National Highway Traffic Safety Administration Fact Sheet

The Effects Following the Implementation of an 0.08 BAC Limit and an Administrative Per Se Law in California

On January 1, 1990, California reduced its blood alcohol concentration limit -- the level at or above which it is illegal to drive a vehicle -- from 0.10 percent to 0.08 percent. On July 1, 1990, California also implemented an Administrative Per Se (also known as Administrative License Revocation) law. This law allows police and driver licensing authorities to suspend the driver's license of drivers who fail or refuse an alcohol test. Both pieces of legislation received media attention. The National Highway Traffic Safety Administration recently completed a study on driver awareness, impaired driving arrests, traffic crashes, and police and court activities subsequent to the introduction of these laws.

Effects on drivers

Drivers in five counties were surveyed. Over 80 percent were aware that the blood alcohol concentration level had been reduced and three-quarters believed that the risk of being stopped for driving while impaired had increased. Half of all drivers who drink reported that they were less likely to drive within 2 hours of drinking than they were before the law changes.

Effects on arrests and crashes

Impaired driving arrests increased in each county studied. Alcohol-related crashes statewide were unchanged. Alcohol-related traffic fatalities decreased by 12 percent statewide, while all other traffic fatalities were unchanged.

Effects on police and courts

Police agencies reported only limited changes in their policies and procedures. Courts reported a slight reduction in the blood alcohol level that would be prosecuted as driving while intoxicated (rather than a reduced charge). No changes in guilty pleas, requests for jury trials, convictions, or appeals were reported.

Conclusions

The two laws and their publicity appear to have reduced alcohol-related traffic fatalities by 12 percent in 1990. The study could not quantify the separate effect of each law. The police and courts required only minimal changes to accommodate the 0.08 law.

This Fact Sheet summarizes the findings of NHTSA contract DTNH22-89-D-07265. The final report, DOT HS 807-777, is available from the National Technical Information Service, Springfield, Virginia 22161.

U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

DOT HS 807 777
Final Report

August 1991

The Effects Following the Implementation of an 0.08 BAC Limit and an Administrative Per Se Law in California

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
DOT HS 807 777		

4. Title and Subtitle	5. Report Date
The Effects Following the Implementation of an 0.08 BAC Limit and an Administrative Per Se Law in California	August 1991
	6. Performing Organization Code: NRD-40
7. Author(s)	8. Performing Organization Report No.

9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Research and Evaluation Associates 607 14th Street, N.W. Suite 610 Washington, DC 20005	11. Contract or Grant No.: DTNH22-89-D-07265
	13. Type of Report and Period Covered: Final Report
12. Sponsoring Agency Name and Address DOT/NHTSA Office of Driver & Pedestrian Research/RD 400 7th Street, S.W. Washington, DC 20590	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

On January 1, 1990 California lowered the allowable blood alcohol concentration (BAC) at which it is illegal to drive from 0.10 to 0.08. On July 1, 1990 California also implemented an Administrative Per Se (also known as Administrative License Revocation) law. This study examined the effects on the organizations which deal with drinking and driving behavior; driver awareness; DUI arrests and alcohol-related crashes and fatalities subsequent to January 1, 1990. An operational evaluation indicated little negative effect of the 0.08 law on police departments, the court system, and other organizations that deal with drinking and driving behavior. Results of a survey showed that most people are aware of the reduction in the BAC limit and almost half know the provisions of the Administrative Per Se law. Examination of arrest data showed an increase in DUI arrests statewide. Trend analysis of FARS data indicated a 12 percent reduction ($p=0.004$) in alcohol-related fatalities after January 1, 1990. There was no significant change in the number of alcohol-related fatalities following the implementation date of the Administrative Per Se law. However, it is possible that effects of the Administrative Per Se law may have taken place earlier than the actual implementation date.

17. Key Words	18. Distribution Statement
BAC limits, DWI laws, highway safety, Administrative Per Se	Document available to the public through the National Technical Information Service, Springfield, VA 22151

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified		

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

Background

This report presents the results of a study of two recent changes in California's driving under the influence (DUI) laws: the lowering of the allowable blood alcohol concentration (BAC) at which it is legal to drive and the implementation of an Administrative Per Se law. The reduction in the BAC limit took effect on January 1, 1990. This law lowered the BAC limit from 0.10% to 0.08%. The Administrative Per Se Law went into effect on July 1,1990. This legislation allowed an arresting officer to remove immediately a DUI offender's license, under certain conditions, for suspension by the Department of Motor Vehicles (DMV).

The evaluation had four major objectives: 1) To determine how the groups responsible for implementing the laws and educating the public about drinking and driving issues altered their activities as a result of changes in the laws; 2) To assess the impact of the legislation on the public's self-reported drinking and driving behavior and attitudes, as well as to appraise the public's knowledge of the laws; 3) To assess the laws' impact on the number of alcohol-related traffic fatalities; and, 4) To assess the legislation's impact on other measures of drinking and driving behavior, such as driving under the influence (DUI) arrests and alcohol-related crashes. For each objective, the primary focus was on the reduction in the BAC limit. This was because the research was designed to feed into a report which the National Highway Traffic Safety Administration (NHTSA) was preparing for Congress on recommended BAC limits.

Collecting information to fulfill the study's multiple objectives required a multi-methodological approach. The assessment of the law's impact on organizations was addressed by an operational evaluation, which utilized information acquired from groups that might have been affected by the new laws. Interviews were conducted with approximately 100 representatives of relevant organizations. In addition, written materials were reviewed and available statistical information was analyzed.

The assessment of the public's drinking and driving behavior and knowledge of the DUI laws was addressed through a self-administered survey of 1,600 individuals. The survey was conducted by the DMV, which distributed the questionnaire at selected field offices.

A time-series analysis of data on fatal crashes constituted the vehicle for determining the law's impact on alcohol-related traffic fatalities. These data were obtained from NHTSA's Fatal Accident Reporting System (FARS). Data from 1986 through 1990 were incorporated into the analysis.

Analyses of additional types of quantitative data were performed to provide further indications of the impact of the reduction in the BAC limit. Alcohol-related crash data provided by the California Department of Justice's Bureau of Criminal Statistics and Special Services were analyzed, as well as DUI arrest data, obtained from the California Highway Patrol (CHP) and the Bureau of Criminal Statistics.

The data collection for each research component focused on five California counties (Alameda County, Los Angeles County, Fresno County, and Shasta/Tehama Counties), comprising the study's four research sites. These research sites were selected to incorporate sufficient diversity so together they would be generally representative of the entire state.

Major Findings

The findings from each research component are based on data collected relatively soon after the laws went into effect. As with any new legislation, the short-term responses may differ from the laws' long-term effects.

Operational Evaluation

The reduction in the BAC limit had most relevance for the operations of law enforcement agencies and the courts. The law had little impact on probation departments and alcohol treatment programs because the DUI offenders referred to them generally had such high BAC levels that the law change did not affect them.

Even for law enforcement agencies and the courts, the law involved few new policies and procedures. Many law enforcement agencies had been making DUI arrests below the 0.10% BAC limit before the law changed. The major difference was that, in cases where the chemical test indicated a blood alcohol concentration of 0.08% or 0.09%, it was no longer necessary for the arresting officer to provide collaborative evidence that the individual was under the influence. This made it easier to make arrests at lower BAC levels.

For the court system, the major policy implication of the reduction in the BAC limit involved prosecutors' decisions about whether to file cases and the BAC levels at which these cases would be prosecuted as DUI. The reduction in the BAC limit generally lowered from around 0.12% down to around 0.10% the cutoff point below which cases were plea-bargained to the reduced charge of "wet" reckless. A conviction of this lesser offense could involve a lighter sentence than a conviction for drunk driving.

The limited quantitative data available indicate that the amount of DUI misdemeanor arrests made by the California Highway Patrol, local police departments, and the Los Angeles Sheriff's department increased in 1990. This was also true for Group C misdemeanor filings (the vast majority of which are DUI) in the courts. Representatives of these agencies perceived that the reduction in the BAC limit had contributed to the increase. However, the number and proportion of arrests and court cases with BAC levels under 0.10% was still very low. There was a general perception that most individuals involved in DUI situations were hard-core drinkers who would have been targeted by the law enforcement and court systems even if the BAC limit had remained at 0.10%

The reduction in the BAC limit was only one of several changes experienced by those law enforcement agencies which demonstrated the most growth in DUI arrests during 1990 and appeared most likely to conduct arrests at lower BAC levels. These additional factors appeared to operate in conjunction with the reduction in the BAC limit, enabling these agencies to take the proactive stance toward DUI enforcement which was necessary for the reduced BAC limit to be implemented most effectively.

Law enforcement officers' lack of knowledge of how to recognize impaired drivers with lower BAC levels constituted a deterrent to full implementation of the law. Training on recognizing the subtle indications of excessive drinking proved useful to police officers. The training needed and provided within the court system focused on the reduction in the BAC limit's implications for the prosecution of cases and for the testimony of expert witnesses.

The new law involved increased staff time and costs, to the extent it increased the number of arrests and court cases, added time to the pre-arrest process, and led

to additional court time for officers. These demands were not excessive. However, they came at a time when law enforcement agencies and city/district attorney's offices were generally having to contend with decreasing resources to handle rising numbers of cases. This made it difficult to absorb any increases in workloads.

Several types of organizations included in the operational evaluation undertook public education efforts regarding drinking and driving issues. Many of these groups incorporated information about the 0.08% limit into their ongoing community outreach activities, such as media releases around holiday times and designated driver campaigns, although few undertook any community outreach efforts specifically focusing on the new law.

There was a consensus across research sites that the reduction in the BAC limit received extensive media coverage. Agency representatives noted a high degree of public awareness of the new BAC limit. They believed the law's major impact involved its deterrent value for the general public.

Survey of The Public

A large majority (81%) of respondents knew that the BAC limit had become stricter since 1989. Slightly less than half (45%) were able to recall and/or write down the actual 0.08%. A similar percentage (48%) demonstrated awareness of the Administrative Per Se law. These findings may underestimate the proportion of participants who knew the BAC limit in relation to the Administrative Per Se law because of variation between the questions on the survey instrument that were used to tap correct knowledge of the two laws.

Correct knowledge of either law was disproportionately low among members of non-white groups except, in the case of the Administrative Per Se Law, for Hispanics. However, awareness that the BAC limit had become stricter was high at all sites and among all demographic groups.

Very low incidences of drinking and, especially, of driving after drinking were elicited. Self-reporting may underestimate the true extent of these behaviors. Over 80% of those individuals who reported ever drinking claimed they never drove within two hours of drinking or did so no more than once a month. An even higher proportion of these individuals (over 90%) maintained they never drove after drinking too much alcohol or did so once a month or less. No relationship was found between respondents' drinking and driving behavior and their knowledge of either DUI law.

The survey responses indicated that the incidence of self-reported driving after drinking had decreased substantially since the BAC law went into effect. Half of all respondents who drank alcohol reported that they were less likely to drive within two hours of drinking now, while almost as large a fraction indicated their probability of driving after drinking too much had decreased. Reasons provided for these changes in drinking and driving behavior centered on concern about the DUI laws and penalties. Unfortunately, it was impossible to tell from the responses whether respondents were referring to one of the two new laws, to both in combination, or to other factors altogether, such as sentences handed down by judges.

Correct knowledge of the BAC limit was unrelated to self-reported changes in drinking and driving behavior. This was true both for driving within two hours after drinking and for driving after drinking too much.

Respondents perceived the risk of being stopped for DUI to be very high. Moreover, three-quarters of them felt this risk had increased since 1989. An even higher percentage believed that the risk of undergoing license suspension if arrested for DUI had increased. Virtually no relationship was found between perceptions of increased risk and knowledge of the new DUI laws.

Analysis of Fatal Crash Data and Supplemental Data Analysis

Analysis of the fatal accident data from FARS indicates a 12% reduction in alcohol-related fatalities statewide following the implementation date of the 0.08% law. However, this does not necessarily mean that the entire alcohol-related fatality reduction was due to the implementation of the lower BAC limit. Prior to implementation of the 0.08% law, a good deal of discussion regarding a proposed Administrative Per Se law was also taking place. The publicity surrounding both these pieces of legislation was therefore intermingled. The effect on alcohol-related driving behavior noted immediately after the 0.08% law was implemented could therefore be a function of both the 0.08% and Administrative Per Se provisions.

It was also found that there was no change in the number of alcohol-related fatalities following the date the Administrative Per Se law went into effect. This law was implemented six months after the 0.08% law. Given the advance publicity mentioned above relating to both the 0.08% and the Administrative Per Se laws, it is difficult to untangle the effects of the two pieces of legislation which occurred so close together. It is possible that effects of the Administrative Per Se law may have taken place earlier than the actual implementation date. In addition, only six months of data

were available following implementation of the Administrative Per Se law, making it difficult to assess any change.

In summary, a 12% reduction in alcohol-related fatalities followed implementation of the 0.08% law, but part of this reduction may be due to overlapping activities relating to a new Administrative Per Se law which took effect six months later.

No change was found in the number of non-alcohol fatalities in California nor in the number of alcohol-related fatalities nationwide. This provides further evidence that the BAC legislation was involved in the decline in the number of alcohol-related fatalities.

Analysis of crash data yielded different results. No change was detected in the number of alcohol crashes statewide nor in two of the study sites, Los Angeles and Alameda Counties. An increase in the number of alcohol crashes was found at the other two sites. However, this identified increase may be a reporting artifact.

Only limited information was available on the number of DUI arrests. The indications are that, overall, there was an increase in the number of DUI arrests statewide by the CHP and in all four of the study sites by all arresting agencies combined. The CHP made 17,661 more DUI arrests statewide during February through October, 1990 than in the comparable period the previous year. Within each research site, the increase in the number of DUI arrests performed during 1990 by all arresting agencies combined ranged from 3.5% in Los Angeles County to 22.5% in Shasta/Tehama Counties. Although total misdemeanor arrests also increased at each research site, DUI arrests rose at a higher rate.

Interrelationship Between Findings

No systematic pattern of findings differentiating one research site from another emerged from the separate components of the research. This lack of systematic variation would seem to indicate that drinking and driving is a problem which cuts across settings and groups and that the responses to this problem also are generally applicable.

Information from the operational evaluation helps explain the apparent discrepancy between results from the analysis of FARS fatality data and CHP crash data. Unlike the fatality data from FARS, the crash data obtained from the CHP is based on officers' subjective assessments of alcohol involvement. The operational evaluation revealed that staff of many law enforcement agencies had become more highly sensitized to DUI enforcement in 1990 and viewed it as an increased priority. The increase in alcohol-involved crashes at several research sites, identified in the CHP crash data, may well represent a growth in the reporting of alcohol-involvement in crashes, rather than a true increase in the incidence of these events.

The analysis of the fatal accident data and the perceptions of agency representatives interviewed for the operational evaluation suggest that the reduced BAC limit had beneficial deterrent effects on the public. Findings from the survey of the public may imply that these deterrent effects resulted from general knowledge that the DUI laws had become stricter, rather than from knowledge of the laws' specific provisions.

I

INTRODUCTION

This report summarizes the results of a study undertaken by Research and Evaluation Associates for the National Highway Traffic Safety Administration (NHTSA). The research was performed under two task orders within the "Collect Innovative Problem Countermeasure Behavior Data" contract. This contract was designed to obtain information on innovative countermeasure programs which address the problems of alcohol, drugs, and other unsafe driving practices. The research described in this report was performed primarily to assess the effects of the lowering of the allowable blood alcohol concentration (BAC) in California from 0.10% to 0.08%. The implementation of an Administrative Per Se law, another recent change in California drinking and driving laws, constituted a secondary research concern. The reduction in the BAC limit was the primary focus because the research was intended to feed into a report which NHTSA was preparing for Congress on recommended BAC limits.

The reduction in the BAC limit (Senate Bill 408) took effect on January 1, 1990. One section of this law lowered the blood alcohol concentration (BAC) at which an individual was legally presumed to be driving under the influence from 0.10% to 0.08%. Another section specifically prohibited individuals with 0.08% or more by weight alcohol in their blood from driving. California was the fourth state to adopt a 0.08% BAC limit, following in the footsteps of Maine, Utah and Oregon. Vermont followed on July 1, 1981.

The Administrative Per Se law, which went into effect on July 1, 1990, was a more complex law. This legislation allowed an arresting officer to remove immediately

the drivers' license of an individual whose BAC was above the legal limit or who refused to take a chemical test that would establish a blood alcohol level.[1] The arresting officer was directed to issue a 45-day temporary license to the offender. This would allow time for an administrative review by the Department of Motor Vehicles (DMV) and, for those who requested it, a hearing before a DMV hearing officer. At the end of the 45 days, the DMV would suspend or revoke the license for a minimum of four months (longer in the case of a subsequent offense or if the person refused to take the chemical test). This sanction was an administrative one, which occurred outside of the judicial process and was entirely independent of any criminal penalty imposed in court for the driving under the influence (DUI) offense. California was the 28th state to implement an Administrative Per Se law.

Research Objectives

The evaluation had the following four major objectives:

- To determine how the groups responsible for enforcing the BAC limit, implementing the Administrative Per Se law , and educating the public about drinking and driving issues altered their activities as a result of changes in the laws;

- To assess the impact of the legislative changes on the public's self-reported drinking and driving behavior and attitudes, as well as to appraise the public's knowledge of the laws;

- To assess the impact of the new laws on the number of alcohol-related traffic deaths; and,

---

[1]Two versions of the Administrative Per Se law were implemented. The original version (Senate Bill 1623) was in effect for less than one month. Since it was passed before the 0.08% BAC limit was implemented, it specified the previous 0.10% BAC limit for removing individuals' licenses. Cleanup legislation (Senate Bill 1150) went into law effective July 26, 1990. This legislation lowered the BAC threshold to 0.08% to conform to the new BAC limit.

- To assess the new legislation's impact on other measures of drinking and driving behavior, such as alcohol-related crashes and DUI arrests.

For each objective, the focus was on the effects of the reduction in the BAC limit, to the extent these effects could be separated out from the effects of the Administrative Per Se Law.

Research Design

Collecting information to fulfill the study's multiple objectives required a multi-methodological approach. This is summarized below. Later chapters of this report include more detailed descriptions of the specific methodologies adopted to achieve each research objective.

The assessment of the laws' impact on organizations was addressed by an operational evaluation, which utilized information acquired from groups that might have been affected by the new laws. These organizations ranged from law enforcement agencies to community activist groups. Interviews were conducted with approximately 100 representatives of relevant organizations. In addition, written materials were reviewed and available statistical information was analyzed.

The assessment of the public's drinking and driving behavior and knowledge of the DUI laws was addressed through a self-administered survey of 1,600 individuals. The survey was conducted by the Department of Motor Vehicles (DMV), which distributed the questionnaire at selected field offices.

A time-series analysis of data on fatal crashes constituted the vehicle for determining the laws' impact on alcohol-related traffic fatalities. These data were obtained from NHTSA's Fatal Accident Reporting System (FARS). FARS data from 1986 through 1990 were incorporated into the analysis.

Analyses of additional types of quantitative data were used to assess further the impact of the reduction in the BAC limit. Alcohol-related crash data provided by the California Department of Justice's Bureau of Criminal Statistics and Special Services were analyzed, as well as DUI arrest data, obtained from the California Highway Patrol (CHP) and the Bureau of Criminal Statistics and Special Services.

The different types of data needed for the study dictated that the overall evaluation be limited to four groups of counties in California.[2] Alameda County, Los Angeles County, Fresno County, and Shasta/Tehama Counties constituted the four research sites.

Site Selection

Site selection was governed by the following four criteria:

- the extent to which the selected counties, taken together, incorporated sufficient diversity to be generally representative of the entire state;
- the access to relevant institutions and personnel in each county;
- the availability of adequate data on traffic fatalities; and
- the ability to obtain data on public awareness and behavior change at each site.

The process Research and Evaluation Associates utilized to identify potential sites, and the extent to which each of the selected sites fully met each criteria are summarized in the following subsections.

Diversity/Representativeness. NHTSA specified that the sites, taken together, should capture three types of diversity: population density, geographic location, and

---

[2]The FARS analysis and the analysis of supplemental data constituted exceptions. These research components incorporated statewide data, in addition to data for the targeted research sites.

the percentage of the population arrested for DUI during 1989 (the baseline year before the legislative changes went into effect). Table 1 displays the way in which Alameda County, Los Angeles County, Fresno County, and Shasta/Tehama Counties together incorporated the full mix of desired characteristics.

Table 1. Characteristics of Potential Sites

SITE	1986 POPULATION PER SQUARE MILE	LOCATION	1989 DUI ARREST RATE
Shasta County Tehama County	35 15	North North	1.40% 1.77%
Alameda County	1,642	Bay Area	1.24%
Fresno County	98	Central Valley	2.31%
Los Angeles County	2,038	South	1.89%

Shasta and Tehama Counties, taken together, constituted a rural, northern locale with a relatively low DUI arrest rate in 1989. (Tehama County by itself had a DUI arrest rate which was slightly above the state's average of 1.72% However, when Tehama County was combined with Shasta County, the site's arrest rate fell below the California average.) Alameda County also had a relatively low arrest rate, but was an urban region in the Bay area. Fresno County represented a rural, Central Valley area with a relatively high DUI arrest rate in 1989, while Los Angeles County constituted an urban, southern region whose arrest rate was also above average.

Research and Evaluation Associates staff presented these potential sites to NHTSA administrators at the national and regional levels and to administrators of

several California state agencies (for example, the Office of Traffic Safety, the Judicial Council of California, and the Department of Alcohol and Drug Programs). They all agreed these sites would be good choices, incorporating sufficient diversity to generally represent the state. Based on this response, Research and Evaluation Associates staff initiated activities to determine the extent to which these sites fulfilled the remaining site-selection criteria.

Access to Relevant Institutions. Cooperation of relevant organizations at each potential site would be essential for the operational evaluation component of the research. Preliminary contacts were instituted with virtually all the major organizations involved in implementing and enforcing the DUI laws in Shasta, Tehama, Fresno, Alameda and Los Angeles Counties . The contacts were uniformly positive. Representatives of all agencies agreed to participate in the operational evaluation interviews, provide copies of any written materials available, and, to the extent possible, share statistical data with Research and Evaluation Associates. A list of all organizations contacted is included in Chapter II.

Adequate Data on Traffic Fatalities. Data on traffic fatalities would be necessary for the time-series analysis. Selected data included in FARS were reviewed to assess the adequacy of available information. Monthly fatality data for the period January 1, 1988-June 30, 1990 were examined for each potential site. Specific elements of concern were the number of fatalities with alcohol involvement and the percent of fatalities that were alcohol-related. One consideration was to determine whether the number of fatalities expected to occur at each site during the study period would be large enough for statistical analysis. A second consideration was to ensure that there

was no history of unreliability as indicated by erratic data patterns, missing data, or low testing percentages.

Alameda, Los Angeles, and Fresno Counties clearly had sufficient numbers of alcohol-related fatalities to allow for an analysis using monthly data. The Shasta/Tehama site averaged just three alcohol-related fatalities per month; however, the pattern of fatalities indicted that the data for this location would be acceptable for analysis because sufficient variability was evident. There were only two months in which no alcohol-related fatalities were recorded in either of these two counties.

No patterns of missing data or erratic results were observed for the numbers of traffic fatalities that involved alcohol. Fairly wide fluctuations in the percentages of these fatalities were evident for all sites except Los Angeles. These were attributable to the small number of cases involved and were deemed to pose no problems for the analysis.

With one exception, the percentages of fatally-injured drivers tested were quite high (over 80%) for all the sites through 1989. The Shasta/Tehama site had a slightly lower percentage in 1987. However, the percentage rose substantially in 1988 and remained high in the subsequent time periods.

One general pattern of reporting which had implications for the analysis, regardless of the specific sites selected, did emerge from review of the FARS data. Though FARS was reported as being 95% complete for the period January 1, 1990 - June 30, 1990, the June data were only 25-25% complete. The number of fatalities reported for that month was well below the numbers for earlier months, suggesting a six-month reporting delay. This delay was especially pronounced for Los Angeles County, but was not unique to that region: all counties in California exhibited similar

patterns of reporting. In order to accommodate this reporting lag, Research and Associates decided to defer requesting FARS data until June 1991. This would enable complete data through 1990 to be included in the analysis.

Access to Data on Public Awareness and Behavior Change. The final criterion governing the site-selection process involved the ability to obtain data on public awareness and behavior change. This criterion could be met either by obtaining access to existing relevant survey data or by identifying one or more groups which would be willing to administer a new survey of the public at the sites, and would have the capacity to do so. This survey would be developed and analyzed by Research and Evaluation Associates.

Research and Evaluation Associates staff used its telephone calls to California state agencies and relevant organizations within the selected counties as the principal means of determining whether the necessary survey information could be obtained for the sites under consideration. These contacts yielded no evidence that any surveys of the public had been conducted in California regarding the lowering of the BAC limit or the implementation of the Administrative Per Se law. A new survey therefore would have to be undertaken, regardless of the sites selected.

Identification of a group or groups willing and capable of administering a new survey was complicated by the project's inability to subsidize the data collection effort. Research and Evaluation Associates staff were unable to identify any groups within the targeted counties that would constitute viable candidates for administering the survey. In addition, there were strong arguments for having the data collection be undertaken by the same organization for all sites to better ensure uniformity of procedures.

Research and Evaluation Associates initiated state-level negotiations with the DMV regarding the agency's willingness to serve as the survey administrator. Several possible data collection methods were considered. The preferable approach from the research standpoint was for DMV staff to mail out the questionnaire to a random sample of drivers in the relevant counties, conducting follow-up contacts to obtain an adequate response rate. This approach proved infeasible since it would have involved a considerable expenditure of DMV time and resources. However, the DMV was willing to have its staff distribute the questionnaire to a sample of individuals visiting DMV field offices at the research sites. This alternative approach was adopted.

Overview of The Report

The remainder of this report is divided into four sections. Chapter II presents a summary of findings from the operational evaluation component of the project. Equivalent information for the survey of the public is provided in Chapter III. Chapter IV focuses on the quantitative analysis, including both the time-series analysis of FARS data and the analysis of supplemental data. Chapter V presents the major findings drawn from the analyses presented in the previous three chapters.

II

OPERATIONAL EVALUATION

Background

Conducting an operational evaluation, designed to determine a law's effects on relevant organizations, is important for two reasons. First, organizations' experiences in implementing any law can feed into an overall determination of the legislation's costs and benefits. Second, understanding of how relevant agencies interpret and carry out the provisions of the new legislation, in conjunction with information about other changes that occurred within the organizations during the same time period, can help explain the degree to which the public proves knowledgeable of the legislative provisions. An operational evaluation can also prove valuable in assessing the extent to which alterations in public behavior are a result of the law change.

The operational evaluation described here was designed to determine the effect which the reduction in the blood alcohol concentration (BAC) limit and, to a lesser extent, the Administrative Per Se law, had on those groups which are responsible for the laws' implementation and/or for educating the public about drinking and driving laws.

Methodology

In each of the five counties comprising the four research sites, Research and Evaluation Associates targeted the following series of organizations for data collection:

- law enforcement organizations (California Highway Patrol (CHP), sheriff's offices, local police departments);

- court systems (municipal/justice courts, offices providing support to the municipal court system, district attorney's/city attorney's offices);
- probation departments;
- alcohol treatment systems (county alcohol program administrations, treatment programs serving first and second/multiple offenders);
- Department of Motor Vehicle (DMV) Driver Safety Offices;
- community outreach/activist groups (grassroots organizations, school-system programs, auto clubs); and,
- miscellaneous organizations, such as military bases.

Two of the relevant organizations, the CHP and the DMV, were organized along state lines, rather than at the county or municipal level. Research and Evaluation Associates staff consequently initiated contact with these highly centralized, hierarchical organizations at the state level. Both organizations agreed to provide data and written materials from headquarters and authorized relevant personnel in District and Area offices serving the study's four research sites to be interviewed.

Each of the counties contained multiple municipal/justice courts and police departments. Los Angeles County was the most extreme case, with 24 municipal courts and over 40 police departments within its boundaries. It obviously was not feasible to obtain information from all of them. A sampling approach was therefore adopted, with two municipal/justice courts and two police departments from each county targeted for study. (Only one of each was selected in Shasta and Tehama Counties because these counties together constituted a single research site). Matched pairs of police departments and courts, serving the same areas within the county, were selected so the research could capture the interaction between them. The selection also attempted to capture the county's socio-economic and ethnic

diversity. Selection among multiple organizations was also necessary for alcohol treatment programs in Los Angeles and Alameda Counties.

Research and Evaluation Associates staff conducted approximately 100 interviews for the operational evaluation. The vast majority were conducted in person during site visits, which occurred in April 1991. Those few key individuals with whom meetings could not be scheduled were interviewed by telephone at a later date. A listing of all groups included in the operational evaluation data collection is provided in Table 2.

Each interview generally required between one and two hours. Although the interviews were not highly structured, the Research and Evaluation Associates staff member conducting the discussion followed a written guide to ensure that all topics of concern were addressed. The interviews were designed to gather information regarding the new laws' effects on a number of areas. These included policies and procedures, volume of activity, BAC levels of cases, staffing and finances, training needs, public outreach activities, and miscellaneous topics relevant to the specific type of organization. Information also was requested regarding any other changes undertaken by the organization during 1990-1991 -- and events occurring within the wider community during the same time period (including media activity) -- which might have influenced the public's drinking and driving behavior or fatal DUI accident rate. Quantitative data and relevant written information, such as training materials and media releases, also were sought.

In order to hear different perspectives and capture potential discrepancies between official policies/procedures and their implementation, multiple interviews were generally conducted at each law enforcement agency. The first interview was with

Table 2. Organizations Included In Data Collection For Operational Evaluation

TYPE OF ORGANIZATION	SITES			
	ALAMEDA COUNTY	LOS ANGELES COUNTY	FRESNO COUNTY	SHASTA/TEHAMA COUNTY
Law Enforcement Agency				
California Highway Patrol	Golden Gate Division Office El Protector Hayward Area Office	South LA Area Office (Southern Division)	Fresno Area Office (Central Division) El Protector	Northern Division Office Redding Area Office Red Bluff Area Office
Sheriff's Department	Alameda County Sheriff's Department	LA County Sheriff's Department (central office and Lakewood Station)	Fresno County Sheriff's Department	Shasta County Sheriff's Department Tehama County Sheriff's Department
Police Department	Oakland Police Department Livermore Police Department	Los Angeles Police Department Compton Police Department	Fresno City Police Department Selma Police Department	Redding Police Department Red Bluff Police Department
Judicial System				
Municipal/Justice Court	Oakland Municipal Court Livermore/Pleasanton/Dublin Municipal Court	Los Angeles Municipal Court (Metropolitan, Van Nuys, and Beverly Hills branches) Compton Municipal Court	Fresno Municipal Court Selma Justice Court	Redding Municipal Court Red Bluff Justice Court
District Attorney's/City Attorney's Office	Alameda County District Attorney's Office (Oakland and Livermore/Pleasanton/ Dublin branches)	Los Angeles District Attorney's Office (Compton branch) Los Angeles City Attorney's Office	Fresno County District Attorney's Office	Shasta County District Attorney's Office Tehama County District Attorney's Office
Support Unit	Alameda County Office of Court Services	LA Municipal Courts Planning and Research Unit		

TYPE OF ORGANIZATION	SITES			
	ALAMEDA COUNTY	LOS ANGELES COUNTY	FRESNO COUNTY	SHASTA/TEHAMA COUNTY
Probation Department	Alameda County Probation Department	Los Angeles County Probation Department	Fresno County Probation Department	Shasta County Probation Department Tehama County Probation Department
Alcohol Treatment System				
County Alcohol Program Administration	Alameda County Alcohol Program	Los Angeles County Office of Alcohol Programs	Fresno County Health Department	Shasta County Substance Abuse Tehama County Alcohol and Drug Program
Treatment Programs	Occupational Health Services	California Association of Drinking Driver Treatment Programs National Council on Alcoholism and Drug Dependency -- San Fernando Valley	Fresno County Hispanic Commission on Alcohol and Drug Abuse Services	CARE Schools Right Road Recovery Center
DMV Driver Safety Office	Office of Driver Safety	Office of Driver Safety	Office of Driver Safety	Office of Driver Safety
Community Outreach/Activist Groups	California State Automobile Association	Designated Driver Program Automobile Club of Southern California MADD (LA County chapter)	MADD (Fresno County chapter) Drive Safe Fresno	Tehama County Department of Education (school-based programs)
Miscellaneous Groups	Alameda Naval Air Station Juvenile Officers Committee Northern California Deuce Defenders			

one or more individual(s) at the management level. The second was with one or more line staff, such as patrol officers. Judges were interviewed separately from court administrators in the municipal/justice courts.

Limitations of The Research

Relatively few of the organizations included in the data collection had computerized data bases or maintained accurate statistical summaries relevant to this study. The only way to acquire quantitative information would have been to extract it from individual case records. Neither Research and Evaluation Associates nor the agencies themselves had the resources to undertake this effort. The operational evaluation's findings therefore are based largely on the perceptions of agency representatives.

The data collection focused on the legislation's impact at the research site level. Both the reduction in the BAC level and the Administrative Per Se Law, especially the latter, also impacted some agencies' operations at the state level. However, the operational evaluation did not deal with this level of activity.

The findings center on the laws' impact on law enforcement agencies and on the court system. This is because these were the groups for which the reduction in the BAC limit had the most relevance.

Information requested from the courts was limited to DUI misdemeanors.[3] DUI felonies are adjudicated in Superior Court rather in the municipal court system. Incorporating them into the operational evaluation would have involved an additional

[3]The major difference between a misdemeanor and felony DUI charge is that the felony charge involves an injury or fatality.

layer of data collection. This was not deemed worthwhile since the proportion of DUI cases charged as felonies is very low.

Findings

The findings presented here relate to the effects of the reduction in the BAC limit, the preliminary focus of the data collection and analysis, on various types of organizations. Findings regarding the effects of the Administrative Per Se law are briefly summarized in Appendix 1.

Law Enforcement Agencies

The law's effects on the operations of the CHP, sheriff's departments, and local police departments at the research sites are detailed in this subsection.

Policies and Procedures. Implementation of the 0.08% BAC limit did not require major revisions in law enforcement agencies' policies and official procedures. Many of these organizations already had the policy of conducting DUI arrests below 0.10% before the reduction in the BAC limit occurred. However, it had been considerably more difficult to make these arrests in the past because the officers had to provide collaborative evidence of impairment. After the limit was reduced, the burden of proof was no longer on the officer for arrests in the 0.08-0.09% BAC range.

Some agencies instituted procedural changes as a result of the lowering of the BAC limit which further simplified the arrest of drivers at 0.08% and 0.09% BAC levels. For example, the Los Angeles Police Department no longer required that these individuals receive medical exams to determine the presence of drugs before they could be booked for DUI.

Volume of Arrests and Other Outcomes: Law enforcement agencies at the research sites were unable to supply arrest data usable for the analysis. Some relevant data were obtained from the California Department of Justice's Bureau of Criminal Statistics and Special Studies. This agency reports annually on the number of arrests made by each law enforcement agency in the state. The analysis of these data, presented in Chapter IV, revealed that DUI misdemeanor arrests increased across the research sites during 1990.

A further breakdown of these data for selected law enforcement agencies (the CHP, the sheriff's department, the largest city police department) at each research site is presented in Table 3. It indicates that arrests made by the CHP and the major city police departments rose at all four sites during 1990. The rate of increase ranged from 2% (the Los Angeles City Police Department) to 39% (the CHP in Alameda County and the Redding Police Department in Shasta County). In each case, the rate of increase was greater than the rate of increase for total misdemeanor arrests. Los Angeles County was the only site at which the sheriff's department's DUI arrests rose sizably (8%) in 1990. DUI arrests made by this agency underwent virtually no change in Fresno County and fell at the other two research sites. Sheriff's departments' total misdemeanor arrests increased at all research sites except Los Angeles County.

Comparison of data over a two-year period has limited utility in identifying trends. Changes identified may reflect normal variation between years rather than general trends. However, the differences identified here tie into the different relationships the law enforcement agencies have to DUI enforcement. The agencies in which DUI arrests increased in 1990 (the CHP, local police departments, the Los Angeles County

Table 3. Total Adult Misdemeanor Arrests[1] and Adult DUI Misdemeanor Arrests By Type of Law Enforcement Agency, 1989 - 1990

LAW ENFORCEMENT AGENCY	1989		1990		% CHANGE 1989 - 90	
	TOTAL ADULT MISDEMEANOR ARRESTS[1]	DUI ADULT MISDEMEANOR ARRESTS	TOTAL ADULT MISDEMEANOR ARRESTS[1]	DUI ADULT MISDEMEANOR ARRESTS	TOTAL ADULT MISDEMEANOR ARRESTS[1]	DUI ADULT MISDEMEANOR ARRESTS
California Highway Patrol						
Alameda County	4,336	3,897	5,783	5,408	33.37	38.77
Los Angeles County	34,270	32,756	35,937	34,432	4.86	5.12
Fresno County	4,696	4,356	6,232	5,970	32.71	37.05
Shasta/Tehama Counties[2]	1,102	814	1,290	975	17.06	19.78
Largest City Police Departments at Research Site						
Oakland (Alameda County)	29,434	929	29,398	1,017	-0.12	9.47
Los Angeles (Los Angeles County)	149,269	34,904	138,597	35,427	-7.15	1.50
Fresno (Fresno County)	19,626	1,844	21,404	2,272	9.06	23.21
Redding (Shasta/Tehama Counties)	3,457	647	4,312	897	24.73	38.64
Sheriff's Department						
Alameda County	1,600	205	1,764	133	10.25	-35.12
Los Angeles County	22,546	3,061	22,033	3,333	-2.26	8.18
Fresno County	3,079	69	3,365	70	9.29	1.45
Shasta/Tehama Counties[3]	1,988	147	2,400	125	20.72	-14.96

[1]DUI misdemeanor arrests represent a subset of total adult misdemeanor arrests and are incorporated into the total figure.
[2]Data for the CHP offices serving Shasta and Tehama counties are merged in this row.
[3]Data for the Shasta and Tehama County Sheriff's Departments are merged in this row.
Source of Data: California Department of Justice Bureau of Criminal Statistics and Special Services

Sheriff's Office) are those which view DUI enforcement as clearly part of their mandate.[4]

No statistical information was available enabling a comparison of BACs of drivers arrested for DUI before and after the reduction in the BAC limit, since arresting agencies did not routinely extract these data from individual arrest records. This makes it difficult to assess the extent to which the increase in DUI arrests during 1990 was due to the new law. Agency representatives did feel that the volume and proportion of arrests made below 0.10% had increased with the new legislation. However, the BAC level of the average DUI arrest remained high. (The estimate generally provided was over 0.15%). The reduction in the BAC limit was viewed as irrelevant for most DUI arrests, although the number of people driving and arrested at very high BAC levels (e.g., over 0.25%) may have decreased.

Few quantitative data were obtained regarding the proportion of drivers now arrested at BACs below 0.10%. The Los Angeles City Attorney's Office did provide statistics on those arrests which the Los Angles Police Department submitted for prosecution from mid-January through mid- October 1990. Thirteen percent were at BAC levels of 0.08% or 0.09%. An additional 6% were at BACs below 0.08%. The percentage of arrests below 0.10% may be exceptionally high in Los Angeles.

---

[4]The CHP is responsible for DUI enforcement on interstate highways and freeways. Local police departments undertake this activity on city streets. The Los Angeles County Sheriff's Department essentially fills the role of a city police department for forty-one municipalities in Los Angeles County, providing general law enforcement services to them on a contractual basis. Sheriff's departments in the other research sites do not view DUI enforcement as their responsibility. Their role in this regard is often limited to stopping drivers suspected of being under the influence. The drivers are then turned over to CHP patrol officers, who make the actual arrests and fill out the accompanying paperwork.

Representatives of law enforcement agencies at the other research sites estimated that only between 5% and 10% of their organizations' 1990 DUI arrests occurred below that BAC level.

Some link is apparent between whether an agency's DUI arrests increased in 1990 and whether the agency performed many arrests at lower BAC levels. Organizations whose DUI arrests declined during the year indicated they continued to make extremely low proportions of arrests below the previous 0.10% BAC limit; those whose DUI arrests increased during 1990 generally perceived that the proportion of their arrests performed at lower BAC levels had also increased.

Representatives of agencies whose DUI arrests increased the most dramatically in 1990 attributed this development only partly to the 0.08% BAC limit. These organizations had undergone internal changes during the year which were perceived as contributing to the growth in these arrests.

One internal development was an increased commitment from top-level personnel to vigorous DUI enforcement. This manifested itself, for example, in new pressure on officers to make a certain amount of DUI arrests per month. CHP administrators and line staff seemed especially aware of this heightened emphasis on DUI, which they viewed as originating at the highest levels of the organization. The increased commitment stemmed partly from the reduction in the BAC limit: Staff of many law enforcement agencies perceived that, in passing the new legislation, the legislators had sent them a signal that society was toughening its attitudes towards DUI and that even marginally impaired drivers were appropriate targets for DUI enforcement. However, agency representatives viewed their organizations' heightened commitment as having some existence of its own, independent of the new law.

The second development was the deployment of staff to special units or shifts which focused more closely on DUI enforcement. Officers assigned to these units tended to be those most experienced in and dedicated to enforcement of the drinking and driving laws. They often received special additional training to heighten their expertise. Because their responsibilities were more narrowly defined, they also had time to take a more aggressive approach to DUI enforcement, seeking out drivers who might show subtle signs of impairment rather than merely arresting the flagrantly drunk ones whom they happened to encounter. The implementation of these special units was perceived to have had a dramatic effect on the volume of DUI arrests.

The receipt of increased resources for DUI enforcement was a third development deemed important. The Redding Police Department (Shasta County) was the only organization included in the operational evaluation that had special funding during the period of study. This department received a traffic-enforcement grant from the California Office of Traffic Safety (OTS), which became operational in 1990. Some of the funds were used to purchase a DUI patrol car and to add staff to the DUI unit. The Redding Police Department's DUI arrests in 1990 rose by the highest percentage of any law enforcement agency included in the operational evaluation.

The use of Preliminary Alcohol Screening (PAS) devices was the fourth development credited with increasing the number of DUI arrests, particularly at low BAC levels.[5] The CHP was the only law enforcement agency at the research sites

---

[5]Preliminary Alcohol Screening devices must be distinguished from Passive Alcohol Sensors, which share the PAS acronym. The CHP does not utilize Passive Alcohol Sensors. Preliminary Alcohol Screening Devices are active screening tools. The individual blows into them, and they are only used with the individual's consent. The results are admissible in court to establish that the officer had probable cause for arrest, but not to establish the driver's BAC level. That level must be established by one of the standard chemical tests.

which had these pocket-sized alcohol screening units. It obtained them through an OTS grant and phased in their use throughout the state in 1990, recommending that officers use them as the last item in conducting field sobriety tests. Both supervisory and line staff were extremely enthusiastic about the PAS devices. The equipment gave officers the confidence to stop drivers who might exhibit relatively little outward appearance of alcohol indulgence and helped resolve doubt about whether there was a reasonable cause for arrest.

DUI enforcement is a time-consuming, labor-intensive activity. Officers generally estimated that it took them an average of 2 1/2 to 3 hours for each DUI arrest, from the time the driver was stopped until the officer was back on the road. The reduction in the BAC limit did not increase the time involved in making a DUI arrest or filling out the paperwork once a driver had been stopped. Some officers felt that the new law had lengthened the pre-arrest process. Compared to a typical DUI stop, it might be necessary to follow a driver with a lower blood-alcohol ratio for a longer time before observing sufficiently aberrant behavior to feel justified in stopping the individual.

There was a general consensus that the reduction in the BAC limit had resulted in more court time for officers, to the extent it had increased the volume of DUI arrests. Several interviewees maintained, however, that the law change had the opposite effect. They attributed this to the fact that drivers arrested in the 0.08%-0.09% range were now less likely to contest their arrests.

Sheriffs's departments are responsible for operating the county jails throughout California. This is where DUI offenders usually are booked and where those subsequently convicted of misdemeanors generally are sentenced to serve their time. Some municipalities also have their own jails, which handle DUI booking and limited incarceration of convicted drivers. These are run by the local police departments.

The reduction in the BAC limit had the potential of affecting the workload of jail staff in two ways. First, it could increase the volume of bookings. The new law did have this effect, to the extent that it involved increased DUI arrests. None of the sheriff or police department staff directly involved in jail operations mentioned this as a problem. CHP and police department arresting officers did talk about the long waits involved on weekends to book DUI offenders. They perceived this problem as stemming from general overcrowding, not from the reduction in the BAC limit.

The reduction in the BAC limit also could affect jails' workloads by increasing the number of DUI offenders serving sentences in jail. This does not seem to have occurred. Law enforcement staff maintained that a relatively high proportion of DUI offenders receiving this sentence ended up serving alternative sentences, such as picking up trash. Those who were incarcerated only served a small fraction of their sentences. This situation was attributed to general jail overcrowding, not to the reduction in the BAC limit.

Training. The provisions of the law reducing the BAC limit were straightforward. Many of the law enforcement agencies have training days at the end of each year in which all new laws which will go into effect the following year are reviewed. The BAC legislation was described in the session held at the end of 1989. Staff also received written notification of the change and were reminded of it during roll-call training. No additional instruction was needed or provided.

Effective implementation of the law, however, involved relatively sophisticated knowledge of how to recognize the subtle indications of impairment. Some law enforcement agencies (for example, the CHP, the Los Angels Sheriff's Office, and the Los Angeles Police Department), intensified this training provided to their staff during

1990. This did not specifically result from the reduction in the BAC limit. However, the new law may have added to the impetus to provide it.

Many smaller law enforcement agencies lacked the expertise and resources to provide such training to their officers. Absence of this training constituted an important deterrent to increasing the number of arrests at lower BAC levels.

Staff and Resources. None of the law enforcement agencies included in this study received increased funds or more staff specifically to implement the reduction in the BAC limit.

The reduction in the BAC limit increased overtime costs, to the extent it resulted in more arrests. These overtime expenditures result from officers' time spent filling out paperwork and appearing in court. In an effort to cut down on this expense, the CHP began requiring its officers to take a certain number of their overtime hours as compensatory time. Top-level staff in several CHP divisions were apprehensive that this might result in decreased DUI arrests because officers now had less incentive to make them. It is too early to tell whether this fear was well founded since the policy was instituted in the spring of 1991.

Additional arrests resulting from the reduction in the BAC created increased booking-fee costs for local police departments.[6] There was concern that booking fees deterred police officers from making DUI arrests. Several police departments included in the research had responded to the institution of booking fees by increasing their efforts to recover the costs of arrests (including bookings) from the

[6]Booking fees are a recent phenomenon, resulting from a California law which took effect in January 1991, retroactive to July 1990. Under this legislation, counties can charge local police departments for costs incurred, including the costs of booking offenders in county jails.

individuals arrested. At least one police department started a cite and release program for DUI arrests in order to avoid processing arrests through the county jail.

In spite of these factors, representatives of law enforcement agencies generally felt that the reduction in the BAC limit had little financial impact and had only placed minor increased demands on staff time. However, the new law took effect at a time when many law enforcement agencies were undergoing budgetary cuts. The need to divide dwindling resources among many competing priorities limited the degree to which these agencies could undertake the proactive approach to DUI enforcement necessary to exploit the full potential of the BAC legislation.

Public Education Efforts. The CHP is the only law enforcement agency which undertook community outreach activities focusing on the reduction in the BAC limit. The CHP headquarters issued a public awareness media resource kit in December, 1989. Public affairs staff throughout the state offices distributed the materials locally. They also made appearances on local radio and television programs to publicize the 0.08% BAC limit.

However, the CHP is still distributing some material to the public which includes the previous 0.10% BAC limit. This is because no updated versions have been produced. During site visits to CHP offices, Research and Evaluation Associates staff obtained several outdated pamphlets from display racks in the reception areas.

Many law enforcement agencies have incorporated information about the BAC reduction into their ongoing community outreach activities, such as media releases around holiday times and designated driver campaigns. Some ongoing community-outreach efforts are targeted at the Hispanic population, which is perceived as a "high risk" group for DUI violations because of language barriers and cultural differences in

drinking behavior. The major effort has been from El Protector. This CHP program provides outreach to the Hispanic community about traffic safety issues, primarily through regularly scheduled Spanish-language radio and television programs. El Protector has been underway in the CHP's Central Division, which includes Fresno County, for several years. It started in the Golden Gate Division, which includes Alameda County, in 1980. The 0.08% BAC limit has been a major theme stressed by El Protector at both locations.

Many local police departments, along with the CHP, conduct outreach efforts targeted at youth within the school system. These are focused on persuading young people to forgo driving after drinking, regardless of how little alcohol they may have consumed. They generally do not refer to the 0.08% BAC limit, since the BAC limit for individuals under 21 years old is 0.05%.

The Court System

Findings regarding the new BAC limit's effects on judges, court administrators, and prosecuting attorneys are presented in this subsection.

Policies and Procedures. The reduction in the BAC limit had little impact on the policies and procedures utilized by judges and court administrators. Within the court system, the main impact was on prosecutors. The new law affected their decisions about whether to file cases. It also entered into decisions regarding the levels at which cases should be prosecuted as DUI or reduced to lesser offenses.

Because of the margin of error allowed for the test results, prosecutors' offices have always been reluctant to prosecute cases as DUI in which the chemical tests yielded BACs at or just above the legal limit. These cases generally end up either not

being filed at all or, more commonly, reduced to "wet" recklessness.[7] Conviction of this lesser offense still counts as a prior conviction of drunk driving if the individual is arrested for DUI again. However, in some courts a "wet" reckless conviction can involve a more lenient sentence than a conviction for drunk driving.

Each district attorney's office has its own guidelines regarding the BAC levels at which to file and plea-bargain. Their application also varies according to the specific chemical test used in a case. (A greater margin of error is allowed for breath tests than for blood or urine). The reduction in the BAC limit generally lowered the cut-off point at which cases were reduced to "wet reckless" from 0.12% or 0.13% down to 0.10% or 0.11% The most lenient policy at any research site was in effect in Alameda County. Under the new BAC limit, this district attorney's office did not file any charges on cases in which blood or urine tests indicated blood alcohol levels of 0.08% or breath tests indicated blood alcohol levels of 0.08% through 0.10%

Volume of Cases and Other Outcomes. Two judicial districts in Los Angeles County and one judicial district at every other research site provided statistical information on cases filed in 1989 and 1990. The information included annual data on total adult misdemeanor filings and the subset of these filings classified as Group C.[8] These data appear in Table 4.

---

[7]Instead of prosecuting cases under Sections 23152(a) and 23152(b) of the California Vehicle Code which deal with DUI misdemeanors, prosecutors under certain conditions reduce the charges to violations of Section 23103.5, a subheading of the reckless driving section. These reductions are termed pleas to "wet" recklessness.

[8]Group C filings encompass violations of several sections of the Vehicle Code, but the overwhelming majority of them are DUI.

Table 4. Total Adult Misdemeanor Filings and Group C Filings In Selected Judicial Districts, 1989 - 1990

Judicial District	1989		1990		% Change 1989 - 1990	
	Total Adult Misdemeanor Filings	Group C Filings	Total Adult Misdemeanor Filings	Group C Filings	Total Adult Misdemeanor Filings	Group C Filings
Oakland (Alameda County)	28,734	1,978	36,616	2,491	27.43	25.94
Compton (Los Angeles County)	16,087	3,876	16,888	4,011	4.98	3.48
Los Angeles (Los Angeles County)	144,161	33,684	149,659	34,933	3.81	3.71
Fresno (Fresno County)	26,731	5,663	30,174	6,833	12.88	20.66
Red Bluff (Tehama County)	1,672	441	1,766	434	5.62	-1.59

NOTE: DUI filings represent over 95% of all Group C filings.

The number of Group C filings rose in four out of the five judicial districts during 1990. The rate of increase ranged from 3% in the Compton judicial district (Los Angeles County) to 26% in Oakland (Alameda County). Group C filings in the Red Bluff judicial district (Tehama County) fell slightly.

Total adult misdemeanor filings increased from 1989 to 1990. Fresno was the only judicial district providing data whose Group C filings increased at a higher rate than total adult misdemeanor filings.

No statistical information was obtained regarding the number of cases filed and/or prosecuted as DUI at various BAC levels, either before or after the new law. This makes it difficult to assess the extent to which the increase in Group C cases was attributable to the reduction in the BAC limit.

Judges perceived that the number of defendants with BACs under 0.10% increased with the reduction in the BAC limit. However, the blood alcohol level of the average defendant remained far above 0.10%.

Judges' and court administrators' estimates regarding the time it took a DUI case to pass through the court system varied across research sites. In all but one court, however, most DUI cases were disposed of within 90 days after being filed. Cases appeared to take somewhat longer at the Selma Justice Court (Fresno County). This was attributed to delays in the understaffed district attorney's office.

Court representatives across research sites felt that the length of time from filing to disposition was decreasing. This change resulted from the delay-reduction program, which was designed to speed up the courts' processing of all cases, rather

than the reduction in the BAC limit.[9] Courts were modifying their procedures to meet the program's guidelines, primarily by trying to get plea bargaining completed earlier in the judicial process.

Some concern was expressed, especially by the Los Angeles City and District Attorney's Offices, that expert witnesses for the prosecution were less confident in their testimony now . This was because there was less scientific information available regarding the implications of a 0.08% BAC than of a 0.10% BAC.

The consensus was that the new law had no impact on the proportion of DUI defendants pleading guilty, going to jury trial, receiving convictions, or appealing their convictions to Superior Court. Court representatives estimated that over 95% of DUI defendants continued to plead guilty. Virtually no convictions for DUI misdemeanors were appealed to a higher judicial level.

The reduction in the BAC limit had no impact on sentencing. Sentencing guidelines for DUI convictions are dependent on the number of prior convictions rather than on BAC levels. Actual sentences imposed by judges reflected the community's mores regarding drinking and driving and the importance which individual judges placed on DUI. At most of the research sites, judges tended to impose the minimum mandatory sentences.[10]

---

[9]The delay reduction program was mandated to begin throughout the California judicial system in January 1991.

[10]If probation was granted, the mandatory minimum sentence for a first offender in 1990 involved attendance at an alcohol/drug program and a fine of $390, plus either 48 hours in jail or a 90-day license restriction (to and from work and treatment program and within the scope of employment.) If probation was not granted, the minimum sentence included 96 hours in jail, a $390 fine, and a 6-month license suspension.

Training. Court staff were informed of the new law via routine legislative updates supplied by their own support units and by the Los Angeles Municipal Court's Planning and Research Unit, which provides briefing materials to agencies throughout California that subscribe to its services.

Training regarding the implications of the legislative change for the prosecution of cases proved useful. The Los Angeles District Attorney's Office and the Los Angeles City Attorney's Office each conducted sessions to prepare their staff for inquiries they might face in court regarding why defendants now were presumed impaired at 0.08% rather than 0.10%. This training, which was provided by the offices' own staff and outside experts, included information on the scientific issues involved and existing evidence. Managers of the Oakland branch of the Alameda District Attorney's Office, the other urban prosection office included in the data collection, provided similar training to their staff informally.

Staff and Resources. The reduction in the BAC limit did not change court agencies' budgets or staff allotments. To the extent the law resulted in increased filings, it imposed additional demands on staff time. These demands were not perceived to be large, especially since few DUI cases go to trial, which is the most labor-intensive step in the judicial process. The anticipated impact of the law proved greater than the actual effect, at least for the Los Angeles City Attorney's Office. Prior estimates had projected that 20% of submissions received from the Los Angeles Police Department under the new law would be in the 0.08-0.09% range. However, only 13.5% of the police department's submissions in 1990 involved individuals with these concentrations of alcohol in their blood.

A blend of circumstances made it more difficult for prosecuting offices to absorb any additional burdens that the reduction in the BAC limit might have placed on them. The law change occurred at a time these offices were undergoing staff cutbacks because of budgetary constraints. Moreover, the need to redeploy staff to handle other types of case, such as drugs and gang violence, which were growing rapidly meant that fewer attorneys were available to prosecute DUI cases. All the district and city attorney's offices reported they were able to cope with the situation, except for the Fresno District Attorney's Office. This severely understaffed office experienced a large backlog of cases. Many DUI misdemeanors were dismissed for overstaying the statute of limitations.

The reduced BAC limit may have generated more revenues, to the extent additional filings resulted in additional convictions. Staff members of courts serving low-income areas felt any increased revenues were minimal because large proportions of defendants were unable to pay their fines. Moreover, the income received from fines and assessments does not all come to the courts. It is distributed to a variety of county and city agencies and funds via a complicated allotment system.

Probation Departments

The possible impact of the reduction in the BAC limit on a probation department's workload depends on two factors: the extent to which the department is responsible for conducting pre-sentencing investigations for individuals convicted of DUI, and the extent to which these individuals are placed on formal (i.e., supervised) probation.

Polices regarding the conduct of pre-sentencing investigations varied across research sites. Fresno County was at one extreme. Because of budget constraints, the probation department no longer performed any pre-sentencing investigations for adult DUI misdemeanors. Shasta County was at the other extreme. Its probation department performed pre-sentencing assessments for all DUI misdemeanors and also for individuals convicted of "wet" recklessness.

The proportion of DUI cases on formal probation also varied across locations. Since the early 1980s, all DUI offenders have been sentenced to formal rather than summary probation in Shasta County, although some receive little supervision. DUI cases tended to constitute a larger proportion of all cases on formal probation in rural than in urban sites, where they were increasingly outnumbered by other types of cases, such as drugs.

The reduction in the BAC limit appeared to have had little impact on probation departments' workload, either in terms of pre-sentencing activity or cases placed on formal probation.

The reduction in the BAC limit involved no changes in budgets, costs or staffing. Although several probation department complained they were under-funded and under-staffed in general, none attributed this situation to an increase in DUI cases.

Alcohol Treatment System

Each county in California has an alcohol program administration. This county agency coordinates the overall system for alcohol treatment and recovery. In the counties constituting the research sites for this study, the alcohol program administration does not run any treatment programs serving drinking drivers. Instead,

it contracts out this function to a variety of profit and non-profit organizations and monitors their operations.

County Alcohol Program Administrations. The responsibilities and operations of county alcohol program administrations did undergo changes in 1990. However, these changes were due to a law (Senate Bill 1344) which happened to go into effect at the same time as the reduction in the BAC limit but was entirely separate from it.[11]

Alcohol Treatment Programs. Representatives of programs providing services to first or repeat DUI offenders generally maintained that the reduction in the BAC limit had tremendous impact on their programs. They asserted the new law had increased program participation, necessitated changes in the services provided, and created the need for more staff. On closer questioning, it became evident that some of the interviewees were confusing Senate Bill 408, the legislation which changed the BAC limit, with Senate Bill 1344, which indeed did have significant implications for alcohol treatment programs. Others represented organizations which expanded their program offerings during 1990 (e.g., by starting first-offender programs while continuing to operate programs for second offenders), independent of the reduction in the BAC limit.

The reduction in the BAC limit had little effect on alcohol treatment programs' operations since people with lower BAC levels were seldom referred for treatment. According to the Los Angeles County Alcohol program administration, the typical

---

[11]Senate Bill 1344 standardized the minimum length and contents of first offender programs, transferring their licensing from the county alcohol program administration to the California Department of Alcohol and Drug Programs. It also extended programs for second offenders, which have always been licensed by the state rather than individual counties, from one year to eighteen months.

referral had a BAC of around 0.18%. Administrators of treatment programs across research sites confirmed they had few clients with BACs under 0.12% and virtually none in the 0.08-0.09% BAC range. They attributed this to two factors: 1) Most people who drive after drinking too much have serious drinking problems, leading to arrests at high BAC levels; and 2) Drivers arrested at lower BAC levels end up being sentenced for "wet" recklessness, which is unlikely to involve referral for treatment.

Public Education Efforts. At some research sites, organizations within the alcohol treatment system provided community outreach regarding drinking and driving issues. Information regarding the 0.08% BAC limit was incorporated into ongoing activities designed to deter the public from driving after drinking, such as holiday awareness campaigns and health fairs. Information regarding the BAC limit also was included in the alcohol and drug education outreach program conducted by Fresno County. This program, which is targeted at migrant farm workers, underwent considerable expansion during the summer of 1990.

Only one community outreach effort was identified which specifically focused on the new BAC limit. This was a series of radio spots, prepared by the National Council on Alcoholism and Drug Dependency (Los Angeles County). These Public Service Announcements were aired around the time the new BAC limit was implemented and during the 1990-91 holiday season.

DMV Driver Safety Offices

The DMV has Driver Safety Offices located across California, although they are not distributed on a county by county basis. One of their functions is to conduct administrative hearings for drivers protesting license sanctions.

Volume of Administrative Hearings And Other Outcomes. For Driver Safety Offices, it is difficult to separate out any impact of the reduction in the BAC limit from that of the Administrative Per Se law. This is because implementation of the Administrative Per Se Law expanded the circumstances under which DUI-related administrative hearings were conducted.[12] This obviously increased the volume of hearings conducted.

Driver Safety Offices serving the research sites appear to have experienced little change in the number of DUI-related administrative hearings conducted during the first six months of 1990. This was the period when the new BAC limit, but not the Administrative Per Se law, was in effect. Several administrators mentioned that the proportion of drivers who claimed to have been unaware of being drunk when arrested increased after the reduction in the BAC limit. No change was noted in the proportion of individuals who canceled their scheduled hearings or failed to appear at them. The percentage of hearings in which the hearings officer upheld the license sanctions remained very high.

Public Education Efforts. Driver Safety Office staff conducted no public outreach activities regarding the 0.08% BAC limit. The function is handled by the DMV at the state level. The new BAC limit was incorporated into the handbook distributed to individuals preparing for the driver's test. Charts, indicating the number of drinks it

[12]Before the implementation of the Administrative Per Se law, the DMV only applied the administrative sanction of suspending/revoking a DUI offender's license if the individual had refused to take a chemical test which would establish a BAC level. Under the Administrative Per Se law, the DMV expanded this sanction to individuals who took the chemical tests but whose BACs were found to be above the legal limit. As a result, these individuals could also request hearings at the Driver Safety Offices to appeal the license actions.

takes to put individuals with various body weights over the legal limit, were included with license renewal/car registration mailings.

Community Outreach/Activist Groups

Very few grassroots organizations currently working on drinking and driving issues were identified at the research sites. The general perception was that community-based activities had decreased over the last year. Fresno County accounted for a disproportionately high share of current activity. At all sites, most pubic outreach activities were led by law enforcement agencies. Some efforts, such as designated driver programs at all sites and Drive Safe Fresno in Fresno County, were conducted by a coalition of law enforcement agencies and other groups. These efforts did not focus on the BAC reduction but incorporated information about the 0.08% limit into their materials.

Alcohol/drug education programs and activities aimed at youth, such as Students Against Drunk Driving (SADD) and Sober Graduations, were underway at all research sites. However, as mentioned earlier, programs targeted at individuals under 21 years old were aimed at discouraging young people from any drinking and driving and did not include the 0.08% BAC limit.

Mothers Against Drunk Driving (MADD) had active chapters at two sites, Los Angeles and Fresno Counties. Both chapters lobbied actively for the reduction in the BAC limit and undertook media activities to increase public awareness and acceptance of the law after its passage.

The two American Automobile Association (AAA) affiliate clubs serving California were active in notifying their membership about changes in the state's drinking and

driving laws. Both AAA affiliates have traffic safety divisions which, as a public service, work with school districts, law enforcement agencies, and grassroots organizations to educate the general public about drinking and driving issues. Information about the BAC limit was incorporated into these efforts.

The Media

The data collection effort did not target media groups as organizations from which information would be collected. However, representatives of other organizations were asked about media activity surrounding the reduction in the BAC limit.

Agency representatives at all sites felt that the reduction in the BAC limit had received considerable media attention, especially around the time of the law's implementation. Media coverage had included both the 0.08 percentage and the number of drinks it took to place individuals of varying body weight over this legal limit.

The timing of the law's implementation (New Year's day) heightened its coverage by the media. The media always devotes attention to DUI issues during the holiday period.

General Assessment of BAC Reduction

Research and Evaluation Associates staff concluded each operational evaluation interview by asking for an overall assessment of the reduction in the BAC limit. Some concerns about the new law were expressed. Representatives of several organizations maintained that the new law represented mere legislative tinkering: Courts' and law enforcement agencies' limited resources should be channeled into

getting drivers with high BACs off the road since these drivers posed the greatest threats to public safety. In contrast, representatives of some other organizations, especially DMV Driver Safety Offices, felt that the legal BAC limit should be set even lower than 0.08%.

Most interviewees, however, felt that the reduction in the BAC limit had been beneficial. This opinion was shared by representatives of agencies that lacked the resources or opportunity to exploit the law's full potential, as well as those more directly affected by it. The consensus was that the law's greatest effect lay in its deterrent value. The public was generally aware of the new BAC limit, and most drivers understood that it now took less alcohol to place them in violation of the law. Although the law was viewed as having no deterrent effect on hard-core alcoholics, it was perceived as having a strong effect on social drinkers. Interviewees believed that members of this larger segment of the general public were less likely to drive after drinking now and that this, in turn, had led to an increase in highway safety. The analyses of survey and quantitative data, presented in the following chapters, should shed some light on whether this assessment was well founded.

III

SURVEY OF THE PUBLIC

Background

The survey of the public was designed to collect the following types of information:

- Knowledge of the blood alcohol concentration (BAC) limit and the Administrative Per Se Law;
- Drinking behavior, both alone and in conjunction with driving;
- Changes in drinking and driving behavior, along with the reasons for change;
- The perceived risk of being stopped for drinking and driving, along with changes in this perceived risk and in the likelihood of undergoing license suspension; and
- Attitudes towards drinking and driving.

Methodology

Survey Instrument

The survey instrument was a two-page (i.e., two sides of a single sheet), self-administered questionnaire. In order to increase the probable response rate, most of the questions were multiple choice, with respondents merely having to circle numbers to answer them. However, a few open-ended questions were included. These dealt with age, knowledge of the BAC limit, and reasons for changes in drinking and driving behavior. A Spanish version of the questionnaire was provided for individuals who felt more comfortable responding in that language. A copy of the English version is included as Appendix 2.

Table 5 links the issues to be addressed in the analysis with the specific questions that were designed to be the sources for the data. To the extent possible, the questions were modeled after those developed for other surveys used by the National Highway Traffic Safety Administration (NHTSA).

Data Collection and Preparation for Analysis

Research and Evaluation Associates was responsible for identifying an organization in each research site to administer the survey. The Department of Motor Vehicles (DMV) was chosen because it could administer the survey at each site, thus increasing the probability that the survey would be administered uniformly; had ready access to the driving public; and was willing and capable of undertaking the effort.

The DMV agreed to administer the survey in one of its field offices in each of the five counties comprising the project's four research sites. (Shasta and Tehama counties together constitute one site). Selection of the particular offices was left up to the DMV, with the provision that these offices should be ones which served as representative a sample of the counties' population as possible.

There was some concern that conducting the survey at DMV field offices would yield an unrepresentative sample of California's driving public, since many but not all DMV clients have the option of renewing drivers' licenses and registering vehicles by mail, rather than coming to the office. A preliminary "mini survey" was devised to address this concern. Department of Motor Vehicle staff distributed a brief, self-administered questionnaire to all clients who came to the five DMV field offices on a

Table 5. Survey Research Issues with Corresponding Sources of Survey Information

Research Issue	Data Source	
What are the respondents' characteristics?	Q.1	What is your sex?
	Q.2	What is your age?
	Q.3	What is your race/ethnic group?
	Q.4	Why did you come to the Motor Vehicle Department office today?
To what extent is the public aware of California's new DUI laws (the BAC level and the Administrative Per Se)?	Q.5	What is the blood alcohol concentration (BAC) at which it becomes illegal for an adult to drive a motor vehicle in California?
	Q.6	Has the blood alcohol concentration (BAC) limit in California changed since 1989?
	Q.7	Suppose you are stopped for drunken driving and either refuse to take the chemical test or fail the test. According to the law, what should happen?
What is the drinking and driving behavior of the public (both driving after drinking at all and driving after drinking too much)?	Q.11a	How often do you drive within two hours of drinking alcohol?
	Q.12a	How often do you think you drive after drinking too much alcohol (including beer, light beer, wine, wine coolers, or liquor) to drive safely?
Has the public's drinking and driving behavior changed since the reduction in the BAC occurred? If so, why?	Q.11b	Has your likelihood of driving within two hours of drinking alcohol changed since the end of 1989?
	Q.11c	If your likelihood of driving within two hours of drinking alcohol has changed, why?
	Q.12b	Has your likelihood of driving after drinking too much alcohol (including beer, light beer, wine, wine coolers or liquor) to drive safely changed since the end of 1989?
	Q.12c	If your likelihood of driving after drinking too much alcohol has changed, why?
What is the perceived risk of being stopped for drinking and driving? Has this perceived risk changed? Has the perceived risk of having one's license suspended changed?	Q.8	How likely are you to be stopped by a police officer for driving after you have had too much to drink?
	Q.9	Do you think the chances of being stopped by a police officer for drunken driving have changed over the past year and a half or so?
	Q.13b	People arrested today for drunk driving are more likely to have their licenses suspended than they were a year ago. (Indicate extent to which agree with statement).
What is the public's attitude towards drinking and driving?	Q.13a	People can drive safely after drinking too much alcohol as long as they drive more carefully than usual. (Indicate extent to which agree with statement).

single day in February, 1991. This questionnaire requested information about the client's age, sex, and reason for visiting the DMV office. Research and Evaluation Associates then compared these data with information obtained from the DMV regarding the age and sex of all registered drivers in California as a whole and in each of the five counties. The comparison indicated that, although conducting a survey of the public in DMV field offices might somewhat oversample men and young people, the distributions were close enough to warrant proceeding with the more comprehensive survey.

Research and Evaluation Associates designed a draft version of the questionnaire and developed procedures for its administration. Meetings with DMV staff in the relevant field offices were scheduled as part of the site visits to Fresno and Tehama Counties, undertaken for the operational evaluation component of the project. The meetings were used to review the draft questionnaire and proposed survey procedures and to elicit suggestions for improvement. The draft questionnaire was pilot tested with nine clients at the DMV Fresno office at this time. Final versions of the survey and survey administration procedures were then developed.

Research and Evaluation Associates sent each of the five participating DMV field offices a survey packet in early May. The packet included sufficient copies of the questionnaire in English and Spanish, overall instructions for conducting the survey, a schedule for the daily distribution of questionnaires during the survey week, and other materials (e.g., clipboards for respondents to use in completing the questionnaires, labels for the survey collection box, and tally sheets for recording the number of questionnaires distributed and collected daily). Research and Evaluation Associates staff then called the DMV staff members who had been designated as the

survey coordinators in the field offices to review the survey procedures and answer any questions about them.

The DMV administered the survey during the week of May 20-24, 1991 in each of the five participating field offices. To ensure that the survey would reach as representative a sample of people served by each office as possible, DMV staff were instructed to start distributing the questionnaires at a different predetermined time each day of the survey week and to distribute only a specified number of questionnaires each day, Monday-Thursday. Since each office was responsible for obtaining a specified number of completed questionnaires during the survey week (450 each for the offices in Alameda, Los Angeles, and Fresno, 225 each for Shasta and Tehama Counties), the number of questionnaires to be handed out on Friday would be dependent on the amount collected during the preceding four days.

In order to be eligible to participate in the survey, individuals had to live, work or go to school in the county. Shasta and Tehama were considered as one county for this purpose since many Shasta County residents routinely used the Tehama County office. Individuals who seemed unlikely to be able to complete either the English or Spanish version because of language or literacy barriers did not receive questionnaires.

The survey procedures were quite simple. DMV staff were instructed to distribute the questionnaire at the "Start Here" station (the desk from which DMV clients entering the office are referred to the appropriate service windows). Within the parameters outlined in the preceding paragraphs, the questionnaires were to be distributed to all clients. After asking screening questions to determine eligibility, the DMV staff member assigned to the "Start Here" station gave each client a copy of the English

or Spanish questionnaire, attached to a clipboard. The recipient was requested to fill out the questionnaire, return the survey clipboard to the "Start Here" station, and deposit the completed questionnaire in the survey drop-box located nearby. Questionnaires handed in at service windows with other papers were deposited in the survey drop box by DMV staff. At close of business on Friday, the completed questionnaires were boxed up, along with tally sheets indicating the amount distributed and collected each day, and sent to Research and Evaluation Associates.

The procedures described above had to be modified slightly for the DMV office in Tehama County. Since that office did not have a "Start Here" station, the questionnaire had to be distributed at all the service windows. This meant that the survey coordinator had to monitor the distribution quite closely to ensure that there were enough blank questionnaires at each service window and that the total number of questionnaires handed out every day conformed to the number specified on the schedule for that office.

Research and Evaluation Association staff assigned each completed questionnaire a discrete identification number and performed a preliminary edit to add codes for missing data and resolve other problems. Coding categories for open-ended responses were devised, based on a sample of responses. After the questionnaires had been entered into a computerized data base, quality control checks were performed to catch mistakes in data entry and identify other problems. Analysis of the data was performed once the cleaning process had been completed.

Response Rate and Sample Size

Comparison of the information provided on the tally sheets with the number of questionnaires returned to Research and Evaluation Associates indicates that the response rate was excellent, especially for a self-administered questionnaire. Overall, the DMV offices reported that 85% of the people who received questionnaires completed and returned them, with a completed questionnaire being defined as one in which at least five of questions 5 through 13 had been answered. Response rates for individual counties varied from 70% for Fresno to 97% for Shasta.

Table 6 presents the number of questionnaires included in the analysis by county and language. In accordance with the research plan, a total of 1,600 questionnaires were analyzed, 400 from each research site. Since Shasta and Tehama Counties together were considered one research site, their questionnaires were merged in the analysis. More than 400 questionnaires had been collected from each research site

Table 6. Number of Questionnaires (English and Spanish Versions) Included in Analysis by County

County	Total Number of Questionnaires	English Version	Spanish Version
Alameda	400	394	6
Los Angeles	400	375	25
Fresno	400	399	1
Shasta	200	200	0
Tehama	200	198	2
All Counties	1,600	1,566	34

in order to provide a "cushion" in case some proved unusable. The surplus questionnaires obtained from each site were randomly discarded during the pre-editing process.

As Table 6 indicates, very few completed Spanish questionnaires were received. Consequently, no attempt was made in the analysis to differentiate Spanish responses from English ones. Most of the 34 Spanish questionnaires included in the sample came from Los Angeles County.

The findings regarding each of the areas of research interest identified at the beginning of this chapter are presented in the following section of this chapter. It should be noted that the analysis was primarily limited to cross-tabulations. Consequently, it merely indicates association between variables of interest. No attempt is made to demonstrate causal relationship between them.

Analysis

Respondent Characteristics

Sex and Age. Males outnumbered females by about 16% among individuals completing the survey. There was a preponderance of male respondents in all four research sites, with the largest gap between the sexes (21%) in Los Angeles County and the smallest (11%) in Shasta/Tehama (Table 7).

Age data are arrayed in Table 8. Over three-quarters of all respondents were between the ages of 20 and 50, with the largest number falling in the 30-39 year old age bracket. Relatively few survey participants were under 20 or over 69 years old. The mean age was 37. The shape of the age distribution was generally consistent across research sites, although Shasta/Tehama Counties had a higher proportion of

Table 7. Sex Distribution of Respondents

Sex	Total for All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Male	58.1%	57.0%	60.6%	59.3%	55.4%
Female	41.9	43.0	39.4	40.7	44.6
N =	1,584	391	398	396	399

Columns sum to 100%
Missing Data = 16

Table 8. Age Distribution of Respondents

Age	Total for All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Under 20	5.4%	3.8%	5.3%	6.0%	6.6%
20 - 24	14.3	15.7	15.9	16.6	9.1
25 - 29	16.4	16.0	17.4	19.8	12.4
30 - 39	27.3	27.3	29.0	27.1	25.5
40 - 49	19.8	19.2	20.4	16.8	22.5
50 - 59	7.7	7.8	5.8	5.8	11.4
60 - 69	5.6	6.3	3.0	5.5	7.6
70 and over	3.5	3.8	3.0	2.3	5.1
Mean Age	37.0	37.3	35.4	35.2	40.0
N =	1,585	395	396	398	396

Columns sum to 100%
Missing Data = 15

respondents in the older age brackets and Fresno County had a higher proportion under 30 years old. Unlike the difference in sex, the differences in age across sites were large enough to be statistically significant ($X^2 = 47.946$, $p < .001$).

Reference was made earlier in this chapter to data supplied by the DMV regarding the sex and age of licensed drivers. These data obtained from the DMV pertained to a 10% sample of drivers who were licensed as of July, 1989. Research and Evaluation Associates had compared this information with that obtained from the "mini-survey", also described earlier in this chapter, to determine whether or not to proceed with the survey analyzed here.

Comparing the DMV data with the demographic information displayed in Tables 7 and 8 indicates that the present survey may slightly underrepresent women (53% of the licensed drivers in the DMV sample, as compared to 58% of individuals in the present survey, were men) and may slightly overrepresent young people (32% of the DMV sample were under 30, as opposed to 36% of present survey respondents). The age disparity was especially evident for Fresno County. The previous comparison of the DMV data with the sex and age data obtained in the "mini-survey" had yielded essentially the same pattern.

Race/Ethnicity. Over six out of ten of all survey respondents classified themselves as white. About two out of ten were Hispanic/Mexican American. Each of the remaining racial/ethnic categories (black/African-American, Asian/Pacific Islander, Alaskan/Native American, and Other) accounted for less than one out of ten individuals (Table 9).

The racial/ethnic distribution varied significantly across research sites. Hispanics were most heavily represented in Fresno County, accounting for over a third of all

Table 9. Race/Ethnicity Distribution of Respondents

Race/Ethnicity	Total for All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
White	65.5%	60.4%	62.2%	50.5%	88.9%
Hispanic/Mexican-American	18.2	17.9	15.6	34.5	4.8
Black/African-American	7.1	8.8	10.2	8.6	0.8
Asian/Pacific Islander	5.4	8.8	7.4	3.8	1.5
Alaskan/Native American	2.0	1.3	1.8	1.5	3.3
Other/Multi-Ethnic	1.8	2.4	2.8	1.0	0.8
N =	1,578	396	392	394	396

Columns sum to 100%
Missing Data/Don't Know = 22

respondents there. Los Angeles County had the highest percentage (10%) of black respondents. Shasta/Tehama Counties yielded the least racial/ethnic diversity. Whites accounted for nine out of ten individuals participating in the survey there.

The relatively small proportion of respondents classifying themselves as Asian/Pacific Islander may partly stem from the fact the questionnaire was only available in English and Spanish. Some Asians receiving service at the DMV offices may have been excluded from participation in the survey because they were unable to read the questionnaire. However, it should be noted that few of the many Hispanics completing the questionnaire selected the Spanish version.

Because so few respondents classified themselves as Alaskan/Native American or Asian/Pacific Islander, these categories have been merged into the "Other" category for all subsequent analysis of the survey data by race/ethnicity.

Reasons for Visiting DMV Field Office. Respondents were asked to indicate their reason(s) for visiting the DMV office. As Table 10 indicates, over half of the reasons offered fit into three categories: 1) Renewing a vehicle registration or license plates; 2) Renewing a driver's license; or 3) Transferring ownership of a vehicle. These same reasons, in varying order, were also mentioned most frequently in Alameda and Fresno counties. Obtaining a new driver's license replaced transferring ownership of a vehicle in Los Angeles County, whereas registering a vehicle for the first time/obtaining new license plates was more commonly mentioned than driver's license renewal in Shasta/Tehama Counties.

Awareness of DUI Laws and Changes

The questionnaire included three questions designed to tap people's knowledge of the reduction in the BAC level and the introduction of the Administrative Per Se Law, the two new DUI laws which had gone into effect during 1990. Respondents first were asked to write in the BAC at which it becomes illegal for an adult to drive in California. They were then asked whether or not this limit had changed since 1989. The final question in this series dealt with the Administrative Per Se law. Respondents were asked to select from several alternatives what should happen, according to the law, if they were stopped for drunken driving and either refused to take the chemical test or failed it. The responses to all three questions are summarized in Tables 11-12. However, the results for each question will be discussed separately.

Table 10. Reasons For Visiting DMV Office

Reasons for Visiting DMV Office	Total for All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Renew vehicle registration/renew license plates	24.6%	21.8%	12.0%	33.4%	31.2%
Renew driver's license	17.7	19.2	30.4	10.2	11.2
Transfer ownership of vehicle	15.1	12.4	4.6	16.3	27.2
Obtain new driver's license	8.9	9.1	17.6	5.1	3.8
Get a copy of driving record	8.5	10.1	9.2	10.0	4.6
Register vehicle for first time/obtain license plates	7.8	5.8	2.6	9.4	13.4
Obtain an identification card	6.0	5.1	9.7	6.6	2.5
Get duplicate license	2.7	3.8	2.6	4.1	0.5
Take a drive test	2.3	1.3	4.3	2.0	1.5
Notify change of address	1.9	2.8	2.8	1.0	1.0
Get a permit	1.8	1.8	1.5	2.6	1.5
Apply for license following suspension or revocation	1.7	3.3	1.3	1.0	1.3
Help a friend	1.5	1.8	2.0	0.5	1.5
Get driver handbook	0.2	0.2	0.5	0.0	0.0
Other	9.7	9.9	7.6	7.9	13.2
N =	1,573	395	392	392	394

Columns may not sum to 100% because respondents could provide more than one reason for visiting the DMV
Missing Data = 27

Table 11. Percentage of Respondents with Accurate Knowledge of DUI Laws and Changes

Knowledge of Laws	All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Knew Correct BAC Limit	45.3%	52.8%	39.3%	39.8%	49.5%
Knew BAC Limit is Stricter Now	81.3	84.3	79.5	74.0	87.5
Knew Administrative Per Se Law	47.7	52.3	47.8	44.8	46.0
N =	1,600	400	400	400	400

Respondents who failed to answer the knowledge questions or indicated they did not know the answer were classified as providing incorrect responses.

Table 12. Percentage of Respondents in Various Demographic Groups With Accurate Knowledge of DUI Laws and Changes

Demographic Characteristics	Knew Correct BAC Limit	Knew BAC Limit Is Stricter Now	Knew Administrative Per Se Law
SEX			
Male	49.5%	82.9%	48.8%
Female	39.6	79.4	47.0
RACE/ETHNICITY			
White	51.4	85.1	50.8
Hispanic	34.2	79.8	49.8
Black	35.7	72.3	31.3
Other	33.8	64.8	34.5

Respondents who failed to answer the knowledge questions or indicated they did not know the answers were classified as providing incorrect responses.

Knowledge of BAC. Forty-five percent of all respondents wrote in the correct percentage (0.08%) as the limit at which it is now illegal for adults to drive in California. This was the most frequent response. The second most common answer was 0.01%. This response was provided by 8% of the individuals answering the question. Six percent of the respondents wrote in the BAC limit as 0.10%, which was the previous legal limit. An additional 6% gave 1.0% as their response. People in Alameda and Shasta/Tehama Counties were more likely to provide the correct answer than those in Los Angeles or Fresno Counties. The differences between counties were large enough to be statistically significant ($X^2 = 22.687$, $p < .001$).

Half of all men, but only two-fifths of all women, wrote in the correct percentage, indicating a slight correlation between sex and accurate knowledge of the law. Half of all white respondents but only about a third of members of other racial/ethnic groups provided the correct answer. The association between BAC knowledge and race/ethnicity was significant at the .001 level ($X^2 = 41.547$). This may help explain the relatively low level of BAC knowledge evidenced in Fresno County, since that site had the largest proportion of non-white respondents.

Age and knowledge of the BAC limit appear to be substantially independent. However, the youngest and oldest respondents were less likely to provide the correct answer than others.

Since respondents had to write in their own answers, an incorrect response could be the result of confusion about how to write a percentage rather than ignorance of the law. Over 150 people provided ".008", "8", or other "variations on the theme" as their responses. These responses were counted as wrong since there was no way of determining whether they were errors of arithmetic or in knowledge of the

law. Including these responses as correct would raise the percentage of people counted as having accurate knowledge of the law to 56%, a considerable increase.

Knowledge of BAC Change: Although less than half of all respondents were able to provide the correct BAC limit, over eight out of ten knew that it was stricter now than it had been in 1989. This discrepancy may be attributable partly to the problem with the BAC knowledge question discussed in the previous paragraph. It also may be attributable to an intuitive feeling that the survey would not be asking about a possible change unless it had occurred and that any change would be likely to be more restrictive.

Knowledge that the BAC limit had become stricter was widespread across all research sites and demographic groups. The relationships between this knowledge and the demographic variables had the same pattern as reported in the discussion of knowledge of the 0.08% BAC limit.

Knowledge of the Administrative Per Se: Forty-eight percent of all respondents knew that, when somebody was stopped for drunken driving and either refused to take the chemical test or failed it, the law called for the police officer to remove the license immediately for suspension by the DMV. Again, knowledge of the law appeared relatively high in Alameda County and relatively low in Fresno. However, the differences between sites were not large enough to be statistically significant.

The percentage of men who knew the Administrative Per Se law (49%) was virtually identical to the percentage answering the BAC limit correctly. However, a somewhat larger percentage of women correctly answered the Administrative Per Se question than the BAC (47% versus 40%).

Whites and Hispanic/Mexican-Americans proved to be most knowledgeable about the Administrative Per Se legislation. The percentage of Hispanics/Mexican-Americans who were aware of the Administrative Per Se was considerably higher than the percentage of this group supplying the correct BAC limit. However, members of other racial/ethnic groups appeared as unlikely to be knowledgeable about the Administrative Per Se as they had been about the BAC. Black persons and respondents from other racial/ethnic groups were significantly less likely to demonstrate accurate knowledge of the Administrative Per Se law than were white people and Hispanics ($X^2 = 26.980$, $p < .001$).

Differences in the construction of the relevant items in the questionnaire may have resulted in an inflation of the percentage of people deemed to know the Administrative Per Se law relative to those "counted" as having accurate knowledge of the BAC limit. The question about the BAC level was open-ended. This meant that people had no clues to help them come up with the correct answer. To demonstrate accurate knowledge of the Administrative Per Se law, however, respondents merely had to select the appropriate answer, summarizing the central provision of the legislation, from the multiple choice responses.

Extent of Knowledge of DUI Laws: As well as looking at knowledge of the BAC limit and the Administrative Per Se law separately, an attempt was made to combine them in the analysis. Respondents were scored on a scale, depending on whether they knew neither law, knew only one of the laws, or answered both correctly. The largest percent of respondents (43%) knew only one of the two laws, while the smallest percent (25%) knew both. This held true across counties, although there was a statistically significant difference regarding scores on the scale. Knowledge of both

laws was highest in Alameda County. This research site also had the lowest percentage of respondents who knew neither of them (Table 13).

Table 13. Extent of Knowledge of DUI Laws

# Of Correct Responses Regarding BAC Limit And Administrative Per Se Law	All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Knew Neither Law	32.1%	26.8%	34.5%	36.8%	30.3%
Knew Only One Law	42.9	41.5	44.0	42.0	44.0
Knew Both Laws	25.1	31.8	21.5	21.3	25.8
N =	1,600	400	400	400	400

Columns sum to 100%
Respondents who failed to answer the knowledge questions or indicated they did not know the answers were classified as providing inaccurate responses.

Analysis by sex and race yielded the same results as for knowledge of the BAC limit (Table 14). Males and white people appeared more likely than women or members of other racial/ethnic groups to know the provisions of both laws. Women appeared slightly more likely than men not to know either law. About a quarter of white respondents, a third of Hispanic respondents and almost half of those individuals classified as black or members of other ethnic/racial groups failed to know either law. Age was not significantly related to knowledge of the laws.

Table 16. Frequency of Drinking Reported by Members of Various Demographic Groups

	% Never Drink	% Drinking Once a Month or Less	% Drinking 2-3 Days a Month	% Drinking 1-2 Days a Week	% Drinking 3-4 Days a Week or More	Other
SEX						
Male	32.7%	24.2%	11.3%	16.6%	15.1%	0.1%
Female	40.9	30.2	11.7	9.9	6.0	1.3
RACE/ ETHNICITY						
White	34.1	27.1	12.1	13.4	12.8	0.5
Hispanic	41.1	23.6	11.8	15.2	6.8	1.5
Black	35.7	24.2	9.5	19.0	11.6	0.0
Other	42.5	31.2	7.4	8.2	10.7	0.0
AGE						
Under 20	57.1	16.9	9.1	10.4	6.5	0.0
20-24	35.5	25.8	16.8	15.4	6.5	0.0
25-29	27.0	30.8	13.1	15.6	11.8	1.7
30-39	33.6	26.1	11.7	14.9	13.2	0.5
40-49	34.2	29.2	9.4	12.9	14.3	0.0
50-59	38.5	26.5	8.3	11.9	12.8	1.8
60-69	57.7	20.5	5.1	10.3	5.1	1.3
70-Over	47.9	20.8	6.3	8.3	16.7	0.0

Rows sum to 100%

Table 17. Frequency of Driving after Drinking Alcohol by County

Frequency of Driving	All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
WITHIN TWO HOURS OF DRINKING					
3-4 Days a Week or More	4.4%	3.3%	3.8%	5.1%	5.5%
1-2 Days a Week	4.7	5.8	4.7	2.5	5.5
2-3 Days a Month	5.8	5.8	4.7	6.6	6.3
Once a Month or Less	23.4	27.5	23.4	26.8	16.4
Never	61.3	57.1	62.6	59.1	66.0
Other	0.4	0.4	0.8	0.0	0.4
N =	911	240	235	198	238
AFTER DRINKING TOO MUCH					
3-4 Days a Week or More	1.7	0.4	3.1	0.5	2.5
1-2 Days a Week	0.9	0.4	0.4	1.6	1.3
2-3 Days a Month	2.0	1.7	1.3	3.7	1.7
Once a Month or Less	14.1	17.8	12.2	18.4	8.8
Never	80.2	78.2	82.2	74.7	84.4
Other	1.1	1.3	0.8	1.1	1.3
N =	888	230	229	190	239

Columns sum to 100%
This table excludes the 529 respondents who reported never drinking alcohol.

A subsequent question asked how often respondents drove after drinking too much alcohol. The frequency reported for this behavior was even lower than for driving after drinking in general. Over nine out of ten of the non-teetotallers maintained they either never drove after drinking excessively (80%) or did so no more than once a month (14%). This was true across all counties (Table 17).

As Table 18 illustrates, men reported being more likely to drive within two hours after drinking than did women. A low proportion of either sex reported driving within two hours of drinking at least three times a week. However, men were three times as likely as women to indicate they engaged in this behavior. Seventy percent of female respondents, as compared to 55% of their male counterparts, reported that they never drove within two hours of drinking. No significant relationship was found between individuals' race/ethnicity or age and their frequency of drinking and driving.

Table 18. Frequency of Driving within Two Hours after Drinking Alcohol by Sex

Sex	% Never Driving Within Two Hours of Drinking	% Driving Within Two Hours of Drinking Once a Month or Less	% Driving Within Two Hours of Drinking 2-3 Days a Month	% Driving Within Two Hours of Drinking 1-2 Days a Week	% Driving Within Two Hours of Drinking 3-4 Days a Week or More	Other
Male	55.1%	25.1%	6.9%	6.9%	5.8%	.4%
Female	70.5	21.5	4.1	1.4	1.9	.5

Rows sum to 100%
This table excludes the 529 respondents who reported never drinking alcohol.

Driving after drinking too much alcohol was the only drinking and driving question for which responses differed between racial/ethnic groups. White and black respondents were only a third as likely as Hispanics or members of other ethnic groups to report they drove after drinking too much at least once a week. Little relationship was found between age and the frequency of driving after excessive drinking. In keeping with their responses to the other drinking and driving questions, men were more likely than women to indicate they frequently drove after excessive drinking (Table 19).

The relationship between people's knowledge of the DUI laws and their drinking and driving behavior is of special relevance to this study. Consequentially, cross-tabulations were performed to determine if non-teetotallers' frequency of driving after drinking (either within two hours after drinking or after drinking too much) was linked with correct knowledge of the BAC limit. Similar cross-tabulations were performed regarding the Administrative Per Se law. In neither case was a connection found. The relationships were not significant at the .10% level.

The results of the responses to the drinking and driving questions, both of which indicate extremely low frequencies of this behavior, need to be interpreted with a large grain of salt. It is important to remember that they emerge from self-reported behavior. Respondents may have down-played the extent to which they drive after drinking in favor of answers deemed more socially acceptable. The fact that the survey was administered in the DMV office may have heightened this tendency. In spite of the questionnaires' anonymity, some people may have felt that "bad" answers could have negative repercussions for their driving licenses.

Table 19. Frequency of Driving After Drinking Too Much Alcohol Reported by Members of Various Demographic Groups

Demographic Characteristics	% Never Drive After Drinking Too Much Alcohol	% Driving After Drinking Too Much Alcohol Once a Month or Less	% Driving After Drinking Too Much Alcohol 2-3 Days a Month	% Driving After Drinking Too Much Alcohol 1-2 Days a Week	% Driving After Drinking Too Much Alcohol 3-4 Days a Week or More	Other
SEX						
Male	76.8%	16.0%	2.8%	0.4%	2.4%	1.5%
Female	85.5	10.8	0.9	1.7	0.6	0.6
RACE/ ETHNICITY						
White	82.8	12.3	2.1	0.3	1.6	0.8
Hispanic	71.0	22.1	0.7	2.8	2.1	1.4
Black	72.9	20.3	3.4	0.0	1.7	1.7
Other	83.0	6.1	3.0	3.0	1.5	3.0

Rows sum to 100%

Changes in Drinking and Driving Behavior

Respondents were asked if their likelihood of driving within two hours of drinking alcohol had changed since the end of 1989. A similar question was asked regarding their likelihood of driving after drinking too much. The end of 1989 was provided as the bench mark because the 0.08% BAC limit went into effect in January, 1990. Teetotallers and members of the sample who indicated these questions were not applicable to them because they never drove after drinking were excluded from the analysis of responses.

Changes in Driving within Two Hours after Drinking: Half of all individuals whose responses were included in this analysis maintained that they were less likely to drive within two hours of drinking now than they had been in 1989. A slightly lower percentage (47%) indicated that the likelihood remained unchanged. A higher percentage of individuals in Alameda County indicated this change had occurred than in each of the other locations. The difference was about six percentage points. However, the differences across counties were not statistically significant. No variation was found by age or race/ethnic group (Table 20).

Those individuals who reported a change had occurred were asked to write in the reason(s). Only about a third of these respondents complied with this request. Their responses are summarized in Table 21. The degree to which their responses are generalizable to the wider sample is, of course, unknown.

Forty-four percent of the answers to this question attributed changed behavior to concern about the DUI laws and penalties (e.g., "The laws have changed a lot";

Table 20. Change In Likelihood Of Driving Within Two Hours Of Drinking Alcohol

Change In Likelihood Of Driving Within Two Hours Of Drinking Alcohol	Total for All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Less likely to drive after drinking now	50.8%	55.8%	48.7%	48.2%	49.8%
No change	47.2	42.2	49.7	49.7	48.3
More likely to drive after drinking now	1.9	1.9	1.6	2.1	1.9
N =	739	206	185	141	207

Columns sum to 100%
Missing Data = 147
This table excludes all respondents who reported never drinking alcohol or indicated the question was not applicable to them.

"Stricter rules have been applied"; "There's a better chance of a DUI now"). The general nonspecific nature of these responses unfortunately made it impossible to separate out the perceived effects of the 0.08 BAC limit from those of the Administrative Per Se law, if indeed they are separated out in the public mind. The second greatest number of responses dealt with concerns about safety (32%). Answers such as "It is too dangerous - people's lives are at stake", "Looking at the casualty rate of drunk drivers, it is very stupid, and "Because of my health and the safety of others" fell into this category. These two groups of reasons together accounted for approximately three-fourths of the responses, overall and in each of the

Table 21. Reasons Likelihood of Driving within Two Hours of Drinking Has Changed

Reasons	All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
General Concern About DUI Laws/Penalties	43.5%	43.4%	33.8%	51.3%	48.5%
Concerns About Safety	32.1	28.9	44.6	25.6	27.3
Concerns About Enforcement	11.8	9.2	9.2	15.4	15.3
Personal Circumstances	11.1	14.5	9.2	12.8	7.6
Drinking Behavior[1]	6.5	9.2	9.2	5.1	1.5
Don't Want/Can't Afford to Lose License	4.9	7.9	3.1	0.0	6.1
Concerns About BAC Limit	3.7	2.6	6.2	2.6	3.0
Don't Want/Can't Afford to Go to Jail	2.8	1.3	1.5	5.1	4.5
Friend or Self Arrested For DUI	2.8	1.3	3.1	5.1	3.0
Other	9.3	6.6	7.7	7.7	15.2
N =	246	76	65	39	66

Columns may not sum to 100% because respondents could give more than one reason for the change.
Missing Data = 493

This table only includes respondents who indicated a change had occurred in their likelihood of driving within two hours of drinking.

[1]Responses dealing with general changes in drinking behavior (e.g., "I'm drinking less now") were coded in this category. Those which specifically mentioned changes in drinking and driving behavior without indicating why the change had occurred (e.g., "I don't drink and drive anymore") were incorporated into the "Other" category.

research sites. However, the rank ordering of the two categories was reversed in Los Angeles County, with concerns about safety being mentioned more frequently than concerns about the laws and penalties.

Perceived heightened enforcement of the laws ("The chances in my opinion of being pulled over are now greater"; "Because of tighter enforcement by police") and changes in personal circumstances ("Because I have a wife and children"; "I'm older and a little bit more responsible for myself now") also received relatively frequent mention in most sites.

Less than 5% of the responses specifically mentioned the reduction in the BAC limit as the reason for change. The same was true regarding concern about license loss, an answer which could specifically relate to the Administrative Per Se Law. The reduction in the BAC was mentioned more frequently in Los Angeles than at the other research sites. Concern about license loss was mentioned most frequently in Alameda County. No respondents in Fresno County gave this as a reason for having reduced their likelihood of driving after drinking.

About one out of ten of the responses did not fit into any the coding categories. The majority of those answers merely restated that the respondent was now drinking and driving less, without shedding light on the reason for the change.

Additional cross tabulations were performed to capture any relationships between changes in the likelihood of driving within two hours of drinking and correct knowledge of the BAC level. A slightly higher percentage (53%) of individuals who provided the correct BAC limit than of those who had given incorrect responses (49%) indicated that their likelihood of driving within two hours after drinking had decreased. However, this difference was not statistically significant at the 0.10% level (Table 22).

Table 22. Change In Likelihood Of Driving Within Two Hours Of Drinking Alcohol by Knowledge of BAC Limit

Change in Likelihood of Driving within Two hours of Drinking Alcohol	Knew Correct BAC Limit	Did not Know Correct BAC Limit
Less likely to drive after drinking now	52.8%	48.7%
No change	45.7	49.0
More likely to drive after drinking now	1.5	2.3
N =	39.4%	34.5%

Columns sum to 100%
Missing Data = 147
This table excludes all respondents who reported never drinking alcohol or indicated the question was not applicable to them.

The reasons provided by respondents who indicated their likelihood of driving within two hours after drinking had decreased are presented in Table 23, according to these respondents' knowledge of the BAC limit. Little variation was found. Over 40% of the individuals, regardless of whether they knew the correct BAC limit, attributed their behavioral change to a general concern about DUI laws and penalties. Five percent of individuals who knew the correct BAC limit, as compared to 1% of the remaining respondents, attributed the change in drinking and driving behavior to concerns about the BAC limit. This difference has little meaning because of the small number of respondents giving either response.

Change in Driving after Drinking Too Much: Over half (54%) of respondents who drink alcohol indicated that no change had occurred in their likelihood of driving after

Table 23. Reasons Likelihood of Driving within Two Hours of Drinking Has Decreased by Knowledge of BAC Limit

Reasons	Knew Correct BAC Limit	Did not Know Correct BAC Limit
General Concern About DUI Laws/Penalties	45.6%	41.1%
Concerns About Safety	31.5	33.7
Personal Circumstances	10.1	11.6
Concerns About Enforcement	8.1	17.9
Drinking Behavior[1]	5.3	7.4
Don't Want/Can't Afford to Lose License	5.4	4.2
Concerns About BAC Limit	5.4	1.1
Don't Want/Can't Afford to Go to Jail	3.4	2.1
Friend or Self Arrested For DUI	3.4	2.1
Other	9.4	9.5
N (Respondents)[2] =	149	95

Columns may not sum up to 100% because respondents could give more than one reason for the change.
Missing Data = 132

This table only includes respondents who indicated a change occurred in their likelihood of driving within two hours of drinking.

[1]Responses dealing with general changes in drinking behavior (e.g., "I'm drinking less now") were coded in this category. Those which specifically mentioned changes in drinking and driving behavior without indicating why the change had occurred (e.g., "I don't drink and drive anymore") were incorporated into the "Other" category.

[2]Two respondents indicated they have increased the incidences of driving within two hours of drinking due to "Personal Circumstances" and "Drinking Behavior". These responses were eliminated from the analysis.

drinking too much since 1989. Virtually all the rest of the respondents indicated they were less likely to drive after excessive drinking now. This same pattern was apparent at all the research sites except Alameda County, where the majority of the respondents stated they were less likely to drive after drinking now (Table 24).

No significant relationship emerged between changes in the likelihood of driving after excessive drinking and any of the demographic variables.

Table 24. Change in Likelihood of Driving after Drinking Too Much Alcohol

Change In Likelihood Of Driving After Drinking Too Much	Total All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Less Likely to Drive After Drinking Now	44.2%	53.3%	39.9%	45.2%	38.8%
No Change	54.0	45.6	59.5	53.3	57.7
More Likely To Drive After Drinking Now	1.8	1.1	0.6	1.5	3.5
N =	686	182	168	135	201

Columns sum to 100%
This table excludes all respondents who reported never drinking alcohol or indicated that the question was not relevant to them.

The reasons individuals gave for changes in their likelihood of driving after drinking too much are arrayed in Table 25. Even fewer people chose to answer this question than the previous query regarding reasons for changes in drinking and driving behavior. However, the patterns of the responses to the two questions, both overall and between research sites, were quite similar. And, as with the more general

Table 25. Reasons Likelihood of Driving after Too Much Drinking Has Changed

Reasons	All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
General Concern About DUI Laws/Penalties	42.3%	44.1%	34.1%	33.3%	56.1%
Concerns About Safety	28.8	30.5	48.8	33.3	26.8
Personal Circumstances	10.2	15.3	2.4	11.1	9.8
Concerns About Enforcement	8.5	8.4	4.9	8.3	12.2
Drinking Behavior[1]	8.5	3.4	2.4	0.0	2.4
Don't Want/Can't Afford to Lose License	5.1	5.1	7.3	5.6	2.4
Friend or Self Arrested For DUI	4.5	5.1	2.4	5.6	4.9
Concerns About BAC Limit	2.8	1.7	4.9	2.8	2.4
Don't Want/Can't Afford to Go to Jail	2.3	1.7	2.4	2.8	2.4
Other	6.8	5.1	9.8	11.1	2.4
N =	177	59	41	36	41

Columns may not sum to 100% due to multiple responses.
Missing Data = 509

This table only includes respondents who indicated a change had occurred in their likelihood of driving after drinking too much.

[1]Responses dealing with general changes in drinking behavior (e.g., "I'm drinking less now") were coded in this category. Those which specifically mentioned changes in drinking and driving behavior without indicating why the change had occurred (e.g., "I don't drink and drive anymore") were incorporated into the "Other" category.

question, few responses specifically mentioned the BAC reduction or provisions of the Administrative Per Se Law as the impetus for change.

No linkage was found between changes in the likelihood of driving after drinking too much alcohol and correct knowledge of the BAC limit. Forty-six percent of individuals who were knowledgeable about this law, as opposed to forty-two percent of respondents who did not know the correct BAC limit, indicated that their likelihood of driving after drinking too much had decreased. The relationship between correct knowledge of the BAC limit and changed drinking and driving behavior was not statistically significant at the 0.10% level (Table 26).

Table 26. Change In Likelihood Of Driving after Drinking Too Much Alcohol by Knowledge of BAC Limit

Change in Likelihood of Driving after Drinking Too Much Alcohol	Knew Correct BAC Limit	Did not Know Correct BAC Limit
Less likely to drive after drinking now	45.9%	42.1%
No change	52.0	56.6
More likely to drive after drinking now	2.1	1.3
N =	375	311

Columns sum to 100%
Missing Data = 166
This table excludes all respondents who reported never drinking alcohol or indicated the question was not applicable to them.

Knowledge of the correct BAC limit did not differentiate the reasons individuals provided for having decreased their likelihood of driving after drinking too much. Both those who knew the law and those who provided incorrect responses to the BAC

knowledge question gave substantially the same reasons for having changed their driving behavior. Only 4% of the former respondents and 2% of the latter attributed their behavioral change specifically to concerns about the BAC limit (Table 27).

Table 27. Reasons Likelihood of Driving after Drinking Too Much Alcohol Has Decreased by Knowledge of BAC Limit

Reasons	Knew Correct BAC Limit	Did not Know Correct BAC Limit
General Concern About DUI Laws/Penalties	42.7%	41.8%
Concerns About Safety	31.8	38.8
Personal Circumstances	11.8	7.5
Concerns About Enforcement	5.5	13.4
Don't Want/Can't Afford to Lose License	5.5	4.5
Friend or Self Arrested For DUI	5.5	3.0
Concerns About BAC Limit	3.6	1.5
Drinking Behavior[1]	2.7	1.5
Don't Want/Can't Afford to Go to Jail	2.7	1.5
Other	7.3	6.0
N (Respondents)[2] =	110	67

Columns may not sum to 100% due to multiple responses.
Missing Data = 126

This table only includes respondents who indicated a change had occurred in their likelihood of driving after drinking too much.

[1]Responses dealing with general changes in drinking behavior (e.g., "I'm drinking less now") were coded in this category. Those which specifically mentioned changes in drinking and driving behavior without indicating why the change had occurred (e.g., "I don't drink and drive anymore") were incorporated into the "Other" category.

[2]Respondents who indicated an increased likelihood of driving after drinking too much alcohol did not provide reasons for the change in behavior.

Perceived Risk of Being Stopped/Having License Suspended

Perceived Risk of Being Stopped for DUI. Half of all respondents felt that they were almost certain or very likely to be stopped by the police if they drove after having had too much to drink. Less than one in five perceived this risk to be somewhat or very low. These patterns were consistent across research sites (Table 28).

Three-quarters of all individuals responding to the survey felt the chances of being stopped by the police for drunken driving had increased over the past year and a half. Only 2% of the survey respondents believed that the probability of being stopped had decreased. The vast majority of respondents at each site, ranging from 73% in Los Angeles County to 81% in Shasta/Tehama Counties agreed that the risk of being stopped had become greater (Table 29).

This common perception did not necessarily emerge from identical roots. For some people it might have stemmed from the opinion that police enforcement efforts had increased. For others it might have been connected with knowledge that the BAC limit had become stricter, exposing more drinking drivers to the risk of being in violation of the law. Compared to the entire sample, a slightly higher percentage of those who believed the risk of being stopped for DUI had increased knew that the BAC limit had become stricter (87% vs. 81%).

Perceived Risk of License Suspension. Survey respondents were even more likely to perceive an increased risk of license suspension if arrested for DUI than to perceive an increased risk of being stopped for this behavior. Eight out of ten either strongly agreed or agreed with the statement that people arrested today for drunk

Table 28. Likelihood of Being Stopped after Having Too Much to Drink

Likelihood	Total for All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Almost Certain	22.2%	24.6%	20.1%	23.2%	21.1%
Very Likely	28.7	27.7	29.0	28.1	30.2
Somewhat Likely	21.7	20.0	23.4	22.2	21.3
Somewhat Unlikely	7.3	6.9	8.4	6.9	7.1
Very Unlikely	11.3	8.2	12.0	11.4	13.5
Unsure	8.7	12.6	7.1	8.2	6.9
N =	1,569	390	393	392	394

Columns sum to 100%
Missing Data = 31

Table 29. Change in Likelihood of Being Stopped for Drunken Driving

Likelihood	Total for All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Chances have increased	76.9%	78.3%	72.7%	75.1%	81.4%
Chances have decreased	1.6	0.8	2.3	1.0	2.5
Chances have stayed about the same	12.2	10.2	11.6	16.1	11.1
Unsure	9.2	10.7	13.4	7.8	5.0
N =	1,584	392	396	398	398

Columns sum to 100%
Missing Data = 16

driving are more likely to have their licenses suspended than they were a year ago (Table 30). There was little variation across research sites.

Table 30. Are People More Likely To Have Their License Suspended Than They Were A Year Ago?

Opinion	Total for All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Strongly Agree	47.0%	51.0%	43.5%	43.8%	49.5%
Agree	35.0	29.6	39.1	37.8	33.9
No Opinion	8.4	7.1	8.0	11.0	7.5
Disagree	3.3	4.3	3.6	2.7	2.7
Strongly Disagree	6.3	8.0	5.9	4.8	6.5
N =	1,397	351	338	336	372

Columns sum to 100%
Missing Data = 203

Little connection was found between knowledge of the Administrative Per Se law and the perceived increased risk of license suspension. Forty-eight percent of all respondents had provided correct responses to the survey question dealing with the Administrative Per Se law's central provision (that an arresting officer could take away the offender's license on the spot). Fifty-two percent of those individuals who perceived an increased risk of license suspension had answered the question about the Administrative Per Se law correctly.

Attitude Toward Drinking and Driving

The large majority (88%) of all respondents either strongly disagreed or disagreed with the statement that people can drive safely after drinking too much alcohol as long as they drive more carefully than usual. However, as Table 31 illustrates, Fresno County had a considerably higher percentage of respondents who felt people could drive safely after excessive drinking than did the other sites.

Table 31. Can People Drive Safely After Too Much Alcohol?

Opinion	Total for All Research Sites	County			
		Alameda	Los Angeles	Fresno	Shasta/ Tehama
Strongly Disagree	68.6%	73.7%	70.6%	59.5%	70.3%
Disagree	19.1	17.9	19.8	17.2	21.2
No Opinion	5.6	5.2	4.7	9.2	3.5
Agree	3.4	1.2	1.5	8.6	2.4
Strongly Agree	3.4	2.0	3.5	5.6	2.7
N =	1,405	346	344	338	377

Columns sum to 100%
Missing Data = 195

IV

ANALYSES OF ALCOHOL-RELATED FATALITIES AND SUPPLEMENTARY DATA

Purpose

Legislative changes, such as the reduction in the legal blood alcohol concentration (BAC) level and the Administrative Per Se laws in California, are designed to deter the drinking driver and ultimately to reduce the number of alcohol-related fatalities and crashes. The purpose of the time series analysis of the fatal crash data for California was to determine if either legislative change did reduce the number of alcohol-related traffic fatalities in the state. Primary emphasis was placed on determining the impact of the reduction in the legal BAC level. However, the analytic models included a component to assess the impact of the Administrative Per Se Law. Analyses considered statewide data as well as data from each of the four study sites. Supplementary analyses of additional types of data were designed to provide a further assessment of the impact of the reduction in the BAC limit.

Analysis of Alcohol-Related Fatalities

Data Source

The data source for alcohol-related fatalities was the Fatal Accident Reporting System (FARS), maintained by the National Highway Traffic Safety Administration (NHTSA). Monthly data on fatal accidents, both alcohol-involved and others, were obtained from FARS for the period January 1986 through December 1990. This time period includes four years prior to the reduction in the legal BAC level and one year following the change.

Data on fatal crashes are submitted to the FARS system by each state. States may later obtain additional information on a fatal crash such as results of alcohol testing. This updated information is submitted to FARS and periodically entered into the FARS analysis file. Data for the analyses reported here were obtained from the FARS analysis file following the June 1991 update.

This project used the customary FARS definition for an alcohol-related fatality. A fatality was defined as alcohol-related if any driver involved had a detectable level of alcohol in his or her system, if alcohol involvement was noted on the reporting form, or if an alcohol-related charge was filed against any driver. Any pedestrian fatality with alcohol in the pedestrian's system is also considered an alcohol-related fatality.

The results from alcohol testing for drivers involved in fatal crashes constitutes a key data element for defining an alcohol-related fatality in the FARS system. As shown in Table 32, the rate of testing of drivers involved in fatal accidents in California was at a very high rate throughout the period studied, with testing completed on 83% of all drivers involved in fatal accidents. Since test results are an objective indicator, this high rate of testing provides confidence in the classification of a fatality as being alcohol-related.

Particular attention was paid to the rate of testing in Los Angeles County, an area that had encountered especially long delays in reporting test results to the FARS system during most of 1990. The source of the delays had apparently been rectified. Test results were available for over 85% of the drivers involved in fatal accidents in 1990 at the time data was obtained from the FARS analysis file.

Table 32. Percent of Fatalities with Known Alcohol Test Results

	1986	1987	1988	1989	1990
California	81	83	83	83	84
Los Angeles County	84	88	92	83	87
Alameda County	81	83	89	85	88
Fresno County	74	79	77	75	76
Shasta/Tehama Counties	73	67	73	87	89

Analytic Technique

The analytic technique used for the time series analysis is a class of models known as AutoRegressive Integrated Moving Averages (ARIMA) (Box and Jenkins, 1976). These models appropriately handle autocorrelated data. In addition, the dynamic structure does not require an a priori distinction between systematic changes in the level of a series (trends) and temporary variations in the level due to some stochastic process (drift). Either situation would be captured as part of the unspecified "driving force" of the series.

The first stage of the ARIMA modelling process involved identification of the appropriate process to represent the pre-legislation series (i.e., January 1986 through December 1989). A model of the form $(p,d,q)_i$ was identified where p is the autoregressive process, q the moving average process, d the order of differencing, and i the lag(s).

Once a tentative model was identified for a series, parameters of the model were estimated. If the model for the pre-intervention series was deemed appropriate (i.e., parameter estimates non-zero and "white noise" residuals), the next step was to introduce intervention components using the entire series, January 1986 through

December 1990. Two primary intervention points were assessed, the first being the effective date of the reduction in the legal BAC level (January 1990) and the other the date of the Administrative Per Se Law (July 1990).

Two forms of intervention components (or transfer functions) were used to assess if either legislative change resulted in a reduction in the number of alcohol-related fatalities. One intervention component postulated an abrupt, permanent change in the level of the series; the second tested for an abrupt but temporary change in the level of the series. Though other, more complex transfer functions are possible, these two are the most likely outcomes.

Though the analyses focused primarily on univariate models along with intervention components, a multivariate approach was used to assess two possible covariates for inclusion in the model to further refine the analytic approach. The first covariate considered was monthly unemployment rates, a variable that has been associated with accident rates. Monthly unemployment rates for California and each of the counties included in the research sites were obtained from the Bureau of Labor Statistics.[13]

The second covariate considered was monthly vehicle miles traveled (VMT), obtained from the California Department of Transportation. Only statewide VMT data were available on a monthly basis. Because of unknown differences in seasonal travel patterns across various areas of the state (e.g., greater seasonal variation in rural, vacation areas than in urban areas), data analysis using VMT as a covariate was limited to statewide data.

---

[13]One research site combined two counties, Shasta and Tehama. The unemployment rate for this site was based on a weighted average of the unemployment rate for each county. The number of individuals employed in the county was used as the weighing factor.

Descriptive Data

During the five year period studied, January 1986 through December 1990, there were 229,790 crash fatalities in the United States with 11.6%, or 26,750 occurring in California. In California during this period, 50% of the fatalities were alcohol-related, slightly higher than the national figure of 46%.

For the four year period prior to the reduction in the legal BAC level (1986-1989), there were 21,561 fatalities in California with 50% alcohol-related (see Table 33). Los Angeles County accounted for nearly a quarter of the fatalities in the state (4,858). Across the four study sites, the percent of fatalities that were alcohol-related prior to the reduction in the BAC ranged from 46% in Los Angeles and Shasta/Tehama Counties to 53% in Fresno County. The year following the legislative change, Fresno County continued to have the highest rate of alcohol-related fatalities (52%) with Los Angeles the lowest (47%).

Table 34 presents data on the number of alcohol-related fatalities per year for California and the four regions studied. The variations in the number of alcohol fatalities on a year-to-year basis shows the difficulties in attributing any reduction to the laws by simply comparing 1990 data with figures from the previous year. Rather, one must compare patterns over a longer period of time to determine if the legislative changes did result in a decline in the number of alcohol-related fatalities.

Univariate Results

Data on the number of alcohol-related fatalities per month were analyzed for the entire State of California, as well as for the four regions of the state selected for

Table 33. Crash Fatalities: 1986 - 1990

	1986 - 1989			1990		
	Total Fatalities	Alcohol-related Fatalities	Percent Alcohol-related	Total Fatalities	Alcohol-related Fatalities	Percent Alcohol-related
United States	185,261	85,821	46%	44,529	20,098	45%
California	21,561	10,831	50%	5,189	2,543	49%
Los Angeles County	4,858	2,225	46%	1,257	590	47%
Alameda County	537	262	49%	127	61	48%
Fresno County	715	378	53%	217	113	52%
Shasta/Tehama Counties	299	139	46%	81	40	49%

Table 34. Number of Alcohol-Related Fatalities Per Year

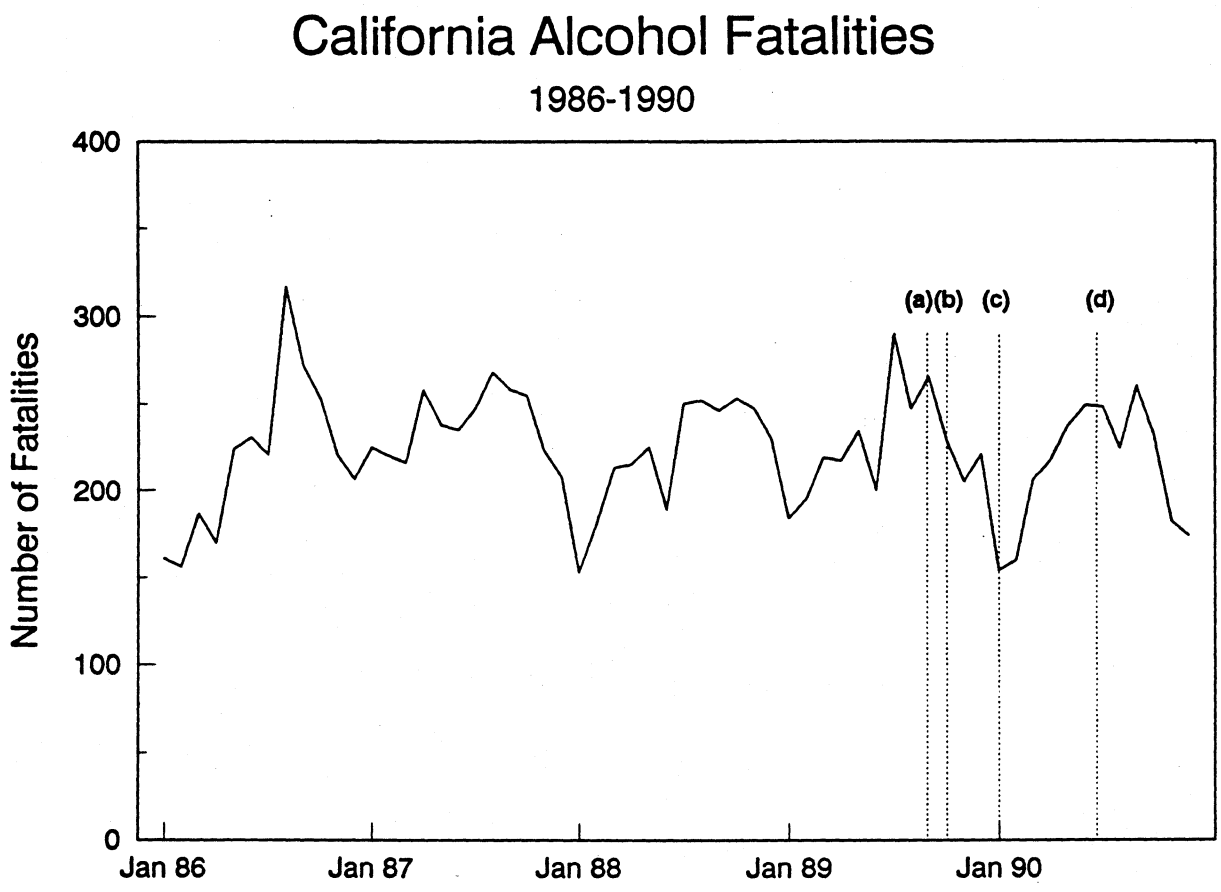
	1986	1987	1988	1989	1990
California	2620	2851	2654	2706	2543
Los Angeles County	520	601	558	546	590
Alameda County	62	58	66	76	61
Fresno County	78	101	104	95	113
Shasta/Tehama Counties	35	32	27	45	40

detailed analyses. Figures 1 through 5 provide graphical representation of the number of alcohol-related fatalities per month for California and each of these four study sites.

Additional analyses were completed on complementary series to assess whether factors other than the reduction in the legal BAC limit and the Administrative Per Se might account for any changes observed. Data on alcohol-related fatalities for the U.S. were analyzed, using the same procedures, to determine the role of national trends in any changes observed in California. Figure 6 presents the nationwide alcohol-related fatality data.

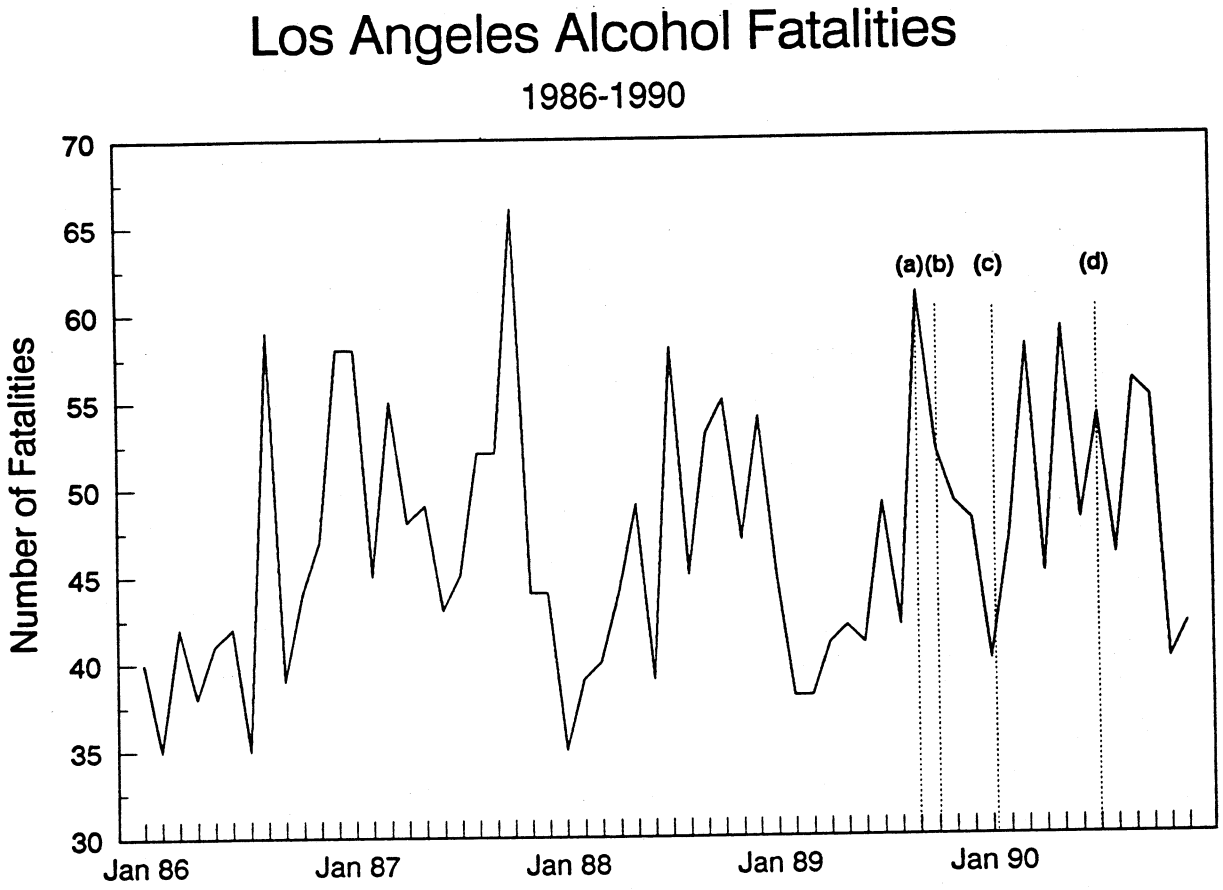
A second check was to analyze data for the entire state and the selected regions on the number of fatalities per month where alcohol was not involved. A reduction in the number of alcohol-related fatalities, with no concomitant change in other fatalities, provides stronger evidence that the reduction in the legal BAC level to 0.08% was involved in the reduction.

Alcohol-related Fatalities. Results from the analysis of statewide, alcohol-related fatalities indicate a 12% decline ($p = 0.004$ using a one-tailed test) in the number of alcohol-related fatalities following the implementation of the 0.08% law (see Table 35). Prior to the reduction in the legal BAC, the state averaged 225 alcohol-related fatalities



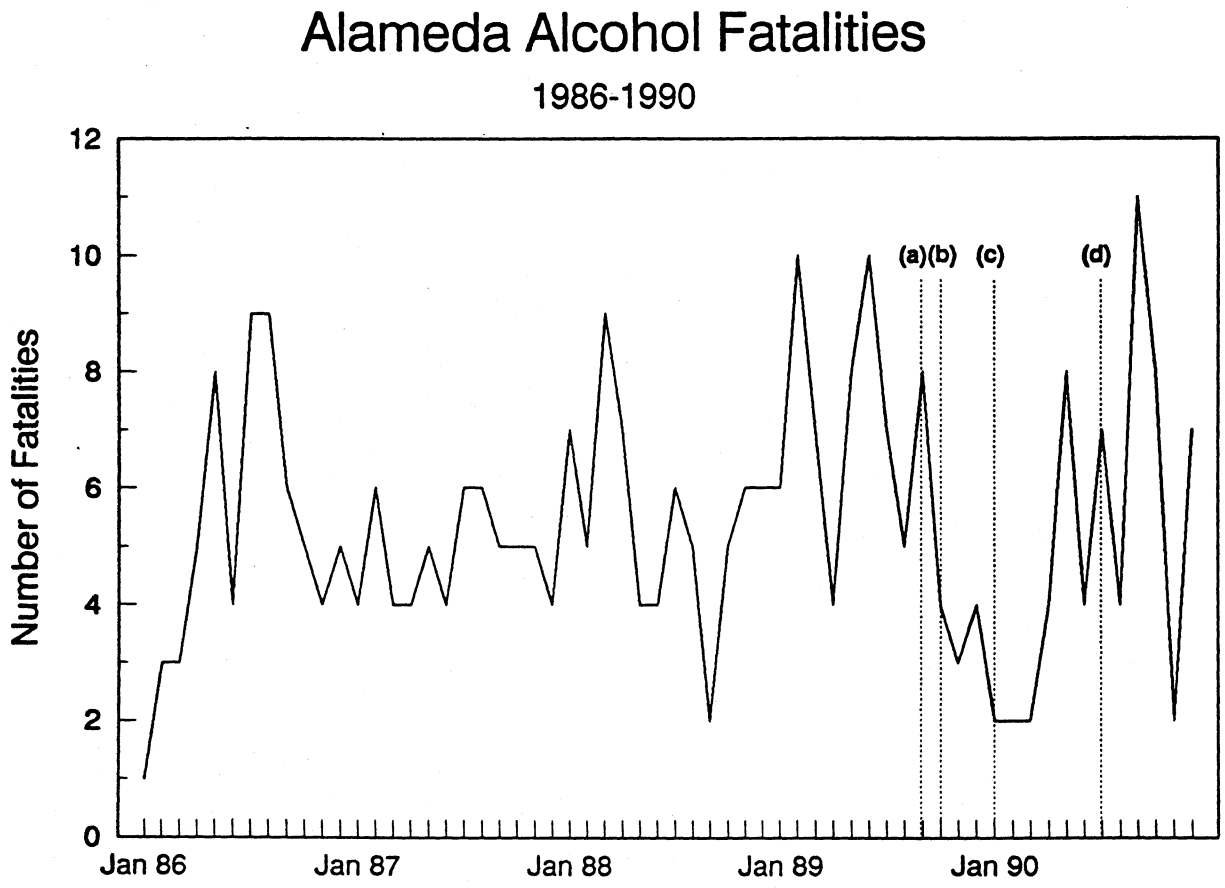
(a) September 1989 - Introduction of 0.08% BAC Into Legislature
(b) October 1989 - Introduction of Administrative Per Se Into Legislature
(c) January 1990 - Implementation of 0.08% BAC Legislation
(d) July 1990 - Implementation of Administrative Per Se Legislation

FIGURE 1. California Alcohol Fatalities



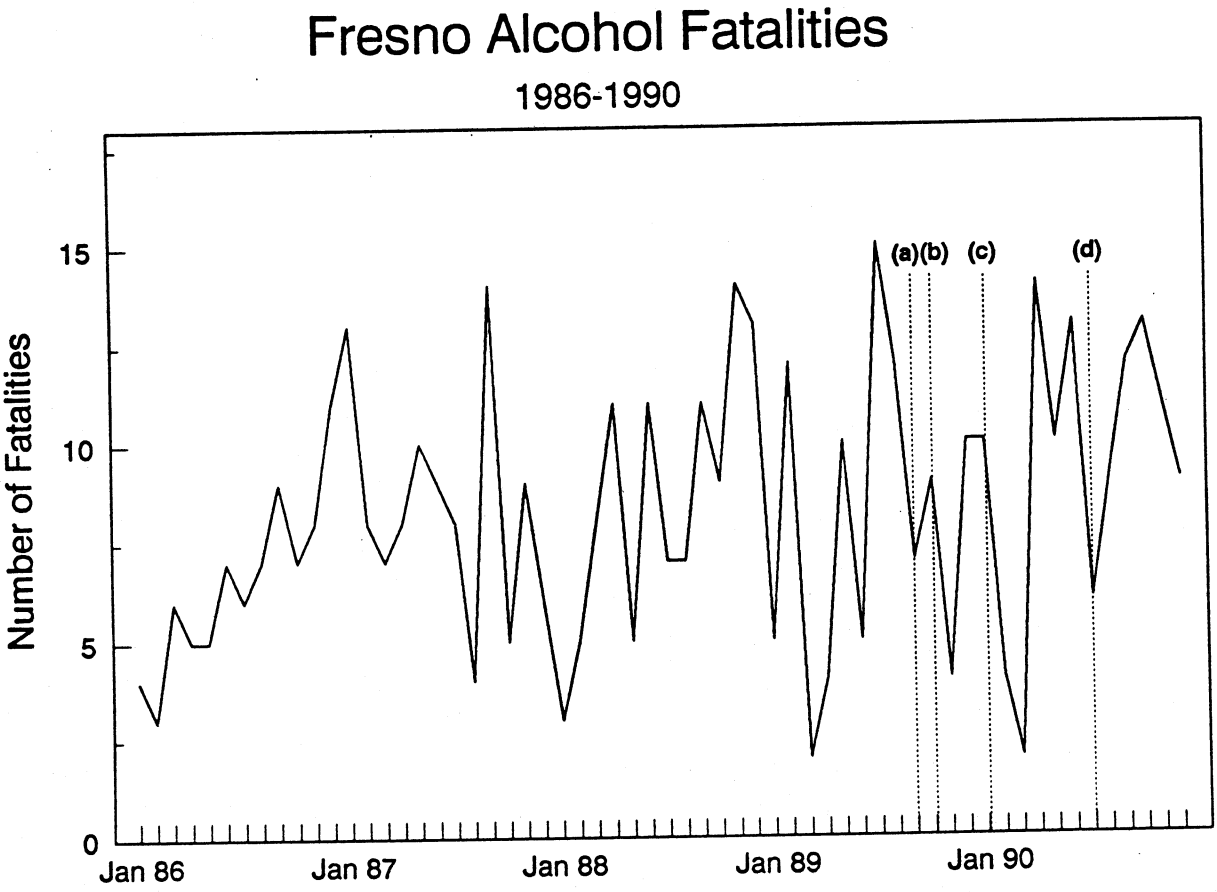
(a) September 1989 - Introduction of 0.08% BAC Into Legislature
(b) October 1989 - Introduction of Administrative Per Se Into Legislature
(c) January 1990 - Implementation of 0.08% BAC Legislation
(d) July 1990 - Implementation of Administrative Per Se Legislation

FIGURE 2. Los Angeles Alcohol Fatalities



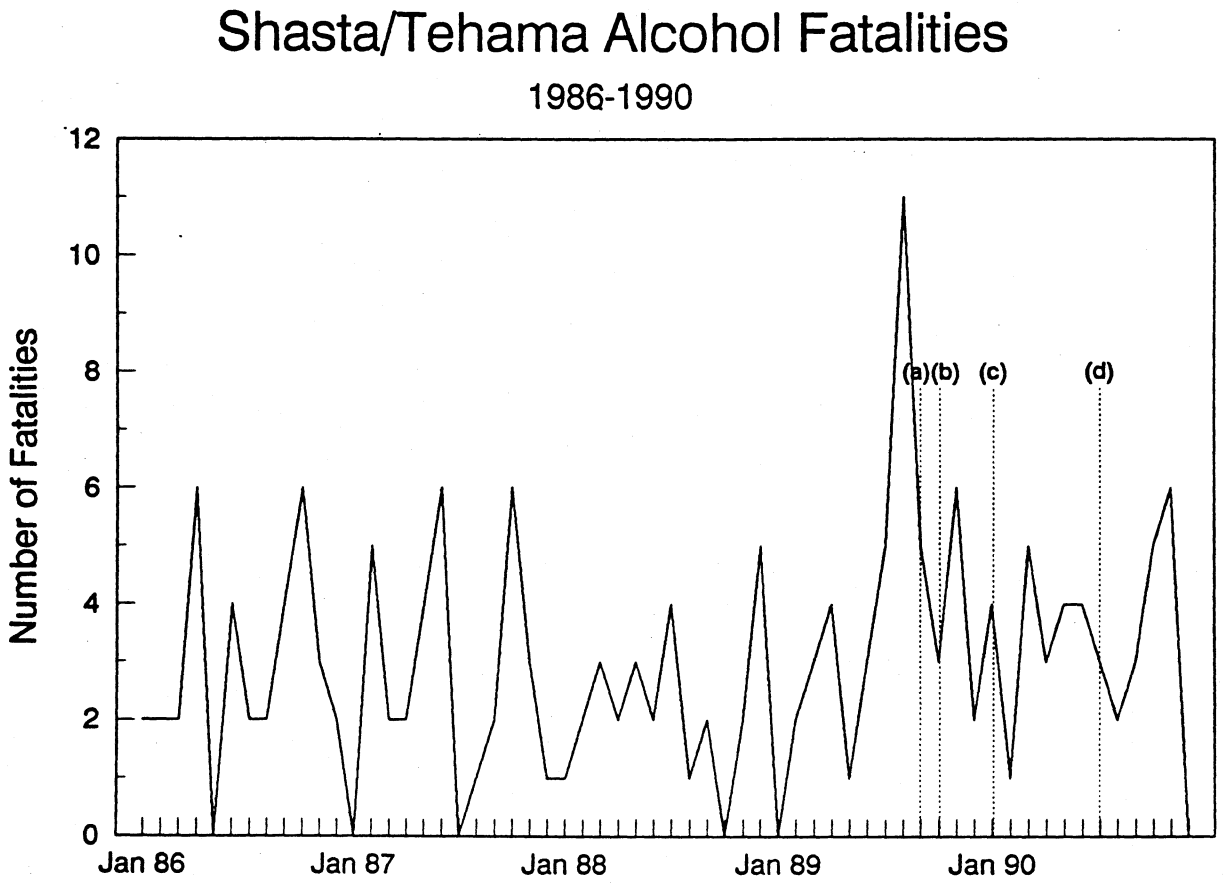
(a) September 1989 - Introduction of 0.08% BAC Into Legislature
(b) October 1989 - Introduction of Administrative Per Se Into Legislature
(c) January 1990 - Implementation of 0.08% BAC Legislation
(d) July 1990 - Implementation of Administrative Per Se Legislation

FIGURE 3. Alameda Alcohol Fatalities



(a) September 1989 - Introduction of 0.08% BAC Into Legislature
(b) October 1989 - Introduction of Administrative Per Se Into Legislature
(c) January 1990 - Implementation of 0.08% BAC Legislation
(d) July 1990 - Implementation of Administrative Per Se Legislation

FIGURE 4. Fresno Alcohol Fatalities



(a) September 1989 - Introduction of 0.08% BAC Into Legislature
(b) October 1989 - Introduction of Administrative Per Se Into Legislature
(c) January 1990 - Implementation of 0.08% BAC Legislation
(d) July 1990 - Implementation of Administrative Per Se Legislation

FIGURE 5. Shasta/Tehama Alcohol Fatalities

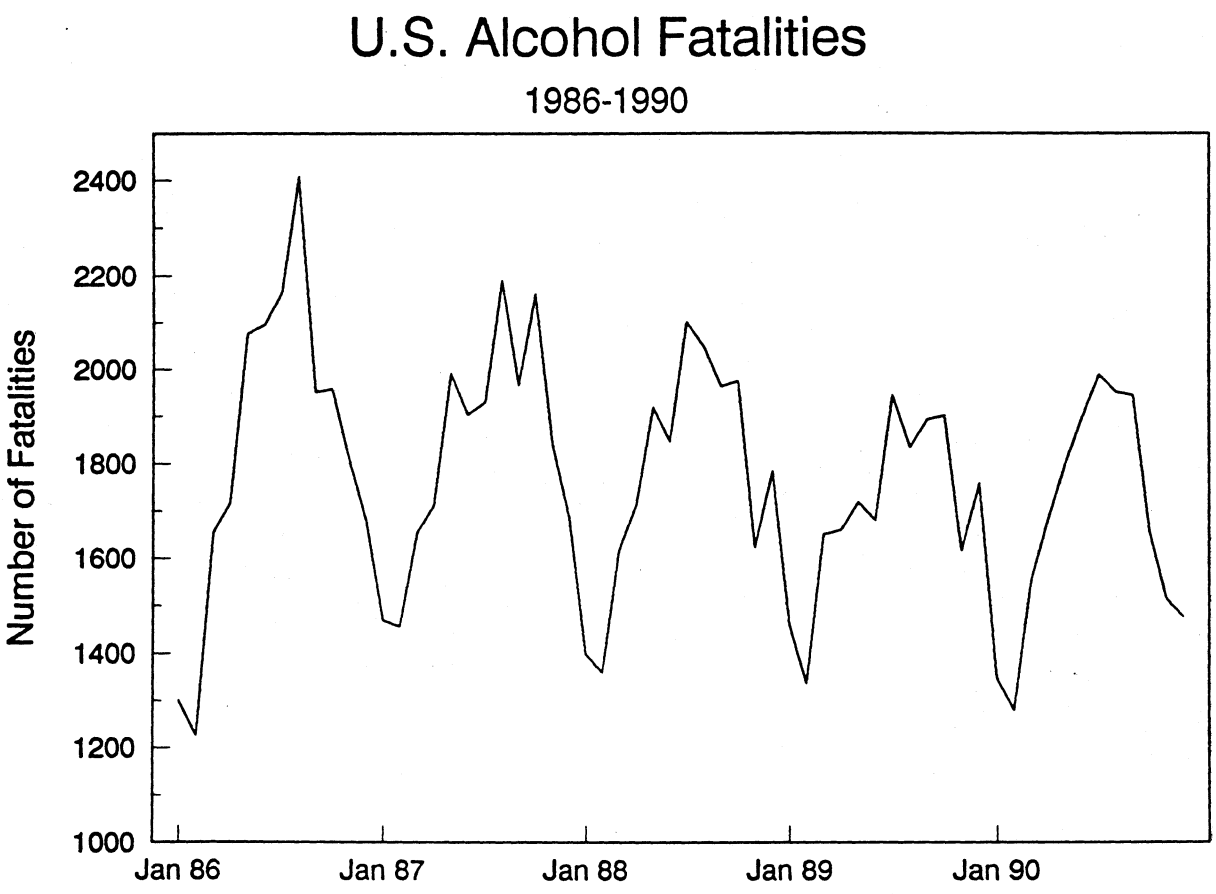


FIGURE 6. U.S. Alcohol Fatalities

Table 35. Time Series Results for Alcohol-Related Fatalities

	ARIMA Model	Model Parameters		Intervention Component		R^2
		Estimate	t-statistics	Form	t-statistics	
California Alcohol Related Fatalities	$(1,0,0)_1$ $(1,0,0)_4$ $(0,0,1)_{12}$	θ_0=234.2 ϕ_1= 0.519 ϕ_4= −0.208 θ_{12}=−0.951	28.84 4.83 1.80 85.52	Abrupt, permanent decline at BAC reduction (ω_0=27.25)	2.69	0.722
Los Angeles County Alcohol Related Fatalities[14]	$(1,0,0)_2$	θ_0= 46.75 ϕ_2= 0.311	35.80 2.48	No change		0.085
Alameda County Alcohol Related Fatalities	$(0,0,1)_6$	θ_0= 5.52 θ_6= 0.932	65.73 34.57	No change[15]		0.279
Fresno County Alcohol Related Fatalities	(0,0,0)	θ_0= 8.18	18.91	No change[16]		0.000
Shasta/Tehama County Alcohol Related Fatalities	$(1,0,0)_4$	θ_0= 3.00 ϕ_4= 0.274	11.56 2.07	No change		0.062

[14]Analysis of the natural log of the data increased the R^2 to 0.211 but yielded a no change finding. The results of the analysis of the raw data is reported here to enhance comparability with the other series.

[15]Though not statistically significant ($p < .05$), an abrupt, permanent decline in the series at the time the BAC limit was reduced was suggested by the analysis ($p=0.097$ using a one-tailed test). The intervention component, which indicated a 12% reduction in fatalities, increased the R^2 by 40%.

[16]An intervention component suggesting a 18% decline in the number of fatalities at the time of the reduction in the legal BAC limit approached statistical significance ($p=0.056$).

per month. Beginning in January 1990, this figure declined by 27.25, indicating that 27 lives were saved each month. No change was found following implementation of the Administrative Per Se law; however, only six months of data were available, making it difficult to assess any change. In addition, it is difficult to untangle the effects of two pieces of legislation that occurred within six months of each other.

No statistically significant reductions ($p < .05$) in the number of alcohol-related fatalities were detected in the specific regions of California studied. However, for two of the regions, Fresno County and Alameda County, there were indications that a decline occurred at the time of the BAC change. For Alameda county, a 12% reduction was observed which, using a one-tailed test, had a p-value of 0.0968. Data for Fresno County suggested a 18% reduction (one tail, $p=0.056$). The limited number of alcohol-related fatalities per month, along with the relatively brief period following the changes, may have contributed to the failure to reach statistical significance. Again, there were no indications of a reduction in alcohol-related fatalities following the implementation date of the Administrative Per Se law.

Complementary Series. Using the dates of the two legislative changes in California as intervention points, no change was observed in the number of alcohol-related fatalities nationwide nor in the number of fatalities in California which were not alcohol-related (see Table 36). The lack of change in these two series provide further evidence that the BAC legislation was involved in the decline in the number of alcohol-related fatalities. Likewise, no change was observed in the number of non-alcohol fatalities in any of the four regions studied.

Table 36. Time Series Results for Complementary Series

	ARIMA Model	Model Parameters		Intervention Component		R^2
		Estimate	t-statistics	Form	t-statistics	
California Non-alcohol Related Fatalities	$(0,0,1)_6$ $(0,0,1)_{12}$	θ_0= 224.20 θ_6= 0.731 θ_{12}= 0.959	143.48 7.74 73.40	No change		0.607
Los Angeles County Non-alcohol Related Fatalities	$(1,0,0)_1$	θ_0= 54.93 ϕ_1= 0.277	33.82 2.19	No change		0.076
Alameda County Non-alcohol Related Fatalities	(0,0,0)	θ_0= 7.07	5.68	No change		0.000
Fresno County Non-alcohol Related Fatalities	(0,0,0)	θ_0= 7.35	14.93	No change		0.000
Shasta/Tehama County Non-alcohol Related Fatalities	$(1,0,0)_6$ $(0,0,1)_{12}$	θ_0= 3.40 ϕ_6= −0.336 θ_{12}= −0.301	17.90 2.31 1.90	No change		0.149
U.S. Alcohol Related Fatalities	$(1,0,0)_1$ $(1,0,0)_4$ $(1,0,0)_{12}$	θ_0= 1660 ϕ_1= 0.474 ϕ_4= −0.438 ϕ_{12}= 0.823	16.13 4.39 3.74 15.01	No change		0.876

Multivariate Results

Using unemployment rates as a covariate resulted in a *reduction* in the adjusted amount of variance explained for analyses of statewide alcohol-related fatalities. Multivariate analyses for each of the four research sites also decreased the adjusted R^2. These reductions in the amount of variance explained indicated that the univariate model was more appropriate than using unemployment rates as a covariate.

Findings from the multivariate model with statewide data using VMT as a covariate were consistent with the univariate model. The results from the multivariate model, which included VMT, indicated an abrupt, permanent decline in the number of alcohol-related fatalities statewide at the time of the reduction in the legal BAC level. The model indicates that 28 lives were saved each month in California, a statistically significant 13 percent reduction in the number of alcohol-related fatalities ($p < .01$). The univariate model indicated a decline of 27.25 alcohol-related fatalities per month.

Other Analyses

Additional types of data, other than fatality data from FARS, were used to help assess the impact of the reduction in the legal BAC limit. These included data on arrests for driving under the influence (DUI) and data on alcohol-related crashes.

Data Sources

Two sources of DUI arrest data were used, the Bureau of Criminal Statistics and Special Services and the CHP. In both cases, only yearly data were available. Obtaining historical arrest data on a monthly basis from the Bureau of Criminal Statistics would have required project staff to obtain disaggregated data and construct

analysis files. The costs involved were well beyond the resources available for this project. Comparison of annual arrest data for 1899 and 1990 provides some indication of the impact of the reduction in the BAC level. However, yearly data does not permit statistical analysis using the ARIMA models.

Monthly crash data were obtained from the California Highway Patrol (CHP) to augment the analysis of the FARS data. The CHP uses less objective information than FARS in classifying a crash as alcohol-related. For the CHP, a crash is considered alcohol-related if the investigating officer indicates alcohol involvement on the report form or if a driver is charged with an alcohol-related offense. Objective testing information is not one of the criteria. One limitation of this definition is the potential for underreporting of alcohol involvement. Of greater concern is the possibility that events external to the crash can influence this measure. Specifically, highly publicized legislative changes aimed at the drinking driver can sensitize police officers to the drinking driver problem. This sensitization can result in an increased willingness by the officer to charge a driver with an alcohol offense or indicate alcohol involvement on the reporting form.

DUI Arrests

DUI arrests by the CHP increased statewide with the decrease in the legal BAC limit. Partial data from the CHP for 1989 and 1990 indicated a 15.5% increase in arrests by the agency following the new law. For February through October 1989, the CHP made 113,905 DUI arrests. During the corresponding period in 1990, the CHP made 131,566 DUI arrests (see Figure 7). On the average, the CHP made 1,962 more

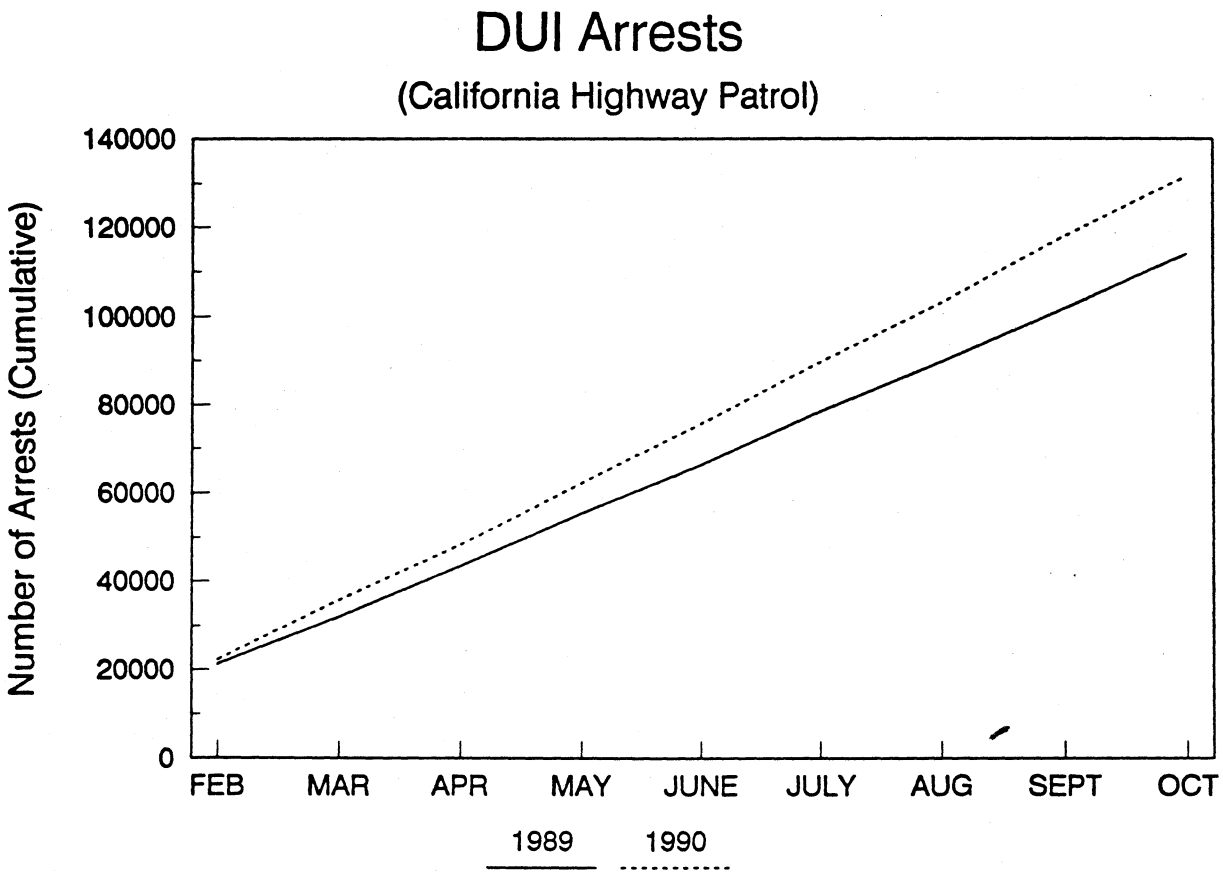


FIGURE 7. California Highway Patrol DUI Arrests

arrests per month in February through October, 1990 than in the same months of 1989, a statistically significant increase ($p < .01$).

Bureau of Criminal Statistics and Special Services data, which include data from all enforcement agencies, indicated increases in DUI arrests across all four areas studied. These changes ranged from a 3.5% increase in Los Angeles County to a 22.5% increase in Shasta/Tehama Counties with Alameda (18.4% increase) and Fresno (20.7% increase) in the middle (see Table 37). In each of the four study sites, the rate of increase for DUI arrests exceeded the change in misdemeanor arrests in general.

Table 37. Changes in DUI Arrests by Study Site: 1990 Versus 1989[1]

	Change in DUI Arrests: 1990 versus 1989	Change in Total Misdemeanor Arrests: 1990 versus 1989
Los Angeles County	+3.46%	+2.27%
Alameda County	+18.38%	+3.36%
Fresno County	+20.69%	+8.75%
Shasta/Tehama Counties	+22.49%	+18.60%

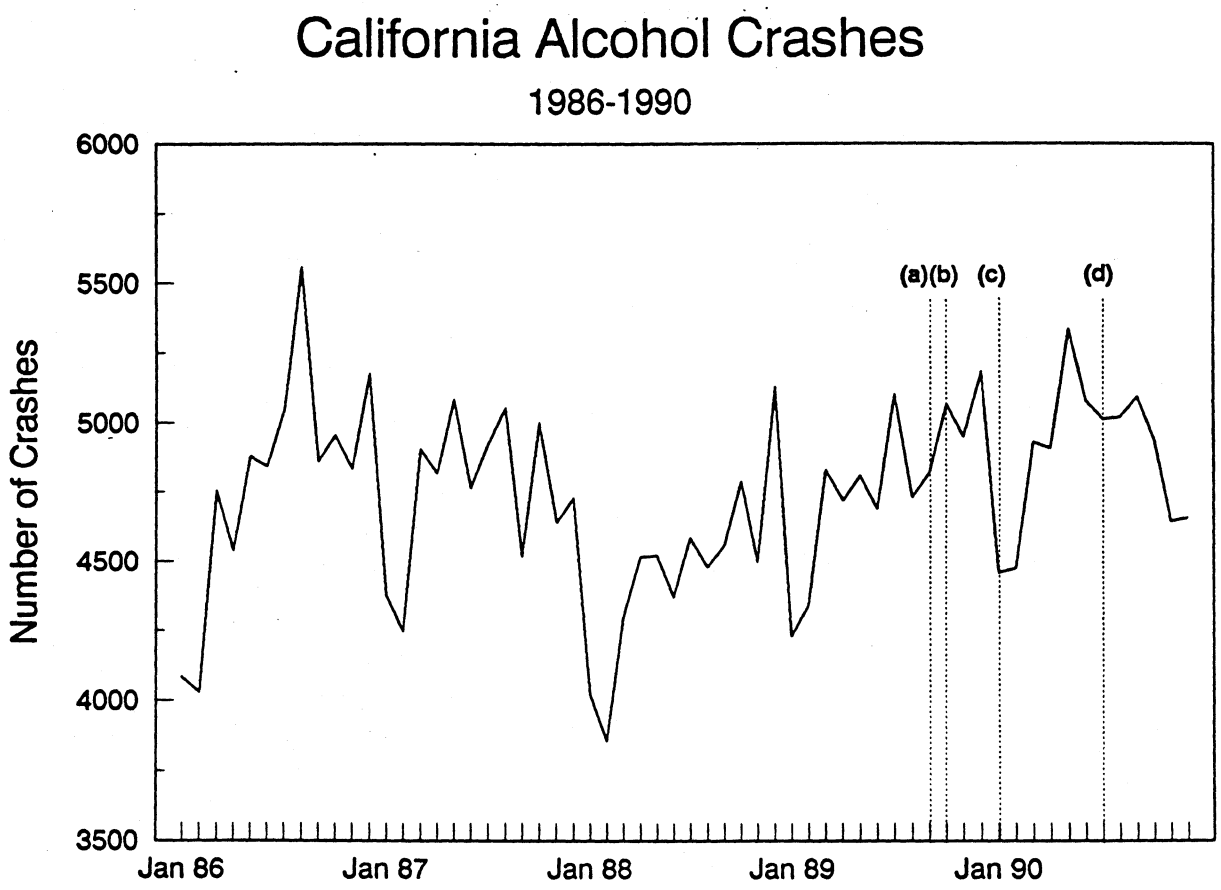
[1]Includes arrests by the CHP, the sheriff's departments in the respective counties, and other law enforcement agencies, such as municipal police departments.

Alcohol-related Crashes

Using data provided by the CHP, ARIMA modeling of crash data for 1986-1990 indicated that there was no reduction in the number of alcohol-related crashes in the state (see Table 38 and Figure 8). In fact, statistically significant increases ($p < .05$) were observed in two of the regions studied (Fresno County and Shasta/Tehama Counties). No change was observed in the two other study sites. Figures 9-12 display the monthly data for each of the four regions.

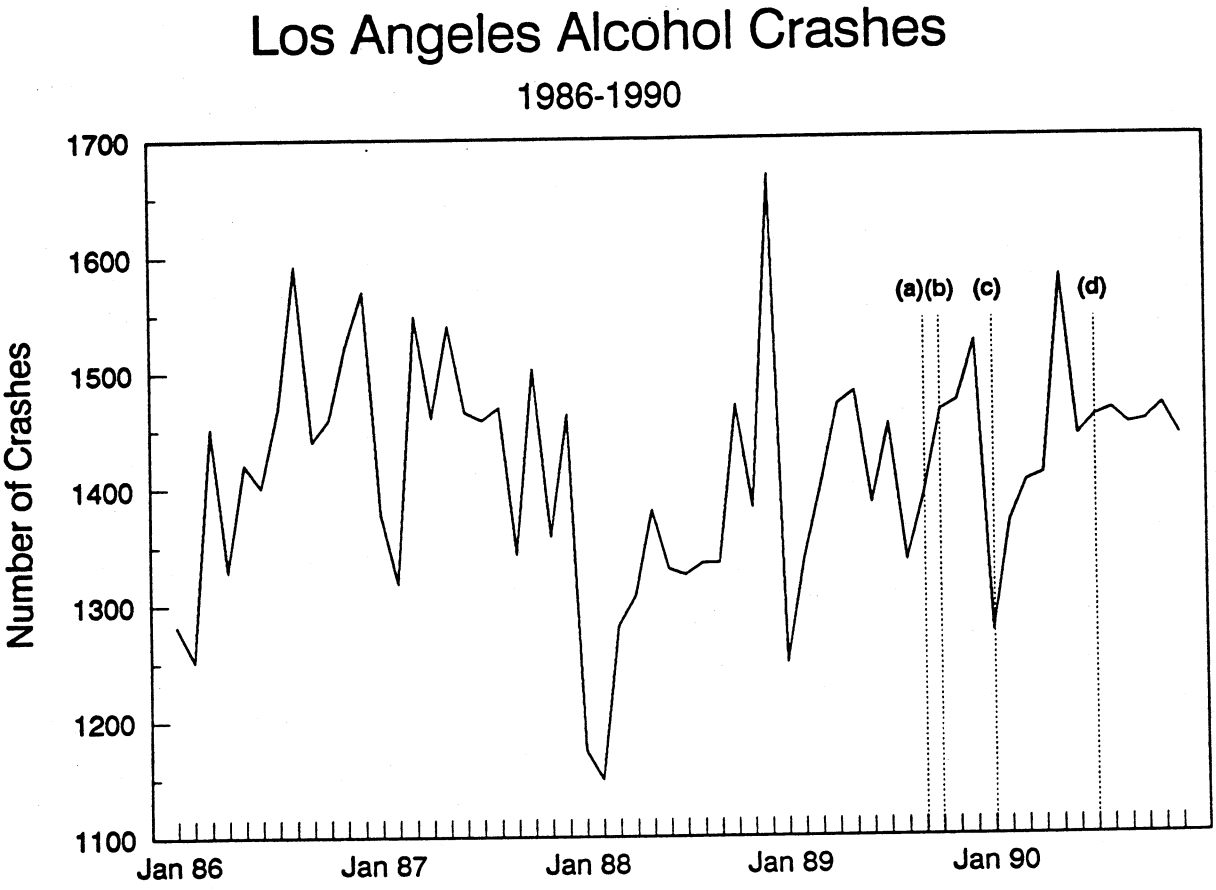
Table 38. Time Series Results for Alcohol-Related Crashes

	ARIMA Model	Model Parameters		Intervention Component		R^2
		Estimate	t-statistics	Form	t-statistics	
California Alcohol Related Crashes	$(1,0,0)_1$ $(0,0,1)_3$ $(1,0,0)_{12}$	θ_0= 4730 ϕ_1= 0.665 θ_3= −0.357 ϕ_{12}= 0.866	7.36 6.24 2.75 14.47	No change		0.693
Los Angeles County Alcohol Related Crashes	$(0,1,1)_1$ $(0,0,1)_2$ $(1,0,0)_{12}$	θ_1= 0.571 θ_2= −0.283 ϕ_{12}= 0.859	4.44 2.16 12.59	No change		0.544
Alameda County Alcohol Related Crashes	$(1,0,0)_1$ $(0,0,1)_{12}$	θ_0=188.7 ϕ_1= 0.352 θ_6= −0.299	39.40 2.84 2.24	No change		0.171
Fresno County Alcohol Related Crashes	$(1,0,0)_6$	θ_0=121.1 ϕ_6= −0.439	68.59 3.47	Abrupt, permanent increase at BAC reduction (ω_0=19.65)	4.41	0.251
Shasta/Tehama County Alcohol Related Crashes	$(1,0,0)_1$	θ_0= 36.06 ϕ_4= 0.245	26.10 1.83	Abrupt, permanent increase at BAC reduction (ω_0=6.84)	2.23	0.207



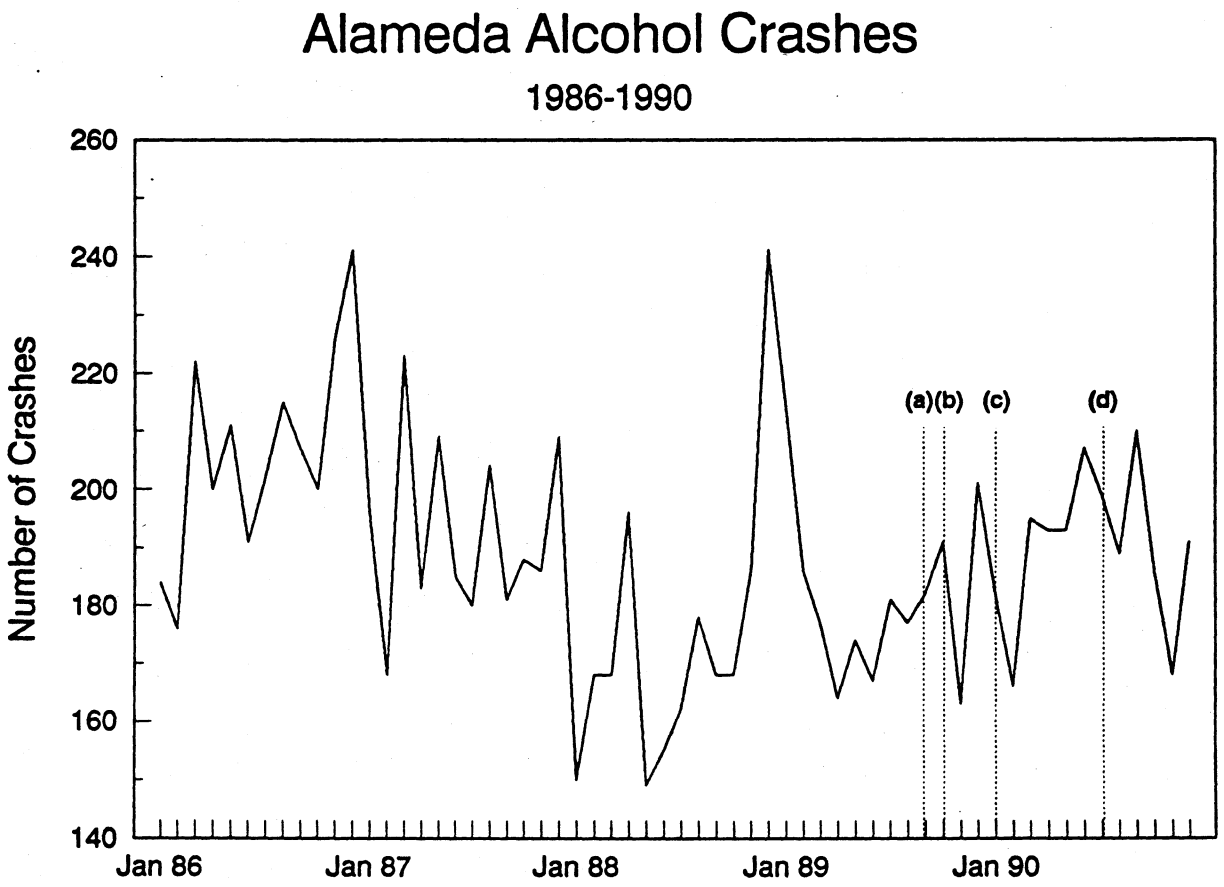
(a) September 1989 - Introduction of 0.08% BAC Into Legislature
(b) October 1989 - Introduction of Administrative Per Se Into Legislature
(c) January 1990 - Implementation of 0.08% BAC Legislation
(d) July 1990 - Implementation of Administrative Per Se Legislation

FIGURE 8. California Alcohol Crashes



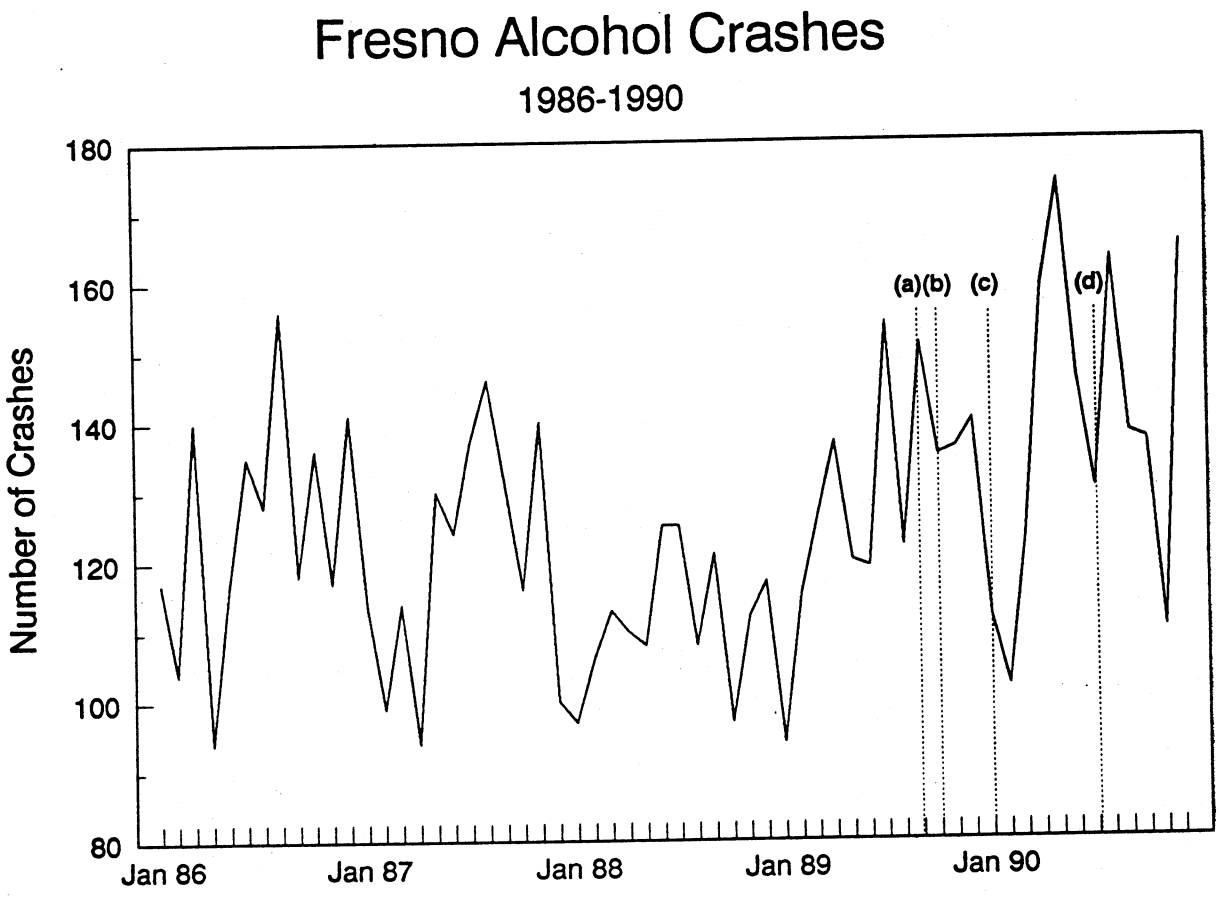
(a) September 1989 - Introduction of 0.08% BAC Into Legislature
(b) October 1989 - Introduction of Administrative Per Se Into Legislature
(c) January 1990 - Implementation of 0.08% BAC Legislation
(d) July 1990 - Implementation of Administrative Per Se Legislation

FIGURE 9. Los Angeles Alcohol Crashes



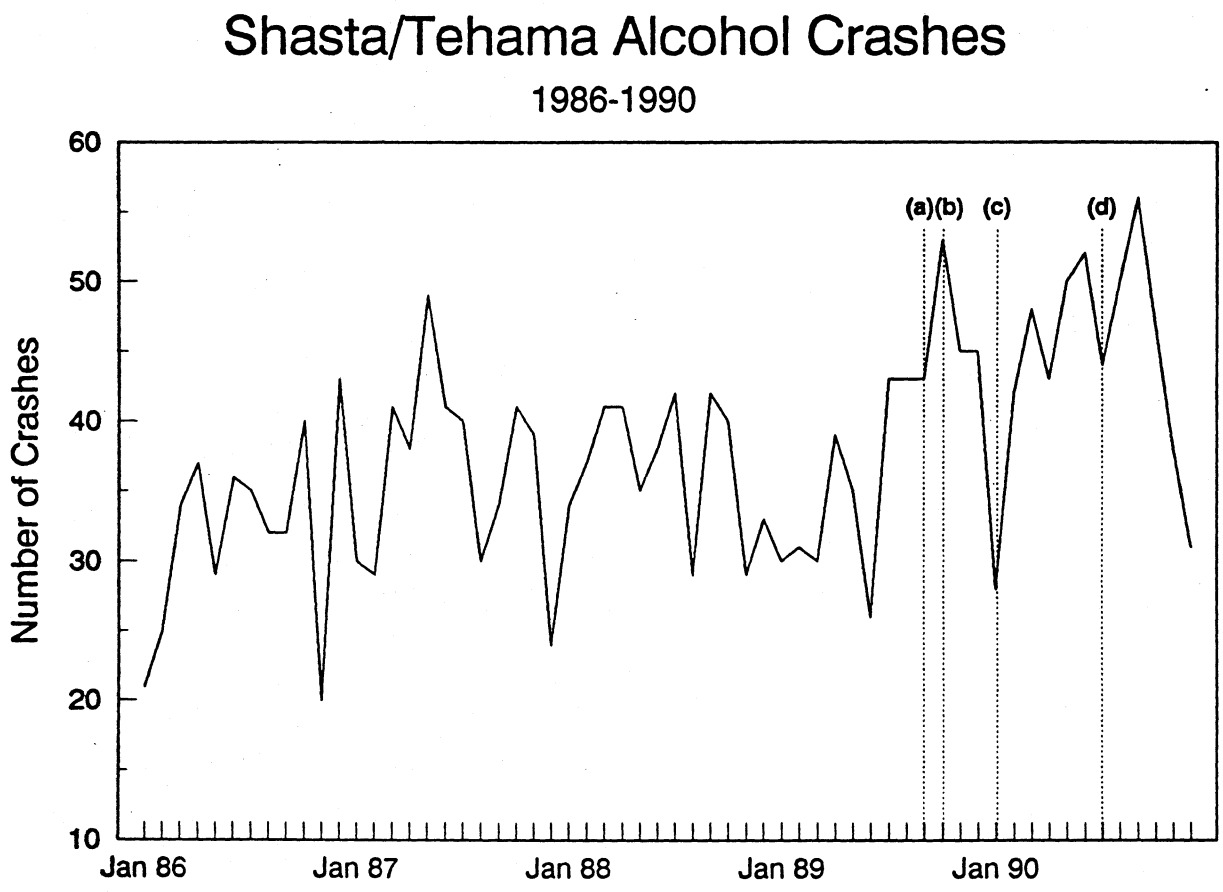
(a) September 1989 - Introduction of 0.08% BAC Into Legislature
(b) October 1989 - Introduction of Administrative Per Se Into Legislature
(c) January 1990 - Implementation of 0.08% BAC Legislation
(d) July 1990 - Implementation of Administrative Per Se Legislation

FIGURE 10. Alameda Alcohol Crashes



(a) September 1989 - Introduction of 0.08% BAC Into Legislature
(b) October 1989 - Introduction of Administrative Per Se Into Legislature
(c) January 1990 - Implementation of 0.08% BAC Legislation
(d) July 1990 - Implementation of Administrative Per Se Legislation

FIGURE 11. Fresno Alcohol Crashes



(a) September 1989 - Introduction of 0.08% BAC Into Legislature
(b) October 1989 - Introduction of Administrative Per Se Into Legislature
(c) January 1990 - Implementation of 0.08% BAC Legislation
(d) July 1990 - Implementation of Administrative Per Se Legislation

FIGURE 12. Shasta/Tehama Alcohol Crashes

The limitation of the CHP data is that it is not based on objective testing as is the FARS data. The change detected could reflect an actual increase in the number of alcohol-related crashes or an increase in reporting of alcohol involvement in crashes. The legislative change and the publicity surrounding the decrease in the legal BAC level to 0.08% may have resulted in an increased tendency by an officer to charge a driver with an alcohol offense or indicate alcohol involvement on the reporting form.

V

CONCLUSIONS

This report has presented the results of research designed to analyze the effects of the reduction in the blood alcohol concentration (BAC) limit and the implementation of an Administrative Per Se law on the following: 1) The operations of organizations involved in implementing the laws and educating the public about them; 2) The public's self-reported drinking and driving behavior and attitudes; 3) The number of alcohol-related fatalities; and, 4) Other measures of drinking and driving behavior, such as DUI arrests and alcohol-related crashes. The reduction in the BAC limit constituted the primary focus of the study, with the implementation of the Administrative Per Se law being of secondary concern. The major findings, which are summarized in this chapter, consequently focus on the effects of the reduction in the BAC limit.

Results from one component of the research may assist in the interpretation of results from other components. The chapter concludes with a discussion of some possible interrelationships between findings from the various research activities.

The findings summarized here are based on data collected relatively soon after the laws went into effect. As with any new legislation, the short-term responses may differ from the laws' long-term effects.

Operational Evaluation

The reduction in the BAC limit had most relevance for the operations of law enforcement agencies and the courts. The law had little impact on probation departments and alcohol treatment programs because the DUI offenders referred to

them generally had such high BAC levels that the law change did not affect them. The reduction in the BAC limit also had no major effect on Department of Motor Vehicle (DMV) Driver Safety Offices or community outreach/activist groups.

Even for law enforcement agencies and the courts, the law involved few new policies and procedures. Many law enforcement agencies had been making DUI arrests below the 0.10% BAC limit before the law changed. The major difference was that, in cases where the chemical test indicated a blood alcohol concentration of 0.08% or 0.09%, it was no longer necessary for the arresting officer to provide collaborative evidence that the individual was under the influence. This made it easier to make arrests at lower BAC levels.

The major policy implication of the reduction in the BAC limit for the court system involved prosecutors' decisions about whether to file cases and the BAC levels at which these cases would be prosecuted as DUI. The reduction in the BAC limit generally lowered from around 0.12% down to around 0.10% the cutoff point below which cases were plea-bargained to the reduced charge of "wet" reckless. A conviction of this lesser offense could involve a lighter sentence than a conviction for drunk driving.

The limited quantitative data available indicates that the amount of DUI misdemeanor arrests made by the California Highway Patrol, local police departments, and the Los Angeles Sheriff's department increased in 1990. For each of these agencies, the rate of increase for DUI arrests across research sites exceeded the rate of increase for adult misdemeanor arrests in general. In four of the five judicial districts for which data were obtained, the number of Group C misdemeanor filings (the vast majority of which are DUI) also rose in 1990, although total adult

misdemeanor filings generally rose more sharply. Representatives of law enforcement agencies and the court system perceived that the reduction in the BAC limit had contributed to the increase in DUI cases. However, the number and proportion of arrests and court cases with BAC levels under 0.10% was still very low. There was a general perception that most individuals involved in DUI situations were hard-core drinkers who would have been targeted by the law enforcement and court systems even if the BAC limit had remained at 0.10%

The reduction in the BAC limit was only one of several changes experienced by those law enforcement agencies which demonstrated the most growth in DUI arrests during 1990 and appeared most likely to conduct arrests at lower BAC levels. These changes included: 1) An increased commitment from top-level personnel to vigorous DUI enforcement, which partly stemmed from the new law but also had an independent aspect; 2) The deployment of staff to special units or shifts focusing on this activity; 3) In the case of one police department, the receipt of increased resources for DUI enforcement; and, 4) The installation of Preliminary Alcohol Screening (PAS) devices, in the case of the CHP. These factors appeared to operate in conjunction with the reduction in the BAC limit, enabling these agencies to take the proactive stance toward DUI enforcement which was necessary for the reduced BAC limit to be implemented most effectively.

The reduction in the BAC limit may have added some time to the pre-arrest process. It also may have resulted in more court time for officers, to the extent it increased the volume of arrests.

For some law enforcement agencies, officers' lack of knowledge of how to recognize impaired drivers with lower BAC levels constituted a deterrent to full

implementation of the law. Training on recognizing the subtle indications of excessive drinking proved useful to police officers. The training needed and provided within the court system focused on the reduction in the BAC limit's implications for the prosecution of cases and for the testimony of expert witnesses. Prosecutors wished that more scientific information and correlation studies were available to demonstrate impairment at 0.08%.

Neither the law enforcement agencies nor the courts received increased funds or additional staff specifically to implement the new law. The reduction in the BAC limit involved more staff time and costs to the extent it increased the number of arrests and court cases, added time to the arrest process, and necessitated additional court time for officers. These demands were not excessive. However, they came at a time when law enforcement agencies and city/district attorney's offices were generally having to contend with decreasing resources to handle the rising number of cases, making it difficult to absorb any increases in workloads.

Several types of organizations included in the operational evaluation undertook public education efforts regarding drinking and driving issues. These included law enforcement agencies, some organizations within the alcohol treatment system, and community-outreach/activist groups. Many of these groups incorporated information about the 0.08% limit into their ongoing community outreach activities, such as media releases around holiday times and designated driver campaigns, although few undertook any community outreach efforts specifically focusing on the new law. Outreach efforts targeted at youth did not include the 0.08% limit because the BAC limit for individuals under 21 years old is 0.05%.

There was a consensus across research sites that the reduction in the BAC limit received extensive media coverage. Agency representatives noted a high degree of public awareness of the new BAC limit. They believed the law's major impact involved its deterrent value for the general public.

Survey of The Public

A large majority (81%) of respondents knew that the BAC limit had become stricter since 1989. Slightly less than half (45%) were able to recall and/or write down the actual 0.08%. A similar percentage (48%) demonstrated awareness of the main provision of the Administrative Per Se law -- namely, that an arresting officer can immediately remove a DUI offender's license for suspension by the DMV. These findings may underestimate the proportion of participants who knew the BAC limit in relation to the Administrative Per Se law because of variation between the questions on the survey instrument that were used to tap correct knowledge of the two laws.

Awareness that the BAC limit had become stricter was high at all sites and among all demographic groups. Individuals in Alameda County were most likely to exhibit knowledge of both laws, while those in Fresno County had the greatest likelihood of knowing neither of them. Men proved more likely than women to demonstrate correct knowledge of the BAC limit and the Administrative Per Se. This was especially true for the BAC limit. Knowledge of either law was disproportionately low among members of non-white groups except, in the case of the Administrative Per Se, for Hispanics.

Very low incidences of drinking and, especially, of driving after drinking were elicited. Self-reporting may underestimate the true extent of these behaviors. Over

one-third of the survey participants classified themselves as teetotallers. An additional quarter reported drinking once a month or less. Over 80% of those individuals who reported ever drinking claimed they never drove within two hours of drinking or did so no more than once a month. An even higher proportion of these individuals (over 90%) maintained they never drove after drinking too much alcohol or did so no more than once a month.

Men proved more likely than women to indicate they drank frequently, drove often within two hours of drinking, and drove frequently after drinking two much. Hispanics had a greater probability than members of other ethnic/racial groups of reporting driving after drinking too much. No relationship was found between respondents' drinking and driving behavior and their knowledge of either DUI law.

The survey responses indicated that the incidence of self-reported driving after drinking had decreased substantially since the BAC law went into effect. Half of all respondents who drank alcohol reported that they were less likely to drive within two hours of drinking now, while almost as large a fraction indicated their probability of driving after drinking too much had decreased. Reasons provided for these changes in drinking and driving behavior centered on concern about the DUI laws and penalties. Unfortunately, it was impossible to tell from the responses whether respondents were referring to one of the two new laws, to both in combination, or to other factors altogether, such as sentences handed down by judges.

Correct knowledge of the BAC limit was unrelated to self-reported changes in drinking and driving behavior. This was true both for driving within two hours after drinking and for driving after drinking too much.

Respondents perceived the risk of being stopped for DUI to be very high. Moreover, three-quarters of them felt this risk had increased since 1989. An even higher percentage believed that the risk of undergoing license suspension if arrested for DUI had increased. Virtually no relationship was found between perceptions of increased risk and knowledge of the new DUI laws.

Analysis of Fatal Crash Data and Supplemental Data Analyses

Analysis of the fatal accident data from FARS indicates a 12% reduction in alcohol-related fatalities statewide following the implementation date of the 0.08% law. However, this does not necessarily mean that the entire alcohol-related fatality reduction was due to the implementation of the lower BAC limit. Prior to implementation of the 0.08% law, a good deal of discussion regarding a proposed Administrative Per Se law was also taking place. The publicity surrounding both these pieces of legislation was therefore intermingled. The effect on alcohol-related driving behavior noted immediately after the 0.08% law was implemented could therefore be a function of both the 0.08% and Administrative Per Se provisions.

It was also found that there was no change in the number of alcohol-related fatalities following the date the Administrative Per Se law went into effect. This law was implemented six months after the 0.08% law. Given the advance publicity mentioned above relating to both the 0.08% and the Administrative Per Se laws, it is difficult to untangle the effects of the two pieces of legislation which occurred so close together. It is possible that effects of the Administrative Per Se law may have taken place earlier than the actual implementation date. In addition, only six months of data

were available following implementation of the Administrative Per Se law, making it difficult to assess any change.

In summary, a 12% reduction in alcohol-related fatalities followed implementation of the 0.08% law, but part of this reduction may be due to overlapping activities relating to a new Administrative Per Se law which took effect six months later.

Though only approaching statistical significance, results from two of the four study sites also suggest a decline in the number of alcohol-related fatalities. Data were available for only twelve months following the reduction in the legal BAC level, a rather limited number of data points when using ARIMA models. Having an additional year of data might result in statistically significant findings for these two study sites.

No change was found in the number of non-alcohol fatalities in California nor in the number of alcohol-related fatalities nationwide. This provides further evidence that the BAC legislation was involved in the decline in the number of alcohol-related fatalities.

Analysis of crash data yielded different results. No change was detected in the number of alcohol crashes statewide nor in two of the study sites, Los Angeles and Alameda Counties. An increase in the number of alcohol crashes was found at the other two sites. One explanation for these increases might be the reactive nature of the definition of alcohol-related used with the crash data. Unlike the fatality data from FARS, the crash data obtained from the CHP is not based on test results. Rather, a crash is denoted as alcohol-related if the arresting officer indicates this on the report or a driver is charged with an alcohol offense. A chemical test is not conducted. In either case, the law had the potential of creating a reporting artifact. One outcome

of the legislation might have been an increased reporting of alcohol involvement in crashes.

Only limited information was available on the number of DUI arrests. However, the indications are that, overall, there was an increase in the number of arrests statewide by the CHP and in all four of the study sites by all arresting agencies combined. The CHP made 17,661 more DUI arrests statewide during February through October 1990 than in the comparable period the previous year. Within each research site, the increase in the number of DUI arrests performed during 1990 by all arresting agencies combined ranged from 3.5% in Los Angeles County to 22.5% in Shasta/Tehama Counties. Although total misdemeanor arrests also increased at each research site, DUI arrests rose at a higher rate.

Interrelationship Between Findings

No systematic pattern of findings differentiating one research site from another emerged from the separate components of the research. The sites were selected to represent sufficient diversity that together they would be generally representative of the entire state. The lack of systematic variation would seem to indicate that drinking and driving is a problem which cuts across settings and groups and that the responses to this problem also are generally applicable.

The finding from the analysis of the FARS data that the reduction in the BAC level was involved in a decrease in highway fatalities implies that the new law had beneficial deterrent effects on the public. Perceptions of the agency representatives interviewed for the operational evaluation support this interpretation. Results from the survey of the public, however, indicate that a majority of respondents lacked correct

knowledge of the BAC limit and that correct knowledge of the BAC limit was unrelated to changes in drinking and driving behavior. This incongruity can be resolved by another cluster of findings from the survey. These findings revealed a high level of awareness that the BAC limit had become stricter, a heightened perceived risk of being stopped by the police for drunken driving and of undergoing license suspension if arrested, and a decreased incidence of driving after drinking which was attributed by survey participants to concern about the DUI laws and penalties. These results suggest that knowledge of DUI laws' specific provisions may be unnecessary for the laws to have increased deterrent value. The important thing is that individuals know the laws have become stricter.

Information from the operational evaluation helps to explain the apparent discrepancy between results from the analysis of FARS alcohol-related fatality data and CHP crash data. The operational evaluation reveals that staff of many law enforcement agencies had become more highly sensitized to DUI enforcement in 1990 and viewed it as an increased priority. This lends credence to the hypotheses that the increase in alcohol-involved crashes, identified in analysis of the CHP crash data, represents a growth in the reporting of alcohol-involvement in crashes, rather than a true increase in the incidence of these events.

APPENDIX I
MAJOR FINDINGS FROM THE OPERATIONAL EVALUATION REGARDING THE ADMINISTRATIVE PER SE LAW'S EFFECTS

MAJOR FINDINGS FROM THE OPERATIONAL EVALUATION REGARDING THE ADMINISTRATIVE PER SE LAW'S EFFECTS

The operational evaluation component of the research was primarily designed to assess the impact of the blood alcohol concentration (BAC) limit's reduction on the operations of those groups charged with enforcing California's DUI laws and educating the public about them (law enforcement agencies, the court system, probation departments, the alcohol treatment system, Department of Motor Vehicles (DMV) Driver Safety Offices, and community outreach/activist groups). These findings are reported in the body of the report. Determining the impact of the Administrative Per Se law on these groups' operations was a subsidiary research objective. The findings are reported in this Appendix. As with the reduction in the BAC limit, the data collection dealt with the law's effects on agencies at the research sites, rather than on agencies' operations at the state level.

Responsibility for implementing the Administrative Per Se law was split between law enforcement agencies and the DMV. Law enforcement agencies were charged with: 1) Immediately removing the California driver's license of an individual arrested for DUI who either refused to take the chemical test or whose BAC level was at or above the percentage specified in the law (0.10% in the original Administrative Per Se law, which was in effect from July 1 through July 25, 1990; 0.08% in the revised, "clean-up" legislation which took effect on July 26, 1990); 2) Serving the driver with an Order of Suspension/Revocation. This also constituted a temporary license since the suspension/revocation did not go into effect for 45 days; 3) Reviewing the supporting documentation completed by the arresting officer and forwarding the materials (the Officer's Sworn Statement, the Order of Suspension/Revocation, the license taken from the driver, any breath test results, and a copy of any citation

issued) to DMV state headquarters within five business days of the arrest; and 4) Within 20 calendar days of the arrest, providing DMV state headquarters with the results of any blood or urine test. Upon receipt of the documents, the DMV was required to conduct an administrative review to determine if all elements of the law had been met. This review, which was conducted at the state level, could result in a set aside of the license sanction. If the administrative review revealed the license sanction was in order, the driver retained the right to appeal the sanction by requesting an administrative hearing. This hearing was conducted at a DMV Driver Safety Office.

Law enforcement agencies and the DMV experienced the direct effects of implementing the Administrative Per Se law. However, the legislation also had indirect effects on other organizations. Both the direct and indirect effects are summarized here.

Law Enforcement Agencies

- Most law enforcement agencies at the research sites began administering the Administrative Per Se law around its effective date of July 1, 1990. However, some smaller law enforcement agencies delayed implementation because they did not understand how to carry out the law, and found it difficult to obtain clarification from the DMV. For example, the Redding Police Department (Shasta County) did not begin implementing the law until March 1991. As of May 1991, the Alameda Naval Air Station still had not begun enforcing the law on the base.

- The replacement of the Administrative Per Se law's original provisions with the "clean-up" legislation's provisions in late July, 1990 did not create conceptual confusion. Law enforcement agency staff had been aware that some stipulations included in the original legislation (for example, the inclusion of 0.10% rather than 0.08% as the lowest BAC level at which licenses would be removed) were only temporary. However, it took the DMV several months to supply agencies with updated forms. During this period arresting officers had to continue using the forms originally received, crossing through the outdated provisions and replacing them

with correct information. Some officers forgot to make these changes. This resulted in the license suspensions being invalidated.

- The Administrative Per Se law's major impact on law enforcement agencies centered on the additional paperwork involved in making a DUI arrest. Officers estimated that filling out the necessary forms added from 10 to 45 minutes to the arrest process. Estimates tended to be highest for those officers and law enforcement agencies that handled few DUI cases. The additional paperwork also placed demands on the time of supervisory and clerical staff, who were responsible for reviewing the completed forms and sending them to the DMV in Sacramento.

- It was hard for law enforcement agencies to meet the legal deadlines for providing the DMV with necessary documentation. The problem was most acute for cases involving blood tests, since the crime labs responsible for analyzing the results often had difficulty complying with the time restraints.

- Representatives of some agencies felt that implementation of the Administrative Per Se law reduced the number of DUI arrests that would otherwise have been made. This was because the Administrative Per Se paperwork increased the time patrol officers were off the road.

- Law enforcement agencies' ability to implement the law fully was handicapped by the large number of individuals driving without valid licenses. Officers in some law enforcement agencies serving low-income, urban areas estimated that over half the drivers arrested for DUI had no licenses to remove, either because the licenses had already been suspended/revoked or because the individuals had always driven illegally.

- Implementation of the Administrative Per Se law raised the morale of some patrol officers. Being able to dispense an immediate, sure punishment to DUI offenders provided a sense of accomplishment.

- Background training materials, including a video, were prepared centrally by the DMV and California Highway Patrol (CHP) together, and distributed to law enforcement agencies throughout the state. Law enforcement agencies only received these materials at the last minute. They wished there had been more lead time to prepare for implementation.

- The amount of training actually provided to patrol officers varied from agency to agency. CHP officers reported receiving the most complete training and expressed the most satisfaction with its adequacy.

- Agencies did not receive additional staff or other resources to implement the law. There was a consensus that implementation had been burdensome, both in terms of staff time and other costs (reproduction, postage, etc.).

DMV Driver Safety Offices

- Before the Administrative Per Se law went into effect, DUI hearings conducted by the DMV were limited to hearings regarding "implied consent" (i.e., cases where drivers had failed to take the chemical tests). The Administrative Per Se law expanded these circumstances to include situations in which drivers' BAC levels were above the limits specified for immediate license removal. The total number of hearings conducted at each Driver Safety Office consequently increased. However, the increase was less than projected. This was perceived as being partly due to a decrease in implied consent hearings. No usable quantitative data were available regarding the number of hearings conducted at individual Driver Safety Offices before and after implementation of the Administrative Per Se law.

- Administrators of Driver Safety Offices felt the Administrative Per Se law had increased the proportion of DUI defendants bringing lawyers to hearings, as well as the proportion canceling out or failing to appear for scheduled hearings. No effect was noted on the proportion of license sanctions upheld in hearings, which remained very high.

- Driver Safety Offices were supposed to receive copies of the documents needed to conduct hearings from DMV headquarters, but experienced difficulty obtaining these records on time. As a result, the office administrators tended to obtain these materials directly from law enforcement agencies.

- DMV headquarters provided Driver Safety Office administrators and hearings officers with extensive training to prepare them to implement the Administrative Per Se law. Clerical staff received training within the individual offices.

- Driver Safety Offices were supplied with additional hearings officers and clerical staff to implement the new law. In addition, some existing staff had their responsibilities reassigned. Office administrators generally felt they had adequate staff and other resources to carry out the legislation.

Court System

- The legal guidelines used by judges in sentencing individuals convicted of DUI offenses, which afforded considerable judicial discretion, conflicted with the more rigid license sanctions mandated in the Administrative Per Se law. This was particularly true for the circumstances under which individuals could receive restricted licenses.[17] Some judges handled this discrepancy by handing down sentences that did not involve license sanctions. Others continued to include restricted licenses in their sentencing, even though the drivers were now unable to utilize them.

- Implementation of the Administrative Per Se law had no direct impact on the number of DUI cases handled by the courts. However, staff members of courts believed this law had an indirect effect on their workload by contributing to the growing number of cases involving driving without a license. It was difficult to assess the extent to which this increase was due to the Administrative Per Se law since licenses were also suspended/revoked for numerous other reasons (e.g., driving without insurance and failure to appear in court).

- Judges and court administrators both reported that they now spent more time dealing with confused and angry defendants. These defendants did not understand the distinction between the court process and administrative law, were bewildered by the conflicting directives imposed by the two systems, and felt they were being subjected to double jeopardy. Representatives of courts also exhibited confusion about some provisions of the Administrative Per Se law and, along with their clients, found it difficult to obtain clarification from the DMV. Staff members who were most successful in having questions answered were those who established one-on-one relationships with staff at the DMV, rather than going through official channels.

- Special problems in dealing with the public arose in Alameda County. The district attorney's office at this research site did not file any charges in DUI cases with BAC levels (as measured by breath tests) below 0.11%. Individuals whose licenses had been removed under the Administrative Per Se law but who had no court charges subsequently filed against them

---

[17]The judicial guidelines afforded judges the option of providing restricted licenses to offenders who had undergone a previous DUI arrest, as well as to first offenders. These restricted licenses were available for travelling to and from work, as well as for participating in alcohol treatment programs. Under the Administrative Per Se law, no work-related restricted licenses were permitted for drivers with non-commercial licenses. First offenders could receive restricted licenses, under certain conditions, which enabled them to drive to and from alcohol treatment programs. This option was not available for individuals with prior DUI offenses.

assumed they were entitled to have their licenses returned by the DMV. In order to deal with this confusion, the district attorney's office began issuing routine written notices to these drivers, clarifying that the absence of charges did not affect the DMV's power to suspend or revoke their licenses.

Probation Departments

- Implementation of the Administrative Per Se law had no direct or indirect effects on probation departments.

Alcohol Treatment System

- Under the Administrative Per Se law, DUI offenders were authorized to enroll in first offender treatment programs before their cases came to court. Administrators of alcohol treatment programs reported that few individuals availed themselves of this opportunity. Virtually all program participants continued to be individuals referred to the programs by courts as a condition of probation. Program administrators attributed this to the fact that the Administrative Per Se law provided little incentive to enroll in a treatment program. Taking this action would reduce the license suspension period by a maximum of thirty days.

- Program administrators maintained the Administrative Per Se law made it more difficult to work with DUI offenders, who believed themselves caught between the conflicting demands of the administrative and criminal law systems, and vented their hostility at the treatment programs. Special difficulties were identified working with participants with prior DUI offenses, since these individuals could no longer receive restricted licenses to drive to and from treatment programs.

- The Administrative Per Se law involved some increased paperwork for alcohol treatment programs. Program staff tended to serve as informal liaisons between program participants and the DMV. This placed additional demands on their time.

Community Education/Public Activist Groups

- As with the reduction in the BAC level, groups involved in educating the public about drinking and driving issues undertook little community outreach specifically centering on the Administrative Per Se law. Information about the Administrative Per Se law was included in their ongoing public education efforts.

The Media

- The general perception was that the Administrative Per Se law received far less media attention than the reduction in the BAC limit. Representatives of organizations included in the data collection attributed this to two factors: 1) The Administrative Per Se law went into effect in mid-year rather than during the holiday period; and, 2) The Administrative Per Se law was a complex piece of legislation, which was difficult for the media to summarize.

- A review of press clippings indicated that the Administrative Per Se law did receive substantial media coverage. One hundred twenty-one articles dealing with the Administrative Per Se law, published in California newspapers between June 27 and August 3, 1990, were collected by the Automobile Club of Southern California. Newspapers serving all research sites were represented.

★U.S. GOVERNMENT PRINTING OFFICE: 1991 - 617-870/41154

APPENDIX 2
SURVEY INSTRUMENT

California Department of Motor Vehicles
Survey on Traffic Safety Issues (1)

The California Department of Motor Vehicles requests your help in providing information about traffic safety issues. Your answers to the following questions will be strictly anonymous and will be used only for statistical purposes.

1. **What is your sex?** *(Circle one number.)* 1. Male 2. Female

2. **What is your age?** _____ Years

3. **What is your race/ethnic group?** *(Circle one number.)*

   1. Alaskan/Native American
   2. Asian/Pacific Islander
   3. Black/African-American
   4. Hispanic/Mexican-American
   5. White
   6. Other *(Specify):* _____
   7. Don't know

4. **Why did you come to the Motor Vehicle Department office today?** *(Circle all numbers that apply.)*

   1. To register vehicle for first time
   2. To renew vehicle registration
   3. To transfer ownership of vehicle
   4. To obtain new driver's license
   5. To renew driver's license
   6. To take a drive test
   7. To obtain an identification card
   8. To get a copy of driving record
   9. To apply for license following suspension or revocation
   10. Other *(Specify)*:_____

5. **What is the blood alcohol concentration (BAC) at which it becomes illegal for an adult to drive a motor vehicle in California?**

   _____%

6. **Has the blood alcohol concentration (BAC) limit in California changed since 1989?** *(Circle one number.)*

   1. It is stricter now
   2. It is less strict now
   3. It has stayed the same
   4. Don't know

7. **Suppose you are stopped for drunken driving and either refuse to take the chemical test or fail the test. According to the law, what should happen?** *(Circle all numbers that apply.)*

   1. Driver's license will be suspended, but only after case goes to court
   2. Police officer will take driver's license immediately for suspension by Department of Motor Vehicles
   3. Driver's license will be suspended only if it is a repeat offense
   4. Driver's license will be suspended only if serious accident occurred
   5. Driver's license will not be suspended, but other penalties may be imposed
   6. Other *(Specify)*:_____
   7. Don't know

8. **How likely are you to be stopped by a police officer for driving after you have had too much to drink?** *(Circle one number.)*

   1. Almost certain
   2. Very likely
   3. Somewhat likely
   4. Somewhat unlikely
   5. Very unlikely
   6. Unsure

9. **Do you think the chances of being stopped by a police officer for drunken driving have changed over the past year and a half or so?** *(Circle one number.)*

   1. Yes, they have increased
   2. Yes, they have decreased
   3. No, they have stayed about the same
   4. Unsure

(MORE QUESTIONS ON THE BACK)

10. **How often do you usually drink any alcoholic beverages, including beer, light beer, wine, wine coolers, or liquor?** *(Circle one number.)*

1. Every day
2. Nearly every day
3. Three or four days a week
4. One or two days a week
5. Two or three days a month
6. Once a month or less
7. Never
8. Other *(Specify)*:_____
9. Don't know

11a. **How often do you drive within two hours of drinking alcohol?** *(Circle one number.)*

1. Every day
2. Nearly every day
3. Three or four days a week
4. One or two days a week
5. Two or three days a month
6. Once a month or less
7. Never
8. Other *(Specify)*:_____
9. Don't know

b. **Has your likelihood of driving within two hours of drinking alcohol changed since the end of 1989?** *(Circle one number.)*

1. Yes, I'm more likely to drive after drinking now
2. Yes, I'm less likely to drive after drinking now
3. No, there has been no change
4. Does not apply
5. Don't know

c. **If your likelihood of driving within two hours of drinking alcohol has changed, why?** _____

_____

12a. **How often do you think you drive after drinking too much alcohol (including beer, light beer, wine, wine coolers, or liquor) to drive safely?** *(Circle one number.)*

1. Every day
2. Nearly every day
3. Three or four days a week
4. One or two days a week
5. Two or three days a month
6. Once a month or less
7. Never
8. Other *(Specify)*:_____
9. Don't know

b. **Has your likelihood of driving after drinking too much alcohol changed since the end of 1989?** *(Circle one number.)*

1. Yes, I'm more likely to drive after drinking now
2. Yes, I'm less likely to drive after drinking now
3. No, there has been no change
4. Does not apply
5. Don't know

c. **If your likelihood of driving after drinking too much alcohol has changed, why?** _____

_____

13. **For each statement below, please circle the number which best describes your feelings about the statement:**

	Strongly Agree	Agree	No Opinion	Disagree	Strongly Disagree
People can drive safely after drinking too much alcohol as long as they drive more carefully than usual	1	2	3	4	5
People arrested today for drunk driving are more likely to have their licenses suspended than they were a year ago	1	2	3	4	5

THANK YOU FOR YOUR COOPERATION. PLEASE PUT THIS COMPLETED FORM IN THE BOX PROVIDED.