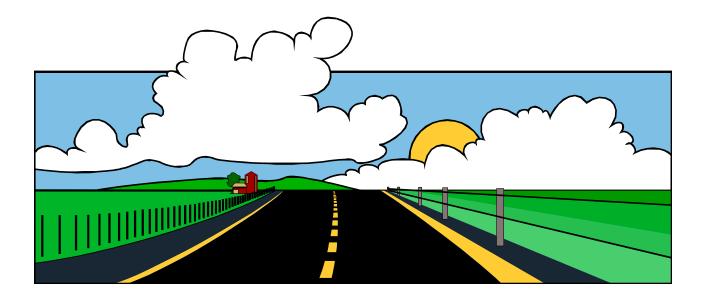


# Canadian Vehicle Survey

Quarter 3, 2000



Transport Canada

CCMTA Canadian Council of Motor Transport Administrators





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Statistics Canada

Transportation Division

# Canadian Vehicle Survey

Quarter 3, 2000

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April 2001

Catalogue no. 53F0004-XIE

Frequency: Quarterly

ISSN 1496-3736

Ottawa

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- nil or zero
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- r revised figures.
- x confidential to meet secrecy requirements of the Statistics Act.

# Acknowledgements

This publication was prepared in the Transportation Division under the direction of **Tricia Trépanier**, Director, and **John Ross**, Chief, Trucking Section.

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Significant contributions to the collection and preparation of the data were made by the following people and organizations:

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

A special note of appreciation goes to Transport Canada whose vision and funding made this survey possible.

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# **HIGHLIGHTS**

- Over 17.5 million vehicles were in-scope for the Canadian Vehicle Survey during this quarter.
- Between July 1 and September 30, 2000, these vehicles travelled an estimated 83.4 billion kilometres.
- Vehicles weighing less than 4 500 kilograms were driven an average of 4 550 kilometres while the largest of the trucks (trucks with gross weight 15 000 kilograms or more) were driven an average of 17 835 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 third 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 third quarter of 2000 is the fourth 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 April 2000. 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 April 2000 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 April 2000 to Statistics Canada for the CVS. A list created in January 2000 was used for Nunavut and the Northwest Territories. This set of prepared vehicle lists and the set of days within the third 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 4,446 vehicles out of 17,328,922 from the survey population were drawn for the ten provinces. Another 2,453 vehicles out of 45,064 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  Light vehicles		-kilometres eteristics re		•	ele-kilometr racteristics	Vehicles out of	Contact made but	
	All	0 km	Non 0 km	All	0 km	Non 0 km	scope	no data
Light vehicles	40%	15%	25%	34%	4%	30%	4%	4%
Trucks 4.5t – 15t	32%	22%	10%	19%	5%	14%	6%	11%
Trucks 15t or more	38%	23%	15%	24%	7%	17%	6%	11%
Buses	43%	34%	10%	3%	0%	3%	5%	30%

TERRITORIES		-kilometres eteristics re	-	Vehicle-	-kilometres	Vehicles out of	Contact made but	
	All	0 km	Non 0 km	All	0 km	Non 0 km	scope	no data
Light vehicles	N/A			16%	0%	16%	5%	9%
Trucks 4.5t – 15t	N/A	N/A	N/A	14%	1%	14%	7%	13%
Trucks 15t or more	N/A	N/A	N/A	20%	0%	19%	7%	9%
Buses	N/A	N/A	N/A	18%	2%	16%	8%	11%

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 hicles 54% 5t - 15t 62% or more 61%	0 km	Non 0 km	All	0 km	Non 0 km			
Light vehicles	54%	20%	34%	46%	6%	40%			
Trucks 4.5t – 15t	62%	43%	19%	38%	10%	28%			
Trucks 15t or more	61%	37%	24%	39%	11%	28%			
Buses	94%	73%	21%	6%	0%	6%			

TERRITORIES	Veh	icle km rep	orted	Vehicle km imputed					
TERRITORIES	All	0 km	Non 0 km	All	0 km	Non 0 km			
Light vehicles	100%	2%	98%	N/A	N/A	N/A			
Trucks 4.5t – 15t	100%	6%	94%	N/A	N/A	N/A			
Trucks 15t or more	100%	2%	98%	N/A	N/A	N/A			
Buses	100%	9%	91%	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.

Quality Indicator	C.V. equivalent	Explanation of estimate quality
A	Less than 5 %	Excellent
В	5 % to 10 %	Very good
С	10 % to 15 %	Good
D	15 % to 20 %	Acceptable
E	20 % 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

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

Owners of buses and trucks registered in the territories are now sent two postcards 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 postcard at the end of the quarter and requesting that bus and truck 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 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 trucks in 2000.
- The changes that may affect comparability with the 1999 results:
  - 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.
  - The fuel purchased question was attached to each trip for the 2000 survey year for trucks. 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 4.5t		Trucks 4.5t - 15	Trucks 4.5t - 15t		Trucks 15t or more			Total	
Jurisdiction:										
Newfoundland	242,067	N	4,174	N	3,249	N	1,255	N	250,745	N
Prince Edward Island	73,622	N	2,152	N	2,684	N	68	N	78,526	N
Nova Scotia	516,154	N	10,297	N	7,667	N	1,891	N	536,009	N
New Brunswick	436,274	N	10,740	N	5,308	N	2,635	N	454,957	N
Quebec	3,904,084	N	57,976	N	35,365	N	16,836	N	4,014,261	N
Ontario	6,426,671	N	83,854	N	110,444	N	27,480	N	6,648,449	N
Manitoba	591,423	N	10,250	N	11,408	N	3,587	N	616,668	N
Saskatchewan	640,307	N	56,957	N	27,296	N	3,956	N	728,516	N
Alberta	1,947,094	N	111,564	N	67,955	N	12,088	N	2,138,701	N
British Columbia	2,261,162	N	62,334	N	14,590	N	8,943	N	2,347,029	N
Yukon Territory	21,302	N	1,259	N	917	N	241	N	23,719	N
Northwest Territories	17,940	N	583	N	804	N	67	N	19,394	N
Nunavut	2,373	N	255	N	124	N	17	N	2,769	N
Canada total	17,080,473	N	412,395	N	287,811	N	79,064	N	17,859,743	N

<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.

Number of vehicles in scope by vehicle type and jurisdiction

					Vehicle type					
	Vehicles up to 4.5t		Trucks 4.5t - 15	Trucks 4.5t - 15t		Trucks 15t or more			Total	
Jurisdiction:										
Newfoundland	240,779	A	3,588	В	2,840	В	1,138	В	248,345	A
Prince Edward Island	72,666	А	2,067	А	2,242	В	62	В	77,037	А
Nova Scotia	503,508	А	8,588	В	6,647	В	1,891	А	520,633	А
New Brunswick	440,340	А	6,673	С	5,139	Α	1,570	С	453,722	А
Quebec	3,795,790	А	49,467	А	34,848	Α	16,492	А	3,896,597	А
Ontario	6,357,742	А	68,106	В	98,471	Α	24,966	Α	6,549,286	А
Manitoba	595,065	А	9,823	А	11,408	Α	3,364	Α	619,660	А
Saskatchewan	636,713	А	43,382	В	21,391	В	3,842	Α	705,328	А
Alberta	1,902,089	А	72,325	В	63,627	Α	11,261	А	2,049,302	А
British Columbia	2,241,290	А	48,926	В	14,463	Α	7,891	В	2,312,571	А
Yukon Territory	21,147	А	1,218	А	917	А	241	Α	23,523	А
Northwest Territories	18,025	А	566	А	1,020	А	50	Е	19,660	А
Nunavut	2,430	А	204	Е	186	Α			2,820	А
Canada total	16,827,585	А	314,934	А	263,199	А	72,768	Α	17,478,486	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	1 863.5	Е							1 876.7	E			
Prince Edward Island	513.7	Е							517.5	Е			
Nova Scotia	4 297.7	Е							4 540.2	Е			
New Brunswick													
Quebec	27 691.3	С							28 543.1	С			
Ontario	51 328.7	С							53 179.5	С			
Manitoba	3 844.1	С							3 885.4	С			
Saskatchewan	6 470.7	Е							6 583.6	Е			
Alberta	19 435.1	D							20 001.5	D			
British Columbia	15 889.1	Е							16 258.7	Е			
All provinces	135 174.2	А					4 064.3	Е	139 238.6	А			

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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.	Vehicles up to 4.5t		Trucks 4.5t - 15t		Trucks 15t or more			Total	
Jurisdiction:										
Newfoundland	970.8	С	24.2	Е	36.6	E			1 032.8	В
Prince Edward Island	306.0	С			14.1	Е			329.0	С
Nova Scotia	2 343.6	В	55.8	Е	104.6	D	6.1	Е	2 510.1	В
New Brunswick	2 183.8	С	34.7	D	65.6	С			2 285.8	В
Quebec	16 715.2	В	501.2	D	1 003.1	В	82.5	D	18 301.9	В
Ontario	29 431.4	В	498.3	С	1 927.4	С	128.0	Е	31 985.1	В
Manitoba	2 145.6	В	48.9	D	342.4	С			2 542.4	В
Saskatchewan	3 010.9	В	89.3	Е	258.3	Е	18.3	Е	3 376.8	В
Alberta	10 124.9	В	239.1	D	745.3	D	62.0	Е	11 171.4	В
British Columbia	9 197.7	В	267.7	Е	159.7	С	21.5	Е	9 646.7	В
Yukon Territory	84.7	В	4.3	Е	20.5	Е	2.5	Е	111.9	В
Northwest Territories	66.4	С			15.7	Е			83.5	С
Nunavut	9.0	Е							9.7	Е
Canada total	76 590.0	А	1 773.4	В	4 694.1	В	329.6	С	83 387.0	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	16,672,739	N	222,079	N	39,130	N	21,109	N	16,955,057	N
Diesel	336,051	N	178,470	N	247,610	N	53,293	N	815,424	N
Other	57,859	N	11,023	N	786	N	4,550	N	74,218	N
Unknown	13,841	N	842	N	298	N	126	N	15,107	N
Total	17,080,490	N	412,414	N	287,824	N	79,078	N	17,859,806	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	40 105.0	D							40 789.5	С
1995 - 1997	33 634.5	D							35 793.6	D
1991 - 1994	32 270.7	В					502.9	Е	32 773.7	В
1987 - 1990	19 364.5	Е							19 864.9	Е
1986 and earlier										
Total	135 174.2	А					4 064.3	Е	139 238.6	А

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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 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	21 435.7	В	654.8	С	2 519.7	С	48.6	Е	24 658.9	В		
1995 - 1997	18 325.7	В	377.1	D	1 153.9	С	155.8	Е	20 012.5	В		
1991 - 1994	19 478.1	В	235.0	D	393.8	Е	28.7	Е	20 135.5	В		
1987 - 1990	11 330.4	С	249.4	Е	488.9	Е	40.1	Е	12 108.9	В		
1986 and earlier	5 860.0	С	251.6	Е	100.9	Е	53.5	Е	6 266.0	С		
Total	76 429.9	Α	1 768.0	В	4 657.2	В	326.8	С	83 181.9	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	78 831.4	С						78 831.4	С
Station wagon	3 836.4	Е						3 836.4	Е
Van	23 268.4	D						23 291.8	D
Sport utility vehicle									
Pickup									
Straight truck									
Tractor trailer									
Bus						3 959.6	Е	3 959.6	Е
Other									
Total	135 174.2	А				4 064.3	Е	139 238.6	А

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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	9	Buses		Total	
Vehicle body type										
Car	44 122.6	А							44 125.6	А
Station wagon	1 885.0	Е							1 885.0	Е
Van	11 526.4	С							11 580.3	С
Sport utility vehicle	6 239.1	D							6 245.4	D
Pickup	12 551.6	В	349.7	Е					12 901.3	В
Straight truck			948.3	С	858.3	С			1 807.3	В
Tractor trailer					3 744.7	В			3 794.5	В
Bus							316.7	С	316.7	С
Other			367.0	D					525.7	D
Total	76 429.9	Α	1 768.0	В	4 657.2	В	326.8	С	83 181.9	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	10,370,951	А							10,374,064	А
Station wagon	289,877	D							289,877	D
Van	2,277,516	В					4,358	Е	2,289,998	В
Sport utility vehicle	1,180,453	В							1,181,445	В
Pickup	2,611,759	В	46,654	D					2,658,413	В
Straight truck			185,088	В	96,049	В			294,740	В
Tractor trailer					148,602	А			152,383	А
Bus							66,560	А	66,560	А
Other			60,009	С	13,376	Е			125,003	D
Total	16,795,110	А	306,418	А	259,366	А	71,587	А	17,432,482	А

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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	130 657.3	В						130 955.2	В
Diesel						3 754.2	Е	7 972.8	Е
Other	298.4	А				12.2	А	310.6	А
Total	135 174.2	А				4 064.3	Е	139 238.6	А

<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 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	73 426.7	А	354.7	D			38.9	Е	73 835.3	А
Diesel	2 779.8	D	1 368.5	В	4 638.2	В	286.8	С	9 073.3	В
Other	223.3	А	44.8	А	4.0	Α	1.1	А	273.3	А
Total	76 429.9	А	1 768.0	В	4 657.2	В	326.8	С	83 181.9	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	 e	Buses		Total	
Day of the week										
Sunday	17 065.2	В							17 289.1	В
Monday	17 880.6	С					464.3	Е	18 344.9	С
Tuesday	19 353.8	D					628.1	Е	19 981.9	С
Wednesday	16 627.4	В					769.8	Е	17 397.3	В
Thursday	21 013.2	С					883.0	Е	21 896.2	С
Friday	21 090.6	В					687.4	Е	21 778.0	В
Saturday	22 143.3	С							22 551.2	С
Total	135 174.2	Α					4 064.3	E	139 238.6	А

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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	е	Buses		Total	
Day of the week										Ī
Sunday	8 798.3	В	105.2	Е	204.4	Е			9 137.6	В
Monday	10 272.4	В	278.9	С	723.2	С	45.9	С	11 320.3	В
Tuesday	11 423.7	В	349.9	С	1 024.9	В	42.7	С	12 841.1	В
Wednesday	10 225.1	А	340.0	С	977.1	С	59.0	С	11 601.2	А
Thursday	12 015.5	В	351.7	С	862.6	В	62.4	С	13 292.2	А
Friday	12 346.5	А	238.8	С	648.6	В	52.8	С	13 286.7	А
Saturday	11 348.6	В	103.6	Е	216.5	Е	34.3	Е	11 702.9	В
Total	76 429.9	А	1 768.0	В	4 657.2	В	326.8	С	83 181.9	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	3 384.6	Е						3 384.6	E
20 - 24 years	4 632.5	E						4 652.5	E
25 - 34 years	19 542.4	С						19 976.0	С
35 - 44 years	47 167.4	С						47 854.0	С
45 - 54 years	31 296.7	С				1 604.3	Е	32 901.0	С
55 - 64 years	14 916.2	D						16 101.7	D
65 - 74 years	10 893.9	Е						11 028.2	D
75 - 84 years	2 974.1	Е						2 974.1	Е
85 years and over									
Total	135 174.2	А				4 064.3	E	139 238.6	А

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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	e	Buses		Total	
Driver age										
Under 20 years	2 162.3	Е							2 168.3	E
20 - 24 years	3 171.3	Е							3 459.1	Е
25 - 34 years	11 917.9	С	555.8	Е	1 589.2	Е			14 096.5	С
35 - 44 years	23 022.8	С	584.4	Е			75.9	Е	25 058.4	В
45 - 54 years	18 843.5	В	397.8	Е	962.6	Е	152.0	Е	20 355.9	В
55 - 64 years	8 946.3	С					55.0	Е	9 592.0	С
65 - 74 years	6 299.2	D							6 383.1	D
75 - 84 years	1 877.5	Е							1 879.3	Е
85 years and over										
Total	76 429.9	А	1 768.0	В	4 657.2	В	326.8	С	83 181.9	A

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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	33 868.3	В
To go to work or school	14 513.1	В
To do shopping or errands	24 869.7	В
To go to a recreational or social activity	21 207.2	В
To go somewhere else	31 982.8	Е
(Job) picking up or delivering goods	2 783.5	Е
(Job) to or from service call	2 646.0	E
(Job) other work purpose	3 303.5	E
Total	135 174.2	Α

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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 4.5	5t
Trip purpose		
To go home	20 562.0	Α
To go to work or school	11 432.1	В
To do shopping or errands	13 531.1	Α
To go to a recreational or social activity	10 610.4	В
To go somewhere else	13 097.1	С
(Job) picking up or delivering goods	2 348.0	Е
(Job) to or from service call	2 364.1	Е
(Job) other work purpose	2 485.1	E
Total	76 429.9	Α

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

	Ve	hicle	e type	
	Trucks 4.5t - 15	t	Trucks 15t or mor	е
Trip purpose				
Driving to or from service call				
Carrying goods or equipment	814.2	С	3 516.2	С
Empty			508.4	D
Other work purpose	129.5	Е		
Non-work purpose	557.9	Е	258.3	Е
Total	1 768.0	В	4 657.2	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	1 610.1	Е
Charter		
Other		
Total	4 064.3	Е

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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	159.7	E
Scheduled intercity		
School	69.4	D
Charter		
0ther		
Total	326.8	С

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

	Vehicles up to 4.5	5t	Trucks 4.5t - 15t	Trucks 15t or more	)	Buses		Total	
Driver sex									
Male	92 462.5	В				3 056.8	Е	95 519.3	В
Female	42 711.7	В						43 719.3	В
Total	135 174.2	Α				4 064.3	Е	139 238.6	А

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

					Vehicle type					
	Vehicles up to 4.5	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Driver sex										
Male	51 425.0	В	1 755.5	В	4 651.7	В	238.5	D	58 070.7	A
Female	25 004.9	В					88.3	Е	25 111.2	В
Total	76 429.9	Α	1 768.0	В	4 657.2	В	326.8	С	83 181.9	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 - 15t	Trucks 15t or more	)	Buses		Total	
Time of day									
00:00 - 05:59	5 159.3	Е						5 278.3	Е
06:00 - 11:59	37 381.2	А				1 655.9	Е	39 037.1	А
12:00 - 17:59	60 424.6	А				1 797.4	Е	62 222.0	А
18:00 - 23:59	32 209.1	В						32 701.1	В
Total	135 174.2	А				4 064.3	Е	139 238.6	А

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

					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	)	Buses		Total	
Time of day										
00:00 - 05:59	3 000.6	D			440.8	Ε			3 562.0	С
06:00 - 11:59	23 711.4	А	767.5	В	1 804.4	В	133.8	С	26 417.2	А
12:00 - 17:59	33 613.4	А	752.2	С	1 678.9	В	133.7	С	36 178.3	А
18:00 - 23:59	16 104.4	В	142.8	Е	733.0	С	44.2	Е	17 024.4	В
Total	76 429.9	А	1 768.0	В	4 657.2	В	326.8	С	83 181.9	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	134 921.2	Α			 4 064.3	E	138 985.5	А
Total	135 174.2	Α			 4 064.3	E	139 238.6	А

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					Vehicle type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Carrying dangerous goods										
Yes										
No	76 280.9	А	1 729.8	В	4 317.0	В	326.8	С	82 654.5	А
Total	76 429.9	А	1 768.0	В	4 657.2	В	326.8	С	83 181.9	А

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

				Vehicle type					
	Vehicles up to 4.5	ōt	Trucks 4.5t - 15t	Trucks 15t or more	•	Buses		Total	
Day type									
Non-working days	41 289.3	В						41 930.9	В
Working days	93 884.9	В				3 422.7	Е	97 307.7	В
Total	135 174.2	Α				4 064.3	Е	139 238.6	А

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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	21 226.7	А	233.3	Е	473.9	D	65.7	Е	21 999.7	А
Working days	55 203.2	А	1 534.6	В	4 183.3	В	261.1	С	61 182.2	А
Total	76 429.9	А	1 768.0	В	4 657.2	В	326.8	С	83 181.9	А

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

	Vehicle type									
	Vehicles up to 4.	5t	Buses							
Road type										
Road with posted maximum speed of 80km/h or more	77 463.9	В	1 266.6	Е						
Other roads	57 710.3	А	2 797.7	Е						
Total	135 174.2	А	4 064.3	Е						

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

	Vehicle type									
	Vehicles up to 4.5	5t	Buses							
Road type										
Road with posted maximum speed of 80km/h or more	41 453.3	В	52.7	Е						
Other roads	34 976.6	Α	274.1	С						
Total	76 429.9	Α	326.8	С						

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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	4 902.0	Е				
5-14 years	10 624.0	D				
15 years and over	119 648.2	Α				
Total	135 174.2	Α				

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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	22 685.4	В
	To go to work or school	9 192.0	С
	To do shopping or errands	15 631.4	В
	To go to a recreational or social activity	12 960.7	С
	To go somewhere else		
	(Job) picking up or delivering goods		
	(Job) to or from service call		
	(Job) other work purpose		ļ.,
	Total	82 667.8	Е
Other below 4.5t	To go home	11 183.0	C
	To go to work or school		
	To do shopping or errands	9 238.3	Е
	To go to a recreational or social activity	8 246.5	D
	To go somewhere else	12 091.9	E
	(Job) picking up or delivering goods	2 072.0	E
	(Job) to or from service call		١.,
	(Job) other work purpose		ļ.,
	Total	52 506.4	C

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

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	13 511.0	В
	To go to work or school	7 302.7	С
	To do shopping or errands	8 714.8	В
	To go to a recreational or social activity	6 868.8	В
	To go somewhere else		ļ
	(Job) picking up or delivering goods		ļ
	(Job) to or from service call		ļ
	(Job) other work purpose		
	Total	46 007.6	А
Other below 4.5t	To go home	7 051.0	С
	To go to work or school	4 129.4	D
	To do shopping or errands	4 816.3	С
	To go to a recreational or social activity	3 741.6	D
	To go somewhere else	5 514.3	Е
	(Job) picking up or delivering goods	1 696.2	E
	(Job) to or from service call	1 641.0	E
	(Job) other work purpose		ļ
	Total	30 422.3	В

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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	9	Buses		Total	
Day type	Time of day									
Non-working days	00:00 - 05:59	1 623.6	Е						1 689.8	E
	06:00 - 11:59	10 168.7	В						10 300.9	В
	12:00 - 17:59	18 731.2	В						19 015.0	В
	18:00 - 23:59	10 765.7	D						10 925.3	С
	Total	41 289.3	В						41 930.9	В
Working days	00:00 - 05:59	3 535.7	Е						3 588.5	E
	06:00 - 11:59	27 212.5	Α				1 523.8	Е	28 736.3	А
	12:00 - 17:59	41 693.4	В				1 513.6	Е	43 207.1	В
	18:00 - 23:59	21 443.3	С						21 775.8	С
	Total	93 884.9	В				3 422.7	Е	97 307.7	В
Total	00:00 - 05:59	5 159.3	Е						5 278.3	Е
	06:00 - 11:59	37 381.2	Α				1 655.9	Е	39 037.1	А
	12:00 - 17:59	60 424.6	Α				1 797.4	Е	62 222.0	А
	18:00 - 23:59	32 209.1	В						32 701.1	В
	Total	135 174.2	Α				4 064.3	Е	139 238.6	А

<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, 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 mor	е	Buses		Total	
Day type	Time of day										
Non-working days	00:00 - 05:59	938.4	D			51.3	Е			1 009.7	С
	06:00 - 11:59	5 821.9	В	100.9	Е	178.8	D			6 122.4	В
	12:00 - 17:59	9 596.1	В	99.5	Е	169.4	D			9 891.0	В
	18:00 - 23:59	4 870.2	В	17.7	Е	74.5	Е			4 976.6	В
	Total	21 226.7	А	233.3	Е	473.9	D	65.7	Е	21 999.7	А
Working days	00:00 - 05:59	2 062.2	D			389.5	Е			2 552.3	D
	06:00 - 11:59	17 889.5	А	666.7	В	1 625.6	В	113.0	С	20 294.8	А
	12:00 - 17:59	24 017.3	А	652.6	В	1 509.6	В	107.8	С	26 287.3	А
	18:00 - 23:59	11 234.2	В	125.2	Е	658.6	D	29.9	D	12 047.8	В
	Total	55 203.2	А	1 534.6	В	4 183.3	В	261.1	С	61 182.2	А
Total	00:00 - 05:59	3 000.6	D			440.8	Е			3 562.0	С
	06:00 - 11:59	23 711.4	А	767.5	В	1 804.4	В	133.8	С	26 417.2	А
	12:00 - 17:59	33 613.4	А	752.2	С	1 678.9	В	133.7	С	36 178.3	А
	18:00 - 23:59	16 104.4	В	142.8	Е	733.0	С	44.2	Е	17 024.4	В
	Total	76 429.9	А	1 768.0	В	4 657.2	В	326.8	С	83 181.9	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	Э	Buses		Total	
Driver age group	Driver sex									
Under 25 years	Male	3 243.3	Е						3 243.3	E
	Female	4 773.8	Е						4 793.8	E
	Total	8 017.1	D						8 037.1	D
25 - 55 years	Male	69 947.6	С				1 739.6	Е	71 687.2	С
	Female	28 058.9	С						29 043.8	С
	Total	98 006.5	В				2 724.5	Е	100 731.0	В
55 years and over	Male	19 271.6	С						20 588.8	С
	Female	9 879.0	Е						9 881.7	Е
	Total	29 150.6	С						30 470.5	В
Total	Male	92 462.5	В				3 056.8	Е	95 519.3	В
	Female	42 711.7	В						43 719.3	В
	Total	135 174.2	А				4 064.3	Е	139 238.6	А

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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, driver age group and driver  $\ensuremath{\text{sex}}$ 

						Vehicle type					
		Vehicles up to 4.	5t	Trucks 4.5t - 15t		Trucks 15t or mor	Buses		Total		
Driver age group	Driver sex										
Under 25 years	Male	2 000.5	Е							2 289.6	Е
	Female	3 333.0	Е							3 337.9	Е
	Total	5 333.6	D							5 627.5	D
25 - 55 years	Male	37 747.5	В	1 525.8	С	3 921.7	В	178.2	Е	43 373.2	В
	Female	16 036.6	В					83.2	Е	16 137.6	В
	Total	53 784.2	А	1 538.1	С	3 927.1	В	261.4	D	59 510.8	А
55 years and over	Male	11 676.9	С					60.0	Е	12 408.0	С
	Female	5 635.2	D							5 635.6	D
	Total	17 312.2	В					60.3	Е	18 043.6	В
Total	Male	51 425.0	В	1 755.5	В	4 651.7	В	238.5	D	58 070.7	А
	Female	25 004.9	В					88.3	Е	25 111.2	В
	Total	76 429.9	А	1 768.0	В	4 657.2	В	326.8	С	83 181.9	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 - 15t		Trucks 15t or more		Buses		Total	
Fuel type										
Gasoline	7 918.4	А					24.3	E	8 028.5	A
Diesel			357.8	D	1 775.6	В	98.9	D	2 585.9	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														
1981 or earlier	3,862	2,683	17,635	12,651	82,253	191,930	40,337	80,249	183,152	196,119	2,615	1,414	104	815,004
1982	639	326	2,313	1,709	8,559	24,945	6,603	12,939	27,874	27,816	329	271	24	114,347
1983	1,001	756	3,740	3,551	15,512	40,350	8,461	14,554	30,522	34,311	386	250	22	153,416
1984	2,149	1,513	7,988	7,516	45,087	86,800	15,232	21,489	49,789	57,123	641	431	48	295,806
1985	3,330	2,070	11,148	10,402	72,546	132,385	19,982	24,606	63,930	71,944	713	538	77	413,671
1986	5,074	2,721	16,014	14,240	109,782	204,184	27,555	31,990	86,596	102,382	1,038	659	78	602,313
1987	7,302	3,715	20,540	18,365	154,332	251,433	26,377	27,343	76,401	103,742	1,068	578	110	691,306
1988	13,860	5,455	29,371	26,732	225,274	364,605	32,487	32,917	99,128	123,528	1,298	859	145	955,659
1989	16,436	5,689	31,808	28,731	236,199	393,983	32,565	32,792	104,805	135,293	1,299	932	141	1,020,673
1990	15,888	5,877	32,831	28,642	246,473	398,220	35,221	33,906	109,964	146,572	1,308	966	150	1,056,018
1991	16,251	5,140	31,716	27,776	253,092	385,604	36,377	34,796	109,370	141,235	1,177	909	171	1,043,614
1992	16,940	5,663	34,475	30,417	283,409	415,181	36,933	34,962	105,706	142,117	1,144	808	144	1,107,899
1993	17,655	5,302	33,221	27,120	255,305	391,343	33,251	31,814	96,508	130,746	1,112	828	148	1,024,353
1994	17,640	5,161	33,938	27,250	242,315	389,573	32,246	33,643	100,809	124,000	1,093	976	155	1,008,799
1995	16,381	5,140	34,387	27,826	257,634	415,731	34,876	35,610	106,588	126,554	1,137	1,022	165	1,063,051
1996	12,377	3,986	28,440	22,411	205,580	343,435	30,122	29,410	89,663	99,828	848	835	124	867,059
1997	16,462	4,152	34,375	27,163	257,629	434,019	38,577	37,718	121,838	127,244	1,212	1,292	160	1,101,841
1998	20,920	3,217	38,723	32,037	309,525	492,653	39,854	37,246	137,469	128,703	1,120	1,374	155	1,242,996
1999	20,726	2,507	36,317	30,002	309,902	504,444	34,511	27,251	119,961	118,569	1,110	1,515	139	1,206,954
2000	16,813	2,441	35,741	30,408	314,975	528,591	28,839	23,357	118,633	117,084	634	1,337	99	1,218,952
2001	348	114	1,437	1,319	18,668	37,266	1,023	1,719	8,394	6,257	24	151	19	76,739
Unknown	16	0	0	12	39	0	0	1	0	1	0	0	0	69
TOTAL	242,070	73,628	516,158	436,280	3,904,090	6,426,675	591,429	640,312	1,947,100	2,261,168	21,306	17,945	2,378	17,080,539

<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	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														
1981 or earlier	609	1,006	2,439	1,004	10,227	6,596	2,386	37,677	36,856	12,132	430	87	39	111,488
1982	60	62	187	92	811	786	231	1,126	1,946	857	32	12	4	6,206
1983	79	57	173	81	556	752	161	899	1,428	634	16	9	3	4,848
1984	138	78	290	150	1,619	1,320	263	905	2,000	1,098	39	25	4	7,929
1985	186	95	363	236	2,409	2,231	385	918	2,701	1,466	51	24	11	11,076
1986	207	107	415	301	2,630	2,936	476	1,073	3,237	2,014	38	26	12	13,472
1987	211	94	486	298	3,367	3,447	417	836	2,091	1,882	33	14	19	13,195
1988	326	101	585	393	4,210	5,035	482	932	3,963	2,761	55	26	17	18,886
1989	247	105	569	338	3,197	4,507	456	816	3,737	2,994	56	32	16	17,070
1990	257	75	560	344	3,279	4,799	558	887	4,067	3,402	61	39	17	18,345
1991	223	50	365	324	2,208	3,112	455	703	3,916	2,487	40	27	9	13,919
1992	179	31	342	401	1,913	3,102	394	702	3,491	2,507	44	27	8	13,141
1993	200	42	376	579	2,075	3,830	423	1,039	3,890	2,964	28	20	9	15,475
1994	212	45	365	629	2,539	4,583	411	968	4,816	3,231	47	20	11	17,877
1995	260	56	555	723	3,324	5,704	574	1,165	5,288	3,848	47	42	29	21,615
1996	147	25	336	622	2,077	4,192	421	759	4,001	2,781	33	22	10	15,426
1997	172	33	408	751	2,245	5,581	488	1,086	6,275	3,718	48	36	16	20,857
1998	127	19	496	1,062	2,830	5,784	424	1,146	5,918	3,184	48	28	11	21,077
1999	203	44	578	1,385	3,722	8,569	523	1,775	6,067	4,585	85	41	11	27,588
2000	120	27	382	870	2,305	6,336	288	1,452	4,983	3,361	31	27	5	20,187
2001	12	3	33	159	434	658	38	99	896	433	2	5	1	2,773
Unknown	5	0	0	1	4	0	0	0	0	0	0	0	0	10
TOTAL	4,180	2,155	10,303	10,743	57,981	83,860	10,254	56,963	111,567	62,339	1,264	589	262	412,460

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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														
1981 or earlier	383	863	947	727	877	5,428	1,364	8,717	16,323	2,801	186	129	11	38,756
1982	35	66	97	68	99	668	116	446	1,140	185	13	14	0	2,947
1983	29	42	44	35	57	467	64	171	337	55	5	5	5	1,316
1984	110	154	163	222	321	1,505	258	568	1,018	285	11	20	2	4,637
1985	153	156	259	261	548	2,418	357	792	1,728	366	28	21	0	7,087
1986	155	195	259	268	649	3,341	417	865	1,979	506	23	16	1	8,674
1987	191	219	351	403	1,007	4,491	467	874	1,739	573	19	12	4	10,350
1988	267	187	405	352	1,315	4,829	493	973	2,407	661	34	24	2	11,949
1989	242	124	369	280	1,025	4,961	437	790	2,254	593	32	32	2	11,141
1990	152	108	247	301	995	4,601	393	809	2,432	979	35	31	4	11,087
1991	144	62	155	164	564	2,790	220	539	1,887	538	21	28	9	7,121
1992	102	37	175	128	772	2,780	298	501	1,603	701	40	26	8	7,171
1993	105	46	256	218	1,302	4,197	462	694	2,152	674	29	21	2	10,158
1994	164	65	380	232	2,337	6,077	688	882	3,290	825	34	48	6	15,028
1995	191	98	569	337	3,335	9,903	797	1,043	4,065	876	42	68	14	21,338
1996	143	55	445	217	2,345	6,929	729	780	3,235	810	66	57	9	15,820
1997	127	26	340	206	2,457	6,830	691	852	3,775	854	65	57	5	16,285
1998	191	52	638	243	4,512	11,174	999	1,794	5,731	798	87	62	13	26,294
1999	181	67	688	325	4,853	12,342	1,062	2,735	5,107	755	75	67	25	28,282
2000	158	58	755	261	4,940	12,319	953	2,294	4,669	616	70	61	6	27,160
2001	29	9	129	64	1,047	2,400	147	181	1,088	142	8	11	2	5,257
Unknown	3	0	1	0	11	0	0	0	0	0	0	0	0	15
TOTAL	3,255	2,689	7,672	5,312	35,368	110,450	11,412	27,300	67,959	14,593	923	810	130	287,873

<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														
1981 or earlier	31	22	89	498	411	1,002	262	443	2,050	770	22	9	5	5,614
1982	13	0	19	122	94	162	52	123	414	246	9	1	1	1,256
1983	4	2	25	91	113	295	63	94	164	212	20	0	0	1,083
1984	6	2	31	139	207	214	80	162	260	167	3	4	0	1,275
1985	12	2	52	110	237	432	250	224	343	161	3	1	4	1,831
1986	65	3	73	124	258	523	177	227	393	219	4	2	1	2,069
1987	197	5	100	130	370	935	187	372	458	267	4	6	0	3,031
1988	184	1	134	162	666	1,410	268	238	564	393	15	2	1	4,038
1989	159	2	110	119	1,016	1,851	187	261	679	503	9	2	0	4,898
1990	105	0	141	188	1,173	2,226	137	282	684	512	17	2	0	5,467
1991	96	1	135	77	1,213	1,961	200	215	589	611	14	1	2	5,115
1992	93	3	80	82	1,177	1,899	182	171	601	499	4	0	0	4,791
1993	43	0	103	97	988	1,549	182	179	572	403	7	2	0	4,125
1994	24	0	55	38	1,510	1,327	266	110	418	464	14	1	0	4,227
1995	28	1	184	159	991	1,897	177	125	548	592	17	0	1	4,720
1996	21	2	81	20	1,242	1,959	175	146	447	647	18	0	0	4,758
1997	45	0	107	124	1,217	1,612	156	139	715	422	23	3	1	4,564
1998	34	0	191	185	1,133	2,013	197	170	723	752	14	2	0	5,414
1999	59	7	96	90	1,480	2,409	231	206	806	600	8	22	1	6,015
2000	42	17	87	80	1,135	1,636	157	72	628	491	20	5	1	4,371
2001	0	1	0	2	210	174	4	0	38	17	0	3	0	449
Unknown	0	0	0	2	0	0	0	0	0	0	0	0	0	2
TOTAL	1,261	71	1,893	2,639	16,841	27,486	3,590	3,959	12,094	8,948	245	68	18	79,113

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

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