



CHARACTERISTICS OF NEGLIGENT OPERATORS IN CALIFORNIA

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13. ABSTRACT (Maximum 200 words) This report presents descriptive information on the demographic characteristics and driving behaviors of drivers who received the four levels of treatment within California's negligent operator treatment system (NOTS). Risk profiles are calculated for each treatment level by using historical information on their numbers and types of traffic accidents and convictions resulting in their assignment to the NOTS treatment levels. In addition, a risk profile is developed for a random sample of California drivers to facilitate a baseline for the four levels of NOTS treated drivers.					
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PREFACE

This report is issued as an internal monograph of the California Department of Motor Vehicles' Research and Development Branch rather than as an official report of the State of California. The opinions, findings, and conclusions expressed in this report are those of the authors and not necessarily those of the State of California.

ACKNOWLEDGMENTS

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EXECUTIVE SUMMARY

Background

Section 12810.5a of the California Vehicle Code (CVC) defines a prima facie negligent operator as any Class C (passenger car) licensed driver "whose driving record shows a violation point count of four or more points in 12 months, six or more points in 24 months, or eight or more points in 36 months."

Currently, there are four treatment levels in the neg-op program:

- I. Warning letter (W/L) – 2 points fewer than prima facie definition
- II. Notice of intent to suspend (N/I) – 1 point fewer than prima facie definition
- III. Probation and suspension hearing (P/H) – prima facie negligent operator
- IV. Probation violator sanction (P/V) – suspensions and revocations

Distinctive alcohol treatments have been administered at NOTS Levels I – III since the beginning of the program in 1985 but have not demonstrated significant positive effects on accidents or citations when evaluated separately from the standard NOTS interventions. As a result, various recommendations have been made to eliminate the alcohol treatment at NOTS Levels I – III. After some experimentation, the Level III P/H intervention was the only NOTS treatment Level that had its alcohol treatment component permanently removed.

Current Study: Overview

This report presents information on the demographic characteristics and driving behaviors of drivers who received the four levels of treatment within the negligent operator treatment system. Risk profiles were calculated for each treatment level by using historical information on their numbers and types of traffic accidents and convictions resulting in their assignment to the NOTS treatment levels. In addition, a

risk profile was developed for a random sample of California drivers to facilitate a baseline comparison for the four levels of NOTS treated drivers. It is anticipated that the information provided within this report will prove helpful to the department's management and staff responsible for administering and implementing the new enhanced negligent-operator treatment system (ENOTS) currently under development.

Research Methods

Two groups of drivers were sampled from the department's databases. The first group consisted of a random sample of drivers receiving one or more of the four NOTS treatment levels between June 1, 2000 and December 31, 2001. The second group consisted of a random sample of licensed California drivers and was used as a baseline for assessing driver record risk relativities of the NOTS treated drivers.

Demographic and driving history data for the NOTS and random driver sample groups were obtained from the department's driver record database. One of the main goals of the study was to assess the relative traffic risk posed by each of the NOTS groups. This was achieved by examining traffic accidents and convictions that occurred during the 3 years prior to the date of the NOTS action. For the purpose of computing prior 3-year accidents and convictions, random sample drivers were assigned equivalent dates to the NOTS drivers. Specifically, the following four driving history measures were examined:

1. Total accidents
2. Total citations
3. Fatal/injury accidents
4. Countable (i.e., responsible) accidents

Each of the four driving history measures was examined separately. For each measure, a risk estimate was computed for each NOTS group. To compare the NOTS groups' performance on each of the four driving history measures, the performances of the random sample of licensed drivers on the four measures were used as the baseline values for the calculation of relative risk rate. It is important to note that the relative risk indices only provided an illustration of the traffic risks of the NOTS drivers up to the point of treatment intervention. However, inherent limitations to the data (e.g., lack of an experimental design to present proof of program effectiveness) preclude extrapolating the historical risks presented in this study into the future.

Results

The results of the analyses provided a richly textured description of age and gender characteristics, neg-op drivers and their distributions within the NOTS interventions, and relative risk values for a variety of driver record entries. While the results reported in this section will provide a representative overview of the descriptive data, comprehensive discussions of all findings are presented in the body of this report.

Interventions

During the sampling period between June 1, 2000 and December 31, 2001, DMV dispensed approximately 484,700 NOTS interventions. NOTS Level I warning letters accounted for 68.21% of all those interventions. Because of the effectiveness of the

Level I warning letters, and to a lesser degree the effectiveness of the Level II notice of intent letter (17.72% of total), just 11.04% of the total NOTS interventions were administered by means of a probation hearing, and 3.03% were dispensed to probation violators.

Gender

Men dominated the four levels of the neg-op program. Men comprised 51.72% of the general driving population in California but accounted for 70.07% of drivers sent the NOTS Level I warning letters, 76.94% of drivers mailed the Level II notice of intent letters, 83.95% of drivers receiving a Level III probation and suspension hearing notice, and 87.40% of drivers receiving a Level IV probation-violator sanction notice.

Age

One notable characteristic of NOTS drivers was their youth. Only 12.41% of California drivers in the general driver population sample were 24 years of age and younger, but this age group accounted for 34.95% of NOTS Level I sanctions, 45.22% of Level II interventions, 45.42% of Level III treatments, and 49.73% of the Level IV interventions. Overall, drivers who were younger than 35 accounted for 63.44%, 71.99%, 75.73%, and 80.44% of the NOTS Levels I – IV sanctions, respectively, even though they represented just 35.72 percent of the general driving population. Meanwhile, drivers who were 60 or older made up 16.70 percent of the general driving population but accounted for only 2.53%, 1.45%, 0.79%, and 0.45% of the NOTS Levels I – IV (combined) interventions, respectively.

Critical Incident

The critical incident was defined as the type of incident that activated the driver's latest NOTS intervention. The types of critical incidents considered in this study included a 1-point (moving) conviction, a 2-point (major) conviction, a countable accident, a 0-point conviction, or a failure to appear (FTA) in court violation. The 0-point conviction and FTA only apply to the Level IV P/V sanction.

At both the "standard" Level I and II interventions, the critical incidents were distributed between moving convictions and countable accidents in approximately the same percentages (85% and 15%). However, the "combined" Level I and II interventions included 1-point convictions, 2-point convictions, and countable accidents, all of which were also similarly distributed across both Levels I and II with approximately 70% of the critical incidents being 1-point convictions, 17% being of the 2-point type, and 13% of the critical incidents being countable accidents.

Within the alcohol groups at both Levels I and II, 100% of the critical incidents were 2-point convictions. This finding was more a function of the point-counts that defined each of the NOTS Levels and the points associated with major convictions than it was a reflection of a difference in the individuals who composed Levels I and II as compared with NOTS Levels III and IV drivers.

At NOTS Level III, more than half of the critical incidents were 2-point convictions, and the percentage of 1-point critical incidents dropped to about half (35%) of those noted at Levels I (combined) and II (combined).

At NOTS Level IV, the largest category of critical incidents (34.10%) was 2-point convictions while 0-point convictions plus FTAs combined for 37.09%. The other two critical incidents recorded at Level IV were 1-point convictions (24.02%) and countable accidents (4.79%).

Total Accident Risk

Figure 1 illustrates the prior total accident risks for the NOTS groups and the random driver sample.

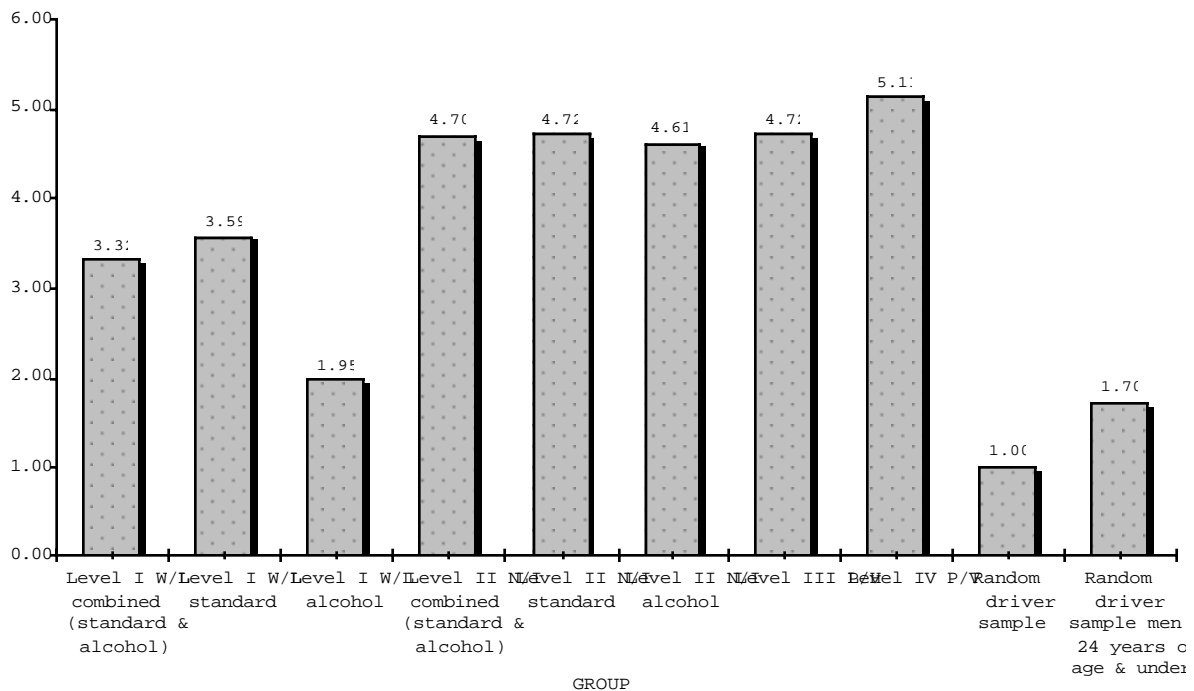


Figure 1. Relative 3-year prior total accident risk (times-as-many index) for each NOTS level and random driver sample groups.

Level IV probation violators exhibited the largest total accident risk that was nearly three times the risk of the Level I alcohol group and more than five times that of the random driver sample. Other interesting observations regarding the relative risk for prior total accidents of NOTS drivers compared with the random driver sample included the following:

- Level I W/L alcohol drivers were 1.95 times more likely to be involved in a prior accident. This result, although modest, was not unexpected since NOTS Level I alcohol drivers qualified for that treatment with a single 2-point conviction. Therefore, these drivers typically had been in the NOTS program for the shortest length of time and often lacked sufficient exposure to accumulate many reportable accidents.

- Level I W/L combined (standard and alcohol) drivers were 3.32 times more likely to be involved in a prior accident.
- Level II N/I combined (standard and alcohol) drivers were 4.70 times more likely to be involved in a prior accident.
- Level III P/H drivers were 4.72 times more likely to be involved in a prior accident.

Total Citation Risk

Figure 2 illustrates the prior total citation risks for the NOTS groups and the random driver sample.

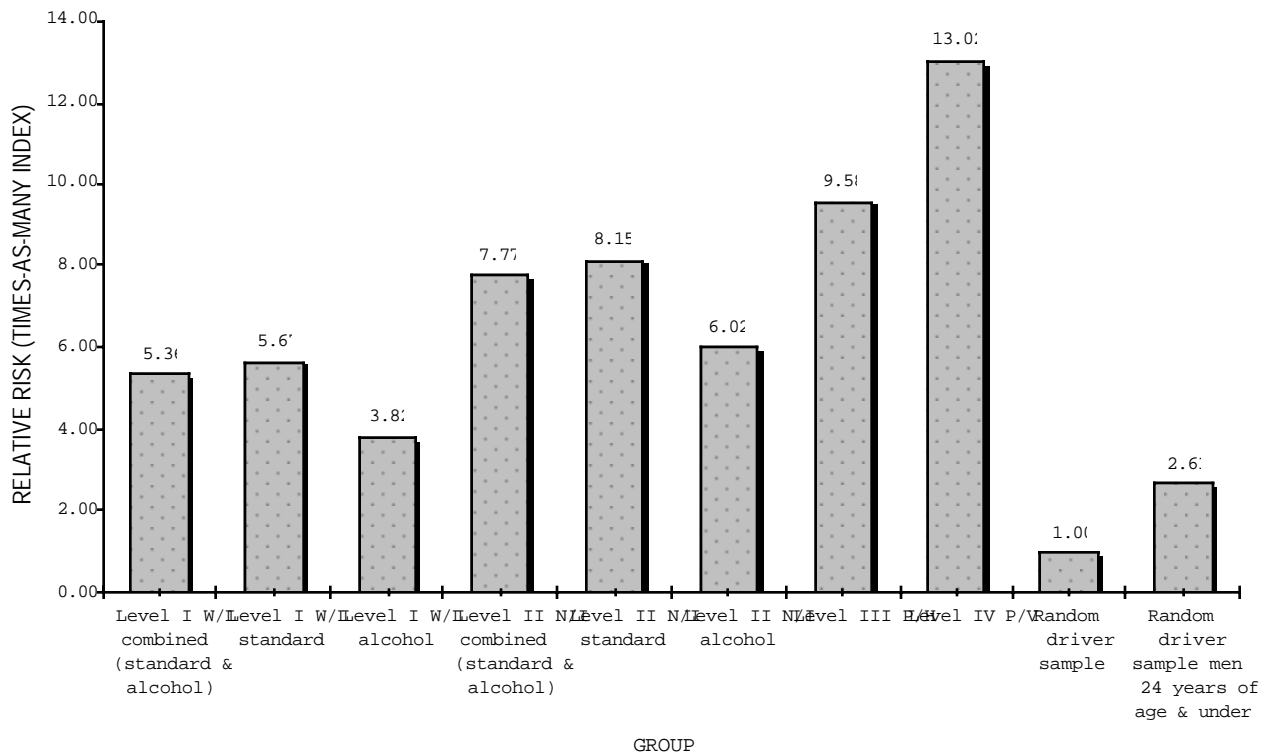


Figure 2. Relative 3-year prior total citation risk (times-as-many index) for each NOTS level and random driver sample groups.

Level IV P/V drivers had 13.02 times as many total citations as the random driver sample and five times as many as the random driver sample of men 24 years of age and under. Other interesting observations regarding the relative risks for prior total citations of NOTS drivers compared with the random driver sample included the following:

- Level I W/L combined (standard & alcohol) drivers had 5.36 times-as-many total citations.

- Level II N/I combined (standard & alcohol) drivers had 7.77 times-as-many total citations.
- Level III P/H drivers had 9.58 times-as-many total citations.
- Random driver sample of men 24 years of age and under had a relative risk index (2.63) of prior total citations that was lower than all NOTS intervention groups.

Fatal/Injury Accidents

Figure 3 illustrates the prior fatal/injury accident risks for the NOTS groups and the random driver sample.

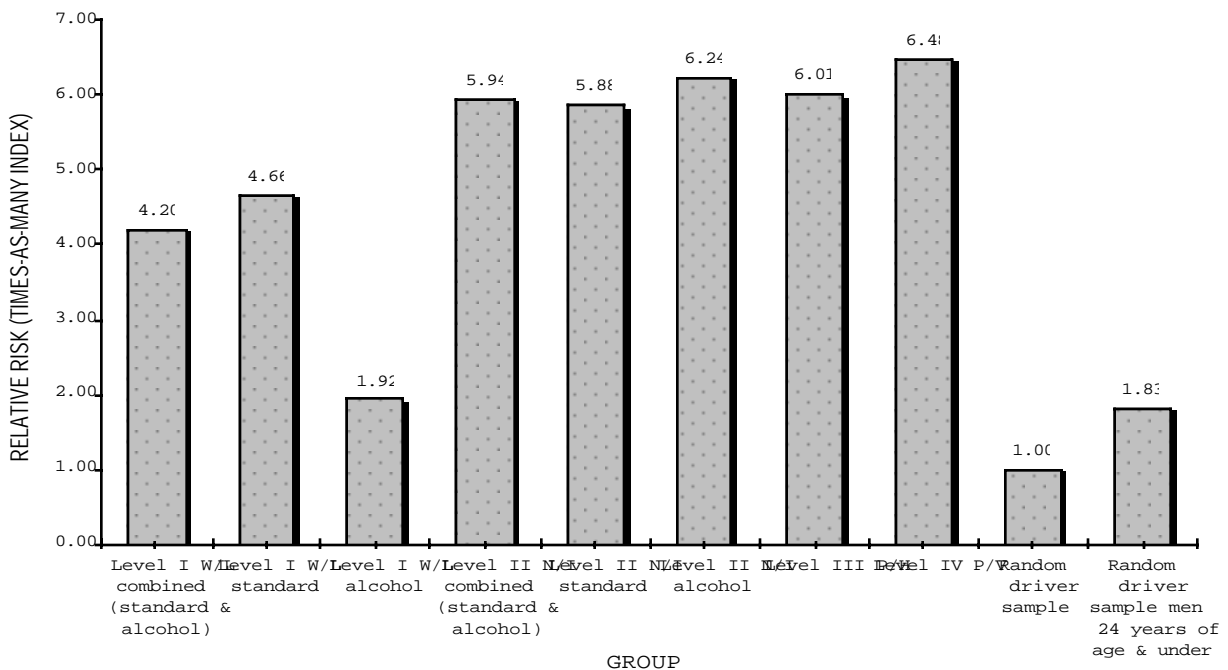


Figure 3. Relative 3-year prior fatal/injury accident risk (times-as-many index) for each NOTS level and random driver sample groups.

Level IV P/V drivers had 6.48 times-as-many prior fatal/injury accidents as the random driver sample and more than three times more than the random driver sample of men 24 years of age and under. Other interesting findings regarding the relative risks for fatal/injury accidents of NOTS drivers as compared to the random driver sample included the following:

- Level I W/L combined (standard & alcohol) were 4.20 times more likely to be involved in a prior fatal/injury accident.
- Level II N/I combined (standard & alcohol) drivers were 5.94 times more likely to be involved in a prior fatal/injury accident.

- Level III P/H drivers were 6.01 times more likely to be involved in a prior fatal/injury accident.
- Drivers in both the Level I W/L alcohol group and the random driver sample of men 24 years of age and under exhibited similar prior fatal/injury accident risk relativities (1.92 vs. 1.83).

Countable Accidents

Figure 4 illustrates the prior countable accident risks for the NOTS groups and the random driver sample.

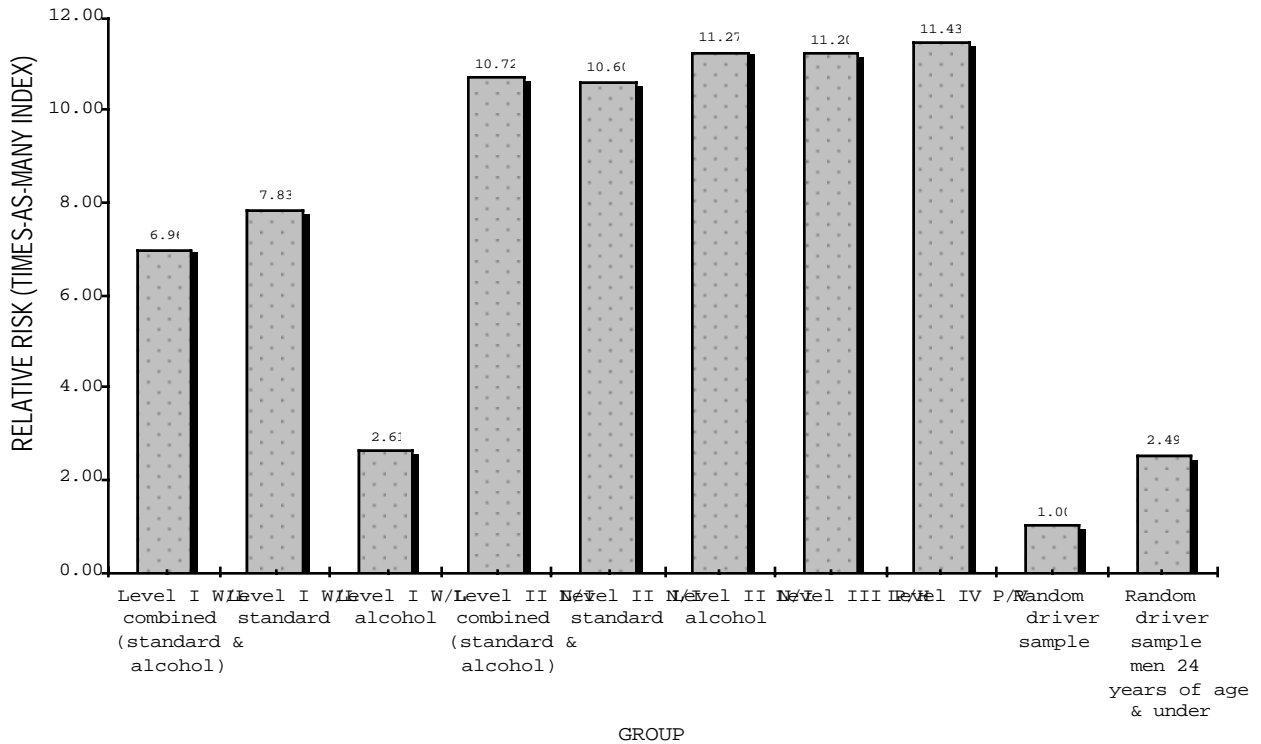


Figure 4. Relative 3-year prior countable accident risk (times-as-many index) for each NOTS level and random driver sample groups.

Level I W/L alcohol drivers and the random driver sample men 24 years of age and younger had similar risks of prior countable accidents, with rates of 2.61 and 2.49, respectively. Other notable observations regarding the relative risk for countable accidents of NOTS drivers as compared to the random driver sample included the following:

- Level I W/L combined (standard & alcohol) drivers had 6.96 times-as-many prior countable accidents.
- Level II N/I combined (standard & alcohol) drivers had 10.72 times-as-many prior countable accidents.

- Level III P/H drivers had 11.20 times-as-many prior countable accidents.
- Level IV P/V drivers had 11.43 times-as-many prior countable accidents.

Discussion

This study presented a cross-sectional, descriptive profile comparing the prior driving behavior of NOTS treated drivers with the general driving population and, therefore, these results should not be extrapolated to predict future driving accident risk.

Slightly fewer than 32% of the approximately 484,700 drivers who qualified for a NOTS intervention between June 1, 2000 and December 31, 2001 persisted in their negligent driving behaviors and became eligible for higher-level interventions beyond the Level I W/L treatment. This observation connecting the early application of a NOTS Level I warning letter with a reduction in convictions is consistent with prior research (Marsh, 1992, 1990, 1988, 1987, 1986; Marsh & Healey, 1995; Marsh & Kadell, 1985) and suggests additional research is needed to identify methods to strengthen the effects of early interventions.

The primary reason that most negligent drivers progressed through NOTS Levels I-IV was the accumulation of citations. As would be expected, the shape of the ensuing relative risk profile for total citations reflected a systematic increase (steps) across NOTS Level I W/L (combined), Level II N/I (combined), Level III P/H, and Level IV P/V. However, the shapes of the relative risk profiles for total accidents, fatal/injury accidents, and total countable accidents were flat for NOTS Levels II-IV, meaning that the relative risk level found for negligent drivers at Level II (combined) was equivalent to those found at Level III and Level IV. The profiles associated with these three accident measures were predictable because most drivers at the higher levels of the NOTS program were members of the NOTS Level I driver group who progressed to higher NOTS Levels after amassing additional neg-op points. Apparently, a relatively small proportion of NOTS Level I drivers persist in their hazardous driving behaviors and progress through the higher levels of the NOTS program. This trend appears to indicate a measure of perseveration highly resistant to current NOTS treatments. New methods, perhaps treatments requiring affirmative actions on the part of drivers involved in accidents, need to be researched and implemented if relative risks for accidents are to be lowered.

Youthful drivers, especially young male drivers, account for the majority of NOTS actions. More than 60% of all drivers subject to the NOTS program were 35 years old or younger. Approximately 50% were under 30 years of age, and the highest risk group was the 18- to 24-year olds. Meanwhile, 12.01% of the general driving population were 65 years of age and older, but they comprised only 0.08% of Level IV P/Vs and 0.90% of standard Level I W/Ls. Finally, while approximately half of the general driving population was composed of men during the time data were gathered for this report, they accounted for approximately 78% of drivers in NOTS Levels I – IV. The development of more effective NOTS treatments that will appeal to male drivers, especially young, male drivers, should be a top priority for future research.

Recommendations

1. Evaluate the effectiveness of an intervention given to drivers at one neg-op point.
2. Evaluate methods designed to strengthen the effectiveness of narrative sanctions.
3. Evaluate cost-effectiveness of methods designed to rival the traffic-safety results achieved by the current NOTS Level III P/H.
4. Evaluate methods designed to strengthen the appeal of NOTS treatments to younger male drivers.
5. Research methods used in other jurisdictions to lower the incidence of accidents.

TABLE OF CONTENTS

	<u>PAGE</u>
PREFACE.....	i
ACKNOWLEDGMENTS.....	ii
EXECUTIVE SUMMARY.....	iii
Background.....	iii
Current Study: Overview.....	iii
Research Methods.....	iv
Results.....	iv
Interventions.....	v
Gender.....	v
Age.....	v
Critical Incident.....	vi
Total Accident Risk.....	vi
Total Citation Risk.....	viii
Fatal/Injury Accidents.....	ix
Countable Accidents.....	x
Discussion.....	xi
Recommendations.....	xii
INTRODUCTION.....	1
Background.....	1
Current Study.....	3
METHODOLOGY.....	4
Subjects.....	4
NOTS Subjects.....	4
Analysis.....	6
Limitations of the data.....	7
RESULTS.....	8
NOTS Interventions.....	8
Critical Incident.....	9
Age and Gender.....	12
Comparison of Group Prior Driver Record Means.....	19
Relative Risk Indices.....	23
Total Accidents.....	23
Total Citations.....	25
Fatal/Injury Accidents.....	26
Countable Accidents.....	28
DISCUSSION.....	30
NOTS Interventions.....	31
Critical Incident.....	32
Age and Gender.....	33
Relative Risk Indices.....	34
REFERENCES.....	36
APPENDIX.....	38

LIST OF TABLES

<u>NUMBER</u>	<u>PAGE</u>
1 Percentage Distribution of Negligent Operator Treatment System Interventions	8
2 Percentage Distribution of Critical Incident Type by Negligent Operator Treatment System Interventions	10
3 Percentage Distribution of Neg-Op Levels I-IV and Random Sample of General Driving Population by Age Group.....	12
4 Comparative Age of Negligent Operators Receiving Levels I-IV Treatments and Random Sample of General Driving Population by Gender	18
5 Percent Men in Neg-Op Levels I-IV and Random Sample of General Driving Population by Age Group.....	19
6 Prior 3-Year Driver Record Entries Per 100 Drivers by NOTS Level, Random Driver Sample, and Random Driver Sample of Men 24 Years of Age and Younger	20

LIST OF FIGURES

1 Percentage distribution of negligent operator treatment system Levels I-IV drivers and driving population by age group.....	13
2 Percentage distribution of negligent operator treatment system Levels I and II standard and alcohol subpopulations and driving population by age group.....	14
3 Cumulative percentage distribution of negligent operator treatment system Levels I-IV drivers and driving population by age group	16
4 Cumulative percentage distribution of negligent operator treatment system Levels I and II standard and alcohol subpopulations and general driving population by age group.....	17
5 Relative 3-year prior total accident risk (times-as-many index) for each NOTS level and random driver sample groups.....	24
6 Relative 3-year prior total citation risk (times-as-many index) for each NOTS level and random driver sample groups.....	25
7 Relative 3-year prior fatal/injury accident risk (times-as-many index) for each NOTS level and random driver sample groups	27
8 Relative 3-year prior countable accident risk (times-as-many index) for each NOTS level and random driver sample groups	28

INTRODUCTION

Background

In California, the negligent-operator (neg-op) point system operates as follows. Each conviction for a violation of a traffic law carries a certain number of neg-op points. For example, a cited driver has one point charged against his driving record for a speeding violation and two points for a major violation, such as driving under the influence of alcohol and/or drugs. Following conviction, these points are added to a driver's record. When the point count reaches specified levels, the driver is exposed to a "treatment." This treatment usually takes the form of a warning letter for the lowest specified neg-op point level and climaxes in the suspension or revocation of the driving privilege at the highest neg-op action.

Section 12810.5a of the California Vehicle Code (CVC) defines a *prima facie* negligent operator as any Class C (passenger car) licensed driver "whose driving record shows a violation point count of four or more points in 12 months, six or more points in 24 months, or eight or more points in 36 months." Minor traffic convictions (e.g., speeding or illegal turn) and accidents for which the driver is considered at least partially responsible by DMV receive one point. Major convictions (e.g., drunk driving, reckless driving, and hit-and-run) receive two points.

Other sections of the CVC (13800 and 14250) grant the department discretionary authority to take a variety of license control actions, including license suspension, against drivers who meet the CVC's definition of a negligent operator. Since the program is discretionary, the CVC (§ 13950) also requires that drivers be offered the opportunity for an administrative hearing pursuant to any action proposed under the negligent-operator provisions.

Currently, there are four treatment levels in the neg-op program:

- I. Warning letter (W/L)
- II. Notice of intent to suspend (N/I) – a more severe warning letter
- III. Probation and suspension hearing (P/H)
- IV. Probation violator sanction (P/V) suspensions and revocations

The W/L is sent when a driver accumulates two neg-op points in 1 year; the N/I is sent when the driver's record reaches one point below the *prima facie* definition of a neg-op. The N/I is essentially a second warning letter that is more formal and severe than the W/L.

At negligent operator treatment system (NOTS) Levels I and II, there are two types of intervention – standard and alcohol. The alcohol W/Ls and N/Is are sent to drivers who have enough neg-op points to qualify them for intervention at one of these levels and whose latest driver record entry is a major conviction, which usually involves alcohol. The alcohol W/Ls and N/Is are similar to the standard interventions, except for making mention of the danger and legal consequences of drunk driving.

The current level III (standard) P/H intervention is imposed when a driver has accumulated enough points to reach the *prima facie* definition of neg-op. Drivers are provided with an opportunity to schedule and to attend a hearing, where a period of probation, and possibly license suspension, may be imposed. If a driver does not request a hearing within 34 days of the mailing of the Level III notice, the neg-op action (probation with a period of suspension) goes into effect. The term of neg-op probation is initially 1 year, and it remains in effect during any license suspension within that period. If DMV receives any failure to appear (FTA) notice, countable traffic conviction, or indication of responsibility for a police-reported accident for a driver who is on probation (given the incident occurred while probation was in force), a probation violator intervention will be imposed. Furthermore, any evidence of driving while suspended (e.g., a driver-reported accident) during the probation period will also lead to a Level IV intervention.

The intervention at Level IV generally imposes a 6-month suspension for the first and second violations of probation. The third violation of probation results in a 1-year revocation. After the third violation of probation, an additional 1-year revocation is imposed for each additional conviction/accident. A P/V license suspension also extends the period of probation to 1 year after the date of the incident that caused the violation of probation.

For over 20 years, the department produced a series of reports evaluating the neg-op treatment system. The negligent operator treatment evaluation system (NOTES) served as an ongoing system to provide the DMV, the Department of Finance, and the Legislature with periodic evaluation reports on NOTS.

Peck and Healey (1995) presented a detailed chronological review of the evaluation system which was initiated in the early 1970s and which terminated at the end of 1994. They reported that all components of the NOTS program had a significant effect in reducing the rate of subsequent traffic citations throughout the 20-year evaluation period. In general, the size of the citation reduction increased with the intensity of the intervention, with warning letters producing the smallest effect and probation violator suspensions producing the largest reductions. Evidence from the evaluations indicated that all components of the program probably reduced subsequent accidents as well; however, the magnitude of the effects (in particular those associated with the lower order interventions, such as warning letters) was smaller and less consistent than with citations. Peck and Healey noted that during the period of 1976 through 1994, the post-license control interventions prevented approximately 30,000 traffic accidents.

Current Study

The present study provides information on the demographic characteristics and driving behavior of drivers receiving the four levels of treatment within NOTS. Risk profiles were calculated for each treatment level by using historical information on their numbers and types of traffic accidents and convictions resulting in their assignment to the NOTS treatment levels. In addition, a risk profile was developed for a random sample of California drivers. The profile of the random sample of California drivers is

intended to provide a baseline to which the four levels of NOTS treated drivers can be compared. It is anticipated that the information provided within this report will prove helpful to the department's management and staff responsible for administering and implementing NOTS.

METHODOLOGY

Subjects

Two groups of drivers were used to construct tabulations and graphic presentations for this report. The first group consisted of drivers receiving one or more of the four NOTS treatment levels between June 1, 2000 and December 31, 2001. The second group consisted of licensed drivers randomly selected from the department's California Driver Record Study Database and was used as a baseline for assessing the relative driver record risk of the NOTS treated drivers. These groups are discussed in more detail below.

NOTS subjects

The Research and Development Branch maintains the Negligent Operator Treatment Evaluation System (NOTES) Finder Record Database. This database currently consists of selected driver record information on a random sample of drivers assigned to Levels I through IV of NOTS. Data are written to the NOTES Finder Record Database on a monthly schedule. The random sample is selected and assigned on the basis of a pseudo-random number generator contained within the NOTES Finder Record Selection Module. The NOTES Finder Record Database served as the primary source for selection of Levels I through IV drivers used in this report.

Level I (W/L) group. The Level I warning letter group consisted of 52,892 drivers who received a NOTS warning letter between June 1, 2000 and December 31, 2001. The 52,892 Level I drivers represent an approximately 16% random sample of drivers receiving a Level I W/L contact between June 1, 2000 and December 31, 2001.

The sample of Level I drivers was composed of two subgroups. The first subgroup consisted of 44,124 drivers receiving the standard Level I warning letter. The second subgroup consisted of 8,768 drivers receiving the alcohol Level I warning letter. The alcohol warning letter is sent to drivers who have enough neg-op points to qualify them for a Level I NOTS intervention and whose latest driver record entry is a major conviction, most of which involve alcohol. The alcohol warning letter is similar to the standard Level I warning letter, except for making mention of the dangers and legal consequences of drunk driving. The mail date of the Level I warning letter was used to "anchor" an individual's driver record in time for the purpose of extracting and summarizing driver record histories.

Level II (N/I) group. The notice of intent Level II group consisted of 13,752 drivers receiving a NOTS N/I to suspend letter between June 1, 2000 and December 31, 2001. The Level II group represents an approximately 16% random sample of drivers receiving a N/I Level II contact between June 1, 2000 and December 31, 2001.

As with the Level I sample, Level II drivers consisted of two subgroups. The first subgroup consisted of 11,316 drivers receiving the standard Level II N/I to suspend letter. The second subgroup consisted of 2,436 drivers receiving the alcohol N/I as the result of a conviction for a major violation. The mail date of the Level II N/I was used to “anchor” a driver’s record in time for the purpose of extracting and summarizing driver record histories.

Level III (P/H) group. The Level III P/H group consisted of 19,235 drivers receiving a probation/suspension notice between June 1, 2000 and December 31, 2001. The Level III group represents an approximately 36% random sample of drivers receiving a Level III contact between June 1, 2000 and December 31, 2001. The date that the Level III action was processed was used to anchor a driver’s record in time for extracting and summarizing driver record information. This processing date varies due to legal issues (e.g., hearings) that must be resolved before the notice is mailed.

Level IV (P/V) group. The Level IV P/V group consisted of 9,415 drivers who received a probation violator action between June 1, 2000 and December 31, 2001. The Level IV group represents an approximately 64% random sample of drivers receiving a Level IV action between June 1, 2000 and December 31, 2001. The date that the Level IV action was processed was used to anchor a driver’s record in time for extracting and summarizing driver record information. This processing date varies due to legal issues (e.g., hearings) that must be resolved before the notice is mailed.

Sample of licensed California drivers. A random sample of 201,100 licensed California drivers was selected from the California Driver Record Study Database. This database stores information on a systematic 1% random sample of licensed California drivers (i.e., those with driver license numbers ending in 01). Detailed information on this database is provided by Gebers and Peck (2003), Peck and Kuan (1983), and Peck, McBride, and Coppin (1971).

Because the random driver sample is representative of all types of drivers, it was used to create a comparison group for assessing the relative crash risk and citation rate of drivers in the four NOTS groups defined above. The sample that was created provided driving record histories and demographic information in a manner comparable to drivers in the NOTS groups.

The following groups of drivers were excluded from the study groups.

1. “X” record driver license numbers. “X” records are created when the department receives an abstract of conviction/crash report for a driver, and is unable to match the record to an existing driver record.
2. Drivers under 18 years of age. These “provisional” drivers receive post-license control measures under provisions of California’s graduated driver licensing program, rather than under the NOTS program.

3. Commercial drivers. Drivers holding a commercial license generally receive an increased number of neg-op points assigned to offenses taking place in heavy commercial vehicles before a NOTS licensing action is imposed. Therefore, the current study utilized only non-commercially licensed drivers subject to the standard 12/24/36 month neg-op point criteria defined earlier in this report.

Analysis

This report presents tabulations and graphical representations of biographical and prior driver record variables for drivers receiving a NOTS intervention. The information presented in the following section is in the form of simple descriptive statistics (e.g., percentages and means).

It should be reiterated that it is not the objective of this report to make recommendations in relation to NOTS. Rather, the primary purpose is to provide data on NOTS treated drivers that may be useful in making policy decisions and in formulating post-licensing control programs, and to aid in evaluating the effectiveness of such policies and programs.

Limitations of the data

It is recognized that valid information on the effectiveness of the department's negligent operator treatment system can be obtained only through controlled experimentation. However, this involves the selection of existing cases in advance and randomly assigning one group to a particular driver improvement action, while randomly assigning another group to a control or "hands off" condition. Following the construction of treatment and control groups, it is then necessary to allow adequate post-treatment and control-assignment time to accumulate so that the future evaluation of the accident records will be complete. Therefore, such "experimentation" is obviously time consuming; however, the department plans to undertake such an evaluation of the NOTS program at a future date. A brief summary of this evaluation is provided in a latter section of this report.

Until such a controlled experiment can be conducted, it is believed that an "ex-post-facto" descriptive study involving the biographical and prior driving records of drivers treated at the four levels of NOTS intervention is a worthy effort. Although no real "proof" of program effectiveness can be furnished by such a study, it is believed that this study can provide information helpful in general driver improvement planning within NOTS.

RESULTS

NOTS Interventions

Table 1 presents the sample sizes and the projected population volume and percentage distribution for each NOTS intervention.

Table 1
Percentage Distribution of Negligent Operator Treatment System Interventions

Intervention group	Number of sample drivers (<i>n</i>)	Projected population volume (<i>N</i>)*	Percentage of NOTS interventions (%)*
Level I W/L			
Standard	44,124	275,800	56.90
Alcohol	8,768	54,800	11.31
Total (combined standard & alcohol)	52,892	330,600	68.21
Level II N/I			
Standard	11,316	70,700	14.59
Alcohol	2,436	15,200	3.14
Total (combined standard & alcohol)	13,752	85,900	17.72
Level III P/H	19,235	53,500	11.04
Level IV P/V	9,415	14,700	3.03
Total interventions	95,294	484,700	100.00

*Population volumes and percentages are estimated from sample drivers with neg-op treatment system entry dates between June 1, 2000 and December 31, 2001. Population volumes are rounded to the nearest hundreds.

The data in the table were obtained from the sample drivers with neg-op system entry dates between June 1, 2000 and December 31, 2001. The projected population volumes and percentages were obtained by multiplying the sample volumes by the reciprocal of their sampling proportions defined in the above methodology.

Table 1 indicates that during the sampling period between June 1, 2000 and December 31, 2001, the department administered approximately 484,700 NOTS interventions. An examination of the individual entries for the intervention groups yields the following estimates:

- The 330,600 total (combined standard & alcohol) Level I interventions represent 68.21% of all NOTS interventions. The 275,800 standard Level I W/Ls represent 56.90% of all NOTS interventions; the 54,800 alcohol Level I W/Ls represent 11.31% of all NOTS interventions.
- The standard Level I W/L represents 83.42% $[(275,800/330,600)*100]$ of the total Level I interventions while the alcohol Level I W/L represents 16.58% $[(54,800/330,600)*100]$ of the total Level I interventions.
- The 85,900 total (combined standard & alcohol) Level II interventions represent 17.72% of all NOTS interventions. The 70,700 standard Level II N/Is represent 14.59% of all NOTS interventions; the 15,200 alcohol Level II N/Is represent 3.14% of all NOTS interventions.

- The standard Level II N/I represents 82.31% $[(70,700/85,900)*100]$ of the total Level II interventions while the alcohol Level II N/I represents 17.70% $[(15,200/85,900)*100]$ of the total Level II interventions.
- The 53,500 Level III P/H interventions represent 11.04% of all NOTS interventions.
- The 14,700 Level IV P/V interventions represent 3.03% of all NOTS interventions.

Critical Incident

As stated in the Introduction section, drivers accumulate negligent operator points and advance through the NOTS intervention levels as a function of the type of “critical” incident for which the driver is involved, cited, and/or subsequently convicted. That is, a driver receives one negligent operator point for a 1-point safety related moving violation, two points for a serious or major violation, and one point for involvement in an accident in which the driver is deemed the responsible or culpable party by the investigating police officer.

Table 2 presents the percentage distribution of the critical incident type by NOTS interventions. The critical incident in the table is defined as the type of incident that triggered the driver’s latest NOTS intervention. The critical incidents presented in the table and qualifying a driver for a NOTS intervention consist of a 1-point (moving) conviction, a 2-point (major) conviction, a countable accident, a 0-point conviction, or a failure to appear (FTA) in court violation.

Table 2
Percentage Distribution of Critical Incident Type by
Negligent Operator Treatment System Interventions

Intervention group	Critical incident				
	% 1-point (moving) conviction	% 2-point (major) conviction	% countable accident	% 0-point conviction	% FTA
Level I W/L					
Standard	84.93	0.00	15.07	0.00	0.00
Alcohol	0.00	100.00	0.00	0.00	0.00
Total (combined standard & alcohol)	70.85	16.58	12.57	0.00	0.00
Level II N/I					
Standard	82.41	0.00	17.59	0.00	0.00
Alcohol	0.00	100.00	0.00	0.00	0.00
Total (combined standard & alcohol)	67.81	17.72	14.47	0.00	0.00
Level III P/H	35.00	55.95*	9.05	0.00	0.00
Level IV P/V	24.02	34.10	4.79	18.15	18.94

Note. Percentages may not add to 100 due to rounding.

*Includes drivers receiving a Level III action as the result of being convicted of driving with a suspended/revoked license under CVC 14601.

The data in Table 2 yield the following conclusions:

- Among the total (combined standard & alcohol) Level I W/L interventions, 70.85% were generated as the result of a 1-point moving conviction; 16.58% were generated as the result of a 2-point major conviction, and 12.57% were generated as the result of a countable accident.
- Among the standard Level I W/L interventions, 84.93% were generated as the result of a 1-point moving conviction, and 15.07% were generated as the result of a countable accident.
- As expected, all alcohol Level I W/L interventions were generated as the result of a 2-point major conviction. Although not displayed in the table, further examination of these data indicated that of the Level I drivers receiving an alcohol warning letter, 54.71% received the letter as the result of a 2-point, alcohol conviction (e.g., driving under the influence of alcohol); 45.29% received the letter as the result of a 2-point, non alcohol conviction (e.g., reckless driving, hit-and-run, speed contests, driving with a suspended/revoked license).¹

A decision was made in the early development of the NOTS program to issue two treatments at Levels I and II. One treatment consists of a letter that does not mention alcohol use and one that does mention its use. The rationale to send the alcohol letter to all drivers with a 2-point critical incident was based upon a departmental belief that major convictions such as reckless driving and hit-and run often involved the driver's use of alcohol, even though there was no driving under the influence of alcohol conviction triggering the action.

- Among the total (combined standard & alcohol) Level II N/I interventions, 67.81% were generated as the result of a 1-point moving conviction, 17.72% were generated as the result of a 2-point major conviction, and 14.47% were generated as the result of a countable accident.
- Among the standard Level II N/I interventions, 82.41% were generated as the result of a 1-point moving conviction, and 17.59% were generated as the result of a countable accident.
- As expected, all Level II N/I interventions were generated as the result of a 2-point major conviction. Although not displayed in the table, further examination of these data indicate that of the Level II drivers receiving an alcohol notice of intent letter, 58.13% received the letter as the result of a 2-point, alcohol conviction; 41.87% received the letter as the result of a 2-point, non alcohol related conviction.
- Among the total number of Level III P/H interventions, 35% were generated as the result of a 1-point moving conviction, 55.95% were generated as the result of a

¹ An alcohol/drug-related incident is defined as the following:

1. A conviction of, or failure to, appear in court for:
 - a. 2-point violation for driving under the influence of alcohol and/or drugs
 - b. drinking an alcoholic beverage while driving
 - c. driving in possession of an opened container of alcohol or less than one ounce of marijuana.
2. An accident in which the investigating officer reports the driver had been drinking or was under the influence of drugs.

2-point major conviction, and 9.05% were generated as the result of a countable accident. When drivers convicted of driving while suspended/revoked (CVC 14601) are removed from the three critical incident categories at the Level III P/H, 1-point convictions increase to 51.74% of the total critical incidents, 2-point convictions drop to 35.19% of the total, and countable accidents increase to 13.08% of the total.

- Among the total number of Level IV P/V interventions, 24.02% were generated as the result of a 1-point moving conviction, 34.10% were generated as the result of a 2-point major conviction; 4.79% were generated as the result of a countable accident; 18.15% were generated as the result of a non-countable, 0-point conviction, and 18.94% were generated as the result of a failure to appear in court violation.

Age and Gender

One of the most notable characteristics of NOTS drivers is their youth. This is clearly evident in Table 3 which presents the percentage distribution of NOTS intervention Levels I through IV and the 1% random sample of the general driving population, by age group.

Table 3

Percentage Distribution of Neg-Op Levels I-IV and Random Sample of General Driving Population by Age Group

Age group	General driving population	Level I W/L total (combined standard & alcohol)	Level I W/L standard	Level I W/L alcohol	Level II N/I total (combined standard & alcohol)	Level II N/I standard	Level II N/I alcohol	Level III P/H	Level IV P/V
	%	%	%	%	%	%	%	%	%
18-24	12.41	34.95	36.14	28.96	45.22	46.31	40.19	45.42	49.73
25-29	11.37	15.57	15.25	17.19	15.61	15.75	14.98	17.98	19.18
30-34	11.94	12.92	12.62	14.43	11.16	10.91	12.32	12.33	11.53
35-39	11.52	11.15	10.99	11.96	9.18	8.93	10.34	9.12	8.43
40-44	11.54	9.12	8.91	10.17	7.29	7.03	8.54	6.92	5.62
45-49	9.99	6.61	6.44	7.44	4.97	4.71	6.20	4.03	3.08
50-54	8.34	4.44	4.36	4.86	3.15	2.96	4.02	2.26	1.30
55-59	6.19	2.71	2.67	2.90	1.96	1.90	2.22	1.14	0.68
60-64	4.69	1.69	1.72	1.55	1.03	1.10	0.70	0.57	0.37
65 & above	12.01	0.84	0.90	0.55	0.42	0.41	0.49	0.22	0.08
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

These data are graphically illustrated in Figures 1 and 2. Figure 1 illustrates the percentage distribution of total NOTS Levels I through IV and the random sample of the general driving population by age group. Figure 2 provides an illustration of the percentage distribution of NOTS Levels I and II standard and alcohol subpopulations and the random sample of the general driving population by age group.

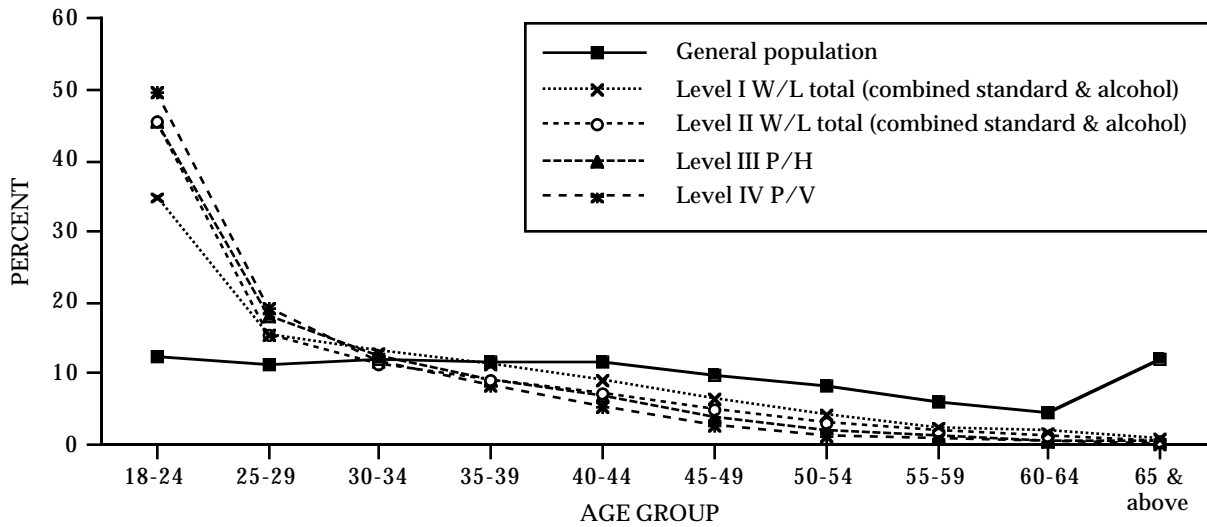


Figure 1. Percentage distribution of negligent operator treatment system Levels I-IV drivers and driving population by age group.

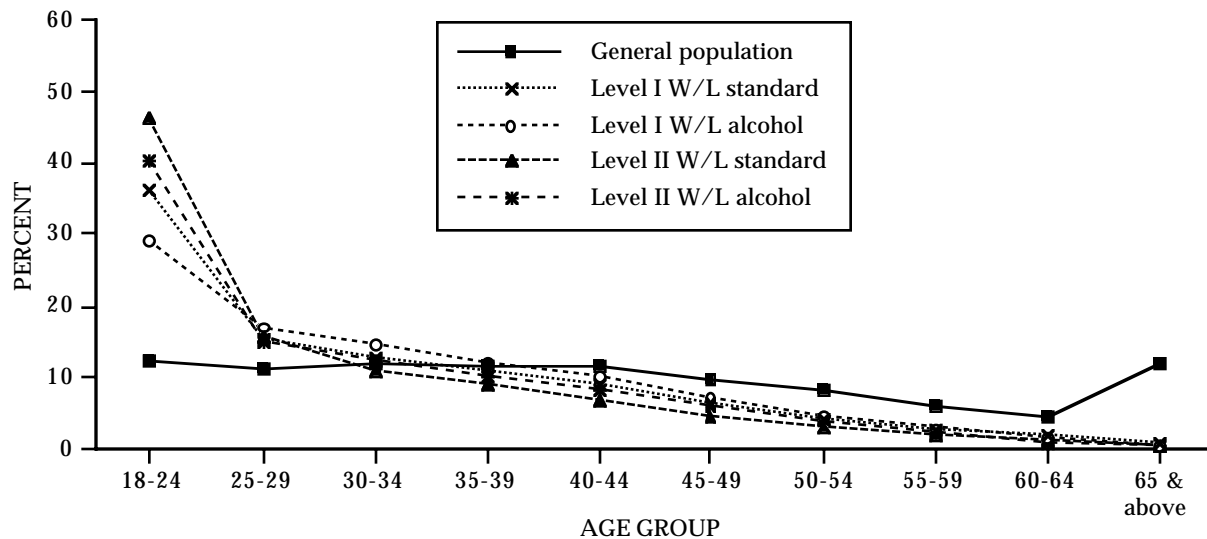


Figure 2. Percentage distribution of negligent operator treatment system Levels I and II standard and alcohol subpopulations and driving population by age group.

The percentages in the table and two figures are based upon the volume of drivers 18 years of age and older for all NOTS intervention groups and the general driving population. The data are organized in a seven-year age grouping for 18-24 year old drivers and in 5-year age groupings for drivers 25 through 64 years of age. Drivers 65 years of age and above are placed into one group due to the small proportion of drivers in these ages qualifying for a NOTS intervention.

The data in the table and figures indicate that the volume of drivers within each age group decreased as driver age increased. For example, an examination of the NOTS intervention groups in the table and figures yields the following conclusions:

- The most prevalent age group within all levels of NOTS interventions was 18-24 years of age. The percentages ranged from 28.96% for Level I alcohol W/L contacts to 49.73% for Level IV P/V interventions.
- The next most frequent age group within all levels of NOTS interventions was 25-29 years of age. The percentages ranged from 15.25% for the Level I standard W/L contact to 19.18% for Level IV P/V interventions.
- With the exception of the Level I alcohol W/L contacts (46.15%), more than half of all drivers receiving a NOTS intervention were under 30 years of age.
- More than 60% of all drivers receiving a NOTS intervention were under 35 years of age.
- Within each NOTS level, drivers 60-64 years of age account for fewer than 2% of all drivers receiving a NOTS intervention.
- Within each NOTS level, drivers 65 years of age and above account for fewer than 1% of all drivers receiving a NOTS intervention.

Comparison of the age groupings of drivers in the four NOTS intervention levels to that of the random sample of the California driving population illustrates some striking differences, particularly at the extremes of the distribution. For example, the data in Table 3 and Figures 1 and 2 indicate the following:

- While 12.41% of the general driving population were 24 years of age and younger, the range of this age group for the NOTS intervention drivers was 28.96% for alcohol Level I W/Ls to 49.73% for Level IV P/V sanctions.
- While 23.78% of the general driving population were under 30 years of age, the range of this age group for the NOTS intervention drivers was 46.15% for alcohol Level I W/Ls to 68.91% for Level IV P/V sanctions.
- While 16.70% of the general driving population were 60 years of age and older, the range of this age group for the NOTS intervention drivers was 0.45% for Level IV P/V sanctions and 2.62% for the standard Level I W/L.
- While 12.01% of the general driving population were 65 years of age and older, the range of this age group for the NOTS intervention drivers was 0.08% for Level IV P/V sanctions and 0.90% for the standard Level I W/L.

When comparing cumulative percentages by age group of the NOTS treated drivers to that of the general driving population, very notable differences become immediately apparent. These comparisons are graphically presented in Figures 3 and 4. Figure 3 illustrates the cumulative percentage of NOTS Levels I through IV drivers and the general driving population by age group. Figure 4 illustrates the cumulative percentage of NOTS Levels I and II standard and alcohol subpopulations and the general driving population by age group.

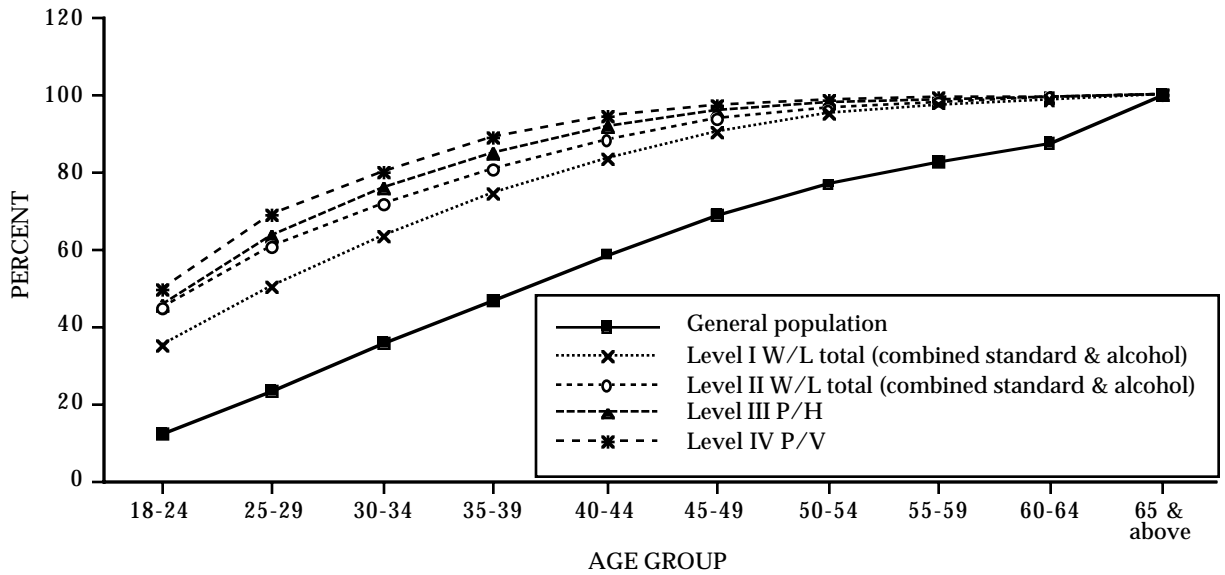


Figure 3. Cumulative percentage distribution of negligent operator treatment system Levels I-IV drivers and driving population by age group.

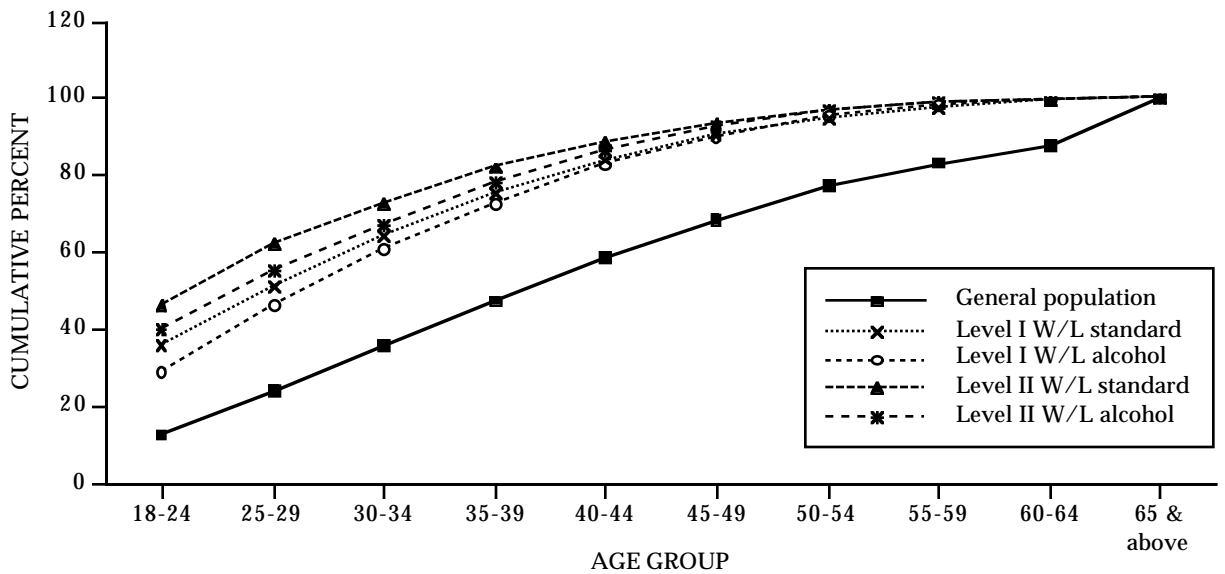


Figure 4. Cumulative percentage distribution of negligent operator treatment system Levels I and II standard and alcohol subpopulations and general driving population by age group.

The plots in the two figures indicate that the cumulative percentage distributions for the general driving population follow a positive linear, or monotonic, trend from the lower left of the figures to the upper right. However, the curve for all of the NOTS intervention groups exhibits a much heavier concentration in the younger ages, shifting

the “bulge” of the curve sharply to the left. For example, the figures indicate that drivers 34 years of age and younger account for approximately 36% of drivers within the general driving population but account for at least 60% of all NOTS interventions.

Table 4 presents additional comparisons on driver age between the four NOTS intervention groups and the general driving population.

This table displays three measures of central tendency of the groups by gender. The three measures of central tendency are (1) the mean, defined as the arithmetic average of age or the value that is equal to the sum of all ages within a specific group divided by the number of drivers within the group, (2) the median, defined as the value of age such that half of the drivers in the group are above the median and half are below the median, and (3) mode, defined as the age that occurs most frequently within the group.

The data in Table 4 indicate that, in addition to the considerable differences in age between NOTS drivers and drivers within the general driving population, the difference, in the vast majority of the cases, between the mean and median age for the NOTS treated drivers is greater than the same difference among drivers within the general driving population. For example, among general population men drivers, the difference between the mean and median age is 1.83 (41.83-40.00). However, among men (standard and alcohol) N/I Level II NOTS drivers, the difference between the mean age and median age increases to 4.40 (29.40-25.00). This trend indicates that chronic violators and culpable accident-involved drivers qualifying for NOTS interventions tend to fall more into the younger ages, with diminishing quantities as age increases. Age, however, within the general driving population is more normally distributed by clustering nearer the central portion of the age distribution. It is also interesting to note that with the exception of a few modal cases, the measures of central tendency in Table 4 indicate that women drivers are slightly older than men drivers.

Table 4
Comparative Age of Negligent Operators Receiving Levels I-IV Treatments
and Random Sample of General Driving Population by Gender

Measure Group	General driving population	Level I W/L combined (standard & alcohol)	Level I W/L standard	Level I W/L alcohol	Level II N/I combined (standard & alcohol)	Level II N/I standard	Level II N/I alcohol	Level III P/H	Level IV P/V
Mean									
Total	42.16	32.11	31.93	33.02	29.64	29.40	30.78	28.82	27.72
Women	42.50	32.34	32.15	33.70	30.46	29.86	33.55	30.31	29.30
Men	41.83	32.01	31.82	32.83	29.40	29.25	30.04	28.54	27.49
Median									
Total	40.00	29.00	29.00	31.00	26.00	25.00	27.00	26.00	25.00
Women	41.00	30.00	30.00	32.00	27.00	26.00	32.00	28.00	27.00
Men	40.00	29.00	29.00	30.00	25.00	25.00	26.00	25.00	24.00
Mode									
Total	35.00	19.00	19.00	19.00	20.00	20.00	20.00	20.00	21.00
Women	35.00	20.00	20.00	23.00	20.00	20.00	19.00	20.00	20.00
Men	35.00	19.00	19.00	19.00	20.00	20.00	20.00	20.00	21.00

In concordance with the over-representation of young drivers within the four NOTS intervention groups, men drivers are also over-represented in all NOTS treatment levels. This relationship is presented in Table 5.

Table 5 displays the percent of men for each NOTS intervention level and the random sample of the general driving population by age group. The data within the table indicate that while all age groups within the general driving population were about half men, all age groups within the four NOTS intervention levels were heavily dominated by men. For example, the total summary measures from the table show that 51.72% of the general driving population are men. However, the total summary measures for the four NOTS intervention levels range from 68.57% men for the standard Level I W/L intervention to 87.40% men for the Level IV P/V intervention. As a result of men dominating within each NOTS Level, the counts related to the prior driving record summaries presented in the following section will be “pooled” or summed into one category containing both men and women drivers.

Table 5
Percent Men in Neg-Op Levels I-IV and Random Sample
of General Driving Population by Age Group

Age	General driving population	Level I W/L combined (standard & alcohol)	Level I W/L standard	Level I W/L alcohol	Level II N/I combined (standard & alcohol)	Level II N/I standard	Level II N/I alcohol	Level III P/H	Level IV P/V
18-24	52.24	71.40	70.03	80.03	79.14	78.07	84.88	86.69	90.17
25-29	53.17	69.70	68.02	77.17	76.80	75.65	82.47	83.78	86.99
30-34	53.48	70.40	68.60	78.34	75.70	76.11	74.00	82.59	83.33
35-39	52.55	67.56	65.80	75.69	73.14	73.47	71.83	80.40	81.49
40-44	51.26	68.03	66.58	74.44	72.78	72.96	72.12	76.63	81.29
45-49	50.98	68.23	66.61	75.31	71.93	72.98	68.21	78.06	84.83
50-54	50.60	70.65	68.78	79.11	77.14	77.01	77.55	83.45	91.80
55-59	50.76	71.91	71.37	74.41	76.21	78.60	66.67	86.30	90.63
60-64	51.24	72.56	71.33	79.41	79.58	80.00	76.47	82.73	88.57
65 & above	49.81	72.91	72.15	79.17	87.93	91.30	75.00	90.70	85.71
Total	51.72	70.07	68.57	77.63	76.94	76.52	78.90	83.95	87.40

Comparison of Group Prior Driver Record Means

Table 6 presents prior 3-year driver record entries per 100 drivers by the four NOTS intervention levels.² Also shown are the prior driver record entries for the random driver sample and the random sample of men drivers 24 years of age and younger.

² The Appendix provides a detailed definition of each driver record entry presented in Table 6.

Table 6

Prior 3-Year Driver Record Entries Per 100 Drivers by NOTS Level, Random Driver Sample, and Random Driver Sample of Men 24 Years of Age and Younger

Group	Driver record entry							
	Total accidents	Total citations	Major citations	Fatal/injury accidents	14601 convictions	TVS dismissals	Countable accidents	Neg-op points
Level I W/L combined (standard & alcohol) (n = 52,892)	50.26	271.56	9.71	17.15	4.38	40.41	29.73	242.28
Level I W/L standard (n = 44,124)	54.36	287.06	0.69	19.00	0.46	44.40	33.42	241.86
Level I W/L alcohol (n = 8,768)	29.62	193.53	55.09	7.85	24.13	20.32	11.13	244.35
Level II N/I combined (standard & alcohol) (n = 13,752)	71.23	393.56	16.56	24.23	6.68	47.67	45.76	367.03
Level II N/I standard (n = 11,316)	71.51	412.67	7.38	23.97	3.28	51.22	45.25	366.78
Level II N/I alcohol (n = 2,436)	69.95	304.76	246.72	25.45	22.50	31.20	48.11	368.19
Level III P/H (n = 19,235)	71.48	485.19	55.87	24.52	67.62	32.90	47.83	531.33
Level IV P/V (n = 9,415)	77.75	659.22	38.18	26.42	119.67	34.89	48.82	683.34
Random driver sample (n = 201,100)	15.16	50.65	3.21	4.08	1.27	14.09	4.27	30.81
Random sample men drivers 24 years of age and younger (n = 11,729)	25.76	133.28	10.47	7.48	4.65	25.70	10.65	87.73

In the following discussion, the specific numerical examples are derived from the prior 3-year aggregated summary measures of total accidents and total citations, the more serious fatal/injury accidents, and the countable or responsible accidents. In interpreting the following, the reader is reminded that the drivers in the NOTS intervention groups were identified and selected for a post licensing control treatment as a result of over-involvement in traffic accidents and/or convictions, and, therefore, their prior driver record incident rates would naturally be expected to be high.

An examination of the table entries associated with prior 3-year total accidents indicates the following:

- Among the NOTS intervention groups, the Level IV P/V group exhibited the highest 3-year total accident rate, with a value of 77.75 total accidents per 100 drivers. This finding was not surprising since a Level IV intervention represents the highest order NOTS level targeting for treatment the highest risk drivers within the post licensing control system.

- Level I alcohol drivers had the lowest rate at 29.62 total accidents per 100 drivers. The fact that the Level I alcohol drivers had the lowest total accident rate prior to NOTS intervention was not surprising since the two neg-op points assigned to major convictions mean that the alcohol groups would tend to have a lower total number of citations and accidents prior to their assignment than standard groups would have at the same or higher level.
- Every NOTS intervention group had a total accident rate higher than the rate for the random driver sample (15.16 per 100 drivers), and the rate for the random sample of men drivers 24 years of age and younger (25.76 per 100 drivers).

The values in Table 6 associated with fatal/injury accidents yield the following conclusions:

- Among the four NOTS intervention groups, Level IV drivers had the highest prior 3-year fatal/injury accident rate, with a value of 26.42 fatal/injury accidents per 100 drivers.
- Level I alcohol drivers had the lowest rate of fatal/injury accidents at 7.85 per 100 drivers.
- Every NOTS intervention group had a fatal/injury accident rate higher than the fatal/injury accident rate than for the random driver sample (4.08 fatal/injury accidents per 100 drivers).
- Random sample of men drivers 24 years of age and younger had a notably lower fatal/injury accident rate (7.48 per 100 drivers) relative to all of the NOTS intervention levels with the exception of NOTS Level I alcohol W/L group, which was only directionally higher with a rate of 7.85 per 100 drivers.

With respect to the entries associated with total citations, the following conclusions are observed:

- Among drivers in the NOTS intervention groups, the Level IV drivers had the highest prior 3-year total citation rate, with a value of 659.22 total citations per 100 drivers.
- Level I alcohol drivers had the lowest rate of 193.53 total citations per 100 drivers.
- Every NOTS intervention group exhibited a total citation rate higher than the total citation rate for the random driver sample and the random sample men drivers 24 years of age and younger (50.65 and 133.28 total citations per 100 drivers, respectively).

An examination of the entries for the countable, or responsible, accidents indicates the following:

- Among the NOTS intervention groups, Level IV drivers had the highest rate of prior 3-year countable accidents, followed closely by the rate for Level II alcohol N/I treated drivers (48.82 and 48.11 countable accidents per 100 drivers respectively).
- Level I alcohol W/L drivers had the lowest rate of 11.13 countable accidents per 100 drivers.
- Every NOTS treated intervention group had a countable accident rate higher than the rate for the random driver sample (4.27 countable accidents per 100 drivers).
- The rate of 10.65 countable accidents per 100 random sample men drivers 24 years of age and younger was notably lower than all NOTS treated groups with the exception of Level I alcohol W/L treated drivers, whose rate was directionally higher at 11.13 countable accidents per 100.

Relative Risk Indices

Of central interest in this section are the comparisons of the rates of prior 3-year total accidents, total citations, fatal/injury accidents, and countable accidents between the respective NOTS intervention groups and the random driver sample. To arrive at these comparisons, it was necessary to transform the respective rates in Table 6 into measures of risk or relative risk indices.

Figures 5 through 8 present a common way of expressing risk in terms of the risk of a base comparison group (i.e., the random driver sample). To obtain the relative risk indices illustrated in the four figures, the average number of prior total accidents, total citations, fatal/injury accidents, and countable accidents for a particular NOTS intervention group and the random driver sample men 24 years of age and under was divided by the average number of driver record entries for drivers in the random driver sample base comparison group. For example, dividing the prior 3-year total accident rate (50.26) for the Level I W/L combined (Table 6) by the prior 3-year total accident rate (15.16) for the random driver sample (Table 6), yields the value of 3.32 as the first relative risk entry reported in Figure 5.

The relative risk indices can be interpreted as a “times-as-many” ratio that indexes the accident or citation rate of a particular risk group to the accident or citation rate for the random driver sample. The higher the relative risk index, or times-as-many index, the greater is the risk of a particular group relative to the risk of the random driver sample (which by definition has a relative risk, or times-as-many, index of 1.0). For example, the total accident relative risk index of 3.32 computed above would indicate that the Level I W/L combined group of drivers had a total accident risk that was 3.32 times higher than the total accident risk posed by all drivers.

The four figures are discussed below.

Total accidents

Figure 5 illustrates the 3-year prior total accident relative risk (times-as-many index) for each NOTS intervention and random driver group. As defined above, the relative risk

index refers to the relative risk of being accident involved as compared to the random driver sample.

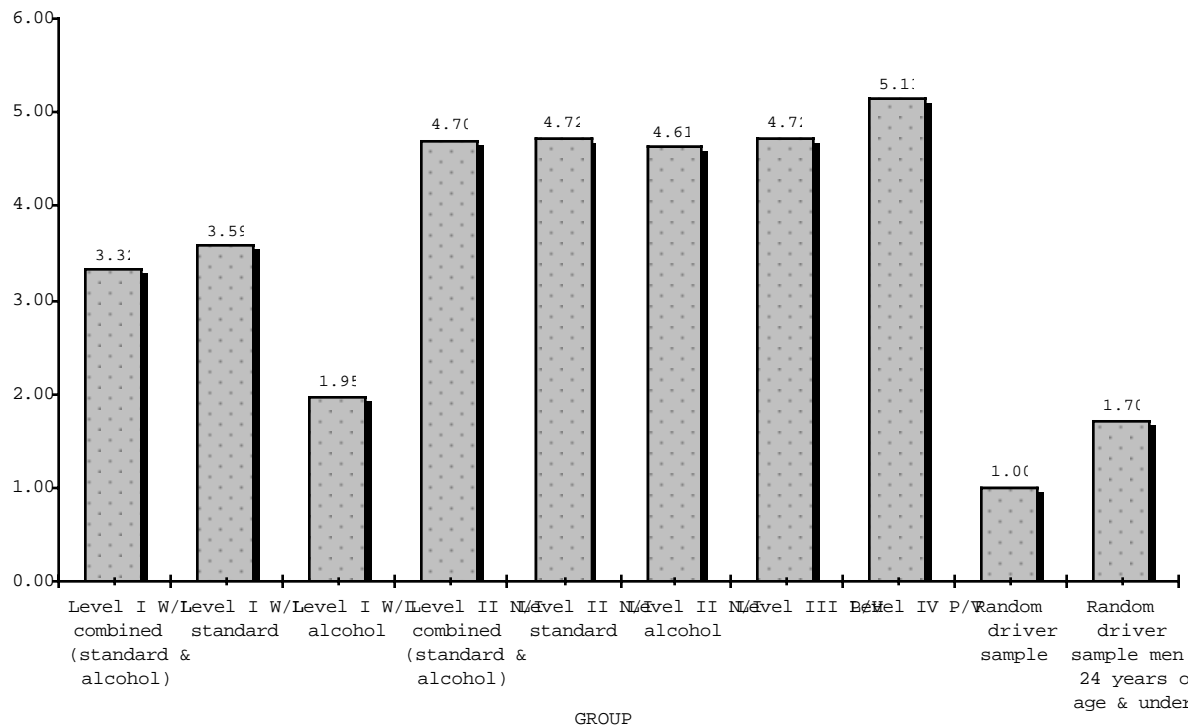


Figure 5. Relative 3-year prior total accident risk (times-as-many index) for each NOTS level and random driver sample groups.

An examination of the relative risk values in Figure 5 yields the following conclusions about the total accident risk of each NOTS intervention group in comparison to the random driver sample:

- Level I W/L combined (standard & alcohol) drivers were 3.32 times more likely to be involved in a prior accident.
- Level I W/L standard drivers were 3.59 times more likely to be involved in a prior accident.
- Level I W/L alcohol drivers were 1.95 times more likely to be involved in a prior accident.
- Level II N/I combined (standard & alcohol) drivers were 4.70 times more likely to be involved in a prior accident.
- Level II N/I standard drivers were 4.72 times more likely to be involved in a prior accident.

- Level II N/I alcohol drivers were 4.61 times more likely to be involved in a prior accident.
- Level III P/H drivers were 4.72 times more likely to be involved in a prior accident.
- Level IV P/V drivers were 5.13 times more likely to be involved in a prior accident.
- Drivers in both Level I W/L alcohol group and random driver sample men 24 years of age and younger displayed roughly similar accident risk relativities. Level I W/L alcohol drivers were 1.95 times more likely to be involved in a prior accident. Random driver sample men 24 years of age and under were 1.70 times more likely to be involved in a prior accident.

Total citations

Figure 6 illustrates for each group the prior 3-year total citations relative risk.

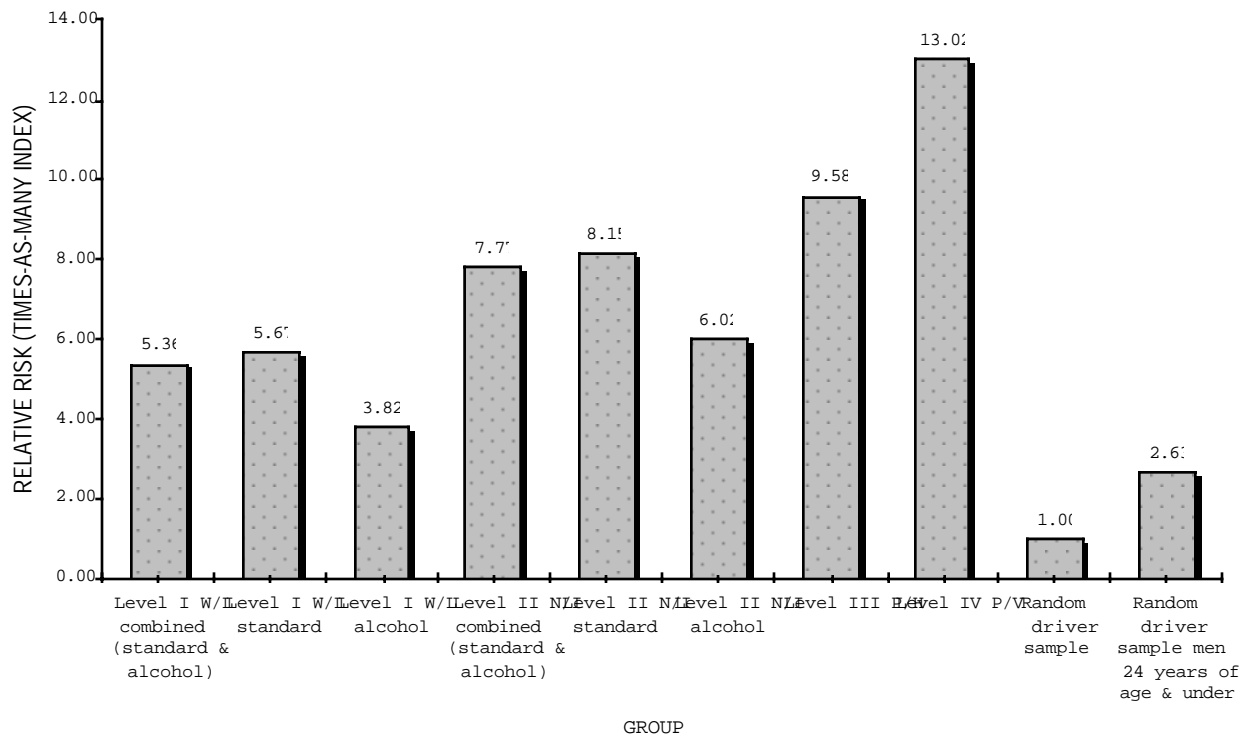


Figure 6. Relative 3-year prior total citation risk (times-as-many index) for each NOTS level and random driver sample groups.

An examination of the values in Figure 6 indicates the following about each group’s total conviction risk, relative to the risk of the random driver sample:

- Level I W/L combined (standard & alcohol) drivers had 5.36 times-as-many total citations.
- Level I W/L standard drivers had 5.67 times-as-many total citations.

- Level I W/L alcohol drivers had 3.82 times-as-many total citations.
- Level II N/I combined (standard & alcohol) drivers had 7.77 times-as-many total citations.
- Level II N/I standard drivers had 8.15 times-as-many total citations.
- Level II N/I alcohol drivers had 6.02 times-as-many total citations.
- Level III P/H drivers had 9.58 times-as-many total citations.
- Level IV P/V drivers had 13.02 times-as-many total citations.
- Random driver sample men 24 years of age and under had a relative risk index (2.63) of prior total citations that was lower than all NOTS intervention groups.

Fatal/injury accidents

Involvement in fatal/injury accidents is often considered the “bottom-line” risk measure as a result of the major human and economic costs associated with fatal/injury accidents. Additionally, fatal/injury accidents are almost always reported and, therefore, are not subject to the same non-reporting biases inherent in the reporting of property damage only accidents.

A graphical illustration of the relative 3-year prior fatal/injury accident risk for each NOTS intervention group and the random driver sample is presented in Figure 7.

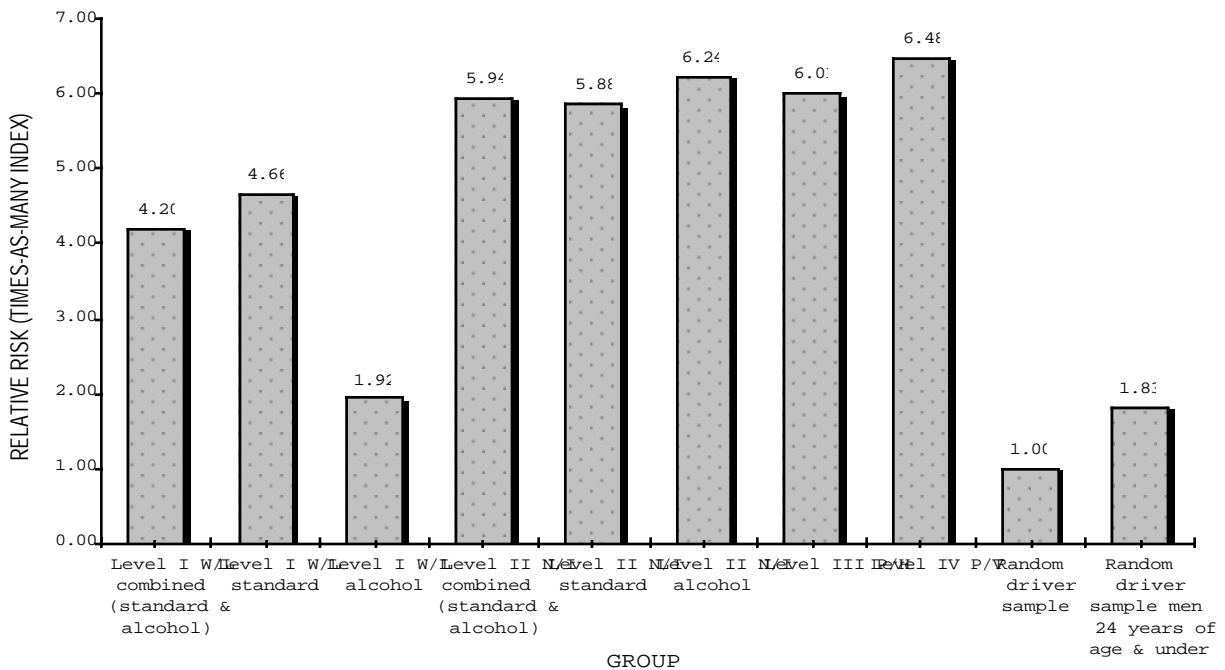


Figure 7. Relative 3-year prior fatal/injury accident risk (times-as-many index) for each NOTS level and random driver sample groups.

The relative risk measures presented in Figure 7 reflect the relative risk of being involved in a prior fatal/injury accident in comparison to the risk of a fatal/injury accident involvement among the random driver sample. One can conclude the following from the relative risk indices presented in Figure 7:

- Level I W/L combined (standard & alcohol) drivers were 4.20 times more likely to be involved in a prior fatal/injury accident.
- Level I W/L standard drivers were 4.66 times more likely to be involved in a prior fatal/injury accident.
- Level II N/I combined (standard & alcohol) drivers were 5.94 times more likely to be involved in a prior fatal/injury accident.
- Level II N/I standard drivers were 5.88 times more likely to be involved in a prior fatal/injury accident.
- Level II N/I alcohol drivers were 6.24 times more likely to be involved in a prior fatal/injury accident.
- Level III P/H drivers were 6.01 times more likely to be involved in a prior fatal/injury accident.
- Level IV P/V drivers were 6.48 times more likely to be involved in a prior fatal/injury accident.
- Drivers in both the Level I W/L alcohol group and the random driver sample men 24 years of age and under exhibit similar accident risk relativities. Level I W/L alcohol drivers were 1.92 times more likely to be involved in a prior fatal/injury accident. Random driver sample men 24 years of age and under were 1.83 times more likely to be involved in a prior fatal/injury accident.

Countable accidents

Figure 8 displays the relative risk measures of 3-year prior countable accidents for each NOTS group relative to the random driver sample.

An examination of the relative risk indices in the figure warrants the following observations:

- Level I W/L combined (standard & alcohol) drivers had 6.96 times-as-many prior countable accidents.
- Level I W/L standard drivers had 7.83 times-as-many prior countable accidents.
- Level II N/I (standard & alcohol) drivers had 10.72 times-as-many prior countable accidents.
- Level II N/I standard drivers had 10.60 times-as-many prior countable accidents.
- Level II N/I alcohol drivers had 11.27 times-as-many prior countable accidents.
- Level III P/H drivers had 11.20 times-as-many prior countable accidents.

- Level IV P/V drivers had 11.43 times-as-many prior countable accidents.
- Level I W/L alcohol drivers and the random driver sample men 24 years of age and younger had similar risks of prior countable accidents, with rates of 2.61 and 2.49, respectively.

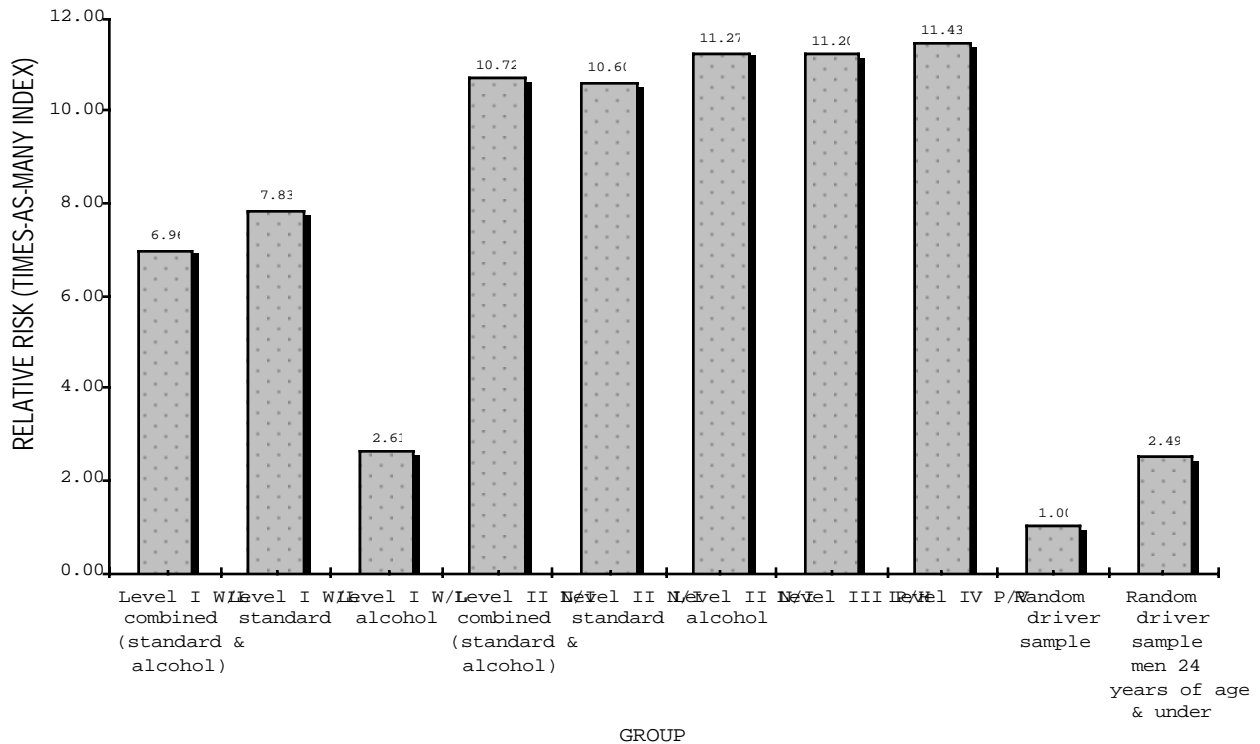


Figure 8. Relative 3-year prior countable accident risk (times-as-many index) for each NOTS level and random driver sample groups.

DISCUSSION

The findings from this study present a descriptive profile of the prior driving behavior of NOTS treated drivers and the general driving population. However, for the reasons cited earlier in this report, the results should not be extrapolated to predict future driving accident risk. In addition, it should be acknowledged that there is a relationship between the definition and characteristics of the NOTS treated groups and the analyses of prior driving behavior. That is, it is not surprising for example that Level IV drivers have the highest rate of prior accidents and prior convictions, since they were suspended or revoked as a result of accumulating accidents and convictions while under a Level III probation action. There is no inherent problem with the relationship between the nature of the NOTS treated groups and the traffic risk indices presented in this report; however, the reader should note that the findings simply represent a descriptive profile of the driving history of the NOTS treated groups.

Since 1994, when NOTES was discontinued, the department's automated *Suspension and Revocation (S&R) Report* has been the only source available to Department of Motor

Vehicles management for information about negligent operators in California. A major limitation of the S&R report is doubt about the accuracy of the information reflecting NOTS actions.

In 2003, with the approval of a California Office of Traffic Safety (OTS) grant to apply behavioral change theory to the development of an enhanced negligent operator treatment and evaluation system (ENOTES), it was incumbent upon the Research and Development Branch to update its knowledge about the characteristics of the negligent operators to be evaluated in the new ENOTES program. Because the Transtheoretical Model (TTM) of behavior change, which forms the basis of the ENOTES treatment letters, contends that all individuals traverse the same stages of behavior change in a similar pattern, ENOTES will not issue separate treatments specific to alcohol-related incidences. Therefore, this discussion will not explicitly report alcohol treatments as separate and distinct from other treatments.

NOTS Interventions

In the period covered by this study (June 1, 2000 through December 31, 2001), DMV administered approximately 484,700 NOTS interventions to qualified drivers with 68.21% (330,600) receiving the Level I letter treatment, 17.72% (85,900) being given the Level II letter intervention, 11.04% (53,500) receiving the Level III probation hearing, and 3.03% (14,700) becoming probation violators.

The observation that fewer than 32% of all drivers treated in the negligent operator program will require interventions beyond the weakest Level I warning letter treatment suggests that a stronger theory-based intervention might produce an even larger, positive effect on traffic safety. Furthermore, the proven success of an early intervention, such as the Level I treatment, implies that an even earlier intervention (e.g., at one point) consisting of an advisory letter and an informational packet also might be effective.

Prior research has demonstrated that the current Level II "Notice of Intent" (N/I) treatment letter is less effective than the Level I "Warning Letter" (W/L) with approximately 78% of those receiving the N/I letter continuing to the Levels III and IV interventions (Marsh, 1992, 1990, 1988, 1987, 1986; Marsh & Healey, 1995; Marsh & Kadell, 1985). A major goal of the current OTS grant is to develop a TTM based Level II intervention letter to significantly reduce the number of drivers moving on to more punitive forms of treatment, which include various sanctions against the driving privilege.

The NOTES evaluations cited above consistently reported that the Level III probation hearing (P/H) is very effective with negligent operators who were reticent to change their hazardous driving behaviors when given less formal interventions. Nevertheless, another goal of the current OTS grant is to conduct an evaluation of a probation-by-mail intervention to determine whether a TTM-based letter can be crafted to be as effective as the current P/H intervention. The creation of a more cost-effective method to produce results equivalent to those currently being achieved with the P/H would liberate significant resources for use in other traffic safety endeavors, including activities targeting recalcitrant Level IV drivers with seemingly intractable behavioral problems.

The findings from the present study clearly show that there is a substantive variation in risk among the NOTS treated drivers and, in addition, that all of the NOTS treated groups have accident and conviction rates that are higher than those of the general driving population. The following is a discussion of the more salient features observed in the report.

Critical Incident

The critical incident is the conviction or traffic related offense that qualifies a driver for a treatment at one of the four levels of the NOTS program. Approximately 70% of drivers who received either a Level I or Level II intervention qualified for their treatments as a result of receiving a 1-point conviction. By way of contrast, only 35% of Level III drivers and 24.02% of Level IV drivers had 1-point critical incidents. While Level IV negligent operators are subject to a wider range of critical incidents than members of the other groups and might include offenses such as non-countable, 0-point convictions and violations due to their failure to appear in court, violation of probation does not depend upon a specific point count above that required for Level III. The significance of these observations regarding critical incidents is that when viewed behaviorally, Level III and Level IV drivers are different from Level I and Level II offenders. When these critical incident data are studied more closely, they may lead to the identification of demographic and driver license predictors capable of identifying these individuals earlier in their driving careers before hazardous driving practices manifest themselves and become reinforced.

The previous section of this report detailed the impact that CVC §14601 convictions have on the percentage distributions of critical incident types by negligent operator treatment system interventions. AB 37 (1990) raised the neg-op point value for driving with a suspended or revoked license (CVC §14601) from 0 to 2 points, thereby qualifying more drivers for the Level III treatment. Marsh and Healey (1995) reported that the percentage of drivers who entered Level III with a prior CVC §14601 increased from 8.8% to 49.2% for the 12 months before and after the change. In addition, Level III probation/suspension hearing notices increased by 65% while the appearance rate at hearings dropped by 16%. Historically, there has always been a lower rate of hearing attendance and significantly smaller effect sizes by those drivers with a CVC §14601 conviction. Marsh and Healey (1995) questioned the rationale for the increase in points considering the fact that the ultimate effect of an increased point value is an actual or threatened license suspension of drivers who have already had their licenses suspended and have driven anyway. The current impact of AB 37 and the wisdom of administering suspension on currently suspended drivers cannot be addressed through this descriptive study. However, the proposed program effectiveness study of the negligent operator treatment evaluation system to be conducted over the next 2 years will address this issue and offer suggestions regarding the advantages and disadvantages of continuing to charge 2 neg-op points for CVC §14601 convictions.

Age and Gender

In some aspects, the traffic safety challenge presented by negligent operators appears to be intractable. More than 60% of all drivers subject to the NOTS program were less than 35 years of age. Approximately 50% were under 30 years of age, and the highest risk group was the 18-to-24-year-olds. Meanwhile, 12.01% of the general driving population were 65 years of age and older, but they comprised only 0.08% of Level IV

P/Vs and 0.90% of standard Level I W/Ls. In addition, although the general driving population is about half men, they dominate the four NOTS intervention levels in all age groups. This pattern is consistent with what traffic safety researchers have reported in prior research (DeYoung & Gebers, in press; Gebers, 1999; Janke, Masten, McKenzie, Gebers, & Kelsey, 2003).

Both general traffic safety appeals and new negligent operator treatments should be developed with the knowledge that methods, techniques, and messages that appeal to younger drivers, especially, can be expected to produce the largest traffic safety benefit. The data presented above and throughout this report should underscore the wisdom of beginning negligent operator interventions with younger drivers at a lower NOTS point count than is currently the practice. For example, Gebers and Peck (2003) identified a group of youthful (18 to 21 years of age) traffic offenders whose point count did not qualify them for any NOTS intervention but whose subsequent traffic accident risk exceeded that of drivers treated at NOTS levels I and II. The authors recommended that these offenders whose high-risk designation is partially attributed to youth receive a customized warning letter and informational brochure. This “treatment” could eliminate the gap between provisional license control (which ends at age 18) and standard NOTS treatments.

Relative Risk Indices

To compare rates between the respective NOTS intervention groups and the random driver sample, the following “prior 3-year experience categories” taken from Table 6 were transformed into the following measures of risk or relative risk indices: Total accidents, total citations, fatal/injury accidents, and countable accidents. In each of the categories, the random driver sample totals were used as the denominator or baseline measure in the relative risk calculations for the respective NOTS intervention groups.

By concentrating upon the four primary treatment categories, which include Level I (W/L) combined, Level II (N/I) combined, Level III, and Level IV (Figures 5 – 8), it is evident that the relative risks increase with the treatment level. However, that pattern is primarily a function of the qualifying criteria for entry into each of the four categories. Due to the “nested” nature of the NOTS program, higher levels represent more points than lower levels simply as a function of the criteria that define each level. Nevertheless, the results presented in this report have notable implications. One is that the results identify NOTS drivers as being fundamentally different from other California drivers in terms of risk for prior total accidents, citations, fatal/injury accidents, and countable accidents. This information presents a powerful argument to continue plans to enhance the NOTS/NOTES programs in a manner that is consistent with current efforts to enhance the effectiveness of treatment letters. Secondly, data presented at Levels III and IV strongly suggest a need for more innovation in the treatment approach targeting NOTS eligible drivers. One suggestion for consideration is to establish procedures under which probation failures are required to successfully negotiate a series of affirmative steps to earn full reinstatement of the driving privilege.

One caveat regarding the interpretation of this study’s results involves the Level I alcohol (W/L) category. Compared with the other groups, it might appear that alcohol involvement provides a protective effect. That would be an incorrect assumption. This illusion is simply a function of the fact that the Level I Alcohol treatment requires a

single, 2-point conviction, and any additional conviction points places the driver into a higher-level treatment. This is an anomaly unique to the Level I alcohol group.

It should be noted that while the design employed by this study permitted the examination of the relative historical risks of the NOTS treated groups, no estimate was provided as to the group's future driving risks. There are both statistical and practical reasons why the findings presented here should not be extrapolated into the future. Based on the statistical phenomenon known as regression to the mean, one would expect that the NOTS treated groups with high prior accident and conviction rates would tend to have lower subsequent accident and conviction rates, regardless of the NOTS treatments they receive. In addition, NOTS drivers may receive additional court imposed or administrative sanctions. These additional sanctions may differentially affect their subsequent driving behavior. In summary, the findings presented in the report provide an historical profile of the risk levels of NOTS treated drivers but are not to be used to predict post-treatment driving behavior.

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Appendix

Description of Variables Used in the Data Analyses

Total Accidents

Accident data presented in this report represent reported accidents only. For the time periods of the data presented in this report, California Vehicle Code (CVC) Section 16000 required the driver of every motor vehicle involved in an accident resulting in damage to property of either party in excess of \$500, or in bodily injury or death of any person, to submit a written report to the Department of Motor Vehicles. (Effective January 1, 2003, the monetary reporting requirement was raised to \$750.) Failure to file a report under the above conditions will result in suspension of the driving privilege. Accidents involving injury or fatality must also be reported to the DMV by the California Highway Patrol.

Fatal/Injury Accidents

These are accidents resulting in death or injury. A fatal accident results in the death of one or more persons within 30 days of the accident. An injury accident results in a severe wound or other visible injury to, or complaint of pain from, one or more persons.

Countable Accidents

These are accidents in which the driver is indicated by the investigating officer to have been at least partly responsible.

Total Citations

The citation count includes convictions, failures to appear in court (FTAs), and traffic violator school (TVS) dismissals in the defined time period (based on violation date). A citation that is dismissed conditional upon the offender's completion of TVS is not an actual conviction. Each citation incident is counted as only one conviction, one FTA, or one TVS dismissal, even if there are multiple violations (e.g., when a driver is cited for speeding and failing to stop for a red light on one "ticket").

Countable Citations

These are countable convictions and TVS dismissals. Countable citations are usually for safety-related violations (e.g., speeding, right-of-way, DUI, and hit-and-run).

14601 Citations

These are convictions for driving with a suspended/revoked license. AB 37 (1990) raised the neg-op point value of California Vehicle code §14601 from 0 to 2 points.

Major Citations

These are convictions for serious violations (e.g., DUI and hit-and-run).

Negligent-Operator Points

In determining neg-op points in California, one point is entered on the driving record for each moving-violation conviction (e.g., speeding, unsafe turns), except those involving "major" offenses such as driving under the influence of alcohol/drugs, reckless driving, and hit-and-run. The latter convictions count as two points each. If a violation occurs while a licensed commercial operator is driving a commercial vehicle or transporting hazardous material, then the normal point count for the conviction is multiplied by 1.5 (i.e., a 1-point conviction becomes 1.5 points, and a 2-point conviction becomes three points). An accident for which the driver is deemed at least partly responsible counts one point. As defined by CVC § 12810.5, drivers with a Class 3/C (personal auto or pickup truck) driver license are defined as neg-ops when their driver records contain four or more points in 1 year, six or more points in 2 years, or eight or more points in 3 years.

Traffic Violator School (TVS) Citation Dismissals

These are traffic citations that were dismissed contingent upon completion of a state-certified TVS program as defined in California Vehicle Code Section 42005.