

FINAL REPORT

Estimation of Costs of Cars and Light Trucks Use per Vehicle-Kilometre in Canada.

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Executive Summary

Transport Canada has initiated, in collaboration with Provincial and Territorial transport departments, a project called the Full Cost Investigation (FCI). The project is being steered by a Task Force reporting to the Policy and Planning Support Committee of the Council of Deputy Ministers Responsible for Transportation and Highway Safety.

The FCI project is intended to estimate the total financial and social costs of transport by all of the major modes to reveal the total resources consumed by transport, and the impacts on the environment, health and well being. It is also intended to make comparisons among alternate modes of transport, showing the resources consumed and their environmental and social impacts for realistic alternatives.

As one component of the overall Full Cost Investigation project, this project estimates the costs per vehicle kilometre of Canadian owned cars and light trucks use in the year 2000 including:

- capital costs of depreciation of the vehicle,
- financing cost of vehicle purchase,
- fuel costs,
- registration or licence fees,
- road or bridge tolls,
- insurance,
- other maintenance and operating costs,

A total of 11 vehicle classes are included from a two-seater auto to a large cargo van.

A *typical vehicle* representing each vehicle class/vintage is used to estimate ownership and operating cost of each vehicle class including depreciation, insurance premium, and fuel and other operating costs in different provinces.

Red Book values are used to determine depreciation values for each vehicle type and age group. Insurance values are determined by obtaining on-line quotes from several vendors for a variety of variables including driver age, sex, and marital status. Statistics Canada's CANSIM database provides price index tables for vehicle purchase, leasing, maintenance, parts, gasoline and other costs.

Website and phone surveys of the provincial registrars are undertaken to provide vehicle registration and driver licence fees. The same approach is used to estimate revenues from toll facilities and parking rates for the Central Business Districts of several cities across Canada. Fleet manager interviews provide

insight as to how the operations and costs of fleet managed vehicles differs from privately owned and used vehicles.

Costs of operating in congested conditions are examined via a literature search while cost comparison of U.S. and Canadian costs on Canadian roads shows that U.S. vehicles generally operate at a 21% lower cost than Canadian vehicles.

Table 1 provides a summary of the national average costs by vehicle class as produced by this study assuming social opportunity cost of 8.6% associated with the vehicle capital investment. Table 2 presents these results assuming the rate is 6%. While per kilometre costs generally decrease as the vehicles age, these costs increase for some vehicle classes with the 15 year plus age group due mainly to the declining distances these vehicles are driven at that age.

Table 1: Summary of National Average per KM costs by Vehicle Class/Vintage (SOCC 8.6%) (Year 2000 \$/km)

Veh Class \ Vintage	0_2	3_5	6_8	9_11	12_14	15+
Two-Seaters	0.4172	0.3496	0.2932	0.2239	0.1860	0.2509
Sub-compact	0.3327	0.2853	0.2820	0.1988	0.1926	0.2198
Compact	0.3265	0.3231	0.2766	0.2064	0.1929	0.2066
Midsize	0.3869	0.3704	0.3089	0.2274	0.2029	0.2471
Full-size	0.4893	0.4056	0.3502	0.2449	0.2350	0.2582
Stationwagon	0.3009	0.2902	0.2717	0.2265	0.2412	0.2050
Minivans	0.4053	0.3221	0.2746	0.2602	0.2542	0.1901
Pass. Van	0.4378	0.3261	0.3234	0.3346	0.3073	0.2059
Cargo Van	0.3669	0.3276	0.2948	0.2368	0.2481	0.1804
Special PV	0.5099	0.4474	0.3228	0.3538	0.2619	0.2472
Pickups	0.3655	0.3790	0.3372	0.3308	0.2651	0.2353

Note: Vintage is expressed in years. For example 0-2 indicates vehicle less than 3 years old.

Table 2: Summary of National Average per KM costs by Vehicle Class/Vintage (SOCC 6%) (Year 2000 \$/km)

Veh Class \ Vintage	0_2	3_5	6_8	9_11	12_14	15+
Two-Seaters	0.3861	0.3328	0.2801	0.2118	0.1825	0.2441
Sub-compact	0.3135	0.2723	0.2720	0.1938	0.1891	0.2164
Compact	0.3046	0.3077	0.2666	0.2009	0.1897	0.2042
Midsize	0.3597	0.3516	0.2968	0.2218	0.1994	0.2422
Full-size	0.4582	0.3856	0.3350	0.2366	0.2288	0.2515
Stationwagon	0.2813	0.2773	0.2610	0.2203	0.2390	0.2024
Minivans	0.3791	0.3056	0.2645	0.2520	0.2480	0.1873
Pass. Van	0.4108	0.3133	0.3155	0.3275	0.3008	0.2030
Cargo Van	0.3421	0.3147	0.2871	0.2317	0.2423	0.1779
Special PV	0.4783	0.4259	0.3110	0.3429	0.2557	0.2430
Pickups	0.3396	0.3609	0.3272	0.3219	0.2604	0.2326

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Estimation of Costs of Cars and Light Truck Use per Vehicle-Kilometre in Canada.

1.0 Introduction

Transport Canada has initiated, in collaboration with Provincial and Territorial transport departments, a project called the Full Cost Investigation (FCI). The project is being steered by a Task Force reporting to the Policy and Planning Support Committee of the Council of Deputy Ministers Responsible for Transportation and Highway Safety.

The FCI project is intended to estimate the total financial and social costs of transport by all of the major modes, to reveal the total amounts of resources consumed by transport, and the impacts on the environment, health and well being. It is also intended to make comparisons among alternative modes of transport, showing the resources consumed and other environmental and social impacts for realistic alternatives.

For passenger transport, these will include comparing private car/light truck with urban public transit and the various public intercity modes – air, bus and train; while for freight transport they will include realistic comparisons and combinations of truck, rail, waterway and air. Eventually, the intention is that this information on “full costs” by mode will also be used to consider appropriate infrastructure pricing strategies, and potential changes to existing charging regimes by mode.

As well, vehicle operating cost information is important for many types of transportation policy analysis, planning and economic evaluation, such as project benefit/cost analysis. Many highway improvements and other transportation programs are justified in part by their vehicle operating cost savings: comprehensive and accurate vehicle operating cost data allows decision-makers to determine what of transportation policies and investments provide the best return on investment for users.

2.0 Objectives

As one component of the overall Full Cost Investigation project, this project estimates the costs of ownership and operation of cars and light trucks on a vehicle-kilometre basis. The specific vehicle classes included are:

- two-seater
- subcompact: interior passenger and cargo volume under 2830 litres
- compact: 2830 to 3115 L
- mid-size: 3115 to 3400 L
- full-size: greater than 3400 L
- station wagon
- pick-up truck
- minivan
- larger passenger van
- larger cargo van
- special purpose vehicle

More specifically, the project provides estimates of the costs per vehicle-kilometre of car and light truck use, in the year 2000, including

- capital costs of depreciation of the vehicle,
- financing cost of vehicle purchase (indicating the methods of financing and interest rate(s) assumed),
- fuel costs,
- registration or licence fees,
- road or bridge tolls,
- insurance,
- other maintenance and operating costs,

Other specific requirements of the project include:

- Estimation of the relationship between costs and vehicle age/model year, to allow application of the costs per vehicle-kilometre to the Canadian Vehicle Survey results by model year,
- Differences in costs per vehicle-kilometre between commercial and private use of vehicles,
- Differences in costs per vehicle-kilometre among functional classes of road due to geometric and surface conditions,
- Differences in costs per vehicle-kilometre by operating speed, within practical operating ranges, and including operations in congested conditions, beyond maximum volume as described in the TAC Geometric Design Guide for Canadian Roads or US Highway Capacity Manual,
- Estimates of the differences in costs by province/territory, in the form of adjustment functions to the various costs described above,

- Research and advice on whether significant differences in costs per vehicle-kilometre arise between Canadian and US vehicles when using the Canadian network and,
- Identification of factors that are likely changing the unit costs over time, independently of routine inflation in input prices.

Each of the above are identified and discussed in the subsequent Chapters of this report.

3.0 General Approach and Methodology

Vehicle operating costs are considered as either fixed (do not vary with vehicle usage) or variable, although some costs items can contain elements of both. Exhibit 3.1 illustrates the operating costs considered by this study and whether they are fixed or variable.

Exhibit 3.1: Fixed and Variable Costs

Cost Item	Fixed or variable
Depreciation	Mostly fixed, minor component variable
Financing	Fixed
Insurance	Mostly fixed, minor component variable
Registration & licencing	Fixed
Fuel	Variable
Maintenance & Repair	Variable

The following describes the general approach and methodology used to identify the costs noted in Exhibit 3.1 and complete the study. A detailed description of the methodology employed to complete each item in the work program is provided in each section of the report describing that task.

Due to the diversity of vehicles that can be included in one vehicle class, Transport Canada provided a list of vehicles to be included in each vehicle class by vehicle age group for each province and territory. Most classes include four of the top selling vehicles in that class, while the other classes only include one vehicle. Appendix 1 provides listing of the vehicles included in each class.

A *typical vehicle* representing each vehicle class/vintage is used to estimate ownership and operating cost of each vehicle class including depreciation, insurance premium, and fuel and other operating costs in different provinces.

Red Book values were then used to determine depreciation values for each vehicle type and age group. Insurance values are determined by obtaining on-

line quotes from several vendors for a variety of variables including driver age, sex, and marital status. Other sources of information used include:

- Insurance Bureau of Canada's average premium per registered vehicle by province
- Statistics Canada's CANSIM database online: price index tables (for each province) for vehicle purchase, leasing, maintenance, parts, gasoline, "Insurance Premiums", registration, license fee, parking, and other costs

Website and phone surveys of the provincial registrars were undertaken to provide vehicle registration and driver licence fees. The same approach is used to estimate revenues from toll facilities and parking rates for the Central Business Districts of several cities across Canada. Fleet manager interviews provide insight as to how the operations and costs of fleet managed vehicles differs from privately owned and used vehicles.

4.0 Depreciation:

Annual depreciation is estimated by examining changes in the value of a sample of vehicles as presented in Canadian Red Book and converted to year 2000 dollar values. Transport Canada provided a list of the vehicles (up to four) to be analyzed for each vehicle class in different provinces (see Appendix 1). In total, this meant that values had to be obtained for about 175 different vehicles classes. Furthermore, data was broken down into several 3-year age groups (0-2, 3-5, 6-8, 9-11, 12-14, and 15+ years old). Since the total number of vehicles for each vehicle make/model by province was not available, instead of weighted average, arithmetic average values for each vehicle class are estimated.

It worth noting that used car and truck values vary depending upon condition and mileage of the vehicle. The market value of a very clean vehicle will be higher than on a rough or high odometer reading vehicle. The vehicle depreciation values estimated are based on Canadian Red Book for typical vehicle reconditioned to meet both the safety and visual standards to satisfy a retail sale.

It is important to note that depreciation is not entirely time-based. Vehicle resale value declines with mileage, and used vehicle pricing guides provide mileage-based depreciation factors that can be used to calculate the additional depreciation cost. Exhibit 4.1 depicts kilometre charts presented in the Canadian Redbook.

Exhibit 4.1: Vehicle Retail Price Adjustment Values for Vehicle Kilometres (\$) Year 2000

Kilometer Chart																				
		0	8001	16001	24001	32001	40001	48001	56001	64001	72001	80001	88001	96001	104001	112001	120001	128001	136001	144001
		8000	16000	24000	32000	40000	48000	56000	64000	72000	80000	88000	96000	104000	112000	120000	128000	136000	144000	152001
Schedule (1)																				
Original SRP/POE Price up to \$19,999																				
	2000	550	400	0	475	1425	2125	2350	2575	2800	3025	3250	3475	3700	3925	4150	4375	4600	4825	5050
ADD	1999	1175	1025	875	675	475	0	450	1325	1975	2200	2425	2650	2875	3100	3325	3550	3775	4000	4225
	1998	1750	1600	1450	1300	1150	950	750	550	0	375	1075	1675	1900	2125	2350	2575	2800	3025	3250
	1997	2025	1925	1825	1725	1625	1475	1325	1175	1025	825	625	0	350	850	1375	1600	1825	2050	2275
	1996	2175	2075	1975	1875	1775	1675	1575	1475	1375	1225	1075	925	725	525	0	300	700	1175	1400
	1995	2275	2175	2075	1975	1875	1775	1675	1575	1475	1325	1175	1025	800	650	500	300	0	275	550
	1994	2375	2275	2175	2075	1975	1875	1775	1675	1575	1425	1275	1125	900	750	600	400			0
Schedule (2)																				
Original SRP/POE Price \$20,000 to \$34,999																				
	2000	700	500	0	625	1875	2775	3050	3325	3600	3875	4150	4425	4700	4975	5250	5525	5800	6075	6350
ADD	1999	1500	1300	1100	850	600	0	575	1725	2575	2850	3125	3400	3675	3950	4225	4500	4775	5050	5325
	1998	2250	2050	1850	1650	1450	1200	950	700	0	500	1450	2125	2400	2675	2950	3225	3500	3775	4050
	1997	2550	2450	2350	2200	2050	1900	1700	1500	1300	1050	800	0	450	1000	1625	1900	2175	2450	2725
	1996	2750	2650	2550	2450	2350	2250	2100	1950	1800	1600	1400	1200	950	700	0	400	850	1425	1700
	1995	2850	2750	2650	2550	2450	2350	2200	2050	1900	1700	1500	1300	1050	850	600	350	0	350	700
	1994	2950	2850	2750	2650	2550	2450	2300	2150	2000	1800	1600	1400	1150	950	700	450			0
Schedule (3)																				
Original SRP/POE Price \$35,000 to \$49,999																				
	2000	925	725	0	775	2200	3275	3600	3925	4250	4575	4900	5225	5550	5875	6200	6525	6850	7175	7500
ADD	1999	1825	1625	1425	1125	825	0	675	1900	2850	3175	3500	3825	4150	4475	4800	5125	5450	5775	6100
	1998	2525	2325	2125	1925	1725	1525	1225	925	0	625	1550	2400	2725	3050	3375	3700	4025	4350	4675
	1997	2875	2775	2675	2525	2375	2225	2025	1825	1625	1325	1025	0	550	1200	1900	2225	2550	2875	3200
	1996	3075	2975	2875	2775	2675	2575	2425	2275	2125	1925	1725	1525	1225	925	0	525	1025	1700	2025
	1995	3175	3075	2975	2875	2775	2675	2525	2375	2225	2025	1825	1625	1325	1050	750	450	0	450	875
	1994	3275	3175	3075	2975	2875	2775	2625	2475	2325	2125	1925	1725	1425	1150	850	550			0
Schedule (4)																				
Original SRP/POE Price \$50,000 and Up																				
	2000	1150	950	0	850	2550	3775	4150	4525	4900	5275	5650	6025	6400	6775	7150	7525	7900	8275	8650
ADD	1999	2150	1950	1750	1400	1050	0	800	2125	3225	3600	3975	4350	4725	5100	5475	5850	6225	6600	6975
	1998	2850	2650	2450	2250	2050	1850	1500	1150	0	725	1775	2750	3125	3500	3875	4250	4625	5000	5375
	1997	3200	3100	3000	2850	2700	2550	2350	2150	1950	1600	1250	0	675	1350	2175	2550	2925	3300	3875
	1996	3400	3300	3200	3100	3000	2900	2750	2600	2450	2250	2050	1850	1500	1150	0	625	1200	1975	2350
	1995	3500	3400	3300	3200	3100	3000	2850	2700	2550	2350	2150	1950	1600	1300	950	600	0	575	1050
	1994	3600	3500	3400	3300	3200	3100	2950	2800	2650	2500	2300	2100	1850	1450	1100	750			0

Maximum Addition or Deduction Should not Exceed 50% of the Published Wholesale Value

Transport Canada provided national level average annual vkm by vehicle type for Year 2000. This average annual vkm information are used as the basis for vehicle depreciation, insurance, and other cost estimates. The average annual vkm by vehicle type for year 2000 is presented in Exhibit 4.2.

Exhibit 4.2: Average Annual vkm by Body Type for Year 2000 (source: Transport Canada) (km/ year)

Vehicle Type	Vehicle Age					
	2 and under	3 to 5	6 to 8	9 to 11	12 to 14	15 plus
Car/Station Wagon	20015	18606	13662	15996	14279	7608
Van	22353	20797	18835	14568	11693	20427
SUV	23133	20607	19840	13485	13269	10746
Pickup	20963	18543	19506	14187	15144	14386

Red Book values for years 2001 and 2000 were used to determine the depreciation rate for the most common type of each vehicle and vintage in the list (e.g., Honda Civic has more than 10 different models for specific year). This resulted in obtaining vehicle values and performing the depreciation calculations for over 2,750 different entries. Year 2001 prices are converted to year 2000 dollar value using CANSIM's consumer price indices and depreciation costs are estimated by subtracting year 2001 from year 2000 values. To make the results consistent with Transport Canada's study, age-based depreciation values are averaged across 3-year vehicle vintages (0-2, 3-5, 6-8, 9-11, 12-14, and 15+ years old). Vehicle depreciation estimates for different vehicles are then adjusted for the annual vehicle vkm (Exhibit 4.2) and the vehicle retail price adjustment values (Exhibit 4.1). Exhibit 4.3 presents summary results of final depreciation estimates. Annual depreciation estimates are then divided by annual vkm to estimate per km vehicle depreciation cost. These estimates are reported in Exhibit 4.4.

A number of factors affect the depreciation costs of any one vehicle type. Purchase price can vary by several thousand dollars depending upon options included in the sale price including engine size, transmission type, interior features, paint finish, power features (door locks, windows), security features, sound system, global positioning system, etc. These features can add to the prices noted in this report.

Exhibit 4.3: Average Annual Vehicle Depreciation by Province (\$, yr 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	4036	2984	2984	2984	2927	3829	3885	2984	3961	3013	3069	4074	2984
	2	2583	2535	2535	2535	2486	2450	2486	2535	2535	2559	2607	2607	2535
	3	984	966	966	966	948	934	948	966	966	975	1446	994	966
	4	331	324	324	324	364	314	318	324	324	328	334	421	324
	5	203	385	189	189	185	183	185	189	189	191	194	390	189
	6	203	200	200	200	196	193	196	200	200	201	205	205	200
Sub-compact	1	2304	2261	2261	2261	2218	2186	2218	2368	2368	2391	2326	2757	2261
	2	1831	1613	1613	1613	1582	1736	1532	1689	1796	2223	1841	1683	1613
	3	954	937	937	937	919	905	919	877	937	946	870	899	937
	4	475	454	454	466	445	450	334	338	413	417	476	425	466
	5	223	218	327	218	214	316	214	315	327	330	225	329	327
	6	59	2	58	58	58	57	3	59	70	70	60	3	59
Compact	1	2120	2046	2012	1977	1491	2195	1939	1977	1977	2292	1558	3084	2012
	2	2147	2107	1879	1636	1766	2037	1843	1879	1879	1817	1683	1535	2107
	3	716	832	752	832	922	726	737	900	752	998	856	710	752
	4	196	258	312	193	306	301	306	378	312	443	400	355	312
	5	138	164	202	109	176	195	79	164	132	331	337	153	202
	6	2	2	2	2	54	2	2	111	111	113	114	2	2
Midsize	1	2342	3194	2298	2765	2800	2945	2742	2795	2765	2791	2875	2832	2765
	2	2511	2488	2488	2488	2302	2405	2118	2061	2276	2370	2392	2196	2488
	3	943	1109	855	927	942	1145	982	1081	1114	981	1103	1168	1106
	4	500	603	548	548	405	530	511	509	509	497	476	524	548
	5	235	267	239	239	226	258	226	232	232	120	77	232	230
	6	44	282	3	152	187	184	149	4	191	42	4	206	191
Full-size	1	5186	5084	4572	4596	4508	4443	4508	4572	4468	4511	4644	5125	4596
	2	3219	3073	3253	3253	2688	2758	2890	3032	2947	2989	3110	3385	2947
	3	1729	1500	1500	1500	1624	1523	1485	1430	1389	1514	1661	1518	1500
	4	637	705	696	685	715	705	715	713	720	916	867	668	729
	5	432	499	499	424	552	510	473	453	453	620	518	323	482
	6	131	128	128	128	262	146	126	128	128	130	176	156	128
Stationwagon	1	1755	1722	1722	1722	1689	3617	3671	3742	3742	3778	853	1771	1722
	2	1721	1688	1688	1688	1656	1632	1278	1303	1303	1704	1737	1737	1688
	3	856	683	683	683	991	660	670	683	683	689	1822	702	683
	4	168	317	466	165	457	307	311	317	317	320	480	480	317
	5	293	312	239	434	235	301	282	288	328	438	446	446	239
	6	3	3	3	3	3	3	388	3	3	3	3	3	3
Minivans	1	3259	3011	3011	3011	3314	3085	3130	3419	3365	3397	3461	3461	3191
	2	2223	1958	1958	2182	2140	1892	1920	1958	1958	1976	2014	2014	1958
	3	1134	1195	1195	1113	1092	1155	1172	1195	1195	1072	1229	1229	1195
	4	797	782	782	782	767	756	840	857	857	789	804	882	782
	5	455	314	447	447	242	239	242	247	247	451	460	323	447
	6	167	164	164	164	161	158	161	164	164	165	168	168	164
Pass. Van	1	2375	3318	3318	2331	3255	3207	2287	2331	2331	3350	2398	3184	3318
	2	2203	2162	2162	2162	2121	2829	2121	2067	2162	2183	2224	2224	2162
	3	2170	2129	2129	2129	2089	2058	2089	2129	2129	2150	2190	2190	2129
	4	1763	1730	1730	1730	1697	1673	1697	1730	1730	1747	1780	1780	1730
	5	943	925	925	925	907	616	907	925	925	934	951	951	925
	6	261	400	387	387	251	248	251	361	361	391	399	372	387
Cargo Van	1	2477	2905	2431	2431	2384	2350	2384	2431	2431	2454	3181	2461	2431
	2	1971	1934	1692	1692	1659	1635	1659	1934	1692	1708	1128	1740	1692
	3	1272	863	863	1275	1250	1232	1250	1152	1248	1260	1311	1311	1275
	4	498	849	1025	849	479	472	479	488	488	1035	1055	874	488
	5	284	305	305	305	75	177	299	305	305	77	431	313	305
	6	181	4	4	6	110	109	110	112	112	113	116	116	112
Special PV	1	4412	4267	4927	5262	5066	4763	5162	5262	5262	4579	4192	4408	4927
	2	3814	3743	3743	3743	2981	3618	3671	3743	3743	3753	3984	3253	3743
	3	1772	1804	2008	1919	1883	1744	1769	1804	1804	2297	2435	1942	1804
	4	1623	1593	1593	1197	1432	1594	1617	1707	1707	1724	1787	1787	1707
	5	1027	782	782	782	767	756	767	741	782	927	902	741	782
	6	425	417	417	313	307	403	409	417	417	421	557	322	417
Pickups	1	1746	1713	1743	1713	1784	1656	1681	1713	1719	1818	1768	1768	1713
	2	2218	2078	1726	2078	1593	2104	2135	2176	2098	2032	1541	2137	2176
	3	1701	1670	1605	1839	1575	1614	1804	1811	1839	1723	1741	1891	1839
	4	1324	1162	1181	1181	914	1256	1275	1300	1300	990	1186	1265	1300
	5	647	634	634	634	461	613	622	711	683	598	609	702	634
	6	216	212	212	245	201	81	115	147	138	253	225	218	212

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

Exhibit 4.4: Per KM Vehicle Depreciation Cost by Province (\$/km, yr 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada	
Two-Seaters	1	0.202	0.149	0.149	0.149	0.146	0.191	0.194	0.149	0.198	0.151	0.153	0.204	0.149	
	2	0.139	0.136	0.136	0.136	0.134	0.132	0.134	0.136	0.136	0.138	0.140	0.140	0.136	
	3	0.072	0.071	0.071	0.071	0.069	0.068	0.069	0.071	0.071	0.071	0.106	0.073	0.071	
	4	0.021	0.020	0.020	0.020	0.023	0.020	0.020	0.020	0.020	0.020	0.020	0.021	0.026	0.020
	5	0.014	0.027	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.014	0.027	0.013
	6	0.027	0.026	0.026	0.026	0.026	0.025	0.026	0.026	0.026	0.026	0.026	0.027	0.027	0.026
Sub-compact	1	0.115	0.113	0.113	0.113	0.111	0.109	0.111	0.118	0.118	0.119	0.116	0.138	0.113	
	2	0.098	0.087	0.087	0.087	0.085	0.093	0.082	0.091	0.097	0.119	0.099	0.090	0.087	
	3	0.070	0.069	0.069	0.069	0.067	0.066	0.067	0.064	0.069	0.069	0.064	0.066	0.069	
	4	0.030	0.028	0.028	0.029	0.028	0.028	0.021	0.021	0.026	0.026	0.030	0.027	0.029	
	5	0.016	0.015	0.023	0.015	0.015	0.022	0.015	0.022	0.023	0.023	0.016	0.023	0.023	
	6	0.008	0.000	0.008	0.008	0.008	0.008	0.008	0.000	0.008	0.009	0.009	0.008	0.000	0.008
Compact	1	0.106	0.102	0.101	0.099	0.075	0.110	0.097	0.099	0.099	0.115	0.078	0.154	0.101	
	2	0.115	0.113	0.101	0.088	0.095	0.109	0.099	0.101	0.101	0.098	0.090	0.082	0.113	
	3	0.052	0.061	0.055	0.061	0.067	0.053	0.054	0.066	0.055	0.073	0.063	0.052	0.055	
	4	0.012	0.016	0.019	0.012	0.019	0.019	0.019	0.024	0.019	0.028	0.025	0.022	0.019	
	5	0.010	0.011	0.014	0.008	0.012	0.014	0.006	0.011	0.009	0.023	0.024	0.011	0.014	
	6	0.000	0.000	0.000	0.000	0.007	0.000	0.000	0.015	0.015	0.015	0.015	0.000	0.000	
Midsize	1	0.117	0.160	0.115	0.138	0.140	0.147	0.137	0.140	0.138	0.139	0.144	0.141	0.138	
	2	0.135	0.134	0.134	0.134	0.124	0.129	0.114	0.111	0.122	0.127	0.129	0.118	0.134	
	3	0.069	0.081	0.063	0.068	0.069	0.084	0.072	0.079	0.082	0.072	0.081	0.085	0.081	
	4	0.031	0.038	0.034	0.034	0.025	0.033	0.032	0.032	0.032	0.031	0.030	0.033	0.034	
	5	0.016	0.019	0.017	0.017	0.016	0.018	0.016	0.016	0.016	0.008	0.005	0.016	0.016	
	6	0.006	0.037	0.000	0.020	0.025	0.024	0.020	0.001	0.025	0.006	0.000	0.027	0.025	
Full-size	1	0.259	0.254	0.228	0.230	0.225	0.222	0.225	0.228	0.223	0.225	0.232	0.256	0.230	
	2	0.173	0.165	0.175	0.175	0.144	0.148	0.155	0.163	0.158	0.161	0.167	0.182	0.158	
	3	0.127	0.110	0.110	0.110	0.119	0.111	0.109	0.105	0.102	0.111	0.122	0.111	0.110	
	4	0.040	0.044	0.043	0.043	0.045	0.044	0.045	0.045	0.045	0.057	0.054	0.042	0.046	
	5	0.030	0.035	0.035	0.030	0.039	0.036	0.033	0.032	0.032	0.043	0.036	0.023	0.034	
	6	0.017	0.017	0.017	0.017	0.034	0.019	0.017	0.017	0.017	0.017	0.023	0.021	0.017	
Stationwagon	1	0.088	0.086	0.086	0.086	0.084	0.181	0.183	0.187	0.187	0.189	0.043	0.088	0.086	
	2	0.092	0.091	0.091	0.091	0.089	0.088	0.069	0.070	0.070	0.092	0.093	0.093	0.091	
	3	0.063	0.050	0.050	0.050	0.073	0.048	0.049	0.050	0.050	0.050	0.133	0.051	0.050	
	4	0.011	0.020	0.029	0.010	0.029	0.019	0.019	0.020	0.020	0.020	0.030	0.030	0.020	
	5	0.021	0.022	0.017	0.030	0.016	0.021	0.020	0.020	0.023	0.031	0.031	0.031	0.017	
	6	0.000	0.000	0.000	0.000	0.000	0.000	0.051	0.000	0.000	0.000	0.000	0.000	0.000	
Minivans	1	0.146	0.135	0.135	0.135	0.148	0.138	0.140	0.153	0.151	0.152	0.155	0.155	0.143	
	2	0.107	0.094	0.094	0.105	0.103	0.091	0.092	0.094	0.094	0.095	0.097	0.097	0.094	
	3	0.060	0.063	0.063	0.059	0.058	0.061	0.062	0.063	0.063	0.057	0.065	0.065	0.063	
	4	0.055	0.054	0.054	0.054	0.053	0.052	0.058	0.059	0.059	0.054	0.055	0.061	0.054	
	5	0.039	0.027	0.038	0.038	0.021	0.020	0.021	0.021	0.021	0.039	0.039	0.028	0.038	
	6	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	
Pass. Van	1	0.106	0.148	0.148	0.104	0.146	0.143	0.102	0.104	0.104	0.150	0.107	0.142	0.148	
	2	0.106	0.104	0.104	0.104	0.102	0.136	0.102	0.099	0.104	0.105	0.107	0.107	0.104	
	3	0.115	0.113	0.113	0.113	0.111	0.109	0.111	0.113	0.113	0.114	0.116	0.116	0.113	
	4	0.121	0.119	0.119	0.119	0.117	0.115	0.117	0.119	0.119	0.120	0.122	0.122	0.119	
	5	0.081	0.079	0.079	0.079	0.078	0.053	0.078	0.079	0.079	0.080	0.081	0.081	0.079	
	6	0.013	0.020	0.019	0.019	0.012	0.012	0.012	0.018	0.018	0.019	0.020	0.018	0.019	
Cargo Van	1	0.111	0.130	0.109	0.109	0.107	0.105	0.107	0.109	0.109	0.110	0.142	0.110	0.109	
	2	0.095	0.093	0.081	0.081	0.080	0.079	0.080	0.093	0.081	0.082	0.054	0.084	0.081	
	3	0.068	0.046	0.046	0.068	0.066	0.065	0.066	0.061	0.066	0.067	0.070	0.070	0.068	
	4	0.034	0.058	0.070	0.058	0.033	0.032	0.033	0.034	0.034	0.071	0.072	0.060	0.034	
	5	0.024	0.026	0.026	0.026	0.006	0.015	0.026	0.026	0.026	0.007	0.037	0.027	0.026	
	6	0.009	0.000	0.000	0.000	0.005	0.005	0.005	0.006	0.006	0.006	0.006	0.006	0.006	
Special PV	1	0.191	0.184	0.213	0.227	0.219	0.206	0.223	0.227	0.227	0.198	0.181	0.191	0.213	
	2	0.185	0.182	0.182	0.182	0.145	0.176	0.178	0.182	0.182	0.182	0.193	0.158	0.182	
	3	0.089	0.091	0.101	0.097	0.095	0.088	0.089	0.091	0.091	0.116	0.123	0.098	0.091	
	4	0.120	0.118	0.118	0.089	0.106	0.118	0.120	0.127	0.127	0.128	0.133	0.133	0.127	
	5	0.077	0.059	0.059	0.059	0.058	0.057	0.058	0.056	0.059	0.070	0.068	0.056	0.059	
	6	0.040	0.039	0.039	0.029	0.029	0.037	0.038	0.039	0.039	0.039	0.052	0.030	0.039	
Pickups	1	0.083	0.082	0.083	0.082	0.085	0.079	0.080	0.082	0.082	0.087	0.084	0.084	0.082	
	2	0.120	0.112	0.093	0.112	0.086	0.113	0.115	0.117	0.113	0.110	0.083	0.115	0.117	
	3	0.087	0.086	0.082	0.094	0.081	0.083	0.092	0.093	0.094	0.088	0.089	0.097	0.094	
	4	0.093	0.082	0.083	0.083	0.064	0.089	0.090	0.092	0.092	0.070	0.084	0.089	0.092	
	5	0.043	0.042	0.042	0.042	0.030	0.040	0.041	0.047	0.045	0.039	0.040	0.046	0.042	
	6	0.015	0.015	0.015	0.017	0.014	0.006	0.008	0.010	0.010	0.018	0.016	0.015	0.015	

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

4.1 Finance Charges:

Statistics Canada's CANSIM database was used to determine the number of financed vehicles for each province. No information was found available on financed cars in the territories. Using Bank of Canada's published year 2000 bank interest rate (avg. 5.77%) and the weighted national average annual utilization rate of 20,884 km for vehicles 0 to 2 years of age and 19,136 km for vehicles 3 to 5 years (estimated km based on data provided by Transport Canada), per km finance charges are estimated and summarized in Exhibit 4.5.

Exhibit 4.5: Per Km Estimates of Finance Charges for Financed Vehicles¹
 (\$, yr 2000)

	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
Vehicle loans (1999 \$ million)	29089	638	141	1174	1017	6380	10021	1075	1389	3477	3777
Number of Cars	15289096	232431	66559	478811	411086	3545754	5846792	545266	508249	1691266	1926610
Number of Cars (0-5 years)	6086241	95653	18321	188641	159588	1444612	2446209	200809	180389	665561	672227
Vehicle loans per HH	2561	3378	2798	3348	3684	2177	2380	2635	3728	3291	2490
Veh loans per veh 5 years and under	4779	6670	7696	6223	6373	4416	4097	5353	7700	5224	5619
Finance Charges per veh	275.8	384.9	444.1	359.1	367.7	254.8	236.4	308.9	444.3	301.4	324.2
Estimated weighted finance Charges per veh 0-2 years	355.1	495.6	571.8	462.4	473.5	328.1	304.4	397.7	572.1	388.1	417.5
Estimated weighted finance Charges per veh 3-5 years	198.5	277.0	319.6	258.4	264.6	183.4	170.1	222.3	319.7	216.9	233.3
Estimated weighted finance Charges per km for veh 0-2 years	0.017	0.024	0.027	0.022	0.023	0.016	0.015	0.019	0.027	0.019	0.020
Estimated weighted finance Charges per km for veh 3-5 years	0.010	0.014	0.017	0.014	0.014	0.010	0.009	0.012	0.017	0.011	0.012

4.2 Social Opportunity Costs:

In a commuter society, a dependable vehicle can play a major role in household's financial prosperity. Therefore, for many people, purchasing a new or used car is a major investment. Exhibit 4.6 presents average vehicle values obtained for most popular vehicles by provinces (see Appendix 1) used in this study.

¹ Total number of vehicles used in this analysis is 15,289,096 as provided by Transport Canada. This total is less than national fleet size reported in Statistics Canada's year 2000 vehicle registration database of 16,832,180 which also includes commercially used cars and light trucks.

Costs of Autos and Light trucks in Canada

Exhibit 4.6: Average Vehicle Values (\$, yr. 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	55688	23993	23993	23993	23536	52826	53606	23993	54647	24221	24678	56209	23993
	2	12233	12005	12005	12005	11776	11604	11776	12005	12005	12119	12348	12348	12005
	3	7062	6930	6930	6930	6798	6699	6798	6930	6930	6996	11250	7128	6930
	4	7557	7416	7416	7416	3932	7169	7275	7416	7416	7487	7628	5427	7416
	5	2033	3263	1890	1890	1854	1827	1854	1890	1890	1908	1944	3996	1890
	6	2033	1995	1995	1995	1957	1929	1957	1995	1995	2014	2052	2052	1995
Sub-compact	1	15037	14756	14756	14756	14475	14264	14475	16640	16640	16799	15177	17293	14756
	2	10203	9273	9273	9273	9096	9678	8141	9176	10012	13652	10300	9371	9273
	3	5372	5272	5272	5272	5172	5096	5172	5018	5272	5322	4975	4851	5272
	4	3147	2863	2863	3089	2809	2986	2732	2586	3016	3045	2972	3103	3089
	5	1440	1413	1956	1426	1386	1891	1399	1787	1956	1975	1454	1922	1956
	6	774	732	742	760	966	952	874	919	1291	1219	926	898	984
Compact	1	16609	16161	16839	16702	15785	17293	16384	16702	16702	18060	16195	18356	16839
	2	11230	11021	9982	9846	10999	10653	9791	9982	9982	11320	10127	9266	11021
	3	4445	5265	5259	5265	6630	5084	5159	5911	5259	7257	5416	4770	5259
	4	2390	2914	3388	2345	3324	3275	3324	2975	3388	4297	3026	3674	3388
	5	1522	1605	1818	1448	1624	1728	1240	1605	1579	2248	2290	1501	1787
	6	694	668	668	668	722	658	631	995	995	1043	1010	700	681
Midsize	1	21127	20953	20733	20923	23273	21828	19831	20216	20923	21122	20794	20263	20923
	2	12292	13438	13438	13438	12162	12990	12057	11467	11955	14180	12872	11227	13438
	3	5366	6099	5200	5053	5895	6354	5701	6002	6720	5982	5827	6197	6383
	4	3285	3514	3398	3398	2888	3285	3223	3341	3341	3390	3342	3437	3398
	5	1957	2325	1877	1877	1884	2248	1884	2194	2194	1747	1622	2329	1920
	6	1267	1211	852	1529	1042	1123	1295	1358	1437	760	1198	1222	1437
Full-size	1	24646	24914	24358	23918	23462	23121	23462	24358	23976	24204	23613	23860	23918
	2	14077	14490	14733	14733	13536	13869	14060	14591	14333	14074	14884	15117	14333
	3	7704	7998	7998	7998	7487	7985	8015	7840	7912	8074	7776	8192	7998
	4	4697	4974	4931	4906	4965	4893	4965	4963	5018	5686	5339	4831	5062
	5	3190	3299	3299	3130	3425	3301	3378	3327	3327	3849	3521	2799	3443
	6	1986	1949	1949	1949	2244	1884	1912	1949	1949	1968	2121	2221	1949
Stationwagon	1	15362	15075	15075	15075	14788	19511	19800	20184	20184	20376	17980	15506	15075
	2	9407	9232	9232	9232	9056	8924	10900	11112	11112	9320	9495	9495	9232
	3	4289	5626	5626	5626	4283	5438	5519	5626	5626	5679	8298	5787	5626
	4	2630	3806	4077	2581	3999	3679	3734	3806	3806	3843	4194	4194	3806
	5	2666	1960	1208	1846	1185	1895	2567	2617	1628	1863	1899	1899	1208
	6	1124	761	1103	761	747	1066	812	1103	761	769	783	783	761
Minivans	1	22291	22441	22441	22441	21503	21737	22059	23268	23941	24169	24625	24625	22487
	2	13286	13153	13153	13038	12789	12715	12903	13153	13153	13279	13529	13529	13153
	3	7166	7348	7348	7032	6898	7103	7208	7348	7348	7305	7558	7558	7348
	4	4668	4581	4581	4581	4493	4428	4590	4679	4679	4624	4712	5405	4581
	5	2833	2710	2780	2780	2210	2178	2210	2253	2253	2807	2860	2787	2780
	6	2294	2251	2251	2251	2208	2176	2208	2251	2251	2273	2316	2316	2251
Pass. Van	1	21735	23213	23213	21329	22771	22440	20922	21329	21329	23434	21938	25739	23213
	2	10451	10255	10255	10255	10060	14177	10060	13265	10255	10353	10548	10548	10255
	3	5805	5696	5696	5696	5588	5506	5588	5696	5696	5751	5859	5859	5696
	4	4048	3972	3972	3972	3896	3840	3896	3972	3972	4010	4086	4086	3972
	5	3005	2948	2948	2948	2892	2935	2892	2948	2948	2976	3033	3033	2948
	6	2448	1864	2302	2302	2357	2322	2357	2481	2481	2324	2367	2552	2302
Cargo Van	1	21712	20255	21307	21307	20901	20596	20901	21307	21307	21510	22121	21400	21307
	2	10103	9914	10325	10325	10128	9980	10128	9914	10325	10423	7209	10620	10325
	3	5939	863	5250	5618	5511	5430	5511	5434	5828	5883	5778	5778	5618
	4	2916	3754	4130	3754	2807	2766	2807	2861	2861	4169	4464	3861	2861
	5	2666	2651	2651	2651	2000	2428	2601	2651	2651	2059	3051	2727	2651
	6	2113	1339	1339	1870	1945	1916	1945	1982	1982	2001	2039	2039	1982
Special PV	1	28112	26982	28174	27916	28745	27235	27385	27916	27916	29661	26486	27868	28174
	2	17367	17043	17043	17043	16652	16475	16718	17043	17043	18367	18094	16803	17043
	3	8349	8931	9490	8850	8681	8633	8760	8931	8931	10548	10509	9493	8931
	4	5401	5300	5300	4681	4935	5492	5573	5635	5635	5689	6732	6732	5635
	5	3165	3185	3185	3185	3124	3079	3124	3268	3185	3189	3363	2700	3185
	6	1808	1774	1774	1488	1460	1715	1740	1774	1774	1791	2371	1531	1774
Pickups	1	21325	20927	19793	20927	19996	20229	20528	20927	20596	21260	22080	21184	20927
	2	13161	12204	11865	12204	11084	12485	12669	12915	12972	13330	12627	12553	12915
	3	7463	7159	6880	7531	6749	7079	7388	8056	7531	7285	7193	7747	7531
	4	4951	4618	4570	4570	3751	4696	4766	4858	4858	4129	4720	4974	4858
	5	2782	2730	2730	2730	2279	2639	2678	2865	2811	2414	2459	2891	2730
	6	1560	1531	1531	1626	1384	1458	1573	1772	1913	1398	1536	1575	1531

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

Social opportunity costs of vehicle capital investment are the sum of private and external benefits that could have been accomplished by the owner of the vehicle with the resources expended in the vehicle. This is the value capital would have earned if it is invested in other parts of the economy. In other words, the social opportunity cost represents opportunities forgone. Using average annual vkm (Exhibit 4.2), per KM social opportunity costs of capital in this study are estimated for two rate of return of 6% and 8.6%. These estimates are presented in Exhibits 4.7 and 4.8.

Exhibit 4.7: Social Opportunity Cost Estimates (6% rate of return) (\$/km, yr 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada	
Two-Seaters	1	0.167	0.072	0.072	0.072	0.071	0.158	0.161	0.072	0.164	0.073	0.074	0.168	0.072	
	2	0.039	0.039	0.039	0.039	0.038	0.037	0.038	0.039	0.039	0.039	0.040	0.040	0.039	
	3	0.031	0.030	0.030	0.030	0.030	0.029	0.030	0.030	0.030	0.030	0.031	0.049	0.031	
	4	0.028	0.028	0.028	0.028	0.015	0.027	0.027	0.028	0.028	0.028	0.029	0.020	0.028	
	5	0.009	0.014	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.017	0.008	
	6	0.016	0.016	0.016	0.016	0.015	0.015	0.015	0.016	0.016	0.016	0.016	0.016	0.016	0.016
Sub-compact	1	0.045	0.044	0.044	0.044	0.043	0.043	0.043	0.050	0.050	0.050	0.045	0.052	0.044	
	2	0.033	0.030	0.030	0.030	0.029	0.031	0.026	0.030	0.032	0.044	0.033	0.030	0.030	
	3	0.024	0.023	0.023	0.023	0.023	0.022	0.023	0.022	0.023	0.023	0.022	0.021	0.023	
	4	0.012	0.011	0.011	0.012	0.011	0.011	0.010	0.010	0.011	0.011	0.011	0.011	0.012	0.012
	5	0.006	0.006	0.008	0.006	0.006	0.008	0.006	0.008	0.008	0.008	0.008	0.006	0.008	0.008
	6	0.006	0.006	0.006	0.006	0.008	0.008	0.007	0.007	0.010	0.010	0.007	0.007	0.007	0.008
Compact	1	0.050	0.048	0.050	0.050	0.047	0.052	0.049	0.050	0.050	0.054	0.049	0.055	0.050	
	2	0.036	0.036	0.032	0.032	0.035	0.034	0.032	0.032	0.032	0.037	0.033	0.030	0.036	
	3	0.020	0.023	0.023	0.023	0.029	0.022	0.023	0.026	0.023	0.032	0.024	0.021	0.023	
	4	0.009	0.011	0.013	0.009	0.012	0.012	0.012	0.011	0.013	0.016	0.011	0.014	0.013	
	5	0.006	0.007	0.008	0.006	0.007	0.007	0.005	0.007	0.007	0.009	0.010	0.006	0.008	
	6	0.005	0.005	0.005	0.005	0.006	0.005	0.005	0.008	0.008	0.008	0.008	0.008	0.006	0.005
Midsize	1	0.063	0.063	0.062	0.063	0.070	0.065	0.059	0.061	0.063	0.063	0.062	0.061	0.063	
	2	0.040	0.043	0.043	0.043	0.039	0.042	0.039	0.037	0.039	0.046	0.042	0.036	0.043	
	3	0.024	0.027	0.023	0.022	0.026	0.028	0.025	0.026	0.030	0.026	0.026	0.027	0.028	
	4	0.012	0.013	0.013	0.013	0.011	0.012	0.012	0.013	0.013	0.013	0.013	0.013	0.013	
	5	0.008	0.010	0.008	0.008	0.008	0.009	0.008	0.009	0.009	0.009	0.007	0.007	0.010	0.008
	6	0.010	0.010	0.007	0.012	0.008	0.009	0.010	0.011	0.011	0.011	0.006	0.009	0.010	0.011
Full-size	1	0.074	0.075	0.073	0.072	0.070	0.069	0.070	0.073	0.072	0.073	0.071	0.072	0.072	
	2	0.045	0.047	0.048	0.048	0.044	0.045	0.045	0.047	0.046	0.045	0.048	0.049	0.046	
	3	0.034	0.035	0.035	0.035	0.033	0.035	0.035	0.034	0.035	0.035	0.034	0.036	0.035	
	4	0.018	0.019	0.018	0.018	0.019	0.018	0.019	0.019	0.019	0.021	0.020	0.018	0.019	
	5	0.013	0.014	0.014	0.013	0.014	0.014	0.014	0.014	0.014	0.014	0.016	0.015	0.012	0.014
	6	0.016	0.015	0.015	0.015	0.018	0.015	0.015	0.015	0.015	0.015	0.016	0.017	0.018	0.015
Stationwagon	1	0.046	0.045	0.045	0.045	0.044	0.058	0.059	0.061	0.061	0.061	0.054	0.046	0.045	
	2	0.030	0.030	0.030	0.030	0.029	0.029	0.035	0.036	0.036	0.030	0.031	0.031	0.030	
	3	0.019	0.025	0.025	0.025	0.019	0.024	0.024	0.025	0.025	0.025	0.036	0.025	0.025	
	4	0.010	0.014	0.015	0.010	0.015	0.014	0.014	0.014	0.014	0.014	0.016	0.016	0.014	
	5	0.011	0.008	0.005	0.008	0.005	0.008	0.011	0.011	0.007	0.008	0.008	0.008	0.005	
	6	0.009	0.006	0.009	0.006	0.006	0.008	0.006	0.009	0.006	0.006	0.006	0.006	0.006	0.006
Minivans	1	0.060	0.060	0.060	0.060	0.058	0.058	0.059	0.062	0.064	0.065	0.066	0.066	0.060	
	2	0.038	0.038	0.038	0.038	0.037	0.037	0.037	0.038	0.038	0.038	0.039	0.039	0.038	
	3	0.023	0.023	0.023	0.022	0.022	0.023	0.023	0.023	0.023	0.023	0.024	0.024	0.023	
	4	0.019	0.019	0.019	0.019	0.019	0.018	0.019	0.019	0.019	0.019	0.019	0.022	0.019	
	5	0.015	0.014	0.014	0.014	0.011	0.011	0.011	0.012	0.012	0.012	0.014	0.015	0.014	0.014
	6	0.007	0.007	0.007	0.007	0.006	0.006	0.006	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Pass. Van	1	0.058	0.062	0.062	0.057	0.061	0.060	0.056	0.057	0.057	0.063	0.059	0.069	0.062	
	2	0.030	0.030	0.030	0.030	0.029	0.041	0.029	0.038	0.030	0.030	0.030	0.030	0.030	
	3	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.019	0.019	0.018	
	4	0.017	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.017	0.017	0.017	0.016	
	5	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.016	0.015	0.015
	6	0.007	0.005	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Cargo Van	1	0.058	0.054	0.057	0.057	0.056	0.055	0.056	0.057	0.057	0.058	0.059	0.057	0.057	
	2	0.029	0.029	0.030	0.030	0.029	0.029	0.029	0.029	0.030	0.030	0.021	0.031	0.030	
	3	0.019	0.003	0.017	0.018	0.018	0.017	0.018	0.017	0.019	0.019	0.018	0.018	0.018	
	4	0.012	0.015	0.017	0.015	0.012	0.011	0.012	0.012	0.012	0.012	0.017	0.018	0.016	0.012
	5	0.014	0.014	0.014	0.014	0.010	0.012	0.013	0.014	0.014	0.014	0.011	0.016	0.014	0.014
	6	0.006	0.004	0.004	0.005	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
Special PV	1	0.073	0.070	0.073	0.072	0.075	0.071	0.071	0.072	0.072	0.077	0.069	0.072	0.073	
	2	0.051	0.050	0.050	0.050	0.048	0.048	0.049	0.050	0.050	0.053	0.053	0.049	0.050	
	3	0.025	0.027	0.029	0.027	0.026	0.026	0.026	0.027	0.027	0.032	0.032	0.029	0.027	
	4	0.024	0.024	0.024	0.021	0.022	0.024	0.025	0.025	0.025	0.025	0.030	0.030	0.025	
	5	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.014	0.015	0.014	0.014	0.015	0.012	0.014
	6	0.010	0.010	0.010	0.008	0.008	0.010	0.010	0.010	0.010	0.010	0.010	0.013	0.009	0.010
Pickups	1	0.061	0.060	0.057	0.060	0.057	0.058	0.059	0.060	0.059	0.061	0.063	0.061	0.060	
	2	0.043	0.039	0.038	0.039	0.036	0.040	0.041	0.042	0.042	0.043	0.041	0.041	0.042	
	3	0.023	0.022	0.021	0.023	0.021	0.022	0.023	0.025	0.023	0.023	0.022	0.024	0.023	
	4	0.021	0.020	0.019	0.019	0.016	0.020	0.020	0.021	0.021	0.017	0.020	0.021	0.021	
	5	0.011	0.011	0.011	0.011	0.009	0.010	0.011	0.011	0.011	0.011	0.010	0.010	0.011	0.011
	6	0.007	0.006	0.006	0.007	0.006	0.006	0.007	0.007	0.008	0.006	0.006	0.007	0.007	0.006

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

Exhibit 4.8: Social Opportunity Cost Estimates (8.6% rate of return) (\$/km, yr 2000)

Veh Class	Mintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada	
Two-Seaters	1	0.239	0.103	0.103	0.103	0.101	0.227	0.230	0.103	0.235	0.104	0.106	0.242	0.103	
	2	0.057	0.055	0.055	0.055	0.054	0.054	0.054	0.055	0.055	0.056	0.057	0.057	0.055	
	3	0.044	0.044	0.044	0.044	0.043	0.042	0.043	0.044	0.044	0.044	0.044	0.041	0.045	0.044
	4	0.041	0.040	0.040	0.040	0.040	0.021	0.039	0.039	0.040	0.040	0.040	0.041	0.029	0.040
	5	0.012	0.020	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.012	0.024	0.011
	6	0.023	0.023	0.023	0.023	0.022	0.022	0.022	0.022	0.023	0.023	0.023	0.023	0.023	0.023
Sub-compact	1	0.065	0.063	0.063	0.063	0.062	0.061	0.062	0.071	0.071	0.072	0.065	0.074	0.063	
	2	0.047	0.043	0.043	0.043	0.042	0.045	0.038	0.042	0.046	0.063	0.048	0.043	0.043	
	3	0.034	0.033	0.033	0.033	0.033	0.032	0.033	0.032	0.033	0.034	0.031	0.031	0.033	
	4	0.017	0.015	0.015	0.017	0.015	0.016	0.015	0.014	0.016	0.016	0.016	0.017	0.017	
	5	0.009	0.009	0.012	0.009	0.008	0.011	0.008	0.011	0.012	0.012	0.009	0.012	0.012	
	6	0.009	0.008	0.008	0.009	0.011	0.011	0.010	0.010	0.010	0.015	0.014	0.010	0.010	
Compact	1	0.071	0.069	0.072	0.072	0.068	0.074	0.070	0.072	0.072	0.078	0.070	0.079	0.072	
	2	0.052	0.051	0.046	0.046	0.051	0.049	0.045	0.046	0.046	0.052	0.047	0.043	0.051	
	3	0.028	0.033	0.033	0.033	0.042	0.032	0.032	0.037	0.033	0.046	0.034	0.030	0.033	
	4	0.013	0.016	0.018	0.013	0.018	0.018	0.018	0.016	0.018	0.018	0.023	0.016	0.020	0.018
	5	0.009	0.010	0.011	0.009	0.010	0.010	0.007	0.010	0.010	0.014	0.014	0.009	0.011	
	6	0.008	0.008	0.008	0.008	0.008	0.007	0.007	0.011	0.011	0.012	0.011	0.008	0.008	
Midsize	1	0.091	0.090	0.089	0.090	0.100	0.094	0.085	0.087	0.090	0.091	0.089	0.087	0.090	
	2	0.057	0.062	0.062	0.062	0.056	0.060	0.056	0.053	0.055	0.066	0.059	0.052	0.062	
	3	0.034	0.038	0.033	0.032	0.037	0.040	0.036	0.038	0.042	0.038	0.037	0.039	0.040	
	4	0.018	0.019	0.018	0.018	0.016	0.018	0.017	0.018	0.018	0.018	0.018	0.018	0.018	
	5	0.012	0.014	0.011	0.011	0.011	0.014	0.011	0.013	0.013	0.011	0.010	0.014	0.012	
	6	0.014	0.014	0.010	0.017	0.012	0.013	0.015	0.015	0.016	0.009	0.014	0.014	0.016	
Full-size	1	0.106	0.107	0.105	0.103	0.101	0.099	0.101	0.105	0.103	0.104	0.101	0.103	0.103	
	2	0.065	0.067	0.068	0.068	0.063	0.064	0.065	0.067	0.066	0.065	0.069	0.070	0.066	
	3	0.048	0.050	0.050	0.050	0.047	0.050	0.050	0.049	0.050	0.051	0.049	0.052	0.050	
	4	0.025	0.027	0.027	0.026	0.027	0.026	0.027	0.027	0.027	0.031	0.029	0.026	0.027	
	5	0.019	0.020	0.020	0.019	0.021	0.020	0.020	0.020	0.020	0.023	0.021	0.017	0.021	
	6	0.022	0.022	0.022	0.022	0.025	0.021	0.022	0.022	0.022	0.022	0.024	0.025	0.022	
Stationwagon	1	0.066	0.065	0.065	0.065	0.064	0.084	0.085	0.087	0.087	0.088	0.077	0.067	0.065	
	2	0.043	0.043	0.043	0.043	0.042	0.041	0.050	0.051	0.051	0.043	0.044	0.044	0.043	
	3	0.027	0.035	0.035	0.035	0.027	0.034	0.035	0.035	0.035	0.036	0.052	0.036	0.035	
	4	0.014	0.020	0.022	0.014	0.022	0.020	0.020	0.020	0.020	0.021	0.023	0.023	0.020	
	5	0.016	0.012	0.007	0.011	0.007	0.011	0.015	0.016	0.010	0.011	0.011	0.011	0.007	
	6	0.013	0.009	0.012	0.009	0.008	0.012	0.009	0.012	0.009	0.009	0.009	0.009	0.009	
Minivans	1	0.086	0.086	0.086	0.086	0.083	0.084	0.085	0.090	0.092	0.093	0.095	0.095	0.087	
	2	0.055	0.054	0.054	0.054	0.053	0.053	0.053	0.054	0.054	0.055	0.056	0.056	0.054	
	3	0.033	0.034	0.034	0.032	0.031	0.032	0.033	0.034	0.034	0.033	0.035	0.035	0.034	
	4	0.028	0.027	0.027	0.027	0.027	0.026	0.027	0.028	0.028	0.027	0.028	0.032	0.027	
	5	0.021	0.020	0.020	0.020	0.016	0.016	0.016	0.017	0.017	0.021	0.021	0.020	0.020	
	6	0.010	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.010	0.010	0.010	0.009	
Pass. Van	1	0.084	0.089	0.089	0.082	0.088	0.086	0.080	0.082	0.082	0.090	0.084	0.099	0.089	
	2	0.043	0.042	0.042	0.042	0.042	0.059	0.042	0.055	0.042	0.043	0.044	0.044	0.042	
	3	0.027	0.026	0.026	0.026	0.026	0.025	0.026	0.026	0.026	0.026	0.027	0.027	0.026	
	4	0.024	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.024	0.024	0.024	0.023	
	5	0.022	0.022	0.022	0.022	0.021	0.022	0.021	0.022	0.022	0.022	0.022	0.022	0.022	
	6	0.010	0.008	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.011	0.010	
Cargo Van	1	0.084	0.078	0.082	0.082	0.080	0.079	0.080	0.082	0.082	0.083	0.085	0.082	0.082	
	2	0.042	0.041	0.043	0.043	0.042	0.041	0.042	0.041	0.043	0.043	0.030	0.044	0.043	
	3	0.027	0.004	0.024	0.026	0.025	0.025	0.025	0.025	0.027	0.027	0.026	0.026	0.026	
	4	0.017	0.022	0.024	0.022	0.017	0.016	0.017	0.017	0.017	0.025	0.026	0.023	0.017	
	5	0.020	0.019	0.019	0.019	0.015	0.018	0.019	0.019	0.019	0.015	0.022	0.020	0.019	
	6	0.009	0.006	0.006	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.009	0.009	0.008	
Special PV	1	0.105	0.100	0.105	0.104	0.107	0.101	0.102	0.104	0.104	0.110	0.098	0.104	0.105	
	2	0.072	0.071	0.071	0.071	0.069	0.069	0.070	0.071	0.071	0.077	0.076	0.070	0.071	
	3	0.036	0.039	0.041	0.038	0.038	0.037	0.038	0.039	0.039	0.046	0.046	0.041	0.039	
	4	0.034	0.034	0.034	0.030	0.031	0.035	0.036	0.036	0.036	0.036	0.043	0.043	0.036	
	5	0.021	0.021	0.021	0.021	0.020	0.020	0.020	0.021	0.021	0.021	0.022	0.017	0.021	
	6	0.014	0.014	0.014	0.012	0.012	0.014	0.014	0.014	0.014	0.014	0.019	0.012	0.014	
Pickups	1	0.087	0.086	0.081	0.086	0.082	0.083	0.084	0.086	0.084	0.087	0.091	0.087	0.086	
	2	0.061	0.057	0.055	0.057	0.051	0.058	0.059	0.060	0.060	0.062	0.059	0.058	0.060	
	3	0.033	0.032	0.030	0.033	0.030	0.031	0.033	0.036	0.033	0.032	0.032	0.034	0.033	
	4	0.030	0.028	0.028	0.028	0.023	0.028	0.029	0.029	0.029	0.025	0.029	0.030	0.029	
	5	0.016	0.016	0.016	0.016	0.013	0.015	0.015	0.016	0.016	0.014	0.014	0.016	0.016	
	6	0.009	0.009	0.009	0.010	0.008	0.009	0.009	0.011	0.011	0.008	0.009	0.009	0.009	

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

5.0 Registration and License Fees

Current annual costs of registration and driver licences were obtained by contacting the Registrar of Motor Vehicles for each province either through their website or by telephone. Statistics Canada's price index tables were used to adjust registration costs to 2000 rates. As a price index specific to driver licence fees was not available at the provincial level, each province was contacted by phone or email to obtain their 2000 rates. Exhibit 5.1 provides a summary of results.

Dividing these costs by the number of kilometres driven annually derives a per-kilometre cost. These costs account for only a small portion of the total costs of operating an automobile. Exhibit 5.2 shows these costs on a per-kilometre basis for selected annual driving distance.

Exhibit 5.1: Annual Registration and Driver Licence Fees

Province	Vehicle Class	Annual Registration Fee 2005	Annual Registration Fee 2000*	Annual Drivers Licence fee 2005	Annual Drivers Licence fee 2000	Notes and Sources
Newfoundland Labrador	All classes	\$180	\$180	\$20	\$20	http://www.gs.gov.nl.ca/gsmr/
Nova Scotia	two seater sub-compact compact mid-size full-size station wagon pick-up truck mini van passenger van cargo van special purpose	\$71 \$71 \$71 \$71 \$89 \$71 \$89 \$89 \$89 \$89	\$61 \$61 \$61 \$61 \$76 \$61 \$76 \$76 \$76 \$76	\$31.80	\$20.00	Auto registration rates for two year period vary by weight as follows: Up to 1,000 kg.....\$115 1,001 kg to 1,500 kg...\$142 1,501 kg to 3,200 kg...\$178 3,201 kg to 4,100 kg...\$222 4,101 kg to 5,000kg....\$268 http://www.gov.ns.ca/snsmr/rmv/registration/register.asp
PEI	All classes	\$80	\$75	\$16.67	\$16.67	http://www.gov.pe.ca/infopei/index.php3?number=60699&lang=E
New Brunswick	two seater sub-compact compact mid-size full-size station wagon pick-up truck mini van passenger van cargo van special purpose	\$63 \$63 \$63 \$75 \$89 \$89 \$101 \$101 \$101 \$101	\$63 \$63 \$63 \$75 \$89 \$89 \$101 \$101 \$101 \$101	\$15	\$13.50	Annual auto registration rates vary by weight of vehicle as follows: Up to 1,000 kg.....\$50 1,001 kg to 1,200 kg...\$63 1,201 kg to 1,400 kg...\$75 1,401 kg to 1,600 kg...\$89 1,601 kg to 1,800kg....\$101 1,801 kg to 2,000kg....\$117 2,001 kg to 2,200kg....\$133 Exceeding 2,000 kg.....\$156 http://www.gnb.ca

*adjusted from 2005 rates using CANSIM database.

Exhibit 5.1: Annual Registration and Driver Licence Fees (continued)

Province	Vehicle Class	Annual Registration Fee 2005	Annual Registration Fee 2000*	Annual Drivers Licence fee 2005	Annual Drivers Licence fee 2000	Notes and Sources
Quebec	All classes	\$255 \$225 \$173	\$255 \$225 \$173	\$43	\$43	Source: SAAQ personal communication Vehicle registration fee of \$255 applies in cities where public transportation is available; otherwise the rate is \$225. For remote areas, fee is \$173 per annum. Surcharge also applies on vehicles costing over \$40,000. (1% of amount in excess of \$40,000). Vehicle registration fee includes \$104 for insurance; Drivers licence renewal fee (2 year period) for insurance with drivers having 3 or fewer demerit points, increasing to \$365.13 or drivers with 15 or more demerit points.
Ontario	All classes	\$74	\$74	\$15	\$10	Vehicle registration fee in northern Ontario is \$37 http://www.mto.gov.on.ca/english/kiosk/vehicle.htm
Manitoba	All classes	\$99	\$57	\$65	\$60	Source: Manitoba Public Insurance (website email inquiry)
Saskatchewan	All classes	\$68	\$63	\$25	\$25	Source: Saskatchewan Government Insurance. Registration fees are paid at same time as insurance fees.
Alberta	All classes	\$68	\$68	\$17	\$8	2004 fees include \$7 registry agent fee. http://www3.gov.ab.ca/gs/services/mv
B. C.	two seater sub-compact compact mid-size full-size station wagon pick-up truck mini van passenger van cargo van special purpose	\$53 \$53 \$53 \$61 \$61 \$61 \$61 \$61 \$61 \$61 \$61 \$61 \$61	\$53 \$53 \$53 \$61 \$61 \$61 \$61 \$61 \$61 \$61 \$61 \$61 \$61	\$15	\$15	Drivers licence \$75 for 5 years Annual auto registration rates vary by weight as follows: Up to 1,000 kg.....\$46 1,001 kg to 1,400 kg...\$53 1,401 kg to 1,900 kg...\$61 1,901 kg to 2,300 kg...\$84 2,301 kg to 2,800 kg...\$122 Exceeding 2,800 kg....\$142 to http://www.qp.gov.bc.ca?statreg/reg/M/MotorVehicle/334_91.htm

Exhibit 5.2: Costs of Licence and Registration Fees (\$/km, yr. 2000)

Veh Class	Mintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.010	0.005	0.004	0.004	0.007	0.004	0.006	0.004	0.004	0.003	0.005	0.005	0.005
	2	0.011	0.005	0.004	0.004	0.007	0.005	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	3	0.015	0.007	0.006	0.006	0.010	0.006	0.009	0.006	0.006	0.005	0.007	0.007	0.007
	4	0.013	0.006	0.005	0.005	0.009	0.005	0.007	0.006	0.005	0.004	0.006	0.006	0.006
	5	0.014	0.006	0.006	0.005	0.010	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	6	0.026	0.012	0.011	0.010	0.018	0.011	0.015	0.012	0.010	0.009	0.013	0.013	0.013
Sub-compact	1	0.010	0.005	0.004	0.004	0.007	0.004	0.006	0.004	0.004	0.003	0.005	0.005	0.005
	2	0.011	0.005	0.004	0.004	0.007	0.005	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	3	0.015	0.007	0.006	0.006	0.010	0.006	0.009	0.006	0.006	0.005	0.007	0.007	0.007
	4	0.013	0.006	0.005	0.005	0.009	0.005	0.007	0.006	0.005	0.004	0.006	0.006	0.006
	5	0.014	0.006	0.006	0.005	0.010	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	6	0.026	0.012	0.011	0.010	0.018	0.011	0.015	0.012	0.010	0.009	0.013	0.013	0.013
Compact	1	0.010	0.005	0.004	0.004	0.007	0.004	0.006	0.004	0.004	0.003	0.005	0.005	0.005
	2	0.011	0.005	0.004	0.004	0.007	0.005	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	3	0.015	0.007	0.006	0.006	0.010	0.006	0.009	0.006	0.006	0.005	0.007	0.007	0.007
	4	0.013	0.006	0.005	0.005	0.009	0.005	0.007	0.006	0.005	0.004	0.006	0.006	0.006
	5	0.014	0.006	0.006	0.005	0.010	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	6	0.026	0.012	0.011	0.010	0.018	0.011	0.015	0.012	0.010	0.009	0.013	0.013	0.013
Midsize	1	0.010	0.005	0.004	0.004	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
	2	0.011	0.005	0.004	0.005	0.007	0.005	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	3	0.015	0.007	0.006	0.006	0.010	0.006	0.009	0.006	0.006	0.006	0.007	0.007	0.007
	4	0.013	0.006	0.005	0.006	0.009	0.005	0.007	0.006	0.005	0.005	0.006	0.006	0.006
	5	0.014	0.006	0.006	0.006	0.010	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	6	0.026	0.012	0.011	0.012	0.018	0.011	0.015	0.012	0.010	0.010	0.013	0.013	0.013
Full-size	1	0.010	0.005	0.005	0.005	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
	2	0.011	0.005	0.005	0.006	0.007	0.005	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	3	0.015	0.007	0.007	0.008	0.010	0.006	0.009	0.006	0.006	0.006	0.007	0.007	0.007
	4	0.013	0.006	0.006	0.006	0.009	0.005	0.007	0.006	0.005	0.005	0.006	0.006	0.006
	5	0.014	0.006	0.007	0.007	0.010	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	6	0.026	0.012	0.013	0.013	0.018	0.011	0.015	0.012	0.010	0.010	0.013	0.013	0.013
Stationwagon	1	0.010	0.005	0.004	0.005	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
	2	0.011	0.005	0.004	0.006	0.007	0.005	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	3	0.015	0.007	0.006	0.008	0.010	0.006	0.009	0.006	0.006	0.006	0.007	0.007	0.007
	4	0.013	0.006	0.005	0.006	0.009	0.005	0.007	0.006	0.005	0.005	0.006	0.006	0.006
	5	0.014	0.006	0.006	0.007	0.010	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	6	0.026	0.012	0.011	0.013	0.018	0.011	0.015	0.012	0.010	0.010	0.013	0.013	0.013
Minivans	1	0.009	0.004	0.004	0.005	0.006	0.004	0.005	0.004	0.003	0.003	0.004	0.004	0.004
	2	0.010	0.004	0.005	0.006	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
	3	0.011	0.005	0.005	0.006	0.007	0.004	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	4	0.014	0.006	0.007	0.008	0.009	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	5	0.017	0.008	0.008	0.010	0.012	0.007	0.010	0.008	0.006	0.006	0.008	0.008	0.008
	6	0.010	0.004	0.005	0.006	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
Pass. Van	1	0.009	0.004	0.004	0.005	0.006	0.004	0.005	0.004	0.003	0.003	0.004	0.004	0.004
	2	0.010	0.004	0.005	0.006	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
	3	0.011	0.005	0.005	0.006	0.007	0.004	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	4	0.014	0.006	0.007	0.008	0.009	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	5	0.017	0.008	0.008	0.010	0.012	0.007	0.010	0.008	0.006	0.006	0.008	0.008	0.008
	6	0.010	0.004	0.005	0.006	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
Cargo Van	1	0.009	0.004	0.004	0.005	0.006	0.004	0.005	0.004	0.003	0.003	0.004	0.004	0.004
	2	0.010	0.004	0.005	0.006	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
	3	0.011	0.005	0.005	0.006	0.007	0.004	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	4	0.014	0.006	0.007	0.008	0.009	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	5	0.017	0.008	0.008	0.010	0.012	0.007	0.010	0.008	0.006	0.006	0.008	0.008	0.008
	6	0.010	0.004	0.005	0.006	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
Special PV	1	0.009	0.004	0.004	0.005	0.006	0.004	0.005	0.004	0.003	0.003	0.004	0.004	0.004
	2	0.010	0.004	0.005	0.006	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
	3	0.010	0.005	0.005	0.006	0.007	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
	4	0.015	0.007	0.007	0.008	0.010	0.006	0.009	0.007	0.006	0.006	0.007	0.007	0.007
	5	0.015	0.007	0.007	0.009	0.010	0.006	0.009	0.007	0.006	0.006	0.007	0.007	0.007
	6	0.019	0.009	0.009	0.011	0.013	0.008	0.011	0.008	0.007	0.007	0.009	0.009	0.009
Pickups	1	0.010	0.004	0.005	0.005	0.006	0.004	0.006	0.004	0.004	0.004	0.005	0.005	0.005
	2	0.011	0.005	0.005	0.006	0.007	0.005	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	3	0.010	0.005	0.005	0.006	0.007	0.004	0.006	0.005	0.004	0.004	0.005	0.005	0.005
	4	0.014	0.006	0.007	0.008	0.010	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	5	0.013	0.006	0.006	0.008	0.009	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007
	6	0.014	0.006	0.007	0.008	0.009	0.006	0.008	0.006	0.005	0.005	0.007	0.007	0.007

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

6.0 Road and Bridge Tolls

There are relatively few toll facilities in Canada. There are four toll bridges located within Canada (all in Atlantic Canada), eleven international toll bridges (all connecting Ontario – U.S.) and three toll highways: Hwy 104 in Nova Scotia, Hwy 407 in Ontario and the Coquihalla Highway in B.C.

Actual revenues are obtained for the Coquihalla Highway (B.C.), Highway 407 (Ont), Highway 104 (N.S.) and the Halifax-Dartmouth Bridges. For the other facilities, estimates are made using the available traffic volume data multiplied by the respective published toll rates for autos and 5-axle tractor trailers, the most common vehicle types. Revenues determined in this manner are approximate only as they do not take into account all vehicle type as well as frequent user discounts. Revenues for 2004 are estimated at \$762 million. Exhibit 6.1 provides a summary of results. More details are presented in Appendix 2.

The extent to which a toll facility affects the costs to operate a vehicle obviously depends upon the extent to which the facility is used. For most Canadian drivers, tolls are either non-existent or paid very infrequently as part of a special trip, such as a vacation trip. However, for those living near such a facility and using it on a daily basis, the cost can become significant. For example, with current Highway 407 peak toll rates of 14.95¢ per kilometre, a 40 kilometre round trip daily commute (20 km each way) would add \$5.98 to the daily cost of a vehicle.

Exhibit 6.1: Estimated Revenue by Toll Facility.

Facility	2004 Revenue (\$ millions)	2000 Revenues (\$ millions)
Halifax–Dartmouth Bridges	\$23	\$23
Hwy 104 (N.S.)	\$15	\$12
<i>Total Nova Scotia</i>	<i>\$38</i>	<i>\$35</i>
Confederation Bridge	\$150	\$149
<i>Total PEI</i>	<i>\$150</i>	<i>\$149</i>
Saint John Harbour Bridge	\$4	\$4
<i>Total New Brunswick</i>	<i>\$4</i>	<i>\$4</i>
Ambassador Bridge	\$66	\$68
Blue Water Bridge	\$32	\$29
Detroit/Windsor Tunnel	\$24	\$26
Lewiston Queenston	\$30	\$33
Ogdensburg Bridge	\$2	\$2
Peace Bridge	\$53	\$50
Rainbow Bridge	\$12	\$15
Sault Ste. Marie Bridge	\$5	\$34
Seaway International	\$10	\$6
Thousand Islands	\$11	\$12
Whirlpool Rapids	\$1	\$2
Hwy 407 (Ont)	\$277	\$190
<i>Total Ontario</i>	<i>\$523</i>	<i>\$467</i>
Coquihalla Highway (B.C.)	\$47	\$41
<i>Total B.C.</i>	<i>\$47</i>	<i>\$41</i>
Total Revenues (\$millions)	\$762	\$695

7.0 Insurance Costs:

A considerable number of factors are involved in determining the insurance paid by a particular driver for a specific vehicle. Some of these include, age, sex, driving experience, marital status, commute to work, annual distance driven, city or other geographical area, deductible limits, discounts available through associations, and amount of public liability and property damage coverage.

Insurance costs in this study are determined for various vehicle class/vintages and across different provinces considering variations in insurance premium for annual driving distance, drivers' gender, marital status and age groups. Using a base driver (male, married, 33 years old, Ontario resident, employed and with clean driving record), a basic insurance premium was obtained from at least 2 (and in most cases 3) insurance companies for each vehicle in the list. Annual vehicle vkm in year 2000 are obtained from Exhibit 4.2. It is assumed that insurance policies have a typical coverage, limits, and endorsements. The typical insurance policy has a collision and comprehensive deductibles of \$500 for collision and comprehensive. No comprehensive coverage is assumed for vehicles older than 10 years. Maximum liability is assumed to be \$1,000,000. This includes property damage, accident benefit, uninsured motorist and family protection.

Using the distribution percentages of drivers' attributes (obtained from Toronto Automobile Ownership Survey and presented in Appendix 3), weighted adjustment factors were determined and applied to the base driver insurance premium to identify insurance costs differences for various gender, marital status, and age groups.

For the vehicle classes with four popular make/model cars listed in the Transport Canada data file, the first vehicle in the list was analyzed. Using vehicle class frequency data for Ontario a typical insurance premium rate is estimated. This value is then compared either with Stat Canada's Survey of Household Spending data or the average insurance cost data obtained from the Insurance Bureau of Canada (IBC) and designated provincial insurance agencies. Then factors were obtained to adjust the insurance premium rates in each class/vintage group. The aggregate provincial insurance premium cost for Quebec was not available through IBC or a provincial agency. Instead, the average annual insurance premium reported in Statistics Canada's Survey of Household Spending (CANSIM table 203-0007) is used to determine the average year 2000 insurance cost in Quebec. Then insurance premium estimates are adjusted using consumer price indices (CANSIM table 326-0002) to obtain the insurance premium of each vehicle class for the base year 2000. Insurance premium rates for individual vehicle class/vintages in various provinces are also adjusted proportionally based on the average IBC or Statistics Canada's provincial premiums. Exhibits 7.1 and 7.2 summarize insurance annual premiums estimated in this study.

Exhibit 7.1: Typical Annual Vehicle Insurance Premium (adjusted for IBC and provincial agencies total values) (\$/ year, 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	885	713	764	917	719	1637	1445	672	1082	1179	657	1201	1026
	2	698	719	771	925	724	1292	1140	678	854	1188	662	948	1034
	3	646	665	714	856	671	1196	1056	628	790	1100	501	878	958
	4	450	463	497	596	560	833	735	437	550	766	427	611	667
	5	448	433	535	642	503	896	791	470	592	825	460	658	718
	6	422	434	466	559	438	781	689	410	516	718	400	573	625
Sub-compact	1	852	802	941	1129	808	1441	1392	828	1042	1326	798	1157	1154
	2	671	691	741	889	697	1242	1097	652	821	1143	660	902	995
	3	613	631	677	812	659	1134	1001	595	750	1081	521	832	908
	4	467	481	515	618	511	911	763	453	571	838	407	634	730
	5	446	459	499	591	469	836	728	433	545	769	379	605	670
	6	453	466	500	600	427	838	739	436	550	765	427	610	666
Compact	1	712	733	786	944	739	1318	1163	699	871	1213	671	959	1056
	2	639	658	705	846	663	1182	1043	620	781	1087	606	854	947
	3	586	603	646	776	625	1115	956	568	716	1026	556	795	893
	4	448	462	495	594	465	864	763	453	571	795	426	609	692
	5	401	413	442	531	416	794	655	389	490	731	380	544	594
	6	380	392	420	504	406	704	621	369	465	714	361	517	564
Midsize	1	641	660	708	850	672	1199	1048	623	784	1103	585	837	960
	2	563	580	622	746	584	1042	874	547	654	958	508	726	834
	3	488	502	538	646	518	924	832	494	623	867	454	692	740
	4	455	430	502	553	472	841	669	397	501	711	372	556	674
	5	374	385	413	496	388	692	611	363	457	637	348	497	554
	6	372	383	411	493	386	689	608	361	455	634	346	495	552
Full-size	1	586	603	647	776	608	1084	957	569	717	998	543	796	869
	2	590	607	651	782	612	1092	964	573	721	1004	560	801	874
	3	533	524	589	706	553	941	831	531	652	908	472	676	790
	4	380	386	420	471	389	694	612	386	486	676	361	517	556
	5	345	331	381	426	363	648	580	345	435	605	305	429	519
	6	321	334	359	430	337	637	531	334	387	586	305	429	510
Stationwagon	1	635	654	701	842	659	1057	933	555	699	972	599	863	942
	2	565	581	623	748	586	1045	896	533	671	961	536	767	837
	3	541	489	525	630	516	879	776	461	581	809	488	645	704
	4	515	469	539	682	507	842	744	442	557	775	464	663	675
	5	400	428	463	570	436	769	654	389	526	732	408	584	622
	6	394	415	435	534	418	729	597	383	493	686	383	547	597
Minivans	1	609	627	672	806	632	1126	994	591	744	1036	578	827	902
	2	577	594	636	764	598	1011	942	531	668	981	547	742	854
	3	532	547	587	704	552	984	868	506	650	905	517	722	788
	4	389	405	434	521	404	720	643	382	476	670	369	534	576
	5	359	369	396	475	372	663	586	348	438	610	340	487	531
	6	349	359	385	462	362	645	570	339	427	594	331	474	517
Pass. Van	1	587	646	692	777	651	1160	958	569	717	1068	557	857	929
	2	565	582	624	749	586	1074	923	534	691	962	536	767	837
	3	528	544	583	700	548	977	863	513	646	899	501	717	783
	4	424	437	468	562	440	785	693	412	519	722	402	576	628
	5	388	399	428	513	402	717	633	376	474	660	368	526	574
	6	358	422	392	470	372	663	585	362	456	604	337	506	526
Cargo Van	1	600	733	663	795	623	1111	980	583	734	1022	515	762	889
	2	480	495	558	669	524	935	825	467	618	860	506	686	749
	3	482	477	512	628	492	877	774	462	589	820	450	643	702
	4	376	337	376	434	391	697	615	366	460	580	319	444	558
	5	305	314	336	404	330	557	498	296	373	519	289	414	452
	6	293	305	327	393	308	548	484	288	362	505	281	402	439
Special PV	1	717	738	791	949	744	1211	1069	635	800	1114	621	889	970
	2	696	710	761	914	716	1217	1074	638	804	1119	624	893	974
	3	566	583	625	750	535	1048	925	550	693	964	538	769	839
	4	419	426	452	543	425	758	669	398	501	697	407	582	635
	5	397	409	378	454	351	735	559	333	419	583	325	465	508
	6	398	353	379	454	413	736	650	333	419	584	378	466	590
Pickups	1	640	659	707	848	664	1184	1045	621	783	1090	608	869	949
	2	604	622	667	800	627	1118	987	587	739	1029	573	820	895
	3	617	635	681	817	640	1142	1008	599	755	1050	586	838	915
	4	367	378	405	486	381	679	600	356	449	625	349	499	544
	5	358	369	395	475	372	663	585	348	438	610	340	486	531
	6	352	362	389	466	365	651	575	342	430	599	334	478	522

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

Exhibit 7.2: Typical Annual Vehicle Insurance Premium (adjusted for Statistics Canada's Survey of Household Spending values) (\$/year, 2000)

Veh Class	Mintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	1357	1216	940	1282	719	1862	1507	380	1871	1365	1106	1139	1179
	2	1071	1225	948	1292	724	1469	1189	383	1476	1376	1114	899	1189
	3	992	1135	878	1197	671	1360	1101	355	1367	1275	842	832	1101
	4	691	790	611	833	560	947	767	247	952	888	719	579	767
	5	687	739	658	897	503	1019	825	266	1025	955	774	624	825
	6	647	740	573	781	438	888	719	232	892	832	674	543	718
Sub-compact	1	1308	1367	1158	1578	808	1639	1452	468	1803	1536	1343	1097	1326
	2	1030	1178	912	1243	697	1413	1144	369	1420	1324	1110	855	1143
	3	940	1076	832	1135	659	1290	1044	336	1296	1253	876	789	1044
	4	716	820	634	864	511	1036	795	256	987	971	684	601	838
	5	684	783	614	826	469	951	760	245	943	891	638	574	769
	6	694	795	615	838	427	953	771	247	950	886	718	579	765
Compact	1	1093	1250	967	1319	739	1499	1214	395	1506	1404	1128	910	1213
	2	980	1121	867	1182	663	1344	1088	351	1351	1259	1020	810	1088
	3	898	1028	795	1084	625	1268	998	321	1238	1188	935	754	1026
	4	688	787	609	830	465	983	796	256	988	921	716	577	795
	5	615	704	544	742	416	903	683	220	848	846	640	516	682
	6	584	668	517	704	406	801	648	209	805	827	607	490	648
Midsize	1	984	1126	871	1188	672	1364	1093	352	1357	1278	985	794	1103
	2	864	988	765	1042	584	1185	911	309	1131	1109	854	689	959
	3	748	856	662	903	518	1050	868	280	1077	1004	765	656	850
	4	697	733	617	773	472	957	697	225	866	824	626	527	774
	5	574	657	508	693	388	787	637	205	791	738	585	471	637
	6	571	653	506	689	386	783	634	204	787	734	582	469	634
Full-size	1	899	1029	796	1085	608	1233	999	322	1239	1156	913	754	998
	2	905	1036	801	1092	612	1242	1005	324	1248	1163	942	759	1005
	3	818	893	724	987	553	1070	866	300	1127	1051	795	641	908
	4	584	658	517	658	389	789	639	218	840	783	608	490	638
	5	529	565	468	595	363	737	605	195	752	701	514	407	596
	6	493	570	441	601	337	725	554	189	669	679	513	407	587
Stationwagon	1	975	1115	863	1176	659	1202	973	314	1208	1126	1007	818	1082
	2	866	991	767	1045	586	1188	934	301	1160	1113	902	727	962
	3	830	834	645	880	516	1000	810	261	1005	937	820	612	809
	4	789	799	663	953	507	958	776	250	963	898	780	629	775
	5	614	729	570	797	436	874	682	220	910	848	687	554	715
	6	604	708	535	746	418	829	623	216	852	795	644	519	686
Minivans	1	934	1069	827	1127	632	1281	1037	334	1287	1200	972	784	1037
	2	884	1012	783	1067	598	1150	982	300	1156	1137	921	703	982
	3	815	933	722	984	552	1119	906	286	1124	1048	870	684	905
	4	596	691	534	729	404	818	670	216	822	776	621	507	662
	5	550	629	487	664	372	755	611	197	758	707	573	462	611
	6	535	612	474	646	362	734	594	191	738	688	557	449	594
Pass. Van	1	900	1101	852	1086	651	1320	999	322	1240	1237	937	812	1068
	2	867	992	767	1046	586	1221	963	302	1195	1114	902	727	962
	3	810	927	717	978	548	1111	900	290	1117	1041	843	680	899
	4	650	744	576	785	440	892	722	233	897	836	677	546	722
	5	594	680	526	717	402	816	660	213	820	764	619	499	660
	6	549	719	482	657	372	754	610	205	788	699	566	480	604
Cargo Van	1	921	1249	815	1111	623	1263	1023	330	1269	1183	866	723	1022
	2	737	843	686	935	524	1063	861	264	1068	996	851	650	860
	3	739	814	630	877	492	997	807	261	1019	950	756	610	807
	4	578	575	463	606	391	792	641	207	796	672	537	421	641
	5	467	535	414	564	330	633	519	167	644	601	486	392	519
	6	449	520	402	549	308	624	505	163	627	584	473	382	505
Special PV	1	1099	1258	973	1327	744	1377	1115	359	1384	1290	1045	842	1114
	2	1068	1211	937	1277	716	1383	1120	361	1390	1296	1050	846	1120
	3	869	994	769	1048	535	1192	965	311	1198	1117	904	729	964
	4	643	727	556	758	425	862	698	225	866	808	684	552	730
	5	609	697	465	634	351	836	584	188	724	675	547	441	583
	6	610	602	466	635	413	837	678	188	725	676	635	441	677
Pickups	1	982	1124	869	1185	664	1347	1091	351	1354	1262	1022	824	1090
	2	927	1061	821	1119	627	1271	1029	332	1278	1191	965	778	1029
	3	947	1083	838	1142	640	1299	1051	339	1305	1217	985	794	1051
	4	563	645	499	680	381	773	626	202	777	724	586	473	625
	5	550	629	487	663	372	754	610	197	758	706	572	461	610
	6	540	618	478	652	365	741	600	193	744	694	562	453	599

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

It should be noted that insurance is generally considered a fixed cost, but it often increases a small amount with vehicle usage, depending on the policy. It is assumed that increased driving increases the chances of an at-fault claim, and therefore deductible charges and higher future premiums. Exhibit 7.3 presents changes in insurance premium rates based on different annual driving mileage obtained for a sample car (2001 Honda Civic) for the base driver.

Exhibit 7.3: Annual Insurance Premium and Vehicle Usage (2001 Honda Civic) (2000)

Annual Usage (km)	Insurance Premium	% Change
10,000	\$1,721	0%
20,000	\$1,721	0%
25,000	\$1,721	0%
30,000	\$1,790	4%
38,000	\$1,790	4%
42,000	\$1,862	8%
48,000	\$1,862	8%

Annual Insurance premium estimates are finally divided by annual vkm to estimate per km vehicle insurance cost. The estimates that are adjusted for Stat Canada's Survey of Household Spending data and the IBC or provincial insurance agencies data are reported in Exhibits 7.4 and 7.5.

Exhibit 7.4: Per km Vehicle Insurance Premium (adjusted for IBC and provincial agencies total values) (\$/km, yr. 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.044	0.036	0.038	0.046	0.036	0.082	0.072	0.034	0.054	0.059	0.033	0.060	0.051
	2	0.038	0.039	0.041	0.050	0.039	0.069	0.061	0.036	0.046	0.064	0.036	0.051	0.056
	3	0.047	0.049	0.052	0.063	0.049	0.088	0.077	0.046	0.058	0.081	0.037	0.064	0.070
	4	0.028	0.029	0.031	0.037	0.035	0.052	0.046	0.027	0.034	0.048	0.027	0.038	0.042
	5	0.031	0.030	0.037	0.045	0.035	0.063	0.055	0.033	0.041	0.058	0.032	0.046	0.050
	6	0.055	0.057	0.061	0.073	0.058	0.103	0.091	0.054	0.068	0.094	0.053	0.075	0.082
Sub-compact	1	0.043	0.040	0.047	0.056	0.040	0.072	0.070	0.041	0.052	0.066	0.040	0.058	0.058
	2	0.036	0.037	0.040	0.048	0.037	0.067	0.059	0.035	0.044	0.061	0.035	0.048	0.053
	3	0.045	0.046	0.050	0.059	0.048	0.083	0.073	0.044	0.055	0.079	0.038	0.061	0.066
	4	0.029	0.030	0.032	0.039	0.032	0.057	0.048	0.028	0.036	0.052	0.025	0.040	0.046
	5	0.031	0.032	0.035	0.041	0.033	0.059	0.051	0.030	0.038	0.054	0.027	0.042	0.047
	6	0.060	0.061	0.066	0.079	0.056	0.110	0.097	0.057	0.072	0.101	0.056	0.080	0.088
Compact	1	0.036	0.037	0.039	0.047	0.037	0.066	0.058	0.035	0.044	0.061	0.034	0.048	0.053
	2	0.034	0.035	0.038	0.045	0.036	0.064	0.056	0.033	0.042	0.058	0.033	0.046	0.051
	3	0.043	0.044	0.047	0.057	0.046	0.082	0.070	0.042	0.052	0.075	0.041	0.058	0.065
	4	0.028	0.029	0.031	0.037	0.029	0.054	0.048	0.028	0.036	0.050	0.027	0.038	0.043
	5	0.028	0.029	0.031	0.037	0.029	0.056	0.046	0.027	0.034	0.051	0.027	0.038	0.042
	6	0.050	0.051	0.055	0.066	0.053	0.093	0.082	0.049	0.061	0.094	0.047	0.068	0.074
Midsize	1	0.032	0.033	0.035	0.042	0.034	0.060	0.052	0.031	0.039	0.055	0.029	0.042	0.048
	2	0.030	0.031	0.033	0.040	0.031	0.056	0.047	0.029	0.035	0.051	0.027	0.039	0.045
	3	0.036	0.037	0.039	0.047	0.038	0.068	0.061	0.036	0.046	0.063	0.033	0.051	0.054
	4	0.028	0.027	0.031	0.035	0.029	0.053	0.042	0.025	0.031	0.044	0.023	0.035	0.042
	5	0.026	0.027	0.029	0.035	0.027	0.048	0.043	0.025	0.032	0.045	0.024	0.035	0.039
	6	0.049	0.050	0.054	0.065	0.051	0.091	0.080	0.048	0.060	0.083	0.045	0.065	0.073
Full-size	1	0.029	0.030	0.032	0.039	0.030	0.054	0.048	0.028	0.036	0.050	0.027	0.040	0.043
	2	0.032	0.033	0.035	0.042	0.033	0.059	0.052	0.031	0.039	0.054	0.030	0.043	0.047
	3	0.039	0.038	0.043	0.052	0.040	0.069	0.061	0.039	0.048	0.066	0.035	0.049	0.058
	4	0.024	0.024	0.026	0.029	0.024	0.043	0.038	0.024	0.030	0.042	0.023	0.032	0.035
	5	0.024	0.023	0.027	0.030	0.025	0.045	0.041	0.024	0.030	0.042	0.021	0.030	0.036
	6	0.042	0.044	0.047	0.057	0.044	0.084	0.070	0.044	0.051	0.077	0.040	0.056	0.067
Stationwagon	1	0.032	0.033	0.035	0.042	0.033	0.053	0.047	0.028	0.035	0.049	0.030	0.043	0.047
	2	0.030	0.031	0.034	0.040	0.031	0.056	0.048	0.029	0.036	0.052	0.029	0.041	0.045
	3	0.040	0.036	0.038	0.046	0.038	0.064	0.057	0.034	0.043	0.059	0.036	0.047	0.052
	4	0.032	0.029	0.034	0.043	0.032	0.053	0.046	0.028	0.035	0.048	0.029	0.041	0.042
	5	0.028	0.030	0.032	0.040	0.031	0.054	0.046	0.027	0.037	0.051	0.029	0.041	0.044
	6	0.052	0.055	0.057	0.070	0.055	0.096	0.078	0.050	0.065	0.090	0.050	0.072	0.079
Minivans	1	0.027	0.028	0.030	0.036	0.028	0.050	0.044	0.026	0.033	0.046	0.026	0.037	0.040
	2	0.028	0.029	0.031	0.037	0.029	0.049	0.045	0.026	0.032	0.047	0.026	0.036	0.041
	3	0.028	0.029	0.031	0.037	0.029	0.052	0.046	0.027	0.035	0.048	0.027	0.038	0.042
	4	0.027	0.028	0.030	0.036	0.028	0.049	0.044	0.026	0.033	0.046	0.025	0.037	0.040
	5	0.031	0.032	0.034	0.041	0.032	0.057	0.050	0.030	0.037	0.052	0.029	0.042	0.045
	6	0.017	0.018	0.019	0.023	0.018	0.032	0.028	0.017	0.021	0.029	0.016	0.023	0.025
Pass. Van	1	0.026	0.029	0.031	0.035	0.029	0.052	0.043	0.025	0.032	0.048	0.025	0.038	0.042
	2	0.027	0.028	0.030	0.036	0.028	0.052	0.044	0.026	0.033	0.046	0.026	0.037	0.040
	3	0.028	0.029	0.031	0.037	0.029	0.052	0.046	0.027	0.034	0.048	0.027	0.038	0.042
	4	0.029	0.030	0.032	0.039	0.030	0.054	0.048	0.028	0.036	0.050	0.028	0.040	0.043
	5	0.033	0.034	0.037	0.044	0.034	0.061	0.054	0.032	0.041	0.056	0.031	0.045	0.049
	6	0.018	0.021	0.019	0.023	0.018	0.032	0.029	0.018	0.022	0.030	0.016	0.025	0.026
Cargo Van	1	0.027	0.033	0.030	0.036	0.028	0.050	0.044	0.026	0.033	0.046	0.023	0.034	0.040
	2	0.023	0.024	0.027	0.032	0.025	0.045	0.040	0.022	0.030	0.041	0.024	0.033	0.036
	3	0.026	0.025	0.027	0.033	0.026	0.047	0.041	0.025	0.031	0.044	0.024	0.034	0.037
	4	0.026	0.023	0.026	0.030	0.027	0.048	0.042	0.025	0.032	0.040	0.022	0.031	0.038
	5	0.026	0.027	0.029	0.035	0.028	0.048	0.043	0.025	0.032	0.044	0.025	0.035	0.039
	6	0.014	0.015	0.016	0.019	0.015	0.027	0.024	0.014	0.018	0.025	0.014	0.020	0.022
Special PV	1	0.031	0.032	0.034	0.041	0.032	0.052	0.046	0.027	0.035	0.048	0.027	0.038	0.042
	2	0.034	0.034	0.037	0.044	0.035	0.059	0.052	0.031	0.039	0.054	0.030	0.043	0.047
	3	0.029	0.029	0.032	0.038	0.027	0.053	0.047	0.028	0.035	0.049	0.027	0.039	0.042
	4	0.031	0.032	0.034	0.040	0.032	0.056	0.050	0.029	0.037	0.052	0.030	0.043	0.047
	5	0.030	0.031	0.028	0.034	0.026	0.055	0.042	0.025	0.032	0.044	0.024	0.035	0.038
	6	0.037	0.033	0.035	0.042	0.038	0.069	0.060	0.031	0.039	0.054	0.035	0.043	0.055
Pickups	1	0.031	0.031	0.034	0.040	0.032	0.057	0.050	0.030	0.037	0.052	0.029	0.041	0.045
	2	0.033	0.034	0.036	0.043	0.034	0.060	0.053	0.032	0.040	0.055	0.031	0.044	0.048
	3	0.032	0.033	0.035	0.042	0.033	0.059	0.052	0.031	0.039	0.054	0.030	0.043	0.047
	4	0.026	0.027	0.029	0.034	0.027	0.048	0.042	0.025	0.032	0.044	0.025	0.035	0.038
	5	0.024	0.024	0.026	0.031	0.025	0.044	0.039	0.023	0.029	0.040	0.022	0.032	0.035
	6	0.024	0.025	0.027	0.032	0.025	0.045	0.040	0.024	0.030	0.042	0.023	0.033	0.036

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

Exhibit 7.5: Per km Vehicle Insurance Premium (adjusted for Statistics Canada's Survey of Household Spending values) (\$/km, yr. 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.068	0.061	0.047	0.064	0.036	0.093	0.075	0.019	0.093	0.068	0.055	0.057	0.059
	2	0.058	0.066	0.051	0.069	0.039	0.079	0.064	0.021	0.079	0.074	0.060	0.048	0.064
	3	0.073	0.083	0.064	0.088	0.049	0.100	0.081	0.026	0.100	0.093	0.062	0.061	0.081
	4	0.043	0.049	0.038	0.052	0.035	0.059	0.048	0.015	0.060	0.055	0.045	0.036	0.048
	5	0.048	0.052	0.046	0.063	0.035	0.071	0.058	0.019	0.072	0.067	0.054	0.044	0.058
	6	0.085	0.097	0.075	0.103	0.058	0.117	0.094	0.030	0.117	0.109	0.089	0.071	0.094
Sub-compact	1	0.065	0.068	0.058	0.079	0.040	0.082	0.073	0.023	0.090	0.077	0.067	0.055	0.066
	2	0.055	0.063	0.049	0.067	0.037	0.076	0.061	0.020	0.076	0.071	0.060	0.046	0.061
	3	0.069	0.079	0.061	0.083	0.048	0.094	0.076	0.025	0.095	0.092	0.064	0.058	0.076
	4	0.045	0.051	0.040	0.054	0.032	0.065	0.050	0.016	0.062	0.061	0.043	0.038	0.052
	5	0.048	0.055	0.043	0.058	0.033	0.067	0.053	0.017	0.066	0.062	0.045	0.040	0.054
	6	0.091	0.104	0.081	0.110	0.056	0.125	0.101	0.032	0.125	0.116	0.094	0.076	0.101
Compact	1	0.055	0.062	0.048	0.066	0.037	0.075	0.061	0.020	0.075	0.070	0.056	0.045	0.061
	2	0.053	0.060	0.047	0.064	0.036	0.072	0.058	0.019	0.073	0.068	0.055	0.044	0.058
	3	0.066	0.075	0.058	0.079	0.046	0.093	0.073	0.024	0.091	0.087	0.068	0.055	0.075
	4	0.043	0.049	0.038	0.052	0.029	0.061	0.050	0.016	0.062	0.058	0.045	0.036	0.050
	5	0.043	0.049	0.038	0.052	0.029	0.063	0.048	0.015	0.059	0.059	0.045	0.036	0.048
	6	0.077	0.088	0.068	0.093	0.053	0.105	0.085	0.027	0.106	0.109	0.080	0.064	0.085
Midsize	1	0.049	0.056	0.044	0.059	0.034	0.068	0.055	0.018	0.068	0.064	0.049	0.040	0.055
	2	0.046	0.053	0.041	0.056	0.031	0.064	0.049	0.017	0.061	0.060	0.046	0.037	0.052
	3	0.055	0.063	0.048	0.066	0.038	0.077	0.064	0.020	0.079	0.074	0.056	0.048	0.062
	4	0.044	0.046	0.039	0.048	0.029	0.060	0.044	0.014	0.054	0.052	0.039	0.033	0.048
	5	0.040	0.046	0.036	0.049	0.027	0.055	0.045	0.014	0.055	0.052	0.041	0.033	0.045
	6	0.075	0.086	0.066	0.091	0.051	0.103	0.083	0.027	0.103	0.096	0.076	0.062	0.083
Full-size	1	0.045	0.051	0.040	0.054	0.030	0.062	0.050	0.016	0.062	0.058	0.046	0.038	0.050
	2	0.049	0.056	0.043	0.059	0.033	0.067	0.054	0.017	0.067	0.063	0.051	0.041	0.054
	3	0.060	0.065	0.053	0.072	0.040	0.078	0.063	0.022	0.083	0.077	0.058	0.047	0.066
	4	0.036	0.041	0.032	0.041	0.024	0.049	0.040	0.014	0.053	0.049	0.038	0.031	0.040
	5	0.037	0.040	0.033	0.042	0.025	0.052	0.042	0.014	0.053	0.049	0.036	0.029	0.042
	6	0.065	0.075	0.058	0.079	0.044	0.095	0.073	0.025	0.088	0.089	0.067	0.053	0.077
Stationwagon	1	0.049	0.056	0.043	0.059	0.033	0.060	0.049	0.016	0.060	0.056	0.050	0.041	0.054
	2	0.047	0.053	0.041	0.056	0.031	0.064	0.050	0.016	0.062	0.060	0.048	0.039	0.052
	3	0.061	0.061	0.047	0.064	0.038	0.073	0.059	0.019	0.074	0.069	0.060	0.045	0.059
	4	0.049	0.050	0.041	0.060	0.032	0.060	0.048	0.016	0.060	0.056	0.049	0.039	0.048
	5	0.043	0.051	0.040	0.056	0.031	0.061	0.048	0.015	0.064	0.059	0.048	0.039	0.050
	6	0.079	0.093	0.070	0.098	0.055	0.109	0.082	0.028	0.112	0.104	0.085	0.068	0.090
Minivans	1	0.042	0.048	0.037	0.050	0.028	0.057	0.046	0.015	0.058	0.054	0.043	0.035	0.046
	2	0.043	0.049	0.038	0.051	0.029	0.055	0.047	0.014	0.056	0.055	0.044	0.034	0.047
	3	0.043	0.050	0.038	0.052	0.029	0.059	0.048	0.015	0.060	0.056	0.046	0.036	0.048
	4	0.041	0.047	0.037	0.050	0.028	0.056	0.046	0.015	0.056	0.053	0.043	0.035	0.045
	5	0.047	0.054	0.042	0.057	0.032	0.065	0.052	0.017	0.065	0.060	0.049	0.039	0.052
	6	0.026	0.030	0.023	0.032	0.018	0.036	0.029	0.009	0.036	0.034	0.027	0.022	0.029
Pass. Van	1	0.040	0.049	0.038	0.049	0.029	0.059	0.045	0.014	0.055	0.055	0.042	0.036	0.048
	2	0.042	0.048	0.037	0.050	0.028	0.059	0.046	0.015	0.057	0.054	0.043	0.035	0.046
	3	0.043	0.049	0.038	0.052	0.029	0.059	0.048	0.015	0.059	0.055	0.045	0.036	0.048
	4	0.045	0.051	0.040	0.054	0.030	0.061	0.050	0.016	0.062	0.057	0.046	0.037	0.050
	5	0.051	0.058	0.045	0.061	0.034	0.070	0.056	0.018	0.070	0.065	0.053	0.043	0.056
	6	0.027	0.035	0.024	0.032	0.018	0.037	0.030	0.010	0.039	0.034	0.028	0.023	0.030
Cargo Van	1	0.041	0.056	0.036	0.050	0.028	0.057	0.046	0.015	0.057	0.053	0.039	0.032	0.046
	2	0.035	0.041	0.033	0.045	0.025	0.051	0.041	0.013	0.051	0.048	0.041	0.031	0.041
	3	0.039	0.043	0.033	0.047	0.026	0.053	0.043	0.014	0.054	0.050	0.040	0.032	0.043
	4	0.040	0.039	0.032	0.042	0.027	0.054	0.044	0.014	0.055	0.046	0.037	0.029	0.044
	5	0.040	0.046	0.035	0.048	0.028	0.054	0.044	0.014	0.055	0.051	0.042	0.034	0.044
	6	0.022	0.025	0.020	0.027	0.015	0.031	0.025	0.008	0.031	0.029	0.023	0.019	0.025
Special PV	1	0.048	0.054	0.042	0.057	0.032	0.060	0.048	0.016	0.060	0.056	0.045	0.036	0.048
	2	0.052	0.059	0.045	0.062	0.035	0.067	0.054	0.018	0.067	0.063	0.051	0.041	0.054
	3	0.044	0.050	0.039	0.053	0.027	0.060	0.049	0.016	0.060	0.056	0.046	0.037	0.049
	4	0.048	0.054	0.041	0.056	0.032	0.064	0.052	0.017	0.064	0.060	0.051	0.041	0.054
	5	0.046	0.053	0.035	0.048	0.026	0.063	0.044	0.014	0.055	0.051	0.041	0.033	0.044
	6	0.057	0.056	0.043	0.059	0.038	0.078	0.063	0.018	0.067	0.063	0.059	0.041	0.063
Pickups	1	0.047	0.054	0.041	0.057	0.032	0.064	0.052	0.017	0.065	0.060	0.049	0.039	0.052
	2	0.050	0.057	0.044	0.060	0.034	0.069	0.056	0.018	0.069	0.064	0.052	0.042	0.055
	3	0.049	0.056	0.043	0.059	0.033	0.067	0.054	0.017	0.067	0.062	0.051	0.041	0.054
	4	0.040	0.045	0.035	0.048	0.027	0.054	0.044	0.014	0.055	0.051	0.041	0.033	0.044
	5	0.036	0.042	0.032	0.044	0.025	0.050	0.040	0.013	0.050	0.047	0.038	0.030	0.040
	6	0.038	0.043	0.033	0.045	0.025	0.051	0.042	0.013	0.052	0.048	0.039	0.031	0.042

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

8.0 Operating Costs

8.1 Fuel Costs

Fuel costs by province for both 2000 and 2004 have been obtained from the Ontario Ministry of Energy who use M. J. Ervin data to monitor fuel prices in the other provinces. The price in each province is indicated by the price in one or two major urban centres except for Ontario which uses several markets. Results are presented as Exhibit 8.1.

Exhibit 8.1: Fuel Prices by Province (Regular unleaded in cents per litre)

Province	Cities Included	2004	2000
Newfoundland	St. Johns	91.8	83.1
Nova Scotia	Halifax	87.4	78.1
PEI	Charlottetown	84.4	70.3
New Brunswick	Saint John	87.6	73.6
Quebec	Montreal	86.0	77.2
	Quebec City	87.0	72.2
Ontario*	See below	80.6	71.3
Manitoba	Winnipeg	76.3	66.5
Saskatchewan	Regina	82.3	72.0
Alberta	Calgary	75.0	64.4
	Edmonton	75.2	63.9
British Columbia	Vancouver	87.4	68.9
Canada		81.4	71.5

Includes Toronto, Ottawa, Windsor, London, Sudbury, Sault Ste. Marie, Thunder Bay, Timmins, Hamilton, and St. Catharines. Source: Ontario Ministry of Energy and M. J. Ervin & Associates. Canada average price is volume-weighted for 10 major Canadian cities.

Exhibit 8.2 provides the federal and provincial taxes included in the prices noted above.

Exhibit 8.2: Federal and Provincial Tax Rates on Transportation Fuels.

Jurisdiction	2000/01 Tax rate (¢ per litre)
Federal Excise tax	
Motor gasoline	10.0
Other Fuels (1)	4.0
Provincial Tax Rates	
Newfoundland	16.5
Prince Edward Island	13.0
New Brunswick	13.5
Quebec	
Montreal (2)	16.7
Quebec City (3)	15.2
Average (4)	15.8
Ontario	14.7
Manitoba	11.5
Saskatchewan	15.0
Alberta – effect	8.2
British Columbia	
Vancouver (5)	15.0
Victoria (6)	13.5
Average (7)	11.0
Yukon	6.2
Northwest Terr.	10.7
Nunavut	11.2

- (1) Rate applies to fuel used for road, rail and marine transportation, marine heavy fuel oil and aviation jet fuel.
- (2) Includes tax of 1.5¢ per litre in Montreal for urban transit, starting on January 1, 1996
- (3) Nominal rate for the province of Quebec outside of Montreal
- (4) Calculated by TC's Economic Analysis & Research (ACAD); reflects reductions in rates near provincial borders and remote areas
- (5) The Vancouver surtax was 3¢ per litre in 1990; it was raised to 4¢ on July 1, 1993
- (6) A surtax of 1.5¢ per litre was introduced in may 1993; it was raised to 2.5¢ in July 1997
- (7) Calculated by TC's Economic Analysis & Research (ACAD)

Source: Transport Canada

Fuel costs per kilometre for selected vehicles are presented in Exhibit 8.3. The costs are based on the average Canadian price of unleaded regular gasoline in 2000 (71.5 cents per litre, taxes included) and the fuel economy rating as published in the natural Resources Canada Fuel Consumption Guide².

Costs are shown for 55% city and 45% highway driving, 100% city driving and 100% highway driving to indicate the range of costs associated with various mixes of city and highway driving. The fuel consumption of a vehicle may vary from its published rating, depending on factors such as driving style and behaviour, vehicle acceleration and driving speed, the overall age and operating condition of the vehicle, temperature, weather, traffic and road conditions. In addition, power-driven accessories (e.g., air conditioning) and other options will also affect fuel use³.

Exhibit 8.3: Fuel Costs for Selected Vehicles (yr. 2000)

Vehicle Class	Specific Vehicle	Fuel economy (litres/100 km)		Fuel Costs* (¢ per veh-km)		
		City	Highway	City (55%) Hwy (45%)	100% City Driving	100% Hwy Driving
Sub-compact	Acura 1.6 EL	9.2	6.7	5.77	6.58	4.79
Compact	Grand AM(2.4L)	10.7	7.1	6.49	7.65	5.08
Mid-size	Buick Century	11.6	7.3	6.91	8.29	5.22
Full Size	Chevrolet Impala	12.1	7.2	7.07	8.65	5.15
Van	Ford Econoline E250	16.5	11.8	10.29	11.80	8.44
Pick-Up	Ford 150 4X4 6	15	10.7	9.34	10.73	7.65

*based on 71.5¢ per litre average Canadian Cost 2000.

8.2 Non-Fuel Operating Costs

Statistic Canada's CANSIM database provides highly aggregate level statistics on vehicle operating costs including fuel, non-fuel operating, parking, registration, insurance, and maintenance costs at the national level and for different provinces. Exhibit 8.4 summarizes non-fuel operating and maintenance costs per household that were used in this study to calibrate non-fuel operating costs estimates. Average annual non-fuel operating and maintenance costs per vehicle can be estimated by using total number of households and vehicles in each province. These are summarized in Exhibit 8.5. Unfortunately these costs are not

² <http://oee.nrcan.gc.ca/transportation/tools/fuel-consumption-guide/fuel-consumption-guide.cfm?attr=8>

³ For information about vehicle testing for fuel economy, visit the road Web site of Transport Canada (<http://www.tc.gc.ca/road>)

reported by vehicle age or by class, so it is not possible to determine these costs beyond the level shown.

The non-fuel operating cost in this study includes the cost of oil, tires, maintenance parts, labour costs, driving lessons and auto association or similar fees. Note that body repair costs are included only if not covered by insurance. Repair costs covered by insurance (which covers the bulk of body repair costs) would appear indirectly in consumer expenses in the payments of insurance premium.

Exhibit 8.4: Non-Fuel Operating Cost (source: CANSIM Average Year 2000 Transportation Expenditure - Table 203-0007) (\$/year)

	Tires, batteries, and other automotive parts and supplies for owned and leased veh	Maintenance and repair for owned and leased veh	Driving lessons	Other operation services (e.g., auto association fees, etc.)	Total non-Fuel Operating and Maintenance Costs
CANADA	220	498	12	32	762
NF	236	267	0	3	506
PE	274	387	0	91	752
NS	256	457	13	40	766
NB	281	464	11	21	777
QC	210	427	8	15	660
ON	211	575	17	47	850
MB	185	439	5	25	654
SK	247	377	0	27	651
AB	250	510	16	29	805
BC	221	505	9	33	768

Exhibit 8.5: CANSIM data on Non-Fuel Operating and Maintenance Costs (\$/year, 2000)

	Canada	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
non-fuel Operating and Maintenance Costs per household	762	506	752	766	777	660	850	654	651	805	768
Estimated No. of HHs in year 2000	11357347	188894	50391	350695	276024	2930393	4210365	407996	372582	1056623	1516728
Numer of Cars	15289096	232431	66559	478811	411086	3545754	5846792	545266	508249	1691266	1926610
Auto Ownership Ratio	1.346	1.230	1.321	1.365	1.489	1.210	1.389	1.336	1.364	1.601	1.270
Costs per Veh	566	411	569	561	522	545	612	489	477	503	605

A modified version of the work conducted by the World Bank, as part of the Highway Design and Maintenance (HDM) Standard study⁴ was used to estimate non-fuel operating costs. The World Bank study has developed methods and relationships for estimation of vehicle operating costs as a function of vehicle type and road characteristics. These procedures are combined in a computer model, HDM-VOC, for the calculation of user costs under a variety of conditions. The basic inputs to the HDM-VOC model system are vehicle specifications (type, age, service life, weight, etc.), gasoline price, vehicle price, tire cost, lubricants cost, maintenance labour and repair costs, interest rate, vehicle annual utilization, road surface type and roughness. Exhibit 8.6 summarizes the characteristics of various vehicle class/vintages used in this study. The HDM-VOC model was used to estimate operating cost of *typical vehicles* in each vehicle class category.

Vehicle operating costs are estimated for both paved and unpaved roads. Average surface roughness (IRI) for Canadian roads is assumed to be 1.10 mm/m for paved roads and 3.0 mm/m for unpaved roads⁵. It is assumed that Canadian roads have more than one lane and in average have 2% positive and negative gradient. The proportion of uphill travel in average is 10% and the effects of horizontal curvature and superelevation are ignored as these are minor cost factors for most Canadian highways. The estimates are based on the assumption of average terrain altitude of 300 m. It is also assumed that passenger cars carry 200 kg load. This value was assumed to be 300 kg for passenger vans and 400 kg for cargo vans.

⁴ Archondo-Callao, Rodrigo S., and Asif Faiz, "Estimating Vehicle Operating Costs", World Bank technical paper number 234, 1994, Washington D.C.

⁵ Based on a review of IRI values reported on provincial department of highways websites

Annual vehicle utilization rates are obtained from Transport Canada (see Exhibit 4.2). Average service life of the vehicles is hypothesised to be 16 years and ages of vehicles in km for various vehicle vintages are estimated from Exhibit 4.2. Average national gasoline cost of \$ 0.715 per litre was used in the analysis. New tire cost is assumed to be \$85 per tire for cars and mini-vans and \$100 per tire for large vans, SUVs, and pickup trucks. Maintenance labour cost was assumed to be \$70 per hour and average annual interest rate of 5.77% published by Bank of Canada for year 2000 was used in the analysis.

HDM-VOC software can estimate both fuel and non-fuel operating costs. It also provides estimates of depreciation and interest charges for the vehicle. Only operating costs estimates of HDM-VOC model are used in this study. The model calculates total fuel consumption based on engine performance and driving condition. Operating costs are estimated for typical conditions and the above mentioned assumptions for various parameters of the model. The fuel consumption rates estimated by the model were then compared with the combined MPG rates for the vehicle model/year published by the US Department of Energy. Assuming a desired driving speed of 100 km/hr, parameters of the model (engine efficiency, aerodynamic drag coefficient, and fuel consumption model parameters) can be calibrated so that the model can generate fuel consumption estimates close to the published combined MPG rates. The model also estimates vehicle operating speed based on the road surface and the geometry. It was observed that the estimated operating speed in an unpaved road is smaller than paved road condition. This will result in lower fuel cost estimates in unpaved road which is not realistic. In order to have a consistent fuel consumption estimates in both paved and unpaved roads, the operating speed values estimated by the model for the paved road condition are used as an external input to the model in the unpaved surface runs to estimate fuel cost for unpaved road condition. This adjustment has a very minor effect on other non-fuel operating cost estimates.

It became clear that the non-fuel operating cost estimates obtained from HDM-VOC model were not in the same range as the average national non-fuel operating cost reported in household expenditure Table 203-0007 of CANSIM data (see Exhibit 8.5). This is probably due to differences in vehicle fleet and operation characteristics in Canada and those used to develop the HDM model. Therefore, non-fuel operating cost estimates are adjusted such that the aggregate cost matches data reported in the Statistics Canada's household expenditure database. Exhibits 8.7 and 8.8 summarize total adjusted non-fuel operating costs as well as total fuel cost estimates for various vehicle class/vintages in paved and unpaved Canadian roads. Note that these estimates are for 1000 km of driving. The last column in each table suggests per km non-fuel cost estimates for various vehicle groups. In order to capture the variations of per km operating cost in different provinces, values presented in Exhibits 8.7 and 8.8 are further adjusted and presented in Exhibits 8.9 and 8.10.

Exhibit 8.6: Characteristics of various vehicle class/vintages used in the HDM-VOC model

Veh Class	Vintage (Years)	Popular Model in Class/Vintage	Cost of New Car (\$)	Annual Utilization (km)	Total KM on car	Weight (lbs)	Width (in)	Height (in)	Max Engine Power (hp)	Comb-ined MPG	Max Used Driving Power	Max Used Braking Power	Frontal Area (m ²)	Fuel Efficiency (km/lit.)
Two Seater	0_2	Mazda MX5 Miata	26025	20015	20015	2335	66	48	140	25	63.6	15.4	2.05	10.32
	3_5	Honda Civic	14500	18606	77242	2450	67	54	102	32	50.9	16.1	2.33	13.21
	6_8	Honda Civic	14500	13662	123172	2265	67	54	125	31	58.7	14.9	2.33	12.80
	9_11	Mazda MX5 Miata	17500	15966	168766	2126	66	48	140	26	63.6	14.0	2.05	10.74
	12_14	Honda Civic CRX	12000	14279	213290	1998	64	55	91	31	47.0	13.1	2.27	12.80
	15+	Pontiac Fiero	15070	7608	242785	2530	69	47	92	31	47.4	16.6	2.09	12.80
Sub-Compact	0_2	Honda Civic	17400	20015	20015	2440	67	55	115	31	55.4	16.0	2.36	12.80
	3_5	Honda Civic	14500	18606	77242	2450	67	55	102	32	50.9	16.1	2.36	13.21
	6_8	Chevrolet Cavalier	15650	13662	123172	2443	66	54	110	29	53.7	16.1	2.28	11.97
	9_11	Honda Civic	12995	15966	168766	2148	66	54	92	33	47.4	14.1	2.26	13.63
	12_14	Honda Civic	12000	14279	213290	1998	64	55	91	31	47.0	13.1	2.27	12.80
	15+	Honda Accord	17050	7608	242785	2293	65	54	86	35	45.2	15.1	2.26	14.45
Compact	0_2	Toyota Corolla	20070	20015	20015	2525	67	55	120	30	57.1	16.6	2.37	12.39
	3_5	Chevrolet Cavalier	17015	18606	77242	2765	68	55	150	30	66.7	18.2	2.41	12.39
	6_8	Honda Accord	22600	13662	123172	2763	68	55	140	26	63.6	18.2	2.40	10.74
	9_11	Ford Tempo	12200	15966	168766	2593	68	53	98	24	49.5	17.1	2.32	9.91
	12_14	Ford Tempo	11200	14279	213290	2523	68	53	86	25	45.2	16.6	2.32	10.32
	15+	Ford Tempo	11200	7608	242785	2443	66	53	84	28	44.5	16.1	2.25	11.56
Mid-Size	0_2	Honda Accord	24800	20015	20015	3245	70	55	148	25	66.1	21.3	2.49	10.32
	3_5	Chevrolet Lumina	23075	18606	77242	3395	73	55	160	22	69.8	22.3	2.59	9.08
	6_8	Buick Regal	22300	13662	123172	3151	72	53	170	22	72.8	20.7	2.48	9.08
	9_11	Chevrolet Corsica	13750	15966	168766	2615	68	56	130	22	60.4	17.2	2.47	9.08
	12_14	Pontiac 6000	15800	14279	213290	2748	72	54	125	22	58.7	18.1	2.49	9.08
	15+	Pontiac 6000	15800	7608	242785	2748	68	54	112	25	54.4	18.1	2.36	10.32
Full-Size	0_2	Chrysler Intrepid	25060	20015	20015	3455	75	56	200	24	81.6	22.7	2.71	9.91
	3_5	Chrysler Intrepid	25060	18606	77242	3435	74	56	161	21	70.1	22.6	2.67	8.67
	6_8	Chrysler Intrepid	25060	13662	123172	3250	74	56	153	23	67.7	21.4	2.70	9.50
	9_11	Buick LeSabre	23000	15966	168766	3277	72	56	165	22	71.3	21.5	2.59	9.08
	12_14	Buick LeSabre	23000	14279	213290	3286	72	56	125	21	58.7	21.6	2.58	8.67
	15+	Oldsmobile Delta 88 Royale	21300	7608	242785	3533	76	57	140	20	63.6	23.2	2.83	8.26

Costs of Autos and Light trucks in Canada

Veh Class	Vintage (Years)	Popular Model in Class/Vintage	Cost of New Car (\$)	Annual Utilization (km)	Total KM on car	Weight (lbs)	Width (in)	Height (in)	Max Engine Power (hp)	Comb-ined MPG	Max Used Driving Power	Max Used Braking Power	Frontal Area (m^2)	Fuel Efficiency (km/lit.)
Station Wagon	0_2	Ford Escort	16396	15782	15782	2585	66	54	110	28	53.7	17.0	2.28	11.56
	3_5	Ford Escort	16396	34237	100038	2565	67	54	127	29	59.4	16.9	2.31	11.97
	6_8	Ford Taurus	24695	27634	189543	3294	71	56	140	23	63.6	21.7	2.55	9.50
	9_11	Ford Taurus	24695	28283	273743	3252	71	56	140	21	63.6	21.4	2.54	8.67
	12_14	Volkswagen Fox	11750	28516	359058	3297	72	77	95	15	48.5	21.7	3.61	6.19
	15+	Toyota Tercel	12200	45020	477614	2284	64	59	62	35	36.0	15.0	2.43	14.45
Mini Van	0_2	Ford Windstar	31795	22353	22353	4055	75	68	200	19	81.6	26.7	3.27	7.85
	3_5	Dodge Caravan	27445	20797	86300	3835	72	67	142	22	64.2	25.2	3.09	9.08
	6_8	Dodge Caravan	27445	18835	144767	3605	72	66	142	22	64.2	23.7	3.07	9.08
	9_11	Plymouth Voyager	27445	14568	192738	3100	72	65	100	22	50.2	20.4	3.02	9.08
	12_14	Dodge Caravan	27445	11693	230692	2911	70	65	104	20	51.6	19.1	2.90	8.26
	15+	Dodge Caravan	27445	20427	283239	2911	70	65	104	20	51.6	19.1	2.90	8.26
Pass Van	0_2	Gmc Safari M/L10	27025	22353	22353	4520	78	73	190	15	78.7	29.7	3.67	6.19
	3_5	Ford Aerostar	20195	20797	86300	4220	72	73	135	20	62.0	27.7	3.38	8.26
	6_8	Ford Aerostar	20195	18835	144767	3735	72	73	145	20	65.2	24.7	3.40	8.26
	9_11	Ford Aerostar	20195	14568	192738	3361	72	73	145	19	65.2	22.1	3.37	7.85
	12_14	Ford Aerostar	20195	11693	230692	3250	72	73	140	18	63.6	21.4	3.37	7.43
	15+	Volkswagen Vanagon	22600	20427	283239	3297	72	77	100	19	50.2	21.7	3.61	7.85
Cargo Van	0_2	Chevrolet Venture	24725	22353	22353	3890	72	68	180	19	75.8	25.6	3.14	7.85
	3_5	Ford Econoline Van E150	24295	20797	86300	5005	79	81	200	15	81.6	32.9	4.13	6.19
	6_8	Ford Econoline Van E150	24295	18835	144767	4475	80	81	200	16	81.6	29.4	4.16	6.61
	9_11	Chevrolet Astro M/L10	18850	14568	192738	3089	77	74	150	19	66.7	20.3	3.68	7.85
	12_14	Ford Econoline Van E150	24295	11693	230692	4395	80	81	174	17	74.0	28.9	4.18	7.02
	15+	Chevrolet Chevy Van G20	16500	20427	283239	4097	80	82	150	20	66.7	26.9	4.20	8.26
Special Purpose	0_2	Ford Explorer	21350	23133	23133	4325	70	67	205	16	83.0	28.4	3.02	6.61
	3_5	Ford Explorer	21350	20607	87480	4280	70	70	160	18	69.8	28.1	3.16	7.43
	6_8	Ford Explorer	21350	19840	147767	4280	70	70	160	18	69.8	28.1	3.16	7.43
	9_11	Jeep Cherokee	26705	13485	192738	2838	70	63	150	21	66.7	18.7	2.88	8.67
	12_14	Ford Bronco	19300	13269	230692	4393	77	73	160	21	69.8	28.9	3.63	8.67
	15+	Chevrolet Blazer	26895	10746	283239	4421	80	74	160	24	69.8	29.1	3.80	9.91
Pickup Truck	0_2	Ford F150	22095	20963	20963	4450	78	72	210	16	84.4	29.3	3.63	6.61
	3_5	Ford F150	22095	18543	79012	4329	79	73	202	17	82.2	28.5	3.72	7.02
	6_8	Ford F150	22095	19506	136567	4004	79	70	225	16	88.6	26.3	3.56	6.61
	9_11	Ford F150	22095	14187	184447	3974	72	74	210	15	84.4	26.1	3.42	6.19
	12_14	Ford F150	22095	15144	228922	3433	77	72	200	15	81.6	22.6	3.59	6.19
	15+	Ford F150	22095	14386	272838	3828	77	72	200	15	81.6	25.2	3.59	6.19

Note: MPG is U.S. Gallons per mile and not Imperial

Exhibit 8.7: Vehicle Operating cost estimates per 1000 km drive on paved roads (\$, yr. 2000)

Veh Class	Vintage (Years)	Popular Model in Class/Vintage	Paved Road Surface (operating cost per 1000 km)							
			Lubricants	Tires	Maint Labor	Maint Parts	Non-Fuel Operating Cost per 1000 km	Fuel Cost per 1000 km	Total VOC per 1000 km	Non-Fuel Operating Cost per km (\$)
Two Seater	0_2	Mazda MX5 Miata	3.43	4.54	14.72	2.86	25.55	69.41	94.96	0.0255
	3_5	Honda Civic	3.43	4.54	19.57	2.56	30.10	53.00	83.10	0.0301
	6_8	Honda Civic	3.43	4.54	21.69	3.03	32.69	55.04	87.73	0.0327
	9_11	Mazda MX5 Miata	3.43	4.54	23.36	4.11	35.44	66.54	101.98	0.0354
	12_14	Honda Civic CRX	3.43	4.54	24.27	3.03	35.27	55.03	90.30	0.0353
	15+	Pontiac Fiero	3.43	4.54	25.11	4.00	37.09	56.17	93.26	0.0371
Sub-Compact	0_2	Honda Civic	3.43	4.54	14.41	1.87	24.25	55.59	79.84	0.0243
	3_5	Honda Civic	3.43	4.54	19.57	2.56	30.10	53.00	83.10	0.0301
	6_8	Chevrolet Cavalier	3.43	4.54	21.75	3.27	32.99	59.75	92.74	0.0330
	9_11	Honda Civic	3.43	4.54	23.14	3.02	34.13	53.30	87.43	0.0341
	12_14	Honda Civic	3.43	4.54	24.27	3.03	35.27	55.03	90.30	0.0353
	15+	Honda Accord	3.43	4.54	25.21	4.55	37.73	48.92	86.65	0.0377
Compact	0_2	Toyota Corolla	3.43	4.54	14.51	2.17	24.66	57.42	82.08	0.0247
	3_5	Chevrolet Cavalier	3.43	4.54	19.69	3.02	30.68	58.17	88.85	0.0307
	6_8	Honda Accord	3.43	4.54	22.06	4.80	34.82	67.21	102.03	0.0348
	9_11	Ford Tempo	3.43	4.54	23.10	2.83	33.90	71.47	105.37	0.0339
	12_14	Ford Tempo	3.43	4.54	24.23	2.82	35.02	70.63	105.65	0.0350
	15+	Ford Tempo	3.43	4.54	24.90	2.95	35.82	61.93	97.75	0.0358
Mid-Size	0_2	Honda Accord	3.43	4.54	14.68	2.72	25.37	66.67	92.04	0.0254
	3_5	Chevrolet Lumina	3.43	4.54	19.94	4.15	32.06	78.38	110.44	0.0321
	6_8	Buick Regal	3.43	4.54	22.04	4.73	34.74	77.78	112.52	0.0347
	9_11	Chevrolet Corsica	3.43	4.54	23.18	3.20	34.35	78.23	112.58	0.0344
	12_14	Pontiac 6000	3.43	4.54	24.47	4.02	36.46	79.11	115.57	0.0365
	15+	Pontiac 6000	3.43	4.54	25.15	4.20	37.32	69.02	106.34	0.0373
Full-Size	0_2	Chrysler Intrepid	3.43	4.54	14.69	2.75	25.41	69.19	94.60	0.0254
	3_5	Chrysler Intrepid	3.43	4.54	20.02	4.52	32.52	82.20	114.72	0.0325
	6_8	Chrysler Intrepid	3.43	4.54	22.16	5.34	35.47	75.58	111.05	0.0355
	9_11	Buick LeSabre	3.43	4.54	23.61	5.46	37.04	80.13	117.17	0.0370
	12_14	Buick LeSabre	3.43	4.54	24.81	5.93	38.70	84.63	123.33	0.0387
	15+	Oldsmobile Delta 88 Royale	3.43	4.54	25.41	5.73	39.11	86.11	125.22	0.0391

Costs of Autos and Light trucks in Canada

Veh Class	Vintage (Years)	Popular Model in Class/Vintage	Paved Road Surface (operating cost per 1000 km)								
			Lubricants	Tires	Maint Labor	Maint Parts	Non-Fuel Operating Cost per 1000 km	Fuel Cost per 1000 km	Total VOC per 1000 km	Non-Fuel Operating Cost per km (\$)	
Station Wagon	0_2	Ford Escort	3.43	4.54	13.56	1.61	23.13	60.98	84.11	0.0231	
	3_5	Ford Escort	3.43	4.54	20.81	3.19	31.97	60.55	92.52	0.0320	
	6_8	Ford Taurus	3.43	4.54	24.27	6.12	38.37	75.19	113.56	0.0384	
	9_11	Ford Taurus	3.43	4.54	26.21	6.96	41.14	82.79	123.93	0.0411	
	12_14	Volkswagen Fox	3.43	4.54	27.07	3.55	38.59	114.18	152.77	0.0386	
	15+	Toyota Tercel	3.43	4.54	28.73	4.07	40.78	49.80	90.58	0.0408	
Mini Van	0_2	Ford Windstar	3.43	4.54	15.31	3.69	26.97	90.28	117.25	0.0270	
	3_5	Dodge Caravan	3.43	4.54	20.61	5.18	33.76	79.95	113.71	0.0338	
	6_8	Dodge Caravan	3.43	4.54	23.04	6.22	37.23	79.35	116.58	0.0372	
	9_11	Plymouth Voyager	3.43	4.54	24.47	6.88	39.32	79.79	119.11	0.0393	
	12_14	Dodge Caravan	3.43	4.54	25.41	7.32	40.70	86.90	127.60	0.0407	
	15+	Dodge Caravan	3.43	4.54	26.51	7.86	42.35	86.16	128.51	0.0423	
Pass Van	0_2	Gmc Safari M/L10	3.43	5.34	14.60	2.99	26.37	113.69	140.06	0.0264	
	3_5	Ford Aerostar	3.43	5.34	19.76	3.65	32.19	88.56	120.75	0.0322	
	6_8	Ford Aerostar	3.43	5.34	22.18	4.41	35.36	88.13	123.49	0.0354	
	9_11	Ford Aerostar	3.43	5.34	23.62	4.88	37.27	91.14	128.41	0.0373	
	12_14	Ford Aerostar	3.43	5.34	24.55	5.21	38.53	96.42	134.95	0.0385	
	15+	Volkswagen Vanagon	3.43	5.34	25.78	6.30	40.84	91.85	132.69	0.0408	
Cargo Van	0_2	Chevrolet Venture	3.43	5.34	14.52	2.72	26.01	91.97	117.98	0.0260	
	3_5	Ford Econoline Van E150	3.43	5.34	19.95	4.44	33.16	115.70	148.86	0.0332	
	6_8	Ford Econoline Van E150	3.43	5.34	22.38	5.35	36.50	108.48	144.98	0.0365	
	9_11	Chevrolet Astro M/L10	3.43	5.34	23.55	4.55	36.86	90.47	127.33	0.0369	
	12_14	Ford Econoline Van E150	3.43	5.34	24.75	6.32	39.84	101.70	141.54	0.0398	
	15+	Chevrolet Chevy Van G20	3.43	5.34	25.45	4.54	38.76	87.49	126.25	0.0388	

Exhibit 8.8: Vehicle Operating cost estimates per 1000 km drive on unpaved roads (\$, yr. 2000)

Veh Class	Vintage (Years)	Popular Model in Class/Vintage	Un-Paved Road Surface (operating cost per 1000 km)							
			Lubricants	Tires	Maint Labor	Maint Parts	Non-Fuel Operating Cost per 1000 km	Fuel Cost per 1000 km	Total VOC per 1000 km	Non-Fuel Operating Cost per km (\$)
Two Seater	0_2	Mazda MX5 Miata	4.01	5.69	17.81	4.03	31.55	70.48	102.03	0.0315
	3_5	Honda Civic	4.01	5.69	23.60	3.60	36.90	54.46	91.36	0.0369
	6_8	Honda Civic	4.01	5.69	26.16	4.25	40.12	56.15	96.27	0.0401
	9_11	Mazda MX5 Miata	4.01	5.69	28.20	5.78	43.68	67.51	111.19	0.0437
	12_14	Honda Civic CRX	4.01	5.69	29.26	4.25	43.21	56.50	99.71	0.0432
	15+	Pontiac Fiero	4.01	5.69	30.30	5.63	45.63	57.83	103.45	0.0456
Sub-Compact	0_2	Honda Civic	4.01	5.69	17.39	2.63	29.73	56.52	86.25	0.0297
	3_5	Honda Civic	4.01	5.69	23.60	3.60	36.90	53.98	90.88	0.0369
	6_8	Chevrolet Cavalier	4.01	5.69	26.24	4.61	40.54	60.70	101.24	0.0405
	9_11	Honda Civic	4.01	5.69	27.90	4.25	41.85	54.38	96.23	0.0418
	12_14	Honda Civic	4.01	5.69	29.26	4.25	43.21	56.01	99.22	0.0432
	15+	Honda Accord	4.01	5.69	30.43	6.40	46.52	50.15	96.67	0.0465
Compact	0_2	Toyota Corolla	4.01	5.69	17.53	3.06	30.29	58.57	88.86	0.0303
	3_5	Chevrolet Cavalier	4.01	5.69	23.76	4.25	37.71	59.16	96.87	0.0377
	6_8	Honda Accord	4.01	5.69	26.66	6.76	43.11	68.24	111.36	0.0431
	9_11	Ford Tempo	4.01	5.69	27.84	3.98	41.52	72.88	114.40	0.0415
	12_14	Ford Tempo	4.01	5.69	29.20	3.96	42.86	72.20	115.05	0.0429
	15+	Ford Tempo	4.01	5.69	30.01	4.14	43.85	63.32	107.17	0.0439
Mid-Size	0_2	Honda Accord	4.01	5.69	17.76	3.83	31.29	68.32	99.61	0.0313
	3_5	Chevrolet Lumina	4.01	5.69	24.10	5.84	39.65	79.31	118.96	0.0396
	6_8	Buick Regal	4.01	5.69	26.64	6.66	43.00	78.57	121.58	0.0430
	9_11	Chevrolet Corsica	4.01	5.69	27.95	4.50	42.15	78.99	121.15	0.0422
	12_14	Pontiac 6000	4.01	5.69	29.52	5.65	44.87	79.96	124.83	0.0449
	15+	Pontiac 6000	4.01	5.69	30.34	5.91	45.95	70.22	116.18	0.0460
Full-Size	0_2	Chrysler Intrepid	4.01	5.69	17.77	3.88	31.35	70.54	101.89	0.0313
	3_5	Chrysler Intrepid	4.01	5.69	24.21	6.38	40.29	83.59	123.87	0.0403
	6_8	Chrysler Intrepid	4.01	5.69	26.79	7.53	44.02	77.13	121.15	0.0440
	9_11	Buick LeSabre	4.01	5.69	28.53	7.69	45.93	81.50	127.43	0.0459
	12_14	Buick LeSabre	4.01	5.69	29.98	8.35	48.03	86.38	134.41	0.0480
	15+	Oldsmobile Delta 88 Royale	4.01	5.69	30.70	8.06	48.46	87.70	136.16	0.0485

Costs of Autos and Light trucks in Canada

Veh Class	Vintage (Years)	Popular Model in Class/Vintage	Un-Paved Road Surface (operating cost per 1000 km)							
			Lubricants	Tires	Maint Labor	Maint Parts	Non-Fuel Operating Cost per 1000 km	Fuel Cost per 1000 km	Total VOC per 1000 km	Non-Fuel Operating Cost per km (\$)
Station Wagon	0_2	Ford Escort	4.01	5.69	16.36	2.26	28.32	62.44	90.76	0.0283
	3_5	Ford Escort	4.01	5.69	25.12	4.49	39.30	61.88	101.18	0.0393
	6_8	Ford Taurus	4.01	5.69	29.34	8.63	47.67	76.15	123.82	0.0477
	9_11	Ford Taurus	4.01	5.69	31.68	9.81	51.19	83.51	134.70	0.0512
	12_14	Volkswagen Fox	4.01	5.69	32.62	4.99	47.31	114.68	161.99	0.0473
	15+	Toyota Tercel	4.01	5.69	34.64	5.73	50.07	50.79	100.85	0.0501
Mini Van	0_2	Ford Windstar	4.01	5.69	18.55	5.21	33.46	91.18	124.64	0.0335
	3_5	Dodge Caravan	4.01	5.69	24.93	7.30	41.93	81.22	123.15	0.0419
	6_8	Dodge Caravan	4.01	5.69	27.86	8.77	46.33	80.56	126.90	0.0463
	9_11	Plymouth Voyager	4.01	5.69	29.60	9.70	48.99	81.38	130.37	0.0490
	12_14	Dodge Caravan	4.01	5.69	30.73	10.32	50.75	88.38	139.13	0.0507
	15+	Dodge Caravan	4.01	5.69	32.06	11.08	52.85	88.00	140.85	0.0528
Pass Van	0_2	Gmc Safari M/L10	4.01	6.70	17.67	4.22	32.60	116.13	148.73	0.0326
	3_5	Ford Aerostar	4.01	6.70	23.86	5.14	39.71	91.58	131.29	0.0397
	6_8	Ford Aerostar	4.01	6.70	26.78	6.20	43.70	90.82	134.51	0.0437
	9_11	Ford Aerostar	4.01	6.70	28.51	6.87	46.10	93.31	139.40	0.0461
	12_14	Ford Aerostar	4.01	6.70	29.64	7.33	47.68	98.75	146.43	0.0477
	15+	Volkswagen Vanagon	4.01	6.70	31.14	8.86	50.71	94.54	145.25	0.0507
Cargo Van	0_2	Chevrolet Venture	4.01	6.70	17.55	3.84	32.10	95.17	127.27	0.0321
	3_5	Ford Econoline Van E150	4.01	6.70	24.11	6.25	41.07	117.88	158.95	0.0411
	6_8	Ford Econoline Van E150	4.01	6.70	27.04	7.54	45.29	110.27	155.56	0.0453
	9_11	Chevrolet Astro M/L10	4.01	6.70	28.42	6.40	45.52	92.82	138.34	0.0455
	12_14	Ford Econoline Van E150	4.01	6.70	29.91	8.90	49.52	107.65	157.17	0.0495
	15+	Chevrolet Chevy Van G20	4.01	6.70	30.70	6.38	47.79	89.13	136.92	0.0478
Special Purpose	0_2	Ford Explorer	4.01	6.70	17.52	3.32	31.55	108.63	140.18	0.0315
	3_5	Ford Explorer	4.01	6.70	24.00	5.48	40.19	98.24	138.44	0.0402
	6_8	Ford Explorer	4.01	6.70	26.98	6.63	44.31	98.24	142.56	0.0443
	9_11	Jeep Cherokee	4.01	6.70	28.93	9.22	48.86	85.56	134.42	0.0489
	12_14	Ford Bronco	4.01	6.70	29.58	6.99	47.28	85.73	133.01	0.0473
	15+	Chevrolet Blazer	4.01	6.70	31.41	10.64	52.77	74.93	127.69	0.0528
Pickup Truck	0_2	Ford F150	4.01	6.70	17.13	3.32	31.16	116.05	147.21	0.0312
	3_5	Ford F150	4.01	6.70	23.50	5.47	39.69	108.80	148.48	0.0397
	6_8	Ford F150	4.01	6.70	26.56	6.68	43.95	115.37	159.32	0.0440
	9_11	Ford F150	4.01	6.70	28.37	7.44	46.51	120.00	166.51	0.0465
	12_14	Ford F150	4.01	6.70	29.72	8.03	48.46	119.82	168.28	0.0485
	15+	Ford F150	4.01	6.70	30.85	8.54	50.11	120.96	171.07	0.0501

Exhibit 8.9: Avg. non-fuel operating cost for paved roads (\$/km, yr. 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.019	0.026	0.025	0.024	0.025	0.028	0.022	0.022	0.023	0.027	0.026	0.026	0.026
	2	0.022	0.030	0.030	0.028	0.029	0.033	0.026	0.025	0.027	0.032	0.030	0.030	0.030
	3	0.024	0.033	0.032	0.030	0.032	0.035	0.028	0.028	0.029	0.035	0.033	0.033	0.033
	4	0.026	0.036	0.035	0.033	0.034	0.038	0.031	0.030	0.031	0.038	0.035	0.035	0.035
	5	0.026	0.035	0.035	0.033	0.034	0.038	0.030	0.030	0.031	0.038	0.035	0.035	0.035
	6	0.027	0.037	0.037	0.034	0.036	0.040	0.032	0.031	0.033	0.040	0.037	0.037	0.037
Sub-compact	1	0.018	0.024	0.024	0.022	0.023	0.026	0.021	0.020	0.022	0.026	0.024	0.024	0.024
	2	0.022	0.030	0.030	0.028	0.029	0.033	0.026	0.025	0.027	0.032	0.030	0.030	0.030
	3	0.024	0.033	0.033	0.030	0.032	0.036	0.029	0.028	0.029	0.035	0.033	0.033	0.033
	4	0.025	0.034	0.034	0.031	0.033	0.037	0.030	0.029	0.030	0.036	0.034	0.034	0.034
	5	0.026	0.035	0.035	0.033	0.034	0.038	0.030	0.030	0.031	0.038	0.035	0.035	0.035
	6	0.027	0.038	0.037	0.035	0.036	0.041	0.033	0.032	0.034	0.040	0.038	0.038	0.038
Compact	1	0.018	0.025	0.024	0.023	0.024	0.027	0.021	0.021	0.022	0.026	0.025	0.025	0.025
	2	0.022	0.031	0.030	0.028	0.030	0.033	0.027	0.026	0.027	0.033	0.031	0.031	0.031
	3	0.025	0.035	0.035	0.032	0.034	0.038	0.030	0.029	0.031	0.037	0.035	0.035	0.035
	4	0.025	0.034	0.034	0.031	0.033	0.037	0.029	0.029	0.030	0.036	0.034	0.034	0.034
	5	0.025	0.035	0.035	0.032	0.034	0.038	0.030	0.030	0.031	0.037	0.035	0.035	0.035
	6	0.026	0.036	0.036	0.033	0.035	0.039	0.031	0.030	0.032	0.038	0.036	0.036	0.036
Midsize	1	0.018	0.026	0.025	0.023	0.024	0.027	0.022	0.021	0.023	0.027	0.025	0.025	0.025
	2	0.023	0.032	0.032	0.030	0.031	0.035	0.028	0.027	0.028	0.034	0.032	0.032	0.032
	3	0.025	0.035	0.034	0.032	0.033	0.038	0.030	0.029	0.031	0.037	0.035	0.035	0.035
	4	0.025	0.035	0.034	0.032	0.033	0.037	0.030	0.029	0.031	0.037	0.034	0.034	0.034
	5	0.026	0.037	0.036	0.034	0.035	0.039	0.032	0.031	0.032	0.039	0.036	0.036	0.036
	6	0.027	0.038	0.037	0.034	0.036	0.040	0.032	0.031	0.033	0.040	0.037	0.037	0.037
Full-size	1	0.018	0.026	0.025	0.023	0.024	0.027	0.022	0.021	0.023	0.027	0.025	0.025	0.025
	2	0.024	0.033	0.032	0.030	0.031	0.035	0.028	0.027	0.029	0.035	0.033	0.033	0.033
	3	0.026	0.036	0.035	0.033	0.034	0.038	0.031	0.030	0.032	0.038	0.035	0.035	0.035
	4	0.027	0.037	0.037	0.034	0.036	0.040	0.032	0.031	0.033	0.040	0.037	0.037	0.037
	5	0.028	0.039	0.038	0.036	0.037	0.042	0.033	0.033	0.034	0.041	0.039	0.039	0.039
	6	0.028	0.039	0.039	0.036	0.038	0.042	0.034	0.033	0.035	0.042	0.039	0.039	0.039
Stationwagon	1	0.017	0.023	0.023	0.021	0.022	0.025	0.020	0.020	0.021	0.025	0.023	0.023	0.023
	2	0.023	0.032	0.032	0.029	0.031	0.035	0.028	0.027	0.028	0.034	0.032	0.032	0.032
	3	0.028	0.039	0.038	0.035	0.037	0.041	0.033	0.032	0.034	0.041	0.038	0.038	0.038
	4	0.030	0.041	0.041	0.038	0.040	0.044	0.036	0.035	0.037	0.044	0.041	0.041	0.041
	5	0.028	0.039	0.038	0.036	0.037	0.042	0.033	0.033	0.034	0.041	0.039	0.039	0.039
	6	0.030	0.041	0.040	0.038	0.039	0.044	0.035	0.034	0.036	0.044	0.041	0.041	0.041
Minivans	1	0.020	0.027	0.027	0.025	0.026	0.029	0.023	0.023	0.024	0.029	0.027	0.027	0.027
	2	0.025	0.034	0.033	0.031	0.033	0.037	0.029	0.028	0.030	0.036	0.034	0.034	0.034
	3	0.027	0.037	0.037	0.034	0.036	0.040	0.032	0.031	0.033	0.040	0.037	0.037	0.037
	4	0.029	0.040	0.039	0.036	0.038	0.043	0.034	0.033	0.035	0.042	0.039	0.039	0.039
	5	0.030	0.041	0.040	0.038	0.039	0.044	0.035	0.034	0.036	0.043	0.041	0.041	0.041
	6	0.031	0.043	0.042	0.039	0.041	0.046	0.037	0.036	0.038	0.045	0.042	0.042	0.042
Pass. Van	1	0.019	0.027	0.026	0.024	0.025	0.029	0.023	0.022	0.023	0.028	0.026	0.026	0.026
	2	0.023	0.032	0.032	0.030	0.031	0.035	0.028	0.027	0.029	0.034	0.032	0.032	0.032
	3	0.026	0.036	0.035	0.033	0.034	0.038	0.031	0.030	0.031	0.038	0.035	0.035	0.035
	4	0.027	0.037	0.037	0.034	0.036	0.040	0.032	0.031	0.033	0.040	0.037	0.037	0.037
	5	0.028	0.039	0.038	0.036	0.037	0.042	0.033	0.032	0.034	0.041	0.039	0.039	0.039
	6	0.030	0.041	0.040	0.038	0.039	0.044	0.035	0.034	0.036	0.044	0.041	0.041	0.041
Cargo Van	1	0.019	0.026	0.026	0.024	0.025	0.028	0.022	0.022	0.023	0.027	0.026	0.026	0.026
	2	0.024	0.033	0.033	0.031	0.032	0.036	0.029	0.028	0.029	0.035	0.033	0.033	0.033
	3	0.027	0.037	0.036	0.034	0.035	0.039	0.032	0.031	0.032	0.039	0.036	0.036	0.036
	4	0.027	0.037	0.037	0.034	0.036	0.040	0.032	0.031	0.033	0.039	0.037	0.037	0.037
	5	0.029	0.040	0.039	0.037	0.038	0.043	0.034	0.034	0.035	0.043	0.040	0.040	0.040
	6	0.028	0.039	0.038	0.036	0.037	0.042	0.034	0.033	0.034	0.041	0.039	0.039	0.039
Special PV	1	0.019	0.026	0.025	0.024	0.025	0.028	0.022	0.022	0.023	0.027	0.026	0.026	0.026
	2	0.024	0.033	0.032	0.030	0.031	0.035	0.028	0.027	0.029	0.035	0.033	0.033	0.033
	3	0.026	0.036	0.036	0.033	0.035	0.039	0.031	0.030	0.032	0.038	0.036	0.036	0.036
	4	0.029	0.039	0.039	0.036	0.038	0.042	0.034	0.033	0.035	0.042	0.039	0.039	0.039
	5	0.028	0.038	0.038	0.035	0.037	0.041	0.033	0.032	0.034	0.041	0.038	0.038	0.038
	6	0.031	0.043	0.042	0.039	0.041	0.046	0.037	0.036	0.038	0.045	0.042	0.042	0.042
Pickups	1	0.018	0.025	0.025	0.023	0.024	0.027	0.022	0.021	0.022	0.027	0.025	0.025	0.025
	2	0.023	0.032	0.032	0.030	0.031	0.035	0.028	0.027	0.029	0.034	0.032	0.032	0.032
	3	0.026	0.036	0.035	0.033	0.034	0.038	0.031	0.030	0.032	0.038	0.035	0.035	0.035
	4	0.027	0.038	0.037	0.035	0.036	0.041	0.032	0.032	0.033	0.040	0.038	0.038	0.038
	5	0.028	0.039	0.039	0.036	0.038	0.042	0.034	0.033	0.035	0.042	0.039	0.039	0.039
	6	0.029	0.041	0.040	0.037	0.039	0.044	0.035	0.034	0.036	0.043	0.040	0.040	0.040

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

Exhibit 8.10 Avg. non-fuel operating cost for unpaved roads (\$/km, yr. 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.023	0.032	0.031	0.029	0.030	0.034	0.027	0.027	0.028	0.034	0.032	0.032	0.032
	2	0.027	0.037	0.037	0.034	0.036	0.040	0.032	0.031	0.033	0.039	0.037	0.037	0.037
	3	0.029	0.040	0.040	0.037	0.039	0.043	0.035	0.034	0.036	0.043	0.040	0.040	0.040
	4	0.032	0.044	0.043	0.040	0.042	0.047	0.038	0.037	0.039	0.047	0.044	0.044	0.044
	5	0.031	0.044	0.043	0.040	0.042	0.047	0.037	0.036	0.038	0.046	0.043	0.043	0.043
	6	0.033	0.046	0.045	0.042	0.044	0.049	0.040	0.039	0.041	0.049	0.046	0.046	0.046
Sub-compact	1	0.022	0.030	0.029	0.027	0.029	0.032	0.026	0.025	0.026	0.032	0.030	0.030	0.030
	2	0.027	0.037	0.037	0.034	0.036	0.040	0.032	0.031	0.033	0.039	0.037	0.037	0.037
	3	0.029	0.041	0.040	0.037	0.039	0.044	0.035	0.034	0.036	0.043	0.041	0.041	0.041
	4	0.030	0.042	0.041	0.039	0.040	0.045	0.036	0.035	0.037	0.045	0.042	0.042	0.042
	5	0.031	0.044	0.043	0.040	0.042	0.047	0.037	0.036	0.038	0.046	0.043	0.043	0.043
	6	0.034	0.047	0.046	0.043	0.045	0.050	0.040	0.039	0.041	0.050	0.047	0.047	0.047
Compact	1	0.022	0.030	0.030	0.028	0.029	0.033	0.026	0.026	0.027	0.032	0.030	0.030	0.030
	2	0.027	0.038	0.037	0.035	0.036	0.041	0.033	0.032	0.034	0.040	0.038	0.038	0.038
	3	0.031	0.043	0.043	0.040	0.041	0.047	0.037	0.036	0.038	0.046	0.043	0.043	0.043
	4	0.030	0.042	0.041	0.038	0.040	0.045	0.036	0.035	0.037	0.044	0.042	0.042	0.042
	5	0.031	0.043	0.042	0.040	0.041	0.046	0.037	0.036	0.038	0.046	0.043	0.043	0.043
	6	0.044	0.061	0.060	0.056	0.058	0.065	0.052	0.051	0.054	0.065	0.061	0.061	0.061
Midsize	1	0.023	0.032	0.031	0.029	0.030	0.034	0.027	0.026	0.028	0.033	0.031	0.031	0.031
	2	0.029	0.040	0.039	0.037	0.038	0.043	0.034	0.033	0.035	0.042	0.040	0.040	0.040
	3	0.031	0.043	0.043	0.040	0.041	0.046	0.037	0.036	0.038	0.046	0.043	0.043	0.043
	4	0.031	0.042	0.042	0.039	0.041	0.046	0.037	0.036	0.038	0.045	0.042	0.042	0.042
	5	0.033	0.045	0.044	0.041	0.043	0.048	0.039	0.038	0.040	0.048	0.045	0.045	0.045
	6	0.033	0.046	0.046	0.042	0.044	0.050	0.040	0.039	0.041	0.049	0.046	0.046	0.046
Full-size	1	0.023	0.032	0.031	0.029	0.030	0.034	0.027	0.026	0.028	0.034	0.031	0.031	0.031
	2	0.029	0.041	0.040	0.037	0.039	0.044	0.035	0.034	0.036	0.043	0.040	0.040	0.040
	3	0.032	0.044	0.044	0.041	0.042	0.048	0.038	0.037	0.039	0.047	0.044	0.044	0.044
	4	0.033	0.046	0.046	0.042	0.044	0.050	0.040	0.039	0.041	0.049	0.046	0.046	0.046
	5	0.035	0.048	0.048	0.044	0.046	0.052	0.042	0.041	0.043	0.051	0.048	0.048	0.048
	6	0.035	0.049	0.048	0.045	0.047	0.052	0.042	0.041	0.043	0.052	0.048	0.048	0.048
Stationwagon	1	0.021	0.029	0.028	0.026	0.027	0.031	0.025	0.024	0.025	0.030	0.028	0.028	0.028
	2	0.029	0.040	0.039	0.036	0.038	0.042	0.034	0.033	0.035	0.042	0.039	0.039	0.039
	3	0.035	0.048	0.047	0.044	0.046	0.052	0.041	0.040	0.042	0.051	0.048	0.048	0.048
	4	0.037	0.052	0.051	0.047	0.049	0.055	0.044	0.043	0.046	0.055	0.051	0.051	0.051
	5	0.034	0.048	0.047	0.044	0.046	0.051	0.041	0.040	0.042	0.051	0.047	0.047	0.047
	6	0.036	0.050	0.050	0.046	0.048	0.054	0.043	0.042	0.045	0.054	0.050	0.050	0.050
Minivans	1	0.024	0.034	0.033	0.031	0.032	0.036	0.029	0.028	0.030	0.036	0.033	0.033	0.033
	2	0.030	0.042	0.042	0.039	0.040	0.045	0.036	0.035	0.037	0.045	0.042	0.042	0.042
	3	0.034	0.047	0.046	0.043	0.045	0.050	0.040	0.039	0.041	0.050	0.046	0.046	0.046
	4	0.036	0.049	0.049	0.045	0.047	0.053	0.042	0.041	0.044	0.052	0.049	0.049	0.049
	5	0.037	0.051	0.050	0.047	0.049	0.055	0.044	0.043	0.045	0.054	0.051	0.051	0.051
	6	0.038	0.053	0.052	0.049	0.051	0.057	0.046	0.045	0.047	0.057	0.053	0.053	0.053
Pass. Van	1	0.024	0.033	0.032	0.030	0.031	0.035	0.028	0.028	0.029	0.035	0.033	0.033	0.033
	2	0.029	0.040	0.039	0.037	0.038	0.043	0.034	0.034	0.035	0.042	0.040	0.040	0.040
	3	0.032	0.044	0.043	0.040	0.042	0.047	0.038	0.037	0.039	0.047	0.044	0.044	0.044
	4	0.033	0.046	0.046	0.042	0.044	0.050	0.040	0.039	0.041	0.049	0.046	0.046	0.046
	5	0.035	0.048	0.047	0.044	0.046	0.052	0.041	0.040	0.042	0.051	0.048	0.048	0.048
	6	0.037	0.051	0.050	0.047	0.049	0.055	0.044	0.043	0.045	0.054	0.051	0.051	0.051
Cargo Van	1	0.023	0.032	0.032	0.030	0.031	0.035	0.028	0.027	0.029	0.034	0.032	0.032	0.032
	2	0.030	0.041	0.041	0.038	0.040	0.044	0.036	0.035	0.037	0.044	0.041	0.041	0.041
	3	0.033	0.046	0.045	0.042	0.044	0.049	0.039	0.038	0.040	0.048	0.045	0.045	0.045
	4	0.033	0.046	0.045	0.042	0.044	0.049	0.039	0.038	0.040	0.049	0.046	0.046	0.046
	5	0.036	0.050	0.049	0.046	0.048	0.054	0.043	0.042	0.044	0.053	0.050	0.050	0.050
	6	0.035	0.048	0.047	0.044	0.046	0.052	0.041	0.040	0.043	0.051	0.048	0.048	0.048
Special PV	1	0.023	0.032	0.031	0.029	0.030	0.034	0.027	0.027	0.028	0.034	0.032	0.032	0.032
	2	0.029	0.040	0.040	0.037	0.039	0.043	0.035	0.034	0.036	0.043	0.040	0.040	0.040
	3	0.032	0.045	0.044	0.041	0.043	0.048	0.038	0.037	0.039	0.047	0.044	0.044	0.044
	4	0.035	0.049	0.048	0.045	0.047	0.053	0.042	0.041	0.043	0.052	0.049	0.049	0.049
	5	0.034	0.048	0.047	0.044	0.045	0.051	0.041	0.040	0.042	0.051	0.047	0.047	0.047
	6	0.038	0.053	0.052	0.049	0.051	0.057	0.046	0.045	0.047	0.056	0.053	0.053	0.053
Pickups	1	0.023	0.031	0.031	0.029	0.030	0.034	0.027	0.026	0.028	0.033	0.031	0.031	0.031
	2	0.029	0.040	0.039	0.037	0.038	0.043	0.034	0.034	0.035	0.042	0.040	0.040	0.040
	3	0.032	0.044	0.044	0.041	0.042	0.048	0.038	0.037	0.039	0.047	0.044	0.044	0.044
	4	0.034	0.047	0.046	0.043	0.045	0.050	0.040	0.039	0.041	0.050	0.047	0.047	0.047
	5	0.035	0.049	0.048	0.045	0.047	0.052	0.042	0.041	0.043	0.052	0.048	0.048	0.048
	6	0.036	0.050	0.050	0.046	0.048	0.054	0.043	0.042	0.045	0.054	0.050	0.050	0.050

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

8.3 Parking Costs

Parking costs can represent a substantial portion of an individual's cost of operating an automobile, especially in larger urban centres. Representative rates for downtown parking in several Canadian cities are presented in Exhibit 8.11. Monthly downtown parking ranges from \$65 to \$400. This can add \$800 up to \$4,800 to the annual cost of operating an automobile. However, such charges typically only apply to a small portion of total trips, and many commuters who use such parking receive exemptions or subsidies that offset some or all of these costs.

Exhibit 8.11: Representative Parking Costs

City	On Street Meters (per Hour)	Downtown Surface/Parkades			
		Per Day		Per Month Unreserved	
		Range	Median	Range	Median
Halifax	\$1.00	\$10 - \$19	\$12.50	\$132 - \$143	\$138
Montreal	\$3.00	\$13 - \$18	\$14	\$200- \$360	\$247
Ottawa	\$2.50	\$12.85 - \$25.70	\$17	\$150 - \$210	\$200
Toronto	\$3.00	\$14 - \$18	\$16	\$200 - \$400	\$285
Winnipeg	\$1.50	\$10	\$10	\$85 - \$145	\$110
Regina	\$1.00	\$6 - \$7	\$6.25	\$91 - \$128	\$105
Calgary	\$3.00	\$6.25 - \$19.25	\$13.75	\$120 - \$385	\$245
Vancouver	\$2.50	\$6.40 - \$15.75	\$13	\$105 - \$200	\$145
Victoria	\$1.50	\$5 - \$14	\$10	\$65 - \$135	\$100

Sources: Meter rates: Canadian Parking Association Winnipeg parking Authority Website for three parkades. Other rates: Colliers International CBD Parking Rates Survey (June 2005).

Most parking costs are borne indirectly through building costs, taxes, incorporated into the price of retail goods, or included as an employee benefit, and when motorists pay directly for parking it is often priced by the month or year, and so becomes a fixed cost. As a result, only a small portion of parking costs is variable, that is, motorists pay by the minute, hour or day, and so would save if they avoided a particular trip. According to some U.S. estimates, total parking facility costs have been estimated to exceed total roadway costs ("Parking Costs," Litman, 2004)⁶.

There have been few reliable surveys of the portion of trips for which motorists pay directly for parking. According to U.S. travel surveys, motorists use unpriced parking for most trips; of the 95% of commuters who drive, only about 5% pay full parking costs and 9% pay a subsidized rate, while unpriced parking is provided for more than 99% of non-commute trips (Shoup, 2005). Priced parking appears to be more common in Canada, but even if it is significantly more common,

⁶ In other words, the total annualized cost of building, operating and maintaining parking facilities is greater than the total annualized cost of building, maintaining and operating costs of roads.

parking is probably priced at only 2-5% of total trip destinations, and most of this is priced by the month or year and so is not variable.

The Exhibits below indicate our estimate of parking costs paid by users. These are out-of-pocket costs and do not include the costs of providing parking facilities which do not have any direct out-of-pocket costs associated with their use; parking provided by shopping malls would be one example.

Exhibit 8.12: Short-Term Priced Parking (Priced by the hour or day), which can be considered a variable cost.

	Lower Bound	Best Guess	Upper Bound
Portion of trips	0.5%	1%	2%
Average payment per trip that parking is priced	\$1.00	\$2.00	\$3.00
Average kilometres per trip	8	10	12
Average per kilometre	\$0.001	\$0.002	\$0.005

Exhibit 8.13: Long-Term Priced Parking (Priced by the Month or Year), which can be considered a fixed cost.

	Lower Bound	Best Guess	Upper Bound
Portion of total trips	2%	4%	6%
Average payment per trip that parking is priced	\$2.00	\$3.00	\$4.00
Average kilometres per trip	8	10	12
Average per kilometre	\$0.005	\$0.012	\$0.020

This estimate indicates that user paid parking over all trips averages about 1-2¢ per vehicle-kilometre, but this is mostly a fixed cost which is not affected by individual trip decisions. These costs are higher for vehicles used for commuting in major urban areas, such as Toronto, Montreal and Vancouver, and lower for vehicles in suburban and rural areas.

9.0 Differences between Commercial and Private Use Vehicles

A limited fleet survey was undertaken to identify differences in fleet managed vehicles and privately owned and used vehicles that may affect operating costs. In total, five fleet managers were interviewed including; a municipal fleet, a utility company fleet, a taxi fleet, a federal government fleet, a retail delivery fleet.

The fleets had several characteristics in common that differ from privately used vehicles. Results are summarized in Exhibit 9.1. It was not possible for the fleets to identify their administration costs as these were in different cost centres and people involved often had shared responsibilities (e.g. clerks that looked after all invoices, not just those associated with the fleet related invoices; a separate department that looked after all insurance costs for the organization).

Exhibit 9.1: Comparison of Characteristics of Fleet Managed Vehicles to Private use Vehicles.

Item	Comparison
Ownership (lease or buy)	All companies interviewed purchase the majority of their vehicles rather than leasing. Vehicles are leased where vehicle need is short term or a "specialty" vehicle for that fleet. The exception was the taxi fleet where the vehicles are owned by the drivers (Owner-operators).
Vehicle Purchase	Vehicles are purchased by tender in bulk. Discounts of 10% to 20% are obtained compared to the street prices individuals would pay. The exception is the taxi fleet where the driver is completely responsible for the vehicle purchase.
Insurance	Three of the fleets were self-insured; the other has a high deductible (\$5,000). For the taxi fleet, drivers are responsible for insurance.
Vehicle use (annual distance driven)	Fleet vehicles, for the most part, are driven farther than private use vehicles. The taxi fleet had the most used vehicles, averaging about 120,000 km a year. Typical usage in the other fleets is about 30,000 km per annum, although some vehicles record higher and lower usage. Average distance driven for a private automobile is 18,000 km per annum. Three of the fleets noted that fleet vehicles are issued only when the cost of a company vehicle is less than the cost the individual would otherwise submit for personal vehicle use.
Depreciation period	Depreciation costs are tracked by all fleets that own their vehicles. Fleets reported using different depreciation procedures. One fleet used a seven year straight line depreciation rate, while others used declining rates where maximum depreciation occurred in first year and then declined each year thereafter.
Vehicle Life	Fleet vehicles are life-cycle managed for optimum cost with a life 7 to 10 years. The taxi life is about 4 years.
Record Keeping	All fleets owning vehicles carefully record costs all costs and have computer based management systems to record/report costs life-to-date. Odometer readings are taken at specified intervals. Fleet owners are therefore much more aware of their per km costs than private owners.

Exhibit 9.1(continued)

Item	Comparison
Maintenance	<p>All fleets that owned their vehicles did as much in-house as possible. For some fleets down time for vehicles user is obtained as repairs are down outside normal working hours and the vehicle is ready for the user's next shift. An exception to doing work in-house is where the fleet size was too small to support a maintenance shop or overload situations.</p> <p>Major maintenance is generally contracted out at negotiated or fleet rates, which are about 10% to 15% less than street rates. As owner-operators taxi drivers were responsible for their own maintenance, doing as much as possible themselves. They also or generic or used replacement parts to minimize costs. Manufacturers recommended maintenance, or more frequent maintenance is followed</p>
Special policies	<p>All fleets owning vehicles had no personal use policies in place. Only work related passengers allowed.</p>
Fuel purchase	<p>Where fleet numbers warrant, fuel is purchased in bulk and dispensed from a central location. No "hedging" contracts were in place. Price discounts of 3% to 4% compared to street prices are obtained.</p> <p>For fuel is purchased at pumps a 2 cent per litre discount is obtained.</p>
Alternate fuels	<p>All fleets owning vehicles reported using some form of alternate fuel. Government fleets are more sensitive to showing stewardship in the use of alternate "green" fuels and fuel efficient vehicles.</p> <p>All fleets owning vehicles reported having at least one hybrid vehicle in the fleet.</p>
Vehicle Specifications	<p>Fleets often order vehicles with special options or modifications to fit the needs of the user. For example, the utility company adds heavier suspensions and the trailer towing package (increased longevity when there is lots of idling. For vans additions include interior cabinets, generators, security screening, and alarms. All modifications must be approved by health and safety departments.</p> <p>The retail delivery fleet's special requirements include racking/shelving, heaters in back, interior lighting on timer and see through roof (for additional interior lighting), sometimes stretched body, back-up cameras and upgraded mirrors.</p> <p>The federal fleet does not require any special modifications while the municipal fleet has police vehicles specially equipped; other autos aren't.</p>
Monitoring devices	<p>There is very little monitoring. No speed governing. Taxi company has GPS for dispatching purposes. Utility company going with a GPS system but mainly to download information technician needs to complete work.</p>

10.0 Differences in Unit Costs by Class of Road Due to Geometric and Surface Conditions

Exhibits 8.8 and 8.9 present per km non-fuel operating cost of vehicles while operated on paved and unpaved roads. Also Exhibits 8.6 and 8.7 summarize both fuel and non fuel operating costs estimates per 1000 km operating of the vehicle for different class and vintages. Comparing weighted average operating costs suggest that in average non-fuel operating cost is 24% higher on unpaved road compared to the paved road (see Exhibit 10.1). Furthermore, one can observe the average fuel cost on unpaved roads is almost 2% higher than the paved road condition. Exhibits 10.2 and 10.3 summarize per km fuel cost for both paved and unpaved roads adjusted for different provinces using fuel prices presented in Exhibit 8.1

Exhibit 10.1: Comparison of the weighted non-fuel operating cost of paved and unpaved roads (per 1000 km) (\$, yr. 2000)

	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
unpaved	29.40	42.87	40.60	37.88	38.88	44.03	36.15	35.62	36.92	44.68	42.53	41.19	40.99
paved	23.82	34.53	32.78	30.57	31.46	35.57	29.08	28.63	29.72	35.97	34.27	33.25	33.07

Exhibit 10.2: Fuel Cost for Paved Roads by Provinces (\$/km, yr. 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.081	0.068	0.076	0.071	0.075	0.069	0.065	0.070	0.063	0.067	0.069	0.069	0.069
	2	0.062	0.052	0.058	0.055	0.057	0.053	0.049	0.053	0.048	0.051	0.053	0.053	0.053
	3	0.064	0.054	0.060	0.057	0.059	0.055	0.051	0.055	0.050	0.053	0.055	0.055	0.055
	4	0.077	0.065	0.073	0.068	0.072	0.066	0.062	0.067	0.060	0.064	0.067	0.067	0.067
	5	0.064	0.054	0.060	0.057	0.059	0.055	0.051	0.055	0.050	0.053	0.055	0.055	0.055
	6	0.065	0.055	0.061	0.058	0.061	0.056	0.052	0.057	0.051	0.054	0.056	0.056	0.056
Sub-compact	1	0.065	0.055	0.061	0.057	0.060	0.055	0.052	0.056	0.050	0.054	0.056	0.056	0.056
	2	0.062	0.052	0.058	0.055	0.057	0.053	0.049	0.053	0.048	0.051	0.053	0.053	0.053
	3	0.069	0.059	0.065	0.062	0.065	0.060	0.056	0.060	0.054	0.058	0.060	0.060	0.060
	4	0.062	0.052	0.058	0.055	0.058	0.053	0.050	0.054	0.048	0.051	0.053	0.053	0.053
	5	0.064	0.054	0.060	0.057	0.059	0.055	0.051	0.055	0.050	0.053	0.055	0.055	0.055
	6	0.057	0.048	0.053	0.050	0.053	0.049	0.045	0.049	0.044	0.047	0.049	0.049	0.049
Compact	1	0.067	0.056	0.063	0.059	0.062	0.057	0.053	0.058	0.052	0.055	0.057	0.057	0.057
	2	0.068	0.057	0.064	0.060	0.063	0.058	0.054	0.059	0.052	0.056	0.058	0.058	0.058
	3	0.078	0.066	0.073	0.069	0.073	0.067	0.063	0.068	0.061	0.065	0.067	0.067	0.067
	4	0.083	0.070	0.078	0.074	0.077	0.071	0.066	0.072	0.064	0.069	0.071	0.071	0.071
	5	0.082	0.069	0.077	0.073	0.076	0.070	0.066	0.071	0.064	0.068	0.071	0.071	0.071
	6	0.072	0.061	0.068	0.064	0.067	0.062	0.058	0.062	0.056	0.060	0.062	0.062	0.062
Midsize	1	0.077	0.066	0.073	0.069	0.072	0.066	0.062	0.067	0.060	0.064	0.067	0.067	0.067
	2	0.091	0.077	0.086	0.081	0.085	0.078	0.073	0.079	0.071	0.076	0.078	0.078	0.078
	3	0.090	0.076	0.085	0.080	0.084	0.078	0.072	0.078	0.070	0.075	0.078	0.078	0.078
	4	0.091	0.077	0.085	0.081	0.084	0.078	0.073	0.079	0.070	0.075	0.078	0.078	0.078
	5	0.092	0.078	0.086	0.081	0.085	0.079	0.074	0.080	0.071	0.076	0.079	0.079	0.079
	6	0.080	0.068	0.075	0.071	0.075	0.069	0.064	0.070	0.062	0.067	0.069	0.069	0.069
Full-size	1	0.080	0.068	0.076	0.071	0.075	0.069	0.064	0.070	0.062	0.067	0.069	0.069	0.069
	2	0.096	0.081	0.090	0.085	0.089	0.082	0.076	0.083	0.074	0.079	0.082	0.082	0.082
	3	0.088	0.074	0.083	0.078	0.082	0.075	0.070	0.076	0.068	0.073	0.076	0.076	0.076
	4	0.093	0.079	0.088	0.082	0.087	0.080	0.075	0.081	0.072	0.077	0.080	0.080	0.080
	5	0.098	0.083	0.092	0.087	0.091	0.084	0.079	0.085	0.076	0.082	0.085	0.085	0.085
	6	0.100	0.085	0.094	0.089	0.093	0.086	0.080	0.087	0.078	0.083	0.086	0.086	0.086
Stationwagon	1	0.071	0.060	0.067	0.063	0.066	0.061	0.057	0.061	0.055	0.059	0.061	0.061	0.061
	2	0.070	0.060	0.066	0.062	0.065	0.060	0.056	0.061	0.055	0.058	0.061	0.061	0.061
	3	0.087	0.074	0.082	0.077	0.081	0.075	0.070	0.076	0.068	0.072	0.075	0.075	0.075
	4	0.096	0.081	0.090	0.085	0.089	0.083	0.077	0.083	0.075	0.080	0.083	0.083	0.083
	5	0.133	0.112	0.125	0.118	0.123	0.114	0.106	0.115	0.103	0.110	0.114	0.114	0.114
	6	0.058	0.049	0.054	0.051	0.054	0.050	0.046	0.050	0.045	0.048	0.050	0.050	0.050
Minivans	1	0.105	0.089	0.099	0.093	0.097	0.090	0.084	0.091	0.081	0.087	0.090	0.090	0.090
	2	0.093	0.079	0.087	0.082	0.086	0.080	0.074	0.081	0.072	0.077	0.080	0.080	0.080
	3	0.092	0.078	0.087	0.082	0.086	0.079	0.074	0.080	0.071	0.076	0.079	0.079	0.079
	4	0.093	0.078	0.087	0.082	0.086	0.080	0.074	0.080	0.072	0.077	0.080	0.080	0.080
	5	0.101	0.085	0.095	0.089	0.094	0.087	0.081	0.088	0.078	0.084	0.087	0.087	0.087
	6	0.100	0.085	0.094	0.089	0.093	0.086	0.080	0.087	0.078	0.083	0.086	0.086	0.086
Pass. Van	1	0.132	0.112	0.124	0.117	0.123	0.113	0.106	0.114	0.102	0.110	0.114	0.114	0.114
	2	0.103	0.087	0.097	0.091	0.096	0.088	0.082	0.089	0.080	0.085	0.089	0.089	0.089
	3	0.102	0.087	0.096	0.091	0.095	0.088	0.082	0.089	0.079	0.085	0.088	0.088	0.088
	4	0.106	0.090	0.100	0.094	0.098	0.091	0.085	0.092	0.082	0.088	0.091	0.091	0.091
	5	0.112	0.095	0.105	0.099	0.104	0.096	0.090	0.097	0.087	0.093	0.096	0.096	0.096
	6	0.107	0.090	0.100	0.095	0.099	0.092	0.085	0.092	0.083	0.089	0.092	0.092	0.092
Cargo Van	1	0.107	0.090	0.100	0.095	0.099	0.092	0.086	0.093	0.083	0.089	0.092	0.092	0.092
	2	0.134	0.114	0.126	0.119	0.125	0.115	0.108	0.117	0.104	0.111	0.116	0.116	0.116
	3	0.126	0.107	0.118	0.112	0.117	0.108	0.101	0.109	0.098	0.105	0.108	0.108	0.108
	4	0.105	0.089	0.099	0.093	0.098	0.090	0.084	0.091	0.081	0.087	0.090	0.090	0.090
	5	0.118	0.100	0.111	0.105	0.110	0.101	0.095	0.102	0.092	0.098	0.102	0.102	0.102
	6	0.102	0.086	0.096	0.090	0.094	0.087	0.081	0.088	0.079	0.084	0.087	0.087	0.087
Special PV	1	0.124	0.105	0.116	0.109	0.115	0.106	0.099	0.107	0.096	0.102	0.106	0.106	0.106
	2	0.112	0.094	0.105	0.099	0.104	0.096	0.089	0.097	0.086	0.093	0.096	0.096	0.096
	3	0.112	0.094	0.105	0.099	0.104	0.096	0.089	0.097	0.086	0.093	0.096	0.096	0.096
	4	0.097	0.082	0.091	0.086	0.090	0.083	0.078	0.084	0.075	0.081	0.084	0.084	0.084
	5	0.098	0.083	0.092	0.087	0.091	0.084	0.078	0.085	0.076	0.081	0.084	0.084	0.084
	6	0.086	0.073	0.081	0.076	0.080	0.074	0.069	0.074	0.067	0.071	0.074	0.074	0.074
Pickups	1	0.126	0.107	0.119	0.112	0.117	0.108	0.101	0.109	0.098	0.105	0.109	0.109	0.109
	2	0.119	0.100	0.111	0.105	0.110	0.102	0.095	0.103	0.092	0.098	0.102	0.102	0.102
	3	0.126	0.106	0.118	0.111	0.117	0.108	0.101	0.109	0.098	0.104	0.108	0.108	0.108
	4	0.131	0.111	0.123	0.116	0.122	0.113	0.105	0.114	0.102	0.109	0.113	0.113	0.113
	5	0.131	0.111	0.123	0.116	0.122	0.113	0.105	0.114	0.102	0.109	0.113	0.113	0.113
	6	0.132	0.112	0.124	0.117	0.123	0.114	0.106	0.115	0.103	0.110	0.114	0.114	0.114

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

Exhibit 10.3: Fuel Cost for Unpaved Roads by Provinces (\$/km, yr. 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.082	0.069	0.077	0.073	0.076	0.070	0.066	0.071	0.063	0.068	0.070	0.070	0.070
	2	0.063	0.054	0.059	0.056	0.059	0.054	0.051	0.055	0.049	0.052	0.054	0.054	0.054
	3	0.065	0.055	0.061	0.058	0.061	0.056	0.052	0.057	0.051	0.054	0.056	0.056	0.056
	4	0.078	0.066	0.074	0.069	0.073	0.067	0.063	0.068	0.061	0.065	0.068	0.068	0.068
	5	0.066	0.056	0.062	0.058	0.061	0.056	0.053	0.057	0.051	0.054	0.057	0.057	0.057
	6	0.067	0.057	0.063	0.060	0.062	0.058	0.054	0.058	0.052	0.056	0.058	0.058	0.058
Sub-compact	1	0.066	0.056	0.062	0.058	0.061	0.056	0.053	0.057	0.051	0.054	0.057	0.057	0.057
	2	0.063	0.053	0.059	0.056	0.058	0.054	0.050	0.054	0.049	0.052	0.054	0.054	0.054
	3	0.071	0.060	0.066	0.062	0.066	0.061	0.056	0.061	0.055	0.058	0.061	0.061	0.061
	4	0.063	0.053	0.059	0.056	0.059	0.054	0.051	0.055	0.049	0.052	0.054	0.054	0.054
	5	0.065	0.055	0.061	0.058	0.060	0.056	0.052	0.056	0.050	0.054	0.056	0.056	0.056
	6	0.058	0.049	0.055	0.052	0.054	0.050	0.047	0.050	0.045	0.048	0.050	0.050	0.050
Compact	1	0.068	0.058	0.064	0.060	0.063	0.058	0.054	0.059	0.053	0.056	0.059	0.059	0.059
	2	0.069	0.058	0.065	0.061	0.064	0.059	0.055	0.060	0.053	0.057	0.059	0.059	0.059
	3	0.079	0.067	0.075	0.070	0.074	0.068	0.063	0.069	0.061	0.066	0.068	0.068	0.068
	4	0.085	0.072	0.080	0.075	0.079	0.073	0.068	0.073	0.066	0.070	0.073	0.073	0.073
	5	0.084	0.071	0.079	0.074	0.078	0.072	0.067	0.073	0.065	0.070	0.072	0.072	0.072
	6	0.074	0.062	0.069	0.065	0.068	0.063	0.059	0.064	0.057	0.061	0.063	0.063	0.063
Midsize	1	0.079	0.067	0.075	0.070	0.074	0.068	0.064	0.069	0.062	0.066	0.068	0.068	0.068
	2	0.092	0.078	0.087	0.082	0.086	0.079	0.074	0.080	0.071	0.076	0.079	0.079	0.079
	3	0.091	0.077	0.086	0.081	0.085	0.078	0.073	0.079	0.071	0.076	0.079	0.079	0.079
	4	0.092	0.078	0.086	0.081	0.085	0.079	0.073	0.080	0.071	0.076	0.079	0.079	0.079
	5	0.093	0.079	0.087	0.082	0.086	0.080	0.074	0.081	0.072	0.077	0.080	0.080	0.080
	6	0.082	0.069	0.077	0.072	0.076	0.070	0.065	0.071	0.063	0.068	0.070	0.070	0.070
Full-size	1	0.082	0.069	0.077	0.073	0.076	0.070	0.066	0.071	0.064	0.068	0.071	0.071	0.071
	2	0.097	0.082	0.091	0.086	0.090	0.083	0.078	0.084	0.075	0.081	0.084	0.084	0.084
	3	0.090	0.076	0.084	0.079	0.083	0.077	0.072	0.078	0.069	0.074	0.077	0.077	0.077
	4	0.095	0.080	0.089	0.084	0.088	0.081	0.076	0.082	0.073	0.079	0.082	0.082	0.082
	5	0.100	0.085	0.094	0.089	0.093	0.086	0.080	0.087	0.078	0.083	0.086	0.086	0.086
	6	0.102	0.086	0.096	0.090	0.095	0.087	0.082	0.088	0.079	0.085	0.088	0.088	0.088
Stationwagon	1	0.073	0.061	0.068	0.064	0.067	0.062	0.058	0.063	0.056	0.060	0.062	0.062	0.062
	2	0.072	0.061	0.068	0.064	0.067	0.062	0.058	0.062	0.056	0.060	0.062	0.062	0.062
	3	0.089	0.075	0.083	0.078	0.082	0.076	0.071	0.077	0.069	0.073	0.076	0.076	0.076
	4	0.097	0.082	0.091	0.086	0.090	0.083	0.078	0.084	0.075	0.080	0.084	0.084	0.084
	5	0.133	0.113	0.125	0.118	0.124	0.114	0.107	0.115	0.103	0.111	0.115	0.115	0.115
	6	0.059	0.050	0.055	0.052	0.055	0.051	0.047	0.051	0.046	0.049	0.051	0.051	0.051
Minivans	1	0.106	0.090	0.100	0.094	0.098	0.091	0.085	0.092	0.082	0.088	0.091	0.091	0.091
	2	0.094	0.080	0.089	0.084	0.088	0.081	0.076	0.082	0.073	0.078	0.081	0.081	0.081
	3	0.094	0.079	0.088	0.083	0.087	0.080	0.075	0.081	0.073	0.078	0.081	0.081	0.081
	4	0.095	0.080	0.089	0.084	0.088	0.081	0.076	0.082	0.073	0.078	0.081	0.081	0.081
	5	0.103	0.087	0.097	0.091	0.095	0.088	0.082	0.089	0.080	0.085	0.088	0.088	0.088
	6	0.102	0.087	0.096	0.091	0.095	0.088	0.082	0.089	0.079	0.085	0.088	0.088	0.088
Pass. Van	1	0.135	0.114	0.127	0.120	0.125	0.116	0.108	0.117	0.105	0.112	0.116	0.116	0.116
	2	0.106	0.090	0.100	0.094	0.099	0.091	0.085	0.092	0.082	0.088	0.092	0.092	0.092
	3	0.106	0.089	0.099	0.093	0.098	0.091	0.084	0.091	0.082	0.088	0.091	0.091	0.091
	4	0.108	0.092	0.102	0.096	0.101	0.093	0.087	0.094	0.084	0.090	0.093	0.093	0.093
	5	0.115	0.097	0.108	0.102	0.107	0.098	0.092	0.099	0.089	0.095	0.099	0.099	0.099
	6	0.110	0.093	0.103	0.097	0.102	0.094	0.088	0.095	0.085	0.091	0.095	0.095	0.095
Cargo Van	1	0.111	0.094	0.104	0.098	0.103	0.095	0.089	0.096	0.086	0.092	0.095	0.095	0.095
	2	0.137	0.116	0.129	0.121	0.127	0.118	0.110	0.119	0.106	0.114	0.118	0.118	0.118
	3	0.128	0.108	0.120	0.114	0.119	0.110	0.103	0.111	0.099	0.106	0.110	0.110	0.110
	4	0.108	0.091	0.101	0.096	0.100	0.093	0.086	0.093	0.084	0.089	0.093	0.093	0.093
	5	0.125	0.106	0.118	0.111	0.116	0.107	0.100	0.108	0.097	0.104	0.108	0.108	0.108
	6	0.104	0.088	0.097	0.092	0.096	0.089	0.083	0.090	0.080	0.086	0.089	0.089	0.089
Special PV	1	0.126	0.107	0.119	0.112	0.117	0.108	0.101	0.109	0.098	0.105	0.109	0.109	0.109
	2	0.114	0.097	0.107	0.101	0.106	0.098	0.091	0.099	0.088	0.095	0.098	0.098	0.098
	3	0.114	0.097	0.107	0.101	0.106	0.098	0.091	0.099	0.088	0.095	0.098	0.098	0.098
	4	0.099	0.084	0.093	0.088	0.092	0.085	0.080	0.086	0.077	0.082	0.086	0.086	0.086
	5	0.100	0.084	0.094	0.088	0.093	0.085	0.080	0.086	0.077	0.083	0.086	0.086	0.086
	6	0.087	0.074	0.082	0.077	0.081	0.075	0.070	0.075	0.067	0.072	0.075	0.075	0.075
Pickups	1	0.135	0.114	0.127	0.119	0.125	0.116	0.108	0.117	0.105	0.112	0.116	0.116	0.116
	2	0.126	0.107	0.119	0.112	0.117	0.108	0.101	0.110	0.098	0.105	0.109	0.109	0.109
	3	0.134	0.113	0.126	0.119	0.125	0.115	0.107	0.116	0.104	0.111	0.115	0.115	0.115
	4	0.139	0.118	0.131	0.124	0.130	0.120	0.112	0.121	0.108	0.116	0.120	0.120	0.120
	5	0.139	0.118	0.131	0.123	0.129	0.119	0.111	0.121	0.108	0.115	0.120	0.120	0.120
	6	0.141	0.119	0.132	0.125	0.131	0.121	0.112	0.122	0.109	0.117	0.121	0.121	0.121

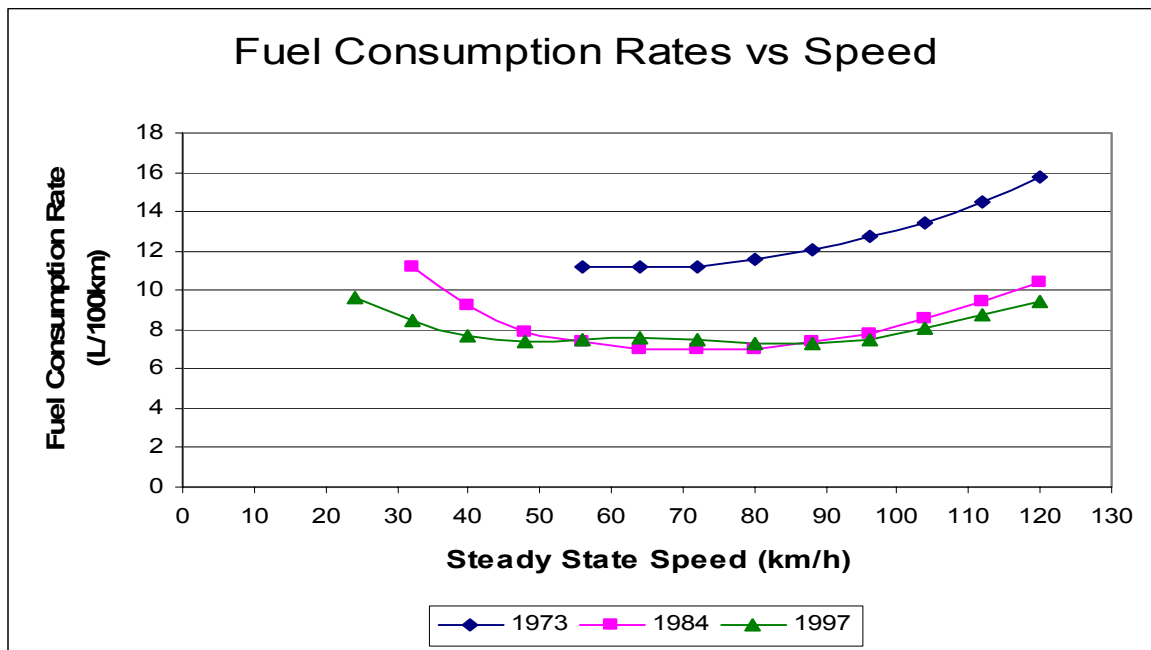
Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

11.0 Cost by Operating Speed

Within normal driving speeds and road conditions experienced in Canada, the only cost variable that changes significantly for autos and light trucks with operating speed is fuel consumption. Exhibit 11.1 illustrates this relationship for steady state driving conditions. Basically, with the latest models shown (1997) fuel economy is maximized in the 50 to 90 km per hour speed range and increases as speed either increases or decreases beyond these speeds. However, also as noted by Exhibit 11.1 the fuel consumption penalty is not as great as it was with 1970's and 1980's vintages due to improvements such as vehicle aerodynamics and reduced rolling resistance.

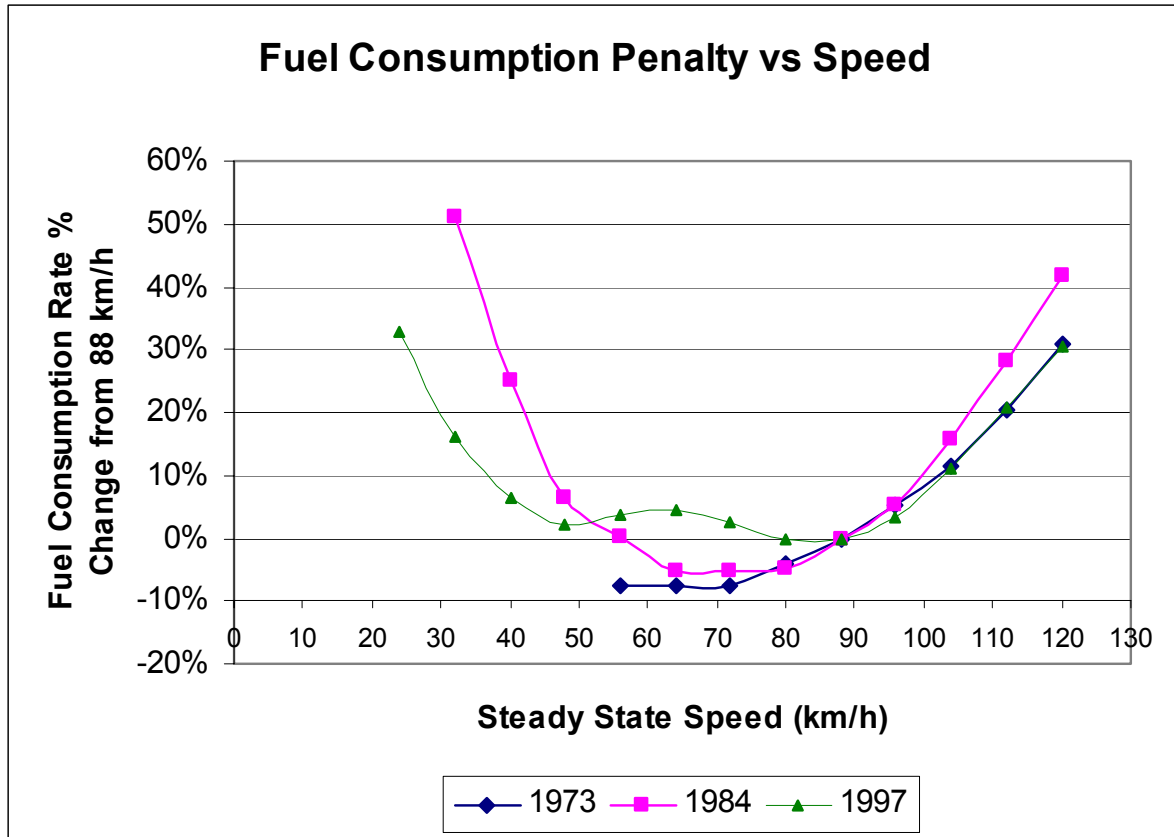
Exhibit 11.2 illustrates the fuel consumption with speed.

Exhibit 11.1: Fuel Consumption Rates vs Speed



Source: Instrumental Solutions based on Analysis of US Department of Energy Data

Exhibit 11.2 Fuel Consumption Penalty vs. Speed



Source: Instrumental Solutions based on Analysis of US Department of Energy Data

12.0 Cost of Operations in Congested Conditions

The Cost of Urban Congestion in Canada by Transport Canada Environmental Affairs (2005 2006) developed congestion indicators for the nine largest urban areas in Canada. The study found that urban recurrent congestion costs Canadians between \$2.3 billion and \$3.7 billion in 2002 dollar values. More than 90 per cent of this cost is time lost in traffic by drivers and passengers; 7 per cent is attributable to increased fuel consumption; and 3 per cent is from increased greenhouse gas emissions. Increased fuel consumption, a vehicle operating cost and hence of interest to this study would therefore annually cost in the order of \$176 to \$213 million annually. However, impact on operating costs on a per-kilometre basis was not developed. Consequently additional review of the literature was undertaken to identify impacts on a per vehicle kilometre basis and by different traffic levels (levels of service)

Costs of operations in congested conditions are difficult to estimate due to the number of variables involved such as number of stop-and-go cycles, fuel spent idling, accelerating and stopping rates and speed cycle changes during these conditions.

Interviews have been undertaken with Canadian and U.S. researchers⁷ working in or familiar with this area. None of the persons interviewed were aware of any work that specifically identifies how vehicle costs are affected in these situations. The Commute Atlanta project which has collected data from instrumented personal use vehicles in urban operations indicated they would be able to analyze their data to derive values, but at a significant cost.

A literature research identified research documenting traffic flow behaviour in these conditions⁸. The research, based on observations on the 401 in Toronto, shows that flow breakdown can often occur at volumes in excess of those shown in the Highway Capacity Manual. Refer to Exhibit 12.1. Where breakdown does not occur vehicle operating costs are not affected compared to lower traffic volumes.

The same research shows that when traffic flow breakdowns do occur vehicle operating speeds operate over wide speed ranges (refer to Exhibit 12.2). This repeated speed up / slow down adversely affects fuel economy thereby increasing operating costs.

⁷ Including Dr John Morrall, University of Calgary and Dr. Lily Elefteriadou, Director, Transportation Research Centre, University of Florida both of whom have served on the Committee for drafting the Highway Capacity manual.

⁸ Matt Lorenz and Lily Elefteriadou, Pennsylvania Transportation Institute, Pennsylvania State University.

Exhibit 12.1: Hourly Flow Rate vs. Probability of Breakdown. (Source: Transportation Research Circular E-C018: 4th International Symposium on Highway Capacity)

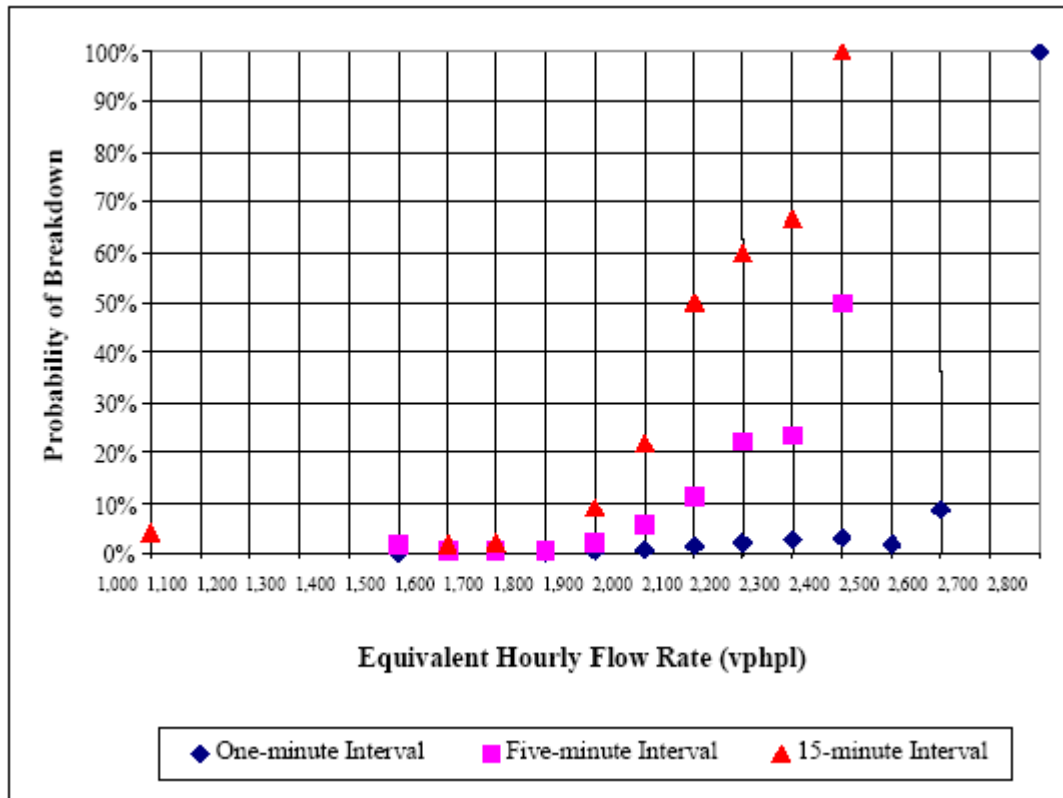
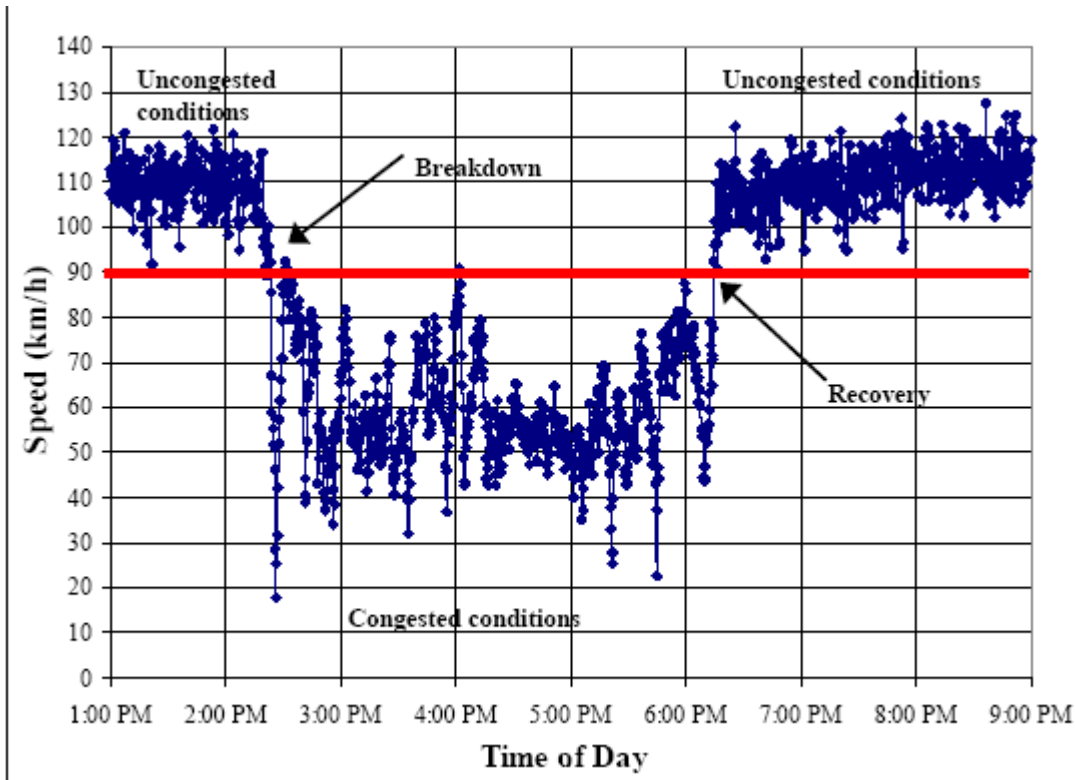


Exhibit 12.2: Time Series Speed Plot (Source: Transportation Research Circular E-C018: 4th International Symposium on Highway Capacity)



Another source of information on the effects of level of service on fuel consumption is the “Comprehensive Modal Emissions Model (CMEM)” by University of California at Riverside “The Development of a Comprehensive Modal Emissions Model” sponsored by the US National Cooperative Highway Research Program (NCHRP, Project 25-11). The study developed a modal emissions model that accurately reflects Light-Duty Vehicle emissions. Exhibit 12.3 lists various vehicle/technology categories identified in the CMEM Project. While these categories are different from standard vehicle classes used in the literature and current Transport Canada project (e.g., compact, mini-van, etc), they provide more detailed information on fuel consumption under various driving conditions.

It is clear that both in arterials and freeways as the level of service changes from A (free-flow condition) to E or F (congested condition), fuel consumption on average increases by 70%. While the range of increase varies from 63% to 88% for different vehicle categories on arterial facilities, fuel consumption rate can increase from 52% to 113% on freeway facilities. Exhibit 12.5 depicts fuel consumption variations in both freeway and arterials facilities under different level of service conditions for two sample vehicles (a Honda Civic and a Ford Explorer).

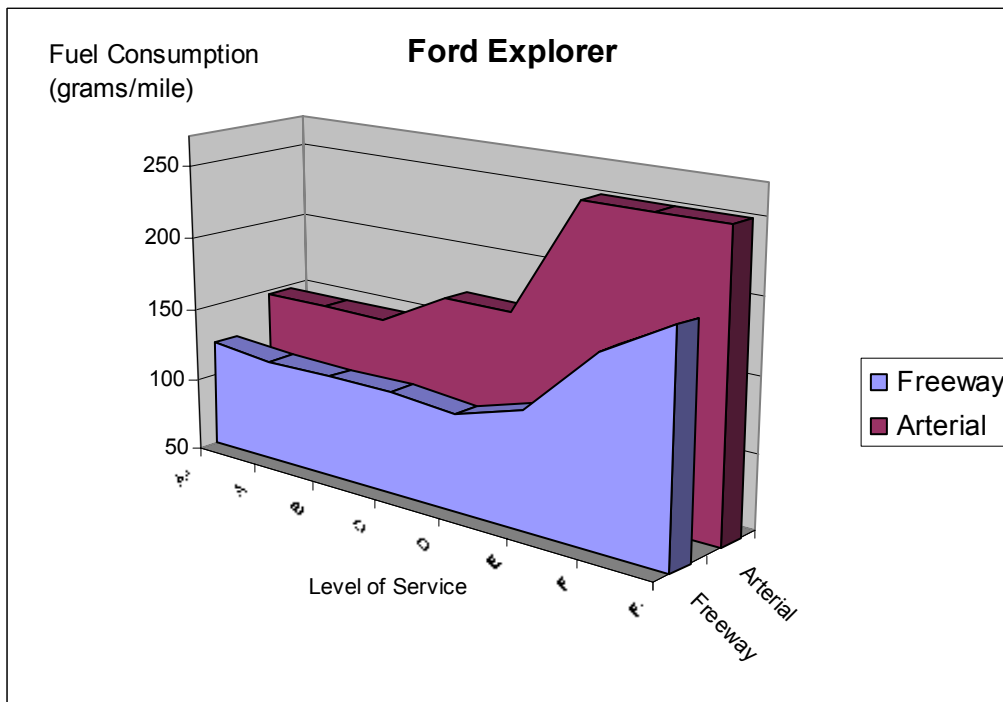
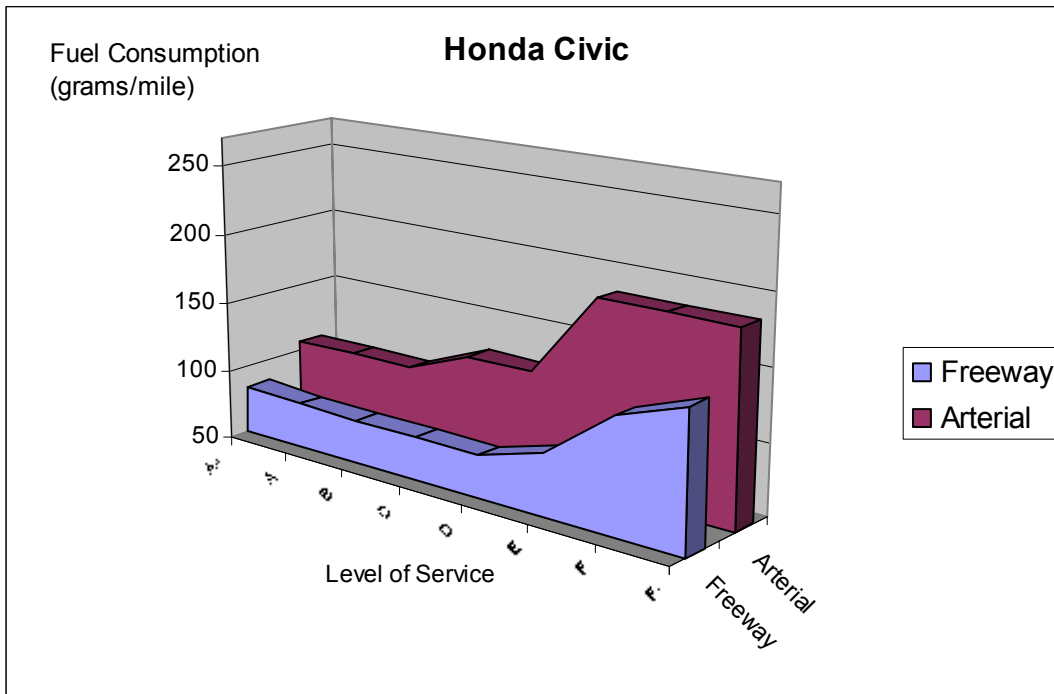
Exhibit 12.3: Vehicle/Technology Categories (source: UC-Riverside CMEM Project)

Category #	Vehicle Technology Category	Examples of Vehicle Make/Model in Category
	<i>Normal Emitting Cars</i>	
1	No Catalyst	Ford_Mustang_1967, Honda_Civic_1976
2	2-way Catalyst	Chevrolet_Capri_1985, Honda_Accord_1983
3	3-way Catalyst, Carbureted	Ford_Festiva_1988, Nissan_Sentra_1986
4	3-way Catalyst, FI, >50K miles, low power/weight	>50K miles: Toyota_Tercel, Ford_Tempo, Dodge_Shadow
5	3-way Catalyst, FI, >50K miles, high power/weight	>50K miles: Acura_Integra, Honda_Accord, Ford_Taurus
6	3-way Catalyst, FI, <50K miles, low power/weight	<50K miles: Ford_Escort, Toyota_Camry, Mazda_Protege
7	3-way Catalyst, FI, <50K miles, high power/weight	<50K miles: Ford_Mustang, Nissan_Altima, Honda_Accord
8	Tier 1, >50K miles, low power/weight	Tier1, >50K miles: Honda_Civic, Toyota_Corolla, Acura_Vigor
9	Tier 1, >50K miles, high power/weight	Tier1, >50K miles: Dodge_Spirit, Saturn_SL2, Toyota_Camry
10	Tier 1, <50K miles, low power/weight	Tier1, <50K miles: Honda_Civic, Toyota_Corolla, Ford_Escort
11	Tier 1, <50K miles, high power/weight	Tier1, <50K miles: Toyota_Camry, Buick_Lesabre, Acura_Integra
24	Tier 1, >100K miles	Older Tier 1 standard cars with >100K miles
	<i>Normal Emitting Trucks</i>	
12	Pre-1979 (<=8500 GVW)	All Pre-1979 (<=8500 GVW) Trucks
13	1979 to 1983 (<=8500 GVW)	All 1979 to 1983 (<=8500 GVW) Trucks
14	1984 to 1987 (<=8500 GVW)	All 1984 to 1987 (<=8500 GVW) Trucks
15	1988 to 1993, <=3750 LVW	All 1988 to 1993, <=3750 LVW Trucks
16	1988 to 1993, >3750 LVW	All 1988 to 1993, >3750 LVW Trucks
17	Tier 1 LDT2/3 (3751-5750 LVW or Alt. LVW)	Tier 1 LDT2/3 (3751-5750 LVW or Alt. LVW): Ford_Explorer, Toyota_4Runn
18	Tier 1 LDT4 (6001-8500 GVW, >5750 Alt. LVW)	Tier 1 LDT4 (6001-8500 GVW, >5750 Alt. LVW): Ford_F150, Dodge_Ram
	<i>High Emitting Vehicles</i>	
19	Runs lean	Emitting Vehicles Running lean
20	Runs rich	Emitting Vehicles Running rich
21	Misfire	Emitting Vehicles Misfire
22	Bad catalyst	Emitting Vehicles with Bad catalyst
23	Runs very rich	Emitting Vehicles Running very rich
<p>Notes:</p> <p>FI: Fuel Injected</p> <p>GVW: gross Vehicle Weight</p> <p>LVW: Loaded Vehicle Weight</p> <p>LDT: Light duty Truck</p> <p>Tier 1: Federal standards for cars that were phased in over a threeyear period; 40% of 1994 cars sold met the standards, while all 1996 and after cars must meet the standards.</p>		

Exhibit 12.4: Variations in Fuel consumption (grams/mile) for different vehicle categories in various highway facility and level of service (compiled from CMEM project report: NCHRP 25-11)

Vehicle Technology Category		Facility: Local road	Arterial			Ramp	Freeway						Non-Freeway
			LOS A-B	LOS C-D	LOS E-F		LOS A+	LOS A-C	LOS D	LOS E	LOS F	LOS F-	
Normal Emitting Cars													
1	No Catalyst	323.3	197.8	240.2	372.0	196.4	139.7	137.2	136.4	166.5	242.1	297.2	238.2
2	2-way Catalyst	215.1	140.9	164.8	245.1	149.2	112.7	108.9	106.6	122.0	170.0	196.6	164.9
3	3-way Catalyst, Carbureted	141.7	97.4	110.5	158.7	105.8	85.1	82.0	79.3	86.5	115.6	129.7	111.3
4	3-way Catalyst, FI, >50K miles, low power/weight	164.3	108.9	126.5	185.6	113.9	86.8	84.7	82.4	95.6	131.9	150.4	126.1
5	3-way Catalyst, FI, >50K miles, high power/weight	176.7	116.9	135.9	199.1	122.3	93.4	91.0	88.4	102.7	141.7	162.3	135.7
6	3-way Catalyst, FI, <50K miles, low power/weight	161.4	107.9	125.0	183.1	116.2	87.9	85.3	83.2	94.6	130.1	147.3	124.7
7	3-way Catalyst, FI, <50K miles, high power/weight	156.4	104.6	120.6	174.7	110.2	84.7	82.2	79.8	92.4	127.3	143.2	121.2
8	Tier 1, >50K miles, low power/weight	162.7	107.2	125.1	184.9	114.0	84.0	81.9	80.3	93.3	130.5	147.4	124.8
9	Tier 1, >50K miles, high power/weight	150.3	100.3	115.5	168.0	105.0	79.5	77.4	75.4	88.5	122.6	137.7	115.8
10	Tier 1, <50K miles, low power/weight	157.6	104.1	121.2	178.5	108.6	82.4	80.5	78.3	91.0	125.9	143.9	120.7
11	Tier 1, <50K miles, high power/weight	175.0	115.3	134.5	198.3	120.0	91.7	89.5	86.7	100.7	139.7	160.2	134.0
24	Tier 1, >100K miles	169.9	114.4	131.7	192.3	119.6	95.9	93.1	89.7	100.7	136.7	155.2	131.6
Normal Emitting Trucks													
12	Pre-1979 (<=8500 GVW)	370.7	237.8	281.9	425.7	251.4	191.2	184.6	181.6	205.2	287.7	339.1	280.0
13	1979 to 1983 (<=8500 GVW)	288.8	187.6	220.7	332.0	198.2	150.9	147.1	143.7	161.9	224.7	261.4	220.1
14	1984 to 1987 (<=8500 GVW)	198.0	133.4	153.1	223.1	141.4	113.3	109.1	105.7	117.1	159.1	181.3	153.8
15	1988 to 1993, <=3750 LVW	191.4	129.7	148.5	215.8	139.3	110.7	107.3	103.5	114.3	154.5	174.6	149.2
16	1988 to 1993, >3750 LVW	273.0	176.8	207.7	311.6	180.7	141.7	137.6	133.7	153.1	212.5	249.7	207.6
17	Tier 1 LDT2/3 (3751-5750 LVW or Alt. LVW)	221.5	147.3	170.7	251.4	155.1	122.7	119.2	115.3	129.2	176.3	201.9	171.0
18	Tier 1 LDT4 (6001-8500 GVW, >5750 Alt. LVW)	278.5	182.7	213.1	319.2	190.4	152.3	146.9	141.9	157.6	218.9	252.9	212.5
High Emitting Vehicles													
19	Runs lean	216.7	141.2	165.3	246.1	145.7	111.1	108.3	105.4	122.9	170.3	198.1	164.9
20	Runs rich	169.9	114.4	131.6	191.9	122.9	97.2	93.7	90.5	101.1	137.4	155.9	132.1
21	Misfire	185.5	124.8	143.6	209.1	129.1	105.9	102.1	98.6	109.8	149.4	170.9	144.2
22	Bad catalyst	210.3	139.9	161.7	237.2	147.6	116.6	112.9	109.5	122.9	167.4	192.7	162.5
23	Runs very rich	224.9	150.5	175.2	256.4	155.2	123.0	119.6	116.4	131.3	179.7	202.0	174.3

Exhibit 12.5: Variations in Fuel Consumption on Freeway and Arterials by Different Levels of Service



13.0 Differences between US and Canadian Vehicles when using the Canadian Network

U.S. depreciation rates, insurance costs and fuel costs were examined to identify differences between US and Canadian vehicles.

Average fuel prices in the United States were obtained from the Department of energy's website. These values were converted to Canadian dollar values using currency conversion rates for both 2000 and 2004. Exhibit 13.1 shows the results. This cost difference would apply for fuel that was purchased in the U. S. and consumed on short trips into Canada or until whatever fuel was in vehicle when it entered Canada is consumed. This would be offset by Canadian based vehicles re-fuelling in the United States before re-entering Canada.

Depreciation and insurance rates were obtained as described earlier in the chapters covering these tow items.

Exhibit 13.1: Comparison of US and Canadian Gasoline Pump Prices (regular unleaded)

Year	Average U.S. pump price (cents US/US gal)	US pump price in Cdn. cents per litre	Comparable Canadian pump price (cents Cdn. Per litre)
2000	151.0	64.2	71.5
2004	188.0	66.1	81.4

Source of US prices: US Department of Energy – Energy Information Administration.

Note: \$1 Canadian = \$0.62 US in 2002 and \$0.75 in 2004.

Four sample vehicles (compact, mid-size, mini-van, and SUV) were selected from among the most popular vehicle types. Their depreciation, insurance and annual fuel costs are compared in Exhibit 13.2. Fuel economy data are obtained from the US department of energy website and are estimated based on 45% highway and 55% city driving condition. Vehicles are assumed to be driven 12,500 miles or 20,000 kilometres annually and the price of fuel is assumed to be \$2.40 per gallon in the US and \$0.80 per litre in Canada.

After converting total cost to CND, Exhibit 13.2 suggests that the depreciation, insurance and fuel costs of Canadian owned vehicles are on average 21% more than the same vehicle make/model owned by Americans. While other ownership and operating costs (e.g., maintenance, interest charges, etc) are not considered in this table, it should be noted that differences in fleet mix and perhaps average annual mileage could significantly change these results. In some sense, U.S. motorists may pay the same or even more per vehicle year, since they tend to commute longer and use larger, less fuel efficient vehicles.

Exhibit 13.2: Comparison of US and Canadian Vehicle Costs (yr. 2000)

Vehicle	Country	Fuel economy (MPG or KM/L)	Annual mileage (Mile or KM)	Annual fuel (gal. or lit.)	Depreciation (CND or US\$)	Insurance (CND or US\$)	Annual fuel cost (CND or US\$)	Total annual cost (CND or US\$)	Total annual cost (CND)
Honda Civic 2001	US	35.2	12500	356	1655	942	853	3450	4072
	CAN	14.5	20000	1378	2058	1721	1102	4881	4881
Chevrolet Malibu 2004	US	28.5	12500	439	3050	934	1053	5037	5943
	CAN	11.8	20000	1700	3307	1710	1360	6377	6377
Ford Windstar Minivan 200	US	20.7	12500	604	1610	752	1449	3811	4497
	CAN	8.5	20000	2340	2653	1553	1872	6078	6078
Ford Explorer SUV 2004	US	17.3	12500	725	2100	1010	1739	4849	5722
	CAN	7.1	20000	2808	2870	1843	2246	6959	6959

14.0 Factors Changing Unit Costs over Time

A number of factors play a role in changing unit costs over time. These include changes in fleet structure over time such as more Hybrid/Electric vehicles, government policies regarding alternate fuels and gasoline prices, GHG reduction policies, longer vehicle life, reduced periodic maintenance (such as oil and spark plug changes).

Fleet interviews identified one possible change. City delivery vehicles currently on diesel may switch to gasoline as purchase price of gasoline is now cheaper (in past diesel was cheaper) and the purchase price of the gasoline powered vehicle is less.

15.0 Data Quality Issues and Research Recommendations

For this study we have tried to expand and improve on previous research concerning vehicle operating costs as summarized by Exhibit 15.1. We believe the costs as presented do not have any particular data biases that would lead to either an over or under estimation of the costs. While certain costs such as depreciation and insurance are developed initially for Ontario, adjustment factors available from reliable sources such as Statistics Canada and the Insurance Bureau of Canada as used to develop adjustment factors for other provinces. As a result we do not believe there are significant variations in the accuracy of the final costs estimates from province to province.

Exhibit 15.1: Recommendations for Data Improvements

Cost Category	Portion of Total Costs	Current Data Quality	Recommendations For Improvement
Capital costs of depreciation of the vehicle	Large.	Good information on the average effects of depreciation on resale values. Moderate information on the effects of mileage on depreciation. No information on vehicle repair costs and how they increase with age and mileage.	Additional research is justified to better identify mileage-based depreciation costs, particularly those resulting from additional annual repairs.
Financing cost of vehicle purchase (indicating the methods of financing and interest rate(s) assumed)	Medium	Limited data available on what actual loan rates are and what percentage of vehicle purchases are financed at these different rates.	Consumer surveys to determine these information
Fuel costs	Large	Good data on average fuel costs. These values will need to be adjusted over time as fuel prices, average annual vehicle mileage, and the mix of vehicles in the vehicle fleet change over time.	Continue standardized surveys of vehicle fuel price, vehicle fuel consumption and fleet mix.
Registration or licence fees	Medium	Moderate. There is no single source of this data, or information on the average cost.	Require standardized reporting of these fees by provincial governments.
Road or bridge tolls	Small	Moderate. Since there are few priced roads and bridges it has been possible to estimate their total value.	Require standardized reporting of these fees by provincial governments.
Parking	Large in total, small as a direct user cost.	Poor. Rough estimates were used for the portion of trips for which parking is priced at destinations, and the type and magnitude of the fees.	Research is needed to identify the total portion of trips for which parking is priced at the destination, how it is priced (hour, day, month or year), and magnitude of the fees. Travel surveys can collect information on the portion of trips for which parking is priced.
Insurance	Large	Moderate. Although it was possible to estimate overall average insurance payments, there is little information on how these vary by vehicle type, or the degree to which they are affected by mileage.	Require standardized reporting of these fees by provincial governments. Special analysis is needed to determine the degree to which premiums are affected by vehicle mileage.
maintenance and operating costs	Large, particularly for older vehicles.	Poor. There is no reliable source of information on average vehicle repair costs (this is often assumed to be included in "depreciation" and how this varies by vehicle mileage.	Use consumer expenditure survey data and surveys of mechanics to calculate average vehicle repair costs and how these vary by vehicle type, age, annual mileage and geographic location.

16.0 Summary

Adding all per km cost estimates presented in Exhibits 4.4 (depreciation cost), 4.7 or 4.8 (social opportunity cost), 5.2 (registration and license fees), 7.3 (insurance), 8.8 or 8.9 (non-fuel operating cost), 8.11 and 8.12 (parking cost), and 10.2 or 10.3 (fuel cost) total per km ownership and operating cost of Canadian owned vehicles are estimated for different provinces and national level. These results are presented in Exhibits 16.1, 16.2, 16.3, and 16.4 for paved and unpaved roads and for different SOCC rate of return assumptions.

Costs of Autos and Light Trucks in Canada

Exhibit 16.1: Total per KM Costs - Paved Roads (SOCC 6%) (\$/km, yr. 2000)

Veh Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.536	0.369	0.378	0.380	0.373	0.546	0.533	0.364	0.519	0.394	0.374	0.546	0.386
	2	0.324	0.315	0.322	0.325	0.318	0.342	0.328	0.309	0.313	0.341	0.318	0.333	0.333
	3	0.267	0.258	0.266	0.270	0.263	0.296	0.279	0.251	0.257	0.290	0.301	0.277	0.280
	4	0.207	0.198	0.206	0.205	0.201	0.223	0.207	0.192	0.193	0.217	0.198	0.207	0.212
	5	0.172	0.181	0.173	0.175	0.173	0.196	0.180	0.159	0.163	0.189	0.165	0.201	0.183
	6	0.231	0.218	0.226	0.231	0.227	0.264	0.245	0.209	0.217	0.253	0.216	0.238	0.244
Sub-compact	1	0.309	0.295	0.307	0.311	0.299	0.324	0.316	0.304	0.310	0.333	0.300	0.346	0.314
	2	0.276	0.255	0.263	0.265	0.259	0.295	0.263	0.253	0.266	0.326	0.270	0.271	0.272
	3	0.260	0.251	0.259	0.263	0.258	0.287	0.270	0.238	0.249	0.284	0.237	0.262	0.272
	4	0.184	0.176	0.182	0.184	0.183	0.206	0.179	0.161	0.170	0.196	0.174	0.185	0.194
	5	0.170	0.163	0.181	0.171	0.171	0.202	0.176	0.165	0.170	0.195	0.159	0.185	0.189
	6	0.198	0.179	0.195	0.202	0.192	0.240	0.212	0.179	0.193	0.230	0.185	0.201	0.216
Compact	1	0.300	0.287	0.295	0.296	0.265	0.329	0.299	0.281	0.284	0.328	0.261	0.358	0.305
	2	0.301	0.291	0.283	0.271	0.280	0.317	0.288	0.270	0.273	0.299	0.264	0.266	0.308
	3	0.247	0.250	0.253	0.262	0.272	0.282	0.262	0.251	0.242	0.301	0.250	0.254	0.267
	4	0.183	0.180	0.194	0.182	0.193	0.212	0.196	0.183	0.181	0.217	0.188	0.199	0.201
	5	0.180	0.172	0.184	0.175	0.182	0.205	0.175	0.166	0.164	0.208	0.186	0.182	0.190
	6	0.194	0.180	0.189	0.193	0.199	0.224	0.205	0.189	0.195	0.238	0.195	0.198	0.204
Midsize	1	0.332	0.365	0.328	0.354	0.361	0.385	0.353	0.338	0.340	0.367	0.346	0.355	0.360
	2	0.344	0.336	0.346	0.346	0.331	0.358	0.321	0.302	0.313	0.352	0.327	0.323	0.352
	3	0.273	0.277	0.264	0.270	0.274	0.315	0.283	0.270	0.277	0.293	0.273	0.297	0.297
	4	0.214	0.209	0.217	0.213	0.206	0.232	0.210	0.196	0.195	0.219	0.198	0.213	0.222
	5	0.197	0.190	0.196	0.195	0.195	0.214	0.194	0.181	0.180	0.195	0.173	0.197	0.199
	6	0.212	0.228	0.198	0.228	0.226	0.258	0.235	0.185	0.216	0.225	0.189	0.235	0.242
Full-size	1	0.485	0.471	0.453	0.454	0.446	0.460	0.450	0.439	0.434	0.459	0.443	0.481	0.458
	2	0.394	0.377	0.399	0.398	0.362	0.387	0.377	0.370	0.364	0.392	0.379	0.408	0.386
	3	0.342	0.314	0.327	0.329	0.332	0.349	0.328	0.304	0.303	0.343	0.323	0.329	0.335
	4	0.228	0.223	0.232	0.228	0.232	0.245	0.229	0.219	0.218	0.256	0.234	0.229	0.237
	5	0.222	0.215	0.227	0.217	0.231	0.241	0.222	0.208	0.206	0.244	0.217	0.209	0.229
	6	0.244	0.226	0.239	0.241	0.259	0.271	0.245	0.221	0.219	0.258	0.232	0.247	0.252
Stationwagon	1	0.277	0.266	0.274	0.276	0.271	0.396	0.386	0.374	0.376	0.400	0.229	0.281	0.281
	2	0.272	0.262	0.270	0.272	0.267	0.286	0.256	0.241	0.243	0.284	0.265	0.277	0.277
	3	0.265	0.244	0.253	0.255	0.271	0.273	0.256	0.237	0.239	0.268	0.340	0.259	0.261
	4	0.205	0.206	0.228	0.206	0.227	0.232	0.214	0.199	0.199	0.225	0.219	0.231	0.220
	5	0.249	0.232	0.237	0.252	0.236	0.258	0.238	0.226	0.223	0.260	0.241	0.254	0.239
	6	0.189	0.177	0.186	0.193	0.186	0.223	0.247	0.169	0.176	0.212	0.174	0.196	0.202
Minivans	1	0.380	0.357	0.369	0.368	0.378	0.384	0.370	0.373	0.371	0.396	0.382	0.394	0.379
	2	0.314	0.292	0.302	0.312	0.308	0.311	0.298	0.285	0.284	0.311	0.295	0.304	0.306
	3	0.255	0.250	0.261	0.255	0.252	0.274	0.257	0.244	0.244	0.262	0.253	0.263	0.264
	4	0.250	0.239	0.249	0.249	0.246	0.261	0.251	0.238	0.237	0.257	0.240	0.259	0.252
	5	0.246	0.221	0.244	0.244	0.223	0.240	0.222	0.206	0.205	0.253	0.233	0.234	0.248
	6	0.187	0.178	0.188	0.185	0.187	0.196	0.179	0.172	0.168	0.190	0.179	0.186	0.187
Pass. Van	1	0.365	0.396	0.410	0.357	0.404	0.415	0.349	0.342	0.337	0.416	0.350	0.408	0.411
	2	0.313	0.299	0.311	0.310	0.306	0.370	0.305	0.298	0.293	0.318	0.303	0.314	0.313
	3	0.314	0.301	0.313	0.312	0.308	0.323	0.307	0.296	0.294	0.321	0.304	0.316	0.315
	4	0.328	0.312	0.324	0.324	0.320	0.335	0.319	0.307	0.305	0.333	0.316	0.328	0.327
	5	0.300	0.284	0.297	0.297	0.294	0.288	0.294	0.278	0.276	0.306	0.286	0.299	0.301
	6	0.198	0.196	0.204	0.201	0.197	0.205	0.188	0.188	0.184	0.205	0.194	0.202	0.203
Cargo Van	1	0.345	0.352	0.340	0.339	0.335	0.348	0.334	0.324	0.322	0.347	0.361	0.338	0.342
	2	0.329	0.311	0.316	0.312	0.312	0.322	0.305	0.307	0.292	0.318	0.267	0.315	0.315
	3	0.289	0.236	0.263	0.284	0.284	0.295	0.278	0.262	0.264	0.291	0.276	0.286	0.287
	4	0.232	0.243	0.269	0.252	0.228	0.241	0.225	0.213	0.210	0.274	0.261	0.255	0.232
	5	0.242	0.228	0.241	0.239	0.219	0.241	0.234	0.222	0.219	0.223	0.241	0.240	0.242
	6	0.183	0.163	0.173	0.170	0.179	0.185	0.169	0.165	0.160	0.180	0.171	0.176	0.178
Special PV	1	0.460	0.435	0.480	0.493	0.485	0.480	0.481	0.474	0.470	0.470	0.427	0.452	0.478
	2	0.428	0.411	0.424	0.424	0.383	0.432	0.416	0.405	0.403	0.435	0.424	0.397	0.426
	3	0.305	0.296	0.321	0.313	0.307	0.320	0.302	0.291	0.289	0.345	0.332	0.316	0.311
	4	0.330	0.316	0.327	0.295	0.312	0.345	0.329	0.319	0.319	0.347	0.337	0.350	0.343
	5	0.277	0.247	0.253	0.252	0.251	0.272	0.248	0.234	0.235	0.270	0.252	0.247	0.256
	6	0.236	0.219	0.229	0.219	0.222	0.257	0.238	0.212	0.213	0.241	0.240	0.221	0.243
Pickups	1	0.343	0.324	0.336	0.337	0.336	0.347	0.331	0.320	0.316	0.349	0.329	0.339	0.340
	2	0.361	0.337	0.330	0.349	0.318	0.369	0.352	0.339	0.333	0.359	0.308	0.354	0.361
	3	0.318	0.301	0.311	0.323	0.306	0.328	0.318	0.306	0.303	0.325	0.304	0.327	0.327
	4	0.327	0.297	0.312	0.310	0.289	0.329	0.312	0.303	0.298	0.300	0.300	0.317	0.322
	5	0.264	0.248	0.261	0.258	0.247	0.269	0.251	0.248	0.241	0.259	0.245	0.263	0.260
	6	0.236	0.219	0.233	0.233	0.231	0.234	0.218	0.210	0.205	0.237	0.220	0.230	0.233

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

Exhibit 16.2 Total per KM Costs Unpaved Roads (SOCC 6%) (\$/km, yr. 2000)

Veh Class	Mintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.542	0.376	0.386	0.386	0.380	0.554	0.540	0.371	0.525	0.401	0.381	0.553	0.393
	2	0.331	0.323	0.331	0.333	0.326	0.351	0.336	0.316	0.321	0.350	0.326	0.341	0.341
	3	0.273	0.266	0.274	0.278	0.272	0.305	0.286	0.258	0.265	0.299	0.309	0.286	0.289
	4	0.214	0.207	0.215	0.214	0.210	0.232	0.215	0.200	0.201	0.226	0.207	0.216	0.221
	5	0.179	0.191	0.183	0.183	0.182	0.206	0.188	0.168	0.171	0.199	0.174	0.211	0.192
	6	0.239	0.228	0.236	0.241	0.237	0.275	0.254	0.218	0.226	0.264	0.226	0.249	0.254
Sub-compact	1	0.314	0.301	0.313	0.317	0.305	0.331	0.322	0.310	0.315	0.340	0.307	0.352	0.320
	2	0.282	0.263	0.270	0.272	0.267	0.304	0.270	0.260	0.272	0.334	0.278	0.279	0.280
	3	0.267	0.259	0.268	0.271	0.267	0.296	0.277	0.246	0.257	0.293	0.246	0.270	0.280
	4	0.191	0.185	0.191	0.193	0.192	0.215	0.187	0.169	0.178	0.205	0.183	0.194	0.203
	5	0.177	0.172	0.190	0.179	0.179	0.211	0.184	0.173	0.178	0.204	0.168	0.193	0.198
	6	0.206	0.190	0.205	0.211	0.202	0.250	0.221	0.188	0.202	0.240	0.195	0.211	0.226
Compact	1	0.305	0.294	0.302	0.302	0.272	0.337	0.305	0.287	0.290	0.335	0.268	0.365	0.311
	2	0.307	0.299	0.291	0.279	0.287	0.326	0.295	0.277	0.280	0.308	0.272	0.274	0.316
	3	0.254	0.259	0.263	0.270	0.282	0.292	0.270	0.259	0.250	0.311	0.260	0.264	0.276
	4	0.191	0.189	0.203	0.190	0.202	0.222	0.204	0.191	0.189	0.226	0.197	0.208	0.210
	5	0.187	0.182	0.194	0.184	0.191	0.215	0.183	0.175	0.173	0.218	0.196	0.191	0.199
	6	0.214	0.206	0.215	0.217	0.225	0.252	0.228	0.212	0.219	0.266	0.221	0.224	0.230
Midsize	1	0.338	0.373	0.336	0.361	0.368	0.393	0.359	0.345	0.347	0.375	0.354	0.363	0.367
	2	0.351	0.345	0.355	0.354	0.339	0.368	0.328	0.309	0.321	0.362	0.336	0.331	0.360
	3	0.279	0.286	0.273	0.278	0.283	0.324	0.291	0.278	0.285	0.303	0.282	0.306	0.306
	4	0.221	0.218	0.226	0.221	0.214	0.242	0.217	0.204	0.203	0.228	0.207	0.222	0.230
	5	0.204	0.200	0.205	0.203	0.204	0.224	0.202	0.189	0.189	0.205	0.182	0.207	0.209
	6	0.220	0.238	0.208	0.237	0.235	0.268	0.244	0.194	0.224	0.236	0.198	0.245	0.252
Full-size	1	0.491	0.478	0.461	0.461	0.453	0.468	0.456	0.446	0.440	0.467	0.451	0.488	0.466
	2	0.401	0.386	0.408	0.407	0.371	0.397	0.385	0.378	0.373	0.402	0.388	0.417	0.395
	3	0.350	0.324	0.337	0.338	0.342	0.360	0.337	0.313	0.312	0.354	0.333	0.339	0.345
	4	0.236	0.233	0.243	0.237	0.242	0.256	0.238	0.228	0.227	0.267	0.244	0.240	0.247
	5	0.231	0.226	0.238	0.227	0.241	0.253	0.232	0.218	0.216	0.256	0.228	0.220	0.240
	6	0.252	0.237	0.250	0.251	0.270	0.283	0.254	0.231	0.229	0.270	0.243	0.258	0.262
Stationwagon	1	0.283	0.272	0.281	0.283	0.277	0.403	0.392	0.380	0.382	0.407	0.236	0.288	0.288
	2	0.278	0.271	0.279	0.280	0.276	0.295	0.264	0.249	0.251	0.293	0.273	0.286	0.286
	3	0.273	0.254	0.263	0.265	0.281	0.284	0.265	0.246	0.248	0.279	0.351	0.269	0.271
	4	0.213	0.217	0.239	0.216	0.237	0.243	0.223	0.209	0.208	0.237	0.230	0.242	0.231
	5	0.255	0.241	0.246	0.261	0.245	0.268	0.246	0.234	0.231	0.270	0.251	0.263	0.248
	6	0.197	0.187	0.196	0.203	0.196	0.234	0.256	0.178	0.185	0.223	0.185	0.206	0.213
Minivans	1	0.386	0.364	0.376	0.375	0.385	0.392	0.377	0.380	0.377	0.404	0.390	0.401	0.387
	2	0.321	0.301	0.312	0.321	0.317	0.321	0.306	0.293	0.292	0.321	0.304	0.313	0.315
	3	0.263	0.261	0.271	0.265	0.262	0.285	0.267	0.253	0.253	0.273	0.263	0.274	0.275
	4	0.258	0.250	0.260	0.259	0.257	0.273	0.261	0.248	0.247	0.269	0.251	0.271	0.263
	5	0.255	0.232	0.255	0.255	0.234	0.252	0.232	0.216	0.215	0.265	0.245	0.245	0.259
	6	0.196	0.190	0.201	0.196	0.199	0.209	0.190	0.183	0.180	0.203	0.191	0.198	0.200
Pass. Van	1	0.372	0.405	0.419	0.365	0.413	0.424	0.357	0.349	0.345	0.425	0.358	0.417	0.419
	2	0.322	0.310	0.322	0.320	0.317	0.381	0.315	0.307	0.302	0.329	0.313	0.324	0.324
	3	0.324	0.312	0.324	0.322	0.319	0.335	0.317	0.305	0.304	0.332	0.315	0.327	0.327
	4	0.336	0.324	0.335	0.334	0.331	0.347	0.329	0.316	0.315	0.344	0.327	0.339	0.338
	5	0.310	0.295	0.308	0.308	0.305	0.300	0.304	0.288	0.287	0.318	0.297	0.311	0.312
	6	0.208	0.208	0.217	0.212	0.209	0.219	0.199	0.199	0.195	0.219	0.207	0.215	0.216
Cargo Van	1	0.353	0.361	0.350	0.348	0.344	0.357	0.342	0.333	0.330	0.357	0.370	0.347	0.351
	2	0.337	0.321	0.326	0.322	0.322	0.332	0.314	0.316	0.301	0.329	0.277	0.325	0.325
	3	0.298	0.247	0.274	0.294	0.294	0.307	0.287	0.271	0.274	0.302	0.287	0.297	0.298
	4	0.241	0.254	0.280	0.263	0.239	0.253	0.234	0.222	0.220	0.285	0.272	0.266	0.243
	5	0.256	0.244	0.257	0.254	0.234	0.257	0.248	0.237	0.233	0.239	0.257	0.256	0.258
	6	0.191	0.173	0.184	0.180	0.189	0.196	0.179	0.174	0.170	0.191	0.181	0.187	0.189
Special PV	1	0.466	0.443	0.488	0.501	0.493	0.489	0.488	0.481	0.478	0.479	0.435	0.460	0.486
	2	0.436	0.421	0.434	0.433	0.393	0.442	0.425	0.413	0.412	0.445	0.434	0.407	0.436
	3	0.314	0.307	0.331	0.323	0.318	0.331	0.312	0.300	0.299	0.356	0.343	0.327	0.322
	4	0.339	0.327	0.338	0.305	0.323	0.357	0.339	0.329	0.329	0.359	0.348	0.361	0.355
	5	0.285	0.257	0.264	0.262	0.261	0.283	0.258	0.243	0.244	0.281	0.262	0.258	0.266
	6	0.245	0.231	0.241	0.230	0.233	0.269	0.249	0.222	0.223	0.253	0.251	0.233	0.254
Pickups	1	0.356	0.337	0.350	0.350	0.350	0.361	0.343	0.333	0.328	0.362	0.342	0.352	0.353
	2	0.375	0.351	0.345	0.363	0.333	0.384	0.365	0.353	0.346	0.374	0.323	0.368	0.375
	3	0.332	0.317	0.327	0.338	0.322	0.344	0.332	0.320	0.317	0.341	0.320	0.342	0.343
	4	0.341	0.313	0.329	0.325	0.305	0.346	0.326	0.318	0.313	0.316	0.316	0.333	0.338
	5	0.279	0.264	0.278	0.274	0.263	0.286	0.265	0.263	0.255	0.276	0.261	0.279	0.277
	6	0.251	0.236	0.251	0.249	0.247	0.252	0.233	0.226	0.220	0.254	0.237	0.247	0.249

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

Exhibit 16.3: Total per KM Costs Paved Roads (SOCC 8.6%) (\$/km, yr. 2000)

Veh Class	Mintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.608	0.400	0.410	0.411	0.404	0.615	0.603	0.396	0.590	0.425	0.406	0.619	0.417
	2	0.341	0.332	0.339	0.342	0.335	0.359	0.345	0.326	0.330	0.358	0.335	0.350	0.350
	3	0.280	0.271	0.279	0.283	0.276	0.308	0.291	0.264	0.270	0.303	0.322	0.291	0.293
	4	0.219	0.210	0.218	0.217	0.207	0.234	0.219	0.204	0.205	0.229	0.211	0.216	0.224
	5	0.175	0.187	0.177	0.178	0.176	0.199	0.183	0.163	0.166	0.192	0.169	0.208	0.186
	6	0.238	0.224	0.233	0.238	0.234	0.271	0.252	0.216	0.224	0.260	0.223	0.245	0.251
Sub-compact	1	0.329	0.314	0.326	0.330	0.318	0.342	0.335	0.326	0.331	0.355	0.320	0.369	0.333
	2	0.290	0.268	0.275	0.278	0.272	0.309	0.275	0.266	0.280	0.345	0.284	0.285	0.285
	3	0.271	0.261	0.269	0.273	0.268	0.297	0.280	0.248	0.259	0.294	0.247	0.271	0.282
	4	0.189	0.180	0.187	0.189	0.188	0.210	0.184	0.165	0.175	0.201	0.179	0.190	0.199
	5	0.173	0.166	0.184	0.174	0.173	0.205	0.178	0.168	0.173	0.198	0.162	0.188	0.193
	6	0.201	0.182	0.197	0.204	0.196	0.243	0.215	0.182	0.198	0.234	0.188	0.204	0.220
Compact	1	0.322	0.308	0.317	0.317	0.286	0.352	0.320	0.302	0.305	0.352	0.282	0.382	0.326
	2	0.316	0.306	0.297	0.285	0.295	0.332	0.301	0.284	0.287	0.315	0.278	0.279	0.323
	3	0.255	0.260	0.263	0.272	0.285	0.292	0.272	0.262	0.252	0.315	0.261	0.263	0.277
	4	0.187	0.185	0.199	0.185	0.198	0.218	0.202	0.188	0.187	0.224	0.193	0.205	0.206
	5	0.182	0.175	0.188	0.178	0.185	0.208	0.177	0.169	0.167	0.212	0.190	0.184	0.193
	6	0.196	0.182	0.191	0.195	0.202	0.226	0.207	0.193	0.199	0.241	0.198	0.201	0.207
Midsize	1	0.360	0.392	0.355	0.381	0.391	0.413	0.378	0.365	0.368	0.394	0.373	0.381	0.387
	2	0.361	0.355	0.365	0.365	0.348	0.377	0.337	0.318	0.330	0.372	0.345	0.339	0.370
	3	0.283	0.288	0.274	0.279	0.285	0.327	0.294	0.281	0.290	0.305	0.284	0.309	0.309
	4	0.220	0.215	0.222	0.219	0.210	0.238	0.215	0.202	0.201	0.225	0.204	0.219	0.227
	5	0.201	0.195	0.199	0.198	0.198	0.218	0.197	0.185	0.184	0.198	0.176	0.201	0.203
	6	0.217	0.233	0.201	0.233	0.229	0.262	0.240	0.190	0.221	0.228	0.193	0.239	0.247
Full-size	1	0.517	0.503	0.485	0.485	0.476	0.490	0.480	0.471	0.465	0.491	0.474	0.512	0.489
	2	0.414	0.397	0.419	0.419	0.381	0.407	0.397	0.390	0.384	0.412	0.400	0.429	0.406
	3	0.356	0.329	0.342	0.344	0.346	0.364	0.343	0.319	0.318	0.358	0.337	0.344	0.350
	4	0.235	0.231	0.241	0.236	0.240	0.253	0.238	0.227	0.226	0.266	0.243	0.237	0.245
	5	0.228	0.221	0.233	0.222	0.237	0.247	0.228	0.214	0.212	0.251	0.223	0.214	0.235
	6	0.251	0.233	0.245	0.248	0.267	0.278	0.251	0.228	0.226	0.265	0.239	0.254	0.258
Stationwagon	1	0.297	0.285	0.293	0.296	0.290	0.421	0.412	0.401	0.402	0.426	0.253	0.301	0.301
	2	0.285	0.275	0.283	0.285	0.280	0.299	0.271	0.257	0.258	0.297	0.278	0.290	0.290
	3	0.273	0.254	0.264	0.266	0.279	0.284	0.266	0.248	0.249	0.278	0.356	0.270	0.272
	4	0.209	0.212	0.235	0.210	0.233	0.238	0.220	0.205	0.205	0.232	0.226	0.238	0.227
	5	0.253	0.235	0.239	0.256	0.238	0.262	0.243	0.231	0.226	0.264	0.245	0.257	0.241
	6	0.193	0.180	0.190	0.196	0.189	0.227	0.250	0.173	0.179	0.215	0.177	0.199	0.205
Minivans	1	0.406	0.383	0.395	0.394	0.403	0.409	0.396	0.401	0.399	0.425	0.411	0.422	0.405
	2	0.331	0.308	0.319	0.328	0.324	0.326	0.314	0.301	0.300	0.328	0.312	0.321	0.322
	3	0.265	0.260	0.271	0.265	0.262	0.284	0.267	0.254	0.254	0.273	0.263	0.274	0.275
	4	0.258	0.247	0.257	0.257	0.254	0.269	0.259	0.246	0.245	0.266	0.248	0.269	0.260
	5	0.252	0.227	0.250	0.250	0.227	0.245	0.227	0.211	0.210	0.259	0.239	0.240	0.254
	6	0.190	0.181	0.191	0.187	0.189	0.198	0.182	0.175	0.171	0.193	0.182	0.189	0.190
Pass. Van	1	0.390	0.423	0.437	0.382	0.431	0.441	0.373	0.366	0.362	0.443	0.375	0.438	0.438
	2	0.326	0.312	0.324	0.323	0.319	0.387	0.318	0.314	0.306	0.331	0.316	0.327	0.326
	3	0.322	0.309	0.320	0.320	0.316	0.331	0.315	0.304	0.302	0.329	0.312	0.324	0.323
	4	0.335	0.320	0.331	0.331	0.327	0.342	0.326	0.314	0.312	0.340	0.323	0.335	0.335
	5	0.307	0.290	0.303	0.303	0.300	0.295	0.300	0.284	0.283	0.313	0.293	0.306	0.307
	6	0.201	0.198	0.207	0.203	0.200	0.208	0.191	0.191	0.187	0.208	0.197	0.205	0.206
Cargo Van	1	0.370	0.375	0.365	0.364	0.359	0.372	0.358	0.349	0.347	0.372	0.387	0.363	0.367
	2	0.342	0.323	0.329	0.325	0.324	0.334	0.317	0.319	0.305	0.331	0.276	0.328	0.328
	3	0.297	0.237	0.271	0.292	0.291	0.303	0.285	0.269	0.272	0.299	0.284	0.294	0.295
	4	0.237	0.250	0.277	0.259	0.233	0.246	0.230	0.218	0.215	0.281	0.269	0.261	0.237
	5	0.248	0.234	0.247	0.245	0.223	0.246	0.240	0.228	0.225	0.227	0.248	0.246	0.248
	6	0.186	0.164	0.175	0.173	0.181	0.188	0.172	0.167	0.163	0.182	0.173	0.179	0.180
Special PV	1	0.491	0.465	0.512	0.524	0.517	0.511	0.511	0.505	0.502	0.504	0.457	0.483	0.510
	2	0.450	0.433	0.446	0.445	0.405	0.452	0.437	0.426	0.425	0.458	0.446	0.419	0.447
	3	0.316	0.308	0.333	0.325	0.319	0.331	0.314	0.303	0.301	0.359	0.346	0.329	0.323
	4	0.340	0.326	0.337	0.304	0.321	0.355	0.339	0.330	0.329	0.358	0.350	0.363	0.354
	5	0.283	0.253	0.259	0.259	0.257	0.278	0.255	0.240	0.241	0.276	0.258	0.252	0.262
	6	0.240	0.224	0.234	0.223	0.226	0.261	0.243	0.216	0.217	0.245	0.245	0.225	0.247
Pickups	1	0.370	0.350	0.360	0.363	0.361	0.372	0.357	0.346	0.342	0.375	0.357	0.365	0.366
	2	0.380	0.354	0.347	0.367	0.334	0.387	0.370	0.357	0.352	0.378	0.326	0.371	0.379
	3	0.328	0.311	0.320	0.333	0.315	0.337	0.328	0.317	0.313	0.334	0.314	0.337	0.337
	4	0.336	0.306	0.321	0.318	0.296	0.338	0.321	0.312	0.307	0.307	0.308	0.326	0.331
	5	0.269	0.252	0.266	0.263	0.251	0.274	0.256	0.253	0.246	0.263	0.249	0.268	0.265
	6	0.238	0.222	0.236	0.236	0.233	0.237	0.220	0.213	0.209	0.240	0.223	0.233	0.235

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

Exhibit 16.4 Total per KM Costs Unpaved Roads (SOCC 8.6%)(\$/km yr 2000)

Veh Class	Mintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada
Two-Seaters	1	0.614	0.407	0.417	0.417	0.411	0.623	0.609	0.402	0.596	0.433	0.413	0.626	0.424
	2	0.348	0.340	0.348	0.350	0.343	0.367	0.352	0.333	0.338	0.367	0.343	0.359	0.358
	3	0.287	0.279	0.288	0.291	0.284	0.318	0.299	0.271	0.278	0.312	0.331	0.299	0.302
	4	0.226	0.219	0.227	0.226	0.216	0.244	0.227	0.212	0.213	0.239	0.220	0.225	0.233
	5	0.183	0.196	0.186	0.187	0.185	0.210	0.192	0.171	0.175	0.202	0.178	0.218	0.195
	6	0.246	0.235	0.243	0.248	0.244	0.282	0.261	0.225	0.233	0.271	0.233	0.256	0.261
Sub-compact	1	0.334	0.321	0.333	0.336	0.324	0.349	0.341	0.332	0.337	0.362	0.326	0.375	0.339
	2	0.296	0.276	0.283	0.285	0.280	0.317	0.281	0.272	0.286	0.353	0.292	0.292	0.293
	3	0.277	0.269	0.278	0.281	0.277	0.306	0.287	0.255	0.267	0.303	0.255	0.280	0.291
	4	0.196	0.189	0.196	0.198	0.196	0.220	0.191	0.173	0.183	0.210	0.187	0.199	0.208
	5	0.180	0.175	0.193	0.182	0.182	0.214	0.186	0.176	0.181	0.208	0.171	0.197	0.202
	6	0.208	0.192	0.207	0.214	0.205	0.254	0.224	0.191	0.207	0.245	0.198	0.214	0.230
Compact	1	0.327	0.315	0.324	0.324	0.292	0.359	0.326	0.308	0.312	0.359	0.289	0.389	0.333
	2	0.322	0.315	0.305	0.293	0.303	0.340	0.308	0.291	0.294	0.323	0.286	0.287	0.331
	3	0.262	0.269	0.273	0.280	0.294	0.302	0.280	0.270	0.260	0.325	0.270	0.273	0.286
	4	0.194	0.194	0.208	0.194	0.207	0.227	0.210	0.196	0.195	0.233	0.202	0.214	0.215
	5	0.190	0.185	0.197	0.187	0.194	0.218	0.185	0.177	0.176	0.222	0.200	0.194	0.202
	6	0.216	0.209	0.217	0.219	0.227	0.254	0.230	0.215	0.222	0.269	0.225	0.227	0.233
Midsize	1	0.366	0.400	0.363	0.388	0.398	0.421	0.385	0.371	0.374	0.402	0.381	0.389	0.395
	2	0.368	0.364	0.374	0.373	0.356	0.386	0.345	0.325	0.338	0.381	0.354	0.347	0.379
	3	0.290	0.298	0.283	0.288	0.294	0.336	0.302	0.289	0.298	0.314	0.293	0.318	0.318
	4	0.226	0.223	0.231	0.227	0.219	0.247	0.222	0.209	0.208	0.234	0.212	0.227	0.236
	5	0.208	0.204	0.208	0.207	0.207	0.228	0.205	0.193	0.193	0.208	0.185	0.211	0.212
	6	0.224	0.242	0.211	0.242	0.239	0.272	0.249	0.199	0.229	0.238	0.203	0.249	0.257
Full-size	1	0.523	0.511	0.492	0.492	0.484	0.498	0.486	0.477	0.471	0.499	0.481	0.519	0.497
	2	0.421	0.406	0.428	0.428	0.390	0.416	0.405	0.398	0.393	0.421	0.409	0.438	0.415
	3	0.364	0.339	0.352	0.353	0.356	0.375	0.352	0.328	0.327	0.369	0.347	0.355	0.360
	4	0.243	0.241	0.251	0.245	0.250	0.264	0.247	0.236	0.235	0.277	0.253	0.248	0.255
	5	0.237	0.232	0.244	0.233	0.248	0.259	0.238	0.224	0.222	0.263	0.234	0.225	0.246
	6	0.259	0.244	0.256	0.258	0.277	0.289	0.261	0.238	0.236	0.277	0.250	0.265	0.269
Stationwagon	1	0.303	0.292	0.300	0.302	0.296	0.428	0.418	0.407	0.408	0.433	0.259	0.308	0.308
	2	0.291	0.284	0.292	0.293	0.288	0.308	0.279	0.264	0.266	0.306	0.287	0.299	0.299
	3	0.281	0.265	0.274	0.275	0.289	0.295	0.275	0.257	0.258	0.289	0.366	0.280	0.282
	4	0.217	0.223	0.246	0.220	0.244	0.249	0.229	0.215	0.215	0.243	0.236	0.249	0.237
	5	0.260	0.244	0.248	0.264	0.247	0.272	0.251	0.239	0.234	0.274	0.254	0.266	0.250
	6	0.201	0.190	0.200	0.205	0.199	0.238	0.259	0.182	0.188	0.226	0.187	0.209	0.215
Minivans	1	0.412	0.391	0.402	0.401	0.410	0.417	0.402	0.407	0.405	0.432	0.419	0.430	0.413
	2	0.338	0.318	0.328	0.337	0.333	0.337	0.322	0.309	0.309	0.338	0.321	0.330	0.332
	3	0.273	0.271	0.281	0.274	0.272	0.295	0.276	0.263	0.263	0.284	0.273	0.284	0.285
	4	0.267	0.258	0.269	0.267	0.265	0.281	0.269	0.256	0.255	0.278	0.260	0.280	0.271
	5	0.261	0.238	0.262	0.261	0.239	0.257	0.237	0.221	0.220	0.271	0.251	0.251	0.266
	6	0.199	0.193	0.204	0.199	0.201	0.211	0.192	0.186	0.182	0.206	0.194	0.201	0.202
Pass. Van	1	0.398	0.432	0.446	0.390	0.439	0.451	0.381	0.374	0.369	0.452	0.384	0.447	0.446
	2	0.335	0.323	0.334	0.333	0.329	0.399	0.327	0.324	0.315	0.342	0.326	0.337	0.337
	3	0.332	0.320	0.332	0.330	0.327	0.343	0.325	0.313	0.312	0.340	0.323	0.335	0.334
	4	0.344	0.331	0.343	0.341	0.338	0.354	0.336	0.323	0.322	0.352	0.334	0.346	0.346
	5	0.316	0.302	0.315	0.314	0.311	0.307	0.310	0.294	0.293	0.325	0.304	0.318	0.319
	6	0.211	0.211	0.220	0.215	0.212	0.222	0.202	0.202	0.198	0.222	0.210	0.218	0.218
Cargo Van	1	0.378	0.385	0.374	0.373	0.369	0.381	0.366	0.358	0.355	0.382	0.396	0.372	0.376
	2	0.350	0.333	0.339	0.335	0.334	0.345	0.326	0.328	0.314	0.342	0.286	0.338	0.338
	3	0.306	0.248	0.281	0.302	0.302	0.314	0.295	0.278	0.282	0.310	0.295	0.305	0.305
	4	0.246	0.261	0.288	0.270	0.244	0.258	0.239	0.227	0.225	0.293	0.280	0.272	0.248
	5	0.262	0.250	0.263	0.260	0.239	0.263	0.254	0.243	0.239	0.243	0.264	0.262	0.264
	6	0.194	0.175	0.185	0.183	0.192	0.199	0.181	0.176	0.172	0.193	0.184	0.190	0.191
Special PV	1	0.498	0.473	0.520	0.532	0.526	0.520	0.519	0.513	0.509	0.512	0.465	0.491	0.518
	2	0.458	0.443	0.455	0.455	0.414	0.463	0.446	0.435	0.434	0.468	0.456	0.429	0.457
	3	0.324	0.319	0.344	0.335	0.329	0.342	0.323	0.312	0.310	0.370	0.357	0.339	0.333
	4	0.350	0.338	0.348	0.314	0.333	0.368	0.350	0.340	0.340	0.370	0.361	0.374	0.365
	5	0.291	0.263	0.270	0.268	0.267	0.289	0.264	0.249	0.250	0.287	0.269	0.263	0.272
	6	0.249	0.235	0.245	0.234	0.237	0.273	0.253	0.226	0.228	0.258	0.257	0.236	0.259
Pickups	1	0.382	0.363	0.374	0.376	0.375	0.386	0.369	0.359	0.354	0.389	0.370	0.379	0.379
	2	0.393	0.368	0.361	0.381	0.348	0.402	0.383	0.371	0.365	0.392	0.340	0.386	0.393
	3	0.342	0.326	0.336	0.349	0.331	0.353	0.342	0.331	0.327	0.350	0.329	0.352	0.353
	4	0.351	0.322	0.337	0.334	0.312	0.355	0.335	0.327	0.322	0.324	0.324	0.342	0.347
	5	0.284	0.268	0.283	0.278	0.267	0.291	0.270	0.268	0.260	0.280	0.265	0.284	0.281
	6	0.254	0.239	0.253	0.252	0.250	0.254	0.235	0.229	0.224	0.257	0.240	0.250	0.252

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

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Vehicle Cost Calculator (www.agric.gov.ab.ca/app24/costcalculators/vehicle/getvechimpls.jsp), produced by the Alberta Department of Agriculture, Food and Rural Development, estimates and compares the ownership and operating costs for a vehicle, with default values for eleven types of vehicles that can be modified to reflect specific conditions.

APPENDIX 1: VEHICLES INCLUDED IN EACH VEHICLE CLASS

Costs of Autos and Light Trucks in Canada

Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada		
Compact	1	Toyota	Toyota	Toyota	Toyota	Toyota	Toyota	Toyota	Pontiac	Toyota	Toyota	Ford Escort	Ford Escort	Toyota		
		Corolla	Corolla	Corolla	Corolla	Corolla	Corolla	Corolla	Grand AM	Corolla	Corolla	Volksw age	Toyota	Pontiac	Corolla	
		Mazda	Pontiac	Plymouth	Plymouth	Mazda	Pontiac	Pontiac	Ford Escort	Grand AM	Pontiac	Plymouth	Corolla	Grand AM	Protegé	
		Pontiac	Grand AM	Neon	Neon	Protegé?	Grand AM	Grand AM	Plymouth	Plymouth	Plymouth	Neon	Neon	Neon	Pontiac	Pontiac
		Grand AM	Ford Escort	Pontiac	Ford Escort	Volksw age	Plymouth	Plymouth	Neon	Neon	Neon	Neon	Neon	Ford Focus	Ford Focus	Grand AM
	Saturn S	Saturn S	Mazda	Pontiac	n Jetta	Neon	Neon	Volksw age	Toyota	Toyota	Toyota	Plymouth	Neon	Chrysler	Plymouth	
	Series	Series	Protegé	Grand AM	Ford Escort	n Jetta	Ford Escort	Corolla	Ford Escort	Corolla	Ford Escort	Neon	Ford Focus	Neon	Neon	
	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Ford Escort	Chevrolet	
	Pontiac	Pontiac	Pontiac	Pontiac	Pontiac	Pontiac	Pontiac	Pontiac	Pontiac	Pontiac	Pontiac	Toyota	Pontiac	Chevrolet	Pontiac	
	2	Sunfire	Sunfire	Sunfire	Sunfire	Sunfire	Sunfire	Sunfire	Sunfire	Sunfire	Sunfire	Corolla	Sunfire	Cavalier	Sunfire	
		Toyota	Toyota	Pontiac	Toyota	Toyota	Toyota	Pontiac	Pontiac	Pontiac	Pontiac	Corolla	Toyota	Pontiac	Toyota	
		Corolla	Corolla	Grand AM	Corolla	Corolla	Corolla	Grand AM	Grand AM	Grand AM	Grand AM	Sunfire	Corolla	Sunfire	Corolla	
		Pontiac	Pontiac	Dodge	Dodge	Honda	Toyota	Dodge	Dodge	Dodge	Dodge	Honda	Dodge	Dodge	Pontiac	
	Grand AM	Grand AM	Neon	Neon	Accord	Corolla	Neon	Neon	Neon	Neon	Accord	Neon	Neon	Grand AM		
	3	Ford Tempo	Ford Tempo	Ford Tempo	Ford Tempo	Honda	Accord	Corolla	Ford Tempo	Ford Tempo	Ford Tempo	Honda	Ford Tempo	Ford Tempo	Accord	
		Dodge	Mercury	Mercury	Mercury	Toyota	Pontiac	Pontiac	Pontiac	Pontiac	Pontiac	Toyota	Toyota	Toyota	Ford Tempo	
		Shadow	Topaz	Topaz	Topaz	Corolla	Grand AM	Grand AM	Grand AM	Grand AM	Grand AM	Camry	Corolla	Corolla	Pontiac	
		Mercury	Pontiac	Pontiac	Pontiac	Volksw age	Ford Tempo	Mercury	Mercury	Mercury	Honda	Toyota	Pontiac	Ford Escort	Pontiac	
		Topaz	Grand AM	Grand AM	Grand AM	n Golf	Topaz	Topaz	Topaz	Accord	Corolla	Grand AM	Mercury	Mercury	Mercury	
	Pontiac	Toyota	Honda	Toyota	Mazda	Mercury	Honda	Toyota	Mercury	Ford Tempo	Mercury	Mercury	Mercury	Mercury		
	Grand AM	Corolla	Accord	Corolla	Protegé?	Topaz	Accord	Camry	Topaz	Topaz	Topaz	Topaz	Topaz	Topaz		
	4	Ford Tempo	Ford Tempo	Ford Tempo	Ford Tempo	Toyota	Accord	Honda	Ford Tempo	Ford Tempo	Ford Tempo	Honda	Toyota	Ford Tempo	Ford Tempo	
		Mercury	Mercury	Mercury	Mercury	Corolla	Accord	Corolla	Ford Tempo	Ford Tempo	Ford Tempo	Accord	Corolla	Ford Tempo	Ford Tempo	
		Topaz	Topaz	Topaz	Topaz	Honda	Ford Tempo	Honda	Mercury	Honda	Mercury	Toyota	Ford Tempo	Toyota	Honda	
		Pontiac	Pontiac	Toyota	Dodge	Accord	Mercury	Accord	Topaz	Accord	Topaz	Corolla	Ford Tempo	Mercury	Accord	
		Sunbird	Sunbird	Corolla	Shadow	Ford Tempo	Mercury	Mercury	Mercury	Mercury	Honda	Mercury	Ford Tempo	Plymouth	Mercury	
	Dodge	Honda	Honda	Pontiac	Mercury	Toyota	Toyota	Plymouth	Toyota	Toyota	Toyota	Toyota	Sundance	Topaz	Corolla	
	Shadow	Accord	Accord	Sunbird	Topaz	Corolla	Corolla	Sundance	Corolla	Corolla	Camry	Honda	Shadow	Camry	Topaz	
	5	Chevrolet	Ford Tempo	Chevrolet	Chevrolet	Chevrolet	Toyota	Corolla	Corolla	Sundance	Corolla	Camry	Shadow	Camry	Topaz	
		Cavalier	Ford Tempo	Cavalier	Cavalier	Cavalier	Accord	Ford Tempo	Ford Tempo	Ford Tempo	Ford Tempo	Accord	Ford Tempo	Ford Tempo	Ford Tempo	
Ford Tempo		Chevrolet	Ford Tempo	Ford Tempo	Ford Tempo	Ford Tempo	Chevrolet	Mercury	Honda	Toyota	Toyota	Mercury	Honda	Honda		
Cavalier		Cavalier	Ford Tempo	Ford Tempo	Ford Tempo	Ford Tempo	Cavalier	Topaz	Accord	Corolla	Camry	Topaz	Topaz	Accord		
Pontiac		Mercury	Volksw age	Volksw age	Toyota	Chevrolet	Mercury	Chevrolet	Mercury	Ford Tempo	Toyota	Toyota	Toyota	Chevrolet		
Sunbird	Topaz	n Jetta	n Jetta	Corolla	Cavalier	Topaz	Cavalier	Topaz	Chevrolet	Topaz	Corolla	Corolla	Cavalier			
Chevrolet	Pontiac	Honda	Mercury	Volksw age	Toyota	Pontiac	Pontiac	Toyota	Chevrolet	Toyota	Honda	Pontiac	Toyota			
Corsica	Grand AM	Accord	Topaz	n Jetta	Corolla	Sunbird	Grand AM	Cavalier	Cavalier	Camry	Accord	Sunbird	Corolla			
6	Ford Tempo	Ford Tempo	Ford Tempo	Ford Tempo	Chevrolet	Ford Tempo	Ford Tempo	Ford Tempo	Ford Tempo	Ford Tempo	Toyota	Ford Tempo	Ford Tempo	Ford Tempo		
	Volksw age	Buick	Volksw age	Volksw age	Chevrolet	Ford Tempo	Ford Tempo	Ford Tempo	Ford Tempo	Ford Tempo	Corolla	Ford Tempo	Ford Tempo	Ford Tempo		
	n Jetta	Skylark	n Jetta	n Jetta	Volksw age	Volksw age	Volksw age	Buick	Mercury	Toyota	Ford Tempo	Chevrolet	Toyota	Toyota		
	Chevrolet	Mercury	Mercury	Buick	n Jetta	n Jetta	Buick	Skylark	Topaz	Corolla	Mercury	Toyota	Toyota	Mercury		
	Cavalier	Topaz	Topaz	Skylark	Ford Tempo	Toyota	Toyota	Toyota	Toyota	Mercury	Toyota	Toyota	Toyota	Mercury		
Toyota	Volksw age	Chevrolet	Chevrolet	Pontiac	Toyota	Mercury	Mercury	Toyota	Toyota	Toyota	Volksw age	Mercury	Volksw age			
Corolla	n Jetta	Cavalier	Cavalier	Sunbird	Corolla	Topaz	Camry	Camry	Camry	Camry	n Jetta	Topaz	n Jetta			

Costs of Autos and Light Trucks in Canada

Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada	
Midsized	1	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Honda	Honda	Chevrolet	Chevrolet	Chevrolet	Honda	Ford	Ford	Honda	
		Malibu	Malibu	Malibu	Malibu	Accord	Accord	Malibu	Malibu	Malibu	Accord	Taurus	Taurus	Accord	
		Chevrolet	Buick	Honda	Toyota	Toyota	Chevrolet	Ford	Chevrolet	Ford	Ford	Toyota	Chevrolet	Mercury	Chevrolet
		Lumina	Century	Accord	Camry	Camry	Malibu	Taurus	Lumina	Taurus	Lumina	Camry	Lumina	Sable	Malibu
		Honda	Toyota	Chevrolet	Ford	Chevrolet	Toyota	Chevrolet	Ford	Honda	Chevrolet	Chevrolet	Chevrolet	Toyota	Toyota
	2	Accord	Camry	Lumina	Taurus	Malibu	Camry	Lumina	Taurus	Accord	Malibu	Malibu	Camry	Camry	Camry
		Toyota	Ford	Toyota	Honda	Nissan	Pontiac	Toyota	Toyota	Toyota	Toyota	Ford	Toyota	Chevrolet	Ford
		Camry	Taurus	Camry	Accord	Maxima	Grand Prix	Camry	Camry	Camry	Camry	Taurus	Camry	Malibu	Taurus
		Chevrolet	Chevrolet	Chevrolet	Chevrolet	Toyota	Chevrolet	Ford	Chevrolet	Ford	Ford	Toyota	Ford	Ford	Chevrolet
		Lumina	Lumina	Lumina	Lumina	Camry	Lumina	Taurus	Lumina	Taurus	Lumina	Camry	Taurus	Taurus	Lumina
	3	Ford	Ford	Ford	Ford	Chevrolet	Toyota	Chevrolet	Ford	Chevrolet	Ford	Chevrolet	Ford	Dodge	Toyota
		Taurus	Taurus	Taurus	Taurus	Lumina	Camry	Lumina	Taurus	Lumina	Taurus	Lumina	Lumina	Stratus	Camry
		Pontiac	Pontiac	Pontiac	Toyota	Ford	Ford	Toyota	Mercury	Mercury	Chevrolet	Toyota	Mercury	Mercury	Ford
		Grand Prix	Grand Prix	Grand Prix	Camry	Taurus	Taurus	Camry	Sable	Sable	Lumina	Camry	Camry	Sable	Taurus
		Dodge	Toyota	Toyota	Pontiac	Dodge	Pontiac	Mercury	Oldsmobile	Pontiac	Volvo 850	Chrysler	Chevrolet	Chevrolet	Pontiac
	4	Stratus	Camry	Camry	Grand Prix	Stratus	Grand Prix	Sable	Cutlass	Grand Prix	Volvo 850	Cirrus	Lumina	Grand Prix	
		Dodge Spirit	Dodge Spirit	Dodge Spirit	Dodge Spirit	Buick Regal	Buick Regal	Taurus	Taurus	Taurus	Taurus	Century	Taurus	Buick Regal	
		Plymouth	Pontiac	Plymouth	Ford	Dodge Spirit	Ford	Oldsmobile	Oldsmobile	Buick Regal	Buick Regal	Chevrolet	Chevrolet	Ford	
		Acclaim	Grand Prix	Acclaim	Taurus	Plymouth	Taurus	Cutlass	Cutlass	Cutlass	Cutlass	Lumina	Lumina	Taurus	
		Chevrolet	Chevrolet	Oldsmobile	Plymouth	Plymouth	Pontiac	Buick	Chevrolet	Pontiac	Oldsmobile	Ford	Mercury	Dodge Spirit	
	5	Lumina	Lumina	Cutlass	Acclaim	Grand Prix	Century	Lumina	Grand Prix	Oldsmobile	Cutlass	Taurus	Sable	Pontiac	
		Oldsmobile	Oldsmobile	Ford	Chevrolet	Oldsmobile	Chevrolet	Dodge Spirit	Buick	Oldsmobile	Dodge Spirit	Dodge Spirit	Pontiac	Pontiac	
		Cutlass	Cutlass	Taurus	Lumina	Cutlass	Lumina	Ford	Century	Ford	Cutlass	Oldsmobile	Chevrolet	Grand Prix	
		Chevrolet	Chrysler	Chevrolet	Chrysler	Chevrolet	Chevrolet	Chevrolet	Ford	Ford	Ford	Oldsmobile	Chevrolet	Ford	
		Corsica	Dynasty	Corsica	Dynasty	Corsica	Corsica	Taurus	Taurus	Taurus	Cutlass	Lumina	Taurus	Corsica	
	6	Chevrolet	Pontiac	Chrysler	Chevrolet	Chrysler	Chevrolet	Chrysler	Chevrolet	Chrysler	Chrysler	Ford	Lumina	Chevrolet	
		Lumina	6000	Dynasty	Corsica	Dynasty	Lumina	Dynasty	Lumina	Dynasty	Taurus	Taurus	Corsica	Dynasty	
		Chrysler	Chevrolet	Chevrolet	Chevrolet	Pontiac	Oldsmobile	Chevrolet	Chevrolet	Chevrolet	Chrysler	Chevrolet	Chevrolet	Chevrolet	
		Dynasty	Lumina	Lumina	Lumina	Tempest	Cutlass	Corsica	Corsica	Corsica	Dynasty	Corsica	Lumina	Lumina	
		Dodge Spirit	Oldsmobile	Oldsmobile	Oldsmobile	Plymouth	Chrysler	Pontiac	Chrysler	Chevrolet	Chevrolet	Plymouth	Chrysler	Oldsmobile	
7	Chevrolet	Pontiac	Cutlass	Cutlass	Acclaim	Dynasty	6000	Dynasty	Lumina	Corsica	Acclaim	Dynasty	Cutlass		
	Chevrolet	Pontiac	Chevrolet	Chevrolet	Pontiac	Pontiac	Pontiac	Chevrolet	Pontiac	Plymouth	Chevrolet	Ford	Pontiac		
	Celebrity	6000	Celebrity	Celebrity	6000	6000	6000	Celebrity	6000	Reliant	Celebrity	Taurus	6000		
	Pontiac	Chevrolet	Pontiac	Pontiac	Oldsmobile	Oldsmobile	Chevrolet	Pontiac	Chevrolet	Oldsmobile	Ford	Chevrolet	Oldsmobile		
	6000	Celebrity	6000	6000	Cutlass	Cutlass	Celebrity	6000	Celebrity	Oldsmobile	Cutlass	Taurus	Corsica		
8	Oldsmobile	Oldsmobile	Oldsmobile	Oldsmobile	Chevrolet	Chevrolet	Oldsmobile	Ford	Oldsmobile	Dodge	Plymouth	Chevrolet	Chevrolet		
	Cutlass	Cutlass	Cutlass	Cutlass	Celebrity	Celebrity	Cutlass	Taurus	Cutlass	Aries	Reliant	Lumina	Celebrity		
	Plymouth	Oldsmobile	Dodge	Dodge	Plymouth	Oldsmobile	Plymouth	Oldsmobile	Ford	Ford	Dodge	Chrysler	Plymouth		
	Reliant	Cutlass	Aries	Aries	Reliant	Cutlass	Reliant	Cutlass	Taurus	Taurus	Aries	Dynasty	Reliant		
	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Pontiac	Pontiac	Chrysler	Chrysler	Chrysler	Plymouth	Chevrolet	Ford	Pontiac	
9	Celebrity	Celebrity	Celebrity	Celebrity	Celebrity	6000	6000	Fifth	Fifth	Reliant	Citation	Taurus	6000		
	Chrysler	Pontiac	Dodge	Pontiac	Pontiac	Oldsmobile	Chevrolet	Oldsmobile	Oldsmobile	Dodge	Chrysler	Oldsmobile	Chevrolet		
	Fifth	6000	Aries	6000	6000	Cutlass	Celebrity	Cutlass	Cutlass	Aries	Fifth	Cutlass	Celebrity		
	Dodge	Pontiac	Plymouth	Chrysler	Oldsmobile	Oldsmobile	Chrysler	Chrysler	Chevrolet	Oldsmobile	Oldsmobile	Pontiac	Oldsmobile		
	Aries	Bonneville	Reliant	Fifth	Cutlass	Cutlass	Fifth	Ford LTD	Celebrity	Cutlass	Ford LTD	6000	Cutlass		
10	Oldsmobile	Ford LTD	Oldsmobile	Oldsmobile	Buick	Chevrolet	Plymouth	Chevrolet	Pontiac	Chrysler	Mercury	Chevrolet	Chrysler		
	Cutlass		Cutlass	Cutlass	Century	Celebrity	Reliant	Celebrity	6000	LeBaron	Marquis	Celebrity	Fifth		

Costs of Autos and Light Trucks in Canada

Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada	
Full-size	1	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Ford	Chrysler	Chrysler
		Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Taurus	Intrepid	Intrepid
		Chevrolet	Buick	Buick	Chevrolet	Chrysler	Buick	Buick	Buick	Buick	Buick	Ford Crown	Chevrolet	Chevrolet	Buick
		Impala	LeSabre	LeSabre	Impala	Concorde	LeSabre	LeSabre	LeSabre	LeSabre	LeSabre	Victoria	Impala	Impala	LeSabre
		Chrysler	Mercury	Chrysler	Buick	Chevrolet	Chrysler	Chrysler	Chrysler	Chrysler	Ford Crown	Buick	Chrysler	Ford	Chrysler
		Concorde	Grand	Concorde	LeSabre	Impala	Concorde	Impala	Concorde	Concorde	Victoria	LeSabre	Intrepid	Taurus	Concorde
	Ford Crown	Chevrolet	Mercury	Chrysler	Buick	Chevrolet	Chrysler	Mercury	Chrysler	Mercury	Chrysler	Chrysler	Pontiac	Ford Crown	Chevrolet
	Victoria	Impala	Grand	Concorde	LeSabre	Impala	Concorde	Grand	Concorde	Concorde	Concorde	Bonneville	Victoria	Impala	
	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler	Chrysler
	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid	Intrepid
	Ford Crown	Buick	Ford Crown	Mercury	Buick	Buick	Buick	Buick	Oldsmobile	Ford Crown	Ford Crown	Ford Crown	Ford Crown	Ford Crown	Buick
	Victoria	LeSabre	Victoria	Grand	LeSabre	LeSabre	LeSabre	Eighty Eight	Victoria	Victoria	Victoria	Victoria	Victoria	Victoria	LeSabre
	Mercury	Ford Crown	Buick	Buick	Buick	Chrysler	Oldsmobile	Oldsmobile	Mercury	Buick	Buick	Buick	Toyota	Chevrolet	Ford Crown
	Grand	Victoria	LeSabre	LeSabre	Concorde	Eighty Eight	Eighty Eight	Eighty Eight	Grand	LeSabre	LeSabre	Avalon	Caprice	Victoria	
	Eagle	Pontiac	Mercury	Ford Crown	Oldsmobile	Pontiac	Ford Crown	Ford Crown	Buick	Oldsmobile	Chrysler	Eagle	Mercury	Oldsmobile	
	Vision	Bonneville	Grand	Victoria	Eighty Eight	Bonneville	Victoria	LeSabre	Eighty Eight	Concorde	Vision	Grand	Eighty Eight		
	Chrysler	Buick	Chrysler	Chrysler	Chrysler	Buick	Buick	Oldsmobile	Chrysler	Chrysler	Ford Crown	Ford Crown	Chrysler		
	Intrepid	LeSabre	Intrepid	Intrepid	Intrepid	LeSabre	LeSabre	Eighty Eight	Intrepid	Intrepid	Victoria	Victoria	Intrepid		
	Ford Crown	Chrysler	Ford Crown	Ford Crown	Buick	Chrysler	Chrysler	Mercury	Ford Crown	Ford Crown	Chrysler	Chrysler	Chevrolet	Intrepid	
	Victoria	Intrepid	Victoria	Victoria	LeSabre	Intrepid	Intrepid	Grand	Victoria	Victoria	Victoria	Intrepid	Caprice	LeSabre	
	Mercury	Ford Crown	Mercury	Mercury	Chrysler	Mercury	Oldsmobile	Chrysler	Oldsmobile	Chrysler	Oldsmobile	Buick	Chrysler	Mercury	Ford Crown
	Grand	Victoria	LeSabre	LeSabre	Concorde	Eighty Eight	Eighty Eight	Eighty Eight	Grand	LeSabre	LeSabre	Avalon	Caprice	Victoria	
	Chrysler	Mercury	Buick	Buick	Ford Crown	Pontiac	Ford Crown	Mercury	Ford Crown	Eighty Eight	Buick	Mercury	Chevrolet	Eagle	Mercury
	Concorde	Grand	LeSabre	LeSabre	Victoria	Bonneville	Grand	Victoria	LeSabre	LeSabre	Grand	Caprice	Vision	Grand	
	Chevrolet	Buick	Chevrolet	Ford LTD	Buick	Buick	Buick	Oldsmobile	Buick	Oldsmobile	Oldsmobile	Chevrolet	Chevrolet	Chevrolet	Buick
	Caprice	LeSabre	Caprice	Crown	LeSabre	LeSabre	LeSabre	Delta 88	Delta 88	Delta 88	Delta 88	Delta 88	Caprice	Caprice	LeSabre
	Ford LTD	Oldsmobile	Ford LTD	Chevrolet	Pontiac	Pontiac	Oldsmobile	Buick	Buick	Buick	Buick	Ford LTD	Mercury	Mercury	Oldsmobile
	Crown	Delta 88	Crown	Caprice	Bonneville	Bonneville	Delta 88	LeSabre	LeSabre	LeSabre	LeSabre	Crown	Grand	Delta 88	
	Mercury	Mercury	Oldsmobile	Mercury	Oldsmobile	Oldsmobile	Mercury	Mercury	Mercury	Pontiac	Pontiac	Lincoln	Ford LTD	Pontiac	
	Grand	Grand	Delta 88	Grand	Delta 88	Delta 88	Delta 88	Grand	Grand	Bonneville	Bonneville	Town Car	Crown	Bonneville	
	Chevrolet	Chevrolet	Buick	Buick	Mercury	Mercury	Mercury	Pontiac	Ford LTD	Ford LTD	Ford LTD	Cadillac	Oldsmobile	Pontiac	Mercury
	Caprice	Caprice	LeSabre	LeSabre	Grand	Grand	Bonneville	Crown	Crown	Crown	Oldsmobile	Oldsmobile	Delta 88	Bonneville	Grand
	Chevrolet	Ford LTD	Chevrolet	Ford LTD	Buick	Buick	Oldsmobile	Oldsmobile	Oldsmobile	Oldsmobile	Oldsmobile	Oldsmobile	Ford LTD	Mercury	Buick
	Caprice	Crown	Caprice	Crown	LeSabre	LeSabre	Delta 88	Delta 88	Delta 88	Delta 88	Delta 88	Delta 88	Crown	Grand	LeSabre
	Oldsmobile	Chevrolet	Ford LTD	Chevrolet	Oldsmobile	Oldsmobile	Oldsmobile	Oldsmobile	Oldsmobile	Oldsmobile	Oldsmobile	Oldsmobile	Oldsmobile	Chevrolet	Oldsmobile
	Delta 88	Caprice	Crown	Caprice	Ninety Eight	Delta 88	Ninety Eight	Delta 88	Ninety Eight	Ninety Eight	Ninety Eight	Ninety Eight	Delta 88	Caprice	Delta 88
Ford LTD	Oldsmobile	Oldsmobile	Mercury	Oldsmobile	Oldsmobile	Oldsmobile	Buick	Mercury	Ford LTD	Buick	Chevrolet	Ford LTD	Oldsmobile		
Crown	Ninety Eight	Delta 88	Grand	Delta 88	Ninety Eight	LeSabre	Grand	Crown	LeSabre	Caprice	Crown	Ninety Eight			
Mercury	Oldsmobile	Oldsmobile	Oldsmobile	Pontiac	Chevrolet	Mercury	Ford LTD	Mercury	Cadillac	Lincoln	Chevrolet	Mercury			
Grand	Delta 88	Ninety Eight	Delta 88	Bonneville	Caprice	Grand	Crown	Grand	Deville	Town Car	Caprice	Grand			
Ford LTD	Pontiac	Pontiac	Pontiac	Pontiac	Oldsmobile	Pontiac	Oldsmobile	Oldsmobile	Mercury	Oldsmobile	Ford LTD	Mercury	Oldsmobile		
Crown	Parisienne	Parisienne	Parisienne	Parisienne	Delta 88	Parisienne	Delta 88	Parisienne	Delta 88	Grand	Delta 88	Crown	Grand	Delta 88	
Pontiac	Ford LTD	Oldsmobile	Oldsmobile	Oldsmobile	Pontiac	Mercury	Mercury	Mercury	Ford LTD	Mercury	Oldsmobile	Chevrolet	Pontiac		
Parisienne	Crown	Delta 88	Delta 88	Delta 88	Parisienne	Grand	Grand	Crown	Crown	Grand	Delta 88	Caprice	Parisienne		
Oldsmobile	Oldsmobile	Ford LTD	Ford LTD	Buick	Buick	Oldsmobile	Oldsmobile	Ford LTD	Oldsmobile	Ford LTD	Pontiac	Pontiac	Mercury		
Delta 88	Delta 88	Crown	Crown	LeSabre	LeSabre	Delta 88	Crown	Delta 88	Crown	Parisienne	Parisienne	Grand			
Mercury	Mercury	Mercury	Mercury	Cadillac	Mercury	Ford LTD	Pontiac	Pontiac	Pontiac	Pontiac	Oldsmobile	Cadillac	Ford LTD		
Grand	Grand	Grand	Grand	Fleetwood	Grand	Crown	Parisienne	Parisienne	Parisienne	Parisienne	Ninety Eight	Fleetwood	Crown		
Ford Escort	Ford Escort	Ford Escort	Ford Escort	Ford Escort	Ford Escort	Ford Escort	Taurus	Taurus	Taurus	Taurus	Taurus	Subaru	Ford Escort	Ford Escort	
Ford Escort	Ford Escort	Ford Escort	Ford Escort	Ford Escort	Ford Escort	Ford Escort	Taurus	Taurus	Taurus	Taurus	Taurus	Leqacy	Ford Escort	Ford Escort	
Chevrolet	Ford	Ford	Ford	Ford	Ford Escort	Ford	Ford	Taurus	Taurus	Taurus	Ford	Toyota	Ford	Ford	
Chevrolet	Taurus	Taurus	Taurus	Taurus	Taurus	Taurus	Taurus	Taurus	Taurus	Taurus	Taurus	Corolla	Taurus	Taurus	
Ford	Ford	Toyota	Chevrolet	Toyota	Toyota	Ford	Ford	Ford	Ford	Ford	Ford	Toyota	Toyota	Ford	
Cavalier	Taurus	Corolla	Cavalier	Corolla	Taurus	Taurus	Taurus	Taurus	Taurus	Taurus	Taurus	Corolla	Corolla	Taurus	
Ford	Chevrolet	Volksw age	Toyota	Volksw age	Chevrolet	Ford	Ford	Ford	Nissan Multi	Toyota	Toyota	Toyota	Toyota	Volksw age	
Taurus	Celebrity	n Fox	Tercel	n Fox	Celebrity	Taurus	Taurus	Taurus	XE	Tercel	Tercel	Tercel	Tercel	n Fox	
Chevrolet	Toyota	Chevrolet	Toyota	Toyota	Chevrolet	Plymouth	Chevrolet	Toyota	Toyota	Toyota	Toyota	Toyota	Toyota	Toyota	
Celebrity	Tercel	Celebrity	Tercel	Tercel	Celebrity	Reliant	Celebrity	Tercel	Tercel	Tercel	Tercel	Tercel	Tercel	Tercel	

Costs of Autos and Light Trucks in Canada

Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada	
Minivans	1	Dodge	Ford	Dodge	Ford	Ford	Ford	Ford	Ford	Ford	Ford	Ford	Ford	Ford	
		Caravan Ford	Windstar Dodge	Caravan Ford	Windstar Dodge	Windstar Dodge	Windstar Dodge	Windstar Dodge	Windstar Dodge	Windstar Dodge	Windstar Dodge	Windstar Dodge	Windstar Dodge	Windstar Dodge	Windstar Dodge
		Windstar Plymouth	Caravan Dodge	Windstar Plymouth	Caravan Dodge	Caravan Chevrolet	Caravan Dodge	Caravan Dodge	Caravan Dodge	Caravan Dodge	Caravan Dodge	Caravan Toyota	Caravan Dodge	Caravan Dodge	Caravan Dodge
		Voyager Chevrolet	Grand Plymouth	Voyager Dodge	Grand Plymouth	Venture Pontiac	Grand Pontiac	Grand Pontiac	Grand Plymouth	Grand Toyota	Grand Toyota	Sienna Dodge	Grand Toyota	Grand Toyota	Grand Pontiac
		Venture Plymouth	Voyager Dodge	Grand Dodge	Voyager Dodge	Trans Sport Dodge	Trans Sport Ford	Trans Sport Dodge	Grand Ford	Sienna Ford	Grand Ford	Sienna Dodge	Sienna Dodge	Sienna Ford	Trans Sport Dodge
	2	Voyager Dodge	Caravan Ford	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Windstar Dodge	Caravan Ford	Windstar Dodge	Windstar Dodge	Caravan Ford	Caravan Ford	Windstar Dodge	Caravan Ford
		Caravan Pontiac	Windstar Plymouth	Voyager Ford	Voyager Ford	Voyager Pontiac	Caravan Plymouth	Windstar Plymouth	Caravan Plymouth	Caravan Dodge	Caravan Dodge	Windstar Plymouth	Windstar Dodge	Caravan Dodge	Windstar Plymouth
		Trans Sport Ford	Voyager Dodge	Windstar Dodge	Windstar Pontiac	Trans Sport Ford	Voyager Dodge	Voyager Dodge	Voyager Dodge	Voyager Dodge	Grand Plymouth	Voyager Dodge	Grand Plymouth	Grand Plymouth	Voyager Dodge
		Windstar Dodge	Grand Dodge	Grand Dodge	Trans Sport Dodge	Windstar Dodge	Grand Dodge	Grand Dodge	Grand Dodge	Grand Dodge	Voyager Dodge	Grand Dodge	Voyager Plymouth	Voyager Dodge	Grand Dodge
	3	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Grand Dodge	Caravan Dodge	Caravan Dodge	Grand Dodge	Caravan Dodge	Caravan Plymouth
		Voyager Chevrolet	Voyager Dodge	Voyager Dodge	Voyager Dodge	Voyager Chevrolet	Voyager Dodge	Voyager Dodge	Caravan Plymouth	Grand Plymouth	Grand Plymouth	Mazda MPV	Grand Dodge	Grand Plymouth	Voyager Dodge
		Lumina Dodge	Grand Plymouth	Grand Plymouth	Grand Chevrolet	Lumina Dodge	Grand Plymouth	Grand Plymouth	Grand Plymouth	Grand Plymouth	Voyager Plymouth	Voyager Dodge	Caravan Plymouth	Voyager Plymouth	Grand Plymouth
		Grand Plymouth	Grand Dodge	Grand Dodge	Lumina Dodge	Grand Plymouth	Grand Plymouth	Grand Dodge	Voyager Dodge	Grand Plymouth	Grand Dodge	Grand Dodge	Voyager Plymouth	Grand Dodge	Grand Plymouth
	4	Voyager Dodge	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Voyager Dodge	Voyager Dodge	Caravan Plymouth	Caravan Plymouth	Voyager Dodge	Caravan Dodge	Caravan Dodge	Voyager Dodge	Caravan Dodge	Voyager Dodge
		Caravan Dodge	Voyager Dodge	Voyager Dodge	Voyager Dodge	Caravan Dodge	Caravan Dodge	Voyager Dodge	Voyager Dodge	Caravan Dodge	Caravan Dodge	Mazda MPV	Caravan Dodge	Grand Dodge	Caravan Dodge
		Mazda MPV	Grand	Mazda MPV	Grand	Mazda MPV	Grand	Grand	Grand	Grand	Grand	Voyager	Grand	Voyager	Mazda MPV
		Plymouth Grand Dodge	Mazda MPV Dodge	Dodge Dodge	Mazda MPV Dodge	Dodge Dodge	Mazda MPV Dodge	Plymouth Dodge	Plymouth Dodge	Plymouth Dodge	Plymouth Dodge	Dodge Dodge	Mazda MPV Dodge	Toyota Dodge	Dodge Dodge
	5	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth
		Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth
		Grand Volksw age	Grand NONE	Grand Volksw age	Grand Volksw age	Grand Volksw age	Grand Plymouth	Grand Plymouth	Grand Plymouth	Grand Plymouth	Grand Plymouth	Grand Volksw age	Grand Volksw age	Grand NONE	Grand Volksw age
		n Dodge	Dodge	n Dodge	n Dodge	Colt Dodge	Colt Dodge	Colt Dodge	Colt Dodge	Colt Dodge	Colt Dodge	n Dodge	n Dodge	NONE	n Dodge
	6	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Plymouth	Caravan Toyota Le	Caravan Plymouth
		Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Plymouth	Voyager Toyota Le	Voyager Toyota Le	Voyager Toyota Le	Van Plymouth	Voyager Plymouth
		T115 Toyota Le	T115 Toyota Le	T115 Toyota Le	T115 Toyota Le	T115 Toyota Le	T115 Toyota Le	T115 Toyota Le	T115 Toyota Le	T115 Toyota Le	Van Plymouth	Van Plymouth	Van Plymouth	Voyager Plymouth	T115 Toyota Le
		Van Chevrolet	Van Gmc Safari	Van Gmc Safari	Van Chevrolet	Van Gmc Safari	Van Gmc Safari	Van Gmc Safari	Van Chevrolet	Van Chevrolet	T115 Chevrolet	T115 Gmc Safari	T115 Chevrolet	T115 Ford	Van Gmc Safari
	Pass. Van	1	Astro Ford	ML10 Ford	ML10 Ford	Astro Ford	ML10 Ford	ML10 Gmc Safari	Astro Ford	Astro Chevrolet	Astro Ford	ML10 Ford	Astro Ford	Econoline Ford	ML10 Ford
		2	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	ML10 Ford	Aerostar Ford	Astro Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford
		3	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford
4		Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Gmc Safari	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	Aerostar Ford	
5		Aerostar Chevrolet	Aerostar Chevrolet	Aerostar Volksw age	Aerostar Volksw age	Aerostar Chevrolet	Aerostar Chevrolet	ML10 Chevrolet	Aerostar Chevrolet	Aerostar Gmc Rally	Aerostar Gmc Rally	Aerostar Volksw age	Aerostar Volksw age	Aerostar Gmc Rally	Aerostar Volksw age
6		Sportvan	Astro	n Vanaqon	n Vanaqon	Sportvan	Sportvan	Sportvan	Sportvan	Van G2500	Van G2500	n Vanaqon	n Vanaqon	Van G2500	n Vanaqon

Costs of Autos and Light Trucks in Canada

Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada	
Cargo Van	1	Chevrolet	Dodge Ram	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Ford	Ford	Chevrolet	
		Venture	Van B1500	Venture	Venture	Venture	Venture	Venture	Venture	Venture	Venture	Venture	Econoline	Econoline	Venture
	2	Dodge Ram	Dodge Ram	Ford	Ford	Ford	Ford	Ford	Ford	Dodge Ram	Ford	Ford	Gmc	Ford	Ford
		Van B2500	Van B2500	Econoline	Econoline	Econoline	Econoline	Econoline	Econoline	Van B2500	Econoline	Econoline	Vandura	Econoline	Econoline
	3	Chevrolet	Dodge Ram	Dodge Ram	Ford	Ford	Ford	Ford	Ford	Gmc	Chevrolet	Chevrolet	Ford	Ford	Ford
		Chevy Van	Van B2501	Van B2500	Econoline	Econoline	Econoline	Econoline	Econoline	Vandura	Chevy Van	Chevy Van	Econoline	Econoline	Econoline
4	Chevrolet	Ford	Chevrolet	Ford	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Ford	Chevrolet	
	Astro	Econoline	Chevy Van	Econoline	Astro	Astro	Astro	Astro	Astro	Astro	Chevy Van	Chevy Van	Econoline	Astro	
5	Chevrolet	Ford	Ford	Dodge Mini	Dodge Mini	Dodge Mini	Dodge Mini	Dodge Mini	Dodge Mini	Dodge Mini	Chevy Van	Chevy Van	Ford	Ford	
	Chevy Van	Econoline	Econoline	Econoline	Econoline	Ram	Vandura	Econoline	Econoline	Econoline	Ram	Chevy Van	Econoline	Econoline	
6	Gmc	Dodge Mini	Dodge Mini	Ford	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	
	Vandura	Ram	Ram	Econoline	Chevy Van	Chevy Van	Chevy Van	Chevy Van	Chevy Van	Chevy Van	Chevy Van	Chevy Van	Chevy Van	Chevy Van	
Special PV	1	Jeep Grand	Jeep Grand	Jeep Grand	Jeep Grand	Jeep Grand	Ford	Ford	Ford	Ford	Ford	Ford	Ford	Ford	
		Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer	
		Honda CR-	Ford	Ford	Ford	Honda CR-	Jeep Grand	Chevrolet	Jeep Grand	Jeep Grand	Jeep Grand	Nissan	Subaru	Chevrolet	Jeep Grand
		V	Explorer	Explorer	Explorer	V	Cherokee	Blazer	Cherokee	Cherokee	Pathfinder	Forester	Blazer	Cherokee	Cherokee
	2	Chevrolet	Honda CR-	Honda CR-	Chevrolet	Nissan	Honda CR-	Jeep Grand	Cherokee	Blazer	Cherokee	Cherokee	Pathfinder	Jeep	Jeep
		Blazer	V	V	Blazer	Pathfinder	V	Cherokee	Blazer	Blazer	Blazer	Cherokee	Cherokee	Cherokee	V
		Ford	Toyota	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Honda CR-	Cherokee	Toyota	Ford
		Explorer	Rav4	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	V	4Runner	Expedition	Gmc Jimmy
	3	Chevrolet	Jeep Grand	Jeep Grand	Jeep Grand	Jeep Grand	Ford	Ford	Ford	Ford	Ford	Ford	Ford	Ford	Ford
		Blazer	Cherokee	Cherokee	Cherokee	Cherokee	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer
		Jeep Grand	Gmc Jimmy	Ford	Ford	Suzuki	Jeep Grand	Chevrolet	Chevrolet	Jeep Grand	Jeep Grand	Jeep Grand	Nissan	Chevrolet	Jeep Grand
		Cherokee	Chevrolet	Explorer	Explorer	Sidekick	Cherokee	Blazer	Blazer	Cherokee	Cherokee	Cherokee	Pathfinder	Blazer	Cherokee
	4	Ford	Cherokee	Chevrolet	Chevrolet	Honda CR-	Gmc Jimmy	Jeep Grand	Jeep Grand	Jeep Grand	Cherokee	Cherokee	Nissan	Gmc Jimmy	Chevrolet
		Explorer	Blazer	Blazer	Blazer	V	Cherokee	Cherokee	Cherokee	Blazer	Blazer	Pathfinder	Cherokee	Cherokee	Blazer
		Gmc Jimmy	Ford	Gmc Jimmy	Gmc Jimmy	Toyota	Chevrolet	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Cherokee	Chevrolet	Jeep Grand	Gmc Jimmy
		Ford	Explorer	Ford	Ford	Suzuki	Blazer	Ford	Ford	Ford	Ford	Blazer	Blazer	Cherokee	Ford
	5	Explorer	Explorer	Explorer	Explorer	Sidekick	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer	Explorer
		Chevrolet	Jeep Grand	Jeep	Jeep	Jeep Grand	Jeep Grand	Jeep Grand	Jeep Grand	Jeep Grand	Jeep Grand	Jeep Grand	Nissan	Jeep	Jeep Grand
		Blazer	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Pathfinder	Cherokee	Cherokee
		Toyota	Jeep	Jeep Grand	Jeep Grand	Ford	Jeep	Cherokee	Jeep	Jeep	Jeep	Jeep	Toyota	Suzuki	Jeep
	6	4Runner	Cherokee	Cherokee	Cherokee	Explorer	Cherokee	Blazer	Cherokee	Cherokee	Cherokee	Cherokee	4Runner	Sidekick	Cherokee
		Jeep	Chevrolet	Toyota	Suzuki	Jeep	Chevrolet	Jeep	Cherokee	Cherokee	Cherokee	Nissan	Jeep	Gmc	Chevrolet
		Cherokee	Blazer	4Runner	Sidekick	Cherokee	Blazer	Cherokee	Blazer	Blazer	Blazer	Pathfinder	Cherokee	Suburban	Blazer
		Chevrolet	Gmc Jimmy	Jeep	Jeep	Jeep	Jeep	Jeep	Jeep	Jeep	Jeep	Jeep	Toyota	Toyota	Jeep
7	Blazer	Chevrolet	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	4Runner	4Runner	Cherokee	
	Jeep	Chevrolet	Chevrolet	Chevrolet	Suzuki	Chevrolet	Chevrolet	Cherokee	Cherokee	Cherokee	Cherokee	Jeep	Jeep	Chevrolet	
	Cherokee	Blazer	Blazer	Blazer	Sidekick	Blazer	Blazer	Explorer	Explorer	Explorer	4Runner	Cherokee	Cherokee	Blazer	
	Gmc Jimmy	Toyota	Toyota	Toyota	Toyota	Gmc Jimmy	Ford	Ford	Cherokee	Cherokee	Ford	Chevrolet	Ford	Toyota	
8	Toyota	4Runner	4Runner	4Runner	4Runner	4Runner	4Runner	4Runner	4Runner	4Runner	4Runner	Suburban	Explorer	4Runner	
	Jeep	Jeep	Jeep	Jeep	Jeep	Ford	Gmc Jimmy	Explorer	Blazer	4Runner	Cherokee	Ford	Cherokee	Ford	
	4Runner	Cherokee	Gmc Jimmy	Sidekick	Gmc Jimmy	Explorer	Gmc Jimmy	Blazer	Blazer	Blazer	Cherokee	Suburban	Cherokee	4Runner	
	Chevrolet	Chevrolet	Ford	Ford	Gmc Jimmy	Chevrolet	Ford	Ford	4Runner	Blazer	Blazer	Cherokee	Suburban	Explorer	
9	Blazer	Blazer	Bronco	Bronco	Bronco	Blazer	Bronco	Bronco	Bronco	Bronco	Bronco	Suburban	Bronco	Bronco	
	Ford	Ford	Chevrolet	Chevrolet	Chevrolet	Gmc Jimmy	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Ford	Suzuki	Chevrolet	
	Bronco	Bronco	Blazer	Blazer	Blazer	Ford	Blazer	Blazer	Blazer	Blazer	Blazer	Bronco	Samurai	Blazer	
	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Bronco	Ford	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Cherokee	4Runner	Blazer	Gmc Jimmy	
10	Toyota	Jeep	Jeep	Jeep	Jeep	Jeep	Jeep	Jeep	Chevrolet	Jeep	Toyota	Chevrolet	Gmc	Jeep	
	4Runner	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Cherokee	Suburban	Cherokee	4Runner	Blazer	Suburban	Cherokee	
	Chevrolet	Ford	Ford	Ford	Chevrolet	Chevrolet	Chevrolet	Chevrolet	Ford	Ford	Ford	Chevrolet	Ford	Chevrolet	
	Blazer	Bronco	Bronco	Bronco	Blazer	Blazer	Blazer	Blazer	Bronco	Bronco	Bronco	Blazer	Bronco	Blazer	
11	Ford	Chevrolet	Chevrolet	Chevrolet	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Chevrolet	Chevrolet	Chevrolet	Ford	Chevrolet	Ford	
	Bronco	Blazer	Blazer	Blazer	Ford	Ford	Bronco	Blazer	Blazer	Blazer	Blazer	Bronco	Blazer	Bronco	
	Toyota	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Ford	Ford	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Toyota	Suzuki	Gmc Jimmy	
	4Runner	Toyota	Toyota	Suzuki	Bronco	Bronco	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Gmc Jimmy	Landcruiser	Samurai	Gmc Jimmy	
12	Gmc Jimmy	Toyota	Toyota	Suzuki	Bronco	Bronco	Toyota	Toyota	Toyota	Toyota	Toyota	Toyota	Samurai	Toyota	
	4Runner	4Runner	4Runner	Samurai	Samurai	4Runner	4Runner	4Runner	4Runner	4Runner	4Runner	4Runner	Gmc Jimmy	4Runner	

Costs of Autos and Light Trucks in Canada

Class	Vintage	NF	PE	NS	NB	QC	ON	MB	SK	AB	BC	YT	NT	Canada	
Pickups	1	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	
		Gmc Sierra 1500	Gmc Sierra 1500	Gmc Sierra 1500	Gmc Sierra 1500	Gmc Sierra 1500	Gmc Sierra 1500	Gmc Sierra 1500	Gmc Sierra 1500	Gmc Sierra 1500	Gmc Sierra 1500	Ford F350	Gmc Sierra 1500	Ford F250	Gmc Sierra 1500
		Chevrolet Silverado 1500	Dodge Ram 1500	Dodge Ram 1500	Chevrolet Silverado 1500	Dodge Dakota 1500	Dodge Silverado 1500	Chevrolet Silverado 1500	Chevrolet Silverado 1500	Chevrolet Silverado 1500	Dodge Ram 1500	Gmc Sierra 1500	Dodge Ram 2500	Dodge Ram 1500	Dodge Ram 1500
		Dodge Ram 1500	Chevrolet Silverado	Dodge Dakota	Dodge Ram 1500	Chevrolet Silverado	Chevrolet Silverado	Dodge Ram 1500	Dodge Ram 1500	Ford F250	Ford F250	Ford F350	Gmc Sierra 1500	Chevrolet Silverado	
	2	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150
		Chevrolet C1500	Ford Ranger	Ford Ranger	Chevrolet K1500	Ford Ranger	Dodge Ram 1500	Chevrolet K1500	Chevrolet K1500	Chevrolet K1500	Chevrolet K1500	Chevrolet K1500	Dodge Ram 2500	Dodge Ram 1500	Dodge Ram 1500
		Dodge Ram 1500	Dodge Ram 1500	Dodge Ram 1500	Dodge Ram 1500	Dodge Ram 1500	Chevrolet C1500	Dodge Ram 1500	Chevrolet C1500	Chevrolet C1500	Dodge Ram 1500	Ford F250	Ford F250	Ford Ranger	Chevrolet K1500
		Chevrolet K1500	Chevrolet K1500	Chevrolet C1500	Ford Ranger	Dodge Dakota	Chevrolet K1500	Chevrolet C1500	Chevrolet C1500	Gmc Sierra 1500	Dodge Ram 2500	Dodge Ram 1500	Dodge Ram K1500	Chevrolet K1500	Chevrolet C1500
	3	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150
		Ford Ranger	Ford Ranger	Ford Ranger	Ford Ranger	Ford Ranger	Ford Ranger	Ford Ranger	Ford Ranger	Chevrolet K1500	Chevrolet K1500	Ford Ranger	Toyota	Ford Ranger	Ford Ranger
		Chevrolet C1500 HD	Chevrolet K1500	Chevrolet K1500	Chevrolet K1500	Dodge Dakota	Chevrolet K1500	Chevrolet K1500	Chevrolet C1500	Chevrolet C1500	Gmc K1500	Ford HD	Chevrolet K1500	Chevrolet K1500	Chevrolet K1500
		Chevrolet K1500	Dodge S10/T10	Dodge Dakota	Gmc K1500	Chevrolet K1500	Chevrolet C1500	Gmc K1500	Gmc K1500	Gmc K1500	Ford Ranger	Chevrolet K1500	Ford Ranger	Gmc K1500	Gmc K1500
	4	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150
		Chevrolet C1500	Ford Ranger	Ford Ranger	Ford Ranger	Ford Ranger	Chevrolet C1500	Ford Ranger	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Ford Ranger	Ford HD	Ford Ranger	Ford Ranger
		Gmc C1500	Chevrolet C1500	Toyota	Chevrolet C1500	Mazda B2200	Gmc C1500	Chevrolet C1500	Gmc C1500	Gmc C1500	Ford Ranger	Ford HD	Toyota	Ford HD	Chevrolet C1500
		Ford Ranger	Chevrolet S10/T10	Chevrolet C1500	Toyota	Toyota	Ford Ranger	Gmc C1500	Ford Ranger	Gmc C1500	Mazda B2200	Ford Ranger	Chevrolet C1500	Gmc C1500	
	5	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150
		Chevrolet C1500	Ford Ranger	Ford Ranger	Ford Ranger	Ford Ranger	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Ford Ranger	Ford HD	Chevrolet C1500	Ford Ranger
		Ford Ranger	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Chevrolet S10/T10	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Ford HD	Toyota	Ford Ranger	Chevrolet C1500
		Chevrolet S10/T10	Chevrolet S10/T10	Chevrolet S10/T10	Chevrolet S10/T10	Gmc S15/T15	Chevrolet S10/T10	Chevrolet S10/T10	Gmc S10/T10	Ford S10/T10	Ford F250	Toyota	Ford Ranger	Ford HD	Chevrolet S10/T10
	6	Chevrolet C1500	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150	Ford F150
		Ford F150	Chevrolet C1500	Ford Ranger	Chevrolet C1500	Chevrolet S10/T10	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Nissan	Nissan	Chevrolet C1500	Chevrolet C1500
		Ford Ranger	Ford Ranger	Chevrolet C1500	Ford Ranger	Gmc S15/T15	Chevrolet S10/T10	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Chevrolet C1500	Toyota	Ford F250	Ford Ranger	Chevrolet S10/T10
		Chevrolet S10/T10	Chevrolet S10/T10	Chevrolet S10/T10	Chevrolet K1500	Ford Ranger	Gmc S15/T15	Gmc S15/T15	Dodge D150	Chevrolet K1500	Chevrolet K1500	Chevrolet C1500	Chevrolet HD	Chevrolet C1500	Ford Ranger

Vehicle Vintages: 1 (0-2 years), 2 (3-5 years), 3 (6-8 years), 4 (9-11 years), 5 (12-14 years), and 6 (15+ years)

APPENDIX 2: ROAD AND BRIDGE TOLLS

Costs of Autos and Light Trucks in Canada

CANADIAN TOLL BRIDGES AND HIGHWAYS TOTAL ESTIMATED REVENUE 2000.

Facility	Annual Volume (autos)	Annual Volume (trucks)	Buses & Misc. Misc.	Total Vehicles	Auto Rate (\$)	Truck Rate (\$)	Bus Rate (\$)	Annual Revenue Autos (\$)	Annual Revenue trucks (\$)	Annual Revenue Buses & Misc. (\$)	Estimated Annual Revenue (\$)
Ambassador Bridge	8,733,571	3,486,110	81,320	12,301,001	3.50	10.50	8.00	30,567,499	36,604,155	650,560	67,822,214
Blue Water Bridge	4,390,302	1,576,839	9,690	5,976,831	2.00	12.50	15.50	8,780,604	19,710,488	150,195	28,641,287
Detroit/Windsor Tunnel	8,367,542	182,392	69,802	8,619,736	2.75	12.30	8.25	23,010,741	2,243,422	575,867	25,830,029
Lewiston Queenston Bridge*	3,465,801	1,019,494	21,150	4,506,445	3.50	20.00		12,130,304	20,389,880	-	32,520,184
Ogdensburg Bridge	480,929	56,949	807	538,685	3.00	11.95	7.45	1,442,787	680,541	6,012	2,129,340
Peace Bridge*****	6,797,735	1,439,824	38,632	8,276,191	2.75	28.00	14.00	9,346,886	40,315,072	540,848	50,202,806
Rainbow Bridge*	4,179,482	127	62,458	4,242,067	3.50	20.00		14,628,187	2,540	-	14,630,727
Sault Ste. Marie Bridge	2,488,831	137,804	62,001	2,688,636	1.75	215.75	5.75	4,355,454	29,731,213	356,506	34,443,173
Seaway International Bridge	2,274,507	131,359		2,405,866	2.25	8.50		5,117,641	1,116,552		6,234,192
Thousand Islands Bridge	1,665,356	542,703		2,208,059	3.00	12.00		4,996,068	6,512,436		11,508,504
Whirlpool Rapids Bridge*	761,500	-		761,500	3.50	20.00		2,665,250	-	-	2,665,250
Saint John Harbour Bridge*****	8,800,000	1,500,000		10,300,000	0.25	1.40		2,200,000	2,100,000	-	4,300,000
Confederation Bridge	2,860,000	640,000		3,500,000	39.50	56.50		112,970,000	36,160,000		149,130,000
Halifax - Dartmouth Bridges**				31,728,236							23,100,000
Hwy 407 (Ontario)***											189,500,000
Coquihalla Highway (B. C.)											41,000,000
Hwy 104 (Nova Scotia)											11,600,000
Total Estimated Revenues all Facilities											695,257,704

Sources of traffic data: MTO for Ontario-U.S. Bridges

Costs of Autos and Light Trucks in Canada

* Operate under the authority of the Niagara Falls Bridge Commission. In 2000 truck toll rate was by ton. 2004 per axle weights used as tonnage data is not available to make calculation.

** Includes the A. Murray MacKay Bridge and the Angus L. MacDonald Bridge. Revenues from Commission's annual statement

*** 2000 was first full year of operation

****Total traffic count from Bridge Authority via NBDOT. Trucks are estimated by consultant assuming trucks comprise 15% of total traffic stream.

*****Truck rates in 2000 were based on gross vehicle rates. Rate shown is an approximation for a 5-axle tractor trailer.

Estimated Daily Traffic Volumes

	ADT Cars	ADT trucks	total autos 2000	total trucks 2000
Ambassador Bridge	16912	9237	6172880	3371505
Blue Water Bridge	10306	4930	3761690	1799450
Detroit/Windsor Tunnel	15841	438	5781965	159870
Lewiston Queenston Bridge*	7958	2758	2904670	1006670
Ogdensburg Bridge	1141	274	416465	100010
Peace Bridge	15410	3562	5624650	1300130
Rainbow Bridge*	9345	1	3410925	365
Sault Ste. Marie Bridge	4526	367	1651990	133955
Seaway International Bridge	6538	433	2386370	158045
Thousand Islands Bridge	4460	1313	1627900	479245
Whirlpool Rapids Bridge*	472	0	172280	0

APPENDIX 3: DRIVER ATTRIBUTES

Distribution of Driver's Age for Vehicle Class and Vintages (Toronto Survey Data)

Veh Age	0-2	0-2	0-2	0-2	3-5	3-5	3-5	3-5	6-8	6-8	6-8	6-8	9-11	9-11	9-11	9-11	12-14	12-14	12-14	12-14	15+	15+	15+	15+
Driver Age	16-25	26-40	41-60	60+	16-25	26-40	41-60	60+	16-25	26-40	41-60	60+	16-25	26-40	41-60	60+	16-25	26-40	41-60	60+	16-25	26-40	41-60	60+
Subcompact Car	20%	56%	24%	0%	10%	46%	33%	10%	11%	42%	36%	11%	8%	55%	25%	12%	9%	49%	34%	8%	5%	33%	52%	10%
Compact Car	11%	25%	46%	18%	9%	44%	36%	11%	8%	42%	33%	17%	5%	48%	36%	11%	4%	44%	40%	12%	7%	17%	55%	21%
Mid-size Car	6%	41%	35%	18%	2%	31%	45%	22%	2%	27%	53%	18%	4%	29%	43%	24%	2%	31%	46%	22%	2%	25%	45%	27%
Large Car	0%	19%	56%	25%	7%	15%	52%	26%	4%	24%	48%	24%	0%	24%	58%	18%	0%	12%	64%	24%	0%	11%	61%	28%
Station Wagon	0%	100%	0%	0%	0%	50%	13%	38%	0%	17%	58%	25%	7%	47%	40%	7%	5%	29%	48%	19%	0%	20%	50%	30%
Pickup Truck	8%	62%	31%	0%	10%	40%	50%	0%	19%	44%	19%	19%	9%	39%	39%	13%	15%	38%	31%	15%	13%	50%	38%	0%
Van	0%	40%	60%	0%	0%	38%	59%	3%	5%	23%	55%	18%	0%	41%	52%	7%	0%	31%	69%	0%	0%	13%	63%	25%
Special Purpose Veh	0%	53%	45%	2%	5%	46%	44%	5%	2%	42%	50%	6%	5%	34%	55%	5%	9%	27%	55%	9%	0%	67%	0%	33%

Distribution of Driver's Gender for Vehicle Class and Vintages (Toronto Survey Data)

Veh Age	0-2	0-2	3-5	3-5	6-8	6-8	9-11	9-11	12-14	12-14	15+	15+
Driver Gender	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Subcompact Car	64%	36%	54%	46%	47%	53%	52%	48%	58%	42%	53%	47%
Compact Car	48%	52%	39%	61%	42%	58%	53%	47%	73%	27%	69%	31%
Mid-size Car	68%	32%	45%	55%	51%	49%	66%	34%	55%	45%	71%	29%
Large Car	88%	13%	63%	37%	76%	24%	70%	30%	56%	44%	72%	28%
Station Wagon	50%	50%	63%	38%	50%	50%	73%	27%	71%	29%	80%	20%
Pickup Truck	77%	23%	100%	0%	88%	13%	96%	4%	100%	0%	100%	0%
Van	60%	40%	66%	34%	64%	36%	81%	19%	85%	15%	100%	0%
Special Purpose Vehicle	40%	60%	58%	42%	52%	48%	66%	34%	82%	18%	100%	0%