

Tracking the Incidence of Drinking Drivers on the Road at Night in British Columbia: The Results of Roadside Surveys

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Introduction

In 1995, the Province of British Columbia launched a strategic initiative on impaired driving in the lower mainland and Greater Victoria regions. A key feature of this initiative was an intensive police enforcement program. Police conducted roadchecks for drinking drivers several nights each week in the participating communities. These roadchecks were supplemented by a media campaign to help raise public awareness of the road check activity and to increase the perceived probability of arrest for impaired driving. To obtain an objective assessment of the incidence of alcohol use among nighttime drivers prior to, and following this strategic initiative, the Traffic Injury Research Foundation (TIRF) conducted a series of random roadside surveys in the cities of Vancouver and Saanich. The purpose of the roadside surveys was to determine the extent to which this initiative altered the drinking and driving behaviour of motorists in the targeted communities.

The results of the roadside surveys revealed a 45% reduction in the proportion of nighttime drivers who had been drinking in the targeted communities following five months of intensive roadcheck activity (1). A separate study (2) estimated a 10% decrease in the number of single vehicle male injury crashes over the period of the intervention.

The success of the intensive enforcement campaign warranted its continuation and expansion to other communities in subsequent years. In 1998, roadside surveys were once again conducted before and after the intensive enforcement program to determine the nature and extent of change in nighttime drinking and driving among motorists. In addition to Vancouver and Saanich -- communities that had previously participated in the enforcement campaign -- the city of Kamloops was included in the surveys. Kamloops had never participated in the intensive enforcement program and this provided an excellent opportunity to determine the impact of intensive enforcement in a smaller community within the interior of British Columbia.

The results revealed that the decreases in drinking and driving in Vancouver and Saanich evident as a result of the 1995 campaign were maintained. Prior to participating in the intensive enforcement campaign, the incidence of drinking among nighttime drivers in Kamloops was significantly higher than in Vancouver and Saanich. Following the enforcement campaign, there was a significant decrease in the incidence of drinking and driving among nighttime drivers in Kamloops and the level of drinking and driving did not differ from that observed in Vancouver and Saanich.

As a means to monitor the status of drinking and driving in selected communities, TIRF was asked to conduct random roadside surveys of nighttime drivers in June 2003.

Vancouver and Saanich were included in the survey once again. A third community, Abbotsford, participated in the survey for the first time.

The report presents the results from the roadside surveys conducted in June 2003 in Vancouver, Saanich, and Abbotsford to determine the current level of drinking and driving in these communities and to gauge the success of the ongoing enforcement initiative.

Method

In June 2003, roadside surveys were conducted at 16 sites in each of three communities -- Vancouver, Saanich and Abbotsford -- on Wednesday through Saturday evenings from 9 p.m. to 3 a.m. Interviews were conducted with drivers of passenger vehicles randomly selected from the traffic stream for 90 minutes at each of four sites each night. Survey crews consisted of four interviewers, a traffic controller and a supervisor. A police officer attended each site to assist with selecting vehicles and traffic control.

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. 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, including the origin of their trip, time to reach their destination, and their use of alcohol that day. All drivers were then asked to provide a breath sample for analysis of alcohol content using a hand-held breathtesting device (i.e., Intoxilyzer S-D2). Drivers with a blood alcohol concentration (BAC) below 50 mg% were thanked for their cooperation and reminded to drive safely when leaving the survey site. The entire interview required approximately three to four minutes to complete.

Drivers with a BAC in excess of 50 mg% were provided with alternative transportation home. When available, a passenger with a low or zero BAC was enlisted to drive.

Results

Response rate. Cooperation among motorists was very high. In total, of the 2,627 drivers asked to participate, 93.6% agreed to the interview. Breath samples were obtained from 94.7% of drivers interviewed. The most commonly reported reasons for non-participation were "in a hurry" (23.4%) and "not interested" (28.8%).

Driver BAC. Breath test readings below 5 mg% 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 5 mg% or higher were considered to have been drinking.

An examination of the raw (unweighted) breath alcohol readings reveals that of the 2,314 drivers who provided a breath sample, 291 (12.6%) were found to have a positive BAC. Most of these drivers (198, or 8.6% of all drivers) had BACs below 50 mg%; 40 (1.7% of all drivers) had BACs between 50 and 80 mg%; 53 (2.2% of all drivers) had BACs in excess of 80 mg% -- the legal BAC limit in Canada. Of those with BACs over 80 mg%, 8 (0.3% of all drivers) had BACs that exceeded 150 mg%.

For the remaining analyses, the data within each community 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.

It should be noted that the three communities were not selected to provide a representative sample of all British Columbia drivers. The communities were viewed as separate and distinct entities with very different characteristics as well as different histories with the enhanced enforcement campaign. Therefore, it was deemed inappropriate to combine the breath test results from the three communities in an attempt to provide an overall estimate of the prevalence of drinking and driving.

Table 1 shows the weighted distribution of the breath alcohol test results in each community. The first column (labelled 'Total') shows the (weighted) number of drivers tested in each community; the second column (labelled 'Positive') shows the number and percent of drivers in each community who had been drinking (i.e., had a BAC of 5 mg% or greater). The number and percent of cases in three BAC categories – 5 to 49 mg%; 50 to 80 mg%; and over 80 mg% are presented in the final three columns.

Table 1
Distribution of Driver BAC According to Community*

	Total	Positive	BAC distribution		
			5 - 49	50 - 80	> 80
Vancouver	795 % ± 1.96se	100 12.6 ± 4.6%	70 8.8 ± 3.9%	14 1.8 ± 1.8%	16 2.0 ± 2.0%
Saanich	824 % ± 1.96se	80 9.7 ± 4.0%	66 8.0 ± 3.7%	6 0.7 ± 1.2%	8 1.0 ± 1.3%
Abbotsford	709 % ± 1.96se	81 11.4 ± 4.7%	50 7.1 ± 3.8%	16 2.3 ± 2.2%	15 2.1 ± 2.1%

* weighted data

The distribution of driver BACs did not differ among communities ($\chi^2=11.7$, $df=6$, $p>.05$). In general, just over one out of every 10 drivers on the road at night had been drinking -- i.e., they had a positive BAC. Overall, most had a relatively low BAC (i.e., under 50 mg%). Only 1.5% of drivers had a BAC between 50 and 80 mg%; 1.7% had a BAC in excess of 80 mg%.

Driver Sex. In general, men are more likely than women to drive after drinking and to drive with an elevated BAC. Figure 1 shows the percent of men and women drivers in each community with positive BACs. The difference in the percent of male and female drivers with positive BACs in Abbotsford was the most pronounced ($\chi^2=12.8$, $df=1$, $p<.001$). There was also a difference between men and women in Saanich ($\chi^2=5.8$, $df=1$, $p<.02$) but there was no significant difference in the proportion of male and female drinking drivers in Vancouver ($\chi^2=3.2$, $df=1$, $p>.05$).

Driver Age. For simplicity, the results from all three communities have been combined in Figure 2 to show the percent of drivers with positive BACs in six age groups. Drivers age 26 to 35 and 46 to 55 had the highest proportion of drinking drivers, followed by those 19 to 25 years of age. Drivers age 16 to 18 were least likely to have been drinking.

Figure 1: Percent of Male and Female Drivers with Positive BACs in Each Community

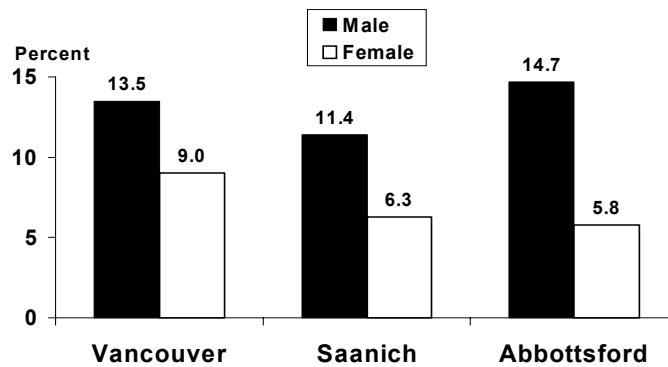
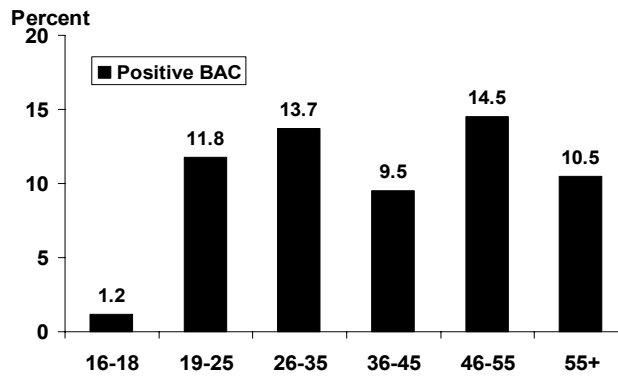


Figure 2: Percent of Drivers in Each Age Group with Positive BACs



Survey Night. The three communities did not differ in the proportion of drinking drivers according to survey night. Figure 3 shows the percent of drinking drivers on the road on each night of the survey. Overall, there was a tendency for the percent of drinking drivers on the road to increase from Wednesday (9.5%) through to Friday night (13.4%). On Saturday night, 10.7% of drivers had been drinking. Interestingly, in Abbotsford, the highest proportion of drinking drivers was found on Wednesday night (14.8%).

Time of Night. In all three communities the proportion of drinking drivers increased later in the evening. Figure 4 shows the percent of drivers who had been drinking according to the start time of each 90-minute survey period. Between 9 p.m. and 10:30 p.m., 7.5% of drivers had been drinking. After 1:30 a.m. 26% of drivers were found to have a positive BAC. Illegal BACs also increased as the night progressed from less than 1% before 10:30 p.m. to 5.9% after 1:30 a.m.

Trip Origin. Overall, the present survey found 28.3% of drivers who reported coming from a bar or tavern were found to have been drinking. This is about double the proportion of drinking drivers who reported coming from a social activity (15.7%), a sport or recreational activity (14.7%), a restaurant (14.4%) and a friend or relative's house (14.1%). Only 2.1% of drivers coming from a movie were found to have consumed alcohol.

Figure 3: Percent of Drivers with Positive BACs by Survey Night

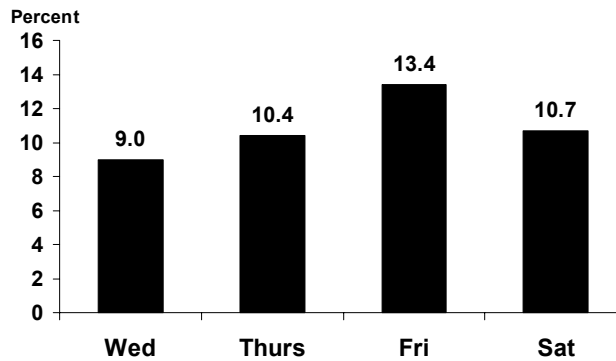
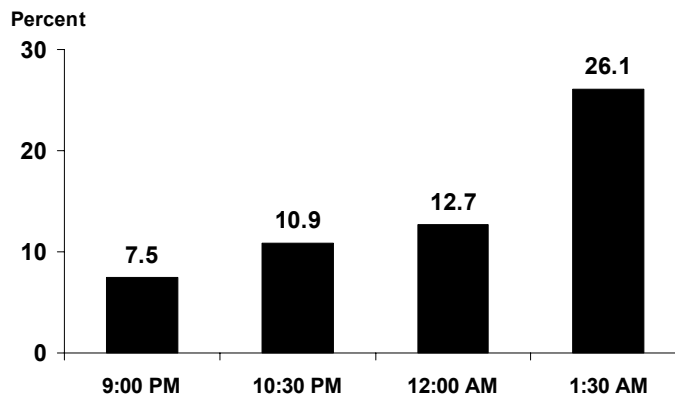


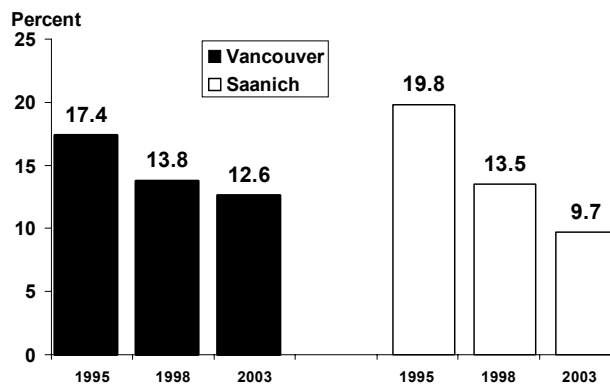
Figure 4: Percent of Drivers with Positive BACs by Time of Night



Trends over time. The present survey was the third in a series of roadside surveys conducted in British Columbia since 1995. The first surveys in this series were conducted in Vancouver and Saanich in the spring of 1995, before the launch of a major enforcement initiative. A similar effort was conducted in both cities in 1998. The enhanced enforcement campaign has continued in these two communities and the present survey was conducted to determine the current level of drinking and driving in these communities.

The surveys in this series were all conducted using the same methodology so it is possible to compare the results over time within a community. Figure 5 shows the percent of drivers with positive BACs in Vancouver and Saanich in 1995, before the start of the enhanced enforcement campaign, as well as those conducted in the spring of 1998 and 2003. It is clear that in both communities the extent of driving after drinking has decreased substantially since 1995 when the enhanced enforcement campaign began. In Vancouver, the percent of drinking drivers has decreased from 17.4% in 1995 to 12.6% in 2003 -- a reduction of 27% ($\chi^2=9.76$, $df=2$, $p<.01$). In Saanich, the decrease in the percent of drinking drivers was 50% -- from 19.7% in 1995 to 9.7% in 2003 ($\chi^2=36.1$, $df=2$, $p<.001$).

Figure 5: Percent of Drivers with Positive BACs in Vancouver and Saanich



Discussion

Roadside surveys are conducted as a means to obtain an objective, scientifically valid estimate of the extent of driving after drinking and the alcohol levels of drivers within specified geographic and temporal parameters. Using a well-developed, standard technique, roadside surveys are a valuable tool for monitoring changes in the magnitude and characteristics of the drinking and driving problem and for evaluating the impact of countermeasure programs and policies.

The current set of roadside surveys were conducted as a means to monitor the status of drinking and driving in selected communities in British Columbia and to assess the extent to which the ongoing enforcement campaign is affecting the incidence of driving after drinking. The results from the current survey can also be used as a baseline against which the success of future initiatives can be assessed.

All three communities involved in the roadside surveys -- Vancouver, Saanich, and Abbotsford -- have been involved in the road check program in previous years and all three were found to have similar proportions of nighttime drivers who had been drinking. Overall, about 1 in 10 drivers on the road between the hours of 9 p.m. and 3 a.m. were found to have been drinking. In Vancouver and Saanich, where roadside surveys have been conducted in 1995, 1998, and 2003, the incidence of drivers with positive BACs has decreased progressively. Given the demonstrated reductions in drinking and driving associated with the intensive enforcement program (1), it is reasonable to assume that at least part of the decrease in drinking and driving, and the maintenance of the effect over the past several years, can be attributed to this program.

References

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