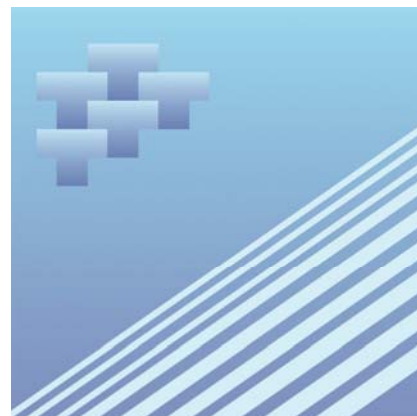




Catalogue no. 53F0004XIE

Canadian Vehicle Survey: Quarterly

Fourth quarter 2005



Statistics
Canada

Statistique
Canada

Canada

How to obtain more information

Specific inquiries about this product and related statistics or services should be directed to: Transportation Division, Statistics Canada, Ottawa, Ontario, K1A 0T6 (telephone: 1 800 263-1136).

For information on the wide range of data available from Statistics Canada, you can contact us by calling one of our toll free numbers. You can also contact us by e-mail or by visiting our website at www.statcan.ca.

National inquiries line **1 800 263-1136**

National telecommunications device for the hearing impaired **1 800 363-7629**

Depository Services Program inquiries **1 800 700-1033**

Fax line for Depository Services Program **1 800 889-9734**

E-mail inquiries infostats@statcan.ca

Website www.statcan.ca

Information to access the product

This product, Catalogue no. 53F0004XIE, is available for free in electronic format. To obtain a single issue, visit our website at www.statcan.ca and select Our Products and Services.

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner and in the official language of their choice. 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 Statistics Canada > Providing services to Canadians.



Statistics Canada
Transportation Division

Canadian Vehicle Survey: Quarterly

Fourth quarter 2005

Published by authority of the Minister responsible for Statistics Canada

© Minister of Industry, 2006

All rights reserved. The content of this electronic publication may be reproduced, in whole or in part, and by any means, without further permission from Statistics Canada, subject to the following conditions: that it be done solely for the purposes of private study, research, criticism, review or newspaper summary, and/or for non-commercial purposes; and that Statistics Canada be fully acknowledged as follows: Source (or "Adapted from", if appropriate): Statistics Canada, year of publication, name of product, catalogue number, volume and issue numbers, reference period and page(s). Otherwise, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, by any means—electronic, mechanical or photocopy—or for any purposes without prior written permission of Licensing Services, Client Services Division, Statistics Canada, Ottawa, Ontario, Canada K1A 0T6.

June 2006

Catalogue no. 53F0004XIE

ISSN 1496-3736

Frequency: Quarterly

Ottawa

La version française de cette publication est disponible sur demande (n° 53F0004XIF 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
- 0^s 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 **Wendy Christoff**.

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

Transportation Division, Canadian Vehicle Survey Unit

Wendy Christoff, Mike Fahey, Sean Fagan

Transportation Division, Systems & Data Integration section

Kevin Ringuette, Real Dery

Business Surveys Methods Division

François Gagnon, Sébastien Landry, Martin Beaulieu

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

Highlights	5
Introduction	6
Survey overview	7
Related products	8
Statistical tables	
1 Number of vehicles on the registration lists by type of vehicle and jurisdiction	13
2 Number of vehicles on the registration lists by jurisdiction and vehicle model year	14
2-1 Vehicles up to 4.5 tonnes	14
2-2 Trucks 4.5 tonnes to 14.9 tonnes	15
2-3 Trucks 15 tonnes or more	16
3 Estimates of number of vehicles in scope for Canada	17
3-1 by type of vehicle and jurisdiction	17
3-2 by type of vehicle and vehicle model year	17
3-3 by type of vehicle and vehicle body type	17
3-4 by type of vehicle and type of fuel	17
4 Estimates of vehicle-kilometres for Canada	18
4-1 by type of vehicle and jurisdiction	18
4-2 by type of vehicle and vehicle model year	18
4-3 by type of vehicle and vehicle body type	18
4-4 by type of vehicle and type of fuel	19
5 Estimates of passenger-kilometres for provinces only	19
5-1 by type of vehicle and jurisdiction	19
5-2 by type of vehicle and vehicle model year	19
5-3 by type of vehicle and vehicle body type	20
5-4 by type of vehicle and type of fuel	20
5-5 by passenger age group for vehicles up to 4.5 tonnes	20
6 Estimates of vehicle-kilometres and passenger-kilometres for provinces only	21
6-1 by type of vehicle and driver age group	21

Table of contents – continued

6-2	by type of vehicle and sex of driver	22
6-3	by driver age group and sex of driver	23
6-4	by type of vehicle and day of the week	24
6-5	by type of vehicle and type of day	25
6-6	by type of vehicle and time of day	26
6-7	by type of vehicle, type of day and time of day	27
6-8	by type of vehicle and road type	28
6-9	by origin and destination of trips for vehicles up to 4.5 tonnes	29
6-10	by part of the driver's job for vehicles up to 4.5 tonnes	29
6-11	by vehicle group and trip purpose for trucks weighing 4.5 tonnes or more	30
6-12	by carrying dangerous goods for trucks weighing 4.5 tonnes or more	31
7	Estimates by type of vehicle, type of fuel and vehicle body type for provinces only	31
7-1	Vehicle-kilometres	31
7-2	Fuel consumed	31
8	Activity type for trucks weighing 4.5 tonnes or more for provinces only	32
8-1	Number of vehicles in scope by type of vehicle	32
8-2	Vehicle-kilometres and passenger-kilometres for trucks 4.5 tonnes to 14.9 tonnes	32
8-3	Vehicle-kilometres and passenger-kilometres for trucks 15 tonnes or more	32
9	Trip type for trucks weighing 4.5 tonnes or more for provinces only	32
9-1	Vehicle-kilometres and passenger-kilometres for trucks 4.5 tonnes to 14.9 tonnes	32
9-2	Vehicle-kilometres and passenger-kilometres for trucks 15 tonnes or more	33
Data quality, concepts and methodology		
	Concepts and definitions	34
	Methodology	36
	Data quality	40
Appendix		
I	Glossary	46

Highlights

- Over 18.8 million vehicles were in-scope for the Canadian Vehicle Survey during this quarter.
- Between October 1 and December 31, 2005, these vehicles travelled an estimated 73.0 billion kilometres.
- During this quarter, vehicles weighing less than 4 500 kilograms were driven an average of 3 650 kilometres while the largest of the trucks (trucks with gross weight 15 000 kilograms or more) were driven an average of 18 150 kilometres.

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 fourth quarter of 2005.

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

53-223-X	Canadian Vehicle Survey: Annual
53F0007X	Driving characteristics of the young and aging population

Selected CANSIM tables from Statistics Canada

405-0005	Canadian vehicle survey, number of vehicles in frame, by type of vehicle, province and territory
405-0006	Canadian vehicle survey, number of vehicles in scope, by type of vehicle, province and territory
405-0007	Canadian vehicle survey, passenger-kilometres, by type of vehicle and province
405-0008	Canadian vehicle survey, vehicle-kilometres, by type of vehicle, province and territory
405-0009	Canadian vehicle survey, number of vehicles in scope, by type of vehicle and type of fuel
405-0010	Canadian vehicle survey, passenger-kilometres, by type of vehicle and age of vehicle model
405-0011	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and age of vehicle model
405-0012	Canadian vehicle survey, passenger-kilometres, by type of vehicle and type of vehicle body
405-0013	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and type of vehicle body
405-0014	Canadian vehicle survey, number of vehicles in scope, by type of vehicle and type of vehicle body
405-0015	Canadian vehicle survey, passenger-kilometres, by type of vehicle and type of fuel
405-0016	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and type of fuel
405-0017	Canadian vehicle survey, passenger-kilometres, by type of vehicle and days of the week
405-0018	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and days of the week
405-0019	Canadian vehicle survey, passenger-kilometres, by type of vehicle and driver age group
405-0020	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and driver age group
405-0026	Canadian vehicle survey, passenger-kilometres, by type of vehicle and sex of driver
405-0027	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and sex of driver
405-0028	Canadian vehicle survey, passenger-kilometres, by type of vehicle and time of day
405-0029	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and time of day
405-0030	Canadian vehicle survey, passenger-kilometres, by type of vehicle and carrying dangerous goods
405-0031	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and carrying dangerous goods
405-0032	Canadian vehicle survey, passenger-kilometres, by type of vehicle and type of day
405-0033	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and type of day
405-0034	Canadian vehicle survey, passenger-kilometres, by type of vehicle and type of road
405-0035	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and type of road
405-0036	Canadian vehicle survey, passenger-kilometres, by type of vehicle and passenger age group

405-0039	Canadian vehicle survey, passenger-kilometres, by type of vehicle, type of day and time of day
405-0040	Canadian vehicle survey, vehicle-kilometres, by type of vehicle, type of day and time of day
405-0041	Canadian vehicle survey, passenger-kilometres, by type of vehicle, driver age group and sex of driver
405-0042	Canadian vehicle survey, vehicle-kilometres, by type of vehicle, driver age group and sex of driver
405-0044	Canadian vehicle survey, number of vehicles up to 4.5 tonnes, by year of vehicle model, province and territory
405-0045	Canadian vehicle survey, number of trucks 4.5 tonnes to 14.9 tonnes, by year of vehicle model, province and territory
405-0046	Canadian vehicle survey, number of trucks 15 tonnes and over, by year of vehicle model, province and territory
405-0053	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)
405-0054	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)
405-0099	Canadian vehicle survey, number of vehicles in scope, by type of vehicle and age of vehicle model
405-0101	Canadian vehicle survey, vehicle-kilometres and passenger-kilometres for vehicles up to 4.5 tonnes, by part of driver's job
405-0102	Canadian vehicle survey, vehicle-kilometres for vehicles up to 4.5 tonnes, by origin and destination of trip
405-0103	Canadian vehicle survey, passenger-kilometres for vehicles up to 4.5 tonnes, by origin and destination of trip
405-0104	Canadian vehicle survey, vehicle-kilometres, by type of vehicle, type of fuel and type of vehicle body
405-0105	Canadian vehicle survey, fuel consumed, by type of vehicle, type of fuel and type of vehicle body
405-0106	Canadian vehicle survey, number of vehicles in scope, by type of vehicle and type of activity
405-0107	Canadian vehicle survey, vehicle-kilometres and passenger-kilometres for trucks 4.5 tonnes to 14.9 tonnes, by type of activity
405-0108	Canadian vehicle survey, vehicle-kilometres and passenger-kilometres for trucks 15 tonnes and over, by type of activity
405-0109	Canadian vehicle survey, vehicle-kilometres and passenger-kilometres for trucks 4.5 tonnes to 14.9 tonnes, by type of trip
405-0110	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	19,079,564	18,348,316	419,452	311,796
Newfoundland and Labrador	266,338	259,102	4,073	3,163
Prince Edward Island	80,755	76,508	1,522	2,725
Nova Scotia	551,171	534,419	8,840	7,912
New Brunswick	466,835	454,352	8,056	4,427
Quebec	4,421,968	4,322,293	59,136	40,539
Ontario	7,078,835	6,870,216	91,586	117,033
Manitoba	653,123	626,674	10,538	15,911
Saskatchewan	730,201	666,010	38,067	26,124
Alberta	2,453,704	2,268,413	108,731	76,560
British Columbia	2,322,081	2,220,831	86,248	15,002
Yukon Territory	27,713	24,873	1,653	1,187
Northwest Territories	23,015	21,210	761	1,044
Nunavut	3,825	3,415	241	169

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	259,098	76,505	534,420	454,350	4,322,294	6,870,216	626,673
Earlier than 1987	5,138	3,152	18,939	13,806	95,175	227,752	39,598
1987	1,523	969	4,798	4,219	34,350	55,095	9,073
1988	3,269	1,528	7,645	7,212	58,550	86,475	12,627
1989	3,848	1,870	9,358	8,851	71,905	120,143	14,787
1990	4,266	2,303	11,768	10,939	97,430	149,655	18,694
1991	5,380	2,524	13,814	13,342	126,092	185,290	22,156
1992	7,239	3,624	18,594	18,084	171,694	233,800	26,346
1993	9,784	4,006	21,087	19,013	176,779	262,377	25,389
1994	12,321	4,578	24,993	22,173	188,893	290,737	27,021
1995	13,293	4,996	27,910	24,574	211,471	344,400	30,731
1996	11,004	4,423	25,032	21,561	178,891	301,438	28,174
1997	15,274	5,505	32,373	26,978	229,270	406,852	38,126
1998	17,829	5,736	36,453	30,648	254,564	450,400	40,662
1999	17,876	5,331	34,738	28,799	252,652	445,885	36,043
2000	20,968	6,295	42,017	35,464	315,865	545,814	41,739
2001	18,602	4,648	35,405	29,396	296,364	491,734	39,568
2002	22,932	4,692	42,245	34,597	362,080	551,206	44,848
2003	24,853	4,105	42,547	35,524	406,998	590,714	46,398
2004	21,124	3,061	37,794	31,645	359,001	497,187	41,270
2005	21,137	2,811	41,111	33,037	380,964	532,209	38,486
2006	1,416	349	5,800	4,485	52,837	101,044	4,937
Year unknown	22	0	0	4	469	0	0
	Saskat- chewan	Alberta	British Columbia	Yukon Territory	Northwest Territories	Nunavut	Total
Total, all vehicle model years	666,012	2,268,415	2,220,827	24,874	21,211	3,414	18,348,309
Earlier than 1987	81,696	187,399	184,820	3,411	1,716	179	862,781
1987	13,221	34,120	48,242	694	310	51	206,665
1988	17,885	50,002	63,017	933	493	76	309,712
1989	19,934	60,191	76,727	1,014	560	80	389,268
1990	23,048	72,714	93,829	1,090	591	89	486,416
1991	25,691	80,727	98,088	1,058	653	116	574,931
1992	28,093	84,802	105,576	1,076	658	137	699,723
1993	26,714	81,986	100,948	1,037	630	146	729,896
1994	29,724	89,735	99,768	1,071	738	158	791,910
1995	32,349	97,569	105,006	1,153	787	187	894,426
1996	27,564	84,916	85,739	906	640	147	770,435
1997	36,997	117,058	112,677	1,257	951	221	1,023,539
1998	38,013	132,760	113,870	1,158	1,022	211	1,123,326
1999	31,717	114,649	103,150	1,041	1,075	212	1,073,168
2000	37,518	132,512	121,736	1,106	1,321	252	1,302,607
2001	37,560	139,674	120,095	1,209	1,489	265	1,216,009
2002	40,792	163,098	142,923	1,392	1,666	291	1,412,762
2003	41,967	174,793	147,216	1,555	2,226	237	1,519,133
2004	38,939	165,261	132,688	1,256	1,749	158	1,331,133
2005	33,061	174,323	143,241	1,314	1,736	176	1,403,606
2006	3,529	30,126	21,471	142	200	25	226,361
Year unknown	0	0	0	0	1	0	496

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	4,071	1,521	8,840	8,055	59,136	91,584	10,537
Earlier than 1987	739	667	1,728	923	10,133	5,516	2,652
1987	98	63	279	141	2,182	1,499	262
1988	170	72	304	187	2,832	2,057	323
1989	141	85	310	177	2,414	2,138	301
1990	166	56	323	202	2,492	2,437	417
1991	162	43	242	202	1,681	1,838	384
1992	136	38	239	227	1,576	1,916	325
1993	144	47	261	276	1,814	2,480	372
1994	182	54	277	323	2,346	3,059	392
1995	244	62	482	386	3,077	4,174	557
1996	133	32	297	310	1,989	3,286	365
1997	192	45	393	377	2,066	4,607	467
1998	173	26	398	403	2,638	4,857	404
1999	228	56	536	538	3,675	7,273	529
2000	208	39	469	377	3,097	6,456	394
2001	173	26	392	407	2,442	6,361	436
2002	209	33	375	413	2,275	6,347	370
2003	175	26	488	685	2,953	7,734	437
2004	141	21	467	748	2,776	7,286	407
2005	207	22	438	582	3,217	7,793	572
2006	49	8	142	171	1,245	2,470	171
Year unknown	1	0	0	0	212	0	0
	Saskat- chewan	Alberta	British Columbia	Yukon Territory	Northwest Territories	Nunavut	Total
Total, all vehicle model years	38,066	108,731	86,246	1,648	759	242	419,436
Earlier than 1987	26,114	32,329	11,353	476	124	40	92,794
1987	431	1,783	1,390	35	17	10	8,190
1988	444	2,426	2,203	59	23	14	11,114
1989	382	2,484	2,400	54	22	8	10,916
1990	517	2,697	2,789	59	40	13	12,208
1991	467	2,117	2,232	33	23	9	9,433
1992	432	2,094	2,313	47	17	6	9,366
1993	500	2,129	2,734	33	15	13	10,818
1994	530	2,621	3,105	52	21	7	12,969
1995	724	3,312	3,623	33	34	27	16,735
1996	459	2,314	2,563	34	17	5	11,804
1997	660	3,787	3,452	64	29	11	16,150
1998	639	3,599	3,042	40	29	9	16,257
1999	663	4,551	3,861	68	42	14	22,034
2000	569	3,970	3,655	47	39	11	19,331
2001	819	5,812	4,393	60	35	7	21,363
2002	675	4,989	4,704	66	37	5	20,498
2003	827	6,070	7,752	137	36	12	27,332
2004	696	5,308	8,077	115	37	9	26,088
2005	1,268	10,483	8,802	127	90	7	33,608
2006	251	3,856	1,804	10	33	5	10,215
Year unknown	0	0	0	0	0	0	213

**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	3,164	2,724	7,913	4,425	40,537	117,032	15,911
Earlier than 1987	333	1,056	787	767	924	5,495	1,625
1987	97	211	209	257	406	2,247	312
1988	121	189	217	227	530	2,373	317
1989	132	146	252	210	472	2,546	303
1990	93	138	170	231	448	2,499	273
1991	89	91	105	129	281	1,628	198
1992	74	46	129	93	442	1,672	224
1993	81	63	187	177	633	2,292	398
1994	127	85	309	227	1,227	3,372	585
1995	195	151	437	280	1,977	5,887	728
1996	160	93	345	172	1,466	4,371	664
1997	146	48	315	141	1,575	4,778	654
1998	222	77	529	239	2,871	8,387	1,056
1999	198	84	600	243	3,338	10,248	1,088
2000	250	71	715	208	4,359	12,150	1,360
2001	135	34	369	125	2,825	7,667	819
2002	101	13	270	90	1,735	5,442	555
2003	147	34	468	127	3,644	7,799	978
2004	158	37	564	147	3,278	8,344	1,230
2005	227	38	621	192	5,483	11,749	1,765
2006	77	20	315	143	2,606	6,085	779
Year unknown	2	0	0	0	17	0	0
	Saskat- chewan	Alberta	British Columbia	Yukon Territory	Northwest Territories	Nunavut	Total
Total, all vehicle model years	26,123	76,560	15,002	1,185	1,045	169	311,790
Earlier than 1987	8,253	16,676	2,369	210	146	19	38,660
1987	877	1,322	396	14	13	5	6,366
1988	971	1,893	438	35	19	0	7,330
1989	825	1,714	449	22	22	6	7,099
1990	844	1,940	718	34	29	2	7,419
1991	548	1,455	411	18	22	7	4,982
1992	561	1,203	536	34	19	5	5,038
1993	850	1,726	521	30	20	5	6,983
1994	1,139	2,672	651	36	35	6	10,471
1995	1,561	3,416	732	48	57	10	15,479
1996	1,126	2,767	688	49	55	10	11,966
1997	1,107	3,307	714	50	53	4	12,892
1998	1,464	4,789	729	58	75	12	20,508
1999	1,198	3,859	661	58	64	23	21,662
2000	1,101	3,990	581	87	68	8	24,948
2001	760	3,727	624	82	63	8	17,238
2002	429	2,925	548	49	51	6	12,214
2003	553	3,333	647	64	50	11	17,855
2004	721	4,272	851	67	73	12	19,754
2005	875	6,307	1,141	105	82	6	28,591
2006	360	3,268	597	35	30	5	14,320
Year unknown	0	0	0	0	0	0	19

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	18,773,462 A	18,194,182 A	281,593 A	297,687 A
Newfoundland and Labrador	257,765 B	251,295 B	3,615 E	2,855 C
Prince Edward Island	79,682 B	75,729 B	1,467 C	2,486 D
Nova Scotia	535,681 A	520,919 A	5,885 C	8,877 C
New Brunswick	446,358 A	437,293 A	4,800 E	4,265 B
Quebec	4,389,561 A	4,304,303 A	45,315 C	39,944 B
Ontario	6,968,690 A	6,791,254 A	64,678 B	112,759 B
Manitoba	647,999 A	624,162 A	8,742 D	15,095 B
Saskatchewan	697,711 A	643,762 A	32,658 C	21,291 C
Alberta	2,375,130 A	2,225,751 A	75,181 B	74,198 B
British Columbia	2,321,593 A	2,271,220 A	36,915 C	13,457 B
Yukon Territory	27,214 A	24,588 A	1,414 B	1,211 B
Northwest Territories	22,240 A	20,476 A	683 B	1,081 A
Nunavut	3,840 A	3,430 A	241 A	169 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 vehicle model years	18,773,462 A	18,194,182 A	281,593 A	297,687 A
Later than 2002	4,037,765 A	3,904,706 A	62,219 B	70,840 B
2000 to 2002	4,435,732 A	4,311,749 A	60,848 B	63,135 B
1996 to 1999	4,564,747 A	4,445,880 A	43,304 D	75,563 C
1992 to 1995	3,247,952 B	3,166,488 B	38,817 D	42,648 D
Earlier than 1992	2,487,267 B	2,365,359 B	76,405 C	45,502 D

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 vehicle body types	18,773,462 A	18,194,182 A	281,593 A	297,687 A
Car	9,812,567 A	9,812,567 A	...	...
Station wagon	359,737 D	359,737 D	...	...
Van	3,046,270 B	3,038,935 B	F	...
Sport utility vehicle	1,316,572 B	1,316,181 B	...	...
Pickup	3,613,729 A	3,584,032 A	29,696 D	F
Straight truck	392,632 B	F	229,397 B	122,619 B
Tractor trailer	176,498 B	...	F	170,684 B
Bus	F	...	F	...
Other vehicle type	F	F	F	F

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	18,773,462 A	18,194,182 A	281,593 A	297,687 A
Gasoline	17,500,654 A	17,427,957 A	68,669 C	F
Diesel	1,149,804 B	649,633 C	207,186 B	292,985 A
Other fuel type	123,004 E	116,592 E	F	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	73,016.7^A	66,353.4^B	1,257.4^C	5,405.9^B
Newfoundland and Labrador	948.3 ^D	887.0 ^D	F	44.7 ^E
Prince Edward Island	338.0 ^E	325.8 ^E	F	F
Nova Scotia	2,675.3 ^C	2,502.4 ^C	21.2 ^E	151.7 ^E
New Brunswick	1,763.8 ^C	1,726.6 ^C	F	26.8 ^E
Quebec	15,596.8 ^B	14,195.8 ^C	238.1 ^E	1,162.9 ^C
Ontario	30,128.1 ^B	27,721.5 ^B	288.8 ^E	2,117.8 ^C
Manitoba	2,500.5 ^C	2,099.1 ^D	F	357.8 ^D
Saskatchewan	2,320.4 ^D	1,996.0 ^D	F	228.1 ^E
Alberta	9,265.9 ^C	7,711.5 ^C	402.9 ^E	1,151.5 ^C
British Columbia	7,286.4 ^C	7,034.5 ^C	126.5 ^E	125.4 ^E
Yukon Territory	110.4 ^C	81.5 ^C	6.7 ^E	22.2 ^E
Northwest Territories	75.0 ^C	65.7 ^C	F	F
Nunavut	7.8 ^E	6.0 ^C	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 vehicle model years	73,016.7^A	66,353.4^B	1,257.4^C	5,405.9^B
Later than 2002	20,012.6 ^B	17,211.5 ^B	475.4 ^D	2,325.7 ^C
2000 to 2002	20,621.0 ^B	19,027.6 ^B	310.5 ^D	1,282.9 ^C
1996 to 1999	17,401.6 ^C	15,949.1 ^C	F	1,290.6 ^E
1992 to 1995	8,960.1 ^D	8,474.7 ^D	F	F
Earlier than 1992	6,021.3 ^D	5,690.6 ^D	F	F

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 vehicle body types	73,016.7^A	66,353.4^B	1,257.4^C	5,405.9^B
Car	35,997.9 ^B	35,997.9 ^B	...	...
Station wagon	1,222.2 ^E	1,222.2 ^E	...	...
Van	13,493.5 ^C	13,452.2 ^C	F	...
Sport utility vehicle	5,018.7 ^D	5,016.3 ^D	...	...
Pickup	10,271.2 ^C	10,167.6 ^C	F	F
Straight truck	2,358.1 ^C	F	1,065.4 ^C	1,015.2 ^D
Tractor trailer	4,414.7 ^B	...	F	4,384.7 ^B
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	73,016.7 ^A	66,353.4 ^B	1,257.4 ^C	5,405.9 ^B
Gasoline	63,784.6 ^B	63,629.2 ^B	F	F
Diesel	8,888.4 ^B	2,384.0 ^E	1,106.5 ^C	5,397.9 ^B
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	115,353.9 ^B	107,535.8 ^B	1,533.6 ^C	6,284.5 ^B
Newfoundland and Labrador	1,567.1 ^D	1,455.5 ^D	F	F
Prince Edward Island	655.9 ^E	639.6 ^E	F	F
Nova Scotia	4,459.0 ^C	4,268.7 ^C	F	159.2 ^E
New Brunswick	3,103.4 ^D	3,057.3 ^D	F	31.7 ^E
Quebec	24,410.8 ^C	22,751.1 ^C	267.6 ^E	1,392.1 ^C
Ontario	47,435.6 ^B	44,568.6 ^B	325.0 ^E	2,542.0 ^E
Manitoba	3,992.3 ^C	3,438.5 ^D	F	476.5 ^E
Saskatchewan	3,607.7 ^D	3,224.8 ^D	F	258.6 ^E
Alberta	14,912.0 ^C	13,263.0 ^C	468.1 ^E	1,180.8 ^D
British Columbia	11,210.1 ^C	10,868.8 ^C	F	142.4 ^E

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 vehicle model years	115,353.9 ^B	107,535.8 ^B	1,533.6 ^C	6,284.5 ^B
Later than 2002	30,748.2 ^B	27,450.4 ^B	578.7 ^D	2,719.0 ^C
2000 to 2002	33,651.7 ^C	31,841.7 ^C	378.5 ^E	1,431.5 ^C
1996 to 1999	28,212.6 ^C	26,446.9 ^C	F	1,584.7 ^E
1992 to 1995	13,775.7 ^D	13,212.1 ^D	F	F
Earlier than 1992	8,965.7 ^D	8,584.7 ^D	F	F

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 vehicle body types	115,353.9^B	107,535.8^B	1,533.6^C	6,284.5^B
Car	57,062.2 ^B	57,062.2 ^B	...	...
Station wagon	F	F	...	...
Van	24,585.3 ^C	24,544.3 ^C	F	...
Sport utility vehicle	8,553.6 ^E	8,551.2 ^E	...	...
Pickup	15,095.2 ^C	14,950.7 ^C	F	F
Straight truck	2,764.0 ^C	F	1,292.2 ^C	1,095.4 ^E
Tractor trailer	5,217.3 ^C	...	F	5,181.9 ^C
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	115,353.9^B	107,535.8^B	1,533.6^C	6,284.5^B
Gasoline	103,608.4 ^B	103,403.5 ^B	F	F
Diesel	11,157.0 ^C	3,547.6 ^E	1,333.4 ^C	6,276.0 ^B
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	107,535.8^B
Under 5 years	2,652.3 ^E
5 to 14 years	4,871.6 ^D
15 to 19 years	3,998.2 ^E
20 to 24 years	2,912.7 ^E
25 to 34 years	13,913.7 ^C
35 to 54 years	40,966.7 ^B
55 to 64 years	23,467.7 ^B
65 to 74 years	11,423.2 ^C
75 to 84 years	3,022.6 ^D
85 years and over	F

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	72,823.5^A	66,200.2^B	1,247.3^C	5,376.0^B
Under 20 years	F	F	F	F
20 to 24 years	F	F	F	F
25 to 34 years	9,931.0 ^D	8,253.4 ^D	231.4 ^E	1,446.3 ^E
35 to 44 years	11,815.6 ^C	10,129.7 ^D	239.9 ^D	1,446.1 ^E
45 to 54 years	23,167.9 ^C	20,892.2 ^C	601.7 ^C	1,674.0 ^C
55 to 64 years	16,240.4 ^C	15,497.6 ^C	131.4 ^E	611.4 ^D
65 years and over	9,299.3 ^C	9,152.3 ^C	F	F
millions of passenger-kilometres				
Total, all age groups	115,353.9^B	107,535.8^B	1,533.6^C	6,284.5^B
Under 20 years	F	F	F	F
20 to 24 years	F	F	F	F
25 to 34 years	15,913.9 ^D	13,635.5 ^D	281.6 ^E	1,996.8 ^E
35 to 44 years	18,982.9 ^C	17,128.0 ^D	293.9 ^D	1,561.0 ^E
45 to 54 years	35,212.2 ^C	32,675.1 ^C	706.3 ^D	1,830.9 ^C
55 to 64 years	26,301.8 ^C	25,412.5 ^C	194.0 ^E	695.3 ^D
65 years and over	15,580.9 ^C	15,433.0 ^C	F	F

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	72,823.5 ^A	66,200.2 ^B	1,247.3 ^C	5,376.0 ^B
Males	52,006.2 ^B	45,592.3 ^B	1,236.6 ^C	5,177.3 ^B
Females	20,817.4 ^C	20,607.9 ^C	F	F
millions of passenger-kilometres				
Both sexes	115,353.9 ^B	107,535.8 ^B	1,533.6 ^C	6,284.5 ^B
Males	83,666.0 ^B	76,112.0 ^B	1,521.1 ^C	6,032.9 ^B
Females	31,687.9 ^C	31,423.8 ^C	F	F

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	72,823.5 ^A	66,200.2 ^B	1,247.3 ^C	5,376.0 ^B
Males	52,006.2 ^B	45,592.3 ^B	1,236.6 ^C	5,177.3 ^B
Females	20,817.4 ^C	20,607.9 ^C	F	F
Under 25 years				
Both sexes	F	F	F	F
Males	F	F	F	F
Females	F	F	F	F
25 to 54 years				
Both sexes	44,914.6 ^B	39,275.3 ^B	1,072.9 ^C	4,566.4 ^B
Males	31,879.6 ^B	26,395.7 ^B	1,062.5 ^C	4,421.4 ^B
Females	13,035.0 ^D	12,879.6 ^D	F	F
55 years and over				
Both sexes	25,539.7 ^B	24,649.9 ^B	138.6 ^E	751.2 ^D
Males	19,232.1 ^B	18,396.2 ^C	138.6 ^E	697.3 ^D
Females	6,307.6 ^D	6,253.7 ^D	F	F
millions of passenger-kilometres				
Total, all age groups				
Both sexes	115,353.9 ^B	107,535.8 ^B	1,533.6 ^C	6,284.5 ^B
Males	83,666.0 ^B	76,112.0 ^B	1,521.1 ^C	6,032.9 ^B
Females	31,687.9 ^C	31,423.8 ^C	F	F
Under 25 years				
Both sexes	F	F	F	F
Males	F	F	F	F
Females	F	F	F	F
25 to 54 years				
Both sexes	70,109.0 ^B	63,438.6 ^B	1,281.8 ^C	5,388.6 ^C
Males	49,757.8 ^B	43,244.7 ^B	1,269.5 ^C	5,243.7 ^C
Females	20,351.1 ^D	20,193.9 ^D	F	F
55 years and over				
Both sexes	41,882.7 ^B	40,845.5 ^B	202.1 ^E	835.1 ^D
Males	32,563.2 ^B	31,632.6 ^C	202.1 ^E	728.4 ^D
Females	9,319.5 ^E	9,212.8 ^E	F	F

Table 6-4

Estimates of vehicle-kilometres and passenger-kilometres for provinces only by type of vehicle and day of the 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	72,823.5^A	66,200.2^B	1,247.3^C	5,376.0^B
Sunday	7,936.7 ^C	7,615.1 ^C	F	263.1 ^E
Monday	10,721.6 ^B	9,491.8 ^C	201.8 ^D	1,028.0 ^B
Tuesday	10,593.5 ^B	9,291.5 ^C	226.6 ^D	1,075.4 ^B
Wednesday	10,463.9 ^B	9,304.7 ^C	212.1 ^D	947.1 ^B
Thursday	11,579.7 ^B	10,299.9 ^C	252.8 ^D	1,027.0 ^B
Friday	11,792.6 ^B	10,731.7 ^C	243.1 ^E	817.8 ^B
Saturday	9,722.8 ^D	9,452.7 ^D	F	217.8 ^E
millions of passenger-kilometres				
Total, all days of the week	115,353.9^B	107,535.8^B	1,533.6^C	6,284.5^B
Sunday	15,141.8 ^C	14,736.1 ^C	F	334.2 ^E
Monday	15,529.7 ^C	14,113.1 ^C	250.3 ^E	1,166.3 ^C
Tuesday	15,069.7 ^C	13,530.3 ^C	282.3 ^E	1,257.1 ^B
Wednesday	14,869.6 ^C	13,485.3 ^C	266.3 ^E	1,118.0 ^C
Thursday	18,090.3 ^C	16,587.8 ^C	304.9 ^E	1,197.6 ^C
Friday	18,865.5 ^C	17,641.4 ^C	287.6 ^E	936.5 ^C
Saturday	17,787.3 ^D	17,441.8 ^D	F	274.8 ^E

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	72,823.5 ^A	66,200.2 ^B	1,247.3 ^C	5,376.0 ^B
Weekends and holidays	19,262.8 ^C	18,538.9 ^C	F	600.6 ^D
Weekdays	53,560.7 ^A	47,661.3 ^B	1,123.9 ^C	4,775.5 ^B
millions of passenger-kilometres				
Total, all days	115,353.9 ^B	107,535.8 ^B	1,533.6 ^C	6,284.5 ^B
Weekends and holidays	35,217.0 ^C	34,311.9 ^C	F	747.5 ^E
Weekdays	80,136.8 ^B	73,223.9 ^B	1,376.0 ^C	5,537.0 ^B

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	72,823.5 ^A	66,200.2 ^B	1,247.3 ^C	5,376.0 ^B
00:00 to 05:59	2,732.3 ^D	2,242.9 ^E	F	448.7 ^C
06:00 to 11:59	24,017.8 ^B	21,446.0 ^B	626.0 ^C	1,945.9 ^B
12:00 to 17:59	32,932.1 ^B	30,324.9 ^B	535.8 ^C	2,071.4 ^B
18:00 to 23:59	13,141.3 ^B	12,186.5 ^C	F	910.1 ^B
millions of passenger-kilometres				
Total, all hours	115,353.9 ^B	107,535.8 ^B	1,533.6 ^C	6,284.5 ^B
00:00 to 05:59	3,766.4 ^E	3,181.5 ^E	F	538.2 ^C
06:00 to 11:59	35,356.0 ^B	32,367.7 ^B	754.9 ^C	2,233.4 ^C
12:00 to 17:59	52,374.6 ^B	49,289.8 ^B	666.4 ^C	2,418.4 ^C
18:00 to 23:59	23,856.8 ^C	22,696.8 ^C	F	1,094.5 ^C

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	72,823.5 A	66,200.2 B	1,247.3 C	5,376.0 B
00:00 to 05:59	2,732.3 D	2,242.9 E	F	448.7 C
06:00 to 11:59	24,017.8 B	21,446.0 B	626.0 C	1,945.9 B
12:00 to 17:59	32,932.1 B	30,324.9 B	535.8 C	2,071.4 B
18:00 to 23:59	13,141.3 B	12,186.5 C	F	910.1 B
Weekends and holidays				
Total, all hours	19,262.8 C	18,538.9 C	F	600.6 D
00:00 to 05:59	F	F	F	49.7 E
06:00 to 11:59	5,562.3 C	5,269.5 D	61.6 E	231.3 D
12:00 to 17:59	9,216.7 C	8,936.2 C	50.1 E	230.4 D
18:00 to 23:59	3,575.8 E	3,482.7 E	F	89.1 D
Weekdays				
Total, all hours	53,560.7 A	47,661.3 B	1,123.9 C	4,775.5 B
00:00 to 05:59	1,824.3 D	1,392.3 E	F	399.0 C
06:00 to 11:59	18,455.5 B	16,176.5 B	564.4 C	1,714.6 B
12:00 to 17:59	23,715.4 B	21,388.7 B	485.8 C	1,841.0 B
18:00 to 23:59	9,565.5 C	8,703.8 C	F	820.9 B
millions of passenger-kilometres				
Total, all days				
Total, all hours	115,353.9 B	107,535.8 B	1,533.6 C	6,284.5 B
00:00 to 05:59	3,766.4 E	3,181.5 E	F	538.2 C
06:00 to 11:59	35,356.0 B	32,367.7 B	754.9 C	2,233.4 C
12:00 to 17:59	52,374.6 B	49,289.8 B	666.4 C	2,418.4 C
18:00 to 23:59	23,856.8 C	22,696.8 C	F	1,094.5 C
Weekends and holidays				
Total, all hours	35,217.0 C	34,311.9 C	F	747.5 E
00:00 to 05:59	F	F	F	64.8 E
06:00 to 11:59	9,769.2 C	9,410.9 D	76.0 E	282.2 E
12:00 to 17:59	17,316.1 C	16,959.9 C	F	290.0 E
18:00 to 23:59	6,766.4 D	6,648.4 D	F	110.4 E
Weekdays				
Total, all hours	80,136.8 B	73,223.9 B	1,376.0 C	5,537.0 B
00:00 to 05:59	2,401.1 E	1,888.8 E	F	473.4 C
06:00 to 11:59	25,586.9 B	22,956.9 B	678.8 C	1,951.2 B
12:00 to 17:59	35,058.4 B	32,329.9 B	600.2 C	2,128.4 C
18:00 to 23:59	17,090.4 C	16,048.4 C	F	984.1 C

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	72,823.5^A	66,200.2^B	1,247.3^C	5,376.0^B
Roads with posted maximum speed of 80 kilometres per hour or more	38,591.7 ^B	34,481.8 ^B	728.0 ^C	3,381.9 ^B
All other roads	34,231.9 ^B	31,718.5 ^C	519.3 ^C	1,994.1 ^B
millions of passenger-kilometres				
Total, all roads	115,353.9^B	107,535.8^B	1,533.6^C	6,284.5^B
Roads with posted maximum speed of 80 kilometres per hour or more	63,292.0 ^B	58,256.2 ^B	905.8 ^C	4,130.1 ^C
All other roads	52,061.8 ^C	49,279.6 ^C	627.8 ^D	2,154.4 ^C

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 or other place of personal business	Leisure, entertainment, recreational facility or restaurant	Other
	millions of vehicle-kilometres				
Origin					
Driver's home	12,339.5 ^B	5,694.4 ^C	2,087.4 ^E	2,394.6 ^E	7,661.1 ^B
Driver's regular workplace	5,320.9 ^C	3,377.3 ^D	F	F	1,057.2 ^E
Shopping centre, bank or other place of personal business	2,574.1 ^E	F	F	F	867.1 ^E
Leisure, entertainment, recreational facility or restaurant	2,589.7 ^D	F	F	F	785.0 ^E
Other	8,467.6 ^C	961.5 ^E	898.7 ^E	1,531.4 ^E	4,553.4 ^C

	Destination				
	Driver's home	Driver's regular workplace	Shopping centre, bank or other place of personal business	Leisure, entertainment, recreational facility or restaurant	Other
	millions of passenger-kilometres				
Origin					
Driver's home	21,278.0 ^B	6,681.3 ^D	3,405.3 ^E	4,950.7 ^E	12,810.5 ^C
Driver's regular workplace	6,078.2 ^D	4,413.7 ^D	F	F	F
Shopping centre, bank or other place of personal business	4,086.1 ^E	F	F	F	1,534.4 ^E
Leisure, entertainment, recreational facility or restaurant	5,446.9 ^D	F	F	1,121.7 ^E	1,562.3 ^E
Other	14,482.7 ^C	F	F	3,265.2 ^E	8,324.8 ^D

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	66,200.2^B	107,535.8^B
Yes	12,356.6 ^B	16,148.5 ^C
No	53,843.6 ^B	91,387.3 ^B

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	F	177.9 ^E
Carrying goods or equipment	805.0 ^E	4,126.8 ^B
Empty	F	834.6 ^C
Other work purpose	F	F
Non-work purpose	F	201.1 ^E
Total	1,247.3^C	5,376.0^B
Straight trucks		
Driving to or from service call	F	F
Carrying goods or equipment	783.4 ^D	657.9 ^E
Empty	F	F
Other work purpose	F	F
Non-work purpose	F	F
Total	1,217.3^C	1,011.4^D
Other trucks over 4.5 tonnes		
Driving to or from service call	F	F
Carrying goods or equipment	F	3,468.9 ^C
Empty	F	691.6 ^D
Other work purpose	F	F
Non-work purpose	F	99.2 ^E
Total	F	4,364.6^B
millions of passenger-kilometres		
Total, all groups		
Driving to or from service call	F	F
Carrying goods or equipment	920.5 ^E	4,967.6 ^C
Empty	F	892.5 ^D
Other work purpose	F	F
Non-work purpose	F	210.7 ^E
Total	1,533.6^C	6,284.5^B
Straight trucks		
Driving to or from service call	F	F
Carrying goods or equipment	896.9 ^E	723.4 ^E
Empty	F	F
Other work purpose	F	F
Non-work purpose	F	F
Total	1,498.2^C	1,095.4^E
Other trucks over 4.5 tonnes		
Driving to or from service call	F	F
Carrying goods or equipment	F	4,244.2 ^C
Empty	F	737.0 ^E
Other work purpose	F	F
Non-work purpose	F	F
Total	F	5,189.1^C

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	6,623.3^B	1,247.3^C	5,376.0^B
With dangerous goods	512.8 ^D	F	510.4 ^D
Without dangerous goods	6,110.5 ^B	1,244.9 ^C	4,865.6 ^B
millions of passenger-kilometres			
Total with or without dangerous goods	7,818.1^B	1,533.6^D	6,284.5^B
With dangerous goods	543.5 ^E	F	541.1 ^E
Without dangerous goods	7,274.6 ^B	1,531.2 ^D	5,743.4 ^C

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 litres								
Vehicle body type								
Car	35,331.7 ^B	F	35,331.7 ^B	F	...	...	...	...
Station wagon	F	F	F	F	...	...	...	...
Van	13,169.1 ^C	F	13,130.3 ^C	F	F	F	...	...
SUV	4,825.2 ^E	F	4,822.8 ^E	F	...	...	...	...
Pickup	8,412.0 ^E	1,783.0 ^E	8,382.5 ^E	1,715.2 ^E	F	F	...	...
Straight truck	348.2 ^E	1,994.2 ^B	272.3 ^E	F	F	988.9 ^C	F	1,005.3 ^C
Tractor trailer	...	4,386.8 ^B	...	...	...	F	...	4,356.9 ^B
Bus	F	F	F	F	F	F	...	...
Other	F	20.6 ^E	F	F	F	14.6 ^E	...	F
Total	63,525.7^B	8,853.0^B	63,377.2^B	2,381.6^E	F	1,103.3^C	F	5,368.1^B

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	3,202.6 ^E	F	3,202.6 ^E	F	...	...	...	...
Station wagon	F	F	F	F	...	...	...	...
Van	F	F	F	F	F	F	...	...
SUV	F	F	F	F	...	...	...	...
Pickup	F	F	F	F	F	F	...	...
Straight truck	F	635.5 ^B	F	F	F	292.4 ^C	F	343.2 ^C
Tractor trailer	...	1,517.8 ^E	...	...	...	F	...	1,506.0 ^E
Bus	F	F	F	F	F	F	...	...
Other	F	F	F	F	F	F	...	F
Total	6,795.3^E	2,515.6^B	6,755.7^E	F	F	326.2^C	F	1,853.9^E

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	279,255^A	295,226^A
For-hire trucking	32,242 ^D	145,716 ^B
Owner-operator trucking	44,267 ^C	62,279 ^C
Private trucking	166,699 ^B	68,498 ^C
Other activity type	36,048 ^D	18,733 ^E

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	1,247.3^C	1,533.6^D
For-hire trucking	180.1 ^E	F
Owner-operator trucking	F	F
Private trucking	721.9 ^E	899.9 ^E
Other activity type	F	F

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	5,376.0^B	6,284.5^B
For-hire trucking	3,139.1 ^C	3,640.1 ^C
Owner-operator trucking	1,272.3 ^D	1,423.8 ^D
Private trucking	873.2 ^E	F
Other activity type	F	F

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	1,247.3^C	1,533.6^D
Trips within provinces	1,241.5 ^C	1,527.2 ^D
Trips between provinces	F	F
Trips across Canada and United States border	F	F
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	5,376.0^B	6,284.5^B
Trips within provinces	3,114.0 ^B	3,265.7 ^C
Trips between provinces	874.4 ^C	1,084.5 ^C
Trips across Canada and United States border	1,159.2 ^E	1,625.7 ^E
Trips outside Canada	228.5 ^E	308.6 ^E

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 — Concepts and definitions"). 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 this quarter was drawn from lists of motor vehicles with valid registrations in any province or territory available in July 2005. Buses, motorcycles, off-road vehicles (e.g., snowmobiles, dune buggies, amphibious vehicles) and special equipment (e.g., cranes, street cleaners, snowplows and backhoes) are excluded from the survey. This population differs from the population of interest of vehicles; e.g., vehicles that were registered after July 2005 are not included.

The thirteen incoming lists underwent a thorough preparation procedure:

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

The last set of processed lists, before the beginning of the reference period, consisted of the thirteen lists provided in July 2005 to Statistics Canada for the CVS. This set of prepared vehicle lists and the set of days within the fourth quarter of 2005 constitute the survey population of vehicle-days.

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 of 5,790 vehicles out of 18,795,085 from the survey population were drawn for the ten provinces. Another 2,779 vehicles out of 53,819 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 — Concepts and definitions"), 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 Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
	percent									
Light vehicles	62	65	59	59	69	63	63	62	60	59
Heavy vehicles 4.5 to 14.9 tonnes	70	61	52	41	73	66	72	54	65	55
Heavy vehicles 15 tonnes or more	73	55	70	64	72	61	70	59	56	51

Table B
Vehicle response rates by territory

	Yukon	Northwest Territories	Nunavut
	percent		
All vehicles	17	15	11

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

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

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, 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.