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An Assessment of the Effects of Implementing and Publicizing Administrative License Revocation for DWI in Nevada

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<p>16. Abstract</p> <p>This report summarizes a study of the effects of publicizing administrative license revocation for Driving While Intoxicated (DWI) in Nevada. The law calls for confiscation of the drivers license at the time of arrest for drivers whose chemical test results are at or above an alcohol concentration of .10 or who refuse to submit to a chemical test.</p> <p>In this project, a public information campaign was designed and implemented emphasizing license revocation and strict enforcement of the law. Subsequent analysis revealed statistically significant reductions in alcohol-related and nighttime crashes at the time the overall PI&E campaign was fully implemented. Alcohol-related crashes were reduced by 12 percent. A subsequent survey revealed increased awareness of the sanction, expectation that it was applied, and reductions in reported drinking driving behavior.</p> <p>Though other changes in the DWI law coincided with implementation of administrative license revocation, the cumulative evidence indicates that administrative license revocation in conjunction with well-publicized enforcement can result in reductions in alcohol-related crashes.</p>			
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SECTION I

INTRODUCTION

This is the final report of a study to assess the effects of publicizing administrative license revocation for Driving While Impaired (DWI) in the state of Nevada. The study was conducted by the University of North Carolina Highway Safety Research Center (HSRC) for the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-84-C-07298. HSRC was supported by Mid-America Research Institute under a subcontract.

BACKGROUND

Administrative license revocation for Driving While Impaired (DWI) is a relatively recent development in the sanctioning process for DWI offenders in the United States. It represents an attempt to insure that a driver license sanction for DWI is imposed with swiftness and certainty upon DWI offenders. This is accomplished by imposing that sanction through an administrative process initiated at the time of arrest by the arresting officer and typically executed by the state's Division of Motor Vehicles. The determination of criminal guilt or innocence of the criminal charge of DWI is made through a separate judicial process in the courts. Appropriate further criminal sanctions such as fines and incarceration are then imposed by the courts on those found guilty of the criminal offense.

Such laws typically are implemented as follows. An individual is arrested for DWI and either submits to a chemical test or refuses to do so. If the person refuses to submit to a chemical test, the normal implied consent law comes into effect, and driver license sanctions may be imposed for the refusal. If the person submits to the chemical test and his or her blood alcohol concentration is at or above the *per se* level for that state, the administrative *per se* provisions apply. In either event, the officer confiscates the individual's license and provides the offender with a temporary license which contains a notice of suspension or revocation as well as information about appealing the loss of license.

License suspension or revocation is generally considered to be the single most effective DWI sanction in use for reducing DWI *recidivism* (Hagen, 1978; Hagen, Williams and McConnell, 1979; Popkin, Lacey, Li, Stewart and Waller, 1983; Salzberg, Hauser and Klingberg, 1981). An attractive feature of administrative *per se* is that imposing license suspension or revocation administratively at the time of arrest rather than as a consequence of conviction of DWI ensures that the largest possible number of apprehended DWI offenders receive and potentially benefit from this sanction.

Because only a relatively small percentage of DWI incidents ever result in a conviction, a much larger traffic safety benefit could be realized if others in the potential drinking driving population were deterred from DWI by the mere threat of license revocation. The deterrence model (Ross, 1981) postulates that the potential effectiveness of a sanction in deterring this larger group is a function of its perception of the severity, certainty, and celerity of imposition of the sanction. Clearly, drivers tend to perceive license revocation as a severe sanction (Nichols, no date; National Transportation Safety Board, 1984). Further, administrative *per se* laws increase the certainty and celerity of punishment for arrested offenders. Thus, it follows that if a sufficient proportion of the driving population is aware of the sanction, believe that it is applied after apprehension, and believe that the risk of apprehension is high, general deterrence may result in the form of reductions in alcohol-impaired driving and related crashes.

SCOPE AND APPROACH

The primary purpose of this study was to determine whether a well publicized administrative *per se* law could realize such a general deterrent effect. Ideally, a study of this issue would implement a public information program in a jurisdiction that had just passed such a law and then examine trends in public awareness and various measures of alcohol-related crashes. Although such a situation did not present itself at the time that this study began (1985), Nevada offered a suitable alternative.

Nevada adopted a new DWI law in 1983 which included administrative license revocation as one of its features. We conducted a time-series analysis of Nevada's alcohol-related crash experience and found no significant reductions associated with implementation of the law. A survey of Nevada drivers revealed relatively low awareness of the administrative *per se* sanction and a lack of confidence in its imposition. Though Nevada's new DWI law contained features other than administrative *per se*, no effect had been observed after the implementation of the law. Thus, Nevada provided an opportunity to determine if publicizing the administrative *per se* aspects of the law could create a general deterrent effect.

The Nevada Office of Traffic Safety conducted the public information and education (PI&E) effort using concepts and materials developed by our project team. A PI&E plan was developed and implemented, a further measure of awareness was taken, and analyses of recidivism patterns and alcohol-related crash trends were conducted. These activities, as well as a description of the implementation of administrative *per se* in Nevada, are described in the subsequent sections of this report. Areas discussed include the system effects, public information activities, public perceptions, DWI recidivism patterns and the effect of implementing and publicizing such a law on crashes.

The basic sequence of events in this study was as follows:

- | | |
|------------------------|---|
| July 1983 | Law change including administrative <i>per se</i> takes effect. |
| Spring and Summer 1985 | Crash analysis and driver license applicant survey indicates low perceived risk of sanction being applied and no effect on alcohol-related crashes. |
| Fall 1986 | Public information and education program highlighting administrative <i>per se</i> reaches full implementation. |
| Spring 1988 | Follow-up surveys and crash analysis conducted. |

SECTION 2

ADMINISTRATIVE LICENSE REVOCATION IN NEVADA

INTRODUCTION

During the 1983 legislative session, the Nevada legislature made major revisions to Nevada's DWI laws that took effect July 1, 1983. Largely because courts rarely imposed license sanctions as a consequence of DWI convictions, the focal point of those revisions was the adoption of *administrative* license revocation.

By making license removal an administrative process, the 1983 legislation created two separate adjudicative proceedings for an accused drunk driver:

- The administrative proceeding before the Department of Motor Vehicles, which determined whether a driver should lose his or her license for failing or refusing a chemical test; and
- The criminal proceeding in court, which decided guilt or innocence of the drunk driving charge itself.

One important law change that accompanied the administrative-revocation procedure was a minimum 45-day "hard" license revocation imposed administratively as a consequence of the arrest (with no restricted license available) for first offenders. Existing legislation had provided for suspension rather than revocation, but imposed no hard suspension period and allowed the trial judge to grant a restricted license on a showing of "extreme hardship."

Administrative license revocation was one of several changes to Nevada's drunk-driving laws that occurred in 1983. Other changes included:

- Establishing .10% as a *per se* standard of legal intoxication. Previous legislation established .10% as a presumptive standard.
- Legislation that authorized police officers to administer "preliminary" breath tests on "reasonable grounds and articulable suspicion" and imposed a 90-day license revocation on drivers who refused such a test.
- A legislative prohibition on plea bargaining. The 1983 legislation forbade prosecuting attorneys to reduce drunk driving charges unless it was not possible to prove guilt, and the prosecutor stated so in court.

- **Mandatory minimum penalties, including two days of jail or 48 hours of community service for first offenders, and 10 days of jail for second offenders.**

THE ADMINISTRATIVE REVOCATION PROCESS

Nevada's administrative license renewal process is comprised of the following steps:

- **After the driver has been arrested for drunk driving, but before he or she is transported to the testing facility, the arresting officer advises the driver of the consequences of failing to submit to a chemical test.**
- **If the driver either refuses to submit to a chemical test, or submits to the test but fails it (has a blood alcohol concentration of .10% or higher), then the officer seizes the driver's license and serves a "notice of revocation" on the driver.**
- **A driver who is given the notice of revocation and whose license is seized is given a seven-day temporary license; during that time, he or she has the option of requesting a hearing before a Department of Motor Vehicles hearing officer to review the arresting officer's revocation order.**
- **If the driver requests a hearing, then he or she is given another temporary permit that is valid until the hearing is held.**
- **The Department's hearing is limited to the issue of whether the driver failed to submit to the chemical test, or had a blood alcohol concentration of .10% or more at the time of the test. If the hearing officer determines that the driver in fact refused or failed the test, he or she upholds the license revocation; otherwise, the hearing officer rescinds the revocation and orders the reissue of the driver's license.**
- **A Department of Motor Vehicles hearing decision upholding a license revocation is appealable to the District Court. Nevada law provides that the court may stay the revocation itself, pending review, only if the driver has presented a "substantial question" for review. However, it has been reported that courts usually grant defense attorneys' petitions for an order staying the revocation. A stay order "stops the clock" on a revocation period. The District Court is required by law to review the Department's decision solely on the record of the hearing.**

- If the District Court upholds the revocation, the driver may appeal to the Nevada Supreme Court. If the court reverses the Department's decision, the driver is given back his or her license.
- A first offender who records an alcohol concentration of .10% or more on a chemical test receives a 90-day revocation; however, after 45 days, he or she may apply to the Department for a restricted license allowing restricted travel for reasons of hardship. A first offender who fails to submit to a test receives a one-year revocation and may, after six months, apply for a restricted license. Second offender refusers receive a three-year revocation. Nevada's implied-consent law is harsher on a driver convicted in court of drunk driving after refusing a test: the mandatory revocation for conviction is added to the revocation imposed for refusing to submit to the test.
- The criminal charge of driving under the influence is pursued on a separate track through the court system, and conviction of the offense results in other sanctions in addition to revocation such as fines, jail or community service, and court costs.

IMPLEMENTATION

Although the law was passed just a few weeks before its effective date, the Department of Motor Vehicles and Public Safety was subsequently able to handle the large increase in license removal cases. One reason was the Department's hiring of two clerks, and an adjudicator was made responsible for drunk driving hearings only. Another important reason why the new legislation was so smoothly implemented was that the Department had received supplemental funds from the U.S. Department of Transportation, National Highway Traffic Safety Administration. Those funds paid the salary of these new Department employees. The cost of these employees has now been absorbed into the regular operating budget of the Department. In addition, Department officials were reasonably certain before the 1983 legislature met that the legislature would approve an administrative license-removal statute and thus had done considerable prior planning.

Nevertheless, the new drunk driving law, combined with the new administrative procedure, created a number of problems within the criminal justice system. Both police officers and court personnel were confronted with new forms, and drunk driving arrests became more time-consuming, particularly as the hearing process was taking place.

Training programs were instituted by the Department of Motor Vehicles and Public Safety, and forms were revised and streamlined so that after the initial learning period, processing of administrative revocation paperwork by enforcement officers was less time consuming. Nevada does not use a uniform traffic ticket and

has no centralized reporting of DWI arrests. Thus, data were not available on the volume of DWI arrests statewide before implementation of the law. However, since implementation of the law, the Office of Traffic Safety has regularly been polling all Nevada enforcement agencies about their DWI arrest volume, and annual counts from 1984 on are available. In 1984, 8,862 arrests were reported, and in 1988 there were 10,449. There has been a gradual increase in the volume of arrests in the years since the law was implemented.

However, implementation of the law has resulted in dramatic increases on the actual number of license suspensions or revocations for the DWI offense. In 1982, the last full year under the former law, there were 2,042 suspensions for implied consent refusal and 372 court ordered suspensions as a result of DWI convictions for a total of 2,414. In 1984, the first full year under the new law, the corresponding revocation figures for refusal and administrative *per se* violations were 2,103 and 7,238, respectively, for a total of 9,341. This represented a nearly fourfold increase. Data on court ordered suspensions were not available for the period after implementation of the new law. The volume of DWI related license suspensions and revocations from 1982 through 1988 is shown in Table 2.1.

There was a corresponding increase in the volume of DWI related hearings conducted, but the ratio of hearings per suspension/revocation actually decreased somewhat overall. Under the present law, the ratio of hearings to revocations imposed is much lower for administrative *per se* revocations (on the order of .15) than it is for implied consent refusal revocations (generally over .25). Thus, the workload of general hearing officers per initial action revocations is lower for administrative *per se* violations than it is for implied current refusals. This is illustrated in Table 2.2.

Thus, though the volume of hearings has increased, so has the volume of revocations imposed (to a somewhat larger degree). Nevada has accommodated this additional volume with the addition of a hearing officer to absorb the additional hearings and two clerical personnel to handle the additional revocation orders and paperwork associated with hearings.

Not surprisingly, a higher rate of hearing requests occurred during the first six months the law was in effect as offenders and defense attorneys tested the system. However, the hearing request rate has stabilized in subsequent years and the administration of the law is now running smoothly.

**Table 2.1 DWI Related License Suspensions (Former Law)
and Revocations (Current Law) by Year.**

	<u>Former Law</u>		<u>Current Law</u>					
	<u>1982</u>	<u>Jan 1, 1983 June 30, 1983</u>	<u>July 1, 1983 Dec. 31, 1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Court Ordered Suspensions	372	178	NOT AVAILABLE					
Administrative Per Se Revocations		None	2185	7738	8021	7797	6932	7397
Implied Consent Refusal Suspensions/ Revocations	2042	883	868	2103	2684	2436	2070	1732
Total	2414	1061	3053	9341	10705	10233	9002	9128

Table 2.2 DWI Related Hearings and Ratio of Hearings to Suspensions/Revocations Imposed by Reason by Year.

<u>Reason for Hearing</u>	<u>Former Law</u>		<u>Current Law</u>					
	<u>1982</u>	<u>Jan 1, 1983 June 30, 1983</u>	<u>July 1, 1983 Dec. 31, 1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Administrative Per Se Revocation	N/A	N/A	576	926	1109	1321	1004	996
Ratio of number of hearings to number of per se revocations			.26	.13	.14	.17	.14	.13
Implied Consent Refusal Revocation	N/A	N/A	278	549	650	703	642	425
Ratio of number of hearings to number of implied consent			.32	.26	.24	.28	.31	.25
Total Hearings Conducted	489	624	854	1475	1759	2024	1646	1421
Ratio	.20	.59	.28	.16	.16	.20	.18	.15

SECTION 3

PUBLIC INFORMATION AND EDUCATION ACTIVITIES

As indicated in the introduction, Nevada was selected for study in this project because, although there was an administrative *per se* law in place and being implemented, there was relatively low public awareness of the administrative *per se* licensing sanction and how it was being implemented. This provided the best opportunity available to examine whether increasing the awareness of an administrative *per se* law and its licensing sanction would have a general deterrent effect. The main operational objective of the project was to enhance the effectiveness of Nevada's administrative *per se* law by bringing it to the attention of the public. Emphasis was placed on the nature of the punishment and its certainty and swiftness. The informational campaign stressed the officer would take a driver's license on the spot if a driver refuses to take a breath test or registers a blood alcohol concentration (BAC) of .10% or greater. It also emphasized the one-year license revocation period for a first refusal and a 90-day revocation period for registering a BAC of .10% or greater, and pointed out that only after half the revocation period is over can a restricted license or work permit be issued.

The project was supported by the Traffic Safety Division of the Nevada Department of Motor Vehicles and Public Safety in conducting this public information program. The Traffic Safety Division produced materials designed by the project team specifically emphasizing the administrative *per se* sanction and incorporated license revocation messages into its other DWI public information efforts.

Note that while Nevada did have several DWI programs in place that were capturing media attention (MADD, REDDI, and enforcement actions including sobriety checkpoints), none of these efforts addressed the administrative *per se* sanction. A survey was administered in cooperation with this project by the Nevada Department of Motor Vehicles at Driver's License Offices during 1985 (described in Section 4 of this report) to ascertain public perceptions of Nevada's DWI laws prior to project related public information and education efforts. The results of that survey indicated that there was a relatively low awareness of the administrative licensing sanction and a lack of belief that it was being enforced.

Working with the public information coordinator within the Traffic Safety Division of the Nevada Department of Motor Vehicles, the project developed an overall public information and education (PI&E) plan that specifically targeted the licensing sanction as a separate initiative, yet worked cooperatively with the existing DWI programs. The public information program was designed to: 1) inform the driving public about the exact provisions of the administrative *per se* law; 2) emphasize the certainty that the provisions of the law would be carried out; and 3) complement other DWI public information programs to enhance awareness of

enforcement efforts underway to increase the likelihood of detection, apprehension and sanctioning.

The project provided technical assistance in developing the materials for the PI&E plan, and the local coordinator was responsible for the production and dissemination of the materials. For example, project staff developed concepts for television public service announcements (TV PSAs), but obtaining assistance from local resources in producing, duplicating, and airing the spots was left to the local personnel. The PI&E plan, originally outlined for 12 months, actually covered a 14-month period starting in April of 1986 and extended through May of 1987.

The theme "If You Drink and Drive in Nevada, the First Thing You Lose is Your License" was chosen to emphasize the certainty and swiftness of the license revocation (that is, the license is taken by the officer at the time of arrest and independent of the court process), and to give the message that it is only the first in a series of sanctions that may apply. This theme was used as the cover for a brochure, as a billboard concept, on key chains, and as the tag line on television and radio public service announcements. A modification of the theme read "Drunk Drivers Have a Lot to Lose" with a graphic of a driver's license with "REVOKED" stamped across it. Figures 3.1 and 3.2 illustrate the use of the theme.

Nevada is a state with its population concentrated mainly in two locations, Las Vegas and the Reno, Sparks, Carson City area. These two locations have the state's television stations and primary newspapers, and the bulk of the DWI enforcement is concentrated in these areas. The PI&E program made a conscious decision to target the messages to the residents and not necessarily the tourists. The consensus was that tourists tend to do their drinking in one place and to stay at that one place. That hypothesis seemed to be reinforced by both the arrest and crash statistics, with out-of-state residents accounting for about 10% of the crashes and 15% of the arrests.

PROJECT THEMES

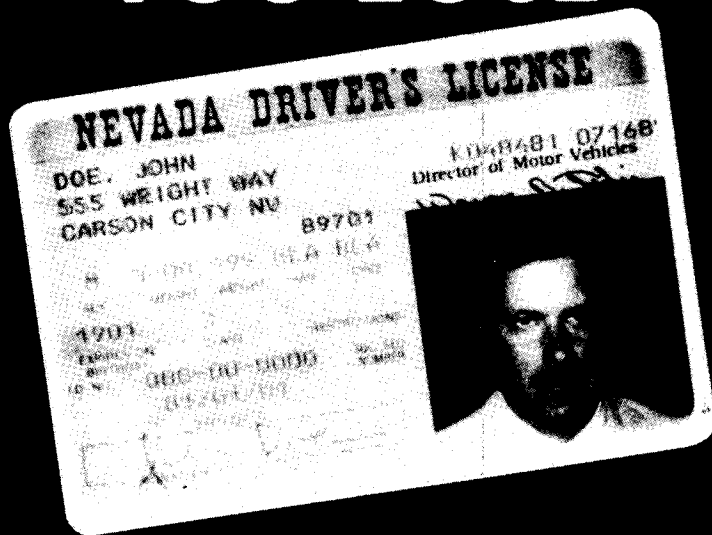
Administrative Per Se Law

The overriding theme on all the elements of the public information campaign was the DWI administrative license revocation. In addition to the swiftness and certainty of the sanction, the ramifications of the sanction were also covered. These included the embarrassment and inconvenience of the lose of license, and the procedures for reinstatement, including passing both the written and driving tests, the reinstatement costs and proof of insurance.

Implied Consent Law

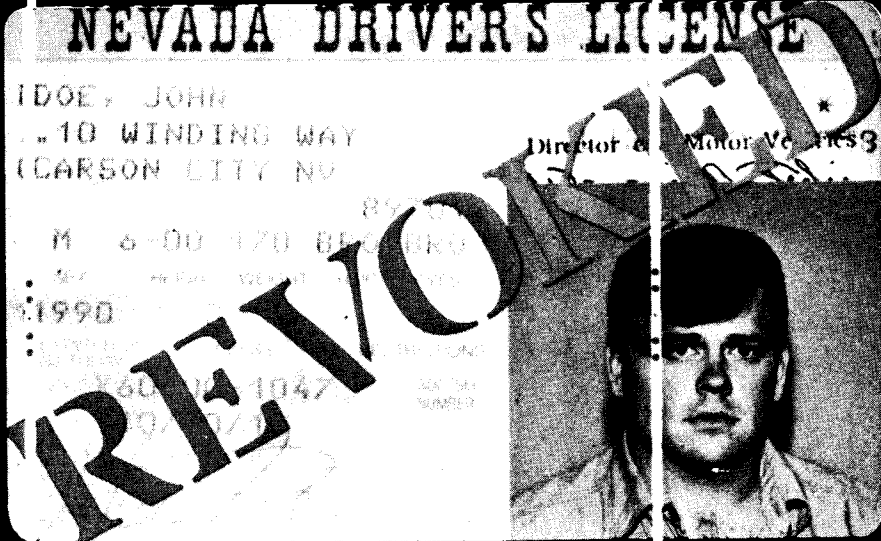
This theme informed the public that the law allowed an officer who suspects a motorist of driving under the influence of alcohol or a controlled substance to request the motorist to submit to a breath or blood test. First time refusals carry

**THE FIRST
THING
YOU LOSE**



**IS YOUR
LICENSE.**

**IF YOU
DRINK AND DRIVE
IN NEVADA**



**NEVADA DEPARTMENT OF MOTOR VEHICLES AND PUBLIC SAFETY,
OFFICE OF TRAFFIC SAFETY**

Figure 3.2. Example of Modified Program Theme Used on Billboards.

a penalty of having the driving privilege revoked for one year. Second or subsequent refusals can result in the loss of the driving privilege for three years.

Cost of DWI

This theme delineated the many sanctions and costs involved in a DWI conviction, including the license revocation, mandatory jail sanction, fines, court costs, lawyers' fees, insurance rate increases, and the inconvenience and expenses of alternate transportation.

REDDI Program

The PI&E program worked closely with the campaign to promote the state's REDDI program, Report Every Drunk Driver Immediately, in which citizens report impaired drivers to their local law enforcement agencies or the Nevada Highway Patrol.

Other General DWI Messages

This category included seasonal messages for holiday periods such as Thanksgiving, Christmas, Memorial Day, Fourth of July, Labor Day and other high travel and increased drinking and driving periods. Also included were releases about general drunk driving statistics, information about how alcohol impairs, and the equivalences of the different forms of alcohol. Additionally, efforts were made by police agencies to encourage coverage of checkpoint and DWI enforcement training activities.

Though the several supporting themes described above were covered during the implementation period of this project, the prevailing and most extensively emphasized message during this period was that of the swift and certain license action of the administrative *per se* law.

PROGRAM COMPONENTS

The project relied on a mix of public information efforts and hard news coverage to cover the state. The following are descriptions of the main components of the program.

Brochure

The central informational piece was a brochure that told about Nevada's DWI laws and emphasized the administrative *per se* sanction. Over 115,000 copies of this brochure were distributed through a variety of outlets including the Nevada Highway Patrol, police and sheriff departments, MADD chapters, driver licensing stations, the Bureau of Alcohol and Drug Abuse, chambers of commerce, liquor wholesalers, the public school system, post offices, hospitals, public health agencies, and the State Mental Health and Mental Retardation Agency (which runs the DWI

schools), and the California State Automobile Association¹. Nevada is a sparsely populated state (at the time, about 950,000 residents with approximately 750,000 licensed drivers) and a distribution of over 100,000 brochures represents a significant number of Nevada citizens potentially exposed to the program.

Television and Radio PSAs

A major component of the PI&E effort was TV public service announcements (PSAs). Three PSAs were developed and aired during the project period. All the PSAs were produced through the University of Nevada at Reno Instructional Media Center. They were distributed to nine TV stations, 5 in the Las Vegas area and 4 in the Reno area.

One PSA that was well received and aired extensively throughout the project was a takeoff on a popular commercial with the come on "You get all this, plus there's more . . ." The message in the "Cost of DWI" PSA was to explain just how extensive the penalties for a DWI arrest and conviction are. A second PSA, called "Breathalyzer," took the viewer through a DWI arrest emphasizing the immediacy of the license revocation. A third PSA, "Faces," showed close ups of faces talking about losing their licenses for DWI offenses and ended with a freeze on the last speaker. The camera then pulled back to show the face was on a driver's license and the word "REVOKED" appeared across the license. The message was that all ages and types of people are arrested for DWI and the consequences for all are the same - revocation of the driver's license. The script for this PSA is shown in Figure 3.4.

Radio PSAs were prepared and distributed in the form of live-announcer scripts. They were sent to 27 radio stations throughout Nevada and were a mix of administrative *per se* messages and general information on alcohol. Five general DWI PSAs, produced in the fall of 1985, were still receiving excellent play during the early months of the program.

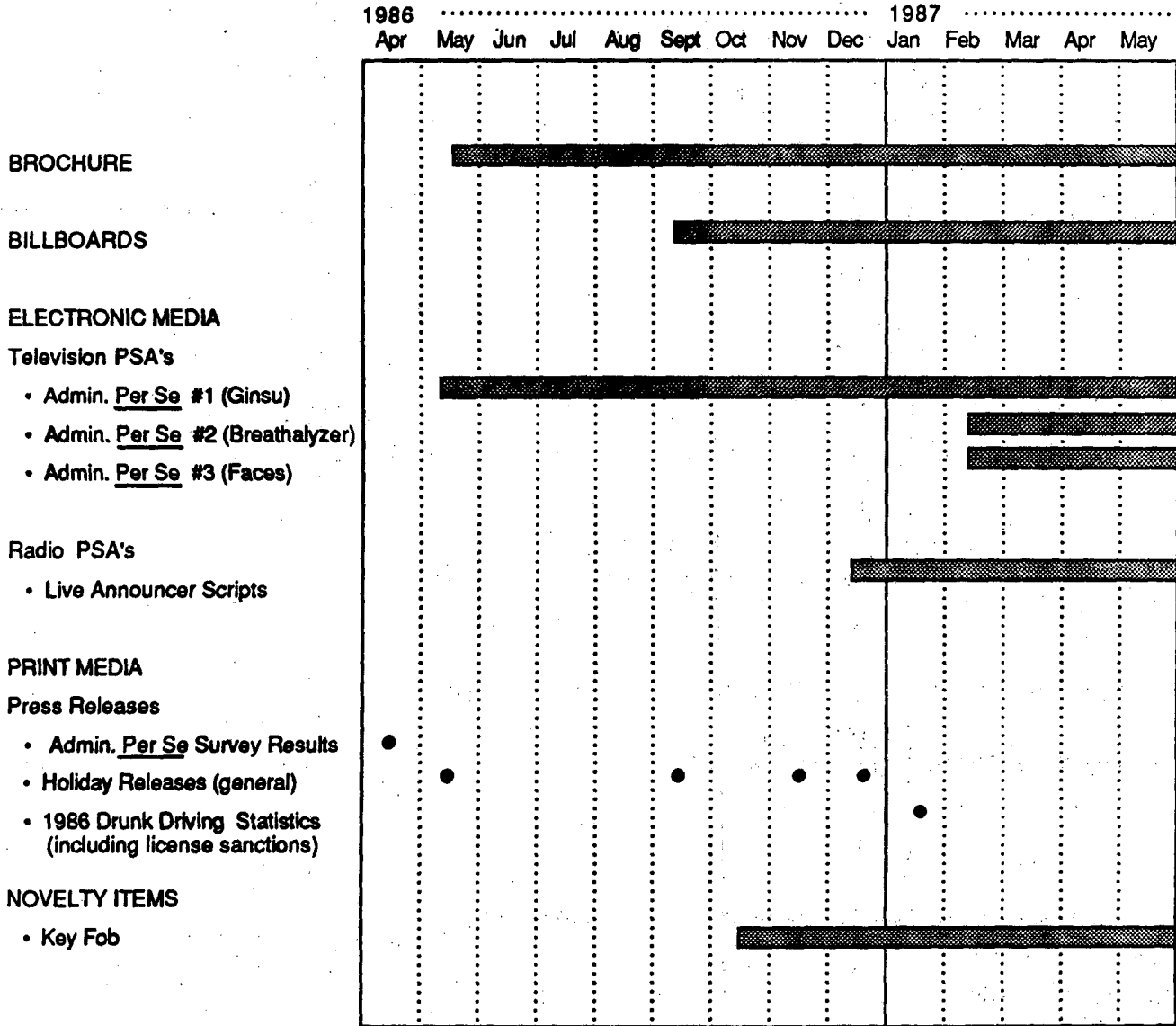
Billboards

Billboards were used extensively throughout the project and received high visibility. An outdoor advertising company donated 100 billboard spaces for the two major urban areas of Nevada, including Las Vegas and the Reno, Sparks, Carson City area. Figure 3.5 shows the billboard locations in the Las Vegas area. The placement of the billboards at all the main entrances and exits to the major population centers allowed for maximum exposure of the message.

¹ This is the Nevada arm of the American Automobile Association. Nevada does not have its own office, but falls under the umbrella of the California office.

Nevada Administrative License Revocation for DUI Public Information and Education Plan

April 1986 - May 1987



VIDEO

1. CLOSE UP OF: Sixteen- or seventeen-
2. year-old white male.
- 3.
4. DISSOLVE TO: CU of white female in
5. mid-twenties.
- 6.
7. DISSOLVE TO: CU of white male thirty-
8. five to forty years old.
9. DISSOLVE TO: CU of male Indian about
10. fifty-five or sixty years old.
11. CAMERA FREEZES ACTION.
12. CAMERA PULLS AWAY TO SHOW
13. PHOTO OF MALE #3 IS PART OF
14. DRIVER'S LICENSE.
15. SUPER: "REVOKED" ACROSS THE
16. LICENSE
17. LOGO

AUDIO

1. MALE #1: If you are convicted of drunk
2. driving in Nevada, you will lose your
3. driver's license for 90 days . . .
4. FEMALE: . . . and that's just if it is your
5. first offense. The arresting officer can
6. take your driver's license . . .
7. MALE #2: . . . on the spot if you refuse to
8. take an alcohol test or . . .
9. MALE #3: . . . if the reading on the
10. alcohol test is .10 or above.
- 11.
- 12.
13. ANNOUNCER: Each year thousands of
14. Nevada citizens learn the hard way - if
15. you drink and drive in Nevada, the first
16. thing you lose is your license.
- 17.

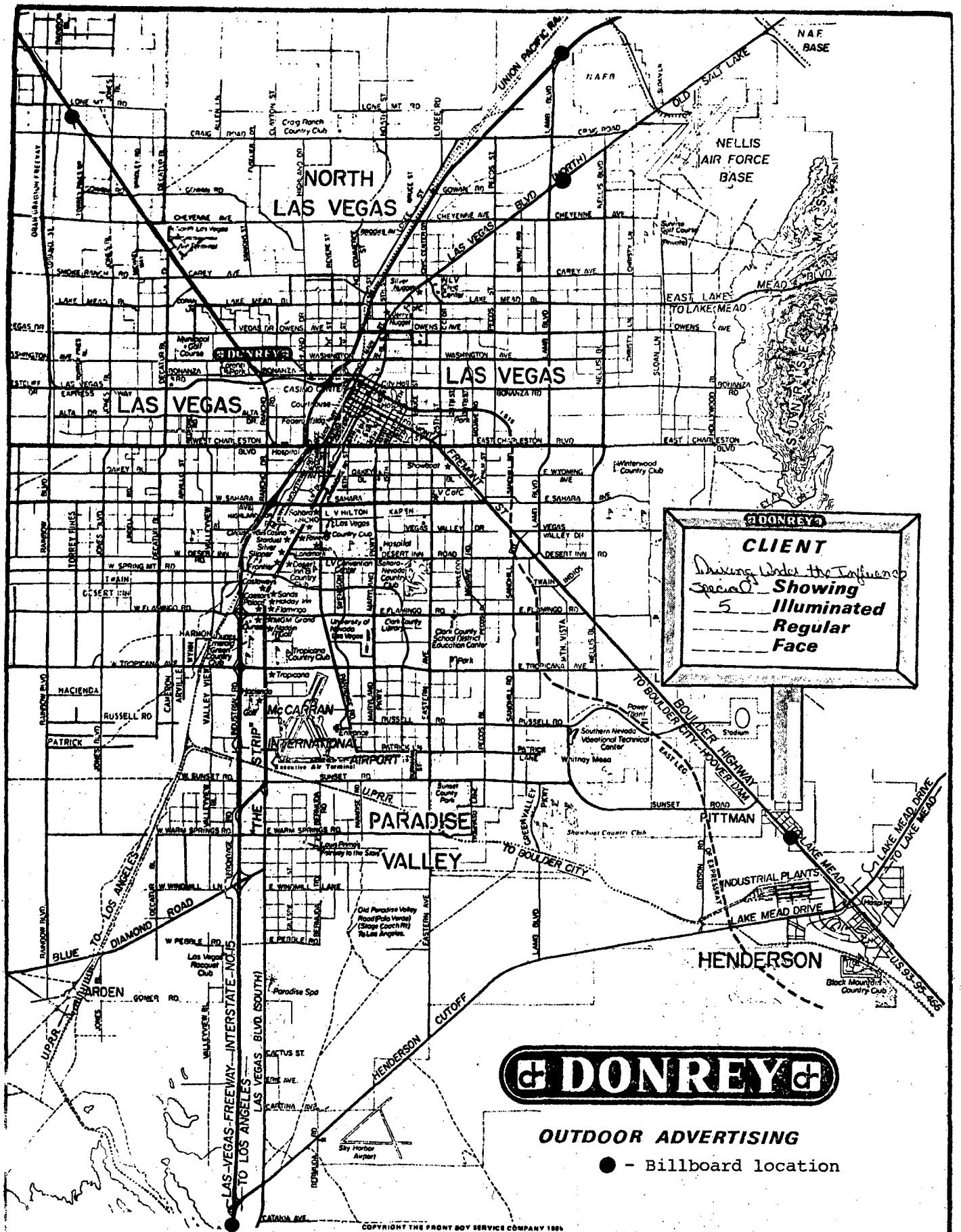


Figure 3.5. Placement of Program Billboards in Las Vegas, Nevada.

Key Chains

A key chain advertising the REDDI program, citizen reporting of drunk driving behavior, was modified to include the project theme with the graphic of "REVOKED" stamped across a license on one side and was widely distributed.

Press Releases

In an effort to generate hard news coverage of the program, several news releases were generated during the project period. These included drunk driving statistics, results of the administrative license revocation for DWI survey, and seasonal (holiday) releases.

The project monitored the print media coverage of DWI-related issues in both the Las Vegas and Reno/Sparks/Carson City areas. Topics of high coverage included DWI laws in general, Highway Patrol roadblocks, MADD activities, the teenage drinking problem, DWI jury trials, DWI victim compensation, law enforcement DWI detection skills, server responsibility and DWI-related accidents and deaths.

COORDINATION WITH ENFORCEMENT AND OTHER PUBLIC INFORMATION EFFORTS

One of the objectives of the program was to complement other DWI public information programs to enhance awareness of enforcement efforts underway that increase the likelihood of detection, apprehension, and sanctioning. Several DWI-related efforts coalesced with this program, enabling each effort to be enhanced.

REDDI Program

Around the beginning of 1985, Nevada launched a REDDI Program (Report Every Drunk Driver Immediately) which included a news conference and brochures, billboards, TV and radio PSAs, bumper stickers and key chains. The program was well received, with 3,841 citizens calling in to report erratic driving during the first 10 months of operation. The administrative license revocation theme joined well with this effort, in effect saying that once the drunk driver is spotted, reported and apprehended, tough laws will keep them from continuing to drive. The REDDI program also was intended to increase the drunk driver's perceived risk of being caught and therefore having to suffer the penalties.

Law Enforcement Sobriety Checkpoints

The Nevada Highway Patrol and local police and sheriff departments conducted sobriety checkpoints periodically throughout the project time period, mostly in conjunction with holidays when there is more driving and also more drinking and

driving. These checkpoints tended to be well covered by the media and served to increase the perception that drinking drivers will be detected.

Law Enforcement DWI Detection Training

Several media stories explained how local law enforcement agencies were being trained in techniques to detect drinking and driving behavior and to determine level of impairment once the motorist has been stopped.

MADD and SADD Activities

Mothers Against Drunk Driving and Students Against Drunk Driving had active programs in Nevada that generated media coverage. Included were pushes by MADD chapters for tougher DWI laws, having the victims of crime compensation program extended to DWI victims, and their public service efforts such as their red ribbon campaign and free taxi service during the Christmas-to-New Year's holiday period. Several SADD chapters also had educational programs and Safe Rides Programs beginning during this time period that generated media coverage.

Other DWI-Related Activities

Drunk and Drugged Driving Awareness Week was held during December 14-21, 1986 and received good media support. Alcohol Awareness Week was held during October 20-24 as part of the University of Nevada at Las Vegas anti-drinking and driving program for their students. These other PI&E efforts may well have served to enhance the effects of those focusing on administrative license revocation.

PROGRAM IMPLEMENTATION

The program public information and education plan covered activities starting in April, 1986, through May, 1987. Although there were some public information activities between April and August, 1986, it was in September, 1986, that many program elements were in place and the program could achieve extensive exposure. By September, 1986, the "Cost of DWI" TV PSA had been aired for several months and was generating public interest. TV stations reported that citizens were calling the stations requesting to know when it would be aired again. The brochure had been distributed to the various avenues for dissemination to the target audiences. A Labor Day news release was distributed by the Traffic Safety Division coinciding with the Nevada Highway Patrol conducting sobriety checkpoints through the Labor Day holiday weekend. The first set of license revocation billboards was posted. It was also during this time period that media attention was focused on Reno police officers being trained in the gaze nystagmus field sobriety test, this training also being provided through the Traffic Safety Division.

The billboards and brochures and the "Cost of DWI" TV PSA continued to be emphasized during the remainder of the project period. In addition, holiday radio PSAs and press releases were distributed during the Thanksgiving-to-New-Year

holiday season and for all other major holiday periods. In October, the license revocation theme was added to the REDDI program key chains. Two new PSAs, the "Breathalyzer" and "Faces on Licenses" were distributed to the TV stations in February and were aired in addition to the "Cost of DWI" PSA, which continued to be popular.

For several reasons, this public information program did not follow the traditional approach of having a kickoff press conference announcing the program. The administrative *per se* law had been in place since 1983 and had arrived as part of a package of strong DWI laws. Also, as is the nature of public information programs that do not have resources in place for that purpose, the funding, development, and/or donation of the various program elements did not become available all at the same time. However, by September 1986, the stage was set, and several of the major components came into place. Finally, the overall PI&E plan had the potential to reach a large portion of the population. This was due to the combination of the widespread use of the brochure through so many and varied outlets, and the excellent exposure given the TV PSAs and billboards in the areas where Nevada's small population is concentrated.

SECTION 4

PUBLIC PERCEPTIONS OF ADMINISTRATIVE LICENSE REVOCATION IN NEVADA

INTRODUCTION

As indicated earlier in this report, Nevada was selected as a test jurisdiction for this project on the basis of analyses of crash data and survey findings. These indicated that alcohol-related crashes had not been significantly reduced by the mere adoption of the law, and that the public was not very aware of the administrative *per se* licensing sanction and generally did not think it was being applied. This section of the report compares the results of the survey conducted prior to this project's public information and education efforts with those obtained after those efforts.

The chronology of this study was as follows. The effective date of the law was July 1, 1983. Initial analyses of crash data through 1984 were conducted in early 1985 and indicated no clear effect due to the law. The Nevada Department of Motor Vehicles and Public Safety agreed to conduct a survey of driver license applicants to determine awareness of various aspects of the law with special attention to administrative license revocation. Questionnaires were developed and pilot tested during the spring and summer of 1985. The questionnaire responses were analyzed, and it was determined that awareness of and belief in the certainty of application of the administrative license revocation was relatively low and that a public information and education effort would be appropriate. During the fall of 1985 and early winter of 1986, project staff worked with Nevada personnel to design and develop a public information and education program. A state project had to be modified to fund the production and distribution of some of the materials, and this led to delays which resulted in the full PI&E effort not being in place until September 1986. Ideally, follow-up survey activities would have taken place at that time. However, due to logistical difficulties within the driver licensing division, a follow-up survey was not conducted until the summer of 1988. The results of the two surveys are discussed in this section.

Two brief questionnaires were designed, pilot tested, and revised. They are shown in Appendix A. One questionnaire was in a closed response format, that is, questions were presented along with answers to choose from. This questionnaire focused on administrative license revocation and reported drinking driving behavior. The other questionnaire had many common questions but when focusing on potential sanctions associated with DWI arrest, the questionnaire had blanks where the respondents had to volunteer a response based on recall. In this discussion they are referred to as the closed format and open format questionnaires respectively.

The single-page questionnaires were administered in driver's license offices to driver's license applicants. After an applicant was notified that he or she had passed the test and would receive a license, the applicant was asked by the examiner to voluntarily complete a questionnaire while the picture license was developing. It was decided to administer the questionnaire at this point in the process in an effort to minimize the extent to which respondents might color their questionnaire responses in an effort to please the driver license examiner.

The first wave of the questionnaire was administered throughout the state in the summer of 1985. We obtained 927 closed-format questionnaires and 987 open-format questionnaires. The results were used in planning public information and education activities. A second wave to assess the impact of PI&E efforts was planned for early 1987 but because of personnel reassignments and other logistical difficulties, it was not administered until the summer of 1988. In the second wave, 673 closed-format and 1,117 open-format questionnaires were obtained. Ideally the second wave would have been conducted closer in time to the more intensive PI&E efforts. Fortunately some of the PI&E efforts, primarily TVPSAs, continued through 1987. However, PI&E exposure of the administrative *per se* sanctions was definitely diminished before the second administration of the questionnaire. It may be that this resulted in less dramatic differences between the two waves than would have been observed had the second administration taken place sooner.

SURVEY RESULTS

As shown in Table 4.1 on the first survey administration, 52.8% of respondents were male and 47.2% female; on the subsequent administration, those values were 55.2% and 44.8% respectively. In 1988, the respondents tended to be somewhat younger than in 1985.

Table 4.1 Respondent Sex by Questionnaire Format and Wave (percent)

	<u>1985</u>			<u>1988</u>		
	<u>Open</u>	<u>Closed</u>	<u>Total</u>	<u>Open</u>	<u>Closed</u>	<u>Total</u>
Male	518 52.6	493 53.1	1011 52.8	598 53.8	377 57.6	975 55.2
Female	467 47.4	435 46.9	902 47.2	513 46.2	278 42.4	791 44.8
Total	985	928	1913	1111	655	1766

On the survey format containing open-ended questions, respondents were queried about DWI sanctions as follows: "If a person is stopped for drunken driving and fails a breath alcohol test or refuses to take the test, what penalties are

police entitled to impose?" Space was provided for up to three responses. Table 4.2 indicates the number and percent of respondents who wrote an indication of license suspension or revocation as one of their responses to this question. For the 1985 wave, 45.6% of the respondents indicated license suspension or revocation as a penalty. By contrast, 70.3% of the respondents to the 1988 wave indicated license suspension or revocation. On each wave, the next most frequently mentioned sanction was jail, which was indicated by 38.6% of 1985 respondents and 44.1% of 1988 respondents. This was followed by fines with values of 26.5% and 29.6%, respectively.

Table 4.2 Respondents Indicating License Suspension Revocation (% of total sample) by Wave by Response

	<u>1985</u>	<u>1988</u>
License action indicated	450 (45.6)	785 (70.3)
License action not indicated	537 (54.4)	332 (29.7)
Total	987 (100.0)	1117 (100.0)

Z = 4.581 p < .002

On the closed-format questionnaire, respondents were asked, "If you are stopped for drunk driving and fail or refuse to take the breath alcohol test, is it possible that you will have to give your license to the police for suspension by the Department of Motor Vehicles before going to court on a drunk driving charge?" A very large percentage of the respondents (83.8%) indicated "yes" on the 1985 survey, while in 1988 an even larger percentage (91.7%) gave an affirmative response. Thus, when prompted, respondents tended to agree that the officer may confiscate their licenses.

However, of greater significance to this study is the extent to which those who agree the officer may take the license believe that it is actually confiscated. Table 4.3 shows that in the 1985 survey, 41.5% of closed format survey respondents who thought that the officer *may* take the license felt that would happen 100% of the time compared to 50.1% in the 1988 survey, a statistically significant shift. Note that this represents an overall shift in the distribution in that there was a corresponding reduction in the percentage of respondents who thought that the likelihood was relatively low (in the 1 to 39% range), while the proportion of respondents who thought the sanction was imposed from 40 to 59% of the time remained constant.

Respondents were then asked, "How strongly does this chance of turning over your driver's license to the police for suspension by the Department of Motor Vehicles before you go to court influence your decision not to drive after drinking enough to violate Nevada's drunk driving law?" The responses to that question appear in Table 4.4. While 51.2% indicated that they were extremely influenced by that threat in 1985, 61.5% so indicated in 1988. Note that the response patterns discussed above are among respondents presented with license revocation as a candidate choice. Perhaps of greater interest are the responses of persons who must recall on their own whether such a sanction exists.

Table 4.3 Respondents' Estimate of Chances of License Revocation if Arrested by Wave (percent) Among Respondents Indicating Officer May Take License

	<u>1985</u>	<u>1988</u>
0%	14 (1.9)	6 (1.1)
1-39%	221 (30.0)	121 (21.3)
40-59%	91 (12.4)	70 (12.3)
60-99%	105 (14.3)	86 (15.2)
100%	306 (41.5)	284 (50.1)
Total	737	567

Questions were also asked about drinking and driving behavior. One question was phrased, "How often do you drink alcoholic beverages and then drive within three hours?" Responses to that question appear in Table 4.5. While 57.3% indicated never doing so in 1985, that figure had risen to 67.8% in 1988. Similarly, when asked about impaired driving behavior ("Within the last three months, how often do you think you may have driven after drinking enough to violate Nevada's drunk driving law?"), a larger proportion of 1988 respondents reported not having done so (87.0%) than did 1985 respondents (81.1%) (Table 4.6).

Table 4.4 Reported Influence of Administrative License Removal on Drinking Driving Behavior by Wave

	<u>1985</u>	<u>1988</u>
Extremely	458 (51.2)	390 (61.5)
Very	227 (25.4)	129 (20.3)
Somewhat	109 (12.2)	66 (10.4)
Not at All	100 (11.2)	49 (7.7)
Total	894	634

Table 4.5 Reported Frequency of Driving Within Three Hours of Drinking by Wave

	<u>1985</u>	<u>1988</u>
Every day	27 (1.5)	17 (0.9)
Several times a week	67 (3.6)	36 (2.1)
Once a week	174 (9.4)	110 (6.3)
Once a month	113 (6.1)	116 (6.7)
Less than once a month	411 (22.2)	280 (16.1)
Never	1062 (57.3)	1176 (67.8)
Total	1854	1735

Table 4.6 Reported Frequency of Illegal Drinking and Driving in Previous Three Months by Wave

	<u>1985</u>	<u>1988</u>
Every day	10 (0.5)	10 (0.6)
Several times a week	15 (0.8)	4 (0.2)
Once a week	49 (2.6)	26 (1.5)
Once a month	83 (4.5)	42 (2.4)
Less than once a month	194 (10.4)	143 (8.3)
Never	1506 (81.1)	1506 (87.0)
Total	1857	1731

In summary, on virtually every measure of perceptions about administrative license revocation, respondents in the 1988 survey indicated greater awareness of the sanction, greater certainty that it would be applied, and greater deterrence from drinking and driving than in 1985. Additionally, survey measures of reported drinking driving behavior indicated decreases in the 1985-1988 period.

SECTION 5

ANALYSIS OF DWI RECIDIVISM

One measure of the effectiveness of a law such as administrative license revocation is the DWI recidivism rate. As was discussed in Section 2, before implementation of the new law, licensing sanctions for DWI were rarely imposed except on persons who refused to submit to a chemical test. A licensing sanction as a result of a DWI conviction was within the purview of the courts rather than the Department of Motor Vehicles and Public Safety, and the courts usually chose not to impose a licensing sanction.

To conduct the recidivism analysis, data on persons convicted of DWI who were arrested between January 1980 and February 28, 1988 were obtained from the Department of Motor Vehicles and Public Safety. The recidivism patterns of persons convicted of DWI who were arrested (cited) under the former provisions (pre-law group) were then contrasted with those arrested (cited) under the current provisions (post-law group). The analyses in this section deal with the effect of the sanctions on subsequent impaired driving recidivism patterns and thus do not relate directly to the effects of the public information and education intervention discussed earlier.

An analysis file was set up which contained the following information on each driver arrested for DWI during the time period:

- Driver sex.
- Driver age at time of 1st citation.
- Group: If 1st citation date is earlier than July 1, 1983, then Group = Pre. If 1st citation date is after July 1, 1983, then Group = Post.
- Failure: If driver has a second citation within the study period then Failure = Yes. If no second citation, then Failure = No.
- Time: If driver has a second citation then Time = time interval from first to second citation. If driver has no second citation then Time = time interval from 1st citation to end of record.

This file was analyzed to estimate differences in recidivism rates between the two groups (Pre and Post). The recidivism rate within t days was taken to be the percent who failed (Failure = yes) within t days, given failure (sometime) or a record length of at least t days. Recidivism rates were calculated for values of t ranging from 90 days to 3 years.

Recidivism rates may be statistically associated with factors other than group membership. If these other factors are also associated with group membership and no adjustments are made with respect to these factors, then biased estimates of group effects may result. Two such factors which could be addressed using the Nevada data were driver age and sex. Tables 5.1 and 5.2 are contingency tables of failure within the first year following initial citation versus sex and driver age (in four categories), respectively.

Table 5.1. Sex by Failure in 1st Year

SEX	Failure in 1st Year		
	NO	YES	TOTAL
FREQUENCY			
PERCENT			
ROW PCT			
COL PCT			
FEMALE	5195	243	5438
	16.33	0.76	17.09
	95.53	4.47	
	17.45	11.94	
MALE	24583	1792	26375
	77.27	5.63	82.91
	93.21	6.79	
	82.55	88.06	
TOTAL	29778	2035	31813
	93.60	6.40	100.00

$$\chi^2 = 40.73 \quad p = .000$$

Recidivism rates are given by the row percent in the second (Failure = yes) column of each table. Thus, from Table 5.1, we find recidivism rates within the first year of 4.47% for females versus 6.79% for males. The difference in these rates is highly significant. Differences in recidivism rates by age categories are not as pronounced, but still statistically significant.

Table 5.2. Age by Failure in 1st Year

AGE	Failure in 1st Year		
FREQUENCY			
PERCENT			
ROW PCT			
COL PCT	NO	YES	TOTAL
16-20	2994	125	3219
	9.41	0.71	10.12
	93.01	6.99	
	10.06	11.06	
21-25	5842	447	6289
	18.37	1.41	19.77
	92.89	7.11	
	19.62	21.97	
26-30	5505	371	5876
	17.31	1.17	18.47
	93.69	6.31	
	18.49	18.23	
Over 30	15430	992	16422
	48.51	3.12	51.63
	93.96	6.04	
	51.83	48.75	
TOTAL	29771	2035	31806
	93.60	6.40	100.00

$$\chi^2 = 10.74, \quad p = .013$$

Tables 5.3 and 5.4 present contingency tables of driver age and sex by group membership. Table 5.3 shows that sex distributions do not differ significantly between the two groups with approximately 17% females in each. On the other hand, distributions of driver age (Table 5.4), do differ significantly, with the Pre group having higher proportions of younger drivers. These results suggested that it would not be necessary to adjust group recidivism rates for driver sex, but that adjustments should be made for differences in age.

Table 5.3. Sex by Group

SEX	GROUP		
FREQUENCY			
PERCENT			
ROW PCT			
COL PCT	POST	PRE	TOTAL
FEMALE	2665	2773	5438
	8.38	8.72	17.09
	49.01	50.99	
	17.49	16.73	
MALE	12572	13803	26375
	39.52	43.39	82.91
	47.67	52.33	
	82.51	83.27	
TOTAL	15237	16576	31813
	47.90	52.10	100.00

$\chi^2 = 3.25, p = .072$

Table 5.4. Age by Group

AGE	GROUP		
FREQUENCY			
PERCENT			
ROW PCT			
COL PCT	POST	PRE	TOTAL
16-20	1363	1856	3219
	4.29	5.84	10.12
	42.34	57.66	
	8.95	11.20	
21-25	2976	3313	6289
	9.36	10.42	19.77
	47.32	52.68	
	19.54	19.99	
26-30	2840	3036	5876
	8.93	9.55	18.47
	48.33	51.67	
	18.64	18.32	
over 30	8054	8368	16422
	25.32	26.31	51.63
	49.04	50.96	
	52.87	50.49	
TOTAL	15233	16573	31806
	47.89	52.11	100.00

$$\chi^2 = 49.74, \quad p = .000$$

Adjusted group recidivism rates were estimated by fitting log linear models to the frequencies of three-way tables of failure within the specified time period by age by group. Tables 5.5 and 5.6 show results from the model fit to data on recidivism during the first year.

Table 5.5. Data for 1st Year Recidivism Model

POPULATION PROFILES			FAILURE PROPORTIONS		
SAMPLE	AGE	GROUP	SAMPLE		
			SIZE	NO	YES
1	16-20	POST	1363	.956713	.043287
2	16-20	PRE	1856	.91056	.08944
3	21-25	POST	2976	.947581	.052419
4	21-25	PRE	3312	.912164	.087836
5	26-30	POST	2840	.949648	.050352
6	26-30	PRE	3036	.924901	.075099
7	over 30	POST	8054	.95257	.04743
8	over 30	PRE	8368	.927103	.072897

Table 5.6. Analysis of Variance Table

SOURCE	DF	CHI-SQUARE	PROB
INTERCEPT	1	11619.68	0.0001
AGE	3	9.31	0.0254
GROUP	1	110.06	0.0001
RESIDUAL	3	4.11	0.2499

Recidivism rates are given as the proportions with failure = yes (times 100), for pre and post groups within each of the four age categories (Table 5.5). Here, it may be noted, for each age category, the rate or proportion for the Pre group exceeds that for the Post group. In Table 5.6, the analysis of variance table for a main effects log linear model fit to the failure proportions is presented. This table indicates the presence of a highly significant group effect and a much weaker age effect. The model fits well to the data with no interaction terms included. From the model, overall estimated recidivism rates were calculated as weighted sums of the estimated within age category rates. For this model the estimated rates were:

$$R_{Pre} = 7.79\%$$

$$R_{Post} = 4.87\%$$

Similar analyses were used to estimate group recidivism rates over several other time periods. The results of these analyses are given in Table 5.7.

Table 5.7. Estimated Recidivism Rates

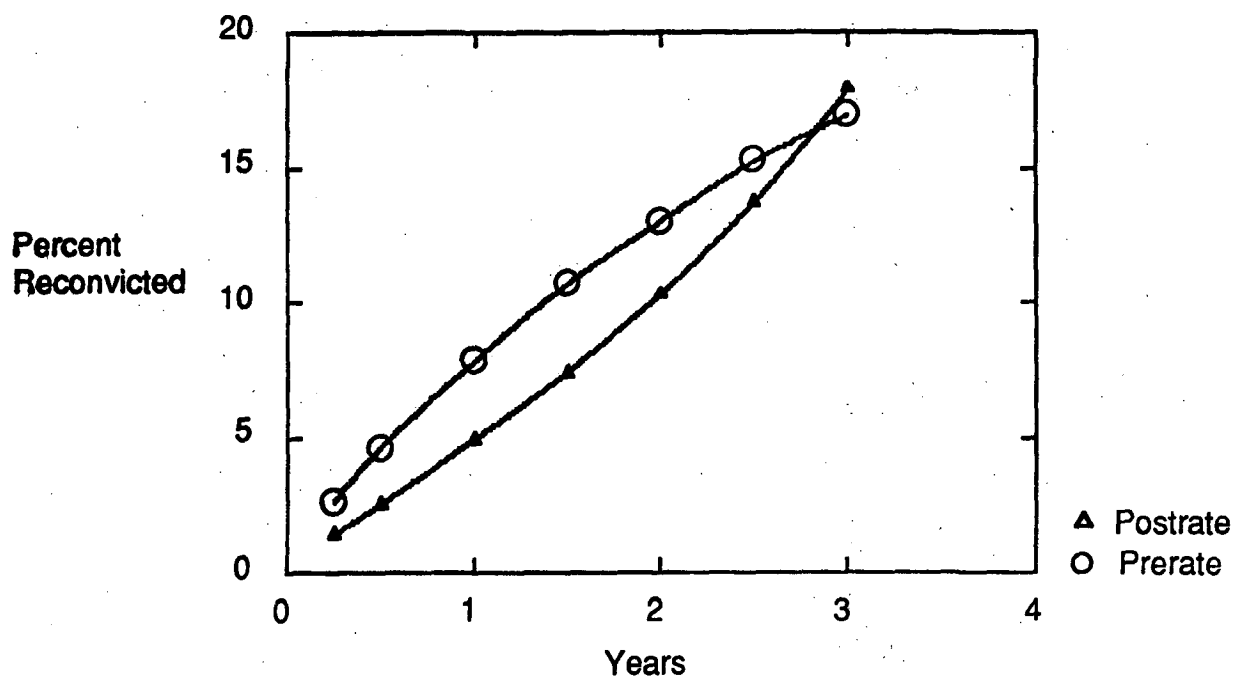
<u>Time Interval</u>	<u>Sample Size</u>		<u>Recidivism Rate</u>		<u>Group χ^2</u>	<u>P</u>
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>		
1st 90 days	16,573	17,567	2.6%	1.4%	61.75	.0001
1st 6 months	16,573	16,924	4.6%	2.5%	107.41	.0001
1st year	16,573	15,233	7.8%	4.9%	110.06	.0001
1st 18 months	16,573	13,231	10.7%	7.4%	92.05	.0001
1st 2 years	16,573	11,286	13.0%	10.3%	46.45	.0001
1st 2 1/2 years	16,573	9,482	15.2%	13.7%	10.04	.0015
1st 3 years	16,573	7,844	16.9%	17.9%	3.35	.0670

Recidivism rates for the two groups are also shown graphically in Figure 5.1. Pre group rates lie well above those of the Post group for time intervals extending up to about 2 1/2 years after the initial citation.

Thus, the increased licensing sanctions associated with adoption of administrative *per se* seem to be associated with reduced DWI recidivism for at least two and one-half years after initial arrest, though that reduction is no longer evident after three years.

Percentage of DWI Convictees Reconvicted for DWI

Figure 5.1 Pre and Post DWI Recidivism Rates



SECTION 6

ANALYSIS OF CRASH DATA

We also assessed the effect of the administrative *per se* laws and the PI&E program on crashes involving drinking drivers. To this end, Nevada Department of Transportation computerized records of reportable crashes occurring in Nevada from 1980 through 1987 were obtained, and trends for two categories of motor vehicle crashes were examined. These were: alcohol-related crashes (i.e., crashes in which alcohol was judged to be a factor by the investigating officer), and nighttime crashes. Alcohol-related crashes relying on the officer's judgement, involve a certain amount of subjectivity. Thus, measures such as the proportion of crashes reported to involve alcohol may also be influenced by factors other than the law change such as increased training, changes in command emphasis, and the like.

Another way to more objectively determine alcohol-involvement in crashes is to examine trends in blood alcohol determinations for fatally injured drivers in jurisdictions where nearly all such drivers are tested. But Nevada is a small state and, fatal crashes are so infrequent that examination of that series of data would not likely yield statistically meaningful results. However, the number of nighttime crashes is an objective measure, and a large percentage of such crashes are thought to involve drinking drivers, although, of course, not all do. Nor do all crashes involving drinking drivers occur at night. Thus, even a program that is effective in reducing alcohol-involved crashes would only be expected to be affecting a portion of nighttime crashes, making it more difficult to discern such an effect if it is present.

Thus, both measures we examined have drawbacks, one by the subjective nature of its determination and the other because of its lessened sensitivity to potential effects. Nonetheless, these two types of crashes are often taken as the best available measures of alcohol-related crashes, and if the results of the analyses of both measures are in the same direction, one may have increased confidence in those results.

The crash data were processed and files created in the form of monthly crash frequencies for number of crashes, number of alcohol-related crashes, and number of nighttime crashes, beginning with January, 1980, and running through December, 1987. Crash frequencies tend to vary with many factors such as season of year, changes in population and economic conditions, and changes in law or enforcement strategies. With this in mind, alcohol-related and nighttime crashes were analyzed as percents of total crashes, rather than directly as crash frequencies. In this ratio form, many of the factors mentioned above should affect both numerator and denominator in approximately the same way and, hence, be cancelled out. Thus, the data consisted of two sequences of monthly observations: percent of alcohol-

related crashes, and percent of nighttime crashes for the months of January, 1980, through December, 1987.

The data were analyzed using methods of time series intervention analysis. Nevada's changes to its drinking and driving laws went into effect July 1, 1983, and the project-initiated public information and education program took full effect in September, 1986. If, as a result of these changes, fewer people drove motor vehicles after drinking, then we would expect to see reductions in drinking and driving related crashes beginning at that point in time. Thus, our analyses involved looking for a downward shift in the percents of alcohol-related and nighttime crashes occurring in July 1983 (i.e., corresponding to the intervention of the legislative change). If the data series contain relatively little month-to-month variation and if the intervention effect is large, then a simple plot of the data over time may clearly show an intervention effect. Often, however, these ideal conditions do not hold. Then, time series models can be fit to the data which may help to clarify the situation. These models can contain parameters which account for some of the month-to-month variation, as well as parameters representing the intervention effects. Tests of significance are provided, from which statistically significant effects can be identified.

Figure 6.1 shows a plot of the data series on the percent of alcohol-related crashes from January 1981 through December 1987, with a vertical (dotted) line indicating the point of intervention (legislative change). The data points for 1980 for this series were much higher (averaging about 18%) than the other data points. This seemed to indicate a data error or change in reporting practices and, so, 1980 data were omitted from the analyses of alcohol-related crashes. Figure 6.2 shows the data series for the percent of nighttime crashes. The 1980 points of this series, though again relatively high, were not inordinately so, and were retained for analysis.

Figures 6.3 and 6.4 depict the alcohol-related and nighttime crash series, respectively, with an intervention indicated at September, 1986, when the PI&E programs were in place. Analyses were done using a relatively new type of time series models developed primarily by Andrew Harvey and used by Harvey and Durbin (1986) in their evaluation of British seatbelt laws. These models contain stochastic or random varying trends and seasonal patterns as part of their basic structure.

The structural model fit to the percent alcohol-related crash series again estimated the intervention effect of July, 1983, not to be statistically significant ($p > .40$). The effect estimated for the September, 1986, intervention, however, was significant ($p < .025$). Figure 6.5 depicts the actual and forecasted percentages of alcohol-related crashes with the forecasted values indicated beginning at September, 1986. The estimated effect at this point was a decrease in the percent of alcohol related crashes of 1.7 percentage points. Since the level of the series prior to the intervention was about 14 percent, this represents a relative decrease of about 12 percent in the level of the series.

The structural model fit to the complete nighttime crash percent series contained significant intervention effects for both intervention points, $p < .005$ for each. Figures 6.6 and 6.7 illustrate the actual and forecasted nighttime crash percentages with forecasted values shown beginning July, 1983, and September, 1986, respectively. The estimated intervention effects corresponded to a decrease in nighttime crash percents by 2.6 percentage points in July 1983 and an additional 1.4 percentage points in September, 1986. These shifts represent relative decreases of approximately 10% and 7%, respectively.

In summary, analyses of monthly series of *alcohol-related crashes* detected no statistically significant reductions coincident with the effective date of Nevada's new DWI law, the principal component of which was administrative license revocation, but did reveal a significant reduction in alcohol-related crashes coincident with the PI&E program that was implemented to raise public awareness of administrative license revocation.

Further analysis also revealed a significant reduction in *nighttime crashes* coincident with implementation of the law and a further statistically significant reduction in nighttime crashes coincident with the full implementation of this project's public information and education program.

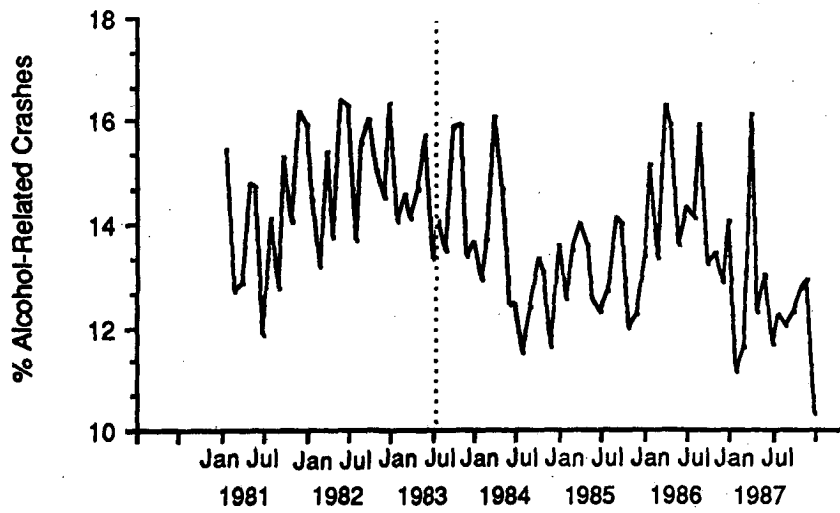


Figure 6.1 Alcohol-related crashes as a percentage of total crashes in Nevada with intervention indicated at July 1987.

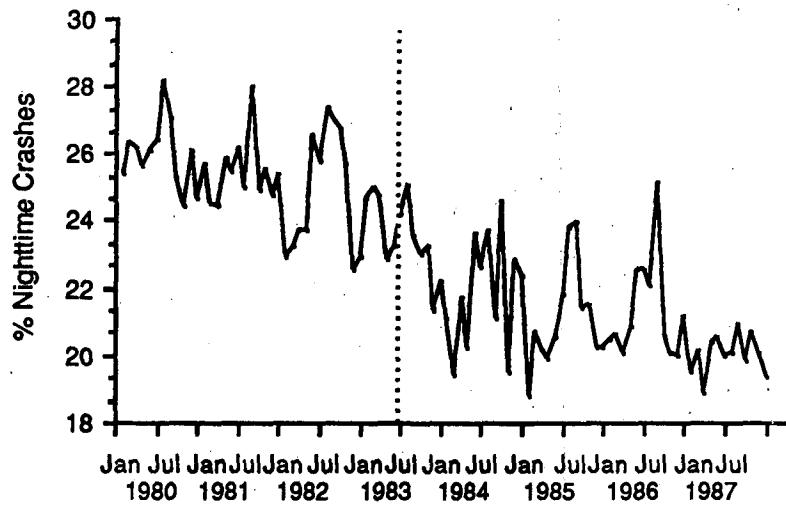


Figure 6.2 Nighttime crashes as a percentage of total crashes in Nevada with intervention indicated at July 1983.

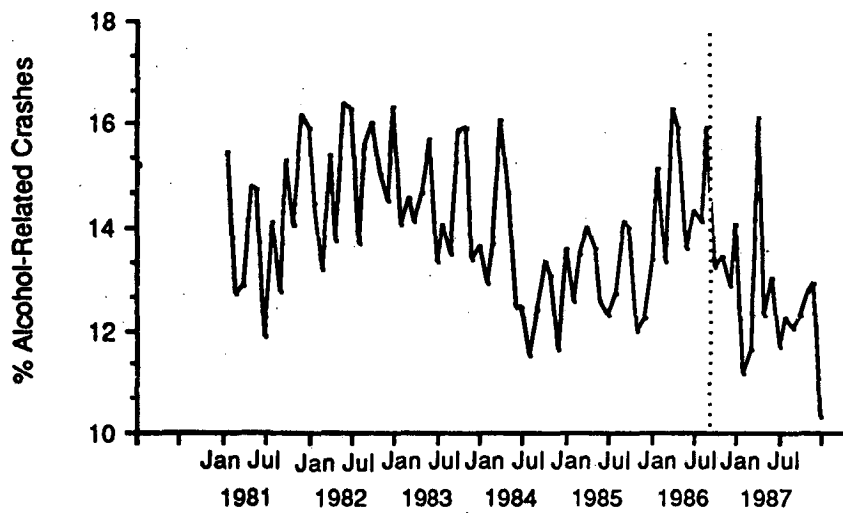


Figure 6.3 Alcohol-related crashes as a percentage of total crashes in Nevada with intervention indicated at September 1986.

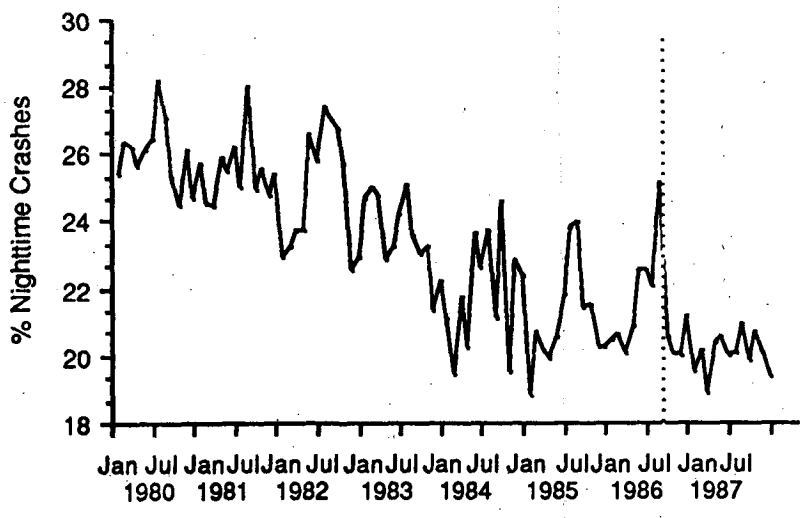


Figure 6.4 Nighttime crashes as a percentage of total crashes in Nevada with intervention indicated at September 1986.

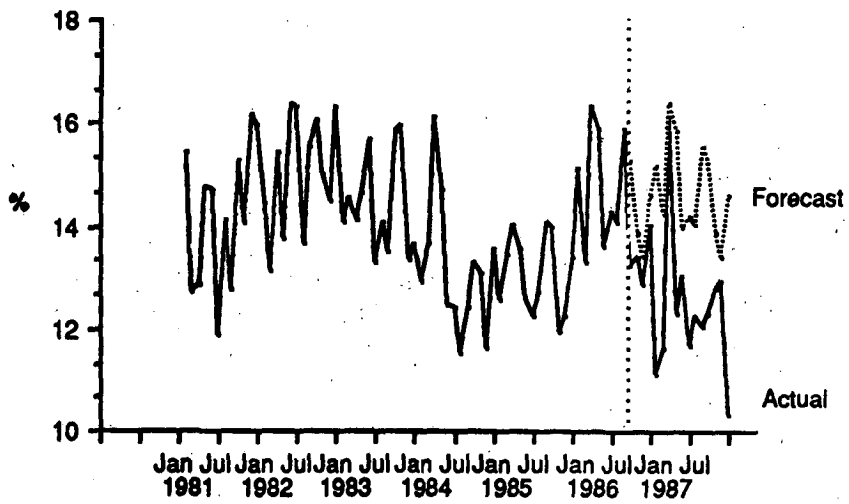


Figure 6.5 Actual and forecasted alcohol related crash percents, forecasted values indicated from September 1986.

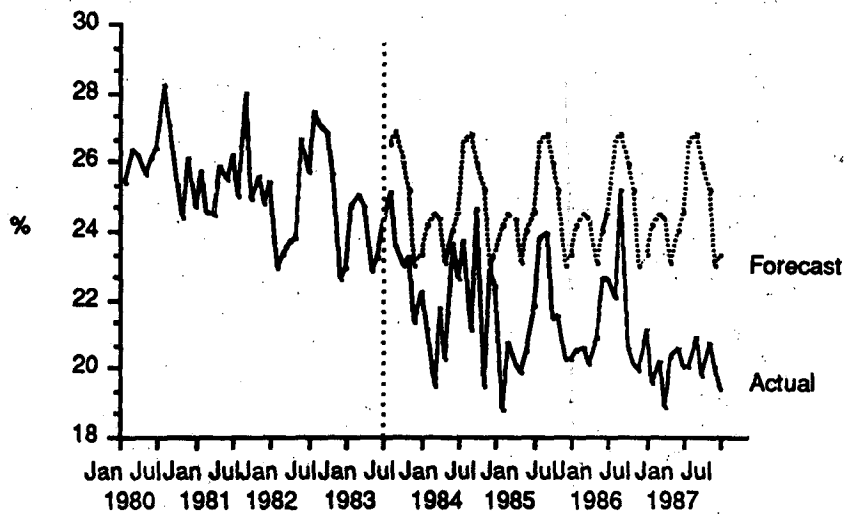


Figure 6.6 Actual and forecasted nighttime crash percents, forecasted values indicated from July 1983.

SECTION 7

CONCLUSIONS AND RECOMMENDATIONS

The major conclusion of this project is that the effectiveness of an administrative *per se* law can be enhanced through public information and education efforts which explain and emphasize its swift and certain revocation of the driver's license. Our analyses of crash data revealed that, while there were reductions in *nighttime crashes* coincident with the implementation of Nevada's administrative *per se* law, there were still further reductions in such crashes after a public information and education program highlighting administrative license revocation was put into effect. *Alcohol-related crashes* were not significantly reduced until after the PI&E program was implemented. We recommend that jurisdictions adopting measures such as an administrative *per se* law take positive steps to insure public awareness through an aggressive public information program, and not assume that the public is already aware of the law as a result of the legislative process.

In today's environment of increased awareness of impaired driving issues and of constant movement to strengthen laws, a social experiment that can *unequivocally* demonstrate the effectiveness of a specific legislative intervention is rare indeed. The experience in Nevada is no exception. The legal changes that took place in the impaired driving area were not confined to adoption of administrative license revocation. However, it is clear that administrative license revocation is the new measure that was principally brought before the public and that caught its attention. Survey results point to license revocation (in this jurisdiction principally handled administratively) as the major element in helping to bring about the general deterrent effect observed in September, 1986, after public awareness activities were in full swing. Ancillary public information efforts emphasized enforcement efforts, and these may have served to heighten the public's perceived risk of receiving the licensing sanction.

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APPENDIX A

SURVEY INSTRUMENTS

Nevada Department of Motor Vehicles
Driver's License Division
Survey on Highway Safety Issues (2)

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

1. Your sex? (CIRCLE ONE)

Male	Female
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2. Your age? (CIRCLE ONE)

a. 16-19	b. 20-29	c. 30-49	d. 50-65	e. 65 & over
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3. Why are you at the driver's license office? (CIRCLE ONE)

a. To get first license	c. To have license reinstated
b. To renew currently valid license	d. I. D. only
e. Other (PLEASE EXPLAIN): _____	

4. If you are stopped for drunken driving and fail or refuse to take the breath alcohol test, is it possible that you will have to give your license to the police for suspension by the Department of Motor Vehicles before going to court on a drunken driving charge? (CIRCLE ONE)

a. Yes	b. No
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5. Suppose you drive after drinking enough to violate Nevada's drunken driving law, what are your chances of being arrested by the police? (CIRCLE ONE)

a. 0%	b. 1-19%	c. 20-39%	d. 40-59%	e. 60-79%	f. 80-99%	g. 100%
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6. What percent of drivers who are stopped for drunken driving and fail or refuse to take a breath alcohol test must give their licenses to the police for suspension by the Department of Motor Vehicles before going to court for a drunken driving charge? (CIRCLE ONE)

a. 0%	b. 1-19%	c. 20-39%	d. 40-59%	e. 60-79%	f. 80-99%	g. 100%
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7. How strongly does this chance of turning over your driver's license to the police for suspension by the Department of Motor Vehicles before you go to court influence your decision not to drive after drinking enough to violate Nevada's drunken driving law? (CIRCLE ONE)

a. Extremely	b. Very	c. Somewhat	d. Not at all
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8. If someone is stopped for drunken driving for the first time and must give his or her license to the police for suspension by the Department of Motor Vehicles before going to court, for how long is the person's license suspended? (If you are not sure, please guess the minimum months' suspension.)

_____ Months

9. In general, about how often do you drink beer, wine or liquor? (CIRCLE ONE)

a. Every day	c. Once a week	e. Less than once a month
b. Several times a week	d. Once a month	f. Never

10. How often do you drink alcoholic beverages and then drive within 3 hours? (CIRCLE ONE)

a. Every day	c. Once a week	e. Less than once a month
b. Several times a week	d. Once a month	f. Never

11. A. Within the last 3 months, how often do you think you may have driven after drinking enough to violate Nevada's drunken driving law? (CIRCLE ONE)

a. Every day	c. Once a week	e. Less than once a month
b. Several times a week	d. Once a month	f. Never

 B. Compared with three months ago, has your rate of driving after drinking: (CIRCLE ONE)

a. Increased	b. Decreased	c. Stayed the same
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 C. If your rate of driving and drinking has changed, please indicate why. (CIRCLE ALL THAT APPLY)

a. Increased enforcement	e. Stronger penalties
b. Decreased enforcement	f. Weaker penalties
c. Greater chance of being convicted	g. Other (PLEASE EXPLAIN): _____
d. Lesser chance of being convicted	

Nevada Department of Motor Vehicles
Driver's License Division
Survey on Highway Safety Issues (1)

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

1. Your sex? (CIRCLE ONE) Male Female
2. Your age? (CIRCLE ONE) a. 16-19 b. 20-29 c. 30-49 d. 50-65 e. 65 & over
3. Why are you at the driver's license office? (CIRCLE ONE)
- a. To get first license c. To have license reinstated
- b. To renew currently valid license d. I. D. only
- e. Other (PLEASE SPECIFY): _____

4. If a person is stopped for drunken driving and fails a breath alcohol test or refuses to take the test, what penalties are the police allowed to impose? Please list the penalties and indicate on how many of each 100 drivers the penalties are imposed?

Penalties	Times out of 100

5. Which, if any, of the penalties you listed above strongly influences you not to drive in violation of Nevada's drunken driving law?
- _____

6. What messages can you remember hearing or seeing about drunken driving penalties in the last three months (e.g., on TV, radio, in the newspaper, posters, etc.)? Please indicate what the message was and where you heard or saw it.

What	Where

7. In general, about how often do you drink beer, wine or liquor? (CIRCLE ONE)
- a. Every day c. Once a week e. Less than once a month
- b. Several times a week d. Once a month f. Never
8. How often do you drink alcoholic beverages and then drive within 3 hours? (CIRCLE ONE)
- a. Every day c. Once a week e. Less than once a month
- b. Several times a week d. Once a month f. Never
9. A. Within the last 3 months, how often do you think you may have driven after drinking enough to violate Nevada's drunken driving law? (CIRCLE ONE)
- a. Every day c. Once a week e. Less than once a month
- b. Several times a week d. Once a month f. Never
- B. Compared with three months ago, has your rate of driving after drinking (CIRCLE ONE)
- a. Increased? b. Decreased? c. Stayed the same?
- C. If your rate of driving and drinking has changed, please indicate why. (CIRCLE ALL THAT APPLY)
- a. Increased enforcement e. Stronger penalties
- b. Decreased enforcement f. Weaker penalties
- c. Greater chance of being convicted g. Other (PLEASE EXPLAIN):
- d. Lesser chance of being convicted _____

APPENDIX B

RECIDIVISM ANALYSIS APPROACH

Appendix B
Recidivism Analysis Approach

Table B.1. Data for 1st Year Recidivism Model

SAMPLE	POPULATION PROFILES		SAMPLE SIZE	FAILURE PROPORTIONS	
	AGE	GROUP		NO	YES
1	16-20	POST	1363	.956713	.043287
2	16-20	PRE	1856	.91056	.08944
3	21-25	POST	2976	.947581	.052419
4	21-25	PRE	3312	.912164	.087836
5	26-30	POST	2840	.949648	.050352
6	26-30	PRE	3036	.924901	.075099
7	over 30	POST	8054	.95257	.04743
8	over 30	PRE	8368	.927103	.072897

Table B.2. Analysis of Variance Table

SOURCE	DF	CHI-SQUARE	PROB
INTERCEPT	1	11619.68	0.0001
AGE	3	9.31	0.0254
GROUP	1	110.06	0.0001
RESIDUAL	3	4.11	0.2499

Recidivism rates are given as the proportions with failure = yes (times 100), for pre and post groups within each of four age categories. Here it may be noted, that for each age category the rate or proportion for the Pre group exceeds that for the Post group. In Table B.2. the analysis of variance table for a main effects log linear model fit to the failure proportions is presented. This table indicates the presence of a highly significant group effect and a much weaker age effect. The model fits well to the data with no interaction terms included. From the model, overall estimated recidivism rates were calculated as weighted sums of the estimated within age category rates. For this model the estimated rates were:

$$R_{Pre} = 7.79\%$$

$$R_{Post} = 4.87\%$$

Similar analyses were used to estimate group recidivism rates over several other time periods. The results of these analyses are given in Table B.3.

Table B.3. Estimated Recidivism Rates

<u>Time Interval</u>	<u>Sample Size</u>		<u>Recidivism Rate</u>		<u>Group χ^2_{1df}</u>	<u>P</u>
	<u>Pre</u>	<u>Post</u>	<u>Pre</u>	<u>Post</u>		
1st 90 days	16,573	17,567	2.6%	1.4%	61.75	.0001
1st 6 months	16,573	16,924	4.6%	2.5%	107.41	.0001
1st year	16,573	15,233	7.8%	4.9%	110.06	.0001
1st 18 months	16,573	13,231	10.7%	7.4%	92.05	.0001
1st 2 years	16,573	11,286	13.0%	10.3%	46.45	.0001
1st 2 1/2 years	16,573	9,482	15.2%	13.7%	10.04	.0015
1st 3 years	16,573	7,844	16.9%	17.9%	3.35	.0670