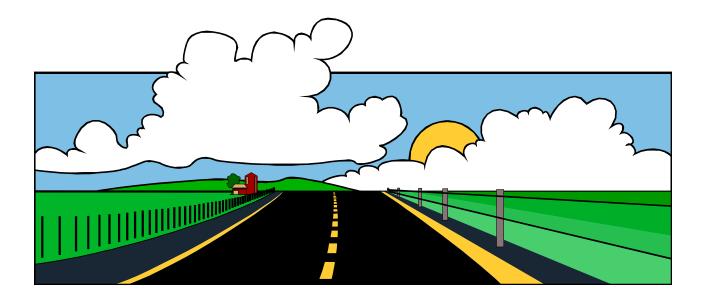


Canadian Vehicle Survey

Quarter 3, 2001



Transport Canada

CCMTA Canadian Council of Motor Transport Administrators





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Transportation Division

Canadian Vehicle Survey

Quarter 3, 2001

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

Symbols

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

- . not available for any reference period.
- .. not available for a specific reference period.
- ... not applicable
- p preliminary
- r revised
- x suppressed to meet confidentiality requirements
- A excellent
- B very good
- C good
- D acceptable
- E use with caution
- F too unreliable to be published

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

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The principal authors of this publication were Adam Wronski and Wendy Christoff.

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Transportation Division, Canadian Vehicle Survey Unit

Wendy Christoff, Mike Fahey, Sean Fagan, Ruth Powell, Linda Manolikakis

Transportation Division, Systems & Data Integration Section

Serge Robert, Mustapha Khan

Business Surveys Methods Division

Adam Wronski, Peter Xiao, Daniel Finch, Jean-François Bastien

Operations and Integration Division

Jacques Beauchamp, Julie Gagnon, CATI unit

Operations Research and Development Division

Ghislaine Desgagné

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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, 2001, these vehicles travelled an estimated 83.9 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 17 450 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 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 2001.

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

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

<u>Passenger-kilometres</u> is the sum of the distances traveled by individual passengers. 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.

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

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

3.3 DEFINITIONS OF VEHICLE CHARACTERISTICS

<u>Vehicle type</u> is the 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 *yehicles (trucks) weighing 4.5 tonnes or more* 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.
- <u>Driver age group</u> and <u>driver sex</u>.
- 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
- Number of kilometres traveled on roads with posted speed limit of 80 km/h or more
- <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 (urban buses are excluded). Passenger age information is collected only for light vehicles. See 3.2. For all other vehicles we collect only the total number of passengers.
- Truck configuration 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 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 lists of motor vehicles with valid registrations in any province or territory available in April 2001. 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 2001 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.
- Last, records with irregular data are verified.

The last set of processed lists, before the beginning of the reference period, consisted of the eleven lists provided in April 2001 to Statistics Canada for CVS and the most recent lists available for the Yukon, Nunavut and the Northwest Territories created in December, 2000. This set of prepared vehicle lists and the set of days within the third quarter of 2001 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 4,999 vehicles out of 17,474,178 from the survey population were drawn for the ten provinces. Another 2,579 vehicles out of 44,333 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, several corrections were done to assure that the estimates correspond (as closely as possible) to the population of interest. The sampling weights derived from the sample design were adjusted and improved using updated registration lists. This was possible because, during the passage of time since the sample was selected, 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 of the survey may result in either under- or overcoverage of the registered vehicles.
- The sample is drawn from the list created three months prior to the beginning of the reference period. Thus the vehicles registered after the list was created and before the end of the reference period cannot be drawn into the sample.
- A vehicle list from any jurisdiction that was not created on time or did not arrive at all results in even larger undercoverage since an older list has to be used for sampling.
- A vehicle list created early causes overcoverage.
- A vehicle that has been scrapped or salvaged and remained on the list causes overcoverage.
- The survey population (see 4.1.1) can contain vehicles with the same Vehicle Identification Number (VIN) in more than one province. Since every vehicle have a unique VIN this is likely to cause some overcoverage and consequently overestimation.
- A vehicle that was registered and subsequently unregistered between two consecutive registration lists causes undercoverage.

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

5.3.2 Response errors

Response errors occur when a respondent provides incorrect information due to a misinterpretation of the survey questions or 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 CVS, it is impossible to detect, for vehicles that travel only a small distance during the reported week, fuel purchases that are missing or entered in error.

5.4 MEASURING QUALITY

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

5.4.1 Response rates

The response rate is a function of the number of vehicles that responded to the survey. 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.

	Vehicle	-kilometres	and trip	Only vehic	le-kilometr	Vehicles	Contact	
PROVINCES	charae	cteristics re	ported	(trip cha	imputed)	out of	made but	
	All	0 km	Non 0 km	All	0 km	Non 0 km	scope	no data
Light vehicles	35%	35% 13%		32%	32% 5%		4%	5%
Trucks 4.5t – 15t	32%	21%	11%	21%	5%	16%	7%	13%
Trucks 15t or more	33%	20%	13%	22%	5%	16%	7%	17%
Buses	42%	34%	8%	2%	0% 2%		5%	27%

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	N/A	N/A	17%	0%	17%	10%	8%
Trucks 4.5t – 15t	N/A	N/A	N/A	12%	1%	11%	15%	7%
Trucks 15t or more	N/A	N/A	N/A	12%	1%	11%	14%	7%
Buses	N/A	N/A	N/A	11%	0%	11%	18%	3%

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	oorted	Vehicle days imputed				
TROVINCES	All	0 km	Non 0 km	All	0 km	Non 0 km		
Light vehicles	53%	19%	33%	47%	7%	40%		
Trucks 4.5t – 15t	60%	39%	21%	40%	10%	30%		
Trucks 15t or more	60%	36%	24%	40%	10%	30%		
Buses	96%	77%	19%	4%	0%	4%		

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%	10%	90%	N/A	N/A	N/A		
Trucks 15t or more	100%	11%	89%	N/A	N/A	N/A		
Buses	100%	0%	100%	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 Symbol	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 20%	Acceptable
E	20% to 35%	Use with caution
F	35% or more	Too unreliable to be published

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

5.5 NOTES FOR HISTORICAL COMPARISON

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

- Duplicate records were previously removed from within and among registration lists. Starting in this quarter, duplicate records were removed from within each list only. This is likely to cause some overcoverage and consequently overestimation.
- Type of fuel used and body type are collected for the territories. Consequently, the four tables (pages: 28, 29, 34, 36) include the territories.
- The truck logs were changed in 2001 in order to collect passenger information for trucks. This change means that passenger-kilometres are now estimated for all vehicles except urban transit buses for all the provinces (but not for territories).
- The truck logs were also changed in 2001 in order to collect distance travelled on roads with posted speeds of 80 kilometres per hour or more. This change means that this information is now estimated for all vehicle types in all provinces (but not for the territories).

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

• Owners of buses and 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 vehicle types) were changed. The purpose is now based on the destination of the trip. Thus the results from 2000 and 1999 are not comparable for this item.
 - Passenger-kilometers were not collected for 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.

 $\label{thm:lists} \mbox{Number of Vehicle on the Registration Lists by Type of Vehicle and Jurisdiction}$

			Vehicle Type		
	Vehicles up to 4.5t	Trucks 4.5t - 15t	Trucks 15t or more	Buses	Total
Jurisdiction					
Newfoundland and Labrador	239 786	4 026	3 225	1 217	248 254
Prince Edward Island	73 372	1 990	2 668	62	78 092
Nova Scotia	522 221	10 247	7 788	1 909	542 165
New Brunswick	438 353	10 946	4 687	2 754	456 740
Quebec	3 819 013	58 842	35 665	13 388	3 926 908
Ontario	6 478 053	82 631	105 953	22 431	6 689 068
Manitoba	599 466	10 234	12 858	3 543	626 101
Saskatchewan	620 891	51 788	26 010	3 871	702 560
Alberta	2 023 029	113 439	69 497	12 518	2 218 483
British Columbia	2 285 255	63 430	14 205	8 557	2 371 447
Yukon Territory	17 739	993	709	163	19 604
Northwest Territories	18 325	551	785	79	19 740
Nunavut	2 911	262	139	15	3 327
Total - Canada	17 138 414	409 379	284 189	70 507	17 902 489

DUE TO ROUNDING THE NUMBERS MAY NOT ADD UP AND MAY DIFFER SLIGHTLY AMONG THE TABLES.

Vehicles up to 4.5t

							Jurisdiction	า						
	Newfound- land and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatche- wan	Alberta	British Columbia	Yukon Territory	Northwest Territor- ies	Nunavut	TOTAL
Vehicle Model Year														
Earlier then 1984	4 482	3 092	20 789	15 066	92 111	219 896	48 263	90 398	213 470	222 941	2 399	1 612	146	934 665
1984	1 587	1 191	6 318	5 813	33 917	61 052	12 797	18 228	43 959	50 228	495	350	48	235 983
1985	2 446	1 596	8 636	7 984	54 189	98 982	16 941	21 119	56 775	63 642	574	482	82	333 448
1986	3 690	2 078	12 393	10 995	82 720	147 339	23 583	28 044	78 579	92 522	871	579	66	483 459
1987	5 316	2 909	16 442	14 755	119 086	198 882	23 167	24 262	70 527	95 594	876	506	109	572 431
1988	10 529	4 449	24 381	22 399	182 448	293 869	29 443	29 608	93 430	115 772	1 099	799	137	808 363
1989	13 120	4 953	27 464	25 157	199 952	342 449	30 286	30 134	100 354	128 563	1 148	870	155	904 605
1990	13 422	5 364	29 737	26 386	218 443	356 153	33 425	31 790	107 364	141 177	1 181	889	151	965 482
1991	14 523	4 879	29 868	26 417	230 694	361 529	35 145	32 962	107 874	137 518	1 037	863	174	983 483
1992	15 617	5 500	33 169	29 611	262 393	395 105	36 221	33 392	105 260	139 412	1 036	759	174	1 057 649
1993	16 730	5 257	32 424	26 725	238 968	380 370	32 881	30 438	96 478	128 254	1 020	783	177	990 505
1994	16 906	5 223	33 525	27 105	227 977	380 329	32 130	32 461	100 879	122 157	998	926	198	980 814
1995	15 796	5 290	34 124	27 770	242 511	410 414	34 841	34 354	106 853	125 173	1 033	984	188	1 039 331
1996	12 030	4 220	28 549	22 536	193 779	340 391	30 284	28 413	90 040	98 860	760	796	152	850 810
1997	16 099	4 851	35 128	27 312	242 325	436 580	39 381	37 144	122 606	125 957	1 079	1 223	211	1 089 896
1998	18 396	4 296	37 695	30 470	266 300	467 997	39 383	35 932	134 745	123 849	943	1 273	200	1 161 479
1999	20 435	2 965	36 030	29 455	289 483	489 977	34 539	26 935	118 186	115 379	880	1 459	181	1 165 904
2000	23 775	3 212	42 025	36 069	348 389	599 455	38 220	30 484	138 104	133 463	307	1 721	202	1 395 426
2001	14 631	1 939	31 843	24 906	280 746	471 684	27 717	23 049	129 502	117 724	3	1 403	154	1 125 301
2002	238	107	1 682	1 417	12 535	25 598	816	1 741	8 044	7 069	0	46	6	59 299
Unknown	15	0	0	5	44	0	0	1	0	1	0	0	0	66
TOTAL	239 783	73 371	522 222	438 353	3 819 010	6 478 051	599 463	620 889	2 023 029	2 285 255	17 739	18 323	2 911	17 138 399

Trucks 4.5t - 15t

							Jurisdictio	า						
	Newfound- land and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatche- wan	Alberta	British Columbia	Yukon Territory	Northwest Territor- ies	Nunavut	TOTAL
Vehicle Model Year														
Earlier then 1984	667	963	2 619	1 046	10 405	6 520	2 639	34 974	38 015	12 414	361	87	41	110 751
1984	116	73	267	134	1 489	1 098	245	664	1 879	1 027	30	22	4	7 048
1985	153	85	347	212	2 223	1 800	359	715	2 512	1 372	36	21	5	9 840
1986	185	96	390	260	2 500	2 441	447	851	3 032	1 919	33	18	13	12 185
1987	187	91	452	265	3 172	2 938	378	669	1 980	1 747	27	11	19	11 936
1988	275	96	516	324	4 042	3 950	429	740	3 513	2 483	47	22	20	16 457
1989	222	99	531	305	3 153	3 754	414	625	3 507	2 802	50	29	15	15 506
1990	244	72	514	309	3 233	4 069	524	738	3 866	3 090	49	38	16	16 762
1991	210	50	359	311	2 141	2 845	454	654	3 745	2 400	36	23	10	13 238
1992	173	38	326	373	1 920	2 917	391	643	3 428	2 436	37	23	11	12 716
1993	178	46	359	537	2 117	3 526	399	909	3 617	2 824	23	17	10	14 562
1994	204	50	355	588	2 594	4 375	404	909	4 597	3 177	45	21	15	17 334
1995	260	54	556	692	3 352	5 445	577	1 094	5 118	3 744	41	38	29	21 000
1996	142	25	341	588	2 102	3 927	412	693	3 821	2 656	30	19	9	14 765
1997	176	34	421	703	2 269	5 400	491	990	6 033	3 561	43	35	15	20 171
1998	131	20	490	909	2 864	5 584	426	1 030	5 645	3 074	31	20	13	20 237
1999	198	45	576	1 258	3 844	8 406	506	1 509	5 840	4 265	58	40	8	26 553
2000	183	27	485	1 003	3 076	7 300	362	1 640	5 820	3 872	14	39	7	23 828
2001	108	22	326	1 079	1 966	6 062	359	1 621	7 060	4 369	1	25	2	23 000
2002	8	1	19	47	376	274	19	120	409	199	0	1	0	1 473
Unknown	5	0	0	0	3	0	0	0	0	0	0	0	0	8
TOTAL	4 025	1 987	10 249	10 943	58 841	82 631	10 235	51 788	113 437	63 431	992	549	262	409 370

Trucks 15t or more

							Jurisdictio	า						
	Newfound- land and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatche- wan	Alberta	British Columbia	Yukon Territory	Northwest Territor- ies	Nunavut	TOTAL
Vehicle Model Year														
Earlier then 1984	362	887	1 020	668	820	5 164	1 417	7 410	17 126	2 717	155	148	16	37 910
1984	92	150	150	185	254	1 208	235	504	998	265	7	21	2	4 071
1985	125	148	232	216	435	1 990	338	702	1 729	318	26	22	1	6 282
1986	138	190	227	241	517	2 779	393	812	1 964	472	19	16	1	7 769
1987	175	211	343	357	823	3 746	440	797	1 712	540	16	13	3	9 176
1988	217	188	367	320	1 089	4 017	440	875	2 361	604	27	20	0	10 525
1989	231	131	365	262	891	4 143	426	738	2 237	555	28	29	1	10 037
1990	133	116	237	279	842	3 886	384	737	2 404	936	32	25	4	10 015
1991	130	64	156	153	499	2 410	221	499	1 865	507	18	27	10	6 559
1992	106	38	173	114	708	2 416	282	476	1 569	671	36	26	7	6 622
1993	102	48	249	178	1 146	3 587	495	716	2 127	649	21	20	1	9 339
1994	157	70	387	205	2 131	5 230	721	929	3 268	775	28	43	6	13 950
1995	209	110	561	281	3 091	8 644	846	1 099	4 042	830	29	63	16	19 821
1996	161	60	411	185	2 214	6 284	819	847	3 128	746	48	50	8	14 961
1997	142	28	324	170	2 283	6 331	720	852	3 747	816	45	48	6	15 512
1998	214	56	593	207	4 285	10 405	1 195	1 619	5 344	766	66	56	13	24 819
1999	191	74	688	265	4 676	11 853	1 268	2 400	4 403	718	54	53	26	26 669
2000	224	71	846	238	5 488	13 284	1 393	2 678	4 590	673	51	56	10	29 602
2001	99	26	387	134	3 001	7 325	735	1 223	4 184	548	2	42	7	17 713
2002	12	2	69	29	466	1 252	91	99	701	101	0	5	1	2 828
Unknown	4	0	1	0	7	0	0	0	0	0	0	0	0	12
TOTAL	3 224	2 668	7 786	4 687	35 666	105 954	12 859	26 012	69 499	14 207	708	783	139	284 192

Buses

							Jurisdictio	 n						
	Newfound- land and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatche- wan	Alberta	British Columbia	Yukon Territory	Northwest Territor- ies	Nunavut	TOTAL
Vehicle Model Year														
Earlier then 1984	32	21	138	711	533	1 364	301	519	2 344	1 051	38	7	4	7 063
1984	3	0	25	139	180	167	64	137	217	129	7	3	0	1 071
1985	5	1	35	111	208	346	217	176	312	133	2	1	4	1 551
1986	14	3	63	125	223	348	150	185	358	184	3	0	0	1 656
1987	78	3	71	131	193	626	164	349	451	221	2	4	0	2 293
1988	165	1	106	157	330	866	245	224	557	320	10	2	0	2 983
1989	180	1	84	119	612	1 001	178	235	654	422	7	3	0	3 496
1990	141	1	130	187	734	1 404	138	273	683	449	10	2	1	4 153
1991	131	1	130	76	840	1 331	198	214	584	544	5	1	0	4 055
1992	119	3	76	83	834	1 258	194	174	598	419	4	0	0	3 762
1993	46	0	103	98	713	1 052	178	180	558	349	2	2	0	3 281
1994	26	0	51	38	1 185	960	244	113	410	419	10	2	0	3 458
1995	26	0	186	157	747	1 339	177	122	533	535	12	1	0	3 835
1996	24	2	72	19	995	1 571	170	143	441	594	14	0	0	4 045
1997	47	0	109	126	933	1 353	157	141	690	389	17	3	1	3 966
1998	35	0	192	189	841	1 647	191	170	718	645	7	3	0	4 638
1999	60	0	99	90	1 117	2 072	230	208	779	547	5	19	3	5 229
2000	54	10	181	98	1 003	2 193	204	154	812	660	7	9	2	5 387
2001	32	13	57	96	998	1 408	72	109	786	528	0	16	0	4 115
2002	0	0	0	0	169	125	70	45	33	14	0	0	0	456
Unknown	0	0	0	2	0	0	0	0	0	0	0	0	0	2
TOTAL	1 218	60	1 908	2 752	13 388	22 431	3 542	3 871	12 518	8 552	162	78	15	70 495

Estimates of the

Number of Vehicles in Scope by Type of Vehicle and Jurisdiction

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Jurisdiction										
Newfoundland and Labrador	234 767	А	3 343	С	2 990	В	1 125	В	242 224	А
Prince Edward Island	72 926	А	1 664	В	2 399	В	62	А	77 051	А
Nova Scotia	519 847	А	7 511	С	7 788	А	1 909	А	537 055	А
New Brunswick	436 955	А	8 927	В	4 809	А	1 417	С	452 109	А
Quebec	3 756 756	А	50 673	В	34 618	А	12 508	А	3 854 556	А
Ontario	6 373 159	А	76 873	А	97 493	А	22 454	А	6 569 980	А
Manitoba	578 420	А	9 152	В	12 448	А	3 543	А	603 563	А
Saskatchewan	615 167	А	51 700	А	23 267	А	3 561	В	693 694	А
Alberta	1 990 030	Α	96 522	А	66 156	А	12 518	Α	2 165 226	А
British Columbia	2 265 346	Α	55 912	В	13 506	А	8 378	А	2 343 142	А
Yukon Territory	17 659	А	836	В	781	А	120	Е	19 396	А
Northwest Territories	18 734	А	528	В	1 088	А		F	20 350	А
Nunavut	3 113	А	376	D	172	С	15	А	3 675	А
Total - Canada	16 882 879	Α	364 017	А	267 514	А	67 611	А	17 582 021	А

Estimates for Canada of the

Number of Vehicles in Scope by Type of Vehicle and Vehicle Model Year

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Vehicle Model Year										
Later than 1998	2 968 430	А	62 264	В	67 036	В	10 320	D	3 108 050	A
1996 - 1998	3 454 369	А	51 648	В	55 150	В	14 194	С	3 575 361	А
1992 - 1995	4 742 963	Α	61 997	С	47 773	В	16 999	С	4 869 732	А
1988 - 1991	3 772 447	Α	56 110	С	49 778	С	14 797	В	3 893 132	А
Earlier than 1988	1 944 670	В	131 997	В	47 778	С	11 301	В	2 135 746	В
Total	16 882 879	А	364 017	А	267 514	Α	67 611	А	17 582 021	А

Estimates for Canada of the

Number of Vehicles in Scope by Type of Vehicle 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	10 659 269	А		F					10 660 890	А
Station wagon	379 399	D							379 399	D
Van	1 996 765	В	27 792	D			6 200	Е	2 030 757	В
Sport utility vehicle	1 327 760	В		F					1 329 593	В
Pickup	2 453 087	В	131 155	В		F			2 592 922	В
Straight truck		F	176 170	В	97 440	В			340 209	В
Tractor trailer			13 026	Е	155 442	А			168 468	В
Bus				F			61 411	А	61 635	А
Other			12 196	Е		F			18 148	E
Total	16 882 879	А	364 017	А	267 514	А	67 611	Α	17 582 021	А

Estimates for Canada of the

Number of Vehicles in Scope by Type of Vehicle and Type of Fuel

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	е	Buses		Total	
Fuel Type										
Gasoline	16 464 620	А	166 091	В	9 594	Е	12 839	С	16 653 144	A
Diesel	375 306	D	182 283	А	257 921	А	52 081	А	867 590	В
Other		F	15 643	Е			2 691	Е	61 287	Е
Total	16 882 879	А	364 017	А	267 514	А	67 611	А	17 582 021	А

Estimates of

 $\label{thm:condition} \mbox{Vehicle-km ('000 000) by Type of Vehicle and Jurisdiction}$

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or mor	e	Buses		Total	
Jurisdiction										
Newfoundland and Labrador	1 233.9	В		F	42.0	Е		F	1 312.7	В
Prince Edward Island	290.3	С		F	11.4	Е		F	311.6	С
Nova Scotia	2 790.5	С	34.1	D	152.4	С	9.5	Е	2 986.6	С
New Brunswick	2 274.8	В	75.1	Е	51.7	D		F	2 403.4	В
Quebec	20 680.3	С	288.9	С	806.1	С	53.3	Е	21 828.5	С
Ontario	26 675.4	А	652.3	С	2 039.6	В	85.4	Е	29 452.7	А
Manitoba	2 419.9	В	79.5	D	414.1	С		F	2 918.6	В
Saskatchewan	2 811.9	В	191.0	D	299.4	D	5.4	Е	3 307.7	В
Alberta	9 327.2	В	541.6	С	722.6	С	43.5	Е	10 634.8	В
British Columbia	8 058.0	В	304.2	С	89.7	D	38.7	Е	8 490.5	В
Yukon Territory	98.5	В	2.1	D	19.1	Е	1.0	Е	120.7	В
Northwest Territories	96.0	D		F		F		F	118.2	С
Nunavut	13.8	Е	0.7	Е		F		F	14.9	E
Total - Canada	76 770.3	А	2 218.9	В	4 665.9	А	245.7	С	83 900.8	А

Estimates of

Passenger-km ('000 000) by Type of Vehicle and Jurisdiction

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	Э	Buses		Total	
Jurisdiction										
Newfoundland and Labrador	2 654.3	E		F		F		F	2 754.5	E
Prince Edward Island	460.3	D		F		F		F	491.2	D
Nova Scotia	5 654.5	D	43.5	Е	171.2	Е	294.3	Е	6 163.6	D
New Brunswick		F		F	52.0	D		F	4 505.8	D
Quebec		F	391.0	Е	891.9	Е		F		F
Ontario	44 878.4	В		F	2 141.4	С		F	48 824.0	В
Manitoba	4 191.4	С		F	457.9	D		F	4 829.5	С
Saskatchewan	4 685.3	С		F	326.1	Е	75.6	Е	5 378.9	С
Alberta	16 692.9	С	833.7	Е	828.3	Е		F	18 951.3	С
British Columbia	12 905.4	С		F	100.8	Е		F	14 180.2	С
Total - Provinces	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В

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DUE TO ROUNDING THE NUMBERS MAY NOT ADD UP AND MAY DIFFER SLIGHTLY AMONG THE TABLES.

ALL PASSENGER-KM ESTIMATES EXCLUDE URBAN TRANSIT BUSES AND THE TERRITORIES.

Estimates for Canada of

Vehicle-km ('000 000) by Type of Vehicle and Vehicle Model Year

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Vehicle Model Year										
Later than 1998	17 563.8	В	702.7	В	2 067.8	В		F	20 382.7	В
1996 - 1998	16 926.0	В	465.0	С	1 397.0	С	75.1	Е	18 863.1	В
1992 - 1995	22 523.5	В	527.8	D	731.6	С	57.6	Е	23 840.6	В
1988 - 1991	14 352.7	С	216.7	Е	362.7	Е	28.9	D	14 961.1	С
Earlier than 1988	5 404.3	С	306.7	Е	106.7	Е	35.7	Е	5 853.4	С
Total	76 770.3	А	2 218.9	В	4 665.9	А	245.7	С	83 900.8	А

Estimates of the Provincial Total of

Passenger-km ('000 000) by Type of Vehicle and Vehicle Model Year

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or mor	е	Buses		Total	
Vehicle model year										
Later than 1998		F	956.4	D	2 217.0	D		F		F
1996 - 1998	29 502.6	В	760.2	Е	1 491.4	D		F	32 560.4	В
1992 - 1995		F		F	787.4	Е		F		F
1988 - 1991	23 563.1	D		F	425.7	Е	452.0	Е	24 732.5	D
Earlier than 1988	8 392.5	Е		F		F		F	9 179.4	D
Total	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В

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ALL PASSENGER-KM ESTIMATES EXCLUDE URBAN TRANSIT BUSES AND THE TERRITORIES.

Estimates for Canada of

Vehicle-km ('000 000) by Type of Vehicle 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	44 863.9	В		F					44 895.0	В
Station wagon	1 481.4	Е							1 481.4	Е
Van	11 620.1	С	270.7	Е				F	11 906.3	С
Sport utility vehicle	6 489.2	С		F					6 513.4	С
Pickup	11 729.8	В	725.1	С		F			12 492.5	В
Straight truck		F	1 086.9	В	744.0	С			2 416.7	С
Tractor trailer				F	3 882.3	В			3 957.9	В
Bus				F			230.2	С	230.4	С
Other				F		F				F
Total	76 770.3	Α	2 218.9	В	4 665.9	А	245.7	С	83 900.8	А

Estimates of the Provincial Total of

Passenger-km ('000 000) by Type of Vehicle and Vehicle Body Type

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15t	t	Trucks 15t or more	9	Buses		Total	
Vehicle Body Type										
Car	71 291.7	В		F					71 348.4	В
Station wagon	2 729.7	Е							2 729.7	Е
Van		F		F				F		F
Sport utility vehicle	11 710.5	Е		F					11 747.2	E
Pickup		F		F		F				F
Straight truck		F		F	874.8	Е				F
Tractor trailer				F	4 108.4	С			4 255.0	С
Bus				F			3 124.9	Е	3 125.1	Е
Other				F		F				F
Total	130 815.1	В		F	5 030.4	В	3 361.8	E	142 415.4	В

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ALL PASSENGER-KM ESTIMATES EXCLUDE URBAN TRANSIT BUSES AND THE TERRITORIES.

Estimates for Canada of

Vehicle-km ('000 000) by Type of Vehicle and Type of Fuel

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Fuel Type										
Gasoline	74 615.9	А	637.4	С		F	21.5	Е	75 313.1	А
Diesel	2 065.7	D	1 525.3	В	4 627.7	Α	214.5	С	8 433.1	В
Other		F		F				F		F
Total	76 770.3	А	2 218.9	В	4 665.9	А	245.7	С	83 900.8	А

Passenger-km ('000 000) by Type of Vehicle and Type of Fuel

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Fuel Type										1
Gasoline	127 629.9	В		F		F	190.9	Е	128 870.1	В
Diesel	3 037.1	Е	2 140.0	D	4 981.5	В	2 937.5	Е	13 096.0	В
Other		F		F				F		F
Total	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В

 $\label{thm:condition} \mbox{Vehicle-km ('000 000) by Type of Vehicle and Day of Week}$

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	е	Buses		Total	
Day of the Week										1
Sunday	10 613.5	В	79.9	Е	286.6	E	15.8	E	10 995.9	В
Monday	10 692.8	В	422.5	D	786.3	С	37.4	D	11 938.9	В
Tuesday	10 629.5	В	410.7	С	838.9	С	43.9	С	11 923.0	В
Wednesday	11 411.1	В	380.0	С	893.9	С	36.0	С	12 721.0	В
Thursday	11 035.3	В	393.8	С	812.9	С	50.4	С	12 292.4	А
Friday	12 170.4	В	332.6	D	711.0	С	41.0	С	13 254.9	В
Saturday	10 009.5	В	192.5	Е	299.2	D	19.7	Е	10 520.9	В
Total	76 562.1	А	2 211.9	В	4 628.8	А	244.3	С	83 647.1	A

Passenger-km ('000 000) by Type of Vehicle and Day of Week

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or mor	е	Buses		Total	
Day of the Week										
Sunday	19 210.8	В		F		F		F	19 886.7	В
Monday		F	573.9	D	827.7	С	559.8	Е		F
Tuesday	17 139.0	В	569.1	D	899.6	С	592.1	Е	19 199.8	В
Wednesday	19 022.6	В		F	996.4	С	529.8	D	21 081.8	В
Thursday	17 755.0	В		F	902.9	С	862.5	Е	20 179.3	В
Friday	20 397.9	В	446.1	D	775.0	С	466.3	E	22 085.2	В
Saturday	19 634.3	В		F	332.0	D		F	20 365.5	В
Total	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В

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Estimates of the Provincial Total of

Vehicle-km ('000 000) by Type of Vehicle and Driver Age Group

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or mor	е	Buses		Total	
Age of Driver										
Under 20 years		F		F		F		F		F
20 - 24 years		F		F	306.7	Е		F		F
25 - 34 years		F	426.1	D	1 000.9	Е	9.8	Е		F
35 - 44 years	18 684.9	В		F	1 466.2	D	85.2	D	20 858.9	В
45 - 54 years	20 817.1	В	747.9	D	1 219.7	D	83.2	Е	22 867.8	В
55 - 64 years	10 456.5	С		F	586.9	Е	59.3	Е	11 250.4	С
65 years and over	6 633.7	С		F		F		F	6 737.9	С
Total	76 562.1	А	2 211.9	В	4 628.8	А	244.3	С	83 647.1	A

Passenger-km ('000 000) by Type of Vehicle and Driver Age Group

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or mor	е	Buses		Total	
Age of Driver										1
Under 20 years		F		F		F		F		F
20 - 24 years		F		F	346.6	Е		F		F
25 - 34 years		F	606.9	D	1 110.6	Е		F		F
35 - 44 years	34 247.2	В		F	1 645.8	D	1 165.6	Е	37 959.9	В
45 - 54 years	34 588.2	С		F	1 252.9	D		F	37 856.0	В
55 - 64 years	16 351.6	С		F	626.0	Е	1 257.2	Е	18 442.4	С
65 years and over	10 911.6	С		F		F		F	11 094.1	С
Total	130 815.1	В		F	5 030.4	В	3 361.8	E	142 415.4	В

Vehicle-km ('000 000) by Type of Vehicle and Sex of Driver

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Sex of Driver										
Male	53 101.4	В	2 167.1	С	4 581.5	В	163.5	D	60 013.4	В
Female	23 460.7	В		F		F	80.8	Е	23 633.6	В
Total	76 562.1	А	2 211.9	В	4 628.8	А	244.3	С	83 647.1	А

Passenger-km ('000 000) by Type of Vehicle and Sex of Driver

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15t		Trucks 15t or more	9	Buses		Total	
Sex of Driver										
Male	92 571.0	В		F	4 956.7	В	1 981.7	Е	102 618.9	В
Female	38 244.1	В		F		F	1 380.0	Е	39 796.5	В
Total	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В

Vehicle-km ('000 000) by Type of Vehicle 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	2 421.4	С		F	458.2	D		F	2 966.3	В
06:00 - 11:59	24 099.8	В	1 067.0	С	1 742.7	В	100.4	С	27 009.9	В
12:00 - 17:59	33 082.6	В	945.5	С	1 708.2	В	107.4	С	35 843.7	В
18:00 - 23:59	16 958.3	В		F	719.8	С	26.8	Е	17 827.2	В
Total	76 562.1	А	2 211.9	В	4 628.8	Α	244.3	С	83 647.1	А

Passenger-km ('000 000) by Type of Vehicle and Time of Day

					Vehicle Type					
	Vehicles up to 4.	Vehicles up to 4.5t Tr		Trucks 4.5t - 15t		Trucks 15t or more			Total	
Time of Day										
00:00 - 05:59	3 357.7	С		F	503.3	D		F	4 112.1	С
06:00 - 11:59	39 363.9	В		F	1 874.3	В	1 454.3	D	44 227.5	В
12:00 - 17:59	58 630.6	В		F	1 870.2	С	1 579.3	D	63 420.6	В
18:00 - 23:59	29 462.8	В		F	782.6	С		F	30 655.2	В
Total	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В

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Vehicle-km ('000 000) by Type of Vehicle and Carrying Dangerous Goods

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Carrying Dangerous Goods										
Declared - yes		F		F		F				F
Declared - no	76 559.2	В	2 188.3	С	4 333.4	В	244.3	С	83 325.1	В
Total	76 562.1	А	2 211.9	В	4 628.8	Α	244.3	С	83 647.1	А

Passenger-km ('000 000) by Type of Vehicle and Carrying Dangerous Goods

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15t		Trucks 15t or mor	e	Buses		Total	
Carrying Dangerous Goods										
Declared - yes		F		F		F				F
Declared - no	130 812.2	В		F	4 727.9	В	3 361.8	Е	142 083.6	В
Total	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В

Vehicle-km ('000 000) by Type of Vehicle and Type of Day

					Vehicle Type					
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Type of Day										
Weekends and Holidays	21 838.4	В	325.6	Е	660.8	D	35.6	Е	22 860.4	В
Weekdays	54 723.7	Α	1 886.3	С	3 968.1	В	208.6	С	60 786.6	А
Total	76 562.1	Α	2 211.9	В	4 628.8	Α	244.3	С	83 647.1	А

Passenger-km ('000 000) by Type of Vehicle and Type of Day

	Vehicle Type												
	Vehicles up to 4.5t		Trucks 4.5t - 15t		Trucks 15t or more	Buses		Total					
Type of Day													
Weekends and Holidays	41 102.3	В		F	714.4	D		F	42 683.0	В			
Weekdays	89 712.8	В		F	4 316.0	В	3 006.8	D	99 732.4	В			
Total	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В			

Vehicle-km ('000 000) by Type of Vehicle and Road Type

		Vehicle Type											
	Vehicles up to 4.	nicles up to 4.5t Truc		t	Trucks 15t or more	Trucks 15t or more			Total				
Road Type													
Road with posted maximum speed of 80km/h or more	43 113.2	В	1 196.1	D	3 068.4	С	78.5	Е	47 456.2	В			
Other roads	33 448.9	Α	1 015.8	D	1 560.4	С	165.8	С	36 190.9	А			
Total	76 562.1	А	2 211.9	В	4 628.8	Α	244.3	С	83 647.1	А			

Passenger-km ('000 000) by Type of Vehicle and Road Type

					Vehicle Type					
	Vehicles up to 4.5t		Trucks 4.5t - 15t		Trucks 15t or more	Buses		Total		
Road Type										
Road with posted maximum speed of 80km/h or more	77 526.3	С		F	3 289.0	С	1 792.9	Е	84 320.2	В
Other roads	53 288.8	В		F	1 741.4	С	1 568.8	Е	58 095.2	А
Total	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В

Vehicles up to 4.5t: Passenger-km ('000 000) by Passenger Age Group

	Estimat	es for	
	Vehicles u	up to 4.5	ōt
Passenger Age			
Under 5 years	4	182.9	С
5-14 years	11	255.0	С
15 years and over	115	377.2	В
Total	130	815.1	В

Passenger-km and Vehicle-km for Buses by Trip Purpose

	Est	tima	tes of					
	Passenger-km ('000 000) Vehicle-km (
Trip Purpose								
Scheduled urban			98.2	Е				
Scheduled intercity		F		F				
School	2 109.8	Е	94.2	D				
Charter		F		F				
Other		F		F				
Total	3 361.8	Е	244.3	С				

Vehicles up to 4.5t: Vehicle-km ('000 000) by Vehicle Group and Trip Purpose

			Vehicle Group				
	Car and Station wag	gon	Other below 4.5t		Total		
Trip Purpose							
To go home	12 966.1	В	7 572.9	С	20 539.1	В	
To go to work or school	7 619.0	В	4 834.7	С	12 453.7	В	
To do shopping or errands	8 754.6	В	4 476.1	С	13 230.7	В	
To go to a recreational or social activity	7 580.5	В	4 266.1	С	11 846.6	В	
To go somewhere else		F		F		F	
(Job) picking up or delivering goods		F	705.5	Е	968.6	D	
(Job) to or from service call		F	714.2	Е	1 233.8	Е	
(Job) other work purpose	1 710.5	Е		F		F	
Total	46 292.1	А	30 270.0	В	76 562.1	А	

Vehicles up to 4.5t: Passenger-km ('000 000) by Vehicle Group and Trip Purpose

			Vehicle Group				
	Car and Station wag	gon	Other below 4.5t		Total		
Trip Purpose							
To go home	20 257.2	В	14 612.2	С	34 869.4	В	
To go to work or school	9 621.9	В	6 123.7	С	15 745.6	В	
To do shopping or errands	13 841.1	В	7 887.0	С	21 728.1	В	
To go to a recreational or social activity	13 134.8	В	10 448.0	С	23 582.8	В	
To go somewhere else		F		F		F	
(Job) picking up or delivering goods		F	776.8	Е	1 069.4	D	
(Job) to or from service call		F	737.8	Е	1 348.7	Е	
(Job) other work purpose	2 409.9	Е		F		F	
Total	74 021.4	В		F	130 815.1	В	

Trucks 4.5t or more: Vehicle-km ('000 000) by Vehicle Group and Trip Purpose

		Vel	hicle	е Туре	
		Trucks 4.5t - 15	t	Trucks 15t or mor	^e
Vehicle Group	Trip Purpose				
Straight truck	Driving to or from service call		F		F
	Carrying goods or equipment		F	592.6	Е
	Empty		F		F
	Other work purpose		F		F
	Non work purpose		F		F
	Total	2 136.3	В	781.5	С
ther over 4.5t	Driving to or from service call		F		F
	Carrying goods or equipment		F	2 967.3	С
	Empty		F	566.2	Е
	Other work purpose		F		F
	Non work purpose		F		F
	Total		F	3 847.4	В
Total	Driving to or from service call		F		F
	Carrying goods or equipment		F	3 559.9	С
	Empty	196.0	Е	633.0	D
	Other work purpose		F		F
	Non work purpose	441.2	D		F
	Total	2 211.9	В	4 628.8	A

Trucks 4.5t or more: Passenger-km ('000 000) by Vehicle Group and Trip Purpose

		Veh	icle	е Туре	
		Trucks 4.5t - 15t		Trucks 15t or mor	`e
Vehicle Group	Trip Purpose				
Straight truck	Driving to or from service call		F		F
	Carrying goods or equipment		F	710.3	E
	Empty		F		F
	Other work purpose		F		F
	Non work purpose		F		F
	Total		F	919.9	Е
Other over 4.5t	Driving to or from service call		F		F
	Carrying goods or equipment		F	3 199.8	С
	Empty		F	579.0	E
	Other work purpose		F		F
	Non work purpose		F		F
	Total		F	4 110.5	С
Total	Driving to or from service call		F		F
	Carrying goods or equipment		F	3 910.1	С
	Empty	309.2	Е	646.4	D
	Other work purpose		F		F
	Non work purpose		F		F
	Total		F	5 030.4	В

 $\label{thm:condition} \mbox{Vehicle-km ('000 000) by Type of Vehicle, Type of Day and Time of Day}$

						Vehicle Type					
		Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	е	Buses		Total	
Type of Day	Time of Day										
Weekends and Holidays	00:00 - 05:59	551.7	С		F	61.8	Е		F	621.8	С
notiuays	06:00 - 11:59	6 371.9	В	154.4	Е	227.6	D	12.5	Е	6 766.4	В
	12:00 - 17:59	9 607.8	В	132.1	Е	230.7	Е	15.6	Е	9 986.2	В
	18:00 - 23:59	5 307.0	В		F	140.7	Е	6.0	Е	5 486.1	В
	Total	21 838.4	В	325.6	Е	660.8	D	35.6	Е	22 860.4	В
Weekdays	00:00 - 05:59	1 869.7	С		F	396.4	D		F	2 344.5	С
	06:00 - 11:59	17 727.9	В	912.5	С	1 515.1	В	87.9	С	20 243.5	А
	12:00 - 17:59	23 474.8	В	813.4	С	1 477.5	В	91.8	С	25 857.5	В
	18:00 - 23:59	11 651.2	В		F	579.1	С	20.8	Е	12 341.1	В
	Total	54 723.7	А	1 886.3	С	3 968.1	В	208.6	С	60 786.6	А
Total	00:00 - 05:59	2 421.4	С		F	458.2	D		F	2 966.3	В
	06:00 - 11:59	24 099.8	В	1 067.0	С	1 742.7	В	100.4	С	27 009.9	В
	12:00 - 17:59	33 082.6	В	945.5	С	1 708.2	В	107.4	С	35 843.7	В
	18:00 - 23:59	16 958.3	В		F	719.8	С	26.8	Е	17 827.2	В
	Total	76 562.1	А	2 211.9	В	4 628.8	А	244.3	С	83 647.1	А

Passenger-km ('000 000) by Type of Vehicle, Type of Day and Time of Day $\left(\frac{1}{2} \right)$

						Vehicle Type					
		Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Type of Day	Time of Day										
Weekends and Holidays	00:00 - 05:59	798.2	D		F	72.2	Е		F	882.7	D
HOIIdays	06:00 - 11:59	11 377.0	С		F	252.2	Е		F	11 985.7	С
	12:00 - 17:59	18 642.4	В		F		F		F	19 272.4	В
	18:00 - 23:59	10 284.7	В		F	147.2	Е		F	10 542.3	В
	Total	41 102.3	В		F	714.4	D		F	42 683.0	В
Weekdays	00:00 - 05:59	2 559.5	С		F	431.1	D		F	3 229.4	С
	06:00 - 11:59	27 986.9	В		F	1 622.1	В	1 337.1	D	32 241.8	В
	12:00 - 17:59		F	1 155.3	С	1 627.3	С	1 377.3	D	44 148.3	В
	18:00 - 23:59		F		F	635.4	D		F		F
	Total	89 712.8	В		F	4 316.0	В	3 006.8	D	99 732.4	В
Total	00:00 - 05:59	3 357.7	С		F	503.3	D		F	4 112.1	С
	06:00 - 11:59	39 363.9	В		F	1 874.3	В	1 454.3	D	44 227.5	В
	12:00 - 17:59	58 630.6	В		F	1 870.2	С	1 579.3	D	63 420.6	В
	18:00 - 23:59	29 462.8	В		F	782.6	С		F	30 655.2	В
	Total	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В

						Vehicle Type					
		Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	е	Buses		Total	
Age of Driver	Sex of Driver										
Under 25 years	Male		F		F	308.1	Е		F		F
	Female		F		F		F		F		F
	Total		F		F	308.1	Е		F		F
25 - 55 years	Male	36 676.4	В	1 752.5	С	3 639.4	С	112.6	Е	42 180.9	В
	Female	16 986.8	В		F		F	65.6	Е	17 143.8	В
	Total	53 663.2	В	1 796.5	С	3 686.8	С	178.2	D	59 324.7	В
55 years and over	Male	13 150.0	В	200.6	Е	634.0	Е	47.8	Е	14 032.4	В
	Female	3 940.3	С		F		F		F	3 956.0	С
	Total	17 090.2	В	201.1	Е	634.0	Е	63.1	Е	17 988.4	В
Total	Male	53 101.4	В	2 167.1	С	4 581.5	В	163.5	D	60 013.4	В
	Female	23 460.7	В		F		F	80.8	Е	23 633.6	В
	Total	76 562.1	А	2 211.9	В	4 628.8	А	244.3	С	83 647.1	А

Passenger-km ('000 000) by Type of Vehicle, Driver Age Group and Sex of Driver

						Vehicle Type					
		Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	е	Buses		Total	
Age of Driver	Sex of Driver										
Under 25 years	Male		F		F	348.0	E		F		F
	Female		F		F		F		F		F
	Total		F		F	348.0	Е		F		F
25 - 55 years	Male	66 171.7	С	2 588.3	С	3 935.7	С		F	73 601.6	С
	Female	28 492.8	С		F		F		F	29 787.2	В
	Total	94 664.5	В	2 685.7	С	4 009.4	С	2 029.3	Е	103 388.8	В
55 years and over	Male	21 382.4	С		F	673.0	Е		F	23 398.4	С
	Female	5 880.9	С		F		F		F	6 138.0	С
	Total	27 263.2	В		F	673.0	Е	1 318.6	Е	29 536.5	В
Total	Male	92 571.0	В		F	4 956.7	В	1 981.7	Е	102 618.9	В
	Female	38 244.1	В		F		F	1 380.0	Е	39 796.5	В
	Total	130 815.1	В		F	5 030.4	В	3 361.8	Е	142 415.4	В

Fuel ('000 000 litres) Purchased by Type of Vehicle and Type of Fuel

	Vehicle Type									
	Vehicles up to 4.	5t	Trucks 4.5t - 15	t	Trucks 15t or more	9	Buses		Total	
Fuel Type										
Gasoline	7 883.8	В	132.1	Е		F	6.0	Е	8 035.5	В
Diesel	142.3	Е	339.7	С	1 940.5	С	76.7	D	2 499.2	В

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Catalogue	
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John Ross Chief Trucking Section Telephone: (613) 951-1922 Facsimile: (613) 951-0579

Facsimile: (613) 951-0579 Internet: John.Ross@statcan.ca

Doug O'Keefe Chief Multimodal Transport Section Telephone: (613) 951-0291 Facsimile: (613) 951-0009

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