MOTOR VEHICLE DATA IN CANADA: PAST, PRESENT AND FUTURE

Linda Yuen
Road Safety
Transport Canada
Paper Number 98-S6-W-40

ABSTRACT

Canada has set a goal to achieve the safest roads in the world by the year 2000. The success of this achievement can only be measured through relevant and accurate data. What data are available to support this initiative? Canada first started collecting motor vehicle related data in 1903. What has been done since?

This paper will trace the development of motor vehicle related data collection in Canada, from the first vehicle registration in 1903, to the formation of the Road Safety Directorate at Transport Canada, and its mandate to collect TRAID, to the current NCDB, and beyond.

The paper will also examine the development of other motor vehicle related databases in Canada, and the strategic plans to allow maximum utilization of these databases.

INTRODUCTION

The National Road Safety Symposium, held in February, 1994, Toronto, Canada, set a goal for Canada to possess the safest roads in the world by the year 2000. The road safety communities in Canada have been working vigorously and cooperatively towards the achievement of this goal. It is realized that the measure of our success is dependent upon accurate, accessible and comprehensive databases.

Since the early 1900's, Canadian motor vehicle related statistics have been produced and published in various ways. Despite this accomplishment, the National Road Safety Symposium in 1994 identified that the "lack of relevant, accurate, accessible, timely, standardized and integrated data hampers the development, delivery and evaluation of road safety countermeasures." (Safety Coordination Advisory Committee, 1994) The need to resolve this data problem was deemed a national priority.

Before we explore the extent of the "lacking", it is important that we first take stock and determine what relevant data are already available.

The Past

Vehicle Registrations - For the purpose of discussion, this paper will examine vehicle registrations of three main vehicle types: the passenger vehicles, the commercial vehicles and the motorcycles.

The earliest motor vehicle related data in Canada were passenger vehicle registrations collected in 1903 by the province of Ontario. (Urquhart and Buckley, 1983) That year, Ontario established the motor vehicle registration with 178 passenger vehicles registered. In 1905, New Brunswick joined the registry with 12 passenger vehicles recorded, and Ontario tripled its number of passenger vehicles to 553 that same year. Shortly after, the provinces of Quebec, Saskatchewan and Alberta (1906) followed suit, with British Columbia in 1907, Manitoba in 1908, Nova Scotia in 1909 and Prince Edward Island in 1913. By 1914, all 9 provinces and the two territories in the Dominion of Canada had established passenger vehicle registration systems, and the registry recorded over 74 thousand passenger vehicles in total. When the province of Newfoundland became the tenth province of Canada in 1949, it had already established full vehicle registries of passenger vehicles, commercial vehicles and motorcycles. By 1949, the total number of motor vehicles registered in Canada had reached over the 2 millions mark. Table 1 summarizes the first year that each province and the two Territories started its motor vehicle registrations, by vehicle type.

Total passenger vehicle registrations showed a continuous and rapid growth to 1931 when a slight decline was recorded. Growth in registrations resumed in 1934, continuing until 1941. A decline in registration from 1942 to 1945 coincided with the war years. Beginning in 1946, when passenger cars were again produced, registration have continued to increase each year. Figure 1 illustrates the registration trends of the passenger vehicles, commercial vehicles, motorcycles and the total from 1903 to 1996. (Urquhart and Buckley, 1983).

The collection of commercial vehicle registration data is less concordant than the passenger vehicle registration. The lack of uniformity in the definition of commercial vehicles is a primary problem. Generally, commercial vehicles include buses and trucks, both large and small. Many provinces' use of the term "commercial vehicles" to cover many of the small trucks, such as pickup trucks often used for personal transportation, is misleading. Prior to 1960, some station wagons were included with commercial vehicles in British Columbia. Often the distinction between passenger and commercial vehicles was based more on the vehicle type rather than the use of the vehicle. For

Table 1.

Year In Which Each Province/Territory Started Collection of Motor Vehicle Registration Data

	NF	NB	NS	PE	QU	ON	MB	SK	AB	BC	Terr.
Total	1949	1905	1909	1913	1906	1903	1908	1906	1906	1907	1914
Passenger Vehicles	1949	1918	1920	1918	1914	1903	1908	1923	1921	1923	1914
Commercial. Vehicles	1949	1918	1920	1918	1914	1916	1922	1923	1921	1923	1915
Motorcycles	1949	1922	1922	1918	1914	1912	1910	1922	1922	1922	1914

example, taxi cabs were included with passenger vehicles while small trucks used primarily for personal transportation were included under commercial vehicles. Furthermore, although attempts were made to eliminate duplicate registration, however, commercial vehicles are often registered in multiple provinces, and such duplications were not easily detected. The lack of uniformity in the definition of "commercial vehicles" and the duplicate registrations have caused the commercial vehicle registration data of earlier years to lose its integrity.

The earliest commercial vehicle registration appeared in 1914 when Quebec showed 384 commercial vehicles registered. The two Territories were next to collect commercial vehicle data when their registry collected 5 commercial vehicles in 1915. Ontario followed in 1916, with New Brunswick and Prince Edward Island in 1918, By 1923, all the 9 provinces and the two territories in the Dominion of Canada had established commercial vehicle registration systems, and the registry recorded over 54 thousand commercial vehicles in total

Motorcycle registrations were first collected by the province of Manitoba in 1910, with 55 motorcycles registered. Two years later, Ontario established its motorcycle registry with 1,754 motorcycles registered in that year. It should be noted that, in the early years, most provinces did not require off-road motorcycles to be registered. However, in the early 1960's, the advent of large importation of motorcycles from Japan brought motorcycle registration into necessity.

Collision Statistics - Data for motor vehicle collisions in Canada are based on collisions occurring on public roads and streets, including boulevards and paths adjacent to the travelled portions. The data are obtained from police reports following a police investigation of the collision. Police departments across Canada are required to attend collision scenes, and file reports on all fatal, and injury involved collisions, as well as property damage only collisions exceeding the damage level set by the provincial/territorial legislation.

The earliest motor vehicle collision statistics were recorded in 1921 when only fatal victims were recorded. In that year, there were 197 motor vehicle related fatal victims. The collection of fatal victims only remained until 1933 when some of the provinces expanded the categories, and began to collect injured victims in addition to the fatally injured victims. Furthermore, these data were broken down by road user class - drivers, passengers, pedestrians, bicyclists and motorcyclists. Figure 1 illustrates the trend of fatally injured victims in motor vehicle collisions from 1921 to 1996.

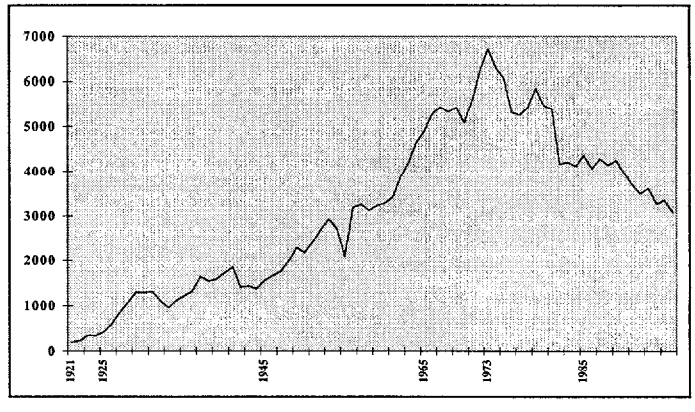

Figure 1. Fatality Trend of Motor Vehicle Collision Victims, 1921 - 1996.

Despite the improvement, the motor vehicle collision data still had many limitations. In 1940, the four western provinces - British Columbia, Alberta, Saskatchewan and Manitoba set up an inter-provincial committee to consider uniformity in inter-provincial matters related to motor vehicles. That committee was the start of the modern day Canadian Council of Motor Transport Administrators (CCMTA). In the early fifties, Ontario and Yukon joined the small committee, and by 1956, all ten provinces and the two territories were members of the committee. In 1977, Transport Canada participated as a full member.

At the Dominion-Provincial Conference in December, 1954, it was decided that detailed motor vehicle collision data should be published on an annual basis by the Dominion Bureau of Statistics (later became Statistics Canada). It was believed that these publications would provide significant collision data and overall trends in total collisions, fatalities and injuries resulted from motor vehicle collisions.

Many problems plagued the collection of motor vehicle collision data. The responsibility of collision reporting rested primarily with the provinces and the territories. Each province/territory had its own collision reporting forms, and these forms varied in terms of reporting standards and data elements. For example, the collision reporting threshold for property damage only collisions varied from one jurisdiction to another. In 1971, the reporting threshold varied from $50 - $200.

As the number of motor vehicles increased in Canada, road safety for its citizens became a primary concern for the federal government. The federal government's role and leadership in the field of road and motor vehicle traffic safety was assigned to the Ministry of Transport (later became Transport Canada) in 1967. On January 1, 1969, the Road and Motor Vehicle Traffic Safety Branch was created with the appointment of a Director. The Branch immediately began its work in drafting an appropriate legislation to enable the Ministry to fulfill its mandate. The Road and Motor Vehicle Traffic Safety Act received Royal Assent in March, 1970, and became effective on January 1, 1971. (Road Safety, 1973)

With the formation of the Road and Motor Vehicle Traffic Safety Branch at the federal Ministry of Transport, the responsibility for the collection of detailed collision statistics was transferred from the Dominion Bureau of Statistics to the Road and Motor Vehicle Traffic Safety Branch in 1974. Under a CCMTA agreement, each province/territory was to send its annual collision data file to the Road and Motor Vehicle Traffic Safety Branch who then undertook the responsibility to combine all the files into the national Traffic Accident Information Data system (TRAID).

The Present

Vehicle Registrations - Since 1989, motor vehicle registration data became much more precise, with registration of each type of vehicle based on the Gross Vehicle Weight (GVW) obtained from the Vehicle Identification Number (VIN).

Today, the 1996 Canadian Vehicles in Operation Census (CompuSearch and DesRosiers) shows over 15.8 million light vehicles (GVW Classes 1 & 2), and the 1996 Trucking Industry Profile (Polk) shows almost one million heavy vehicles registered in Canada. The term, "commercial vehicles" has been replaced with "heavy vehicles" which describes all vehicles over 4538 kilograms in weight (GVW Classes 3 to 8).

Figure 1 illustrates the growth of passenger vehicles, commercial vehicles, motorcycles, and the total vehicles in Canada from 1903 to the present. ((Urquhart and Buckley, 1983), (Road Safety, 1980-1997)

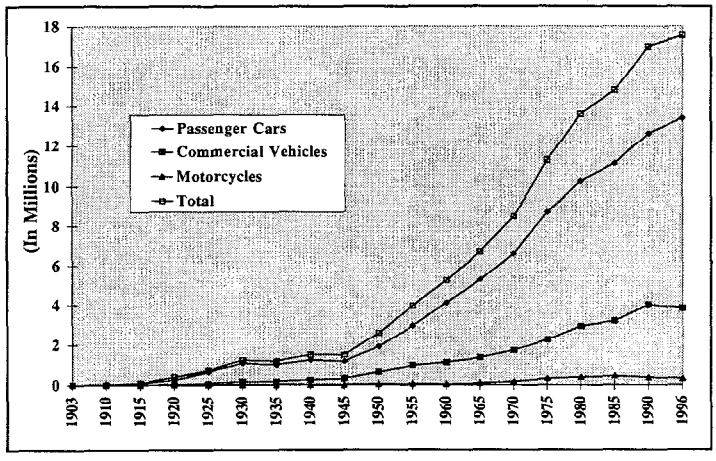

Figure 2. Motor Vehicle Registration Trend, 1903-1996.

Collision Statistics - Since 1974, the Road and Motor Vehicle Traffic Safety Branch at Transport Canada has been compiling annual incident based collision files from each of the province/territory. The files received from the jurisdictions came in various formats - electronic or hard copies. The Road and Motor Vehicle Traffic Safety Branch processed the files into one national format. The national

file became known as Traffic Accident Information Data system (TRAID).
The incident based TRAID file was a major improvement over the summary collision statistics collected by the Dominion Bureau of Statistics. TRAID became the major source of information for the federal government to prepare its annual statistics related to motor vehicle collisions. The Canadian Motor Vehicle Traffic Accident Statistics, collected in cooperation with CCMTA, has been providing annual national collision statistics since 1979. TRAID also serves as a major database for research at Transport Canada for its work on the formulation of motor vehicle safety standards and regulations. In addition, the database also serves as a primary database for regulatory impact analyses.

Although the creation of TRAID provided the road safety community with wide variety and much improved use of collision data, it nevertheless had many shortcomings. Timeliness of the data was one major problem. The provincial files would arrive at Transport Canada in a variety of formats. While the bigger provinces sent their data in electronic format, the smaller provinces would send hard copies of the collision reports, and Transport Canada assumed the responsibility of key editing the data into electronic format. After all the data were converted to electronic format, Transport Canada then had to translate the provincial/territorial data values into the national TRAID values. Often, by the time the TRAID file became available, it would be 18 to 24 months after the collision year. In addition to the timeliness issue, the lack of standardization amongst the jurisdictions on the reporting threshold continued to be a problem for jurisdictional comparisons. This lack of standardization was identified in the early years, but the problem remained unresolved. While most of the provinces have now set $1,000 in property damage as its reporting threshold, the two biggest provinces in Canada - Ontario and Quebec, continued to be different.

At the 1990 CCMTA conference, the federal government, together with the 10 provinces and the two territories agreed to setup a new system to replace TRAID. The provinces/territories would submit to Transport Canada, its annual collision data file in the standardized National Collision Database (NCDB) format. Such a system would permit Transport Canada to provide the annual national collision file in a more timely fashion. Currently, the provinces/territories and Transport Canada are working vigorously together in developing the NCDB, and the expected launching date is in the near future.

In addition to the improvement on timeliness, NCDB will also provide much more up-to-date information on road safety research and policy development. It will provide information on the more current road safety issues such as daytime running light, airbag deployment, blood alcohol concentrations, and more detailed descriptions on the role of the road infrastructure. Furthermore, NCDB will provide the Vehicle Identification Number (VIN) which will allow researchers to learn about the exact features of the vehicles involved in the collisions.

The Future

In response to the goal set by the 1994 National Road Safety Symposium for Canada to achieve the safest roads in the world, CCMTA formed a 2001 Challenge Monitoring Committee and a Road Safety 2001 Work Plan (2001 Challenge Monitoring Committee, 1996). The Work Plan made the following recommendations in response to the Symposium's finding that the "lack of relevant, accurate, accessible, timely, standardized and integrated data hampers the development, delivery and evaluation of road safety countermeasures":

- establish data needs based on safety targets and program objectives for all road user groups.
- develop a universal integrated data management model with stakeholders input to satisfy municipal, provincial and national needs. The data management model should include management of data input, custodian of data, and applications.
- develop standards for data input from a variety of sources such as police, health care, coroner, insurance, vehicle registry, traffic survey, driver training etc.
- explore technological applications such as IVHS, GPS, GIS, automated data collectors (vehicle and infrastructure based), and electronic data input.
- assess needs of relevant training of personnel involved in collecting and reporting collision -relevant data.

With those recommendations, CCMTA, in 1996, established a Project Group on Road Safety Data and Research. The Project Group held a workshop and regular meetings with the provinces, territories, road safety researchers and stakeholders. Several recommendations resulted from the Project Group's report to the CCMTA. A Research Committee was established to determine the data needs of the road safety researchers, and a Data Management Steering Committee was formed to develop a universal integrated data management model. It is hoped that this model will provide standards for data input from a variety of sources, thus allowing accessible data linkage. An

Inventory of Road Safety Databases and Research Information in Canada (Road Safety, 1997) was published, and the publication contains a comprehensive listing of road safety related databases in Canada. This Inventory is presently being developed for accessibility via Internet. This easy accessibility will allow road safety researchers and stakeholders to view the availability of motor vehicle related data. In today's parsimonious financial environment, it is hoped that the Database Inventory would also eliminate duplicate efforts in data collection.

CONCLUSION

The ability to conduct road safety research, programming and policy decision-making is dependent upon accurate and comprehensive databases. Certainly Canada has made significant improvement with the collection of motor vehicle related data. With the cooperation and collaboration of all road safety stakeholders, we are confident that Canada will achieve the safest roads in the world by the year 2000.

REFERENCE

COMPUSEARCH Micromarketing Data and Systems, Toronto , and DesRosiers Automotive Consultants, Toronto, Canada

POLK Multi-Dimensional Intelligence, Truck Group, Detroit, USA

Road Safety, "Road Safety Annual Report, 1972", Transport Canada, Catalogue Number T45-1/1972, Ottawa, Canada, 1973.

Road Safety, "Canadian Motor Vehicle Traffic Accident Statistics 1979 - 1996", Transport Canada, TP3322, Ottawa, Canada, 1980 - 1997

Road Safety, "An Inventory of Road Safety Databases and Research Information in Canada", Transport Canada, TP13091 (E), Ottawa, Canada, 1997.

Safety Coordinating Advisory Council of the Transportation Association of Canada and the Canadian Council of Motor Transport Administrators, "Road Safety in Canada: Facing the Challenge. Proceedings of the National Road Safety Symposium, February 13-16, 1994, Toronto, Ontario". Toronto, Canada, 1995. P. 120

Urquhart, M. C., Buckley, K. A. H. "Historical Statistics of Canada", Second Edition, Statistics Canada, 1983, Catalogue No. CS11-516E, Ottawa, Canada, pp. T117