Canadian Trends In Drinking Driver Fatalities

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1.0 INTRODUCTION

The 1980s was a watershed for concern, commitment, and action to prevent driving after drinking. Early in the decade, citizens' groups, formed by victims of drunken drivers, sparked a lengthy period of concern that has continued into the 1990s. Governments responded with new, tougher laws, stricter enforcement programs, and stiffer penalties for offenders. Education and awareness programs re-emerged as an integral component of a comprehensive approach to the problem.

In many ways, the response to drinking-driving problems in Canada seemed strongest from 1983 through 1987. This unprecedented level of concern about driving-driving naturally raises questions as to whether or not such activity has been associated with changes in the magnitude and/or characteristics of the problem. To sustain the momentum of the effort, it is essential to know whether or not there has been any evidence of improvement in the situation. As a means to address this question, the present paper describes trends in drinking-driver fatalities in Canada from 1973 to 1990.

Alcohol use among crash-involved drivers is routinely and reliably determined for only one subgroup of drivers -- i.e., those fatally injured. Since 1973, the Traffic Injury Research Foundation of Canada (TIRF) has collected and maintained a database containing the results of tests for the presence and amount of alcohol performed on fatally injured drivers in seven provinces1 (Mayhew, Simpson and Brown, 1992). On average, about 80% of drivers of highway vehicles who died within six hours of crash involvement are tested for the presence of alcohol each year.

The historical records for seven provinces are used in this paper as an index of the alcohol fatal crash problem in Canada. Trends in the problem are examined using a variety of indicators derived from the Fatality Database -- e.g., the number and percentage of drinking-driver and impaired driver fatalities, and the ratio of drinking to nondrinking driver fatalities (i.e., the Problem Index).

1. The seven provinces are: British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, and Prince Edward Island.
2.0 Motor Vehicle Use, Traffic Crashes, and Alcohol Consumption

Drinking-driving is the product of two often independent but frequently interrelated behaviours -- driving and drinking. Thus, factors that influence either of these can also impact their joint occurrence. Therefore, prior to examining trends in drinking driver fatalities, it is important to set the stage by reviewing background information on changes in motor vehicle use, traffic crashes, and alcohol consumption in Canada.

2.1 Trends in Motor Vehicle Use

Since 1970, the number of registered motor vehicles in Canada has almost doubled -- from 8.5 million to 17 million in 1990. By comparison, over this same period of time, the population of Canada increased by only 24%.

An increase of comparable magnitude is evident in the number of licensed drivers in Canada. Since 1970, the number of persons in Canada licensed to drive has increased from about 9.3 million to 17.7 million -- a 90% increase. This reflects not just an increase in the population base but an increased propensity for individuals to become licensed. Thus, while in 1970, 63% of persons age 15 and over were licensed to drive, in 1990, this percentage had grown to 84%.

2.2 Trends in Traffic Crashes

Alcohol related crashes are only a portion of the total number of traffic collisions that occur each year. Factors that influence the number of crashes in any year undoubtedly affect both alcohol- and nonalcohol-related crashes. Overall, since 1970, there has been a 47% increase in the total number of casualty crashes in Canada.

When the annual number of casualty crashes is standardized by the number of licensed drivers in Canada, the resultant casualty rate shows an overall 18% decline since 1970. In recent years, however, the casualty crash rate has remained relatively steady at between 11 and 12 crashes per 1,000 licensed drivers.

Fatal crashes have long been used as an indicator of the severity of the traffic crash problem. The number of motor vehicle fatalities in Canada reached a peak in 1973 when 6,706 persons lost their lives in road crashes. Since 1982, however, the number of traffic fatalities in Canada has declined. Since then, the number of persons who have died in road crashes has remained relatively stable at about 4,000 per year.

When the number of fatalities is standardized by the population of Canada, the traffic fatality rate shows an overall 51% reduction -- in 1973 there were 30.4 fatalities for every 100,000 persons in Canada; in 1990, 14.9 persons died in traffic crashes per 100,000 population.
2.3 Trends in Alcohol Consumption

From 1970 to 1983, average annual consumption of alcohol (in litres of absolute alcohol) per person age 15 years and over in Canada increased steadily to a peak of 10.6 litres of absolute alcohol. Thereafter, average annual consumption of alcohol has declined to 9.7 litres. To put these figures in context, in 1989-90, the average Canadian adult consumed the equivalent of 10 bottles of liquor (750 ml), plus 12 bottles of wine, plus 288 bottles of beer.

In summary, the number of vehicles and the number of people to drive these vehicles has risen dramatically in Canada. As might be expected, the number of casualty crashes has also increased. The number of traffic fatalities, however, has declined as has alcohol consumption. It is against this backdrop that the remainder of this paper examines trends in drinking-driver fatalities.

3.0 TRENDS IN DRINKING-DRIVING

Figure 1 presents the number and percent of fatally injured drivers who tested positive for alcohol in seven provinces from 1973 through 1990. The number of fatally injured drinking drivers appears to have fluctuated considerably over the years -- reaching a peak of 833 in 1975. However, with the exception of 1981, the annual number of drinking drivers who have died in traffic crashes has generally declined over the 16-year period to 495 in 1990. Overall, since 1975, there has been a 40% reduction in drinking driver fatalities.

The annual percentage of all driver fatalities accounted for by those with a positive BAC is also plotted in Figure 1. From 1973 to 1981, little change is evident -- drinking drivers accounted for between 57% and 62% of all fatally injured drivers tested for alcohol. Since 1981, however, this percentage dropped steadily, reaching its lowest point, at 43%, in 1990.

It is of interest to note that although the percent of drinking driver fatalities has declined steadily during the past eight years, the actual number of drinking driver fatalities has remained relatively stable, at least since 1984. One reason for this apparent discrepancy in trends is that the number of non-drinking driver fatalities has increased rather dramatically. From 1973 through 1984, the number of drinking driver fatalities covaried with that of non-drinking drivers -- that is, the number of drinking driver fatalities rose and fell in a manner similar to that of non-drinking driver fatalities. After 1984, however, there was a departure from this pattern. Whereas the number of drinking driver fatalities declined somewhat, the number of non-drinking driver fatalities increased rather dramatically. If, as in the past, the number of drinking driver fatalities had followed the trend in non-drinking driver fatalities, there would have been a
substantial increase in drinking driver fatalities. But, this pattern was broken -- drinking driver fatalities declined while non-drinking driver fatalities increased.

This recent departure from an historical pattern helps to explain the apparent discrepancy noted in Figure 1, which showed little change in the number of drinking drivers killed but a consistent decrease in the percent of fatally injured drivers who were drinking. The decrease in the percent of fatally injured drivers who were drinking is a consequence of an increase in the number of fatally injured drivers who were not drinking. The actual number of drinking driver fatalities has changed little in recent years.

A commonly used indicator of the drinking driving problem is the percentage of all fatally injured drivers who had a BAC in excess of 80 mg%, given that this level legally defines impaired driving. Historically, regardless of the total number of driver fatalities that occurred in a year, approximately 50% had a BAC over 80 mg%. From 1973 to 1981, the percent varied from 46% to 52%. However, since 1981, this consistency has disappeared -- the percent of fatally injured drivers with BACs over 80 mg% has declined progressively, reaching 35% in 1990.
A further measure of the alcohol-crash problem is the ratio of fatally-injured drinking drivers to fatally-injured non-drinking drivers (the so-called Problem Index). Because many factors -- such as weather conditions, seasonal patterns of driving, and the state of the economy -- can influence the total number of driver fatalities, simply counting the number of drinking driver fatalities does not reveal whether changes are a consequence of countermeasures specifically targeted at drinking drivers or a result of the many other conditions and forces that may have caused the number of all fatalities to change. The ratio of drinking to non-drinking driver fatalities, however, essentially controls for factors that exert a general influence on motor vehicle fatality rates and permits a more direct assessment of the extent to which the number of drinking driver fatalities has changed, relative to the number of non-drinking driver fatalities.

Figure 2 plots the Problem Index from 1973 to 1990. The 100 value represents the point at which the number of drinking and non-drinking driver fatalities would be equal. Values above the line indicate that the number of fatally injured drinking drivers exceeds the number who were not drinking. Historically, the number of drinking driver fatalities has always exceeded that of non-drinking drivers. But the Problem Index began to decline after 1981. And, for the first time in 15 years, in 1988, the Problem
Index fell below 100 -- the number of drinking driver fatalities was lower than the number of non-drinking driver fatalities.

4.0 DISCUSSION

Overall, most indicators suggest that the magnitude of the drinking-driving problem has decreased. The changes in drinking-driving are both dramatic and significant. Attempts to understand why these changes occurred should recognize, however, that attribution of change to a single factor is most unlikely, for several reasons. First, significant changes such as new legislation, increased enforcement of impaired driving laws, or heightened activity at the community level never occur in isolation. Indeed, numerous initiatives targeted at drinking-driving in the 1980s occurred simultaneously. Second, the context in which initiatives occur is a dynamic one. Although motor vehicle use was increasing, the number of traffic fatalities was declining. Moreover, alcohol consumption began to decrease over this period. Third, the nature of most countermeasures -- slowly increasing in intensity or scope -- actually defies the expectation of an abrupt impact.

Much was done in Canada in the 1980s and this activity appears to have been associated with positive gains. A number of factors (e.g., victim groups, legislative changes, community-based initiatives, enforcement, economic factors, and shifting demographics) undoubtedly contributed to the changes witnessed in the 1980s. It is difficult, however, to assert which of them actually had an impact and which of them did not. The impact of specific initiatives cannot be discerned in the data.

In conclusion, the decade of the 80s witnessed a tremendous resurgence of efforts to reduce the magnitude of the drinking-driving problem in Canada. Through the collective efforts of community groups, governments, and industry, a difference was effected and the magnitude of the problem was reduced. But it is critical that this success not breed complacency. While the statistics give cause for satisfaction, at the same time they underscore the substantial distance yet to go in the battle against drinking and driving. The number of people killed and injured on Canada's roadways is unacceptable. Every year, thousands of lives are irreparably altered by the tragedy of a drinking driver. Some scholars in the field have suggested that the easy battles have been won -- enforcement and persuasive techniques have converted those most accepting of the message, those easiest to change. But new, bolder initiatives are necessary to reach those most resistant to change -- the "hard core", heavy drinker.

REFERENCES