

The State of Road Safety in Canada in 1998

Prepared for

**Canadian Council of Motor Transport Administrators
Standing Committee on Road Safety Research and Policies**

By

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Introduction:

This report summarizes the trends of some of the important national road safety indicators and commercial vehicle safety data in Canada, as well as some frequently used international indicators.

The Executive Summary sets out Canada's vision of having the safest roads in the world, and provides a general overview of current issues in road safety in 1998.

Section 1 illustrates long term trends from 1988 to 1998 and examines such indicators as road user fatalities and injuries, impaired driver fatalities, the most noteworthy program measures (seat belt use rate and the number of persons charged with impaired driving), as well as the most readily available performance measures of road safety initiatives during this period (occupant, motorcyclist, pedestrian and bicyclist casualty rates).

Section 2 examines some of the most relevant indicators of commercial vehicle safety in Canada, during the 1994 to 1998 period. Vehicle condition, driver condition and action, as well as victim data according to vehicle type involved are presented.

Section 3 responds to the need to evaluate if the Canadian vision of the safest roads in the world is being met. International comparisons are provided to show how Canada measures up to the international community in the road safety field.

Road Safety in Canada - 1998 Executive Summary

On October 10, 1996, the Ministers Responsible for Transportation and Highway Safety agreed to an initiative, entitled *Road Safety Vision 2001*, to make Canada's roads the safest in the world. To this end, the initiative commits all provinces and territories to four safety priorities:

- raising public awareness of road safety issues;
- improving communication, coordination and collaboration among road safety agencies;
- developing more efficient enforcement to deal with problem areas, e.g. impaired driving, non use of seat belts, repeat offenders, high-risk drivers;
- improving the collection and quality of data to ensure road safety programs are practical and cost effective.

The motor vehicle is the most prevalent form of transportation in Canadian life. Twenty million licensed drivers used 18 million registered road motor vehicles accounting for 90 percent of all personal travel. Over the past 10 years, traffic deaths have decreased by more than 29 percent, while drivers licensed have increased 20 percent and vehicles registered have increased 15.3 percent. In 1998, motor vehicle collisions claimed the lives of 2,934 people compared to 83, 48 and 101 in the air, marine and rail modes, respectively. The number of road user fatalities in 1998 has reached its lowest level in over 40 years, and persons injured at 217,754 in 1998 reached its lowest level since 1977. Of the 1,092,103 vehicles involved in 601,153 casualty and property damage collisions, 4,183 vehicles were involved in fatal collisions, while 271,830 and 816,090 were involved in personal injury and property damage collisions, respectively.

Among driver fatalities, the percentage of those tested for use of alcohol and found to be above the legal blood alcohol concentration (BAC) limit of 80 mg% has decreased from 40.3 percent in 1988 to 32.8 percent in 1998, up 1.1 percentage points from 1997. Over the ten-year period, the percentage has been declining overall and reached the lowest level of 31.7 percent in 1997. Of the male driver fatalities tested for alcohol, 36.7 percent were found to be legally impaired in 1998 compared to 44.1 percent of those tested in 1988. In the case of female drivers, the percentage of those tested and found to be over the legal limit of 80 mg% BAC, increased and decreased throughout the period with 6 years above 20 percent and the remainder of years below. The percentage of those female drivers tested and found to be above the legal limit decreased to the lowest level of 15.4 percent in 1997 and increased to 18.8 percent in 1998. Impaired driver fatalities decreased 35 percent from 1988 to 1998, while the number of persons charged decreased 42 percent over the same period. When the numbers of impaired driver fatalities and persons charged with impaired driving offences were measured in terms of 100,000 licensed drivers, the decreases were more impressive at 45 percent and 51 percent, respectively.

The national estimate of passenger car driver shoulder seat belt use wearing rate was 91.9 percent in the June 1998 survey, a slight increase of 0.4 percentage points from the results of the 1997 survey. This wearing rate has reached a plateau and remained at 91.5 percent to 91.9 percent range from 1994 to 1998.

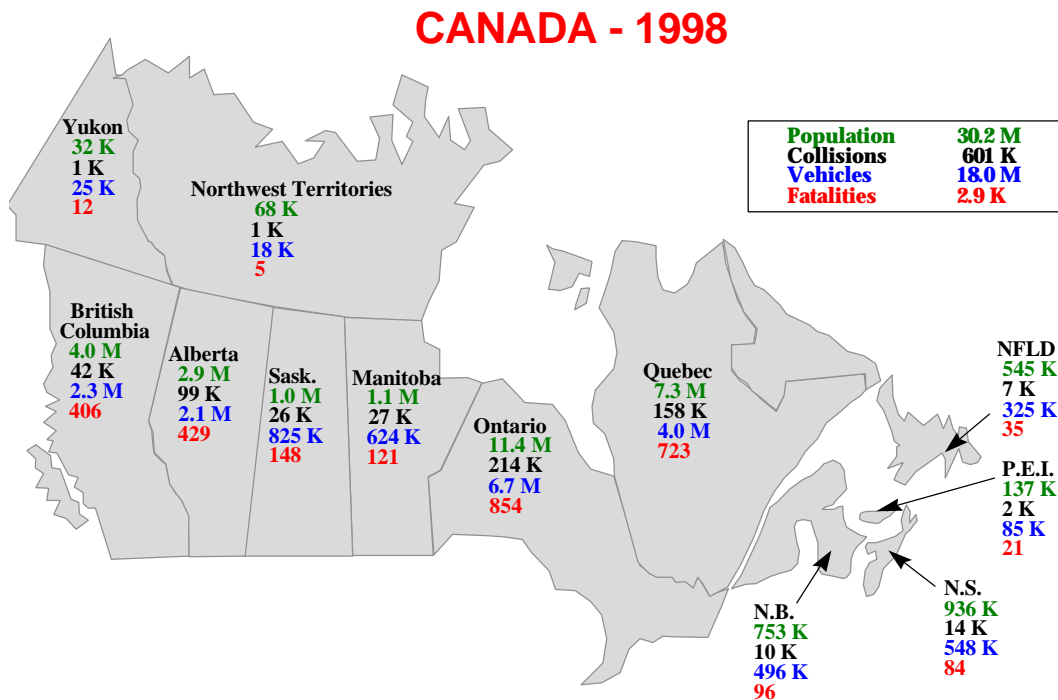
In this report, the term Commercial Vehicle refers to trucks, tractors, trailers, or some combination, exceeding a registered gross vehicle weight of 4 500 kg; or a bus designed, constructed and used for the transportation of passengers with a designated seating capacity of more

than 10, including the driver, but excluding the operation for personal use. In short, the term refers to those vehicles subject to the National Safety Code for Motor Carriers. Commercial vehicles, particularly heavy trucks, involved in traffic collisions continue to be a subject of media and public concern.

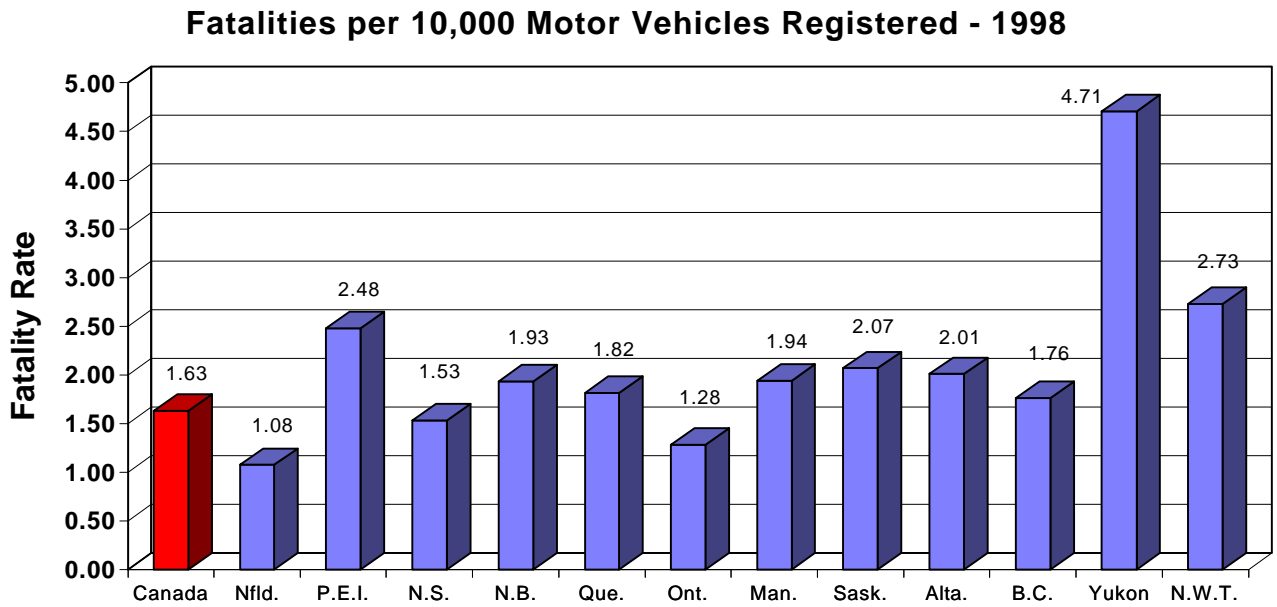
For the period 1994 to 1998, commercial vehicles accounted for an average of 4.7 percent of all vehicles involved in reportable traffic collisions, while these vehicles represented an average of 11.9 percent of all vehicles involved in fatal collisions, 3.7 percent of all vehicles involved in personal injury collisions and 5.0 percent of vehicles in collisions resulting in property damage. The number of commercial vehicles involved in fatal, personal injury and property damage collisions increased in 1997 and consequently reversed the downward trend of the previous few years. However, their involvement decreased again in 1998 so that commercial vehicles involved in fatal collisions decreased one full percentage point to 11.8 percent of all vehicles involved in fatal collisions.

The greatest number of fatalities and injuries were in the 15-24 year old age group at 24 percent and 26 percent, respectively in 1998. Overall, fatalities decreased 10.1 percent from 1994 to 1998 with the most significant decreases recorded in the 0-4 age group (41 percent), 5-14 age group (16 percent), 15-19 years (22 percent), 25-34 age group (16 percent), and 55-64 age group (12 percent). Fatalities increased by 4 percent in the 65 and over age group – the only age group to increase over the period.

Using Transport Canada’s estimates of the costs of a fatality, an injury and a collision, the total estimated cost of road accidents in 1998 to the Canadian economy was \$10.5 billion. If the willingness to pay methodology were used, the amount would increase to about \$25 billion.



The map of Canada shows the provincial and territorial distributions of population, the number of casualty and property damage collisions, the number of road motor vehicles registered, and the number of fatalities in 1998. The chart displays the fatalities per 10,000 motor vehicles registered for 1998 by province and territory.



Section 1 - Trends In Highway Safety

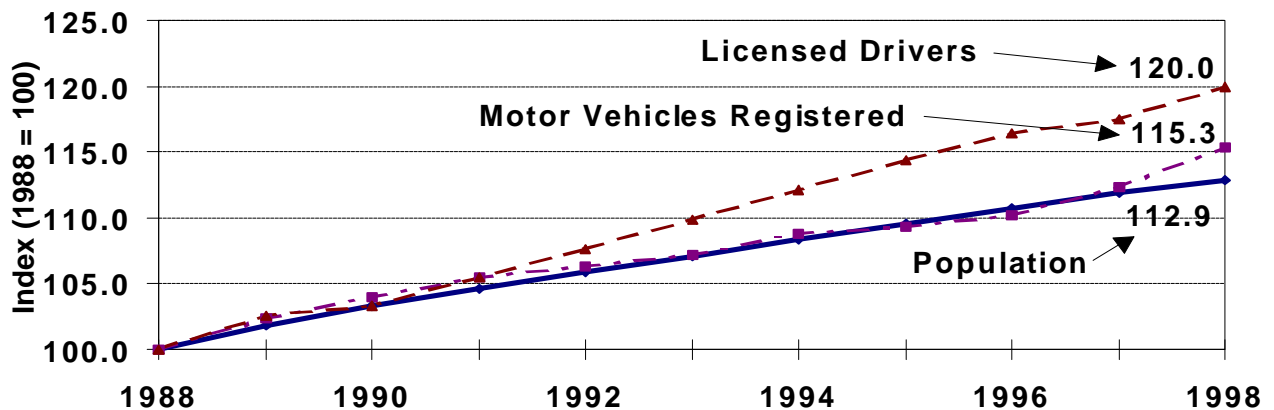
Long Term Trends:

Demographics:

During the past ten years, demographic indicators clearly illustrate that Canadians continue to become more and more mobile. Annual increases in the number of motor vehicles registered and drivers licensed have grown more rapidly than the increase in population. Between 1988 and 1998, the ratio of motor vehicles registered and drivers licensed among Canadians aged 16 years or older increased from 74.8 and 82.3 per 100 persons, respectively, to 75.3 and 86.2 per 100 persons, respectively. Chart 1 shows that during this period, Canada's population in total increased by 12.9 percent, while the number of licensed drivers and motor vehicles registered¹ increased by 20 percent and 15.3 percent, respectively. Canada's population aged 16 years and over increased at a higher rate (14.5 percent) than the population as a whole.

Chart 1

**Population, Motor Vehicles Registered & Licensed Drivers
Canada - 1988 - 1998**



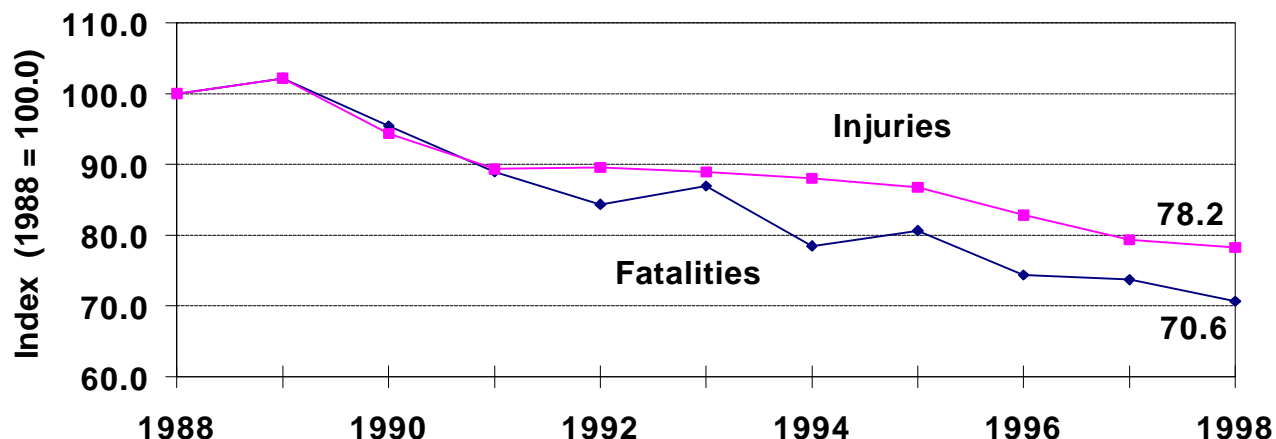
Road Users

Chart 2 illustrates that the number of road user fatalities and injuries in reportable traffic collisions have exhibited impressive decreasing trends during the past nine years. After a slight increase in 1989, fatalities due to traffic collisions decreased to 2,934 in 1998, a significant 29 percent over the period (except for two minor increases in 1993 and 1995). This was the lowest number of fatalities since 1955. Personal injuries decreased to 217,754 in 1998 compared to 278,618 in 1988, a 22 percent reduction.

¹ Motor vehicle registrations were revised/restated by Statistics Canada for the period 1991 - 1995 to reflect a revision to the number of vehicles registered by two provinces to be consistent with other jurisdictions. Instead of reporting the number of vehicle registrations processed, these provinces are now reporting the number of vehicles registered to be on the road. Rather than display an artificial decrease in the number of motor vehicles registered, the numbers have been adjusted to remove the effects of the revision in reporting methodology.

Chart 2

**Road User Fatalities & Injuries in Reportable Traffic Collisions
Canada 1988 - 1998**



Tables 1.1 and 1.2 display the 1998 fatalities and injuries by age group and road user class. Motor vehicle occupants accounted for the majority of road user fatalities at 73.9 percent with motor vehicle drivers and passengers representing 49.5 and 24.4 percent, respectively. With this in mind, significant attention is directed towards the safety of vehicles in an effort to reduce the number of fatalities each year. The greatest number of fatalities were in the 15-24 age group at 24 percent in 1998, followed by the 65 and over age group (19 percent), 25-34 age group (17 percent), and 35-44 age group (15 percent).

Similar to fatalities, motor vehicle occupants represent the major share of road user injuries at 85.6 percent of total injuries, with drivers accounting for 55 percent and passengers at 31 percent in 1998. Also like fatalities, the greatest number of injuries in 1998 were in the 15-24 age group at 26 percent followed by the 25-34 age group (20 percent), 35-44 age group (18 percent) and the 45-54 age group (12 percent).

Table 1.1 1998 Fatalities by Age Group and Road User Class

Age Group	Motor Vehicle Driver	Motor Vehicle Passenger	Motor-cyclist	Pedestrian	Bicyclist	Other/ Not Stated	All Road Users
00 - 04	0	28	1	10	0	1	40
05 - 14	3	53	3	30	17	13	119
15 - 19	132	117	13	33	10	19	324
20 - 24	198	107	36	26	3	13	383
25 - 34	284	101	52	29	12	25	503
35 - 44	271	66	24	45	9	22	437
45 - 54	187	52	26	44	7	10	326
55 - 64	123	48	7	44	3	10	235
65 & Over	252	139	3	137	12	9	552
Unknown	1	5	0	4	4	1	15
TOTAL	1,451	716	165	402	77	123	2,934

Table 1.2 1998 Injuries by Age Group and Road User Class

Age Group	Motor Vehicle Driver	Motor Vehicle Passenger	Motor-cyclist	Pedestrian	Bicyclist	Other/ Not Stated	All Road Users
00 - 04	18	2,694	4	364	51	72	3,203
05 - 14	111	8,700	162	2,530	2,639	440	14,582
15 - 19	12,256	12,271	748	1,573	1,405	595	28,848
20 - 24	16,094	8,359	1,011	1,125	912	443	27,944
25 - 34	28,175	9,586	1,375	1,763	1,298	755	42,952
35 - 44	26,441	7,391	1,031	1,702	1,076	504	38,145
45 - 54	17,864	5,315	710	1,307	530	321	26,047
55 - 64	9,050	3,666	168	838	262	179	14,163
65 & Over	8,460	4,857	70	1,484	215	159	15,245
Unknown	1,500	3,495	85	729	518	298	6,625
TOTAL	119,969	66,334	5,364	13,415	8,906	3,766	217,754

Motorcyclist includes moped riders and their passengers.

The shifts in population, licensed drivers and presumably in travel have largely contributed to the changes in the age distributions of road user fatalities and injuries between 1994 and 1998.

Tables 1.3 and 1.4 show the numbers of road user fatalities and injuries by age group per 100,000 population. For all age groups combined, the fatality rate decreased from 11.2 in 1994 to 9.7 per 100,000 population in 1998. This downward trend occurred in all individual age groups.

In comparing the 1994 percentage distribution of fatalities by age group with the corresponding distribution of population, fatalities were over-represented in four age groups:

- 15 - 19 years – 12.7 percent compared to 6.7 percent of the population;
- 20 - 24 years – 12.8 percent compared to 7.0 percent of the population;
- 65 years and over – 16.2 percent compared to 11.8 percent of the population; and
- 25 - 34 years – 18.3 percent compared to 16.9 percent of the population.

In comparing the 1998 percentage distribution of fatalities by age group with the corresponding distribution of population, fatalities were over-represented in the same four age groups:

- 65 years and over – 18.8 percent compared to 12.3 percent of the population;
- 20 - 24 years – 13.1 percent compared to 6.7 percent of the population;
- 15 - 19 years – 11.0 percent compared to 6.8 percent of the population; and
- 25 - 34 years – 17.1 percent compared to 15.1 percent of the population.

The numbers of fatalities decreased in all age groups except the 65 years of age and over. In that age group, fatalities increased from 1994 to 1998 by 4.2 percent compared to an increase of 8.4 percent in the elderly population. Young people between 15 and 24 years of age (15 - 19 and 20 -24 in the table) accounted for 24.1 percent of fatalities in 1998 compared to 25.5 percent in 1994. These percentages are disproportionately high considering that persons 15 - 24 years old represent approximately 13.5 percent of the population.

Table 1.3 Road User Fatalities and Fatality Rates per 100,000 Population by Age Group, and Comparison of Percentage Distribution of Fatalities to Distribution of Population, 1994 and 1998

Age Group	Fatalities		% Dist. of Fatalities		Population (000's)		% Dist. of Population		Fatality Rate / 100,000 Pop.	
	1994	1998	1994	1998	1994	1998	1994	1998	1994	1998
00 - 04	68	40	2.1	1.4	2,009.8	1,875.5	6.9	6.2	3.4	2.1
05 - 14	142	119	4.4	4.1	3,951.6	4,081.8	13.6	13.5	3.6	2.9
15 - 19	416	324	12.7	11.0	1,959.1	2,048.4	6.7	6.8	21.2	15.8
20 - 24	418	383	12.8	13.1	2,032.1	2,036.1	7.0	6.7	20.6	18.8
25 - 34	598	503	18.3	17.1	4,900.0	4,552.5	16.9	15.1	12.2	11.0
35 - 44	466	437	14.3	14.9	4,768.5	5,206.6	16.4	17.2	9.8	8.4
45 - 54	328	326	10.1	11.1	3,496.0	4,066.5	12.0	13.4	9.4	8.0
55 - 64	266	235	8.2	8.0	2,478.8	2,649.8	8.5	8.8	10.7	8.9
65 +	530	552	16.2	18.8	3,440.1	3,729.7	11.8	12.3	15.4	14.8
Unknown	31	15	1.0	0.5			0.0	0.0		
Total	3,263	2,934	100.0	100.0	29,036.0	30,246.9	100.0	100.0	11.2	9.7

Percentage distributions may not add to 100 due to rounding.

Overall the injury rate per 100,000 population decreased 15 percent from 844.1 in 1994 to 719.9 in 1998. This downward trend was reflected in all individual age groups.

In comparing the 1994 percentage distribution of injuries by age group with the corresponding distribution of population, injuries were over-represented in three age groups:

- 15 - 19 years – 14.0 percent compared to 6.7 percent of the population;
- 20 - 24 years – 13.7 percent compared to 7.0 percent of the population; and
- 25 - 34 years – 22.0 percent compared to 16.9 percent of the population.

In comparing the 1998 percentage distribution of injuries by age group with the corresponding distribution of population, injuries were over-represented in four age groups:

- 15 - 19 years – 13.2 percent compared to 6.8 percent of the population;
- 20 - 24 years – 12.8 percent compared to 6.7 percent of the population;
- 25 - 34 years – 19.7 percent compared to 15.1 percent of the population; and
- 35 - 44 years – 17.5 percent compared to 17.2 percent of the population.

Table 1.4 Road User Injuries and Injury Rates per 100,000 Population by Age Group, and Comparison of Percentage Distribution of Injuries to Distribution of Population, 1994 and 1998

Age Group	Injuries		% Dist. of Injuries		Population (000's)		% Dist. of Population		Injury Rate / 100,000 Pop.	
	1994	1998	1994	1998	1994	1998	1994	1998	1994	1998
00 - 04	4,015	3,203	1.6	1.5	2,009.8	1,875.5	6.9	6.2	199.8	170.8
05 - 14	17,540	14,582	7.2	6.7	3,951.6	4,081.8	13.6	13.5	443.9	357.2
15 - 19	34,370	28,848	14.0	13.2	1,959.1	2,048.4	6.7	6.8	1,754.4	1,408.3
20 - 24	33,594	27,944	13.7	12.8	2,032.1	2,036.1	7.0	6.7	1,653.2	1,372.5
25 - 34	53,937	42,952	22.0	19.7	4,900.0	4,552.5	16.9	15.1	1,100.8	943.5
35 - 44	39,971	38,145	16.3	17.5	4,768.5	5,206.6	16.4	17.2	838.2	732.6
45 - 54	25,494	26,047	10.4	12.0	3,496.0	4,066.5	12.0	13.4	729.2	640.5
55 - 64	14,530	14,163	5.9	6.5	2,478.8	2,649.8	8.5	8.8	586.2	534.5
65 - 98	15,571	15,238	6.4	7.0	3,440.1	3,729.7	11.8	12.3	452.6	408.6
Unknown	6,074	6,625	2.5	3.0			0.0	0.0		
TOTAL	245,101	217,754	100.0	100.0	29,036.0	30,246.9	100.0	100.0	844.1	719.9

Percentage distributions may not add to 100 due to rounding.

The actual number of injuries for all age groups decreased 11.2 percent over the period and all age groups on an individual basis decreased except for the 45 - 54 years of age and the unknown age group. Young people between 15 and 24 years of age (15 - 19 and 20 - 24 in the table) accounted for 26 percent of injuries in 1998 compared to 27.7 percent in 1994. As in the case of fatalities, these percentages are disproportionately high considering that the population between 15 - 24 years of age accounted for approximately 13.5 percent of the total population in those years.

The number of motor vehicle occupant fatalities per 10,000 motor vehicles registered were very stable during the 1988 to 1989 period, at the 2.1 - 2.2 level. Moderate reductions in occupant deaths during the 1990 - 1998 period combined with gradual increases in the number of motor vehicles registered contributed to the lower fatality rates 1.9 to 1.4 observed during this period, ending 41 percent lower at 1.2 motor vehicle occupant fatalities per 10,000 motor vehicles registered in 1998.

From 1988 to 1998, the number of motor vehicle occupants injured per 10,000 motor vehicles registered demonstrated a 32.5 percent decrease, beginning at 156.3 and ending at 105.5 per 10,000 registered vehicles.

Chart 3 shows that occupant fatalities decreased 40.9 percent from 1988 to 1998, while occupants injured in crashes, decreased 32.5 percent over the ten year period. The decreases in both fatalities and injuries were very impressive when one considers that licensed drivers increased by approximately 20 percent during the 1988 - 1998 period.

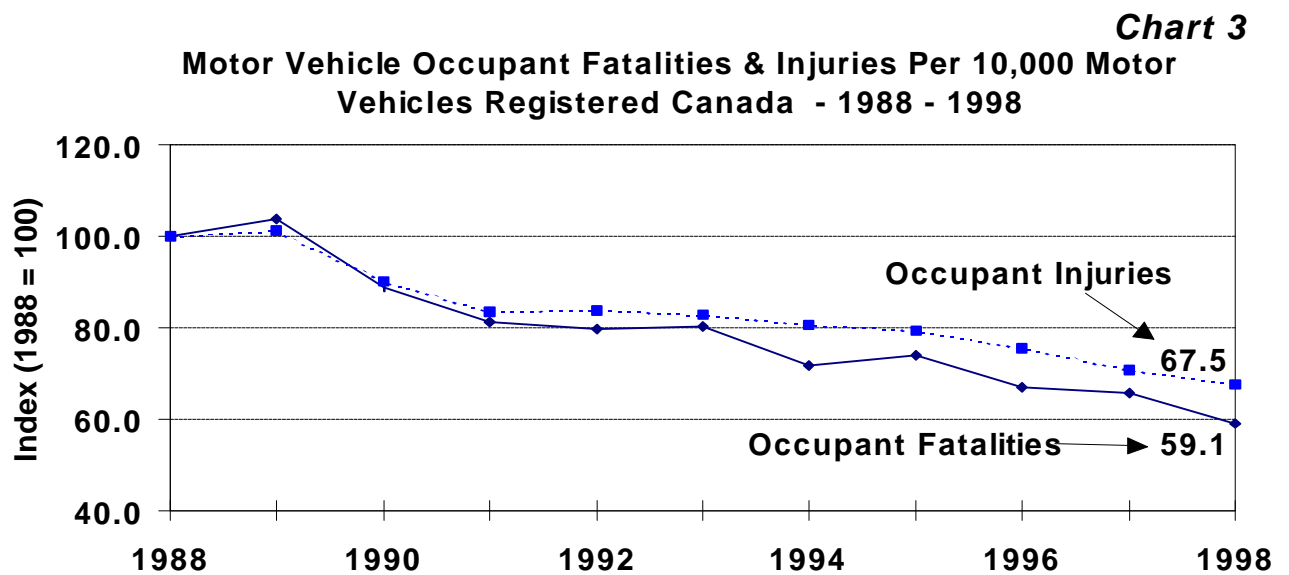


Chart 4 shows that there have been very substantial decreases in the numbers of motorcycle/moped rider fatalities and injuries per 10,000 registrations during the 1988 - 1998 period. While the number of motorcycle/moped riders injured (47.6 percent lower than during 1988) has decreased steadily with only a slight increase in 1998, the year over year changes in the number of fatalities have been quite erratic. The number of motorcycle/moped rider fatalities have increased and decreased over the period to end up only 29 percent lower in 1998, where in 1997 this rate was 45 percent lower than in 1988. The number of motorcycles/mopeds registered in Canada decreased 17 percent from 1988 to 1998 with a 4.5 percent increase in the final year. From 1997 to 1998, motorcycle/moped rider fatalities increased 35 percent.

Chart 4

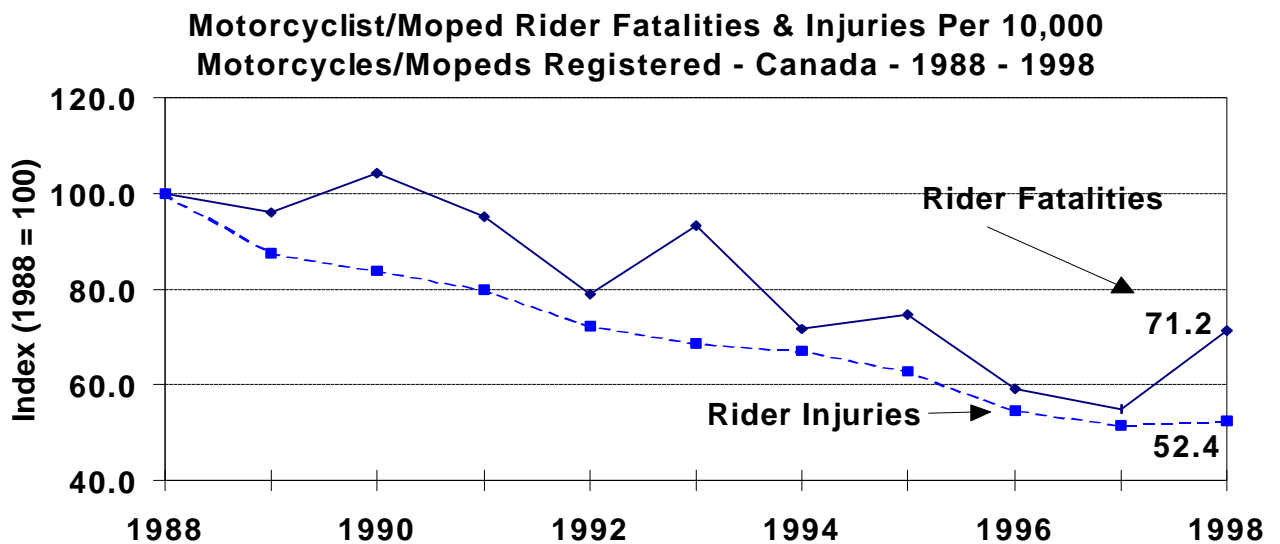


Chart 5 shows that when indexed to 1988 figures, the pedestrian fatalities per 100,000 population appears to be following a three year cycle of two years of decreases followed by an increase, overall exhibiting a downward trend during the period. Pedestrian injuries per 100,000 population have decreased gradually and steadily over the period with a slight increase in 1994. The pedestrian fatalities and injuries on a population basis were approximately 39 percent and 30 percent lower, respectively, in 1998 than during 1988.

Chart 5

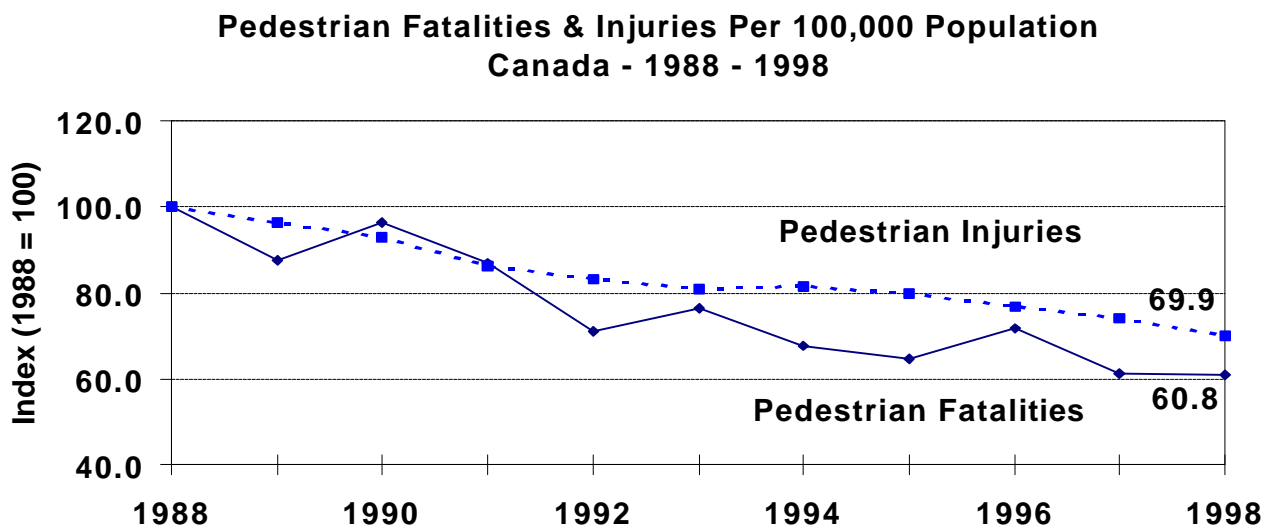
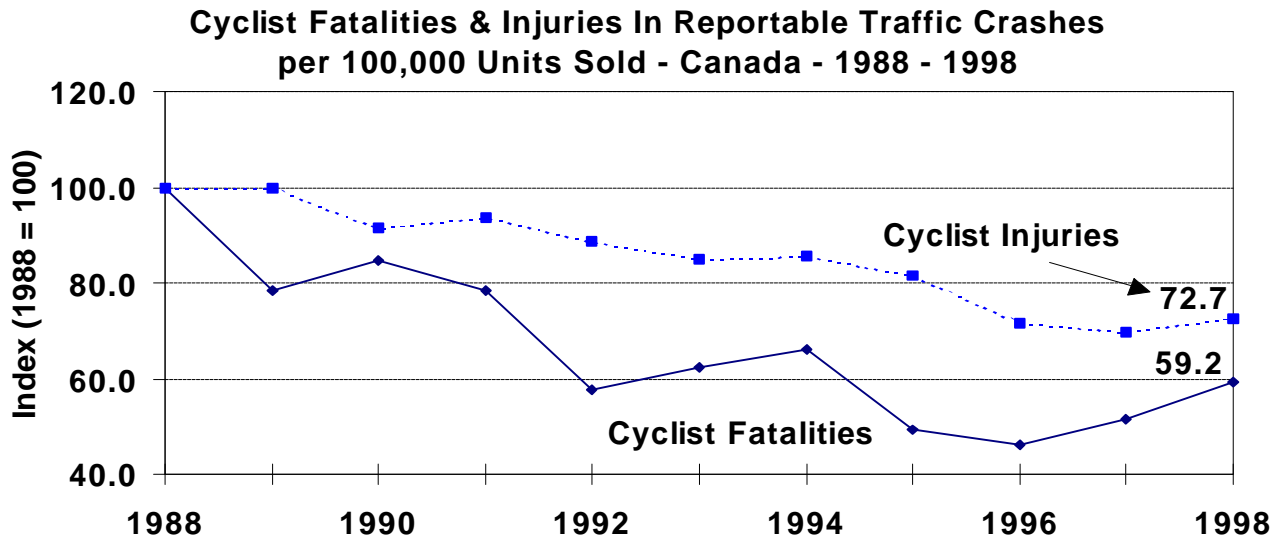


Chart 6 shows that the number of cyclist fatalities on a per 100,000 units sold basis have decreased overall since 1988, while the number who suffered injuries decreased more gradually. Fairly static annual bicycle sales since 1988 combined with a few significant annual decreases in the number of cyclist fatalities and gradual decreases in the number of cyclists injured have contributed to a substantial decrease in the cyclist fatality index during this period (down 40.8 percent) and a decrease of 27.3 percent in the injury rate. The reduction in fatalities over the period was partially offset with a 28 percent increase in fatalities from 1996 to 1998. Since the annual cyclist fatalities

are relatively small, 128 in 1988 and 77 in 1998, any annual change appears to be significant in the chart.

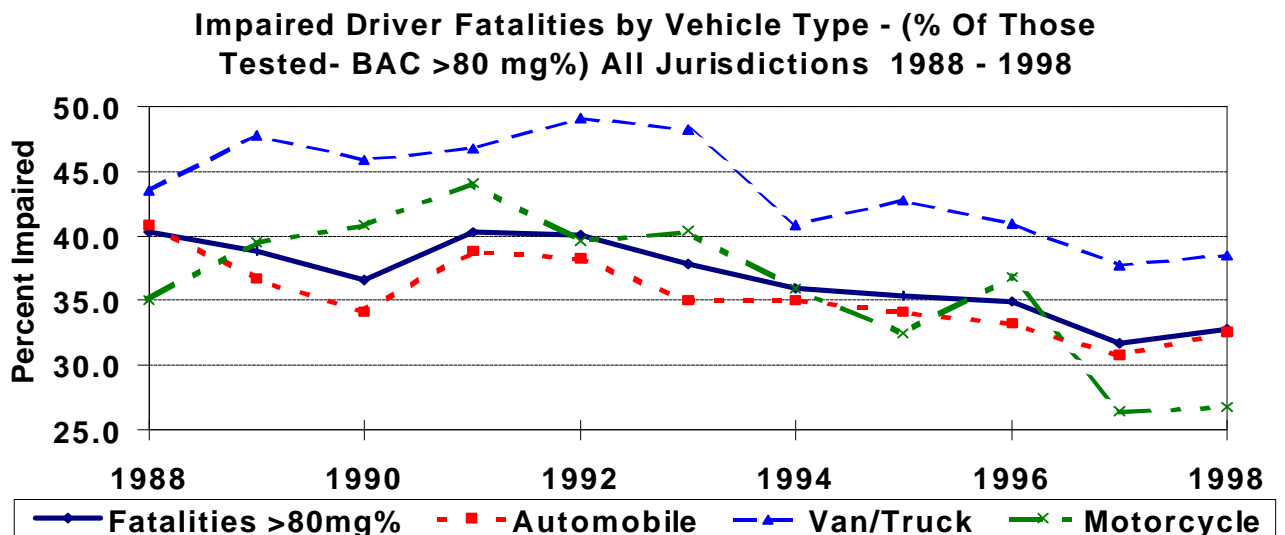
Chart 6



Alcohol

Chart 7 demonstrates that the percentage of fatally injured drivers who were legally impaired followed a gradual decreasing trend from 1988, but the percentages for fatally injured drivers of all vehicle types increased slightly in 1998. Among driver fatalities (death within twelve months), the percentage of those tested for alcohol use and found to be above the legal limit of 80 mg% blood alcohol concentration (BAC) decreased from 40.3 percent in 1988 to 31.7 percent in 1997 and increased to 32.8 percent in 1998. This chart also shows the trends in the percentages of fatally injured drivers, who were tested and found to be legally impaired in automobiles, van/trucks, and motorcycles.

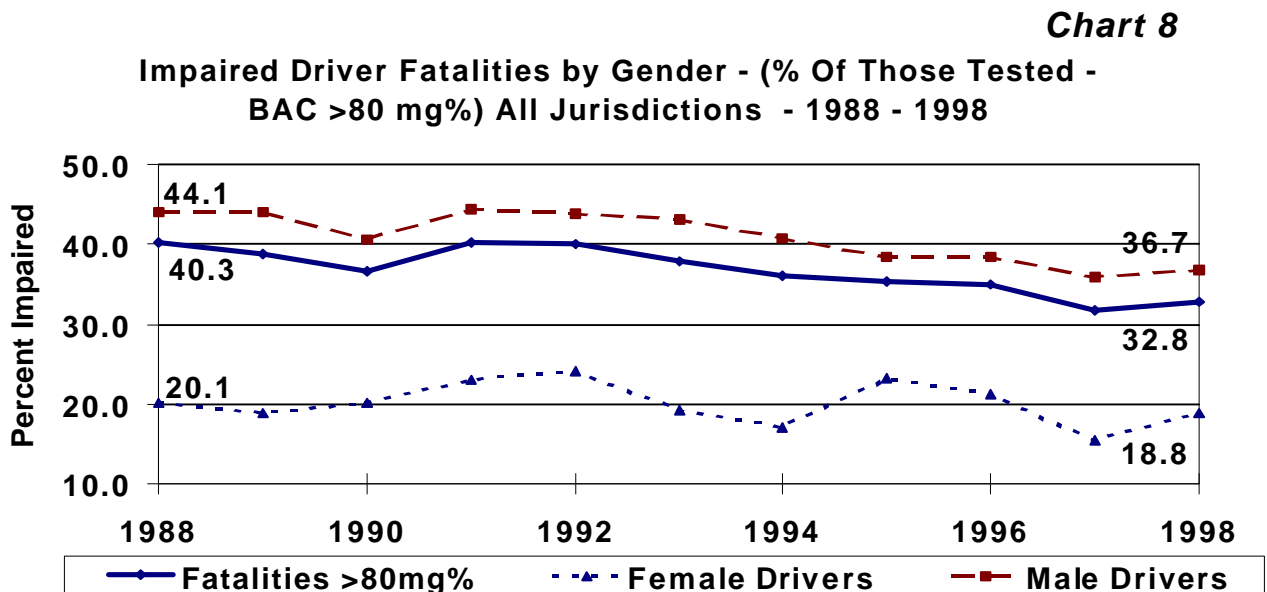
Chart 7



In this chart, vans and trucks were the vehicles where the number of fatally injured drivers was highest after automobile, not only in the number of fatalities tested, but in the number and percentage of persons where the BAC was greater than the legal limit of 80 mg%. This group includes heavy trucks greater than 4500 kg (not tractor trailers), vans, motor homes, light trucks (pickup trucks) and other trucks (including utility vehicles and plows). Although not shown in the chart, this category is very heavily weighted toward the pickup trucks, in that 43.4 percent of the fatally injured drivers tested in 1998 were legally impaired.

Chart 8 displays by gender the percentage of fatally injured drivers (death within twelve months), who were tested and had been drinking, for the period 1988 - 1998 for all jurisdictions. Among male driver fatalities, the percentage of those tested and found to have a BAC over the legal limit of 80 mg% decreased from 44.1 percent in 1988 to 36.7 percent in 1998, which is slightly above the 35.8 percent in 1997. In the case of female driver fatalities, the percentage of those tested and found to be over the legal limit of 80 mg% BAC increased and decreased throughout the period with 20.1 percent in 1988 which decreased to 18.8 percent in 1998. This indicator reached highs of 24.2 percent in 1992 and 23.2 percent in 1995 and a low of 15.4 percent in 1997.

When reviewing the percentages of male and female impaired driver fatalities at 36.7 percent and 18.8 percent, respectively, at first glance it appears that there were twice the percentage of fatally injured male drivers over the legal limit as for fatally injured female drivers. In fact, there were 411 fatally injured male drivers over the legal limit compared to 58 females. The percentages are based on the numbers of fatally injured males and females tested for alcohol and these numbers are vastly different.



The impaired male and female drivers were classed in terms of blood alcohol concentration, those having BAC's from 81 - 150 mg% and greater than 150 mg%. Of the impaired male and female driver fatalities, 73 percent and 62 percent, respectively, had BAC's greater than 150 mg percent.

Chart 9 shows the percentage of fatally injured drivers from 1988-1998 where blood alcohol concentration was found to be above the legal limit of 80 mg % and the share of the percentage where BAC's were between 81-150 mg % and where BAC's were greater than 150 mg %. The latter group accounted for most of the legally impaired fatally injured drivers.

Chart 9

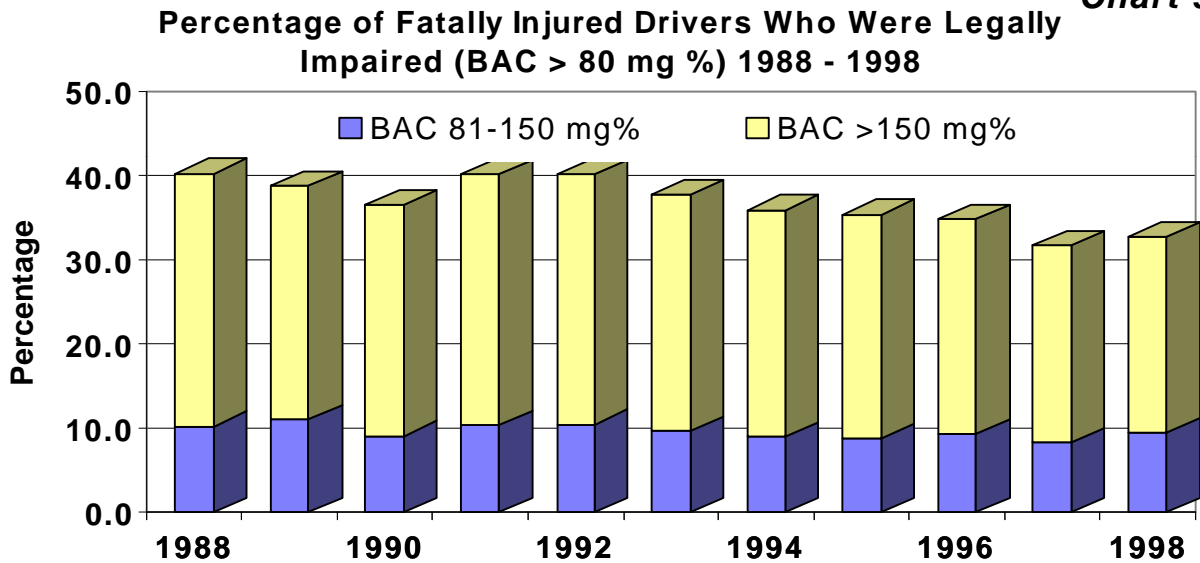


Chart 10 shows that the number of impaired driver fatalities per 100,000 licensed drivers followed a general downward trend from 1988 to 1998. Three significant decreases occurred during the period, from 4.1 impaired driver fatalities per 100,000 licensed drivers to 3.6 in 1990, from 3.4 to 3.0 in 1994 and from 2.9 to 2.5 in 1996 ending at 2.3 fatalities per 100,000 licensed drivers in 1997 and 1998. The figures in this chart show that when indexed to 1988 figures, the annual decreases in the number of persons charged with impaired driving offences per 100,000 licensed drivers were slightly greater than the reductions in the number of impaired driver fatalities per 100,000 licensed drivers.

Chart 10

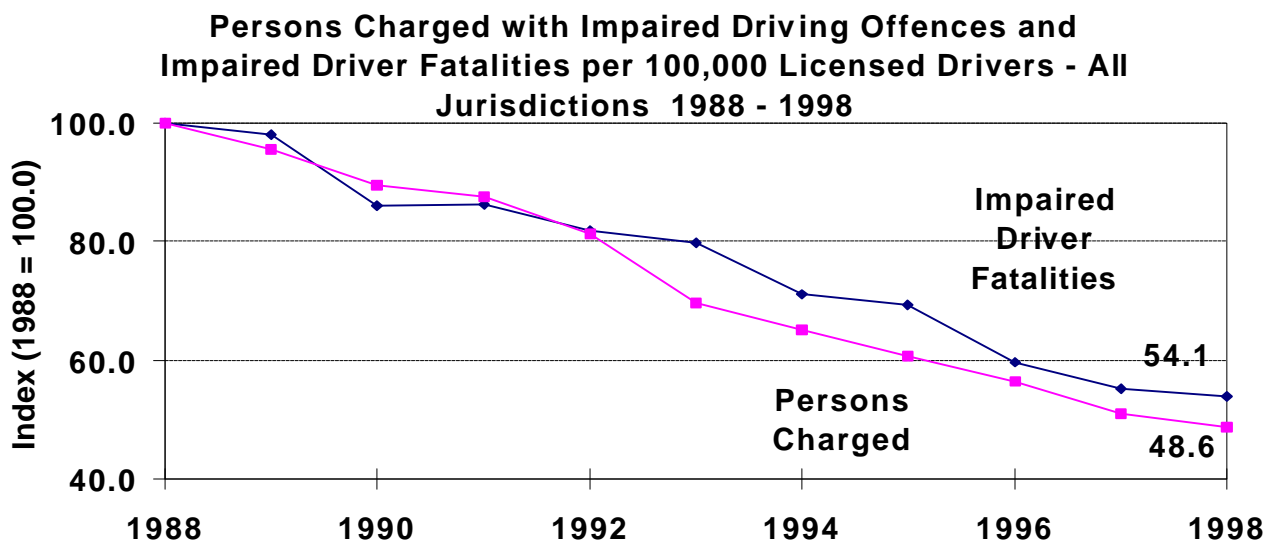


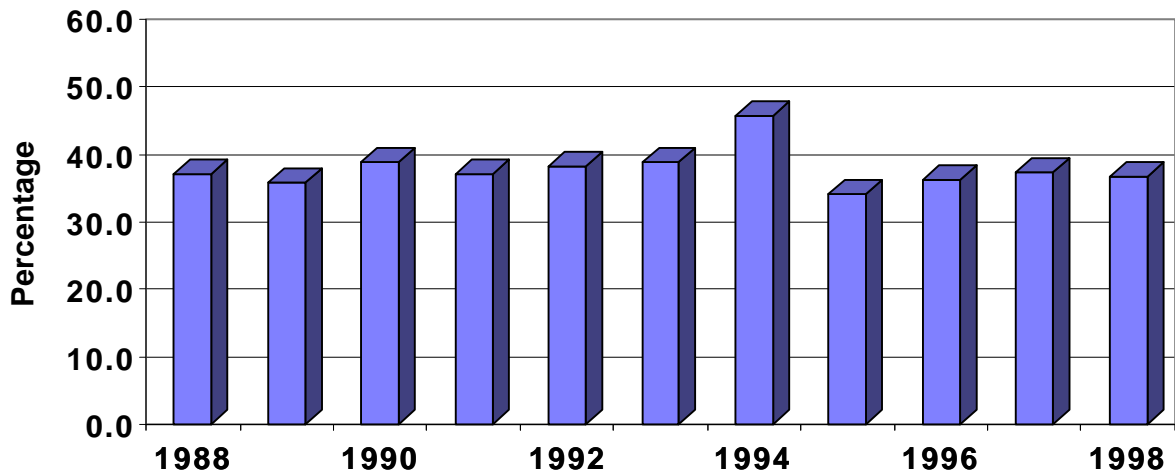
Chart 11 shows the percentage of fatally injured pedestrians who had been drinking and when tested had a blood alcohol concentration greater than 80 mg% or the 'legal limit'. This 'legal limit' actually applies only to the operators of motor vehicles and not to pedestrians. Fatally injured pedestrians who were tested and found to have a BAC greater than 80 mg%, were likely impaired to the point where their judgment was affected by the alcohol.

Of the fatally injured pedestrians tested for alcohol, 37.2 percent in 1988 and 36.6 percent in 1998 were found to have BAC's greater than 80 mg%, reaching a high of 45.8 percent in 1994.

In 1998, the average blood alcohol concentration of those fatally injured pedestrians who had been drinking was 205 mg% compared to the average BAC of 172 mg% of fatally injured drivers who had been drinking. This compares to the previous year when the average BAC of fatally injured pedestrians was 210 mg% and 167 mg% for fatally injured drivers.

Chart 11

Percentage of Fatally Injured Pedestrians Who Were Over the 'Legal Limit' (BAC > 80 mg %) 1988 - 1998

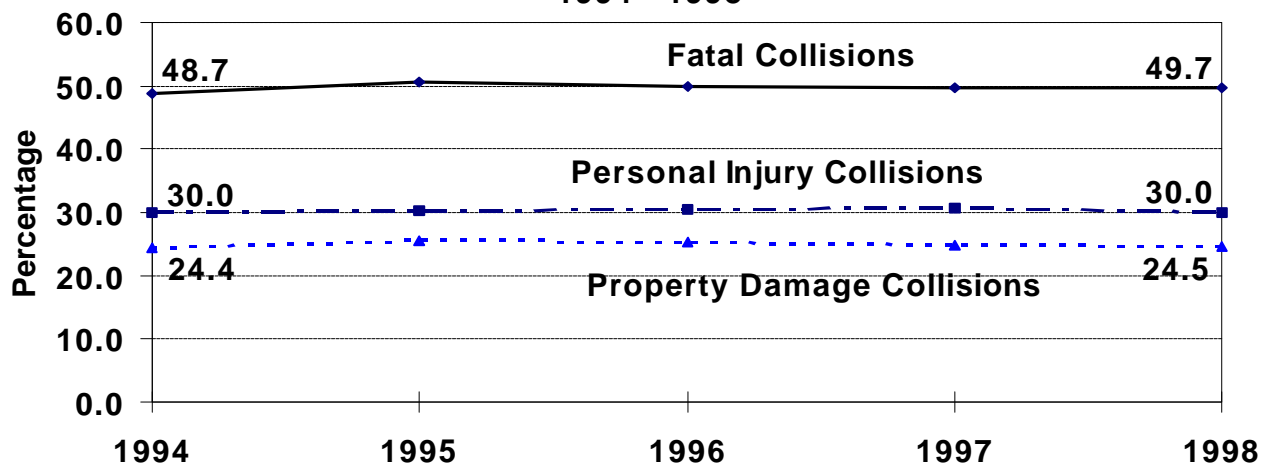


Single-Vehicle Collisions

Chart 12 shows that the proportion of single-vehicle fatal crashes to all fatal collisions has remained constant (at 49 - 51 percent) for the period 1994 to 1998. Single-vehicle crashes represented approximately 31 percent and 25 percent of personal injury and property damage collisions, respectively, over the period. These percentages remained virtually unchanged from the 1993 to 1997 period.

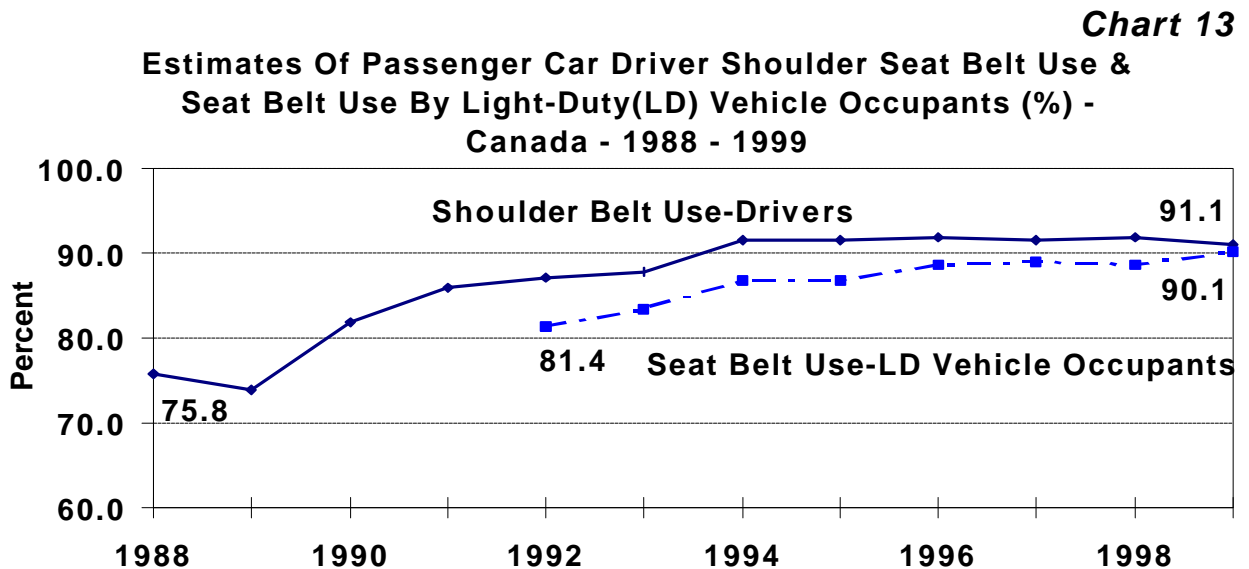
Chart 12

**Single Vehicle Collisions as a Percentage of All Collisions
1994 - 1998**



Seat-Belt Use

Research has shown that the proper use of seat belts is one of the most effective means of reducing death and injury on Canadian roads. Passenger car driver shoulder seat belt use has increased dramatically as shown in Chart 13, which illustrates that the shoulder seat belt use rate for drivers has increased from 75.8 percent in 1988 to 91.1 percent in 1999. By June 1996, national seat belt use by drivers had reached 91.9 percent for the first time since observations of the national survey were recorded. However, in the last six years the rate has reached a plateau and actually decreased 0.4 percentage points in 1997. This seat belt use rate recaptured the 0.4 percentage points in the June 1998 survey, once again reaching 91.9 percent, but declined further to 91.1 percent in the June 1999 survey. In comparison, the estimate of seat belt use for all occupants of light-duty vehicles (including passenger cars, vans and light trucks) reached a high of 90.1 percent in 1999, up from 81.4 percent in 1992, the first year for which this data was available. In the June 1999 survey, this rate broke through the 90 percent barrier,.



Section 2 - Commercial Vehicle Safety in Canada: An Overview

For the period 1994 to 1998, commercial vehicles accounted for an average of 4.7 percent of all vehicles involved in reportable traffic collisions, while they represented an average of 11.9 percent of all vehicles in fatal collisions, 3.7 percent and 5.0 percent of all vehicles in personal injury and property damage collisions, respectively. On a percentage basis, the involvement rates of commercial vehicles by collision severity have remained fairly stable over the period (except in 1997) and compared to previous review periods. The actual number of commercial vehicles involved in collisions increased in 1997, reversing the downward trends of the past few years, but decreased in 1998 to the lowest level in the five-year period.

During the period under review, fatal collisions involving commercial vehicles accounted for an average of 19 percent of all road user fatalities in all reportable collisions, while personal injury collisions involving these vehicles accounted for an average 6 percent of all road users injured. The percentage of road user fatalities in collisions involving commercial vehicles for the period 1994 to 1998 increased 0.1 percentage points from the previous review period, while the percentage for injuries remained unchanged from the last review period. Commercial vehicles involved in single-vehicle collisions as a percent of all commercial vehicles involved in collisions have increased slightly in the last year of the period for fatal collisions and showed a downward trend for personal injury collisions. Single-vehicle crashes accounted for an average 15.6 percent of all commercial vehicles involved in fatal collisions compared to an average 15.4 percent for the 1993 to 1997 period, while they accounted for an average 17.6 percent of personal injury crashes in 1993 to 1997 and 17.7 percent for the 1994 to 1998 period.

In comparison, automobiles involved in single-vehicle crashes as a percent of all automobiles involved in fatal, personal injury and property damage collisions, accounted for 31.4 percent, 15.8 percent and 13.2 percent, respectively. The same comparison for pickup trucks, passenger vans and sport utility vehicles involved in single-vehicle crashes produced percentages of 34.6 percent for fatal, 19.8 percent for personal injury and 19.4 percent for property damage collisions.

In terms of commercial vehicles being reported defective at the time of collision, for all collision types the percentage reported defective decreased from 2.5 percent in 1994 to 2.0 percent in 1998. 'Defective Brakes' was the most frequently reported vehicle condition in fatal, personal injury and property damage collisions accounting for averages of 1.6 percent, 0.9 percent and 0.4 percent over the 1994 to 1998 period, respectively.

If a contributing factor relating to driver condition was not recorded on the collision report, the assumption was made that the driver was 'Apparently normal'. 'Apparently normal' occurred on average in 91 percent of commercial vehicle drivers involved in fatal collisions, while this condition occurred on average 90 and 93 percent for these drivers involved in personal injury and property damage collisions, respectively. 'Inattention/inexperience' was the most often reported driver condition, after 'Apparently normal', with an average 5.6 percent of these drivers involved in fatal collisions from 1994 to 1998, 7.3 percent of injury producing collisions and 5.9 percent of property damage crashes. The next most frequently reported driver conditions were 'Drinking/ impaired' accounting for an average 1.7 percent followed by 'Fatigue/fell asleep' which averaged 1.3 percent for the period in fatal collisions. In personal injury collisions, the next most frequently reported driver conditions were 'Drinking/impaired' and 'Fatigue/fell asleep', averaging 1.1 and 0.9 percent, respectively for the period. In property damage collisions 'Drinking/impaired' remained the next most frequently reported driver condition with an average 0.6 percent for the period.

To put this into perspective, for drivers of automobiles, light trucks and vans the driver condition was classed as 'Apparently normal' in 68 percent of those involved in fatal collisions in 1998. The next most frequently reported driver conditions in fatal collisions after 'Apparently normal' are 'Drinking/ impaired' at 18.3 percent, 'Inattention/inexperience' at 9.2 percent, and 'Fatigue/fell asleep' accounting for 2.4 percent. In personal injury collisions involving drivers of automobiles, light trucks and vans, the driver condition was reported as other than 'Apparently normal' in 15 percent of the cases attributable to 'Inattention/inexperience' at 10.2 percent in 1998

If a contributing factor relating to driver action was not recorded on the collision report, the assumption was made that the driver was 'Driving properly'. 'Driving properly' occurred on average in 80 percent of commercial vehicle drivers involved in fatal collisions, while this condition occurred on average 68 and 72 percent for these drivers involved in personal injury and property damage collisions, respectively. For drivers of commercial vehicles reported as other than 'Driving properly', 'Speeding/driving too fast for road conditions' accounted for an average of 5.7 percent of fatal collisions for the period 1994 to 1998, followed by 'Lost control' and 'Failed to yield right of way' which averaged 3 percent each. In personal injury collisions, the most frequently reported driver actions, after 'Driving properly', were 'Following too closely', 'Speeding/driving too fast for conditions' and 'Failing to yield right of way'. In property damage crashes 'Improper lane change' and 'Improper turn' were the two most often reported driver actions reported in contributing factors after 'Driving properly'.

Once again in comparison, for drivers of automobiles, light trucks and vans, the most frequently reported driver actions in fatal collisions after 'Driving properly' (at an average 58 percent) for the 5-year period were 'Speeding/driving too fast for road conditions' at 13.6 percent, 'Lost control' at 9.7 percent, 'Failed to yield right of way' at 5.6 percent, and 'Disobeyed traffic control device' at 5.2 percent. In personal injury and property damage collisions, the most frequently reported driver actions after 'Driving properly' (at 64 percent and 69 percent, respectively), were 'Following too closely' and 'Failing to yield right of way'.

It is important to note that more than one contributing factor could be reported for each collision and/or each vehicle/driver, and that the cause of an accident cannot be determined by looking at the contributing factors as recorded in the Traffic Accident Information Database (TRAID). Also it is impossible to assign fault to one driver as opposed to another, since this information is not available in TRAID.

Vehicle Data

Vehicles Involved - Canada 1994 - 1998:

Table 2.1 shows the distribution of the number of commercial vehicles involved in reportable traffic collisions by vehicle type involved and collision severity during the five year review period. The table also includes the same statistics for all other vehicles involved in reportable crashes by collision severity so that the trends in the number of commercial vehicles involved could be compared with trends in collision involvement among the general vehicle population.

During the period 1994 to 1998, averages of 54,052 commercial vehicles and 1.06 million other vehicles were involved in traffic collisions on public roads each year. These figures are comparable to the figures for the previous review period of 1993 to 1997 where commercial vehicles averaged 54,391 over the five years and other vehicles averaged 1.13 million. These numbers also show that there were annual decreases in the number of total vehicles involved in reportable collisions during the period under review, a total of 11 percent fewer vehicles in 1998 than in 1994. The number of commercial vehicles involved in collisions in 1998 was 10.6 percent lower than in 1994 and decreased to the lowest level in the 5-year period at 51,009 in 1998.

Commercial vehicles involved in reportable traffic collisions amounted to an average 4.7 percent of all vehicles involved for 1994 to 1998, up 0.1 percentage point from the previous review period. Commercial vehicles on average accounted for 11.9 percent of all vehicles involved in fatal collisions, up 0.1 percentage points from the 1993 to 1997 period, 3.7 percent of personal injury collisions, and 5.0 percent of property damage collisions, the latter two categories up 0.1 percentage point from the previous review period.

Of commercial vehicles involved in collisions, tractor-trailers were the most often involved group in fatal crashes, accounting for an average of 60 percent of commercial vehicles from 1994 to 1998, unchanged from the previous review period. Tractor-trailers comprised an average 38 percent and 38.7 percent of commercial vehicles involved in personal injury crashes and property damage collisions, respectively, during the period 1994 to 1998. The average for personal injury crashes and property damage collisions were both up approximately one percentage point from the 1993 to 1997 period. Buses accounted for an average 7 percent of commercial vehicles involved in fatal collisions, 19 percent in injury producing collisions and 14 percent in property damage collisions, all unchanged from the previous review period.

Table 2.1

**Commercial Vehicles & All Other Vehicles Involved In Reportable Traffic Collisions
By Vehicle Type and Severity - Canada - 1994 - 1998**

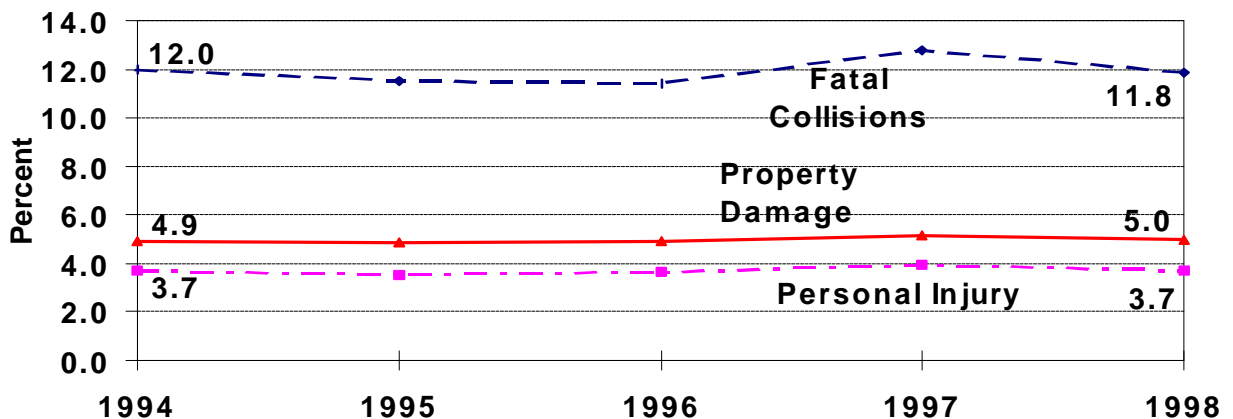
Collision Severity	Vehicle Type	Year					Average
		1994	1995	1996	1997	1998	
Fatal	All Buses	43	31	39	32	43	38
	Straight Trucks >= 4 536 kg	197	163	167	179	166	174
	Tractor-Trailers	328	346	294	335	286	318
	Total Commercial Vehicles	568	540	500	546	495	530
	Non-Commercial Vehicles						
	Involved With NSC Vehicles	574	533	458	486	456	501
	Total Vehs. Involved In Collisions Involving Commercial Vehicles	1142	1073	958	1032	951	1031
	Total All Other Vehicles Involved	3590	3606	3438	3245	3232	3422
	Total - All Vehicles Involved	4732	4679	4396	4277	4183	4453
Personal Injury	All Buses	2155	2047	1949	1906	1786	1969
	Straight Trucks >= 4 536 kg	4871	4625	4642	4652	4295	4617
	Tractor-Trailers	4201	3943	3869	4182	3974	4034
	Total Commercial Vehicles	11227	10615	10460	10740	10055	10619
	Non-Commercial Vehicles						
	Involved With NSC Vehicles	10331	9914	9652	9858	9076	9766
	Total Vehs. Involved In Collisions Involving Commercial Vehicles	21558	20529	20112	20598	19131	20386
	Total All Other Vehicles Involved	283517	279333	264970	253772	252699	266858
	Total - All Vehicles Involved	305075	299862	285082	274370	271830	287244
Property Damage	All Buses	6476	5996	5817	5713	5036	5808
	Straight Trucks >= 4 536 kg	21711	20654	20211	20702	19176	20491
	Tractor-Trailers	17092	16636	15983	17066	16247	16605
	Total Commercial Vehicles	45279	43286	42011	43481	40459	42903
	Non-Commercial Vehicles						
	Involved With NSC Vehicles	36413	34128	33601	34602	31767	34102
	Total Vehs. Involved In Collisions Involving Commercial Vehicles	81692	77414	75612	78083	72226	77005
	Total All Other Vehicles Involved	835437	815439	783093	761758	743864	787918
	Total - All Vehicles Involved	917129	892853	858705	839841	816090	864924
Total	All Buses	8674	8074	7805	7651	6865	7814
	Straight Trucks >= 4 536 kg	26779	25442	25020	25533	23637	25282
	Tractor-Trailers	21621	20925	20146	21583	20507	20956
	Total Commercial Vehicles	57074	54441	52971	54767	51009	54052
	Non-Commercial Vehicles						
	Involved With NSC Vehicles	47318	44575	43711	44946	41299	44370
	Total Vehs. Involved In Collisions Involving Commercial Vehicles	104392	99016	96682	99713	92308	98422
	Total All Other Vehicles Involved	1122544	1098378	1051501	1018775	999795	1058199
	Total - All Vehicles Involved	1226936	1197394	1148183	1118488	1092103	1156621

Straight trucks were the most frequently involved type of commercial vehicle in injury producing and property damage collisions averaging 44 percent and 48 percent, respectively for the period. These involvement rates for straight trucks remained unchanged from the 1993 to 1997 review period. Of commercial vehicles involved in fatal collisions, straight trucks accounted for an average of 33 percent during the 1994 to 1998 period, also unchanged from the previous review period.

Chart 14 shows that on a percentage basis the distribution of commercial vehicles to all vehicles involved in reportable traffic collisions by accident severity remained relatively stable over the period 1994 to 1998. Although the percentages by collision type remained relatively constant over the period with an increase in 1997 followed by a decrease in 1998, the actual number of commercial vehicles involved in all collisions were less in 1998 than any other year of the review period. The total number of vehicles in collisions not involving commercial vehicles decreased almost 10.9 percent over the period.

Chart 14

**Commercial Vehicles Involved In Reportable Traffic Crashes
As A Percent Of All Vehicles Involved In Traffic Collisions -
Canada - 1994 - 1998**



In order to present their involvement properly, there must be a measure of exposure. Ideally, that measure of exposure would be based on distance, kilometres travelled. Since distance travelled is not available at this time, the exposure rates calculated were based on the number of heavy trucks registered in Canada according to the Trucking Industry Profile from 1994 to 1998.

Chart 15 shows the involvement rates individually and combined for tractor-trailers and straight trucks greater than 4 536 kg involved in fatal collisions. The involvement rate for tractor-trailers involved in fatal collisions has decreased 25.5 percent from 21.3 per 10,000 tractor-trailers registered in 1994 to 15.8 in 1998, while the involvement rates for straight trucks decreased 13.1 percent from 6.6 per 10,000 straight trucks registered to 5.7 for the same period.

Chart 15

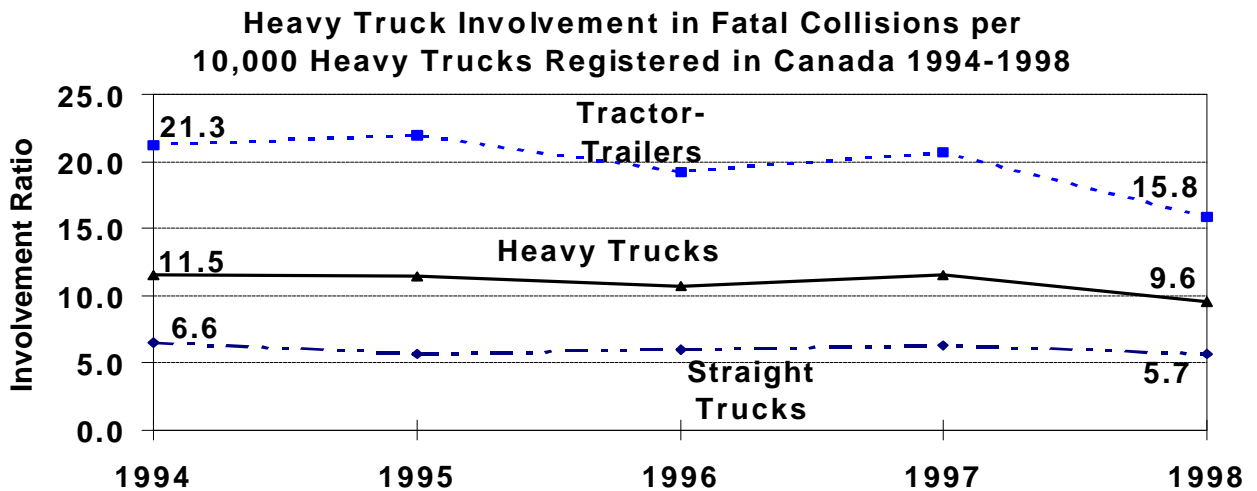
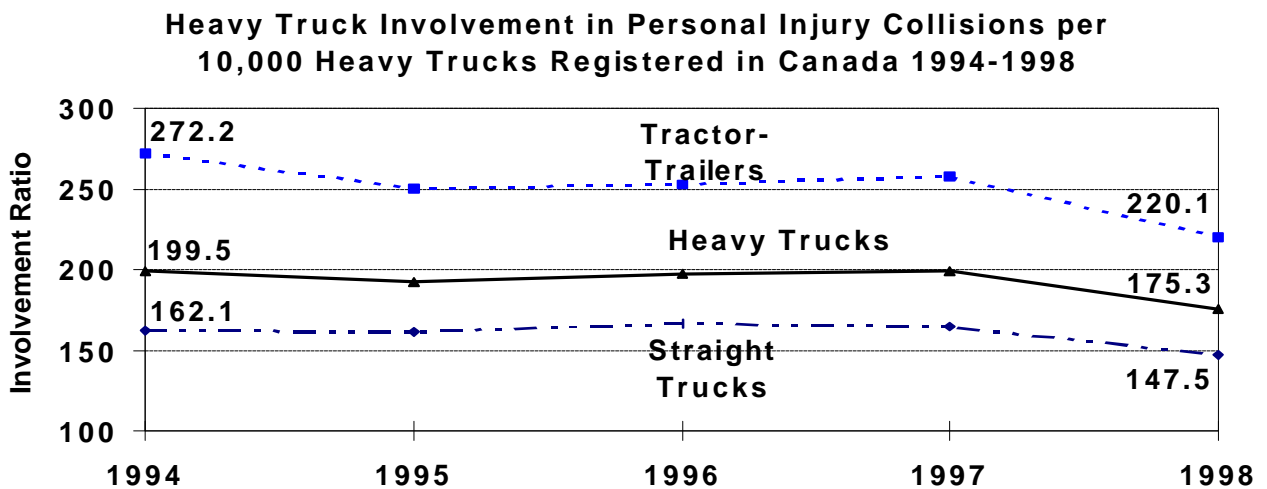


Chart 16 shows the involvement rates individually and combined for tractor-trailers and straight trucks greater than 4 536 kg involved in personal injury collisions. The involvement rate for tractor-trailers involved in personal injury collisions has decreased 19.2 percent from 272.2 per 10,000 tractor-trailers registered in 1994 to 220.1 in 1998, while the involvement rate for straight trucks decreased 9 percent from 162.1 per 10,000 straight trucks registered to 147.5 for the same period.

Chart 16



Single-Vehicle Collisions - Canada - 1994 - 1998:

Of all commercial vehicles involved in collisions, on average 17 percent were involved in single-vehicle crashes. Table 2.2 displays figures on the number of commercial vehicles involved in single-vehicle collisions by vehicle type and collision severity for the period 1994 to 1998. These numbers show that tractor-trailers were the most frequently involved type of commercial vehicles in single-vehicle collisions: 49 percent of fatal crashes, 41 percent of personal injury crashes and 54 percent of property damage crashes. In comparison to the 1993 to 1997 review period, involvement

of tractor-trailers in single-vehicle collisions decreased one percentage point in fatal and property damage collisions while their involvement in personal injury crashes remained unchanged.

A comparison of single-vehicle collisions in this table with all commercial vehicles involved in collisions in Table 2.1 shows that for tractor-trailers, as collision severity increased, the percentage of these vehicles involved in single-vehicle collisions decreased on average: 13 percent in fatal collisions, 19 percent in personal injury collisions and 24 percent in property damage crashes unchanged in all collision types from the previous review period. The converse was found for single-vehicle collisions involving buses as a percentage of all buses involved in collisions. As collision severity increased, so did their involvement in one-vehicle crashes: 35 percent for fatal crashes, 21 percent for personal injury collisions and 5 percent for property damage crashes. Compared to the involvement rates in single-vehicle bus collisions for the 1993 to 1997 period, their average involvement rates were up 3 percentage points in fatal crashes and up one percentage point for personal injury and property damage collisions, respectively. The average involvement rates for straight trucks in single-vehicle accidents as a percentage of all straight trucks involved in collisions were 16 percent in fatal crashes, down one percentage point from the 1993 to 1997 period, while involvement in one-vehicle personal injury and property damage collisions, both averaging 15 percent, remained unchanged from the previous review period.

Table 2.2

**Commercial Vehicles Involved In Single Vehicle Reportable Traffic Collisions
By Vehicle Type and Severity - Canada - 1994 - 1998**

Collision Severity	Vehicle Type	Year				
		1994	1995	1996	1997	1998
Fatal	All Buses	12	10	15	14	15
	Straight Trucks >= 4 536 kg	31	29	29	25	29
	Tractor-Trailers	43	39	36	47	39
	Total Commercial Vehicles	86	78	80	86	83
Personal Injury	All Buses	394	417	428	383	398
	Straight Trucks >= 4 536 kg	684	696	709	719	694
	Tractor-Trailers	827	780	678	802	793
	Total Commercial Vehicles	1905	1893	1815	1904	1885
Property Damage	All Buses	254	267	269	272	265
	Straight Trucks >= 4 536 kg	3219	3258	3102	3121	2952
	Tractor-Trailers	4046	4077	3717	3959	3946
	Total Commercial Vehicles	7519	7602	7088	7352	7163
Total	All Buses	660	694	712	669	678
	Straight Trucks >= 4 536 kg	3934	3983	3840	3865	3675
	Tractor-Trailers	4916	4896	4431	4808	4778
	Total Commercial Vehicles	9510	9573	8983	9342	9131

In comparison, automobiles involved in single-vehicle crashes as a percent of all automobiles involved in fatal, personal injury and property damage collisions, averaged 31.7 percent, 15.7 percent and 13.1 percent, respectively. The same comparison for pickup trucks, passenger vans and sport utility vehicles involved in single-vehicle crashes produced average percentages of 35.0 percent for fatal, 19.3 percent for personal injury and 18.3 percent for property damage collisions. The table below displays the average percentages for automobiles, light trucks and vans and commercial vehicles involved in single-vehicle crashes as a percentage of all crashes involving these vehicle types.

Percentages of Vehicles Involved in Single-Vehicle Collisions by Vehicle Type

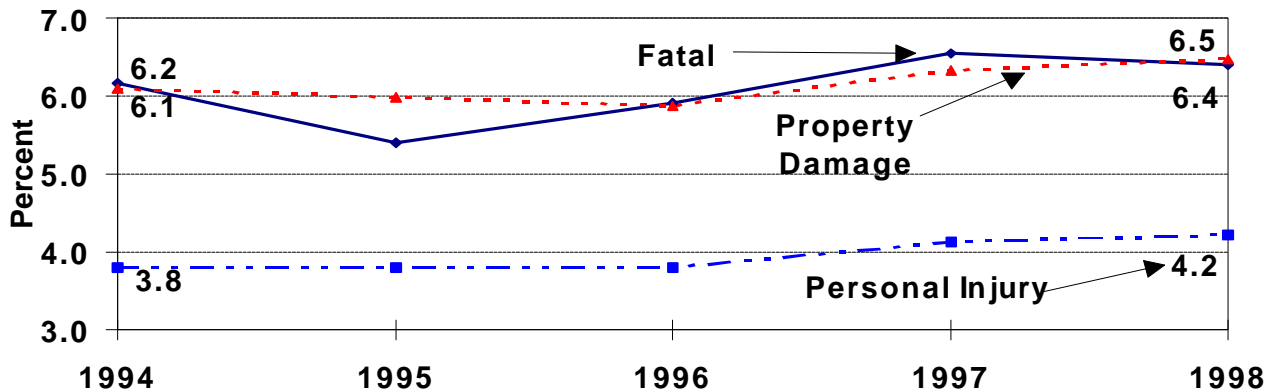
Vehicle Type	Fatal	Personal Injury	Property Damage
Buses	35.1	20.5	4.6
Straight Trucks > 4 536 Kg	16.4	15.2	15.3
Tractor-Trailers	12.8	19.2	23.8
Automobiles	31.7	15.7	13.1
Light Trucks & Vans	35.0	19.3	18.3

Although figures on the total number of vehicles involved in single-vehicle accidents were not included in Table 2.2, they were used to determine the distribution of commercial vehicles involved in single-vehicle crashes as a percent of all one-vehicle accidents. These figures comprise the three trend lines in Chart 17.

The incidence of commercial vehicles involved in single-vehicle collisions as a percentage of all vehicles involved in single-vehicle crashes averaged 6.1 percent for fatal crashes over the 5-year period and accounted for 6.4 percent in 1998. In personal injury and property damage collisions, the involvement of commercial vehicles in single-vehicle collisions as a percentage of all single-vehicle collisions averaged 4.0 percent and 6.2 percent, respectively, as shown in the chart.

Chart 17

Single-Vehicle Commercial Vehicle Crashes As A Percent Of All Vehicles Involved In Single Vehicle Collisions By Severity Canada - 1994 - 1998



Vehicle Condition - Canada Excluding Quebec 1994 - 1998

The figures in Table 2.3 show that on a percentage basis, an improvement has occurred in the mechanical condition of all commercial vehicles involved in collisions for the period 1994 to 1998. In 1994, 2.5 percent of commercial vehicles whose mechanical condition was known and reported at the time of collision occurrence were reported as other than 'No apparent defect'. In 1998, 2.0 percent of commercial vehicles involved in collisions were reported as defective.

The numbers in Table 2.3 show that among vehicles whose reported condition was other than 'No apparent defect', 'Defective brakes' was the most frequently reported problem for all collision severity categories. The percentage of commercial vehicles involved in fatal collisions that reportedly had 'Defective brakes' showed no direct trend but decreased from a high in 1994 of 2.4 percent to a low of 0.7 percent in 1997 and increased slightly to 0.8 percent in 1998. The reported percentages for 'Defective brakes' have decreased in personal injury collisions ranging from a high of 1.0 percent in 1994 to 0.7 percent in 1998 and property damage crashes with a high of 0.5 percent in 1994 to 0.4 percent in 1998. From 1994 to 1998, there were no reported defects in the 'Defective wheels/suspension' category for commercial vehicles involved in fatal crashes. Also for fatal collisions in 1994 and 1995, there were zero cases reported of 'Defective tires and 'Defective lighting', however in 1996 and 1997, there were one case and 2 cases reported relating to lighting defects and one case in each of the last three years related to tire defects. Since these statistics are so small, a slight change can make a significant difference in percentage terms.

Among commercial vehicles involved in injury producing and property damage collisions, "Defective tires", which averaged .04 and 0.2 percent, respectively, was the next most frequently

Table 2.3

**Commercial Vehicles Involved In Reportable Traffic Collisions By Vehicle Condition And
Crash Severity - Canada Excluding Quebec - 1994 - 1998**

Collision Severity	Vehicle Condition	Year				
		1994	1995	1996	1997	1998
Fatal	No Apparent Defect	404	389	341	395	353
	Defective Brakes	10	7	8	3	3
	Defective Lighting (Headlights/Taillights)	0	0	1	2	0
	Defective Wheels/Suspension	0	0	0	0	0
	Defective Tires	0	0	1	1	1
	Other	8	4	6	6	3
	Total	422	400	357	407	360
Personal Injury	No Apparent Defect	8265	7803	7835	7610	7064
	Defective Brakes	86	82	65	76	54
	Defective Lighting (Headlights/Taillights)	7	14	16	12	8
	Defective Wheels/Suspension	7	12	11	8	6
	Defective Tires	32	41	24	28	21
	Other	96	92	81	93	99
	Total	8493	8044	8032	7827	7252
Property Damage	No Apparent Defect	28084	26974	27485	27488	25500
	Defective Brakes	156	148	116	105	96
	Defective Lighting (Headlights/Taillights)	42	40	27	22	22
	Defective Wheels/Suspension	43	34	31	45	27
	Defective Tires	69	93	63	56	40
	Other	388	369	297	312	299
	Total	28782	27658	28019	28028	25984
Total Vehicles Involved	No Apparent Defect	36753	35166	35661	35493	32917
	Defective Brakes	252	237	189	184	153
	Defective Lighting (Headlights/Taillights)	49	54	44	36	30
	Defective Wheels/Suspension	50	46	42	53	33
	Defective Tires	101	134	88	85	62
	Other	492	465	384	411	401
	Total	37697	36102	36408	36262	33596

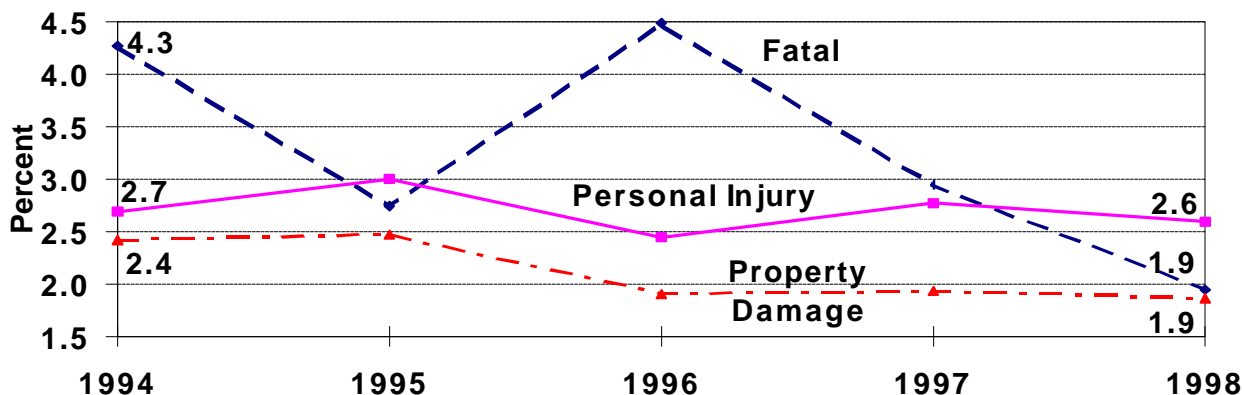
Chart 18 demonstrates that while the percentages of commercial vehicles with reported defects involved in fatal crashes have decreased from 4.3 percent in 1994 to 1.9 percent in 1998, 1996 showed the highest level of 4.5 percent reported as defective. The average for the period at 3.3 percent, was 0.4 percentage points lower than the 1993 to 1997 review period.

In injury producing collisions involving commercial vehicles with defects, the average for the period was 2.7 percent compared to 2.9 percent for the 1993 to 1997 period, with slight increases in 1995 and 1997. The percentage of commercial vehicles with defects involved in property damage accidents averaged 2.1 percent for the 5-year period compared to 2.3 percent for the 1993 to 1997 period.

The actual numbers of commercial vehicles reported to have defects at the time of collision are relatively small, especially for fatal collisions, and consequently, small changes could produce what appear to be significant changes in percentage terms.

Chart 18

Percent Of Commercial Vehicles With Reported Defects Involved In Reportable Traffic Collisions - Canada Excluding Québec 1994 - 1998



Driver Data:

Driver Condition - Canada Excluding Quebec 1994 - 1998

If a contributing factor relating to driver condition was not recorded on the collision report, the assumption was made, for the purpose of presenting this data, that the driver was ‘Apparently normal’. The data in Table 2.4 show that ‘Apparently normal’ occurred on average in 91 percent of commercial vehicle drivers involved in fatal collisions, while this condition occurred on average 90 and 93 percent for these drivers involved in personal injury and property damage collisions, respectively.

‘Inattention/inexperience’ was the most often reported driver condition, after ‘Apparently normal’, with an average 5.6 percent of these drivers involved in fatal collisions from 1994 to 1998, 7.3 percent of injury producing collisions and 5.9 percent of property damage crashes. The next most frequently reported driver condition was ‘Drinking/impaired’ accounting for an average 1.7 percent followed by ‘Fatigue/fell asleep’ which averaged 1.3 percent for the period in fatal collisions. In personal injury collisions, the next most frequently reported driver conditions were ‘Drinking/impaired’ and ‘Fatigue/fell asleep’, averaging 1.1 and 0.9 percent, respectively for the period. In property damage collisions ‘Drinking/impaired’ remained the next most frequently reported driver condition with an average 0.6 percent for the period.

To put this into perspective, for drivers of automobiles, light trucks and vans the driver condition was ‘Apparently normal’ in an average 68 percent of fatal collisions. Driver condition was reported as other than ‘Apparently normal’ in 32 percent of those involved in fatal collisions over impaired’ at 19.5 percent, ‘Inattention/inexperience’ at 8.6 percent, and ‘Fatigue/fell asleep’ accounting for 2.3 percent. In personal injury collisions involving drivers of automobiles, light trucks and vans, the driver condition was reported as other than ‘Apparently normal’ in 15 percent of the cases attributable to ‘Inattention/inexperience’ at 9.7 percent for 1994 to 1998 and ‘Drinking/impaired’ at 4.4 percent.

Table 2.4

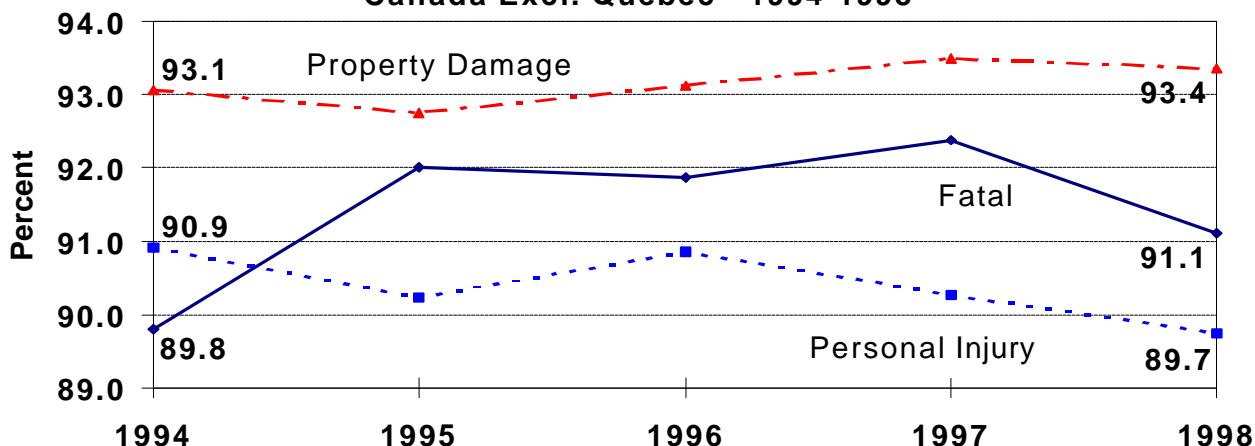
**Drivers of Commercial Vehicles Involved In Reportable Traffic Collisions By Driver Condition
And Severity - Canada Excluding Quebec - 1994 - 1998**

Collision Severity	Driver Condition	Year				
		1994	1995	1996	1997	1998
Fatal	Apparently Normal	379	368	328	376	328
	Inattention/Inexperience	25	20	16	19	20
	Fatigue/Fell Asleep	9	3	6	6	2
	Med./Phys. Disability	0	1	1	1	2
	Drinking/Impaired	8	7	6	4	7
	Other	1	1	0	1	1
	Total	422	400	357	407	360
Personal Injury	Apparently Normal	7721	7258	7298	7065	6508
	Inattention/Inexperience	592	596	555	561	580
	Fatigue/Fell Asleep	65	62	74	87	66
	Med./Phys. Disability	16	13	13	12	18
	Drinking/Impaired	95	110	82	94	65
	Other	4	5	10	8	15
	Total	8493	8044	8032	7827	7252
Property Damage	Apparently Normal	26783	25655	26094	26206	24260
	Inattention/Inexperience	1712	1722	1679	1562	1506
	Fatigue/Fell Asleep	95	77	73	80	66
	Med./Phys. Disability	18	21	13	15	12
	Drinking/Impaired	168	174	149	159	130
	Other	6	9	11	6	10
	Total	28782	27658	28019	28028	25984
Total Drivers Involved	Apparently Normal	34883	33281	33720	33647	31096
	Inattention/Inexperience	2329	2338	2250	2142	2106
	Fatigue/Fell Asleep	169	142	153	173	134
	Med./Phys. Disability	34	35	27	28	32
	Drinking/Impaired	271	291	237	257	202
	Other	11	15	21	15	26
	Total	37697	36102	36408	36262	33596

Chart 19 shows that among commercial drivers involved in fatal crashes, the incidence of drivers being reported as other than 'Apparently normal' decreased from 1994 to 1998 from 10.2 percent to 8.9 percent while the intervening years ranged from 7.6 to 8.1 percent. For the period under review, drivers involved in fatal collisions with a driver condition reported as other than 'Apparently normal' averaged 8.6 percent, an increase of 0.4 percentage points from the previous review period. The chart also shows that the averages for 1994 to 1998 of commercial drivers, whose conditions were reported as other than normal, increased 0.1 percentage point to 9.6 percent involved in injury producing incidents and improved to 6.8 percent involved in property damage crashes compared to the previous review period of 7.0 percent.

The values for driver conditions reported as other than 'Apparently normal' are relatively small, consequently small changes can produce significant changes in percentage terms.

Percentage of Commercial Vehicle Drivers Involved in Collisions Where Driver Condition Was 'Apparently Normal' Canada Excl. Quebec - 1994-1998



Driver Action - Canada Excluding Quebec 1994 - 1998

If a contributing factor relating to driver action was not recorded on the collision report, the assumption was made that the driver was 'Driving properly'. 'Driving properly' occurred on average in 80 percent of commercial vehicle drivers involved in fatal collisions, while this condition occurred on average 68 and 72 percent for these drivers involved in personal injury and property damage collisions, respectively. The numbers in Table 2.5 indicate that among drivers of commercial vehicles who were involved in fatal crashes, the most frequently reported infraction was 'Speeding/driving too fast for conditions' which accounted for an average 5.7 percent over the period. The next most frequently reported infractions were 'Lost control' which averaged 3.2 percent, 'Failing to yield right of way' at 3.1 percent and 'Disobeying traffic control device' at 2.9 percent for the period.

Among commercial vehicle drivers involved in injury producing collisions, the three most frequently reported driver actions were 'Following too closely' which averaged 8.1 percent for the period, 'Speeding/driving too fast for conditions' at 5.3 percent, and 'Failing to yield right of way' at 5.2 percent. The two most frequently reported driving infractions among commercial vehicle drivers involved in property damage collisions were 'Improper lane changes' averaging 5.5 percent, and 'Improper turn' averaging 4.9 percent for the period 1994 to 1998.

For drivers of commercial vehicles, driver actions on average were reported as other than 'Driving properly' in 20 percent of those in fatal collisions, while driver actions were recorded as other than 'Driving properly' in 32 and 28 percent of those drivers involved in injury-producing and property damage collisions, respectively.

Table 2.5

**Drivers of Commercial Vehicles Involved In Reportable Traffic Collisions By Driver Action and Severity
Canada Excluding Quebec - 1994 - 1998**

Collision Severity	Driver Action	Year				
		1994	1995	1996	1997	1998
Fatal	Driving Properly	343	317	288	330	285
	Following Too Closely	2	5	6	3	3
	Improper Turn	1	1	1	4	5
	Speeding/Driving Too					
	Fast For Road Conditions	25	36	19	16	16
	Improper Lane Change	4	1	2	3	2
	Fail To Yield R-O-W	11	11	12	12	14
	Disobey Traffic Control Device	16	8	7	17	10
	Lost Control	11	10	12	12	16
	Other Infractions	9	11	10	10	9
	Total	422	400	357	407	360
Personal Injury	Driving Properly	5810	5520	5440	5306	4818
	Following Too Closely	636	581	670	624	676
	Improper Turn	181	168	184	187	223
	Speeding/Driving Too					
	Fast For Road Conditions	511	457	420	413	312
	Improper Lane Change	299	275	286	294	287
	Fail To Yield R-O-W	453	434	440	376	345
	Disobey Traffic Control Device	202	220	224	213	214
	Lost Control	319	310	302	337	308
	Other Infractions	82	79	66	77	69
	Total	8493	8044	8032	7827	7252
Property Damage	Driving Properly	20458	19646	19956	20356	18768
	Following Too Closely	1221	1209	1220	1116	1155
	Improper Turn	1315	1383	1421	1337	1336
	Speeding/Driving Too					
	Fast For Road Conditions	937	795	731	697	527
	Improper Lane Change	1600	1567	1546	1472	1447
	Fail To Yield R-O-W	1166	1127	1154	990	911
	Disobey Traffic Control Device	311	326	338	278	303
	Lost Control	729	653	747	755	595
	Other Infractions	1045	952	906	1027	942
	Total	28782	27658	28019	28028	25984
Total Drivers Involved	Driving Properly	26611	25483	25684	25992	23871
	Following Too Closely	1859	1795	1896	1743	1834
	Improper Turn	1497	1552	1606	1528	1564
	Speeding/Driving Too					
	Fast For Road Conditions	1473	1288	1170	1126	855
	Improper Lane Change	1903	1843	1834	1769	1736
	Fail To Yield R-O-W	1630	1572	1606	1378	1270
	Disobey Traffic Control Device	529	554	569	508	527
	Lost Control	1059	973	1061	1104	919
	Other Infractions	1136	1042	982	1114	1020
	Total	37697	36102	36408	36262	33596

Once again in comparison, for drivers of automobiles, light trucks and vans, driver action was noted as 'Driving properly' on average 58 percent of those in fatal crashes, 64 percent of those

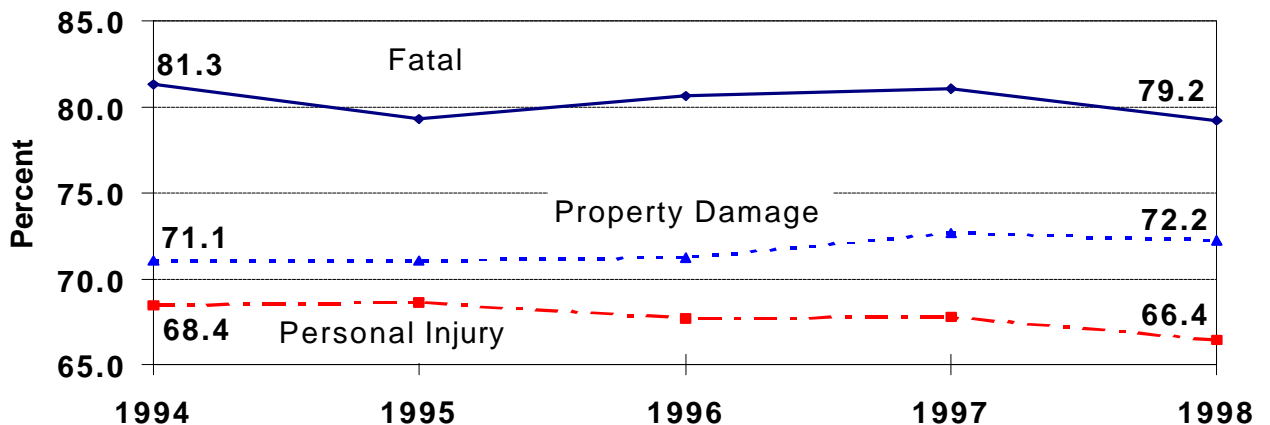
in personal injury collisions and 69 percent of those involving property damage. For the latter vehicle types, driver actions most frequently reported in fatal collisions were ‘Speeding/driving too fast for road conditions’ which averaged 13.6 percent for the period, ‘Lost control’ at 9.7 percent, ‘Disobeyed traffic control device’ at 5.2 percent and ‘Failed to yield right of way’ at 5.5 percent. In personal injury and property damage collisions, the most frequently reported driver actions after ‘Driving properly’ were ‘Following too closely’ and ‘Failing to yield right of way’.

Chart 20 demonstrates that the reported incidences of driving infractions among drivers of commercial vehicles involved in collisions remained fairly constant for all collision severity categories for the period in review.

An average of approximately 80 percent of commercial vehicle drivers involved in fatal crashes were reported as ‘Driving properly’ at the time of the collision, decreasing approximately 0.3 percentage points from the previous review period 1993 to 1997. The corresponding figures for these vehicle operators involved in injury producing and property damage collisions while ‘Driving properly’ were 68 percent and 72 percent, respectively.

Chart 20

Percent of Commercial Vehicle Drivers Where Driver Was ‘Driving Properly’ - Canada Excl. Quebec - 1994-1998



Victim Data:

Casualties of Reportable Traffic Collisions Involving Commercial and Other Vehicles By Vehicle Type and Injury Severity - Canada 1994 - 1998

The figures in Table 2.6 show that no direct trend was evident in the annual distribution of fatalities among road users involved in collisions with commercial vehicles, however, there was an overall decrease in the number of road user fatalities and injuries. On average, commercial vehicle occupant fatalities accounted for 2.5 percent of all fatally injured road users, a decrease of 0.1 percentage point from the previous review period. Occupants of other vehicles and pedestrians involved in collisions with commercial vehicles accounted for approximately 16.7 percent of all fatalities for the 1994 to 1998 period compared to 16.6 percent for the 1993 to 1997 period. It is important to note that while total road user fatalities have decreased by 10.1 percent from 1994 to 1998, the total number of fatalities in collisions involving commercial vehicles has shown a greater

decrease of 12.8 percent. In collisions involving commercial vehicles, fatally injured occupants of other vehicles decreased 13.5 percent and pedestrian fatalities decreased 1.7 percent, whereas the fatalities among occupants of commercial vehicles decreased 16.7 percent.

The occupants of commercial vehicles includes the victims of the fatal single-vehicle bus crash at Les Eboulements, Quebec in October of 1997. Where there were no occupant fatalities involved in bus collisions in 1996, there were 46 fatalities in 1997 and 4 occupant fatalities in 1998.

Table 2.6 also shows that occupants of commercial vehicles injured in traffic collisions accounted for an average 1.9 percent of all road users injured for the period 1994 to 1998. Occupants of other vehicles and pedestrians injured accounted for an average of 4.5 percent of total road users injured for the period. The number of commercial vehicle occupants injured decreased from 1994 to 1998 by 12.3 percent, while injuries to occupants of other vehicles and pedestrians involved in these collisions decreased 12.6 percent and 10.0 percent, respectively. The total number of persons injured in collisions involving commercial vehicles decreased 12.4 percent from 1994 to 1998.

Chart 21 shows the distribution of road user fatalities in collisions involving commercial vehicles increased significantly in 1997 to 21.7 percent contributing to the 1994 to 1998 average of 19.3 percent of all fatally injured road users, up 0.1 percentage point from the 1993 to 1997 review. The distribution of all road users injured as a result of being involved in collisions involving these vehicles as a proportion of all road users injured in collisions averaged 6.4 percent for 1994 to 1998, unchanged from the 1993 to 1997 period.

Chart 21

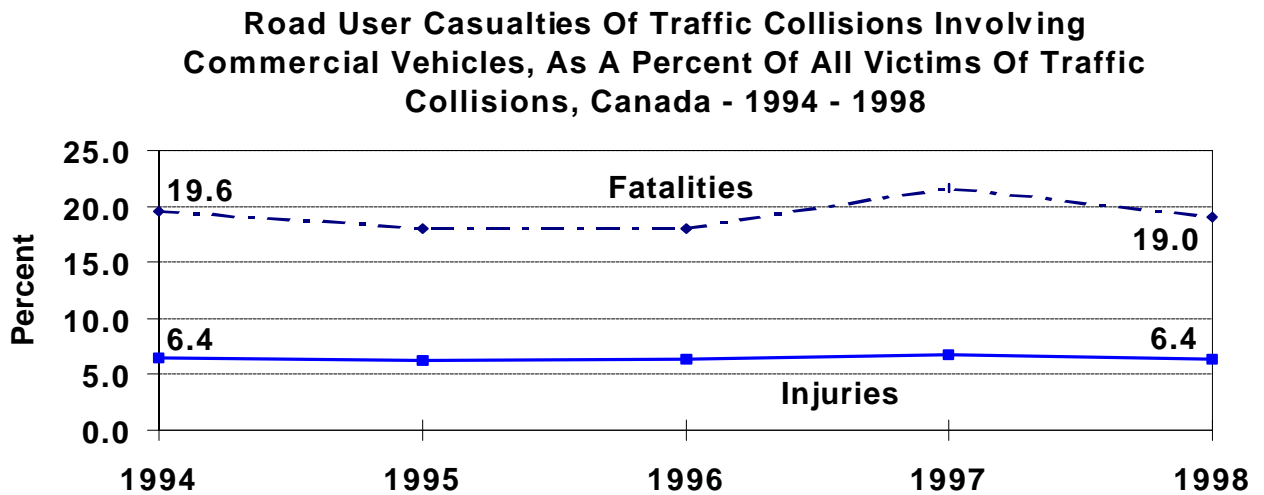


Table 2.6

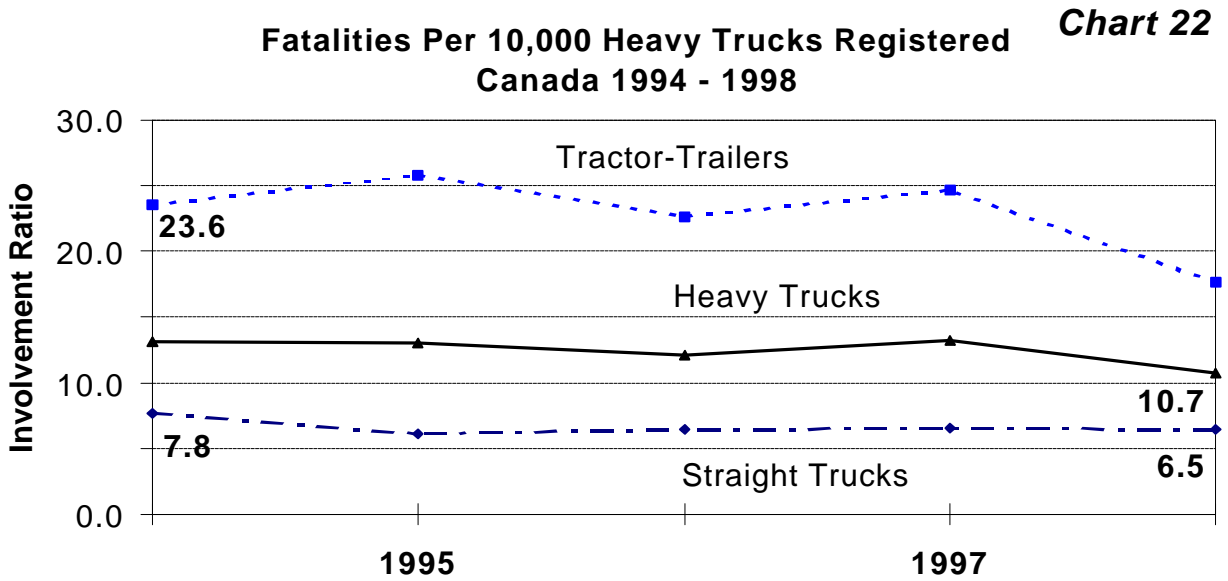
**Road User Casualties of Collisions Involving Commercial Vehicles And All Other Vehicles
By Injury Severity And Vehicle Type - Canada - 1994 - 1998**

Injury Severity	Vehicle Type	Year				
		1994	1995	1996	1997	1998
Fatalities	All Buses	10	6	0	46	4
	Straight Trucks >= 4 536 kg	40	25	25	18	28
	Tractor-Trailers	34	38	33	47	38
	Commercial Vehicle					
	Occupant Total	84	69	58	111	70
	Occupants Of Other Vehicles					
	Inv. With Commercial Vehicles	496	485	434	492	429
	Pedestrians	59	51	64	61	58
	Total Victims Of Collisions					
	Involving Commercial Vehicles	639	605	556	664	557
	Victims Of All Other Collisions	2624	2746	2535	2399	2377
Total	3263	3351	3091	3063	2934	
Injuries	All Buses	1686	1487	1476	1455	1291
	Straight Trucks >= 4 536 kg	1633	1577	1563	1622	1460
	Tractor-Trailers	1411	1402	1289	1451	1395
	Commercial Vehicle					
	Occupant Total	4730	4466	4328	4528	4146
	Occupants Of Other Vehicles					
	Inv. With Commercial Vehicles	10432	10045	9762	9787	9120
	Pedestrians	638	599	626	616	574
	Total Victims Of Collisions					
	Involving Commercial Vehicles	15800	15110	14716	14931	13840
	Victims Of All Other Collisions	229286	226791	216124	206418	203914
Total	245086	241901	230840	221349	217754	
Total Casualties	All Buses	1696	1493	1476	1501	1295
	Straight Trucks >= 4 536 kg	1673	1602	1588	1640	1488
	Tractor-Trailers	1445	1440	1322	1498	1433
	Commercial Vehicle					
	Occupant Total	4814	4535	4386	4639	4216
	Occupants Of Other Vehicles					
	Inv. With Commercial Vehicles	10928	10530	10196	10279	9549
	Pedestrians	697	650	690	677	632
	Total Victims Of Collisions					
	Involving Commercial Vehicles	16439	15715	15272	15595	14397
	Victims Of All Other Collisions	231910	229537	218659	208817	206291
Total	248349	245252	233931	224412	220688	

Although not displayed in the table, it is worth pointing out that during the 1994 to 1998 period, an average of 372 road users were fatally injured in collisions involving tractor-trailers and 193 in crashes involving straight trucks. These fatalities compare to the previous review period, 1993 to 1997 when averages of 381 and 205 road user fatalities occurred, respectively in collisions involving these vehicles.

In terms of exposure, the number of fatalities involving tractor-trailers averaged 22.7 per 10,000 registered vehicles over the period 1994 to 1998, while there were 6.7 fatalities per 10,000 straight trucks (trucks greater than 4 536 kg excluding tractor-trailers) registered over the 5-year period. The combined involvement ratio for fatalities in collisions involving heavy trucks averaged

12.4 per 10,000 heavy trucks registered. This exposure data is based on information contained in the Trucking Industry Profile for the years 1994 to 1998 and is presented in Chart 22.



Section 3 - International Comparisons:

In addition to monitoring short and long term shifts in traffic safety indicators, Canada's road safety community must also compare its performance against the international community in order to monitor its progress towards achieving its stated Road Safety Vision 2001 goal of having the 'safest roads in the world'.

The comparative data displayed in the charts in the following section were derived from the International Road Traffic and Accident Database (IRTAD), a data base which contains time series crash and exposure data from 26 member countries of the Organisation for Economic Co-operation and Development (OECD). Summary data relating to the number of road user fatalities in 1997 has been updated.

Among OECD member countries, where data were available for 1998 and countries are comparable, Canada ranked ninth in the number of road user fatalities per 10,000 registered vehicles. Canada's 1998 rate at 1.63 improved from 1997 at 1.74 fatalities per 10,000 motor vehicles registered. The decrease in the fatality rate per 10,000 motor vehicles registered for Canada resulted from a decrease in fatalities of 4.2 percent from 1997 to 1998, as well as a modest increase of 2.7 percent in the number of motor vehicles registered. Chart 23 shows only the 10 most comparable OECD countries in terms of fatalities per 10,000 motor vehicles registered. Canada's vehicle ownership of 59.5 per 100 inhabitants in 1998 ranked sixth after the United States which ranked first with 76.8 vehicles per 100 inhabitants.

Chart 23

**Road User Fatalities Per 10,000 Motor Vehicles Registered
Selected OECD Member Countries - 1998**

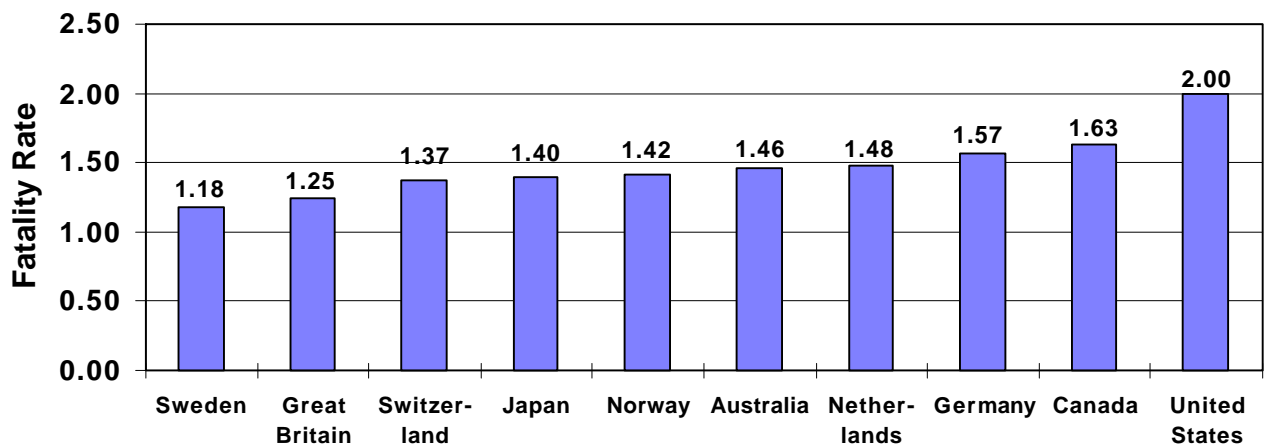
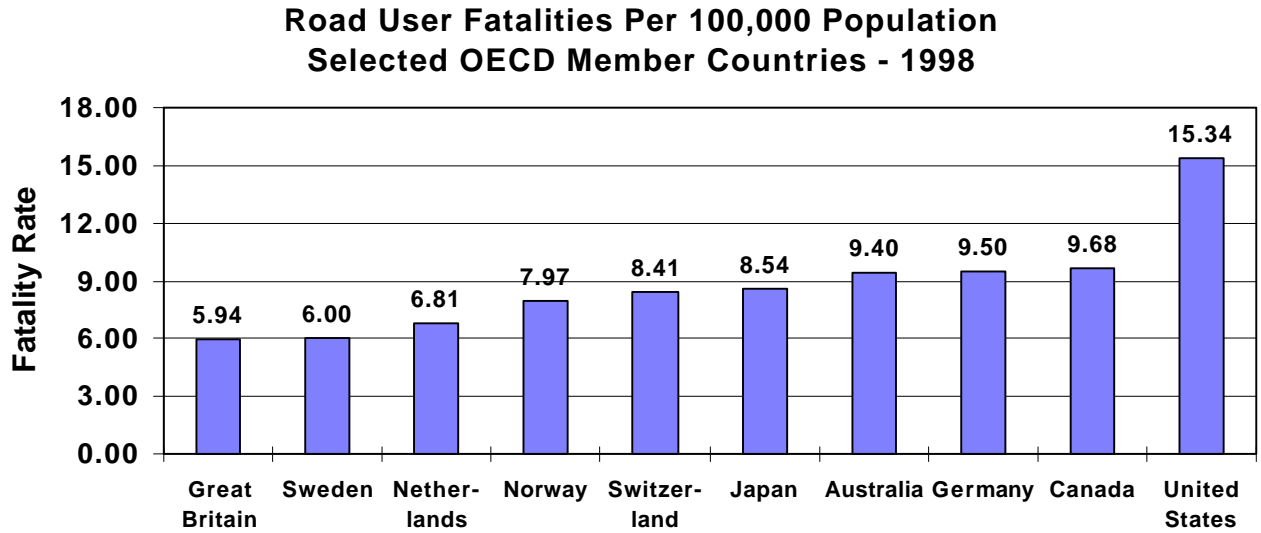


Chart 24 demonstrates that Canada moved to ninth position compared to eighth in 1997 among other comparable OECD countries, even though the 'fatality rate per 100,000 population' decreased from 10.12 in 1997 to 9.68 in 1998. Demographic factors, which must be considered when noting Canada's ranking in this chart, are the size of Canada - it is approximately the same size as the USA, but most travel is within 200 miles of the US border, and as such is the largest OECD member country after the USA; and the extremely low population density - 3.3 inhabitants per square kilometre compared with an OECD member country average of 31 (1998); and vehicle ownership per 100 inhabitants as previously mentioned. Collectively, these demographic and economic factors contribute to a very mobile population which no doubt affects the road user

fatality rate on a per population basis. Also to be considered are differences in recording and reporting collision data.

Chart 24



th as shown in Chart 24.

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