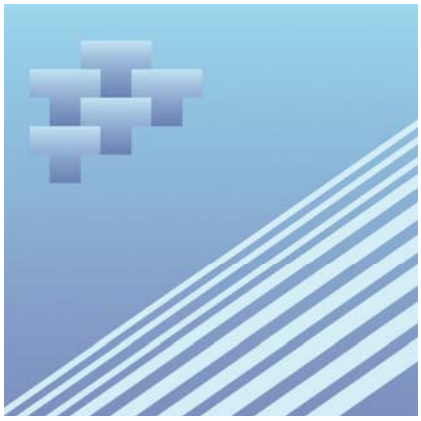
Catalogue no. 53-223-XIE

Canadian Vehicle Survey: Annual

2006



Statistics Canada Statistique Canada

Canada

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website at *www.statcan.ca* or contact us by e-mail at *infostats@statcan.ca* or by phone from 8:30am to 4:30pm Monday to Friday at:

Toll-free telephone (Canada and the United States):
Inquiries line **1-800-263-1136**
National telecommunications device for the hearing impaired **1-800-363-7629**
Fax line **1-877-287-4369**
Depository Services Program inquiries line **1-800-635-7943**
Depository Services Program fax line **1-800-565-7757**

Statistics Canada national contact centre: 1-613-951-8116
Fax line **1-613-951-0581**

Information to access the product

This product, catalogue no. 53-223-XIE, is available for free in electronic format. To obtain a single issue, visit our website at *www.statcan.ca* and select Publications.

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, the Agency has developed *standards of service* which its employees observe in serving its clients.

To obtain a copy of these service standards, please contact Statistics Canada toll free at 1-800-263-1136. The service standards are also published on *www.statcan.ca* under About us > Providing services to Canadians.

Statistics Canada
Transport Division

Canadian Vehicle Survey: Annual

2006

Published by authority of the Minister responsible for Statistics Canada

August 2007

Catalogue no. 53-223-XIE

ISSN 1499-318X

Frequency: Annual

Ottawa

La version française de cette publication est disponible sur demande (nº 53-223-XIF au catalogue).

Note of appreciation

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

User information

Symbols

The following standard symbols are used in Statistics Canada publications:

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

Acknowledgements

This publication was prepared in the Transportation Division under the direction of **Gord Baldwin**, Director, and **Ed Hamilton**, Chief, Trucking Section.

The principal author of this publication was **Réjean Doiron**.

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

Transportation Division, Canadian Vehicle Survey Unit
Réjean Doiron, Mike Fahey, Sean Fagan, Twyla Weimer

Transportation Division, Systems & Data Integration Section
Kevin Ringuette, Real Dery

Business Surveys Methods Division
Sophie Arsenault, Krista Cook, Susan Story

Operations and Integration Division
CATI unit

Operations Research and Development Division

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

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

Table of contents

Table of contents – continued

Data quality, concepts and methodology

Appendix

Highlights

Overall, vehicles of all types logged 326 billion kilometres in 2006, a 3% increase from 2005. That was the highest annual amount since the Canadian Vehicle Survey began. Vehicles of all types in Canada were driven an average of 17,009 kilometres in 2006, a 0.5% increase compared to 2005. While the total kilometres driven in Canada has increased since 2000, the average number of kilometres driven per vehicle for all vehicle types in Canada has declined overall in Canada since 2000, when the average was 17,958. This is because the number of vehicles in-scope for the survey has increased overall since the survey began.

Light vehicles

Light vehicles, which weigh less than 4.5 tonnes and include all cars, sport-utility vehicles, mini-vans and pick-up trucks, were driven more than 296 billion kilometres, an average of 16,015 kilometres per vehicle, or 44 kilometres per day, during 2006.

People in New Brunswick were the busiest among the provinces and territories, with an average of 18,558 kilometres per vehicle. Drivers in British Columbia drove their vehicles the least, with an average of 12,218 kilometres.

Trucks

Trucks (over 4.5 tonnes) were driven more than 29 billion kilometres (an average of 45,012 kilometres per vehicle) in 2006.

Fuel efficiency gains

Vehicle fuel efficiency has improved over the last few years, as all vehicles driven consumed approximately 12.7 L/100km in 2006, while they consumed 13.0L/100km in 2004. For light vehicles using gasoline, fuel efficiency has improved from 11.1L/100km in 2004 to 10.8L/100km in 2006 – a 3% improvement.

Introduction

Road vehicles dominate passenger travel and freight traffic. However, prior to the Canadian Vehicle Survey (CVS), no measures of total vehicle-kilometres or passenger-kilometres were available. The CVS was developed at the request of Transport Canada to fill this data gap. The survey provides quarterly and annual estimates of the amount of road travel, broken down by types of vehicles and characteristics, such as age and sex of driver, time of day and season. The results are the prime source of road vehicle use information for researchers and interested members of the public.

Prior to 2004, the survey was sponsored by Transport Canada. Since then, the survey has been co-sponsored by Transport Canada and Natural Resources Canada. They plan to combine the survey data with other data to improve road safety, monitor fuel consumption and deal with the impact of vehicle usage on the environment.

This document describes concepts, employed methods and discusses data quality. The reference period for all the information presented in this document is the year 2006.

Survey overview

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

The provincial component of the survey consists of two steps. The first step is a computer assisted telephone interview (CATI) with the registered owners of the sampled vehicles. This interview is used to collect some general information on the usage of the vehicle as well as to ask the respondent to complete a trip log specific to his/her vehicle type. The trip log is then mailed out as a second step. If respondents cannot be contacted by phone, the trip log is mailed out with a short questionnaire to collect some of the information normally collected during the CATI.

The territorial component of the survey consists of two short questionnaires. One is mailed to the respondents at the beginning of the quarter and the other is mailed at the end of the quarter. The first questionnaire asks respondents to record the odometer reading at the beginning of the first day of the quarter. All those returning the first questionnaire are mailed a second questionnaire asking them to record the odometer reading at the beginning of the first day of the next quarter. These two odometer readings allow the calculation of the distance the vehicle was driven during the quarter.

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

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

Related products

Selected publications from Statistics Canada

53F0004X	Canadian Vehicle Survey: Quarterly
53F0007X	Driving Characteristics of the Young and Aging Population

Selected CANSIM tables from Statistics Canada

405-0055	Canadian vehicle survey, number of vehicles in frame, by type of vehicle, province and territory
405-0056	Canadian vehicle survey, number of vehicles in scope, by type of vehicle, province and territory
405-0057	Canadian vehicle survey, passenger-kilometres, by type of vehicle and province
405-0058	Canadian vehicle survey, vehicle-kilometres, by type of vehicle, province and territory
405-0059	Canadian vehicle survey, number of vehicles in scope, by type of vehicle and type of fuel
405-0060	Canadian vehicle survey, passenger-kilometres, by type of vehicle and age of vehicle model
405-0061	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and age of vehicle model
405-0062	Canadian vehicle survey, passenger-kilometres, by type of vehicle and type of vehicle body
405-0063	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and type of vehicle body
405-0064	Canadian vehicle survey, number of vehicles in scope, by type of vehicle and type of vehicle body
405-0065	Canadian vehicle survey, passenger-kilometres, by type of vehicle and type of fuel
405-0066	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and type of fuel
405-0067	Canadian vehicle survey, passenger-kilometres, by type of vehicle and days of the week
405-0068	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and days of the week
405-0069	Canadian vehicle survey, passenger-kilometres, by type of vehicle and driver age group
405-0070	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and driver age group
405-0072	Canadian vehicle survey, passenger-kilometres, by type of vehicle and sex of driver
405-0073	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and sex of driver
405-0074	Canadian vehicle survey, passenger-kilometres, by type of vehicle and time of day

405-0075	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and time of day
405-0076	Canadian vehicle survey, passenger-kilometres, by type of vehicle and carrying dangerous goods
405-0077	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and carrying dangerous goods
405-0078	Canadian vehicle survey, passenger-kilometres, by type of vehicle and type of day
405-0079	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and type of day
405-0080	Canadian vehicle survey, passenger-kilometres, by type of vehicle and type of road
405-0081	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and type of road
405-0082	Canadian vehicle survey, passenger-kilometres, by type of vehicle and passenger age group
405-0083	Canadian vehicle survey, passenger-kilometres, by type of vehicle, type of day and time of day
405-0084	Canadian vehicle survey, vehicle-kilometres, by type of vehicle, type of day and time of day
405-0085	Canadian vehicle survey, passenger-kilometres, by type of vehicle, driver age group and sex of driver
405-0086	Canadian vehicle survey, vehicle-kilometres, by type of vehicle, driver age group and sex of driver
405-0088	Canadian vehicle survey, number of vehicles up to 4.5 tonnes, by year of vehicle model, province and territory
405-0089	Canadian vehicle survey, number of trucks 4.5 tonnes to 14.9 tonnes, by year of vehicle model, province and territory
405-0090	Canadian vehicle survey, number of trucks 15 tonnes and over, by year of vehicle model, province and territory
405-0097	Canadian vehicle survey, vehicle-kilometres for trucks over 4.5 tonnes, by vehicle group, type of vehicle and purpose of trip (specific to vehicle type)
405-0098	Canadian vehicle survey, passenger-kilometres for trucks over 4.5 tonnes, by vehicle group, type of vehicle and purpose of trip (specific to vehicle type)
405-0100	Canadian vehicle survey, number of vehicles in scope, by type of vehicle and age of vehicle model
405-0111	Canadian vehicle survey, vehicle-kilometres and passenger-kilometres for vehicles up to 4.5 tonnes, by part of driver's job
405-0112	Canadian vehicle survey, vehicle-kilometres for vehicles up to 4.5 tonnes, by origin and destination of trip
405-0113	Canadian vehicle survey, passenger-kilometres for vehicles up to 4.5 tonnes, by origin and destination of trip
405-0114	Canadian vehicle survey, vehicle-kilometres, by type of vehicle, type of fuel and type of vehicle body

405-0115	Canadian vehicle survey, fuel consumed, by type of vehicle, type of fuel and type of vehicle body
405-0116	Canadian vehicle survey, number of vehicles in scope, by type of vehicle and type of activity
405-0117	Canadian vehicle survey, vehicle-kilometres and passenger-kilometres for trucks 4.5 tonnes to 14.9 tonnes, by type of activity
405-0118	Canadian vehicle survey, vehicle-kilometres and passenger-kilometres for trucks 15 tonnes and over, by type of activity
405-0119	Canadian vehicle survey, vehicle-kilometres and passenger-kilometres for trucks 4.5 tonnes to 14.9 tonnes, by type of trip
405-0120	Canadian vehicle survey, vehicle-kilometres and passenger-kilometres for trucks 15 tonnes and over, by type of trip

Selected surveys from Statistics Canada

2749	Canadian Vehicle Survey

Statistical tables

Table 1

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

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
Total - Canada	**19,499,843**	**18,738,949**	**442,614**	**318,280**
Newfoundland and Labrador	265,411	258,129	4,087	3,195
Prince Edward Island	80,976	76,676	1,523	2,778
Nova Scotia	541,499	525,215	8,608	7,677
New Brunswick	471,895	459,672	7,829	4,395
Quebec	4,471,723	4,373,403	58,614	39,706
Ontario	7,130,694	6,918,915	94,156	117,623
Manitoba	658,599	631,517	10,708	16,374
Saskatchewan	728,764	665,170	37,334	26,260
Alberta	2,533,947	2,339,253	113,729	80,966
British Columbia	2,562,548	2,442,250	103,423	16,875
Yukon Territory	27,873	24,958	1,666	1,249
Northwest Territories	22,318	20,575	716	1,027
Nunavut	3,598	3,218	223	156

Table 2-1

Number of vehicles on the registration lists by jurisdiction and vehicle model year — Vehicles up to 4.5 tonnes

	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba
Total, all vehicle model years	**258,127**	**76,675**	**525,214**	**459,670**	**4,373,402**	**6,918,914**	**631,516**
Earlier than 1988	5,773	3,515	21,331	16,098	116,322	252,755	42,758
1988	2,679	1,283	6,308	6,162	48,956	74,166	10,909
1989	3,173	1,559	7,718	7,515	60,228	96,081	12,913
1990	3,471	1,933	9,631	9,230	82,174	129,813	16,466
1991	4,306	2,131	11,383	11,423	108,754	154,015	19,827
1992	5,838	3,179	15,614	15,937	152,352	209,611	24,141
1993	8,040	3,608	18,135	17,107	160,232	228,866	23,611
1994	10,566	4,234	22,118	20,662	176,082	271,347	25,614
1995	12,089	4,773	25,315	23,372	201,351	318,591	29,387
1996	10,325	4,311	23,344	20,999	174,068	292,469	27,359
1997	14,597	5,481	30,597	26,699	225,281	392,302	37,371
1998	17,310	5,757	34,811	30,433	251,684	445,263	40,238
1999	17,350	5,384	33,514	28,738	250,225	436,585	35,856
2000	20,495	6,379	40,436	35,388	313,185	543,880	41,666
2001	18,194	4,905	34,649	29,636	297,576	489,510	40,051
2002	21,403	5,343	41,484	34,942	349,703	551,311	46,031
2003	24,254	4,459	41,241	35,412	396,055	579,866	46,711
2004	20,858	3,265	36,520	31,434	355,547	493,074	41,178
2005	23,471	3,203	40,860	34,963	390,610	544,329	42,713
2006	12,694	1,718	27,104	20,817	233,556	372,387	24,275
2007	1,211	225	3,093	2,689	29,096	42,686	2,434
2008	0	0	0	0	0	0	0
Year of vehicle model, unknown	19	23	0	5	357	0	0

Table 2-1 – continued

Number of vehicles on the registration lists by jurisdiction and vehicle model year — Vehicles up to 4.5 tonnes

	Saskat-chewan	Alberta	British Columbia	Yukon Territory	Northwest Territories	Nunavut	Total
Total, all vehicle model years	**665,169**	**2,339,251**	**2,442,248**	**24,957**	**20,574**	**3,217**	**18,738,941**
Earlier than 1988	84,786	197,194	224,900	3,703	1,712	200	971,045
1988	15,892	44,221	61,438	846	420	63	273,341
1989	17,916	54,084	75,982	936	482	71	338,664
1990	21,088	66,499	94,249	1,028	526	77	436,191
1991	23,780	74,956	99,368	1,004	593	100	511,646
1992	26,393	79,702	107,648	1,041	592	120	642,174
1993	25,286	77,942	104,020	1,020	585	129	668,587
1994	28,537	86,373	103,779	1,046	701	146	751,209
1995	31,283	94,954	109,989	1,158	732	164	853,165
1996	26,807	83,507	90,394	898	585	124	755,193
1997	36,241	115,707	119,284	1,248	904	203	1,005,921
1998	37,254	131,829	121,617	1,164	954	201	1,118,519
1999	31,328	114,391	110,929	1,042	998	203	1,066,548
2000	37,131	132,708	130,849	1,107	1,233	237	1,304,700
2001	37,672	140,985	131,539	1,217	1,365	256	1,227,560
2002	42,313	166,918	159,111	1,417	1,549	273	1,421,804
2003	42,489	176,756	163,312	1,569	2,056	221	1,514,407
2004	38,774	165,961	147,350	1,253	1,641	144	1,337,005
2005	37,664	185,464	165,952	1,390	1,742	173	1,472,539
2006	20,802	133,386	107,727	764	1,100	90	956,426
2007	1,727	15,706	12,804	98	95	13	111,882
2008	0	0	0	0	0	0	0
Year of vehicle model, unknown	0	0	0	0	1	0	406

Table 2-2

Number of vehicles on the registration lists by jurisdiction and vehicle model year — Trucks 4.5 tonnes to 14.9 tonnes

	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba
Total, all vehicle model years	**4,086**	**1,521**	**8,606**	**7,828**	**58,613**	**94,155**	**10,707**
Earlier than 1988	780	703	1,889	886	11,053	6,260	2,778
1988	159	72	283	150	2,625	1,888	301
1989	129	77	276	153	2,244	1,939	279
1990	149	58	301	177	2,333	2,272	411
1991	151	42	225	174	1,566	1,713	353
1992	131	41	213	196	1,512	1,803	312
1993	135	44	245	216	1,755	2,295	353
1994	168	49	248	259	2,273	2,852	390
1995	222	65	452	322	2,951	3,883	541
1996	126	36	280	255	1,955	3,140	364
1997	183	43	379	319	2,051	4,455	465
1998	163	29	365	337	2,589	4,700	402
1999	238	57	518	501	3,614	7,135	525
2000	213	42	453	364	3,059	6,411	395
2001	175	31	373	400	2,396	6,298	453
2002	203	37	361	422	2,270	6,331	388
2003	180	29	468	711	2,945	7,759	458
2004	145	21	453	795	2,781	7,327	428
2005	239	20	447	735	3,404	8,218	602
2006	173	18	325	411	2,496	6,681	447
2007	16	1	46	39	578	788	53
2008	0	0	0	0	0	0	0
Year of vehicle model, unknown	1	0	0	0	155	0	0

Table 2-2 – continued

Number of vehicles on the registration lists by jurisdiction and vehicle model year — Trucks 4.5 tonnes to 14.9 tonnes

	Saskat-chewan	Alberta	British Columbia	Yukon Territory	Northwest Territories	Nunavut	Total
Total, all vehicle model years	**37,333**	**113,728**	**103,422**	**1,664**	**715**	**222**	**442,607**
Earlier than 1988	24,777	31,858	13,350	469	118	46	94,964
1988	431	2,216	2,360	57	18	13	10,571
1989	389	2,272	2,663	51	19	6	10,501
1990	512	2,526	3,091	59	37	9	11,939
1991	461	2,032	2,491	34	18	5	9,270
1992	440	1,975	2,601	45	14	6	9,295
1993	494	2,025	3,087	33	13	11	10,712
1994	527	2,495	3,470	46	18	6	12,806
1995	718	3,200	4,049	32	34	23	16,497
1996	441	2,213	2,939	33	14	4	11,806
1997	670	3,672	3,873	65	25	9	16,216
1998	638	3,511	3,374	41	27	8	16,188
1999	675	4,497	4,411	64	40	13	22,292
2000	579	3,901	4,176	44	37	10	19,688
2001	830	5,737	5,004	59	33	6	21,800
2002	693	4,949	5,358	66	34	5	21,123
2003	830	6,047	8,826	113	37	9	28,417
2004	707	5,306	9,135	122	34	8	27,268
2005	1,329	10,778	10,266	107	65	6	36,223
2006	1,088	10,977	8,221	109	69	11	31,032
2007	97	1,532	668	7	3	0	3,833
2008	0	0	0	0	0	0	0
Year of vehicle model, unknown	0	0	0	0	0	0	157

Table 2-3

Number of vehicles on the registration lists by jurisdiction and vehicle model year — Trucks 15 tonnes or more

	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba
Total, all vehicle model years	**3,194**	**2,777**	**7,675**	**4,393**	**39,705**	**117,622**	**16,372**
Earlier than 1988	399	1,222	926	940	1,108	6,855	1,840
1988	111	188	208	221	454	2,163	295
1989	117	150	249	208	406	2,346	286
1990	86	141	160	225	379	2,335	256
1991	77	102	103	124	245	1,507	194
1992	68	49	119	88	380	1,547	211
1993	73	71	168	169	541	2,072	371
1994	119	94	279	218	1,036	3,056	551
1995	193	157	394	279	1,685	5,345	697
1996	159	99	322	167	1,306	3,977	621
1997	134	50	292	135	1,382	4,392	637
1998	222	81	471	237	2,504	7,819	988
1999	192	86	547	243	2,971	9,593	1,036
2000	245	73	634	197	3,939	11,415	1,316
2001	136	36	330	117	2,546	7,321	800
2002	99	14	257	85	1,502	5,366	533
2003	138	32	429	123	3,405	7,590	945
2004	151	36	531	147	3,174	8,212	1,179
2005	230	40	607	192	5,464	11,842	1,806
2006	194	34	481	218	4,027	9,713	1,263
2007	41	13	161	51	1,232	3,145	541
2008	0	0	0	0	0	0	0
Year of vehicle model, unknown	2	0	0	0	10	0	0

Table 2-3 – continued

Number of vehicles on the registration lists by jurisdiction and vehicle model year — Trucks 15 tonnes or more

	Saskat-chewan	Alberta	British Columbia	Yukon Territory	Northwest Territories	Nunavut	Total
Total, all vehicle model years	**26,259**	**80,965**	**16,874**	**1,248**	**1,025**	**155**	**318,272**
Earlier than 1988	8,641	17,267	2,835	214	145	21	42,414
1988	940	1,850	471	32	20	0	6,953
1989	791	1,657	497	25	24	5	6,767
1990	815	1,914	785	32	29	4	7,167
1991	552	1,426	439	18	23	6	4,822
1992	550	1,155	581	32	19	4	4,807
1993	826	1,660	563	26	22	5	6,572
1994	1,115	2,636	691	39	39	5	9,885
1995	1,540	3,294	789	51	48	11	14,488
1996	1,104	2,703	716	52	55	6	11,292
1997	1,113	3,255	760	51	46	3	12,254
1998	1,475	4,725	780	60	65	9	19,442
1999	1,226	3,889	704	55	61	18	20,626
2000	1,172	4,095	617	79	63	7	23,857
2001	788	3,700	638	73	58	6	16,555
2002	429	2,874	591	49	36	4	11,846
2003	580	3,277	655	56	47	9	17,291
2004	717	4,367	909	66	58	9	19,562
2005	885	6,556	1,248	102	67	7	29,052
2006	774	6,566	1,272	99	72	5	24,724
2007	217	2,090	324	30	21	1	7,874
2008	0	0	0	0	0	0	0
Year of vehicle model, unknown	0	0	0	0	0	0	12

Table 3-1

Estimates of number of vehicles in scope for Canada by type of vehicle and jurisdiction

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
Total - Canada	**19,174,569** A	**18,536,955** A	**331,667** A	**305,947** A
Newfoundland and Labrador	260,646 A	254,296 A	3,403 B	2,947 B
Prince Edward Island	78,016 A	74,199 A	1,289 B	2,529 B
Nova Scotia	534,838 A	520,568 A	6,645 B	7,626 B
New Brunswick	459,006 A	449,175 A	5,822 B	4,009 B
Quebec	4,402,252 A	4,316,008 A	39,714 B	46,530 A
Ontario	7,010,025 A	6,832,120 A	68,303 A	109,602 A
Manitoba	654,564 A	629,454 A	9,217 B	15,893 A
Saskatchewan	716,514 A	662,810 A	29,062 B	24,642 A
Alberta	2,482,261 A	2,317,159 A	89,393 A	75,709 A
British Columbia	2,523,635 A	2,433,302 A	76,356 A	13,977 B
Yukon Territory	26,924 A	24,112 A	1,570 A	1,242 A
Northwest Territories	22,166 A	20,351 A	681 A	1,134 A
Nunavut	3,720 A	3,401 A	213 A	107 A

Table 3-2

Estimates of number of vehicles in scope for Canada by type of vehicle and vehicle model year

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
Total, all ages of vehicle model	**19,174,569** A	**18,536,955** A	**331,667** A	**305,947** A
Later than 2003	3,036,798 A	2,902,728 A	69,426 B	64,644 A
2001 to 2003	4,601,603 A	4,482,646 A	66,724 B	52,232 B
1997 to 2000	5,417,911 A	5,274,190 A	65,048 B	78,673 A
1993 to 1996	3,379,245 A	3,273,473 A	50,792 B	54,980 B
Earlier than 1993	2,739,012 A	2,603,917 A	79,677 B	55,418 B

Table 3-3
Estimates of number of vehicles in scope for Canada by type of vehicle and vehicle body type

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
Total, all vehicles body types	**19,174,569** A	**18,536,955** A	**331,667** A	**305,947** A
Car	9,714,820 A	9,714,820 A	...	...
Station wagon	486,073 B	486,073 B	...	...
Van	3,052,716 A	3,039,112 A	13,590 C	...
Sport utility vehicle	1,589,222 A	1,589,179 A	...	...
Pickup	3,718,002 A	3,647,069 A	70,394 B	F
Straight truck	370,623 A	39,096 E	222,167 A	109,361 A
Tractor trailer	209,428 A	...	15,463 C	193,380 A
Bus	2,778 E	...	F	...
Other vehicle type	30,908 E	20,449 E	7,804 D	2,655 E

Table 3-4
Estimates of number of vehicles in scope for Canada by type of vehicle and type of fuel

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
Total, all fuel types	**19,174,569** A	**18,536,955** A	**331,667** A	**305,947** A
Gasoline	18,062,790 A	17,969,181 A	89,275 B	4,334 E
Diesel	1,022,403 A	483,691 B	237,627 A	301,085 A
Other fuel type	89,376 D	84,083 D	4,766 E	F

Table 4-1
Estimates of vehicle-kilometres for Canada by type of vehicle and jurisdiction

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions			
Total - Canada	**326,144.9** A	**296,870.8** A	**7,437.6** B	**21,836.5** A
Newfoundland and Labrador	4,358.8 B	4,154.3 B	48.5 E	156.0 C
Prince Edward Island	1,041.5 C	979.3 C	18.6 E	43.6 E
Nova Scotia	10,189.4 B	9,617.3 B	104.3 D	467.7 C
New Brunswick	8,599.0 B	8,335.6 B	160.1 D	103.2 E
Quebec	69,932.2 A	64,772.3 B	898.2 C	4,261.7 B
Ontario	130,391.6 A	120,464.9 A	1,544.0 C	8,382.8 B
Manitoba	11,973.0 B	10,256.5 B	157.7 D	1,558.9 B
Saskatchewan	11,194.3 B	9,432.5 B	468.5 D	1,293.3 C
Alberta	45,495.8 B	38,375.4 B	2,145.0 C	4,975.5 B
British Columbia	31,996.6 B	29,730.3 B	1,851.1 C	415.2 C
Yukon Territory	536.2 B	398.7 B	27.8 D	109.7 C
Northwest Territories	380.5 B	304.7 B	10.7 E	65.1 D
Nunavut	56.0 D	49.1 D	F	F

Table 4-2
Estimates of vehicle-kilometres for Canada by type of vehicle and vehicle model year

	Total, all vehicle	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions			
Total, all ages of vehicle model	**326,144.9** [A]	**296,870.8** [A]	**7,437.6** [B]	**21,836.5** [A]
Later than 2003	69,380.7 [A]	58,785.8 [B]	2,808.6 [B]	7,786.2 [B]
2001 to 2003	89,961.1 [A]	83,066.0 [A]	1,807.1 [C]	5,088.0 [B]
1997 to 2000	93,030.5 [A]	85,888.1 [A]	1,483.9 [C]	5,658.4 [B]
1993 to 1996	47,070.8 [B]	43,961.3 [B]	885.1 [D]	2,224.5 [D]
Earlier than 1993	26,701.8 [B]	25,169.5 [B]	453.0 [E]	1,079.3 [D]

Table 4-3
Estimates of vehicle-kilometres for Canada by type of vehicle and vehicle body type

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions			
Total, all vehicles body types	**326,144.9** [A]	**296,870.8** [A]	**7,437.6** [B]	**21,836.5** [A]
Car	148,143.4 [A]	148,143.4 [A]	...	...
Station wagon	9,052.2 [D]	9,052.2 [D]	...	...
Van	54,219.9 [B]	53,883.7 [B]	336.2 [E]	...
Sport utility vehicle	25,265.0 [B]	25,264.1 [B]	...	...
Pickup	61,619.8 [B]	59,551.5 [B]	2,067.9 [C]	F
Straight truck	8,442.4 [B]	F	4,419.4 [B]	3,404.3 [B]
Tractor trailer	18,870.1 [A]	...	F	18,428.7 [A]
Bus	F	...	F	...
Other vehicle type	F	F	F	F

Table 4-4
Estimates of vehicle-kilometres for Canada by type of vehicle and type of fuel

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions			
Total, all fuel types	**326,144.9** [A]	**296,870.8** [A]	**7,437.6** [B]	**21,836.5** [A]
Gasoline	286,276.7 [A]	285,055.1 [A]	1,162.0 [C]	F
Diesel	38,245.0 [A]	10,261.4 [C]	6,236.2 [B]	21,747.4 [A]
Other fuel type	F	F	F	F

Table 5-1
Estimates of passenger-kilometres for provinces only by type of vehicle and jurisdiction

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions			
Total	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
Newfoundland and Labrador	7,856.7 B	7,635.9 B	60.6 E	160.2 C
Prince Edward Island	1,744.7 C	1,676.8 C	22.5 E	45.3 E
Nova Scotia	16,442.8 B	15,812.0 B	136.4 E	494.4 C
New Brunswick	14,576.5 B	14,261.8 B	199.8 D	114.8 E
Quebec	111,716.8 B	105,925.7 B	1,189.0 C	4,602.1 B
Ontario	213,140.4 A	202,016.6 A	1,949.5 C	9,174.3 B
Manitoba	19,265.3 B	17,260.7 B	209.5 D	1,795.1 B
Saskatchewan	17,108.7 B	15,136.4 B	556.3 D	1,416.0 C
Alberta	70,932.9 B	62,441.8 B	2,840.3 C	5,650.8 B
British Columbia	52,531.1 B	49,588.1 B	2,496.6 C	446.4 D

Table 5-2
Estimates of passenger-kilometres for provinces only by type of vehicle and vehicle model year

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions			
Total, all ages of vehicle model	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
Later than 2003	109,458.9 B	97,297.2 B	3,594.2 B	8,567.5 B
2001 to 2003	149,462.6 A	141,459.4 B	2,363.7 C	5,639.6 B
1997 to 2000	147,531.7 A	139,458.3 A	2,076.3 C	5,997.1 B
1993 to 1996	76,851.6 B	73,301.3 B	1,062.9 D	2,487.4 D
Earlier than 1993	42,011.1 B	40,239.9 B	563.4 E	1,207.8 E

Table 5-3
Estimates of passenger-kilometres for provinces only by type of vehicle and vehicle body type

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions			
Total, all vehicles body types	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
Car	234,108.1 A	234,108.1 A	...	...
Station wagon	16,949.3 D	16,949.3 D	...	...
Van	104,851.3 B	104,478.9 B	372.4 E	...
Sport utility vehicle	44,797.1 B	44,797.1 B	...	...
Pickup	92,819.7 B	89,996.1 B	2,823.6 C	F
Straight truck	10,512.7 B	F	5,762.2 B	3,832.5 B
Tractor trailer	20,567.1 A	...	F	20,063.2 A
Bus	F	...	F	...
Other vehicle type	F	F	F	F

Table 5-4
Estimates of passenger-kilometres for provinces only by type of vehicle and type of fuel

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions			
Total, all fuel types	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
Gasoline	474,310.5 A	472,819.6 A	1,431.4 C	F
Diesel	48,366.3 B	16,365.0 C	8,181.8 B	23,819.5 A
Other fuel type	F	F	F	F

Table 5-5
Estimates of passenger-kilometres for provinces only by passenger age group for vehicles up to 4.5 tonnes

	Vehicles up to 4.5 tonnes
	millions
Total, all ages	**491,756.0** A
Under 5 years	12,281.8 C
5 to 14 years	24,055.1 C
15 to 19 years	15,681.8 C
20 to 24 years	19,483.0 C
25 to 34 years	50,610.1 B
35 to 54 years	198,169.9 A
55 to 64 years	100,932.9 B
65 to 74 years	50,286.0 B
75 to 84 years	18,261.1 B
85 years and over	1,994.2 E

Table 6-1
Estimates of vehicle-kilometres and passenger-kilometres for provinces only by type of vehicle and driver age group

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions of vehicle-kilometres			
Total, all age groups	**325,172.2** A	**296,118.4** A	**7,396.0** B	**21,657.9** A
Under 20 years	F	F	F	F
20 to 24 years	8,753.0 D	7,920.7 E	342.9 E	489.3 D
25 to 34 years	36,340.1 B	31,144.1 C	1,438.5 B	3,757.6 B
35 to 44 years	68,546.5 B	60,012.6 B	2,294.8 B	6,239.2 B
45 to 54 years	95,637.7 B	86,221.5 B	2,225.0 B	7,191.2 B
55 to 64 years	69,128.1 B	64,601.0 B	927.3 D	3,599.9 B
65 years and over	43,640.8 B	43,127.6 B	159.9 E	353.3 E
	millions of passenger-kilometres			
Total, all age groups	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
Under 20 years	F	F	F	F
20 to 24 years	15,119.4 D	14,093.3 D	507.7 E	518.4 D
25 to 34 years	57,259.2 B	50,982.3 C	1,943.5 B	4,333.4 B
35 to 44 years	113,954.6 B	104,095.2 B	3,043.0 B	6,816.3 B
45 to 54 years	145,880.0 B	135,049.6 B	2,652.6 B	8,177.8 B
55 to 64 years	110,470.5 B	105,526.7 B	1,284.9 D	3,659.0 B
65 years and over	77,805.7 B	77,219.7 B	219.0 E	367.0 E

Table 6-2
Estimates of vehicle-kilometres and passenger-kilometres for provinces only by type of vehicle and sex of driver

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions of vehicle-kilometres			
Both sexes	**325,172.2** A	**296,118.4** A	**7,396.0** B	**21,657.9** A
Males	239,987.8 A	211,260.6 A	7,277.1 B	21,450.1 A
Females	85,184.5 B	84,857.7 B	118.9 E	207.9 E
	millions of passenger-kilometres			
Both sexes	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
Males	393,266.8 A	360,191.7 A	9,486.5 B	23,588.5 A
Females	132,049.1 B	131,564.3 B	174.0 E	310.9 E

Table 6-3

Estimates of vehicle-kilometres and passenger-kilometres for provinces only by driver age group and sex of driver

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions of vehicle-kilometres			
Total, all age groups				
Both sexes	325,172.2 A	296,118.4 A	7,396.0 B	21,657.9 A
Males	239,987.8 A	211,260.6 A	7,277.1 B	21,450.1 A
Females	85,184.5 B	84,857.7 B	118.9 E	207.9 E
Under 25 years				
Both sexes	11,879.0 D	11,011.6 E	350.6 D	516.8 D
Males	7,490.1 E	6,633.2 E	345.8 E	511.1 D
Females	F	F	F	F
25 to 54 years				
Both sexes	200,524.3 A	177,378.1 A	5,958.2 B	17,188.0 A
Males	144,537.5 A	121,686.0 B	5,865.6 B	16,985.8 A
Females	55,986.9 B	55,692.1 B	F	202.1 E
55 years and over				
Both sexes	112,769.0 B	107,728.6 B	1,087.2 C	3,953.1 B
Males	87,960.2 B	82,941.4 B	1,065.6 C	3,953.1 B
Females	24,808.8 C	24,787.2 C	F	F
	millions of passenger-kilometres			
Total, all age groups				
Both sexes	525,315.9 A	491,756.0 A	9,660.5 B	23,899.4 A
Males	393,266.8 A	360,191.7 A	9,486.5 B	23,588.5 A
Females	132,049.1 B	131,564.3 B	174.0 E	310.9 E
Under 25 years				
Both sexes	19,945.8 D	18,882.5 D	517.5 E	545.9 D
Males	12,943.0 E	11,891.5 E	511.6 E	539.9 D
Females	7,002.9 E	6,990.9 E	F	F
25 to 54 years				
Both sexes	317,093.8 A	290,127.2 A	7,639.1 B	19,327.5 A
Males	229,476.7 A	202,940.4 B	7,513.6 B	19,022.7 A
Females	87,617.1 B	87,186.7 B	F	304.9 E
55 years and over				
Both sexes	188,276.2 B	182,746.4 B	1,503.9 C	4,026.0 B
Males	150,847.1 B	145,359.8 B	1,461.3 C	4,026.0 B
Females	37,429.1 C	37,386.6 C	F	F

Table 6-4

Estimates of vehicle-kilometres and passenger-kilometres for provinces only by type of vehicle and dayof week

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions of vehicle-kilometres			
Total, all days of the week	**325,172.2** A	**296,118.4** A	**7,396.0** B	**21,657.9** A
Sunday	38,725.7 B	37,001.5 B	380.9 E	1,343.2 B
Monday	45,888.3 A	41,173.1 B	1,071.5 B	3,643.6 A
Tuesday	48,451.2 A	42,682.5 B	1,413.9 B	4,354.9 A
Wednesday	50,257.7 A	44,796.9 A	1,340.9 B	4,119.9 A
Thursday	49,978.6 A	44,715.5 B	1,393.9 B	3,869.2 A
Friday	53,302.7 B	48,780.4 B	1,306.7 B	3,215.5 A
Saturday	38,540.9 B	36,933.3 B	486.6 E	1,121.0 B
	millions of passenger-kilometres			
Total, all days of the week	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
Sunday	76,198.7 B	74,163.5 B	519.2 E	1,516.1 C
Monday	71,102.2 B	65,723.6 B	1,433.5 B	3,945.0 A
Tuesday	69,621.5 B	62,902.5 B	1,848.6 B	4,870.4 A
Wednesday	76,131.5 A	69,918.3 B	1,743.9 B	4,469.3 A
Thursday	72,889.2 B	66,827.2 B	1,789.7 B	4,272.3 B
Friday	86,073.3 B	80,809.2 B	1,696.8 B	3,567.3 B
Saturday	73,299.5 B	71,411.8 B	628.7 E	1,259.0 C

Table 6-5

Estimates of vehicle-kilometres and passenger-kilometres for provinces only by type of vehicle and type of day

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions of vehicle-kilometres			
Total, all days	**325,172.2** A	**296,118.4** A	**7,396.0** B	**21,657.9** A
Weekends and holidays	86,684.8 A	82,362.8 A	1,125.6 C	3,196.4 B
Weekdays	238,487.4 A	213,755.5 A	6,270.4 B	18,461.5 A
	millions of passenger-kilometres			
Total, all days	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
Weekends and holidays	165,631.4 A	160,532.7 A	1,498.5 C	3,600.2 B
Weekdays	359,684.5 A	331,223.3 A	8,162.0 B	20,299.3 A

Table 6-6
Estimates of vehicle-kilometres and passenger-kilometres for provinces only by type of vehicle and time of day

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions of vehicle-kilometres			
Total, all hours	**325,172.2** A	**296,118.4** A	**7,396.0** B	**21,657.9** A
00:00 to 05:59	10,690.3 B	8,168.0 C	359.3 D	2,163.0 B
06:00 to 11:59	110,775.5 A	99,924.9 A	3,310.8 B	7,539.9 A
12:00 to 17:59	143,513.0 A	132,395.4 A	3,117.7 B	7,999.9 A
18:00 to 23:59	60,193.5 B	55,630.1 B	608.2 C	3,955.2 A
	millions of passenger-kilometres			
Total, all hours	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
00:00 to 05:59	16,181.7 B	13,376.9 C	443.1 D	2,361.7 B
06:00 to 11:59	168,467.6 A	155,795.4 A	4,308.7 B	8,363.5 A
12:00 to 17:59	236,945.6 A	224,029.2 A	4,093.8 B	8,822.6 A
18:00 to 23:59	103,720.9 A	98,554.6 A	814.8 C	4,351.6 B

Table 6-7

Estimates of vehicle-kilometres and passenger-kilometres for provinces only by type of vehicle, type of day and time of day

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions of vehicle-kilometres			
Total, all days				
Total, all hours	**325,172.2** A	**296,118.4** A	**7,396.0** B	**21,657.9** A
00:00 to 05:59	10,690.3 B	8,168.0 C	359.3 D	2,163.0 B
06:00 to 11:59	110,775.5 A	99,924.9 A	3,310.8 B	7,539.9 A
12:00 to 17:59	143,513.0 A	132,395.4 A	3,117.7 B	7,999.9 A
18:00 to 23:59	60,193.5 B	55,630.1 B	608.2 C	3,955.2 A
Weekends and holidays				
Total, all hours	**86,684.8** A	**82,362.8** A	**1,125.6** C	**3,196.4** B
00:00 to 05:59	2,718.8 D	2,343.3 E	F	327.5 C
06:00 to 11:59	26,990.0 B	25,425.8 B	522.2 C	1,042.0 B
12:00 to 17:59	40,277.1 B	38,635.4 B	454.7 C	1,187.1 B
18:00 to 23:59	16,698.9 B	15,958.4 B	100.7 E	639.9 B
Weekdays				
Total, all hours	**238,487.4** A	**213,755.5** A	**6,270.4** B	**18,461.5** A
00:00 to 05:59	7,971.5 B	5,824.7 C	311.3 D	1,835.5 B
06:00 to 11:59	83,785.5 A	74,499.0 A	2,788.5 B	6,497.9 A
12:00 to 17:59	103,235.8 A	93,760.0 A	2,663.0 B	6,812.8 A
18:00 to 23:59	43,494.6 B	39,671.8 B	507.5 C	3,315.3 B
	millions of passenger-kilometres			
Total, all days				
Total, all hours	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
00:00 to 05:59	16,181.7 B	13,376.9 C	443.1 D	2,361.7 B
06:00 to 11:59	168,467.6 A	155,795.4 A	4,308.7 B	8,363.5 A
12:00 to 17:59	236,945.6 A	224,029.2 A	4,093.8 B	8,822.6 A
18:00 to 23:59	103,720.9 A	98,554.6 A	814.8 C	4,351.6 B
Weekends and holidays				
Total, all hours	**165,631.4** A	**160,532.7** A	**1,498.5** C	**3,600.2** B
00:00 to 05:59	4,887.6 D	4,463.1 D	F	370.5 C
06:00 to 11:59	50,230.7 B	48,364.5 B	706.7 D	1,159.4 B
12:00 to 17:59	77,755.2 B	75,808.5 B	616.5 C	1,330.1 B
18:00 to 23:59	32,757.9 B	31,896.6 B	121.2 E	740.1 B
Weekdays				
Total, all hours	**359,684.5** A	**331,223.3** A	**8,162.0** B	**20,299.3** A
00:00 to 05:59	11,294.1 C	8,913.8 C	389.1 D	1,991.2 B
06:00 to 11:59	118,236.9 A	107,430.9 A	3,602.0 B	7,204.1 A
12:00 to 17:59	159,190.5 A	148,220.6 A	3,477.4 B	7,492.5 A
18:00 to 23:59	70,963.0 B	66,658.0 B	693.6 C	3,611.4 B

Table 6-8

Estimates of vehicle-kilometres and passenger-kilometres for provinces only by type of vehicle and road type

	Total, all vehicles	Vehicles up to 4.5 tonnes	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions of vehicle-kilometres			
Total, all roads	**325,172.2** A	**296,118.4** A	**7,396.0** B	**21,657.9** A
Roads with posted maximum speed of 80 kilometres per hour or more	171,900.0 A	153,091.3 A	4,078.4 B	14,730.3 A
All other roads	153,272.3 B	143,027.0 B	3,317.6 B	6,927.6 A
	millions of passenger-kilometres			
Total, all roads	**525,315.9** A	**491,756.0** A	**9,660.5** B	**23,899.4** A
Roads with posted maximum speed of 80 kilometres per hour or more	283,534.2 A	261,933.9 A	5,209.3 B	16,390.9 A
All other roads	241,781.7 A	229,822.1 B	4,451.2 B	7,508.5 B

Table 6-9

Estimates of vehicle-kilometres and passenger-kilometres for provinces only by origin and destination of trips for vehicles up to 4.5 tonnes

	Destination				
	Driver's home	Driver's regular workplace	Shopping centre, bank, other place of personal business	Leisure, entertainment, recreational facility, restaurant	Other
	millions of vehicle-kilometres				
Origin					
Driver's home	55,247.0 A	25,169.1 A	10,116.0 C	9,376.5 B	35,418.6 A
Driver's regular workplace	24,015.1 A	11,566.4 B	1,918.0 E	985.7 E	6,401.5 B
Shopping centre, bank, other place of personal business	11,317.9 B	F	3,406.9 E	1,196.3 E	3,516.5 B
Leisure, entertainment, recreational facility, restaurant	10,641.8 B	F	1,286.0 E	1,535.2 E	4,349.8 B
Other	35,997.0 A	4,308.8 A	5,208.5 B	4,503.1 B	27,200.7 B
	millions of passenger-kilometres				
Origin					
Driver's home	92,165.6 A	28,703.7 B	17,642.8 C	18,302.3 B	61,388.4 A
Driver's regular workplace	28,192.3 B	15,417.6 C	F	F	8,445.3 B
Shopping centre, bank, other place of personal business	19,877.8 C	F	6,237.0 E	F	6,567.8 B
Leisure, entertainment, recreational facility, restaurant	21,942.8 B	F	2,334.5 E	3,467.1 E	9,597.0 B
Other	61,765.5 A	5,618.9 B	10,479.8 B	9,738.9 B	56,436.1 B

Table 6-10

Estimates of vehicle-kilometres and passenger-kilometres for provinces only by part of the driver's job for vehicles up to 4.5 tonnes

	Vehicle-kilometres	Passenger-kilometres
	millions	
Total	**296,118.4** [A]	**491,756.0** [A]
Yes	65,216.1 [B]	87,166.1 [B]
No	230,896.9 [A]	404,582.8 [A]

Table 6-11

Estimates of vehicle-kilometres and passenger-kilometres for provinces only by vehicle group and trip purpose for trucks weighing 4.5 tonnes or more

	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions of vehicle-kilometres	
Total, all groups		
Driving to or from service call	1,332.2 C	887.0 C
Carrying goods or equipment	3,704.1 B	16,928.8 A
Empty	516.7 E	2,877.3 B
Other work purpose	478.8 E	267.9 E
Non-work purpose	1,364.2 C	696.9 C
Total	**7,396.0** B	**21,657.9** A
Straight trucks		
Driving to or from service call	1,302.2 C	376.3 E
Carrying goods or equipment	3,407.2 B	2,342.8 C
Empty	478.0 E	329.3 E
Other work purpose	461.3 E	F
Non-work purpose	1,322.5 C	179.0 E
Total	**6,971.1** B	**3,387.9** B
Other trucks over 4.5 tonnes		
Driving to or from service call	F	510.7 E
Carrying goods or equipment	F	14,586.0 A
Empty	F	2,548.0 B
Other work purpose	F	F
Non-work purpose	F	517.9 D
Total	**F**	**18,270.0** A
	millions of passenger-kilometres	
Total, all groups		
Driving to or from service call	1,861.0 C	1,276.6 D
Carrying goods or equipment	4,361.1 B	18,516.7 A
Empty	605.2 E	3,052.7 B
Other work purpose	726.8 E	325.2 E
Non-work purpose	2,106.4 C	728.2 D
Total	**9,660.5** B	**23,899.4** A
Straight trucks		
Driving to or from service call	1,820.4 C	433.3 E
Carrying goods or equipment	4,050.7 B	2,676.9 C
Empty	536.1 E	350.0 E
Other work purpose	705.4 D	F
Non-work purpose	2,055.9 C	F
Total	**9,168.5** B	**3,832.5** B
Other trucks over 4.5 tonnes		
Driving to or from service call	F	843.3 E
Carrying goods or equipment	F	15,839.8 A
Empty	F	2,702.6 B
Other work purpose	F	F
Non-work purpose	F	537.5 D
Total	**F**	**20,067.0** A

Table 6-12

Estimates of vehicle-kilometres and passenger-kilometres for provinces only by carrying dangerous goods for trucks weighing 4.5 tonnes or more

	Total, all vehicles	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
	millions of vehicle-kilometres		
Total with or without dangerous goods	**29,053.9** A	**7,396.0** A	**21,657.9** A
With dangerous goods	2,124.1 C	443.7 D	1,680.4 C
Without dangerous goods	26,929.7 A	6,952.3 B	19,977.5 A
	millions of passenger-kilometres		
Total with or without dangerous goods	**33,559.9** A	**9,660.5** A	**23,899.4** A
With dangerous goods	2,176.6 C	481.5 E	1,695.2 C
Without dangerous goods	31,383.3 A	9,179.0 B	22,204.3 A

Table 7-1

Estimates by type of vehicle, type of fuel and vehicle body type for provinces only — Vehicle-kilometres

	Total, all vehicles		Vehicles up to 4.5 tonnes		Trucks 4.5 tonnes to 14.9 tonnes		Trucks 15 tonnes and over	
	Gasoline	Diesel	Gasoline	Diesel	Gasoline	Diesel	Gasoline	Diesel
	millions of vehicle-kilometres							
Vehicle body type								
Car	144,700.4	2,852.8 E	144,700.4	2,852.8 E	...	...	...	...
Station wagon	9,039.5 E	F	9,039.5 E	F	...	...	...	...
Van	52,737.4	F	52,543.7	F	193.6 E	F	...	...
SUV	24,842.4	F	24,842.4	F	...	...	...	...
Pickup	52,696.7	8,224.5	52,418.2	6,467.3	278.6 E	1,757.1	...	...
Straight truck	1,108.7	7,283.7	465.0 E	F	617.6 E	3,777.4	F	3,360.7
Tractor trailer	...	18,623.3	...	...	...	408.3 E	...	18,215.0
Bus	F	F	F	F	F	F	...	...
Other	334.2 E	160.2 E	F	F	F	142.0 E	...	F
Total	**285,550.2**	**38,015.9**	**284,347.0**	**10,226.7**	**1,146.0**	**6,210.6**	**F**	**21,578.5**

Table 7-2

Estimates by type of vehicle, type of fuel and vehicle body type for provinces only — Fuel consumed

	Total		Vehicles up to 4.5 tonnes		Trucks 4.5 tonnes to 14.9 tonnes		Trucks 15 tonnes and over	
	Gasoline	Diesel	Gasoline	Diesel	Gasoline	Diesel	Gasoline	Diesel
	millions of litres							
Vehicle body type								
Car	13,087.8 D	F	13,087.8 D	F	...	...	...	...
Station wagon	F	F	F	F	...	...	...	...
Van	6,289.0 E	F	6,253.7 E	F	F	F	...	...
SUV	3,227.2 E	F	3,227.2 E	F	...	...	...	...
Pickup	7,283.3 C	1,196.9 E	7,216.1 D	850.2 E	67.2 E	346.6 C	...	...
Straight truck	217.4 E	2,151.1 B	F	F	146.3 E	931.7 B	F	1,202.4 B
Tractor trailer	...	6,366.5 A	...	...	...	118.2 E	...	6,248.3 A
Bus	F	F	F	F	F	F	...	...
Other	F	F	F	F	F	F	...	F
Total	**31,111.3** D	**10,075.4** B	**30,830.5** D	**F**	**262.6** C	**1,446.9** B	**F**	**7,452.5** A

Table 8-1

Activity type for trucks weighing 4.5 tonnes or more for provinces only — Number of vehicles in scope by type of vehicle

	Trucks 4.5 tonnes to 14.9 tonnes	Trucks 15 tonnes and over
Total, all activity types	**329,203** A	**303,465** A
For-hire trucking	40,977 B	141,410 A
Owner-operator trucking	50,647 B	70,527 B
Private trucking	181,389 A	63,650 B
Other activity type	56,191 B	27,877 B

Table 8-2

Activity type for trucks weighing 4.5 tonnes or more for provinces only — Vehicle-kilometres and passenger-kilometres for trucks 4.5 tonnes to 14.9 tonnes

	Vehicle-kilometres	Passenger-kilometres
	millions	
Total, all activity types	**7,396.0** A	**9,660.5** A
For-hire trucking	961.5 E	1,273.8 E
Owner-operator trucking	1,592.3 D	2,012.8 D
Private trucking	3,917.7 B	5,099.9 B
Other activity type	924.4 D	1,273.9 D

Table 8-3

Activity type for trucks weighing 4.5 tonnes or more for provinces only — Vehicle-kilometres and passenger-kilometres for trucks 15 tonnes or more

	Vehicle-kilometres	Passenger-kilometres
	millions	
Total, all activity types	**21,657.9** A	**23,899.4** A
For-hire trucking	12,978.1 A	14,003.7 A
Owner-operator trucking	4,404.1 B	5,072.9 C
Private trucking	2,926.4 C	3,250.3 C
Other activity type	1,349.3 C	1,572.5 D

Table 9-1

Trip type for trucks weighing 4.5 tonnes or more for provinces only — Vehicle-kilometres and passenger-kilometres for trucks 4.5 tonnes to 14.9 tonnes

	Vehicle-kilometres	Passenger-kilometres
	millions	
Total, all trip types	**7,396.0** A	**9,660.5** A
Trips within provinces	6,817.0 B	8,988.0 B
Trips between provinces	330.2 E	355.1 E
Trips across Canada and United States border	237.6 E	284.6 E
Trips outside Canada	F	F

Table 9-2

Trip type for trucks weighing 4.5 tonnes or more for provinces only — Vehicle-kilometres and passenger-kilometres for trucks 15 tonnes or more

	Vehicle-kilometres	Passenger-kilometres
	millions	
Total, all trip types	**21,657.9** A	**23,899.4** A
Trips within provinces	12,528.2 A	13,630.9 A
Trips between provinces	3,985.1 B	4,454.3 B
Trips across Canada and United States border	3,330.6 B	3,667.7 B
Trips outside Canada	1,814.0 C	2,146.6 C

Concepts and definitions

The population of interest

The **in-scope vehicles** for the CVS include all motor vehicles, except buses (buses were included in the survey prior to 2004), motorcycles, off road vehicles (for example, snowmobiles, dune buggies, amphibious vehicles) and special equipment (for example, 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.

Definitions of variables in tables

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

Passenger-kilometres is the sum of the distances traveled by individual passengers (the driver being considered as one of the passengers). For example, for a vehicle with three passengers (the driver being one of them) that is driven on a distance of 10 kilometres, the number of passenger-kilometres will be 30. Light vehicles (see the Vehicle type definition below) report the number of passengers for each trip (see the Trip definition below). The number of passengers in heavy vehicles with gross vehicle weight of 4.5 tonnes or more (see the Vehicle type definition below) 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).

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

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.

The number of vehicles in scope 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.

Definitions of vehicle characteristics

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

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

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

Vehicle model year is derived based on the information available on the registration lists.

Definitions of vehicle usage characteristics

The CVS definition of a **trip** determines the trip characteristics. The definition of what delimits a trip depends on the **vehicle type**:

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

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

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

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

For each trip, the respondent provides the following information:

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

Methodology

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

Survey design

Survey population

The survey population of vehicles was derived from the 13 jurisdiction vehicle registration lists (ten Provincial and three Territorial Governments) created three months before the reference period. The sample of vehicles for each quarter of 2006 was drawn from lists of motor vehicles with valid registrations in any province or territory available three months before the beginning of each quarter. Buses, motorcycles, off-road vehicles (e.g., snowmobiles, dune buggies, amphibious vehicles) and special equipment (e.g., cranes, street cleaners, snowplows and backhoes) were excluded from the survey. This population differs from the population of interest of vehicles; e.g., vehicles that were registered less than three months before the quarter began (or during the quarter) were not included in that quarter's sample.

The thirteen incoming lists underwent a thorough preparation procedure:

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

The most recent set of prepared lists was used to select the sample for each quarter of 2006. These sets of vehicle lists and the days within the respective quarter constitute the survey population.

Sample design

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

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

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

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

Estimation

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

Sample size

A total sample of 21,500 vehicles was drawn for the ten provinces. Another 11,179 hicles were included in the sample for the three territories.

Data collection and processing

Data Collection

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

Provincial collection

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

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

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

The collected data included information about each trip:

- Start and stop dates and times
- Start and stop odometer readings
- origin and destination (light vehicle log) or trip purpose (heavy vehicle log)
- number and age group of passengers (light vehicle log) or number of passengers at the start and end of the trip (heavy vehicle log)
- sex and age group of the driver
- fuel purchases

- distance traveled on roads with posted speed limit of 80km/h or more
- truck configuration (heavy vehicle log only)
- dangerous goods (heavy vehicle log only)

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

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

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

Territorial collection

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

Edit and Imputation

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

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

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

Estimation

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

The following estimates of totals are available:

- vehicle counts by jurisdiction and vehicle type;
- vehicle-kilometres by jurisdiction and vehicle type;

- passenger-kilometres by province and vehicle type;
- fuel consumed, by vehicle type and fuel type;
- cross tabulations of vehicle-kilometers and passenger-kilometers by a number of variables (described in "Data quality, concepts and methodology — Data quality"), such as body type, driver characteristics, time of day, day of week, etc.

Data quality

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

Sources of errors

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

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.

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 nonsampling error component. For example, this type of error can arise when a respondent provides incorrect information or does not answer certain questions, when a unit in the population of interest is omitted or covered more than once, when a unit that is out-of-scope for the survey is included by mistake or when errors occur in data processing, such as coding and capture errors.

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

The non-sampling error as a whole is only one part of the total survey error but its contribution may be important. To minimize the effect of this type of error, a quality assurance program is carried out for each survey. For instance, follow-ups of nonrespondents can be conducted to obtain information from the total nonrespondents or to complete partially unanswered questionnaires for questions that are deemed essential. Various quality assurance procedures can be exercised at the data capture step. The data editing procedures can identify some inconsistencies in the data structure and the imputation procedures can then correct the identified inconsistencies.

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

Coverage errors

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

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

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

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

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

Response errors

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

Few response errors were discovered during editing of the data.

Nonresponse errors

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

Processing errors

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

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

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

Measuring quality

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

Response rates

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

Table A
Vehicle response rates by province and vehicle type

	Newfoundland and Labrador	Prince Edward Island	Nova Scotia	New Brusnwick	Quebec	Ontario	Manitoba	Saskat-chewan	Alberta	British Columbia
	percent									
Light vehicles	65	70	63	61	70	64	72	64	61	62
Heavy vehicles 4.5 to 14.9 tonnes	68	73	66	68	71	67	71	64	64	60
Heavy vehicles 15 tonnes or more	69	64	71	69	80	68	62	69	50	51

Table B
Vehicle response rates by territory

	Yukon	Northwest Territories	Nunavut
	percent		
All vehicles	16	17	9

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.

Relative imputation rates

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

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

Coefficient of variation

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

Quality indicator

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

Letter and significance	Coefficient of variation
A Excellent	Less than 5%
B Very good	5% to 9.9%
C Good	10% to 14.9%
D Acceptable	15% to 19.9%
E Use with caution	20% to 34.9%
F too unreliable to be published	35% or more

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

Notes for historical comparison

Recent updates to the vehicle registration files have now been incorporated into the Canadian Vehicle Survey counts and estimates for British Columbia. The revisions affect the 2003 to 2005 survey years. On average, estimated vehicle kilometres in British Columbia have been revised upward by 0.6% for 2003, 2.3% for 2004, and 6.7% for 2005.

Note that these revisions, in turn, affect the national estimates for the same periods, although the magnitude is much smaller – 0.1% in 2003, 0.4% in 2004, and 0.7% in 2005.

Revisions were also made in order to treat holidays consistently across the reference periods. This affected most variables for the four quarters of 2004. Impacts of the revisions vary depending on the variable, but are generally greatest for tables dealing with the day of week or time of day.

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

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

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

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

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

- Prior to this quarter, duplicate records found within the same list and duplicate records found in more than one list were removed. Starting in this quarter, duplicate records were removed from within each list only. This change may cause some overcoverage and, consequently, overestimation.
- Type of fuel used and body type are collected for the territories. Consequently, the four tables (3-3, 3-4, 4-3 and 4-4) now include the territories.
- The heavy vehicle logs were changed in 2001 in order to collect passenger information for heavy vehicles. This change means that passenger-kilometres are now estimated for all vehicles, except urban transit buses, for all the provinces (but not for territories).
- The heavy vehicle logs were also changed in 2001 in order to collect distance traveled on roads with posted speeds of 80 kilometres per hour or more. This change means that this information is now estimated for all vehicle types in all provinces (but not for the territories).

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

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

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

The changes that affect comparability with 1999 results:

- The trip purpose choices (for all vehicle types) were changed. The purpose is now based on the destination of the trip. Thus the results from 2000 and 1999 are not comparable for this item.
- Passenger-kilometers were not collected for heavy vehicles in 2000.

The changes that may affect comparability with the 1999 results:

- A new log was developed for survey year 2000 for all heavy vehicles. In 1999 heavy vehicles with gross vehicle weights of 4.5 tonnes or more and less than 15 tonnes had a different log than heavy vehicles with gross vehicle weights of 15 tonnes or more.
- The fuel purchased question was attached to each trip for the 2000 survey year for heavy vehicles. Previously it was recorded separately from the trips.

Appendix I

Glossary

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

Survey population: the collection of all units (for example, 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 (for example, 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.