TRENDS IN BLOOD ALCOHOL CONCENTRATION LEVELS OF DRIVERS AT NIGHT

A Comparison of BAC Levels Determined in the First Two Roadside Surveys of the Fairfax Alcohol Safety Action Project

by

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ABSTRACT

As part of the Fairfax Alcohol Safety Action Project (ASAP), staff members of the Virginia Highway Research Council, acting in their role as evaluators of the project, have conducted two roadside surveys in Fairfax, Virginia. A baseline survey was conducted in January 1972 prior to the start of ASAP operations in February 1972, and a second survey was conducted in October 1972. These two surveys were part of the series of four annual surveys to be conducted throughout the duration of the project. The ASAP concept recognizes the major role that alcohol plays in fatal and serious highway crashes, and the project consists of countermeasures designed to identify drunken drivers, remove them from the road, and refer them to proper educational or rehabilitation programs.

The ultimate objective of the ASAP is to reduce the number of fatalities, personal injuries, and property damage accidents caused by the drinking driver. The purpose of the nighttime roadside surveys of randomly selected drivers is to provide a secondary measure of the project's effectiveness in reducing the incidence of driving while under the influence of alcohol. This paper compares the BAC's (blood alcohol concentrations) of drivers in the baseline survey with the BAC's of drivers tested near the end of the first year of the ASAP. The findings can be summarized as follows:

1. There was a significantly greater percentage of drinking drivers in the second survey compared with the baseline survey. This difference was significant at the 99% confidence level.

2. There was a slight reduction in the percentage of drivers with BAC's above .10%, but this difference was not statistically significant.
3. Even though there was a greater percentage of drivers who were drinking on the second survey, the relative probability of accidents was 1.9% lower for the second survey as calculated by the Index of Accident Probability (IAP).
4. On week nights, there was no apparent difference in the risk of accidents from the baseline survey to the second survey. However, there was a dramatic reduction in the IAP for the later time periods on weekends. This reduction cannot be proven to be a result of the ASAP, but it is a very encouraging sign that the ASAP patrols are succeeding in altering the late-night drinking and driving patterns on weekends in Fairfax.

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BACKGROUND

The Fairfax Alcohol Safety Action Project (ASAP) was initiated in January 1972 as one of a number of three-year, federally funded demonstration projects designed to implement and evaluate the concept of the use of comprehensive community alcohol countermeasures in combatting the problem of drunken driving. The ultimate objective of the Fairfax ASAP is to reduce the number of crashes which result in fatalities, personal injuries, and property damage by concentrating its efforts on reducing the incidence of drunken driving. It has already been demonstrated that drunken drivers account for a disproportionately large share

of serious and fatal accidents. If the ASAP is successful in intervening in the normal drinking patterns of drunken drivers so that their incidence of drunken driving is significantly reduced, it follows that the number of alcohol-related accidents could be reduced.

The purpose of the nighttime roadside surveys is to provide a secondary measure of the project's effectiveness in reducing the incidence of drunken driving. The first roadside survey, hereafter called the baseline survey, was conducted prior to the implementation of the ASAP countermeasures. The baseline survey results were established as the base from which changes in drinking habits could be measured during the subsequent yearly surveys during the three-year course of the project. The second survey was conducted after nine months of ASAP operations. Since there were only nine months of ASAP operations between the baseline survey and the second roadside survey, there may not have been enough time for the ASAP to have had a measurable impact. Therefore, any trends identified or conclusions drawn from the comparison of the first two surveys must be considered tentative rather than conclusive.

METHODOLOGY

The basic survey procedures were patterned after the procedures outlined in the U. S. Department of Transportation's report entitled Methodological Considerations in Conducting and Evaluating Roadside Research Surveys, by M. W. Perrine of the University of Vermont. The two primary functions of the roadside surveys as stated in the Perrine report are: "(1) to provide data for describing the basic problem in terms of identification and specification of assumedly relevant parameters, and (2) to provide

data for evaluating the results of any changes in circumstances surrounding the basic problem, whether they are the result of unplanned natural events, on the one hand, or controlled premeditated countermeasures, on the other."(1)

Sampling Frequency

There will be a total of four roadside surveys during the Fairfax Alcohol Safety Action Project. The first survey was conducted each night from January 5, 1972, through the early morning hours of January 16, 1972. The baseline survey had to be conducted in January because of the need to establish comparative data prior to implementation of the enforcement countermeasure on February 1, 1972, and after contracts with the five cooperating police agencies in the area had been signed so that police assistance could be secured in the baseline survey. The second survey was conducted in October 1972, and the two subsequent surveys are scheduled for the month of October. By conducting the surveys during October, the annual changes in BAC levels can be measured without worrying about seasonal variations in drinking patterns. In addition, the survey results would be available in time for analysis and inclusion in the annual evaluation report. In a more practical nature, the weather in October would seem to be more conducive to the taking of an outdoor survey.

Sample Size and Day of the Week

U. S. Department of Transportation guidelines specify a minimum sample size of 640. The guidelines also suggest that the samples be taken on Friday and Saturday nights. However, since ASAP's in North Carolina and Michigan had found positive readings of 22.2% and 19.0%, respectively, when they surveyed throughout the week compared with the positive reading percentage of 42.0% reported by the Oregon ASAP, which surveyed only on Fridays and Saturdays, it was believed to be important to test both periods in Fairfax. By testing both periods the information would be available to allow the Fairfax ASAP to focus increased police patrols on the periods

which showed the greatest number of drunken drivers. Thus, both the baseline and second surveys were conducted on both weekends and week nights. With minimum sample sizes set at 640 for both week nights and weekends (Friday, Saturday), a total of three sets of statistics will be available such that the levels of drinking by nighttime drivers can be measured on weekends, on week nights, and in the aggregate.

Hour of Day

The hours of 7 p.m. to 3 a.m. were used for sampling the drinking driving patterns in Fairfax. This eight-hour period was divided into three 2-hour-and-20-minute periods in which the interviews were conducted and an additional hour allowed for travel time between sites. The time periods were 7:00 p.m. — 9:20 p.m. (Site 1), 9:50 p.m. — 12:10 a.m. (Site 2), and 12:40 a.m. — 3:00 a.m. (Site 3). The three time frames were used rather than the four suggested by the U. S. Department of Transportation guidelines in order to increase the amount of interview time in relation to travel time by reducing the travel time between sites by 33%.

Site Selection

It was determined that the general locations for survey sites would be roughly proportioned among the five participating police jurisdictions on the basis of their resident populations and number of police officers. This decision was made in order to achieve representative samples of the various driving conditions in Fairfax as well as getting all of the police departments involved from the very beginning of the ASAP. After asking the police departments for a list of sites which conformed to the U. S. Department of Transportation guidelines, a staff member of the Virginia Highway Research Council reviewed this list of sites. Sites were selected which seemed to to be a representative mixture of the rural and urban areas in Fairfax as well as being dispersed throughout the county. The final determination of which site should be sampled at what time was made under the condition that the travel time between

sites would be under twenty-five minutes. Thus the site and sampling period combinations were made from subsets consisting of sites in the entire Fairfax ASAP area chosen so that travel time between consecutive sites would not exceed twenty-five minutes. Thus the driving population was sampled randomly within the constraints of travel time and research design.

Questionnaire

The standard U. S. Department of Transportation questionnaire for roadside surveys was used. This questionnaire consisted of questions dealing with the respondent's place of residence, driving habits, drinking habits, drinking attitudes and knowledge, demographic data, and, most importantly, the BAC reading on the breath test. A copy of the questionnaire is shown in Appendix A.

Breath Test Instrument

The breath-testing device for the baseline survey was the Intoximeter-Mark II, manufactured by Intoximeters, Inc. of St. Louis, Missouri. Both the Intoximeter and a breath-testing machine called the HALT model manufactured by Borg-Warner Corporation were used on the second survey.

Administrative Procedures

The five participating police departments provided the necessary patrolmen for traffic control. The coordinators were staff members of the Safety Section of the Virginia Highway Research Council. The interviewers and data recorders were provided under a subcontract to the Stoneland Corporation of Chesapeake, Virginia. The breath-test operators were ASAP lab technicians provided by Fairfax County.

The coordinators selected the vehicles to be stopped by the policemen, designating the first eligible vehicle whenever a vacancy existed within the mobile vans used for interviews. The policemen simply directed the motorist out of the line of traffic and over to the coordinators, who were identified by their white lab

coats. It was the job of the coordinators to secure a motorist's cooperation in the survey. After securing a motorist's cooperation, the coordinator led the driver to one of the two interview vans where he was greeted by a lab technician, who immediately administered the breath test. Then the driver was given the questionnaire, and by the time the questionnaire was finished, his BAC reading had been calculated and was recorded on the questionnaire. The coordinator thanked the motorist for his cooperation, and he was allowed to proceed on his way if his BAC reading was under .10%. Those drivers whose BAC was .10% or above were given options of being driven by a sober passenger when available, by a member of the local Jaycees, or by volunteers from the military. Subjects who were only slightly above .10% were given the option of remaining at the site for a long enough period of time for their BAC to drop below .10% upon retesting.

DISCUSSION OF FINDINGS

Summaries of the BAC results are listed in Tables 1, 2, and 3. Comparisons of BAC's from the baseline and the second surveys were made from these data.

Table 1

BAC Levels in the Roadside Surveys

Total Sample

	BASELINE		SECOND	
BAC CATEGORY	NUMBER	PERCENT	NUMBER	PERCENT
Negative	1,116	70.8%	966	64.1%
01 - 04	293	18.6%	356	23.6%
05 - 09	101	6.4%	123	8.2%
10 - 14	43	2.7%	46	3.0%
15 or Over	24	1.5%	17	1.1%

Table 2

BAC Levels in the Roadside Surveys

Week Nights

	BASELINE		SECOND	
BAC CATEGORY	NUMBER	PERCENT	NUMBER	PERCENT
Negative	622	74.2%	571	68.4%
01 - 04	139	16.6%	169	20.2%
05 - 09	49	5.8%	58	6.9%
10 - 14	20	2.4%	28	3.4%
15 or Over	8	1.0%	9	1.1%

Table 3

BAC Levels in the Roadside Surveys

Weekends (Fridays and Saturdays)

	BASELINE		SECOND	
BAC CATEGORY	NUMBER	PERCENT	NUMBER	PERCENT
Negative	494	66.9%	395	58.7%
01 - 04	154	20.8%	187	27.8%
05 - 09	52	7.0%	65	9.6%
10 - 14	23	3.1%	18	2.7%
15 or Over	16	2.2%	8	1.2%

Total Sample Comparison

The chi-square value obtained for the comparison of the distribution of BAC's shown in Table 1 for the total sample was 18.845. This surpassed the value of 13.277 which is used to establish significance at the 99% confidence level for four degrees of freedom. Thus the two distributions were found to be significantly different at the 99% confidence level.

After the distributions were found to be significantly different, they were tested to try to determine in what ways they were different. The percentage of positive BAC's for the baseline survey was 29.2%, and the percentage of positive BAC's for the second survey was 35.9%. These two percentages were compared and found to be significantly different at the 99% confidence level. It can be concluded that there was a greater percentage of positive BAC readings on the second survey than there was on the baseline survey.

The percentages of BAC's above .10% were 4.2% for the baseline survey and 4.1% for the second survey. These two percentages were not found to be significantly different at even the 20% confidence level.

Week Night Comparison

The chi-square value calculated for the comparison of BAC distributions shown in Table 2 for week nights was 15.822, and the two distributions were found to be significantly different at the 99% confidence level.

The percentage of positive BAC's on week nights was 25.8% on the baseline survey and 31.6% on the second survey. These two percentages were compared and found to be significantly different at the 99% confidence level. It can be concluded that there was a greater percentage of positive BAC readings on the second survey than there was on the baseline survey.

The percentages of BAC's above .10% were 3.4% for the baseline survey and 4.5% for the second survey. These two percentages were not significantly different at the 95% confidence level, so no conclusions can be drawn concerning the difference.

Weekend Comparisons

The chi-square value calculated for the comparison of the BAC distributions shown in Table 3 for weekends was 7.219. Thus the weekend distributions were not significantly different at the 95% confidence level, although they were significant at the 80% level.

The percentages of positive BAC's were 33.1% for the baseline survey and 42.3% for the second survey. These percentages were found to be significantly different at the 99% confidence level. It can be concluded that a greater percentage of drivers had positive BAC's on the second survey than on the baseline survey.

The percentages of BAC's above .10% were 5.3% for the baseline survey and 3.9% for the second survey. These percentages were not significantly different at the 95% confidence level, so no conclusions can be drawn concerning the difference.

INDEX OF ACCIDENT PROBABILITY

The traditional chi-square method for comparing distributions of BAC's has been used quite often in comparing the drinking patterns in one state with those in another or for comparing drinking patterns within a state over a period of time. By referring to the analysis previously presented, it can be seen that there was a greater percentage of drivers who were drinking on the second survey than on the first, but the percentages of drivers who were drunk were not found to be significantly different. However, there is one important fact missing from the previous analysis. Drunken drivers represent only about 4% of the driver population, yet they account for 50% of all highway fatalities. This disproportionate damage done by the drunken driver is not taken into account by a chi-square analysis because this analysis assigns an equal value to every category. The author's method of analysis proposes to include the vital "risk factor" by using the probabilities of causing an accident as shown in Figure 1 as developed by Borkenstein in his study of drinking drivers.[2] An "Index of Accident Probability" (IAP) was calculated by multiplying the percentage of drivers in each BAC category by the risk index of that category and then summing these products. In addition to simply comparing the BAC levels, the relative probabilities of an accident can be compared from one survey to another and from one time period to another.

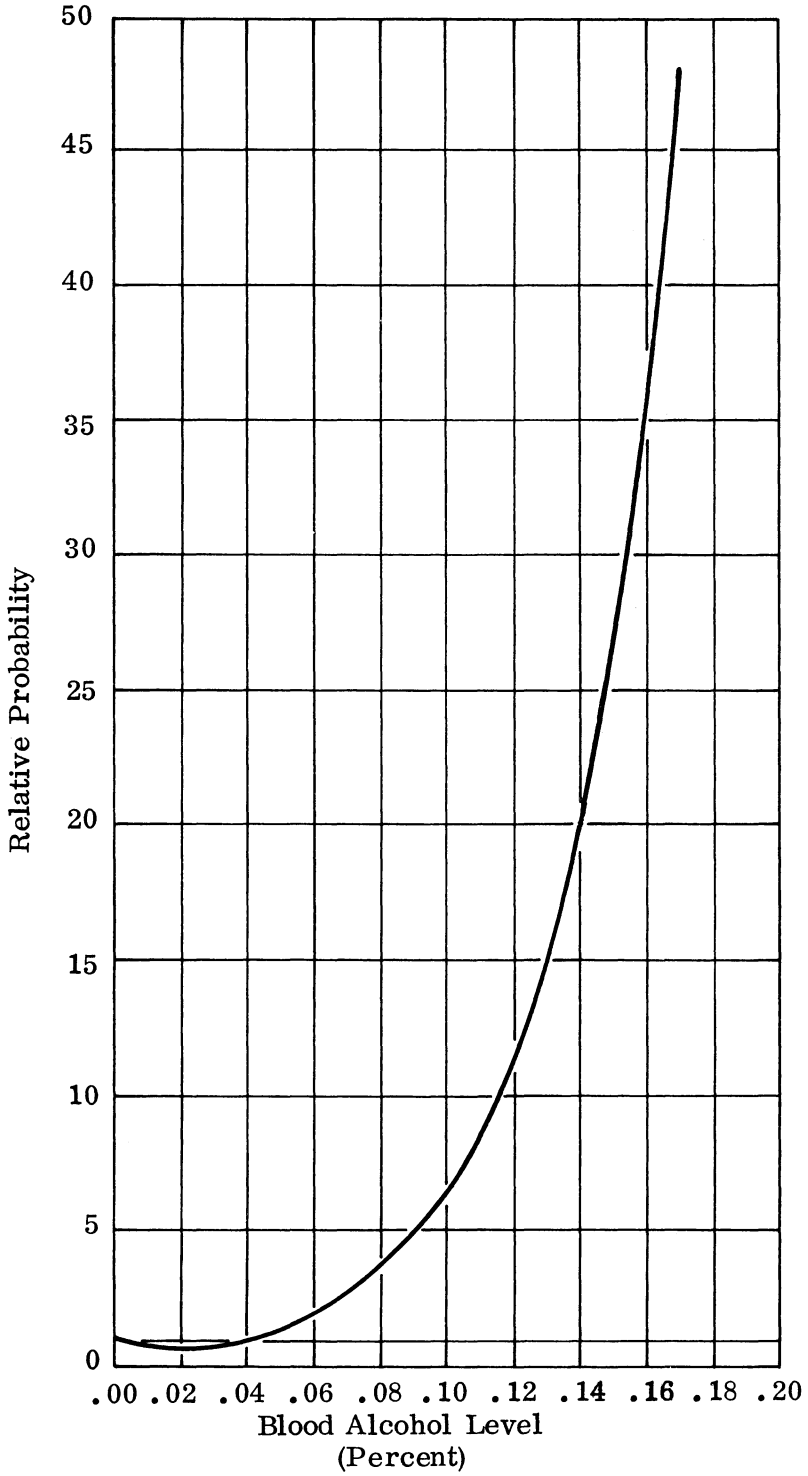

Figure 1. Relative probability of causing an accident. (From reference 2).

The risks assigned to the BAC levels are shown in Table 4.

Table 4

Risk Index by BAC Category

BAC Category	Negative	01 - 04	05 - 09	10 - 14	15 +
Risk Index	1	1	3	12	27

Total Sample Comparison

The IAP for the baseline survey was 1.815, and the index for the second survey was 1.780 as shown in Table 5. This represented a decrease of 1.9% in accident probability from the baseline survey even though the previous analysis determined that there were more drivers who had been drinking.

Table 5

Index of Accident Probability — Total Sample

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.708	.708
01 - 04	1	.186	.186
05 - 09	3	.064	.192
10 - 14	12	.027	.324
15 +	27	.015	.405
			IAP = 1.815

Second Survey

0	1	.641	.641
01 - 04	1	.236	.236
05 - 09	3	.082	.246
10 - 14	12	.030	.360
15 +	27	.011	.297
			IAP = 1.780

Week Night Comparison

As shown in Table 6, the IAP for week nights of the baseline survey was 1.640, while the index for week nights on the second survey was 1.798. This represented an increase of 9.6% in the relative accident probability for the week night periods.

Table 6

Index of Accident Probability — Week Nights

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.742	.742
01 - 04	1	.166	.166
05 - 09	3	.058	.174
10 - 14	12	.024	.288
15 +	27	.010	.270
			IAP = 1.640

Second Survey

0	1	.684	.684
01 - 04	1	.202	.202
05 - 09	3	.069	.207
10 - 14	12	.034	.408
15 +	27	.011	.297
			IAP = 1.798

Weekend Comparison

As shown in Table 7, the IAP for weekends of the baseline survey was 2.053 compared with 1.801 for the second survey. This represented a decrease of 12.3% in the relative risk of accidents on weekends from the baseline survey. Although

the relative risk of accidents on weekends was reduced by 12.3%, it was still higher on weekends than on week nights as reflected in the IAP's of 1.801 and 1.798, respectively, for week nights on the two surveys.

Table 7

Index of Accident Probability — Weekends

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.669	.669
01 - 04	1	.208	.208
05 - 09	3	.070	.210
10 - 14	12	.031	.372
15 +	27	.022	.594
		IAP =	2.053

Second Survey

0	1	.587	.587
01 - 04	1	.278	.278
05 - 09	3	.096	.288
10 - 14	12	.027	.324
15 +	27	.012	.324
		IAP =	1.801

INDEX OF ACCIDENT PROBABILITY BY TIME PERIOD

The distributions of BAC's were found to be significantly different from one time period to another as there were more people drinking and more drunken drivers in the sample at the latest time period of 12:40 a.m. to 3:00 a.m. These time periods

were examined through the technique of assigning them IAP's so that the relative risks of accidents could be compared from one time period to another.

Total Sample Comparison

The IAP for the time period of 7:00 p.m. to 9:20 p.m. was a very low one of 1.332 during the baseline survey compared with 1.458 for the second survey as shown in Table 8. This represented an increase of 9.5% from the baseline survey, but it was still a relatively low IAP.

Table 8

Index of Accident Probability — Total Sample
7:00 p.m. — 9:20 p.m.

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.809	.809
01 - 04	1	.142	.142
05 - 09	3	.033	.099
10 - 14	12	.010	.120
15 +	27	.006	.162
		IAP =	1.332

Second Survey

0	1	.694	.694
01 - 04	1	.230	.230
05 - 09	3	.052	.156
10 - 14	12	.018	.216
15 +	27	.006	.162
		IAP =	1.458

The IAP for the time period of 9:50 p.m. to 12:10 a.m. was 1.521 for the baseline survey compared with 1.456 for the second survey as shown in Table 9. This represented a 4.3% decrease from the baseline survey.

Table 9

Index of Accident Probability — Total Sample:
9:50 p. m. — 12:10 a.m.

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.715	.715
01 - 04	1	.194	.194
05 - 09	3	.065	.195
10 - 14	12	.019	.228
15 +	27	.007	.189
		IAP =	1.521

Second Survey

0	1	.697	.697
01 - 04	1	.219	.219
05 - 09	3	.059	.177
10 - 14	12	.019	.228
15 +	27	.005	.135
		IAP =	1.456

The IAP for the time period of 12:40 a.m. to 3:00 a.m. was 3.321 for the baseline survey compared with 2.653 for the second survey as shown in Table 10. This represented a decrease of 20.1% from the baseline survey, but this time

period still ranked as the most dangerous in terms of the IAP. This decrease could reflect the impact of the ASAP police patrols working during the time period.

Table 10

Index of Accident Probability — Total Sample:
12:40 a.m. — 3:00 a.m.

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.488	.488
01 - 04	1	.262	.262
05 - 09	3	.126	.378
10 - 14	12	.077	.924
15 +	27	.047	1.269
		IAP =	3.321

Second Survey

0	1	.496	.496
01 - 04	1	.267	.267
05 - 09	3	.148	.444
10 - 14	12	.062	.744
15 +	27	.026	.702
		IAP =	2.653

Week Night Comparison

The IAP for the time period of 7:00 p.m. to 9:20 p.m. on week nights was 1.438 for the baseline survey compared with 1.371 for the second survey as shown in Table 11. This represented a 4.7% decrease from the baseline survey, and was a relatively low IAP.

Table 11

Index of Accident Probability — Week Nights:
7:00 p.m. — 9:20 p.m.

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.817	.817
01 - 04	1	.129	.129
05 - 09	3	.034	.102
10 - 14	12	.010	.120
15 +	27	.010	.270
		IAP =	1.438

Second Survey

0	1	.767	.767
01 - 04	1	.178	.178
05 - 09	3	.031	.093
10 - 14	12	.021	.252
15 +	27	.003	.081
		IAP =	1.371

The IAP for the time period of 9:50 p.m. to 12:10 a.m. on week nights was 1.380 for the baseline survey compared with 1.501 for the second survey as shown in Table 12. This represented an increase of 8.8% from the baseline survey.

Table 12

Index of Accident Probability — Week Nights:
9:50 p.m. — 12:10 a.m.

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.727	.727
01 - 04	1	.191	.191
05 - 09	3	.063	.189
10 - 14	12	.016	.192
15 +	27	.003	.081
		IAP =	1.380

Second Survey

0	1	.700	.700
01 - 04	1	.216	.216
05 - 09	3	.057	.171
10 - 14	12	.021	.252
15 +	27	.006	.162
		IAP =	1.501

The IAP for the time period of 12:40 a.m. to 3:00 a.m. on week nights was 2.861 for the baseline survey compared with 2.821 for the second survey as shown in Table 13. There was very little change from the baseline survey for this time period on week nights as reflected in a decrease of only 1.4%. Such a slight reduction might indicate that more ASAP police patrols should be scheduled for this time period on week nights rather than for earlier hours.

Table 13

Index of Accident Probability — Week Nights:
12:40 a.m. — 3:00 a.m.

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.532	.532
01 - 04	1	.226	.226
05 - 09	3	.129	.387
10 - 14	12	.089	1.068
15 +	27	.024	.648
		IAP =	2.861

Second Survey

0	1	.543	.543
01 - 04	1	.214	.214
05 - 09	3	.143	.429
10 - 14	12	.071	.852
15 +	27	.029	.783
		IAP =	2.821

Weekend Comparison

The IAP for the time period of 7:00 p.m. to 9:20 p.m. on weekends was a very low one of 1.183 for the baseline survey compared with 1.574 for the second survey as shown in Table 14. This increase of 33.1% was large on a percentage basis, but the IAP of 1.574 was still relatively low when compared with those of other time periods.

Table 14

Index of Accident Probability — Weekends:
7:00 p.m. — 9:20 p.m.

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.797	.797
01 - 04	1	.161	.161
05 - 09	3	.031	.093
10 - 14	12	.011	.132
15 +	27	.000	.000
		IAP =	1.183

Second Survey

0	1	.594	.594
01 - 04	1	.302	.302
05 - 09	3	.080	.240
10 - 14	12	.014	.168
15 +	27	.010	.270
		IAP =	1.574

The IAP for the time period of 9:50 p.m. to 12:10 a.m. on weekends was 1.705 for the baseline survey compared with 1.408 for the second survey as shown in Table 15. This represented a decrease of 17.4% from the baseline survey and might be an indication that the ASAP police patrols are having an effect on weekend drinking and driving patterns in Fairfax.

Table 15

Index of Accident Probability — Weekends:
9:50 p.m. — 12:10 a.m.

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.700	.700
01 - 04	1	.198	.198
05 - 09	3	.068	.204
10 - 14	12	.021	.252
15 +	27	.013	.351
		IAP =	1.705

Second Survey

0	1	.694	.694
01 - 04	1	.222	.222
05 - 09	3	.064	.192
10 - 14	12	.016	.192
15 +	27	.004	.108
		IAP =	1.408

The IAP for the time period of 12:40 a.m. to 3:00 a.m. on weekends was 3.580 for the baseline survey compared with 2.513 on the second survey as shown in Table 16. This was a decrease in the IAP of 29.8% from the baseline survey and seems to indicate that the ASAP police intervention has resulted in a modification of the weekend drinking and driving patterns in Fairfax.

Table 16

Index of Accident Probability — Weekends:
12:40 a.m. — 3:00 a.m.

Baseline Survey

BAC	Risk Index	Percentage	Value
0	1	.463	.463
01 - 04	1	.282	.282
05 - 09	3	.125	.375
10 - 14	12	.070	.840
15 +	27	.060	1.620
		IAP =	3.580

Second Survey

0	1	.450	.450
01 - 04	1	.320	.320
05 - 09	3	.153	.459
10 - 14	12	.053	.636
15 +	27	.024	.648
		IAP =	2.513

Conclusions From the Index of Accident Probability

An Index of Accident Probability was calculated for each time period for both weekends and week nights for both the baseline survey and the second survey. These indices were plotted on the graph in Figure 2. The purpose of calculating an Index of Accident Probability was to augment the analysis of BAC levels by comparing the relative risks of accidents associated with the various BAC levels.

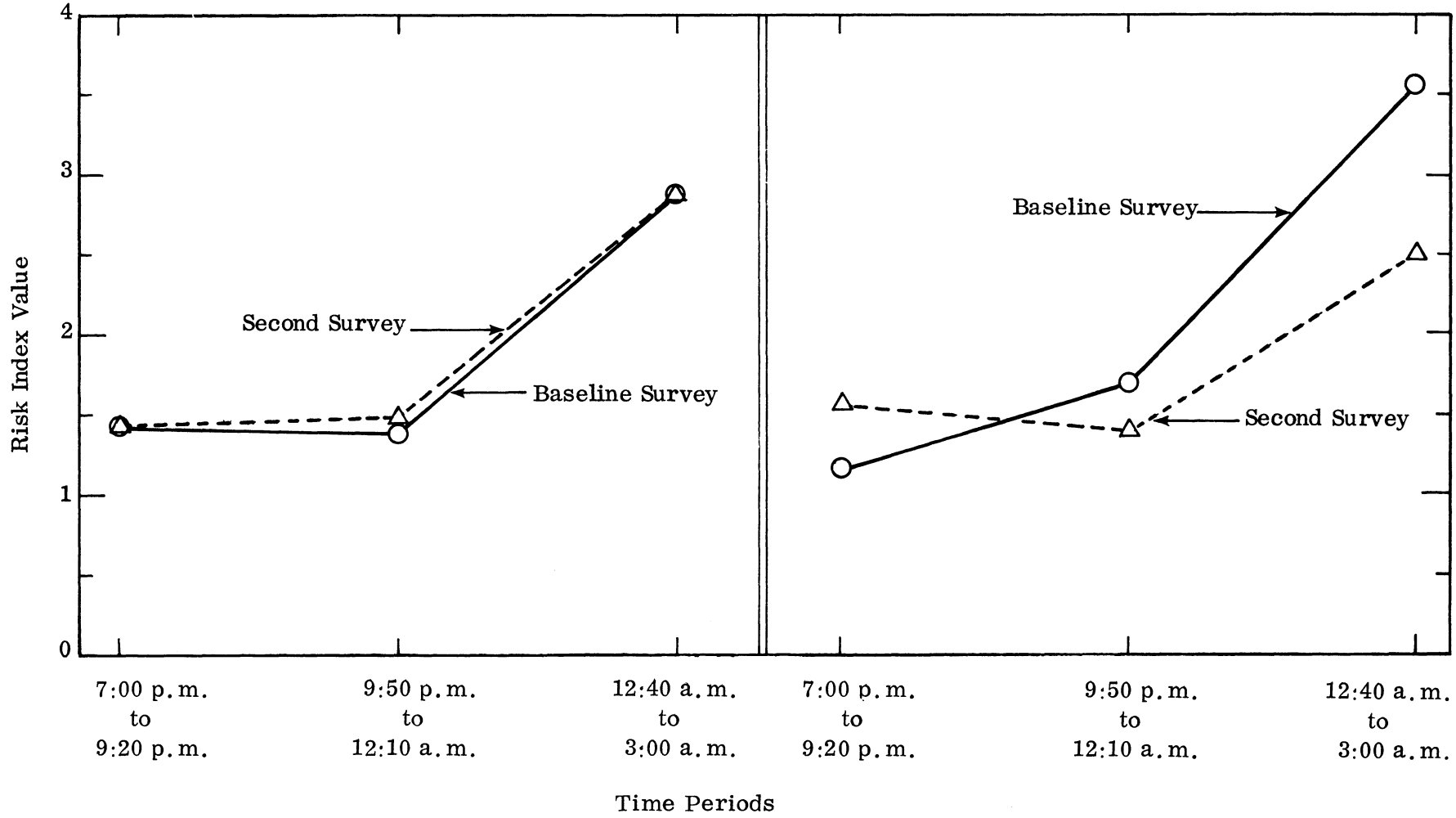

Figure 2. Index of accident probability.

From an examination of the graphs in Figure 2, it is apparent that there was very little difference between the surveys in the probabilities of accident occurrence on week nights. The graphs show that on week nights the risk of an accident among the drivers on the road was about twice as great in the time period from 12:40 a.m. to 3:00 a.m. as it was for the two earlier time periods. This relative risk measurement did not attempt to take into account differences in traffic volume, but dealt only with the drivers who were operating their vehicles for the given time periods.

The graphs do depict a change in weekend drinking and driving patterns between the two surveys. Both the 9:50 p.m. to 12:10 a.m. and the 12:40 a.m. to 3:00 a.m. time periods show a reduction in the IAP from the baseline survey with the more dramatic reduction occurring in the latter time period. This reduction in the IAP on weekends might be a result of the impact of the Fairfax ASAP. In the least, it certainly shows encouraging signs that the late-night ASAP patrols were successfully intervening in the normal drinking and driving patterns with the result that the probabilities of accidents were dramatically reduced.

There is still progress to be made, especially in the 12:40 a.m. to 3:00 a.m. time periods on week nights, but it is very encouraging to note that although a significantly greater percentage of drivers were drinking on the second survey, they were drinking in moderation such that the relative risk of accidents actually was reduced. This phenomenon will be carefully monitored throughout the course of the project as a means of determining if ASAP is successfully reaching the high risk drivers and removing them from the road to rehabilitate them and reduce their risks to themselves and others.

REFERENCES

(1) M. W. Perrine, Methodological Considerations in Conducting and Evaluating Roadside Research Surveys, February 1971 Report to the National Highway Traffic Safety Administration.

(2) R. F. Borkenstein, et. al., The Role of the Drinking Driver in Traffic Accidents, Indiana University Press, 1964.

APPENDIX A

ROADSIDE SURVEY QUESTIONNAIRE

STONELAND RESEARCH
#23-15 - ROADSIDE SURVEY (023015)
1-2-3-4

APPENDIX A

5-6-7

INTERVIEWER: DO NOT MARK THIS SHEET. RECORD ALL ANSWERS ON ANSWER SHEET. 8-6
9-0

1. INTERVIEWER OBSERVATION: Number of people in the car:
10-1 -2 -3 -4 -5 -6 -7 -8 -9 -0 (10 or more)

2a. First, what city or town do you live in? 11-

(INTERVIEWER: ASK 2b AND 2c ONLY IF NECESSARY: BE SURE TO ENTER ANSWERS FOR 2b and 2c)

2b. What county is that? County: 12-1 Fairfax County
Other

2c. And what state? State: 13-1 Virginia
Other

3. How long have you lived in _____ county?

14-1 Less than 1 month
-2 1 - 6 months
-3 7 - 11 months
-4 1 - 2 years
-5 3 - 4 years
-6 Over 4 years

4. About how many miles do you yourself drive in a year?

15-1 Less than 10,000
-2 10,000 - 19,999
-3 20,000 - 29,999
-4 30,000 miles or more

5. In a typical week how many <u>days</u> do you drive?

16-7 Every day
-6 Six days
-5 Five days
-4 Four days
-3 Three days
-2 Two days
-1 One day
-0 None in a typical week

6. Drinking is an accepted part of business and social activity for many people. Do you ever drink beer, wine, or liquor such as whiskey, gin, or vodka?

17-1 Yes
-2 No (Skip to Q. 10)

7. Which of these do you drink most often - - - beer, wine, or liquor?

18-1 Beer
-2 Wine
-3 Liquor

8. At the present time do you consider yourself to be a:

19-1 Very light drinker
-2 Fairly light drinker
-3 Moderate drinker
-4 Fairly heavy drinker
-5 Heavy drinker

HAND RESPONDENT CARD "E"

9. About how many days during this past week did you drink the number of drinks shown below? (By drink we mean a glass of wine, a bottle or can of beer, or a single shot of liquor)? Just read me the number of days of each line.

8 or more drinks?	20-_____	Line 1
5 - 7 drinks?	21-_____	Line 2
3 - 4 drinks?	22-_____	Line 3
1 - 2 drinks?	23-_____	Line 4
No drinks?	24-_____	Line 5

INTERVIEWER: CHECK THAT DAYS TOTAL 7 days

10. What do you think the term Blood Alcohol Concentration or Blood Alcohol Level means?

25-1 Respondent's answer completely correct
-2 Respondent's answer correct
-3 Respondent's answer wrong

HAND RESPONDENT CARD "A"

11. The Blood Alcohol Concentration is based on a chemical test, such as a breath test, and is used to determine if a person is legally drunk or intoxicated. Which of these do you understand is the legal definition of being drunk in this state?

26-1 Any trace
-2 .05%
-3 .08%
-4 .10%
-5 .12%
-6 .15%
-7 .20%
-8 Don't know

12. How many drinks do you think you would have to have to reach the level where you would be considered legally drunk?

27-1 One or less
-2 Two
-3 Three
-4 Four
-5 Five
-6 Six
-7 Seven
-8 Eight
-9 Nine
-0 Ten or more
-X Don't know

13. Now, I'd like you to blow into this tube. This is part of the procedure for gathering data for this survey.

14. Have you drunk any beer, wine, or liquor in the last two hours?

29-1 Yes
-2 No (Skip to Q. 16)

(IF "YES" ON Q. 14, ASK):

15. How many drinks have you had in the last two hours, counting a bottle or can of beer, or a 4-ounce glass of wine, or 1½ ounces of liquor each as one drink?

30-1
-2
-3
-4
-5
-6
-7
-8
-9
-0 (10 or more)
-X None

16. During the past four years, how many times have you moved from one address to another?

31-1 One move
-2 Two moves
-3 Three moves or more
-4 No move - at same address during past 4 years (Skip to Q. 18)

(IF ANY MOVES IN THE PAST 4 YEARS, ASK):

17. How many of these moves were from one county to another?

32-1 One
-2 Two
-3 Three or more
-4 None
-5 Don't know

HAND RESPONDENT CARD "B"

18. Which of these comes closest to your weight? Just give the letter. (INTERVIEWER: ESTIMATE IF NECESSARY)

33-1 Less than 100 lbs.
-2 100-119 lbs.
-3 120-139 lbs.
-4 140-159 lbs.
-5 160-179 lbs.
-6 180-199 lbs.
-7 200-219 lbs.
-8 220-239 lbs.
-9 240 lbs. or more

19. In what 10-year age group do you fall?

34-1 Under 20 years
-2 20-29
-3 30-39
-4 40-49
-5 50-59
-6 60 or over

20. Sex (OBSERVE AND RECORD) 35-1 Male
-2 Female

21. Race (OBSERVE AND RECORD) 36-1 White
-2 Black
-3 Oriental
-4 Latin
-5 American Indian
Other (Specify)

22. LOCATION NO.: 37-

23. TIME OF DAY: 38-

24. DATE: 39- 40-

25. DAY OF WEEK: 41-1 Sunday
-2 Monday
-3 Tuesday
-4 Wednesday
-5 Thursday
-6 Friday
-7 Saturday

THANK RESPONDENT!