	34	20	10	14,906
1997	172	30	403	746	1,829	5,444	482	1,033	6,368	3,767	46	34	16	20,370
1998	131	21	506	1,057	2,350	5,629	432	1,067	5,986	3,193	41	25	10	20,448
1999	196	35	533	1,369	2,954	8,097	507	1,761	6,002	4,499	69	33	8	26,063
2000	40	11	139	398	1,030	2,803	123	541	2,335	1,494	11	11	0	8,936
2001	0	0	3	10	3	33	1	4	87	34	1	0	0	176
Unknown	4	0	0	1	3	0	0	0	0	0	0	0	0	8
TOTAL	3,997	2,010	9,936	9,414	44,946	76,387	9,492	45,422	108,450	58,742	1,229	536	243	370,804

<sup>-</sup> DUE TO ROUNDING THE NUMBERS MAY NOT ADD UP TO THE TOTALS AND DIFFER SLIGHTLY AMONG TABLES.

Vehicle type: Trucks 15t or more

	Jurisdiction													
	Newfound- land	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														
1980 or earlier	231	728	761	256	532	3,192	978	6,377	13,350	2,059	147	90	7	28,708
1981	37	116	132	61	113	727	150	711	2,265	456	32	26	2	4,828
1982	25	64	90	41	78	564	106	379	1,093	176	12	14	0	2,642
1983	22	45	42	20	50	395	59	147	326	53	5	5	5	1,174
1984	89	133	160	121	260	1,282	223	510	967	273	11	22	3	4,054
1985	111	146	253	144	462	2,101	315	687	1,647	365	30	22	1	6,284
1986	118	181	255	170	541	2,824	381	759	1,886	474	25	15	1	7,630
1987	147	200	349	230	869	3,885	423	764	1,645	555	17	14	4	9,102
1988	201	165	404	236	1,134	4,198	443	854	2,306	664	31	23	2	10,661
1989	193	114	359	192	885	4,453	425	699	2,137	578	31	33	2	10,101
1990	125	104	250	212	902	4,152	376	719	2,336	956	34	30	3	10,199
1991	131	54	168	136	499	2,683	222	492	1,767	541	23	28	9	6,753
1992	88	34	176	93	680	2,743	295	438	1,516	710	37	31	7	6,848
1993	90	44	272	164	1,186	4,059	456	645	2,033	665	27	23	1	9,665
1994	141	60	381	180	2,090	5,821	677	798	3,058	810	35	48	7	14,106
1995	175	89	571	279	3,040	9,404	794	952	3,769	879	45	66	14	20,077
1996	139	49	457	175	2,169	6,692	741	723	2,944	823	72	49	8	15,041
1997	119	24	339	172	2,244	6,495	698	814	3,520	869	72	65	4	15,435
1998	180	54	646	203	4,100	10,706	1,032	1,861	5,238	773	94	58	11	24,956
1999	164	63	690	267	4,334	11,638	1,084	2,589	4,518	718	79	61	23	26,228
2000	86	35	492	154	2,993	8,157	657	955	2,774	393	54	42	4	16,796
2001	0	0	2	3	8	45	2	5	36	3	2	2	0	108
Unknown	4	0	1	0	10	0	0	0	0	0	0	0	0	15
TOTAL	2,616	2,502	7,250	3,509	29,179	96,216	10,537	22,878	61,131	13,793	915	767	118	251,411

<sup>-</sup> DUE TO ROUNDING THE NUMBERS MAY NOT ADD UP TO THE TOTALS AND DIFFER SLIGHTLY AMONG TABLES.

Vehicle type: Buses

	Jurisdiction													
	Newfound- land	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														
1980 or earlier	28	13	67	385	232	634	195	310	1,784	495	18	10	4	4,175
1981	5	3	18	113	167	350	72	75	256	147	12	0	2	1,220
1982	13	0	17	122	84	156	54	125	411	239	9	1	1	1,232
1983	3	2	28	91	110	300	68	98	165	203	18	0	0	1,086
1984	9	2	32	140	192	213	98	166	267	153	6	3	0	1,281
1985	21	2	67	110	210	455	279	231	360	151	2	1	4	1,893
1986	171	4	79	125	252	556	190	226	406	216	7	2	0	2,234
1987	239	5	107	133	435	1,013	192	380	456	263	4	7	0	3,234
1988	213	1	142	161	807	1,534	278	239	574	371	17	3	1	4,341
1989	156	1	117	117	1,065	1,964	186	261	683	505	10	4	0	5,069
1990	102	0	143	185	1,182	2,272	130	283	685	498	13	2	0	5,495
1991	93	1	134	78	1,184	1,998	196	210	593	582	16	2	1	5,088
1992	92	3	80	83	1,147	1,924	182	168	594	482	7	0	0	4,762
1993	50	0	103	97	974	1,540	184	173	574	404	4	2	0	4,105
1994	25	0	56	37	1,468	1,310	269	110	421	434	13	1	0	4,144
1995	28	1	186	158	927	1,863	175	126	537	575	14	0	1	4,591
1996	19	2	81	20	1,160	1,928	175	146	444	627	18	0	0	4,620
1997	46	0	103	123	1,154	1,579	157	135	710	416	20	3	0	4,446
1998	33	0	193	185	1,094	1,999	190	168	719	735	11	1	0	5,328
1999	56	14	94	88	1,387	2,305	218	198	793	559	8	25	0	5,745
2000	1	0	1	13	376	612	18	26	205	151	7	3	0	1,413
2001	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Unknown	0	0	0	2	0	0	0	0	0	0	0	0	0	2
TOTAL	1,403	54	1,848	2,566	15,607	26,507	3,506	3,854	11,637	8,206	234	70	14	75,506

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## FOR FURTHER READING

## Selected Publications from Statistics Canada

Selected Fublications from Statistics Canada	
	Catalogue
Surface and Marine Transport - Service Bulletin - Eight issues a year. Bilingual.	50-002-XIB
Aviation - Service Bulletin - Bilingual. Monthly.	51-004-XIB
Air Carrier Traffic at Canadian Airports - Annual. Bilingual.	51-203-XIB
<b>Air Passenger Origin and Destination: Domestic Report</b> - <i>Annual</i> . Bilingual.	51-204-XIB
Canadian Civil Aviation - Annual. Bilingual.	51-206-XIB
Air Charter Statistics - Annual. Bilingual.	51-207-XIB
Railway Carloadings – Monthly. English.	52-001-XIE
French.	52-001-XIF
Rail in Canada - Annual. Bilingual.	52-216-XIB
Passenger Bus and Urban Transit Statistics - Annual. Bilingual.	53-215-XIB
Road Motor Vehicles - Fuel Sales - Annual. Bilingual.	53-218-XIB
Road Motor Vehicles - Registrations - Annual. Bilingual.	53-219-XIB
Trucking in Canada - Annual. Bilingual.	53-222-XIB
Shipping in Canada - Annual. Bilingual.	54-205-XIB
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