

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

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## Abstract

This paper describes the impact on the incidence of driving after drinking following an intensive police DWI enforcement campaign in British Columbia.

## Introduction

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. The success of this campaign, as demonstrated by significant reductions in drinking and driving (1) and crashes (2).

The enforcement campaign was continued in subsequent years and in 1998 was expanded to include Kamloops, a smaller city in the interior of the province. ICBC contracted with the Traffic Injury Research Foundation to conduct roadside breathtesting surveys in Kamloops as well as Vancouver and Saanich prior to the start of the program in the spring and again 20 weeks later. 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

In the spring and again in the fall, surveys took place at 16 sites in each of three communities -- Vancouver, Saanich and Kamloops -- 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 1½ hours at each of four sites each night. Survey crews consisted of four interviewers, a traffic controller and a supervisor. Two police officers 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 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 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. The entire interview required approximately two to three minutes to complete.

Drivers with a blood alcohol concentration (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 5,341 drivers asked to participate, 95.8% agreed to the interview. Breath samples were obtained from 95.1% of drivers interviewed. The most commonly reported reasons for non-participation were “in a hurry” (23.4%) and “not interested” (28.8%). A subsequent comparison of the characteristics of drivers who refused to participate with those who had positive BACs revealed no similarities.

**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.

Of the 4,866 drivers who provided a breath sample, 727 were found to have been drinking. Most of these drivers (522) had BACs below 50 mg%; 99 had BACs between 50 and 80 mg% -- a level that can result in an immediate 24-hour suspension; and 106 had BACs in excess of 80 mg% -- the legal BAC limit in Canada.

For the remaining 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.

The distribution of driver BACs in each of the three communities in the spring (pre) and fall (post) surveys is presented in Table 1. The first column (labelled ‘Total’) shows the number of drivers tested in the spring and fall surveys; the second column (labelled ‘Positive’) displays 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 -- 5-49 mg%; 50-80 mg%; and over 80 mg% -- in the spring and fall surveys are presented in the final three columns..

In the spring survey, prior to the intervention, there was a similar proportion of drivers with positive BACs in Vancouver and Saanich (13.8% and 13.5%, respectively). Both of these communities had participated in the enhanced enforcement campaign since 1995. In Kamloops, where the enhanced enforcement campaign had yet to be implemented, there was a higher proportion of drivers with positive BACs (17.3%;  $X^2=5.89$ ,  $p<.06$ ).

**Table 1**  
**Distribution of Driver BACs in the Spring and Fall Surveys According to Community**

	<b>BAC Distribution</b>									
	<b>Total</b>		<b>Positive BAC</b>		<b>5 - 49 mg%</b>		<b>50 - 80 mg%</b>		<b>&gt; 80 mg%</b>	
	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall
<b>Vancouver</b>	769 (%)	899 (%)	106 (13.8)	101 (11.2)	74 (9.6)	77 (8.6)	14 (1.8)	11 (1.2)	18 (2.3)	13 (1.4)
<b>Saanich</b>	830 (%)	780 (%)	112 (13.5)	113 (14.5)	95 (11.4)	92 (11.8)	11 (1.3)	11 (1.4)	6 (.7)	10 (1.3)
<b>Kamloops</b>	813 (%)	809 (%)	141 (17.3)	103 (12.7)	78 (9.6)	71 (8.8)	29 (3.6)	18 (2.2)	34 (4.2)	14 (1.7)
<b>Total</b>	2412 (%)	2488 (%)	359 (14.9)	317 (12.7)	247 (10.2)	240 (9.6)	54 (2.2)	40 (1.6)	58 (2.4)	37 (1.5)

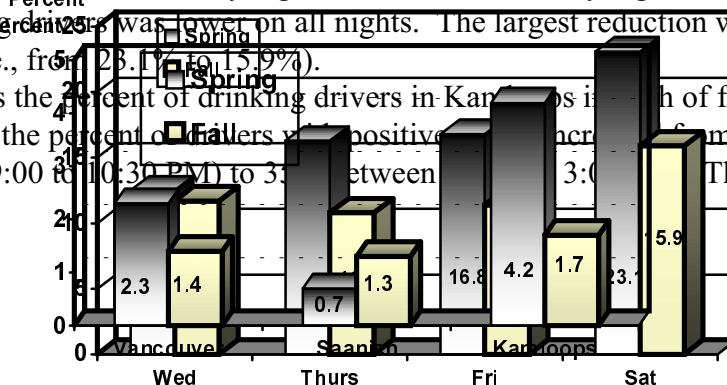
Following five months of intensive enforcement activity, the fall survey revealed no differences in the proportion of drivers with positive BACs among the three communities ( $X^2=3.97, p>.1$ ). A comparison of the change in the percent of drinking drivers between the spring and fall surveys within each community revealed that only Kamloops experienced a significant decrease in drinking drivers -- i.e., from 17.3% to 12.7% ( $z=2.52, p<.01$ ).

The largest reductions in drinking drivers were evident among drivers with BACs in excess of 80 mg%. Figure 1 presents the percent of drivers in each community with BACs in excess of 80 mg% before and after the intensive enforcement campaign. In the spring survey, prior to the intervention, the proportion of drivers with BACs over 80 mg% in Kamloops (4.2%) was significantly higher than in Vancouver (2.3%) and Saanich (0.7%) ( $X^2=20.96, p<.001$ ). Following the intervention, the difference among communities was no longer evident ( $X^2=0.56, p>.5$ ). Only the change in Kamloops, however, was statistically significant ( $z=2.76, p<.01$ ).

**Characteristics of the Change in Drinking and Driving.** The data from Kamloops were examined to determine the extent to which the reduction in drinking and driving was general across the entire spectrum of drinking drivers or whether it was restricted to specific times, days, or types of drivers. Few of these changes were statistically significant but are presented to provide an indication of the impact of the enforcement program.

Figure 2 illustrates the percent of drinking drivers in the spring and fall surveys in Kamloops according to the night of the survey. During the spring survey, the percent of drinking drivers increased from 12.5% on Wednesday night to 23.1% on Saturday night. In the fall survey, the percent of drinking drivers was lower on all nights. The largest reduction was evident on Saturday night (i.e., from 23.1% to 15.9%).

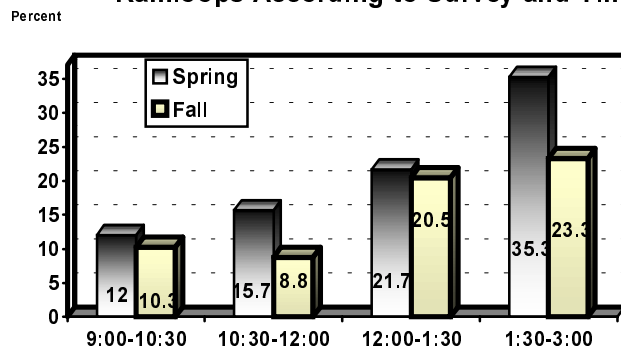
Figure 3 illustrates the percent of drinking drivers in Kamloops in each of four time periods. In the spring survey, the percent of positive drivers increased from 12% in the earliest time period (i.e., 9:00 to 10:30 PM) to 33% between 10:30 PM and 1:00 AM. This same general



pattern was evident in the fall survey but the percent of drinking drivers was lower in every time period. The greatest change was evident between 1:30 and 3:00 AM.

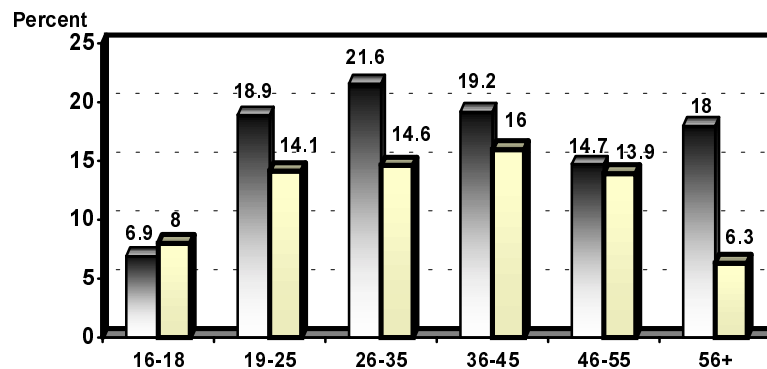
In the spring survey, male drivers in Kamloops were just as likely than females to have a positive BAC (19.2% and 15.3%, respectively). Women drivers were also just as likely as men to have a BAC in excess of 80 mg% (5.5% and 3.8% for women and men, respectively). Following the intensive enforcement program, the percent of male drivers who had been drinking decreased to 15% while among women the percent decreased to 8.3% ( $X^2=6.79, p<.01$ ). Among men, the percent of drivers with a BAC over 80 mg% decreased from 5.5% to 2.3%. No women were found to have a BAC of this magnitude in the fall survey.

**Figure 3: Percent of Drinking Drivers in Kamloops According to Survey and Time**



The age distribution of drivers with positive BACs in Kamloops in both the spring and fall surveys is presented in Figure 4. In the spring survey, the highest percentage of drinking drivers was found among those aged 26 to 35 (21.6%) and lowest among those aged 16 to 18 (6.9%). Following the enforcement program, a decrease in the percent of drinking drivers was found in every age group with the exception of those aged 16-18. The increase among this age group was relatively minor, from 6.9% to 8.0%. The largest decrease was among those over 55 years of age -- i.e., from 18% to 6.3%.

**Figure 4: Percent of Drinking Drivers in Kamloops According to Survey and Driver Age**



## Discussion

Following the initial success of the enhanced drinking-driving enforcement campaign in Vancouver and Saanich, the program was expanded throughout the province. In 1998, Kamloops participated in the program for the first time. The primary objective of the present surveys was to determine whether there was a change in the prevalence of driving after drinking associated with the enhanced enforcement program conducted in British Columbia during the summer of 1998.

In the two communities that had participated in previous enhanced enforcement programs (i.e., Vancouver and Saanich), the present surveys revealed no change in the observed prevalence of driving after drinking as a result of the 1998 enforcement program. A previous evaluation of the impact of the initial enhanced enforcement program in 1995 reported significant decreases in drinking and driving (1). In these two communities, the present surveys found the extent of drinking and driving prior to the 1998 enforcement campaign was comparable to that found following the 1995 campaign, suggesting that the effect of the initial intensive enforcement campaign did not dissipate over time.

Prior to the 1998 enforcement campaign, the extent of driving after drinking, and driving with a BAC in excess of 80 mg%, were considerably higher in Kamloops than in Vancouver and Saanich. Following 20 weeks of intensive enforcement and public awareness activity, the percent of drinking drivers on the road at night decreased from 17.3% to 12.7% -- a 26.5% reduction. The percent of drivers with BACs over 80 mg% decreased by 59.5% -- from 4.2% before the intervention to 1.7% afterwards.

The observed decrease in drinking and driving following the intensive enforcement program appeared to be widespread and general. With few exceptions, the program had an impact on drinking drivers of all ages, at all BACs, and under most circumstances. Although based on a relatively small number of cases in one community, there was no evidence to suggest that the campaign had a selective impact on any particular group of drinking drivers.

It is apparent that there was a substantial -- and statistically significant -- reduction in the prevalence of driving after drinking behaviour in Kamloops 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 -- 86% of drivers interviewed in the fall knew of the intensive effort to reduce impaired driving and 68% had been through a roadcheck in the past five months.

It should also be noted that the magnitude of the decrease in impaired 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 (3). 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 such initiatives.

## References

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