Roadside Breathtesting Surveys to Assess the Impact of an Enhanced DWI Enforcement Campaign in British Columbia

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In July 1995, the Insurance Corporation of British Columbia (ICBC) launched a strategic initiative on impaired driving in the lower mainland and Greater Victoria areas of British Columbia. A key feature of this initiative was an intensive police enforcement program. Police roadchecks for drinking drivers were conducted several nights every week by the police departments in all communities involved in the program. These roadchecks were supplemented by a media campaign to help raise the perceived probability of arrest for driving after drinking.

As part of the evaluation of this initiative, ICBC contracted with the Traffic Injury Research Foundation to conduct roadside breathtesting surveys prior to the start of the program in June and again at the end of the program in November. The purpose of these surveys was to determine the extent of change in the prevalence of nighttime driving after drinking among motorists during the intervening five months of the campaign.

METHOD

The original plan was to conduct surveys in the lower mainland (i.e., Vancouver) and the greater Victoria area (i.e., Saanich) before and after the enhanced enforcement campaign. Unfortunately, logistical difficulties prevented the collection of data in Vancouver in November. Hence, this evaluation is based on the results of roadside surveys conducted in Saanich during a one-week period in June and again during a two-week period in November.
The city of Saanich was divided into segments and sixteen segments were randomly selected. Major roadways in each segment were identified and one was selected at random. The selected road segment was searched for a suitable site to conduct the survey. The typical site was a large parking lot adjacent to the roadway with a well-defined entrance and exit. It had to be either just prior to an intersection or sufficiently past an intersection so as to prevent drivers from turning to avoid the site. For safety reasons, sites that were on curves in the roadway or over the crest of a hill were avoided. The parking area had to be sufficiently large to accommodate four vehicles at a time for interviews.

Traffic cones were used to delineate the site and to mark off four “lanes” where interviews were conducted. When an interviewer was ready to begin an interview, the next vehicle in the traffic flow was directed into the survey site by a police officer. This ensured an essentially random sample of vehicles.

Interviews were conducted Wednesday through Saturday night between the hours of 9 pm and 3 am. Two survey teams, consisting of four interviewers, a supervisor, a traffic controller, and a police officer, worked each night to conduct interviews at a total of four sites per night. One team interviewed between 9 and 10:30 pm and again between midnight and 1:30 am. The other team worked from 10:30 to midnight and from 1:30 to 3 am.

Interviewers began by introducing themselves and briefly describing the survey. Drivers were informed that the survey was voluntary and confidential and were then handed a card that provided further information and requested their cooperation. While drivers read the card, interviewers recorded information about the driver (e.g., sex), the vehicle (e.g., type), the number of occupants and seat belt use. After agreeing to participate, drivers were asked a series of short questions about the origin of their trip, their destination, and their use of alcohol. All drivers were then asked to provide a breath sample for analysis of alcohol content using a small hand-held breathtesting device (i.e., Intoxilyzer S-D2). Drivers with a BAC below 50 mg% were thanked for their cooperation and reminded to drive safely when leaving the survey site.

Drivers with a blood alcohol concentration (BAC) in excess of 50 mg% were provided with alternative transportation home either in a taxi or by a volunteer working with the survey.
crew. When available, a passenger with a low or zero BAC was enlisted to drive. In no instance was a driver with a BAC over 50 mg% allowed to drive away from the survey site.

RESULTS

Response rate.
Cooperation among motorists was very high. In total, of the 2,206 drivers asked to participate, 97.6% agreed to the interview. Breath samples were obtained from 97.5% of drivers. The most commonly reported reason for non-participation was “in a hurry” (43%) followed by “civil rights issues” (19%) and simply “not interested” (15%). Language problems accounted for 3% of refusals and “fear of prosecution” accounted for only 2% of refusals. A subsequent comparison of the characteristics of drivers who refused to participate with those who had positive BACs revealed no similarities.

Driver BAC.
For these analyses, the data have been weighted to account for differences in traffic volume at the various sites. The weighting procedure placed greater emphasis on interviews obtained from sites with higher traffic volumes.

Breath test results of 5 mg% and below fell within the margin of error of the instrument and were considered to be zero. Hence, only drivers who recorded a breath test result of 6 mg% or higher were considered to have been drinking.

Overall, the prevalence of driving after drinking was significantly lower following the enhanced enforcement campaign than before. In June, 19.7% (±1.3%) of drivers were found to have been drinking; five months later, only 10.7% (± 0.9%) had been drinking (p<.001). The distribution of BAC among drinking drivers surveyed before and after the enhanced enforcement campaign is illustrated in Figure 1. Reductions were found in all three BAC categories (i.e., 6-49 mg%, 50-80 mg%, and over 80 mg%) but only the reductions in the highest and lowest BAC categories were statistically significant.
Figure 1

Figure 1
BACs Among Drinking Drivers
Before and After Enhanced Enforcement

Figure 2 presents the percent of drinking drivers on each of the four nights of the survey before and after the enhanced enforcement intervention. Compared to before the intervention, there was a smaller proportion of drinking drivers on each night. Only the changes on Thursday and Friday nights, however, were statistically significant.

Figure 2: Percent of drinking drivers according to day of week before and after enhanced enforcement

Figure 3 illustrates the decreases found in the proportions of drinking driving in each of the four time periods (i.e., 9 to 10:30 pm, 10:30 to midnight, midnight to 1:30 am, and 1:30 to 3 am). The only statistically significant decrease, however, was in the earliest time period.
Drinking drivers were also asked to indicate the location where they did most of their drinking that night. Prior to the enforcement campaign, approximately one-quarter of all drinking drivers consumed most of their alcohol at a licensed drinking establishment. Another one-quarter drank at the home of a friend or relative. This did not change following five months of enhanced enforcement. There was a slight (albeit non-significant) increase in the proportion of drinking drivers who reported drinking at home following the intervention.

DISCUSSION

The primary objective of these surveys was to determine whether there was a change in the prevalence of driving after drinking associated with the enhanced enforcement program. A comparison of the results of two roadside breathtesting surveys -- one conducted before the enhanced enforcement program began (in June) and the other at the end of the program (in November) -- provides evidence of a substantial reduction in drinking-driving behaviour. In November, the proportion of drivers on the road who had been drinking was 45% lower than in June. There was a 65% reduction in the proportion of drivers with BACs in excess of 80 mg%.

It is apparent that there was a substantial -- and statistically significant -- reduction in the prevalence of driving after drinking behaviour following five months of the enforcement campaign. This decrease is most likely attributable to the intensive enforcement and publicity program that took place during the intervening five months. Awareness of the enhanced
enforcement program was certainly high. Nine out of 10 drivers interviewed in November knew of the intensive effort to reduce impaired driving: 62% had been through a roadcheck in the past five months.

While the roadside survey findings indicate a large and positive change in the prevalence of drinking and driving, not all of the decrease may necessarily be attributable to the effect of the enhanced enforcement program. For example, it is possible that the prevalence of drinking and driving may vary according to season. Although seasonal variation in drinking and driving has not been investigated using roadside surveys, it has been well-established that alcohol-related driver fatalities are typically more common during the summer months than during the fall and winter (e.g., Beirness et al., 1995a). And, while there is some evidence to suggest that drinking-driver fatalities are related to the overall prevalence of driving after drinking (Beirness et al., 1995b), there is as yet no evidence that would support the validity of this relationship on a seasonal basis. Nevertheless, seasonal variation in drinking and driving behaviour may account for at least a portion of the decrease observed.

Another possible explanation for the observed decrease in drinking and driving involves drivers simply learning to avoid the locations most likely to be used by the police to set up checkstops. This possibility was minimized, however, through the use of randomly selected survey sites throughout the community. In fact, by specifically not selecting the usual locations of police checkpoints for the survey, drivers attempting to avoid the use of roadways known to be frequented by the police for checkpoint locations may have inadvertently found themselves on a roadway selected for the survey. In addition, the survey crew moved locations every 90 minutes, making it difficult to plan a route to specifically avoid a survey site.

The validity of the observed reduction in the prevalence of driving after drinking is, however, strengthened by reductions in alcohol-related crashes in the targeted enforcement areas over the same period of time. An analysis of single vehicle, male driver (age 21 to 40) casualty crash claims occurring on weekends over the study period revealed a 10.3% reduction from projected levels. In surrounding areas that did not participate in the enhanced enforcement program, the observed proportion of such claims was actually higher than projected (Mercer et al., 1996).
It should also be noted that the magnitude of the decrease in drinking and driving associated with the enhanced enforcement program in British Columbia is comparable to that found as a result of a similar, high-intensity enforcement and publicity program conducted in the state of North Carolina. Roadside surveys conducted before and after the intensive campaign in North Carolina found a 50% reduction in the proportion of drivers with BACs in excess of 80 mg% following the campaign (Foss et al., 1995; Williams et al., 1995). The comparability of the results of the enforcement programs in North Carolina and British Columbia enhances the validity and generalizability of the inference about the effect of the such initiatives.

RÉFÉRENCES


