Are The Declines In Drinking Driving Fatalities In Canada Being Overestimated?

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Abstract
Previous research has shown that the magnitude of the alcohol-fatal crash problem in Canada declined between 1992 and 1997, when it reached the lowest point in the past three decades. This paper examines trends in the alcohol-fatal crash problem to determine if reductions in the magnitude of the problem have continued. The analyses revealed continued progress from 1997 to 1999 as the percentage of fatally injured drivers who were positive for alcohol, as well as the number of drinking driver fatalities dropped even further. By contrast, the number of non-drinking driver fatalities actually increased over this period. The implications of these findings for estimating changes in the magnitude of the alcohol-fatal crash problem are discussed.

Introduction
In Canada during the 1980s, consistent and significant declines were reported in the alcohol-fatal crash problem (1, 2, 3). However, these declines halted rather abruptly and significantly for two years in 1991 and 1992, when increases were recorded (4). The following year, the downward trend re-emerged with decreases occurring each year. As a result, by 1997, the magnitude of the alcohol-fatal crash problem reached the lowest point recorded in the previous three decades (5).

This paper examines more recent trends to determine if reductions in the magnitude of the problem have continued. In so doing, it seeks to identify reasons for both the historical and recent trends, some of which are related to how the problem itself is measured. In this context, a measure that is a widely accepted in many countries as a valid and reliable measure of changes in the magnitude of the alcohol-crash problem (6, 7, 8, 9) is the annual percentage of fatally injured drivers who test positive for alcohol.

Measuring the magnitude of the problem in this way can, however, create interpretive difficulties because the index is sensitive to annual changes in both the numbers of drinking and non-drinking driver fatalities. For example, if both the number of non-drinking driver fatalities and the number of drinking driver fatalities decreased at the same rate each year, the percent of
fatally injured drivers who were positive for alcohol would not change. On the one hand, this could be interpreted as no improvement in the drinking-driving problem, since the percent of fatalities that were alcohol-related did not decline; on the other hand, such results could be interpreted in a positive light, since the absolute number of alcohol-related fatalities did decline each year. Accordingly, this paper also considers the extent to which changes in the percent of fatally injured drivers testing positive for alcohol, faithfully reflect changes in the magnitude of the problem.

Data Sources
Since 1973, the Traffic Injury Research Foundation (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 provinces -- British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, and Prince Edward Island. In 1987, the Fatality Database was expanded to include all ten provinces and two territories. Rates of testing for alcohol vary somewhat among jurisdictions but, on average each year, about 80% of drivers of highway vehicles who died within six hours of the crash are tested for the presence of alcohol.

Information on the presence of alcohol in fatally injured drivers is used in this paper as an index of the alcohol fatal-crash problem in Canada. Consistent with previous papers on this issue, trends in the problem are examined using an indicator derived from the fatality database – i.e., the percentage of fatally injured drivers who tested positive for alcohol. To understand the basis for the changes in this indicator, annual changes in the number of non-drinking driver fatalities and the number of drinking driver fatalities are also examined.

Results
The numbers of fatally injured drivers who tested negative (non-drinking) for alcohol and the number who tested positive (drinking), as well as the percent of tested driver fatalities with positive BACs are shown in Figures 1, 2, and 3 for the 1970s, 1980s, and 1990s, respectively.

During the 1970s, the percentage of fatally injured drinking drivers remained relatively stable ranging from 58% to 60% (see Figure 1). This trend occurred because the number of fatally injured non-drinking drivers mirrored annual changes in the number of fatally injured drinking drivers – i.e., their numbers rose and fell together. Importantly, however, from 1973 to 1979, even though the percentage of drinking driver fatalities remained basically unchanged, the absolute number of drinking driver fatalities actually decreased by 11%.
During the 1980s, the trend was decidedly different (see Figure 2). The percentage of fatally injured drivers who were drinking increased slightly in 1980 and again in 1981 and then declined to the end of the decade. In 1981, 62% of the drivers killed in Canada had been drinking. By 1989, this figure had reached a low of 44%. This represents a 29% reduction in the magnitude of the alcohol-fatal crash problem.

The downward trend in the 1980s occurred not only because the actual number of fatally injured drinking drivers declined but also because the number of non-drinking drivers increased. The divergence in these trends was underscored in 1987, the last year in which the majority of fatally injured drivers had been drinking. Importantly, from 1981 to 1989, the relative change in the number of fatally injured drinking drivers and the change in the percent of fatally injured drivers who had been drinking were similar – 31% and 29% decreases, respectively.

As shown in Figure 3, the downward trend was clearly interrupted in 1991 and 1992 when the percentage of fatally injured drinking drivers increased to 46% and 48%, respectively. But this increase occurred because the number of fatally injured non-drinking drivers declined but the number of fatally injured drinking drivers remained relatively stable.

Since 1992, there has been an annual decline in the percentage of fatally injured drivers who tested positive for alcohol – i.e., a decrease from 48% in 1992 to 34% in 1999. The level achieved in 1999 was the lowest point reached in the past three decades and this downward trend strongly suggests a resurgence of the declines in the magnitude of the alcohol-fatal crash problem characteristic of the 1980s. In fact, both the decades of the 1980s and 1990s witnessed an initial increase in the magnitude of the problem followed by a consistent and comparable drop – reductions of about 30% in both of these decades.

It is, however, important to note that the decline in the percent of fatally injured drinking drivers that began in 1993 was again a function of two things – a decline in the actual number of drinking-driver fatalities, combined with an increase in the number of non-drinking driver fatalities. This divergence was particularly marked after 1996 and had a salutary effect on the percentage. Nonetheless, from 1992 to 1999, the absolute number of drinking drivers did
decrease by 29%, an amount identical the decrease in the percentage of fatally injured drivers who tested positive for alcohol – i.e., a 29% reduction.

**Discussion**
The above findings demonstrate that the magnitude of the alcohol-fatal crash problem in Canada declined in the 1980s and again in the 1990s. In fact, both the percentage and number of drinking driver fatalities decreased at a comparable rate in the 1980s as well as the 1990s – about a 30% reduction for both measures in each of these decades. However, it is important to recognize that when progress is measured in terms of changes in the percent of fatally injured drivers who had been drinking, this index can produce spurious effects, if the number of non-drinking driver fatalities increased at the same time. If the number of non-drinking driver fatalities had remained unchanged during the latter part of the 1990s, or had decreased, the decline in the percentage of drinking driver fatalities would have been less.

Apart from the caution this demands in reporting and interpreting such data, they reveal as well another important finding that has yet to be explored adequately. At issue is the divergence in trends between the number of fatally injured non-drinking drivers and drinking drivers. Why is the number of alcohol-related driver deaths declining while the number of non-alcohol related driver deaths is increasing? Several alternative explanations are possible.

One hypothesis is that the prevailing trend in the 90s was actually for an increase in driver deaths. However, drinking-driving initiatives may have exerted a powerful countervailing influence on factors that were leading to an increase in the number of fatally injured drivers. The myriad of safety measures targeting drinking drivers in the 1980s and 1990s resisted these prevailing influences and the alcohol-fatal crash problem decreased rather than increased. If so, the declines in drinking driver fatalities, as measured by the percentage of fatally injured drivers who tested positive for alcohol, is actually not at all spurious or an overestimate of the magnitude of the reductions. In fact, it would be an appropriate index of the downward trend because it takes into account the increase that would have occurred in the absence of the effective initiatives – i.e., the number of drinking driver fatalities would have increased at the same rate as did the number of non-drinking driver fatalities.
Alternatively, drinking-driving initiatives may have fostered a climate in which driving after drinking has become socially unacceptable. Drivers who would have previously driven after drinking refrained from doing so, but they crashed anyway. If this were the case, one would have to conclude that in such crashes alcohol was not a primary “causal” factor; rather, other factors, such as driving inexperience, overconfidence, poor skills, aggressive driving, and fatigue played a principal role in the increased number of non-drinking driver fatalities. This speaks to the fact that the “presence” of alcohol in a collision is not synonymous with alcohol being a “cause” in the collision. If this hypothesis were supported, it would suggest that although drinking-driving initiatives may have contributed to reductions in alcohol-related fatal crashes, they have not positively influenced the overall road crash problem.

It is also possible that drinking-driving initiatives have played a negligible role in determining the divergent trends that have emerged in the past two decades. Perhaps powerful secular forces have exerted the major influence on these trends. Demographic changes, economic conditions, shifts in attitudes about health and alcohol, and a myriad of other factors largely define the context in which drinking and driving and road crashes takes place and, consequently, could be the driving force behind the divergent trends in the alcohol-and non-alcohol-fatal crash problems.

Such explanations are speculative and provocative. But they underscore the need to reconsider the meaning of changes in indicators of the magnitude of the alcohol-crash problem, and perhaps more importantly, the need for research to understand why the number of alcohol-related fatal crashes has declined but the number of non-alcohol-related crashes has increased.

**Conclusions**
The meaning and continued value of indicators typically used to examine trends in the magnitude of the alcohol-fatality crash problem need to be examined. Apparent reductions in the problem as measured by declines in the percentage of fatally injured drinking drivers can result simply from increases in the number of non-drinking fatally injured drivers and this has been happening in recent years. Even so, it is important to underscore that during the 1980s and 1990s both the percentage and number of drinking driver fatalities declined at about the same rate in Canada.

The implication of these divergent trends for understanding the impact of drinking-driving countermeasures, however, remains unclear. This is especially the case if powerful secular forces and not safety measures have exerted the major influence on these trends.

Basicly, the explanation for these trends remains open to speculation. The factors responsible for them have not been adequately documented. Further research beyond the descriptive level is needed to understand what precipitated the changes in the magnitude of the problem observed in the 1980s and 1990s.

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References


