

EVALUATING FATALITY TRENDS
IN THE ALCOHOL SAFETY ACTION PROJECTS

by

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INTRODUCTION

In fiscal year 1971 the U. S. Department of Transportation, National Highway Traffic Safety Administration, initiated a program of comprehensive alcohol counter-measure projects in selected communities. These programs were called ASAPs (Alcohol Safety Action Projects) and were designed to effect a reduction in the incidence of drunken driving and alcohol related highway crashes, injuries and fatalities by directing comprehensive and well financed campaigns at problem drinkers who drive. The projects were to run for approximately 3½ years and, on average, each was funded with about \$2 million of federal funds. An original group of nine ASAPs were funded in the first year of the program.

In June of 1972, NHTSA issued a report reviewing the results of the first year efforts in the initial eight ASAP areas (one area was excluded since it did not begin operations as planned). While the report took care to point out that "long-term trends cannot be demonstrated on the basis of one year results" and "conclusions of the report must be considered preliminary,"^{1/} the authors nevertheless concluded that "if the national fatality trend had followed the ASAP trend there would have been nearly 4,900 fewer highway fatalities in 1971."^{2/}

This statement suggests that there is scientifically determined evidence that the ASAP programs are working and that early results indicate great program success. Consequently, a national advertising campaign has been mounted to persuade the nation that the ASAP projects appear to be a promising approach to large-scale fatality reduction.

^{1/} Alcohol Safety Action Projects -- First Year Evaluation Preview, U. S. Department of Transportation, National Highway Traffic Safety Administration, June 1972, p. v.

^{2/} Ibid. p. 10.

PURPOSE

The purpose of this report is to analyze the method used by NHTSA in determining ASAP project effectiveness and extrapolating fatality trends nationwide, and to evaluate the results of the program in accordance with generally accepted research methodology.

METHODOLOGY

In the NHTSA report,^{3/} the decrease in fatalities in the ASAP areas was tested for significance by using the fatalities which occurred in the rest of the state, outside the ASAP area, as a control for each ASAP. This procedure disregards the characteristics of the ASAP community which initially influenced its selection for inclusion in the program. A valid control site would be a community in the state that is similar to the ASAP community in terms of geographic and demographic characteristics and traffic accident experience. Use of such a control site would permit a valid comparison for determining if the ASAP brought about a significant change in certain characteristics of the ASAP community. Given the unacceptable nature of the control sites used in the NHTSA evaluation, it was determined that carefully matched control sites for each of the eight original ASAPs should be selected and that the test of significance on the decrease in fatalities in the ASAP areas should be repeated.

In selecting the control sites, care was taken to match as many pertinent characteristics of the ASAP area as possible. Obviously, the match could not be perfect, and in some instances the ASAP area possessed a characteristic which could not be readily matched elsewhere. However, by matching to the greatest degree possible such characteristics as population, vehicle registrations, land area, geographics, the existence of large metropolitan areas, the nature, extent and condition of road systems, and other available characteristics, reasonable control sites were selected for each of the ASAP communities. These control sites are shown in Table 1.

Once the control sites had been selected, the states were contacted for 1970-1971 fatality statistics. These data are shown in Table 2. Shown in Table 3 are the 1970-1971 fatalities for the control sites used by NHTSA.

^{3/} Ibid. p. 5.

TABLE 1

ASAP AREAS AND SELECTED CONTROL AREAS

<u>State</u>	<u>ASAP Area</u>	<u>Control Area</u>
Colorado	City and County of Denver	Colorado Springs & El Paso Co.
Michigan	Washtenaw Co.	Ingham Co.
New Mexico	Albuquerque & San Bernalillo Co.	Santa Fe and Santa Fe Co.
New York	Nassau Co.	Westchester Co.
North Carolina	Charlotte & Mechenberg Co.	Greensboro & Guilford Co.
Oregon	City of Portland Eugene and Lane Co.	Salem, Marion Co. and Clackamas Co.
Washington	Seattle and King Co.	Spokane and Spokane Co.
Wisconsin	Marathon & Sheboygan Co.	Eau Claire and Manitowoc Co.

TABLE 2

SELECTED CONTROL AREA FATALITIES

<u>Control Area</u>	<u>Fatalities</u>		<u>Difference</u>
	<u>1970</u>	<u>1971</u>	
Colorado	53	34	-19
Michigan	47	36	-11
New Mexico	28	27	-1
New York	114	143	+29
North Carolina	83	72	-11
Oregon	101	104	+3
Washington	71	54	-17
Wisconsin	27	36	+9
Total	524	506	-18

TABLE 3

NHTSA CONTROL AREA FATALITIES

<u>State Minus ASAP Area</u>	<u>Fatalities</u>		<u>Difference</u>
	1970	1971	
Colorado	581	539	-42
Michigan	2,135	2,134	-1
New Mexico	499	468	-31
New York	3,040	3,130	+90
North Carolina	1,706	1,777	+71
Oregon	550	593	+43
Washington	698	718	+20
Wisconsin	1,098	1,100	+2
Total	10,307	10,459	+152

FINDINGS

Five of the selected control sites recorded decreases in fatalities, three recorded increases, and, despite the 25% increase in the New York control site, the total for the control fatalities was down. In comparison, total fatalities in the eight states excluding the ASAP areas, which were used as control figures by NHTSA, showed an increase. Table 4 shows the 1970-1971 fatality figures for the ASAP areas, where total fatalities decreased. Given the selected control sites' 1970-1971 fatality figures, the significance of the decrease in fatalities in the ASAP areas was tested using the design in Table 5.

TABLE 4
ASAP FATALITIES

<u>ASAP Area</u>	<u>Fatalities</u>		<u>Difference</u>
	<u>1970</u>	<u>1971</u>	
Colorado	116	106	-10
Michigan	78	66	-12
New Mexico	78	80	+2
New York	171	166	-5
North Carolina	87	95	+8
Oregon	145	100	-45
Washington	190	173	-17
Wisconsin	45	46	+1
Total	910	832	-78

TABLE 5
FATALITY CHANGE — ASAP VS. SELECTED CONTROL

<u>Area</u>	<u>Fatalities</u>		<u>Total Fatalities for Each Area</u>
	<u>1970</u>	<u>1971</u>	
ASAP	910	832	1,742
Control	524	506	1,030
Total	1,434	1,338	2,772

The null hypothesis tested is that the possibility of a fatality is identically distributed between the ASAP and selected control areas over the 1970-1971 period. The calculated Chi-Square is

$$X^2 = \frac{n(ad - bc)^2}{K} = 0.482$$

The critical values of the Chi-Square are as follows:

$$X^2_{(.95)} = 3.84$$

$$X^2_{(.90)} = 2.71$$

$$X^2_{(.50)} = 0.455$$

Thus, with a calculated Chi-Square of $X^2 = 0.482$ the level of significance is only 50% and the hypothesis cannot be rejected. Hence, based on the control site results, no significance can be placed on the reduction in fatalities in the ASAP areas from 1970-1971. This conclusion is contrary to the findings of the NHTSA report, which concluded that applying ASAPs on a nationwide basis would save almost 5,000 lives.

The above result is not intended to indicate that the ASAPs were unsuccessful in the first year, but to show the difficulty involved in evaluating a project such as an ASAP, particularly when using a highly variable statistic like fatalities. Extreme care in the choice of statistical methodology must be exercised in order to make valid comparisons and tests of significance. The evaluation of the ASAPs is of critical importance for understanding what should and should not be applied in order to have a successful statewide alcohol safety program, and only through proper, extensive evaluation can such understanding be gained. The evaluation should include, as well as fatalities, the study of traffic statistics which are more stable and easily predictable, long-term trend analysis as more data from the ASAPs are received, and the study of nonquantifiable effects which must be given consideration in evaluating a program of this nature.