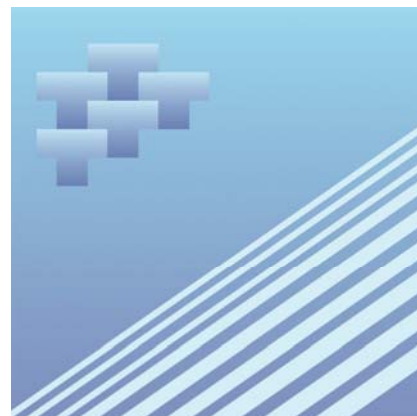




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Canadian Vehicle Survey: Annual

2005 (revised)



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Statistics Canada
Transport Division

Canadian Vehicle Survey: Annual

2005 (revised)

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Note of appreciation

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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

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Highlights

- On average, 18.6 million vehicles were in-scope for the Canadian Vehicle Survey during the year.
- Between January 1 and December 31, 2005, these vehicles travelled an estimated 315.3 billion kilometres.
- Vehicles with gross weight less than 4 500 kilograms were driven an average of 16 000 kilometres while the largest of the trucks (trucks with gross weight 15 000 kilograms or more) were driven an average of 73 275 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 year 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

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
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405-0070	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and driver age group
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405-0073	Canadian vehicle survey, vehicle-kilometres, by type of vehicle and sex of driver
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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
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405-0115	Canadian vehicle survey, fuel consumed, by type of vehicle, type of fuel and type of vehicle body
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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
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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	18,831,491	18,123,891	407,412	300,188
Newfoundland and Labrador	260,194	253,026	4,030	3,138
Prince Edward Island	80,206	75,930	1,591	2,685
Nova Scotia	549,072	532,254	8,947	7,871
New Brunswick	462,328	450,490	7,642	4,197
Quebec	4,341,949	4,245,269	57,483	39,197
Ontario	6,976,030	6,775,883	88,600	111,547
Manitoba	649,218	623,383	10,316	15,519
Saskatchewan	720,713	657,116	38,064	25,532
Alberta	2,401,606	2,223,823	104,259	73,524
British Columbia	2,336,717	2,238,239	83,965	14,513
Yukon Territory	27,454	24,671	1,596	1,187
Northwest Territories	22,567	20,727	702	1,139
Nunavut	3,441	3,083	218	140

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	253,025	75,929	532,253	450,489	4,245,268	6,775,882	623,382
Earlier than 1987	5,367	3,268	20,432	14,893	101,956	236,421	42,887
1987	1,674	1,041	5,385	4,709	38,726	59,360	10,043
1988	3,552	1,693	8,641	8,073	65,752	100,015	13,967
1989	4,209	2,073	10,530	9,843	80,805	130,809	16,112
1990	4,701	2,532	13,200	12,122	108,158	168,373	20,196
1991	5,961	2,780	15,324	14,705	137,475	198,337	23,673
1992	7,917	3,865	20,273	19,517	183,135	253,950	27,634
1993	10,469	4,209	22,633	20,136	185,828	273,843	26,489
1994	12,771	4,723	26,273	22,982	194,435	304,074	27,911
1995	13,519	5,102	28,762	25,187	215,585	350,406	31,452
1996	10,971	4,449	25,533	21,770	180,351	306,881	28,675
1997	15,187	5,497	32,892	27,152	229,730	408,170	38,577
1998	17,749	5,726	36,824	30,735	254,190	453,392	40,967
1999	17,719	5,280	35,011	28,778	252,098	444,782	36,155
2000	20,777	6,186	42,146	35,386	314,290	546,274	41,758
2001	18,832	4,297	34,679	28,938	294,207	486,203	38,534
2002	23,236	4,394	42,351	34,479	366,385	554,384	44,380
2003	24,795	3,933	42,716	35,485	405,159	593,110	46,472
2004	20,544	2,847	37,189	30,925	351,470	488,270	39,834
2005	12,644	1,912	29,404	23,177	267,622	384,943	26,074
2006	403	113	2,047	1,485	17,384	33,875	1,584
Year of vehicle model, unknown	22	0	0	3	520	0	0
	Saskat- chewan	Alberta	British Columbia	Yukon Territory	Northwest Territories	Nunavut	Total
Total, all vehicle model years	657,115	2,223,822	2,238,237	24,670	20,725	3,082	18,123,885
Earlier than 1987	85,186	197,162	202,149	3,562	1,723	184	915,189
1987	13,982	36,556	52,384	728	318	48	224,952
1988	18,764	53,336	68,064	975	503	82	343,422
1989	20,759	63,575	82,048	1,061	578	74	422,482
1990	23,780	75,897	98,989	1,122	619	83	529,777
1991	26,419	83,654	102,807	1,081	666	114	613,002
1992	28,655	87,216	109,835	1,080	655	129	743,865
1993	27,188	83,758	104,722	1,048	632	140	761,101
1994	30,071	91,236	102,911	1,082	754	156	819,383
1995	32,596	98,748	107,995	1,158	775	170	911,461
1996	27,658	85,571	87,704	910	648	134	781,259
1997	37,090	117,691	114,871	1,253	957	201	1,029,271
1998	38,027	133,107	115,808	1,161	1,044	188	1,128,924
1999	31,689	114,678	104,780	1,041	1,100	206	1,073,323
2000	37,407	132,180	123,323	1,093	1,341	219	1,302,384
2001	36,516	137,718	120,883	1,205	1,510	239	1,203,766
2002	40,100	162,140	145,272	1,360	1,724	257	1,420,467
2003	41,827	175,072	149,706	1,567	2,253	204	1,522,304
2004	37,100	161,767	132,617	1,242	1,718	143	1,305,672
2005	21,249	122,924	104,317	881	1,138	95	996,383
2006	1,046	9,828	7,044	50	64	10	74,940
Year of vehicle model, unknown	0	0	0	0	0	0	547

**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	4,028	1,590	8,946	7,640	57,482	88,599	10,315
Earlier than 1987	760	734	1,836	875	10,095	5,679	2,653
1987	104	67	295	138	2,198	1,534	273
1988	178	76	321	176	2,850	2,127	321
1989	152	89	332	168	2,428	2,195	312
1990	169	58	342	194	2,489	2,503	423
1991	169	44	259	199	1,664	1,876	390
1992	135	39	250	222	1,580	1,963	339
1993	146	45	275	269	1,818	2,530	379
1994	187	57	296	315	2,328	3,152	398
1995	241	63	508	381	3,058	4,244	548
1996	133	32	305	299	1,982	3,302	370
1997	189	44	399	369	2,064	4,623	469
1998	173	25	412	392	2,624	4,843	397
1999	226	53	554	532	3,640	7,287	519
2000	202	35	470	366	3,042	6,439	386
2001	174	25	391	407	2,395	6,346	430
2002	208	30	384	408	2,231	6,333	365
2003	176	27	484	697	2,897	7,632	432
2004	139	20	454	736	2,688	7,154	404
2005	141	17	320	421	2,640	5,902	432
2006	16	2	52	68	529	926	66
Year of vehicle model, unknown	2	0	0	0	232	0	0

	Saskat- chewan	Alberta	British Columbia	Yukon Territory	Northwest Territories	Nunavut	Total
Total, all vehicle model years	38,063	104,258	83,964	1,595	701	217	407,405
Earlier than 1987	26,687	32,793	11,925	478	122	38	94,675
1987	443	1,776	1,434	34	14	11	8,321
1988	442	2,416	2,260	58	21	13	11,264
1989	388	2,490	2,493	58	20	7	11,139
1990	520	2,726	2,855	58	36	10	12,389
1991	479	2,118	2,286	35	21	7	9,552
1992	444	2,104	2,351	45	17	7	9,500
1993	503	2,143	2,797	33	14	11	10,969
1994	530	2,641	3,162	51	21	6	13,150
1995	722	3,324	3,685	32	32	23	16,866
1996	463	2,317	2,615	33	18	4	11,880
1997	655	3,785	3,471	63	29	10	16,175
1998	648	3,603	3,044	38	23	8	16,235
1999	652	4,513	3,889	69	40	11	21,991
2000	551	3,950	3,691	49	36	9	19,231
2001	805	5,826	4,434	62	32	5	21,337
2002	660	5,001	4,723	71	36	4	20,459
2003	820	6,106	7,887	121	34	9	27,329
2004	689	5,276	8,224	108	34	10	25,943
2005	877	7,964	6,135	88	80	4	25,025
2006	76	1,376	594	3	13	1	3,728
Year of vehicle model, unknown	0	0	0	0	0	0	235

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	3,137	2,684	7,870	4,196	39,195	111,546	15,518
Earlier than 1987	343	1,058	807	731	937	5,468	1,590
1987	97	201	221	249	409	2,243	322
1988	123	188	226	219	555	2,370	324
1989	138	145	269	208	482	2,571	305
1990	97	137	176	226	457	2,521	277
1991	88	88	110	124	290	1,635	200
1992	80	47	130	91	452	1,657	226
1993	79	62	192	170	653	2,290	399
1994	127	85	315	217	1,276	3,381	597
1995	201	147	445	271	2,031	5,937	749
1996	167	90	356	167	1,495	4,388	681
1997	148	44	317	137	1,607	4,806	661
1998	227	72	543	231	2,943	8,405	1,080
1999	199	79	607	230	3,436	10,225	1,132
2000	253	70	761	200	4,478	12,051	1,367
2001	130	35	389	122	2,862	7,546	834
2002	103	11	278	90	1,866	5,342	568
2003	146	33	481	129	3,606	7,686	1,009
2004	155	38	565	142	3,233	8,193	1,257
2005	197	35	540	167	4,935	10,206	1,592
2006	30	9	134	68	1,165	2,617	341
Year of vehicle model, unknown	1	0	0	0	18	0	0

	Saskat- chewan	Alberta	British Columbia	Yukon Territory	Northwest Territories	Nunavut	Total
Total, all vehicle model years	25,531	73,523	14,512	1,187	1,138	139	300,180
Earlier than 1987	8,265	16,818	2,437	213	155	18	38,839
1987	873	1,336	397	15	14	4	6,380
1988	966	1,918	444	32	20	0	7,391
1989	822	1,749	452	23	24	4	7,198
1990	836	1,958	727	33	30	2	7,483
1991	554	1,456	423	19	26	7	5,026
1992	550	1,211	550	34	21	4	5,059
1993	831	1,727	526	31	26	4	6,995
1994	1,118	2,668	654	36	43	5	10,527
1995	1,540	3,430	735	44	59	8	15,602
1996	1,102	2,760	677	52	59	8	12,007
1997	1,078	3,292	708	52	59	3	12,917
1998	1,439	4,726	724	64	82	9	20,550
1999	1,135	3,801	666	67	75	19	21,675
2000	1,057	3,847	575	96	81	6	24,847
2001	773	3,676	611	82	73	6	17,144
2002	433	2,921	531	48	56	4	12,255
2003	562	3,279	632	66	56	8	17,699
2004	721	4,162	832	74	79	9	19,466
2005	742	5,439	963	87	82	3	24,992
2006	126	1,340	241	13	11	1	6,101
Year of vehicle model, 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	18,608,335	17,993,507	320,635	294,193
Newfoundland and Labrador	255,646	249,113	3,707	2,827
Prince Edward Island	79,975	76,093	1,395	2,487
Nova Scotia	537,743	522,676	6,973	8,094
New Brunswick	446,140	436,358	5,615	4,167
Quebec	4,291,663	4,204,345	47,537	39,781
Ontario	6,906,942	6,727,761	70,245	108,936
Manitoba	645,558	620,895	9,371	15,291
Saskatchewan	707,699	649,380	34,859	23,459
Alberta	2,360,871	2,207,016	81,188	72,667
British Columbia	2,323,900	2,252,578	57,455	13,867
Yukon Territory	26,549	23,918	1,426	1,205
Northwest Territories	22,236	20,297	642	1,298
Nunavut	3,414	3,077	223	114

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	18,608,335	17,993,507	320,635	294,193
Later than 2002	3,398,401	3,273,916	59,621	64,864
2000 to 2002	4,380,744	4,261,864	60,305	58,576
1996 to 1999	4,766,636	4,625,405	63,074	78,158
1992 to 1995	3,283,666	3,195,194	45,377	43,095
Earlier than 1992	2,778,888	2,637,128	92,259	49,501

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	18,608,335	17,993,507	320,635	294,193
Car	10,021,453	10,021,194	...	...
Station wagon	306,203	306,203	...	...
Van	2,907,548	2,890,313	17,185	...
Sport utility vehicle	1,414,339	1,414,012	...	...
Pickup	3,352,777	3,290,617	62,137	F
Straight truck	391,528	50,764 ^E	227,465	113,299
Tractor trailer	184,424	...	6,171 ^E	178,171
Bus	F	...	F	...
Other vehicle type	29,415 ^E	F	6,559 ^E	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	18,608,335	17,993,507	320,635	294,193
Gasoline	17,476,601	17,379,486	93,932	3,184 ^E
Diesel	1,049,067	541,406	217,210	290,451 ^F
Other fuel type	82,667	72,615 ^E	9,493	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	315,297.5	287,722.6	6,020.5	21,554.4
Newfoundland and Labrador	4,380.7 ^E	4,149.1 ^E	52.7 ^E	179.0
Prince Edward Island	1,327.6	1,259.8	F	F
Nova Scotia	10,072.9	9,374.6	115.9	582.3
New Brunswick	7,816.6	7,578.7	120.3 ^E	117.5
Quebec	66,488.4	61,182.7	1,053.6	4,252.0
Ontario	125,101.7	115,412.9	1,293.5	8,395.3 ^E
Manitoba	11,008.2	9,314.4	154.0 ^E	1,539.7
Saskatchewan	11,154.6	9,652.0	360.8 ^E	1,141.8
Alberta	44,145.9	38,011.0	1,571.2 ^E	4,563.8
British Columbia	32,914.0	31,137.7	1,253.3 ^E	523.1
Yukon Territory	489.4	351.2	27.4	110.8
Northwest Territories	367.8	271.6	6.5 ^E	89.6
Nunavut	29.8	26.8	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	315,297.5	287,722.6	6,020.5	21,554.4
Later than 2002	75,771.7	65,844.2	2,099.3	7,828.2
2000 to 2002	90,117.1	82,909.0	1,461.6	5,746.5
1996 to 1999	79,106.3	72,207.8	1,138.5	5,760.0
1992 to 1995	42,163.9	40,008.1	681.0 ^E	1,474.8
Earlier than 1992	28,138.4	26,753.4	640.0	745.0 ^E

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	315,297.5	287,722.6	6,020.5	21,554.4
Car	154,315.3	154,315.3	...	...
Station wagon	5,118.4	5,118.4	...	...
Van	53,904.3	53,565.2	337.7 ^E	...
Sport utility vehicle	23,326.1	23,323.5	...	...
Pickup	50,703.8	49,490.2	1,213.4	F
Straight truck	9,064.1	F	4,275.1	3,398.3
Tractor trailer	18,295.9	...	157.3 ^E	18,138.0
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	315,297.5	287,722.6	6,020.5	21,554.4
Gasoline	276,529.0	275,609.3	885.0	F
Diesel	37,649.5	11,091.7	5,042.8	21,514.9
Other fuel type	1,118.9 ^E	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	525,693.9	493,726.0	7,612.1	24,355.8^E
Newfoundland and Labrador	7,350.5 ^E	7,037.7 ^E	72.7 ^E	240.2
Prince Edward Island	2,282.0 ^E	2,207.4 ^E	F	F
Nova Scotia	16,196.1	15,382.3	167.0	646.9
New Brunswick	14,421.3	14,122.0	149.1 ^E	150.2 ^E
Quebec	110,692.7 ^E	104,383.0 ^E	1,226.5	5,083.2
Ontario	211,837.4	201,055.6	1,524.6	9,257.2 ^E
Manitoba	17,773.5	15,558.6	214.2 ^E	2,000.7
Saskatchewan	18,094.7	16,272.9	514.3 ^E	1,307.5
Alberta	74,615.6	67,381.9	2,204.8 ^E	5,028.9 ^E
British Columbia	52,430.2	50,324.7	1,527.3 ^E	578.2

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	525,693.9	493,726.0	7,612.1	24,355.8^E
Later than 2002	129,992.7	118,390.4	2,669.7	8,932.6
2000 to 2002	153,538.6	145,255.5	1,880.9	6,402.3
1996 to 1999	130,657.3	122,725.1	1,384.9	6,547.3
1992 to 1995	65,995.3	63,443.4	861.9 ^E	1,690.0
Earlier than 1992	45,509.9	43,911.4	814.7 ^E	783.7 ^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	525,693.9	493,726.0	7,612.1	24,355.8^E
Car	249,688.0	249,688.0	...	...
Station wagon	7,947.9	7,947.9	...	...
Van	112,086.1	111,704.2	380.7 ^E	...
Sport utility vehicle	45,042.0	45,039.4	...	...
Pickup	78,504.9	76,839.3	1,665.4	F
Straight truck	10,744.3	F	5,335.2	3,764.2
Tractor trailer	20,748.0	...	F	20,571.4
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	525,693.9	493,726.0	7,612.1	24,355.8^E
Gasoline	475,693.3	474,469.2	1,165.6	F
Diesel	48,039.2	17,412.8	6,332.4	24,294.0
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	493,726.0
Under 5 years	17,136.6
5 to 14 years	37,783.6
15 to 19 years	20,502.9
20 to 24 years	15,149.9
25 to 34 years	46,793.3
35 to 54 years	195,321.1
55 to 64 years	95,413.1
65 to 74 years	48,120.3
75 to 84 years	16,065.9
85 years and over	1,439.2 ^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	314,410.6	287,072.9	5,984.0	21,353.6
Under 20 years	F	F	F	F
20 to 24 years	8,147.8 ^E	7,473.6 ^E	189.6 ^E	484.5
25 to 34 years	36,277.1	30,616.3	1,102.1	4,558.7
35 to 44 years	59,425.2	52,330.1	1,477.7	5,617.3
45 to 54 years	101,715.1	92,290.2	2,195.4	7,229.5
55 to 64 years	64,870.2	60,892.4	860.0	3,117.9
65 years and over	39,754.8	39,314.7	96.4 ^E	343.7 ^E
	millions of passenger-kilometres			
Total, all age groups	525,693.9	493,726.0	7,612.1	24,355.8^E
Under 20 years	7,731.5 ^E	7,606.2 ^E	F	F
20 to 24 years	11,377.9 ^E	10,581.3 ^E	261.9 ^E	534.7
25 to 34 years	59,762.1	52,784.1	1,391.0	5,587.0
35 to 44 years	110,511.8	102,201.2	1,854.3	6,456.3
45 to 54 years	160,373.1	149,696.8	2,759.0	7,917.3
55 to 64 years	105,515.3	100,942.0	1,062.2	3,511.1
65 years and over	70,422.0	69,914.4	160.4 ^E	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	314,410.6	287,072.9	5,984.0	21,353.6
Males	221,108.5	194,060.7	5,888.8	21,159.0
Females	93,302.0	93,012.2	F	194.6 ^E
millions of passenger-kilometres				
Both sexes	525,693.9	493,726.0	7,612.1	24,355.8^E
Males	376,018.3	344,440.9	7,465.7	24,111.6
Females	149,675.5	149,285.0	146.4 ^E	244.2 ^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	314,410.6	287,072.9	5,984.0	21,353.6
Males	221,108.5	194,060.7	5,888.8	21,159.0
Females	93,302.0	93,012.2	F	194.6 ^E
Under 25 years				
Both sexes	12,368.2	11,629.2 ^E	252.5 ^E	486.5
Males	6,538.6 ^E	5,701.2 ^E	324.5 ^E	512.9
Females	8,553.5 ^E	8,550.4 ^E	F	F
25 to 54 years				
Both sexes	197,417.3	175,236.6	4,775.2	17,405.5
Males	165,117.8	138,457.6	5,752.2	20,907.9
Females	74,152.5	73,884.4	F	F
55 years and over				
Both sexes	104,625.0	100,207.0	956.3	3,461.6
Males	96,864.4	91,201.6	1,061.6	4,601.1
Females	30,647.8	30,589.4	F	F
millions of passenger-kilometres				
Total, all age groups				
Both sexes	525,693.9	493,726.0	7,612.1	24,355.8 ^E
Males	376,018.3	344,440.9	7,465.7	24,111.6
Females	149,675.5	149,285.0	146.4 ^E	244.2 ^E
Under 25 years				
Both sexes	19,109.5	18,187.5	385.2 ^E	536.7
Males	11,020.6 ^E	9,935.2 ^E	516.5 ^E	568.9
Females	12,323.9 ^E	12,317.4 ^E	F	F
25 to 54 years				
Both sexes	330,647.1	304,682.0	6,004.4	19,960.7
Males	277,041.8	246,181.2	7,123.8	23,736.7
Females	119,665.0	119,351.4	F	F
55 years and over				
Both sexes	175,937.3	170,856.4	1,222.5	3,858.4
Males	166,768.7	160,366.3	1,345.4	5,057.0
Females	47,703.1	47,579.5	F	F

Table 6-4
Estimates of vehicle-kilometres and passenger-kilometres for provinces only by type of vehicle and day of 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	314,410.6	287,072.9	5,984.0	21,353.6
Sunday	35,890.1	34,612.9	F	1,094.0
Monday	45,807.3	40,919.2	1,009.6	3,878.5
Tuesday	45,546.5	40,436.5	1,108.5	4,001.5
Wednesday	46,899.6	41,888.3	1,135.1	3,876.2
Thursday	50,462.8	45,311.4	1,164.0	3,987.3
Friday	51,364.6	46,932.0	1,007.2	3,425.4
Saturday	38,376.5	36,912.3	375.9 ^E	1,088.3
millions of passenger-kilometres				
Total, all days of the week	525,693.9	493,726.0	7,612.1	24,355.8^E
Sunday	77,691.2	76,181.3	F	1,268.7
Monday	70,164.8	64,479.7	1,311.4	4,373.8
Tuesday	67,432.6	61,425.6	1,428.0	4,579.0
Wednesday	66,087.7	60,111.1	1,448.9	4,527.7
Thursday	77,841.5	71,866.2	1,463.9	4,511.4
Friday	91,838.3	86,748.2	1,259.0	3,831.1
Saturday	74,637.7	72,913.9	459.7 ^E	1,264.1

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	314,410.6	287,072.9	5,984.0	21,353.6
Weekends and holidays	84,393.6	80,576.2	755.4	3,061.9
Weekdays	230,016.9	206,496.6	5,228.6	18,291.7
millions of passenger-kilometres				
Total, all days	525,693.9	493,726.0	7,612.1	24,355.8^E
Weekends and holidays	168,159.0	163,649.5	950.3	3,559.2
Weekdays	357,534.8	330,076.4	6,661.8	20,796.6

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	314,410.6	287,072.9	5,984.0	21,353.6
00:00 to 05:59	10,510.0	8,024.7	259.5	2,225.8
06:00 to 11:59	103,314.3	93,191.9	2,771.5	7,351.0
12:00 to 17:59	138,311.0	127,877.3	2,608.5	7,825.2
18:00 to 23:59	62,275.2	57,979.1	344.4	3,951.7
millions of passenger-kilometres				
Total, all hours	525,693.9	493,726.0	7,612.1	24,355.8^E
00:00 to 05:59	14,784.7	11,820.1	352.5	2,612.0
06:00 to 11:59	163,277.8	151,499.6	3,482.3	8,295.9
12:00 to 17:59	239,509.4	227,329.2	3,303.1	8,877.1
18:00 to 23:59	108,122.0	103,077.0	474.2	4,570.8

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	314,410.6	287,072.9	5,984.0	21,353.6
00:00 to 05:59	10,510.0	8,024.7	259.5	2,225.8
06:00 to 11:59	103,314.3	93,191.9	2,771.5	7,351.0
12:00 to 17:59	138,311.0	127,877.3	2,608.5	7,825.2
18:00 to 23:59	62,275.2	57,979.1	344.4	3,951.7
Weekends and holidays				
Total, all hours	84,393.6	80,576.2	755.4	3,061.9
00:00 to 05:59	3,070.0	2,685.6 ^E	F	341.9
06:00 to 11:59	25,317.9	23,936.2	348.6	1,033.2
12:00 to 17:59	39,927.8	38,488.6	309.4	1,129.8
18:00 to 23:59	16,077.9	15,465.9	55.0 ^E	557.0
Weekdays				
Total, all hours	230,016.9	206,496.6	5,228.6	18,291.7
00:00 to 05:59	7,440.0	5,339.1	217.0	1,883.9
06:00 to 11:59	77,996.4	69,255.7	2,422.9	6,317.8
12:00 to 17:59	98,383.2	89,388.7	2,299.1	6,695.3
18:00 to 23:59	46,197.3	42,513.2	289.4	3,394.7
millions of passenger-kilometres				
Total, all days				
Total, all hours	525,693.9	493,726.0	7,612.1	24,355.8^E
00:00 to 05:59	14,784.7	11,820.1	352.5	2,612.0
06:00 to 11:59	163,277.8	151,499.6	3,482.3	8,295.9
12:00 to 17:59	239,509.4	227,329.2	3,303.1	8,877.1
18:00 to 23:59	108,122.0	103,077.0	474.2	4,570.8
Weekends and holidays				
Total, all hours	168,159.0	163,649.5	950.3	3,559.2
00:00 to 05:59	4,876.8	4,433.4	F	396.5
06:00 to 11:59	47,731.7	46,107.0	431.0	1,193.7
12:00 to 17:59	83,708.0	81,993.7	396.0	1,318.3
18:00 to 23:59	31,842.6	31,115.4	F	650.7
Weekdays				
Total, all hours	357,534.8	330,076.4	6,661.8	20,796.6
00:00 to 05:59	9,907.9	7,386.7	305.7	2,215.5
06:00 to 11:59	115,546.2	105,392.7	3,051.3	7,102.2
12:00 to 17:59	155,801.4	145,335.4	2,907.1	7,558.9
18:00 to 23:59	76,279.3	71,961.6	397.7	3,920.1

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	314,410.6	287,072.9	5,984.0	21,353.6
Roads with posted maximum speed of 80 kilometres per hour or more	171,205.2	153,479.4	3,288.2	14,437.6
All other roads	143,205.2	133,593.5	2,695.8	6,916.0
millions of passenger-kilometres				
Total, all roads	525,693.9	493,726.0	7,612.1	24,355.8^E
Roads with posted maximum speed of 80 kilometres per hour or more	298,659.0	278,067.1	4,162.5	16,429.4
All other roads	227,034.8	215,658.8	3,449.7	7,926.4

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	54,559.5	23,201.5	9,714.8	9,587.1	36,443.0
Driver's regular workplace	20,881.7	9,113.1	2,541.4	1,251.0 ^E	4,158.7
Shopping centre, bank, other place of personal business	11,342.2	948.1 ^E	5,353.2	F	5,039.2
Leisure, entertainment, recreational facility, restaurant	9,702.2	F	1,199.0 ^E	2,907.1 ^E	4,766.9
Other	34,570.0	3,718.1	5,575.8	6,057.4	22,966.6
millions of passenger-kilometres					
Origin					
Driver's home	95,787.7	28,336.7	17,783.1	18,935.4	63,434.5
Driver's regular workplace	24,918.5	11,535.9	2,873.3 ^E	F	5,549.1
Shopping centre, bank, other place of personal business	20,128.4	F	8,631.3	F	12,609.7
Leisure, entertainment, recreational facility, restaurant	18,987.3	F	2,328.9 ^E	5,859.5 ^E	11,006.4
Other	59,247.4	4,418.4	12,800.2	13,915.9	48,798.2

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	287,072.9	493,726.0
Yes	47,432.1	63,330.7
No	239,640.5	430,394.9

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	975.3	1,411.9
Carrying goods or equipment	3,602.9	16,087.5
Empty	F	2,861.1
Other work purpose	496.6 ^E	151.3 ^E
Non-work purpose	611.0 ^E	841.8
Total	5,984.0	21,353.6
Straight trucks		
Driving to or from service call	965.6	277.5 ^E
Carrying goods or equipment	3,508.4	2,258.1
Empty	F	416.8 ^E
Other work purpose	477.4 ^E	F
Non-work purpose	587.4 ^E	309.9 ^E
Total	5,827.8	3,372.1
Other trucks over 4.5 tonnes		
Driving to or from service call	F	1,134.4 ^E
Carrying goods or equipment	F	13,829.4
Empty	F	2,444.3
Other work purpose	F	F
Non-work purpose	F	531.9
Total	156.2^E	17,981.5
millions of passenger-kilometres		
Total, all groups		
Driving to or from service call	1,295.9	1,626.4
Carrying goods or equipment	4,128.5	18,317.1
Empty	F	3,230.9
Other work purpose	791.2 ^E	184.8 ^E
Non-work purpose	1,027.2	996.6
Total	7,612.1	24,355.8^E
Straight trucks		
Driving to or from service call	1,285.7	F
Carrying goods or equipment	4,021.7	2,461.1
Empty	F	F
Other work purpose	772.0	F
Non-work purpose	997.0 ^E	371.3 ^E
Total	7,435.6	3,765.6
Other trucks over 4.5 tonnes		
Driving to or from service call	F	1,300.4
Carrying goods or equipment	F	15,856.0
Empty	F	2,749.2
Other work purpose	F	F
Non-work purpose	F	625.3
Total	F	20,590.2

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	27,337.6	5,984.0	21,353.6
With dangerous goods	1,864.7	F	1,747.1
Without dangerous goods	25,472.9	5,866.3	19,606.6
millions of passenger-kilometres			
Total with or without dangerous goods	31,967.9	7,612.1	24,355.8
With dangerous goods	1,929.7	F	1,804.3
Without dangerous goods	30,038.2	7,486.7	22,551.5

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	150,242.4	F	150,242.4	F	...	...	...	...
Station wagon	5,107.7 ^E	F	5,107.7 ^E	F	...	...	...	...
Van	52,543.6	F	52,403.7	F	140.0 ^E	187.0 ^E	...	...
SUV	22,867.6	F	22,865.0	F	...	...	...	...
Pickup	42,781.1	7,481.1	42,483.8	6,593.5	297.2 ^E	887.6	...	...
Straight truck	1,679.0 ^E	7,254.7	1,250.1 ^E	F	419.9 ^E	3,767.1	F	3,358.6
Tractor trailer	...	18,095.7	...	...	...	156.2 ^E	...	17,939.5
Bus	F	F	F	F	F	F	...	...
Other	F	37.6 ^E	F	F	F	20.9 ^E	...	16.7 ^E
Total	275,750.5	37,421.2	274,871.2	11,082.0	868.4^E	5,023.2	F	21,316.0

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	13,621.8 ^E	F	13,621.8 ^E	F	...	...	...	...
Station wagon	F	F	F	F	...	...	...	...
Van	6,083.2 ^E	F	6,049.0 ^E	F	F	F	...	...
SUV	F	F	F	F	...	...	...	...
Pickup	6,024.6 ^E	1,070.9 ^E	5,948.5 ^E	F	F	195.1 ^E	...	...
Straight truck	F	2,257.0	F	F	F	1,041.2	F	1,184.5
Tractor trailer	...	6,336.1	...	...	...	52.1 ^E	...	6,284.0
Bus	F	F	F	F	F	F	...	...
Other	F	F	F	F	F	F	...	F
Total	29,457.1^E	10,076.9	29,219.6^E	F	230.4	1,337.8	F	7,478.7

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	318,344	291,576
For-hire trucking	32,306	135,988
Owner-operator trucking	44,922	63,888
Private trucking	183,632	67,055
Other activity type	57,484	24,645

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	5,984.0	7,612.1
For-hire trucking	922.0	1,170.7
Owner-operator trucking	911.9	1,139.8 ^E
Private trucking	3,167.0	4,095.4
Other activity type	983.1	1,206.1

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	21,353.6	24,355.8
For-hire trucking	12,417.0	14,071.9
Owner-operator trucking	5,049.1	5,796.1
Private trucking	2,912.6	3,375.5
Other activity type	975.0 ^E	1,112.3 ^E

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	5,984.0	7,612.1
Trips within provinces	5,825.8	7,434.1
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	21,353.6	24,355.8
Trips within provinces	11,958.2	12,928.0
Trips between provinces	3,491.3	4,203.8
Trips across Canada and United States border	4,929.5	6,055.6
Trips outside Canada	974.6	1,168.4

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 was derived from the 13 jurisdiction vehicle registration lists (ten Provincial and three Territorial Governments) created three months before the reference period. The sample for each quarter of 2005 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; 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 incoming lists underwent thorough preparation procedure:

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

The most recent set of prepared lists was used to select the sample for each quarter of 2005. 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 21,915 vehicles was drawn for the ten provinces. Another 10,988 vehicles 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 Brunswick	Quebec	Ontario	Manitoba	Saskat- chewan	Alberta	British Columbia
	percent									
Light vehicles	64	70	61	65	67	65	69	64	62	63
Heavy vehicles 4.5 to 14.9 tonnes	67	66	64	56	70	70	75	63	64	61
Heavy vehicles 15 tonnes or more	74	59	72	73	73	68	63	67	58	65

Table B
Vehicle response rates by territory

	Yukon	Northwest Territories	Nunavut
	percent		
All vehicles	18	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 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.