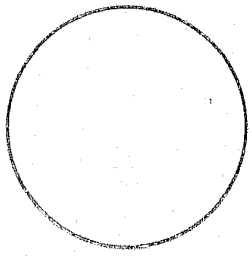

The Drunk Driving Commission

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CHAIRMAN

Honorable Frank X. Graves, Jr., Senator

Honorable Donald DiFrancesco, Senator

Honorable Walter J. Kavanaugh, Assemblyman

Honorable Frank M. Pelly, Assemblyman

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State of New Jersey

DEPARTMENT OF LAW AND PUBLIC SAFETY
COMMISSION ON DRUNK DRIVING
CN048
QUAKERBRIDGE PLAZA, BLDG. 5
TRENTON, N.J. 08625-0048

W. CARY EDWARDS
ATTORNEY GENERAL

WILLIAM T. TAYLOR
EXECUTIVE SECRETARY

September 1, 1987

The Honorable Thomas H. Kean
Governor of The State of New Jersey
State House
Trenton, New Jersey

Dear Governor Kean:

Pursuant to P.L. 1984, Joint Resolution No. 8., approved April 11, 1984, there is respectfully submitted herewith the Second Annual Report of The State Commission on Drunk Driving.

The conclusions and recommendations resulting from the work of The State Commission on Drunk Driving strive to realize the goal which all New Jersey citizens deserve - the elimination of drunk driving.

Respectfully submitted,

W. Cary Edwards

W. Cary Edwards, Chairman
State Commission on Drunk Driving

ERRATA - Page 22 - Recommendation 1.b.
Purchase of Alcohol by/for the
Underaged (N.J.S.A. 33:1-81)
Fine includes a loss of license for
six months rather than one year.

111820

State of New Jersey

DEPARTMENT OF LAW AND PUBLIC SAFETY
COMMISSION ON DRUNK DRIVING
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TRENTON, N.J. 08625-0048

W. CARY EDWARDS
ATTORNEY GENERAL

WILLIAM T. TAYLOR
EXECUTIVE SECRETARY

September 1, 1987

TO: John F. Russo, Senate President
Chuck Hardwick, Assembly Speaker
and Members of the Senate and
General Assembly of the State of
New Jersey

RE: Second Annual Report
of the State Drunk
Driving Commission

Dear Senate President, Assembly Speaker and Members of the Legislature:

The State Commission on Drunk Driving was established by P.L. 1984, Joint Resolution No. 8., approved April 11, 1984. The enabling legislation requires that the Commission report its findings and recommendations annually. Therefore, it is with great pleasure that I submit the Second Annual Report of the State Commission on Drunk Driving.

The Commission members have worked with great enthusiasm and commitment to determine how best to reduce the death and destruction on our highways caused by drunk drivers. The Commission has made recommendations that it feels will help reduce the carnage on our highways caused by those who combine drinking and driving. Long term education and prevention efforts are particularly key to our success in combating the drunk driving problem.

In submitting this report, I am pleased to point out that the number of deaths resulting from drunk driving has been reduced by 50 percent during the last five years, while deaths related to drunk driving in 1986 were the lowest in the last decade. No one agency or group can take the credit for this decrease. It is truly an accomplishment of all the citizens in the State.

In conclusion, I wish to state that this Report alerts us to the progress that we have made and the challenges that still confront us. During the next year, the Commission will continue in their efforts to end the serious problems caused by drunk driving.

Sincerely,

W. Cary Edwards

W. Cary Edwards, Chairman
State Commission on Drunk Driving

INTRODUCTION

Second Annual Report

The New Jersey State Commission on Drunk Driving was formed in February 1985. The task of the Commission, as outlined by the Legislature, is . . . "to assist in the effective implementation of the recently enacted drunk driving legislation, to review its impact on drunk driving, to review the efforts of all departments and organizations in this area, to provide a mechanism to bring together governmental officials and nongovernmental leaders in an effort to increase the public awareness of the drunk driving problem and to develop a coordinated and effective plan to deter drunk driving." As a result of this legislative mandate, the Commission hereby submits this, the Second Annual Report, to you, the Legislature.

The Commission's First Annual Report contained recommendations that addressed both problems and needed improvements and provided a review of the current drunk driving control system.

This report contains an overview of the issues raised in the First Annual Report and the accomplishments that have been made in reducing drunk driving. Although these accomplishments are significant, much remains to be implemented if drunk driving is ever to be socially unacceptable in New Jersey. The Commission will continue to work towards putting an end to one of the very serious problems in our society, drunk driving. This goal can only be attained through the cooperative efforts of all interested parties, including both the public and private sectors and through increased efforts in enforcement, education and public information programs.

SUMMARY OF RECOMMENDATIONS

Specific Deterrence

The recommendations of the Commission are presented below:

1. Legislation should be enacted to permit a pilot test of devices that provide a quick screening of blood alcohol level.
2. The Implied Consent Statute should be amended to permit police officers to request a blood sample to test for alcohol in motorists who cannot give a breath sample because of injury or the need for other medical treatment. Police should be permitted to request a urine sample if the presence of drugs is suspected.
3. Legislation should be enacted that would consider involvement in a traffic accident resulting in death or serious injury probable cause for officers to request a breath, blood or urine sample.
4. The current requirement which mandates the completion of an alcohol education course for motorists whose licenses have been suspended for refusal to submit to a breathalyzer test should be clarified by the legislature.
5. Because prompt license suspension is the major deterrent to misconduct by motorists, there should be continued monitoring of adjudications of driving while intoxicated (DWI) cases by the Administrative Office of the Courts and the Division of Motor Vehicles in order to determine if administrative suspension is necessary to insure the rapid suspension of licenses.
6. Efforts should be made to revive programs that would allow the police to transfer, to detoxification centers, those motorists arrested for DWI whose blood alcohol concentration (BAC) is at least 0.05 percent rather than unconditionally permitting such persons to be allowed to return to the roadways.
7. Legislation should be enacted to impose a license suspension upon any individual who is determined to have a BAC of 0.04 percent or more while operating a commercial motor vehicle.
8. Legislation should be enacted to impose a license suspension upon any underaged person who has a BAC of 0.04 percent or more while operating a motor vehicle.
9. An effort should be made to review 0.05 percent BAC as presumptive evidence of alcohol-impaired driving.
10. A review of the penalties imposed on third and subsequent DWI offenders should be made to determine whether amendments to current legislation are necessary.

General Deterrence

1. A massive public information campaign should be undertaken to inform the public of the penalties resulting from alcohol involved convictions. This public information effort should be a continuing course of action.
2. The adequacy of resources at the state, county and municipal levels devoted to the enforcement of the Division of Alcoholic Beverage Control's regulations prohibiting the serving of intoxicated or underage persons should be reviewed.
3. A special enforcement program should be developed to track suspended or revoked drivers to make sure they do not continue to drive during the period of suspension.

Education

1. The State Department of Education should determine the extent and nature of the implementation of the statute requiring alcohol education in all schools.
2. Alcohol education training procedures for police officers, prosecutors and judges should be developed and offered on a periodic basis.

Prevention

1. The alcoholic beverage industry should be encouraged to develop industry standards, management policies and service personnel training programs to forestall customer intoxication and possible third party liability litigation.
2. The insurance industry should consider offering liability premium reductions for those individuals or corporations who take part in alcohol education efforts.

Program Funding Support

1. A review of the Drunk Driving Enforcement Fund should be conducted by the Commission.

Community Support

1. The needs of community support groups should be reviewed to determine if financial assistance is necessary and feasible.

REPORT OF THE COMMISSION

Statistical Update

Significant reductions in the number of drunk driving incidents and fatalities have been achieved in the past five years with the enactment of tough drunk driving laws. In 1981, New Jersey experienced 322 drunk driving fatal crashes with 376 drunk driving fatalities. During 1986, drunk driving fatalities were reduced by 49.5 percent to 190 deaths in 164 drunk driving fatal crashes.

Further analysis indicates while traffic fatalities and miles travelled increased in 1986, deaths related to drunk driving were the lowest in the last decade. In 1986, 18.3 percent of all traffic fatalities were due to drunk driving, compared to 25.5 percent in 1985, 32.4 percent in 1981 and 24.8 percent in 1976. (Figure 1)

When the drinking age was lowered from 21 to 18 in 1972, fatalities involving 18-20 year old drunk drivers began a steady climb to the 1981 high of 85, which represented 23 percent of total drunk driving fatalities. (Figure 2). When the drinking age was raised to 19, and subsequently to 21, deaths decreased steadily through 1984. The 1984 fatalities involving 18-20 year old drunk drivers totaled 22, or 10 percent of the total deaths. However, fatalities in 1985 involving 18-20 year old drunk drivers increased to a total of 38, or 15 percent of the total. This total still represents a 55.3 percent reduction compared to the high of 85 in 1981. During calendar year 1986, 18-20 year old drunk driver fatalities have decreased by 7, or 18 percent.

Program Update

The most important lesson learned from the past year's effort by the Commission is the need for continued implementation of a comprehensive statewide drunk driving program.

Comprehensive programs must aim towards (a) deterring the majority of drunk drivers who are never arrested; (b) obtaining financial self-sufficiency; (c) generating citizen support to provide consensus for increased enforcement and more stringent sanctions, and (d) using education programs to change the general public attitudes on drinking and driving.

The following provides a synopsis of the achievements of each stated objective:

Deterrence

The State of New Jersey presently conducts state and county-wide sobriety checkpoint programs. The Division of State Police is responsible for conducting programs on state roadways while local police departments, representing five counties, continue their efforts on a county-wide basis. The sobriety checkpoint sites and times are determined by police command personnel based on prior analysis of accident and arrest data. Operations are usually conducted on weekend nights. Police direct traffic into a single lane, officers speak to each driver, and provide drunk driving public information materials. The checkpoint program not only serves as a law enforcement tool, but is also designed to deter the public from driving while intoxicated.

If a driver appears to have been drinking, he/she is directed to an area off the roadway for further screening. The officers may also request that the driver perform psychomotor tests, and if needed, may request a breath test.

Sobriety checkpoints have become an effective alternative to traditional DWI patrols as well as an accepted law enforcement procedure. Municipal and state police departments have been provided with additional funding to permit increased enforcement at locations where DWI related accidents occur.

Program Funding Support

Legislation signed in 1984 created a fund which dedicated monies to Alcohol Education, Rehabilitation and Enforcement Programs.

a. 75 percent or $8,250,000.00 is being used to establish county-based alcohol treatment programs.
b. 10 percent or $1,100,000.00 is earmarked for enforcement and 5 percent or $550,000.00 provides assistance to municipal courts.
c. 10 percent or $1,100,000.00 is devoted to alcohol education and prevention programs.

In total, approximately $11 million is derived annually from increased alcohol tax revenues. Furthermore, a $100 surcharge on each drunk driving conviction is deposited into a Drunk Driving Enforcement Fund. These monies are returned to the arresting agency for use in drunk driving enforcement. Approximately $3 million annually in drunk driving surcharges are devoted for enforcement activities.

Community Support

Community support has been displayed by the participation of volunteers in the S.O.B.E.R. (Slow On the Bottle, Enjoy the Road) programs and in the County Driving While Intoxicated Task Forces. The S.O.B.E.R. program is a public information community awareness program designed to increase the level of awareness on the drinking and driving problem in our counties. All twenty-one counties participate in this program, usually in conjunction with the county Council on Alcoholism. Each county promotes public information efforts, including media events, seminars, and press releases, usually during major holiday periods, regarding the use of alcohol and the penalties for drunk driving. These efforts have been very successful in bringing information to the citizens of our State and in helping to develop county drunk driving task forces.

Sixteen counties presently have on-going drunk driving task force operations. Each task force reviews the status of drunk driving programs in its county and develops short and long term programs for controlling drunk driving. Each task force has committees devoted to enforcement and adjudication, legislation, education, public information, rehabilitation and treatment, and the beverage service industry. In several counties, separate high school and college student task forces have also been formed.

The following public information activities have been implemented by these organizations in an effort to reduce drunk and impaired driving.

a. Annual participation in Drunk and Drugged Driving Awareness Week programs through proclamations, press conferences, radio and television appearances.
b. The American Red Cross, Morris County Chapter, has developed a Double ID program for taverns and package goods stores in cooperation with the Morris County driving while intoxicated program, Mothers Against Drunk Driving (MADD) and the Morris County Student Task Force. The program has been adopted by other counties and the National Red Cross.
c. The Task Forces have conducted server training programs in conjunction with

Community Support (Con't)

MADD and the New Jersey Restaurant Association.

d. Alternative social events for students, including Operation Graduation, have been established.
e. Atlantic City casinos have conducted server training for their employees, posted billboards with drunk driving messages, and developed a safety belt and anti-drunk driving program with the participation of members of the popular singing group Kool and the Gang.
f. Good host packages, developed by Middlesex County S.O.B.E.R. and Remove Intoxicated Drivers (RID) have been distributed statewide through the task forces and S.O.B.E.R, as part of a public information campaign to address the issue of the responsibilities of social hosts of parties. The package included information on non-alcoholic beverages and provided hints for hosting parties.
g. The New Jersey Federation of Women's Clubs has adopted the S.O.B.E.R. program as one of its activities. In addition, they have committed their organization to participating in the safety belt program.
h. New Jersey was the first state to adopt the Stevie Wonder "Don't Drive Drunk" program, in connection with the July Fourth holiday drunk driving programs. The Governor held a press conference to announce the start of the program. Another press conference was held to announce that every movie theater in the state would be showing the 30 second "Don't Drive Drunk" spot during the holiday period. Five million theater goers were expected to see the message.

Citizen groups continue to develop throughout the State. There are currently chapters of MADD (Mothers Against Drunk Driving) in ten counties, while RID (Remove Intoxicated Drivers) has chapters in four counties. Both groups have been instrumental in the enactment of drunk driving legislation, including the Victim Assistance legislation which established a drunken drivers victims' bill of rights. This legislation applies to the victims of drunk driving in cases which involve death or assault by auto. In addition, a second bill (A3611, Assemblyman Stuhltrager) has recently been introduced which permits the Violent Crimes Compensation Board to satisfy claims to victims injured by persons driving under the influence. The Commission supports the goals and objectives of this bill.

Education

Prevention and long term education activities are vital to the overall success of alcohol countermeasure programs. Several activities designed to increase public awareness with regard to the laws against drinking and driving have been conducted. Numerous student/parent seminars have been held throughout the State in an effort to educate parents of their role in setting standards for the behavior of their children. In addition, the Office of Highway Safety has developed and implemented alcohol education programs which help the student to develop responsible decision making skills concerning the use of alcohol, drinking and driving.

Participation in an alcohol safety education or alcohol treatment program is a mandatory condition of relicensure of all DWI offenders. The counties, in cooperation with the Division on Alcoholism, established the Intoxicated Driver Resource Centers (IDRC) in 1984. The functions of the IDRC's include evaluation, education referral to treatment and treatment monitoring. Failure to attend the program or to comply with recommended treatment results in a two day term of imprisonment in a county jail.

The Commission, in its first annual report, recommended that New Jersey must initiate and maintain an aggressive drunk driving program to further reduce the incidence of alcohol related accidents. The State Commission on Drunk Driving is the central focus for this effort.

In order to achieve this, an assessment of three DWI programs designed to reduce the number of alcohol-related fatalities and accidents was conducted. All three programs are locally administered and receive funding

Education (Con't)

from both the state and federal government. The programs which have been evaluated are of the following types:

1. Informational programs such as S.O.B.E.R. (Slow On the Bottle, Enjoy the Road) attempt to improve highway safety by means of pamphlets, public service announcements, and other consciousness-raising efforts about the dangers of drinking and driving.
2. DWI Task Forces review the status of drunk driving programs on a county level and develop short and long term programs for controlling drunk driving.
3. Enforcement programs such as the Strike Force provide overtime funding to police departments on a county-wide basis to set up roadside checkpoints to arrest drunk drivers.

The purpose of the study, which was conducted by Rutgers University under a federal grant, was to evaluate the effectiveness of the programs on a statewide and county-wide basis. The study assesses the effects of these programs in reducing fatality rates and accident rates in participating counties during 1979-1984.

A summary indicates that DWI task forces (education, prevention) and S.O.B.E.R. programs reduced single vehicle night-time accident rates by 5 percent and the strike force program (enforcement) reduced fatalities by 7 percent.

The final part of the study focused on the pattern of effects of local programs on accidents and fatalities for Bergen County. Bergen County implemented a S.O.B.E.R. program in 1982, and a DWI Task Force and Strike Force program in 1983. This program is a pilot program for other counties. A review of the results indicates that the Bergen County strike force program achieved a significant reduction in single-vehicle night-time accidents during 1983 and 1984. This report concluded that a reduction in the single-vehicle accident rate of between 14 percent to 24 percent also occurred. The S.O.B.E.R. program, along with the DWI task force program, reduced single-vehicle night-time accidents by an additional 7 percent.

The general conclusions which can be drawn from this study are that increased levels of enforcement and arrest produce substantial reductions in alcohol-related fatalities. In addition, public information campaigns must be continued in order to raise the perceived risk of arrest. Public information programs which focus on providing a general deterrence will prevent others from drinking and driving. This study will again be done to include 1985 data during the first half of 1987.

In addition to emphasizing the possibility of arrest and penalties associated with drunk driving incidents, alcohol education programs should also address seat belt usage as the best defense against drunk drivers. The Commission recognizes the benefits of safety belts and encourages all motorists to buckle up before driving.

Figure 1

New Jersey Accident Summary 1976–1986

Year	Miles Travelled (100 million)	Deaths	Death Rate	Drunk Driving Deaths	%	Drunk Driving Death Rate	Injuries	Injuries Rate	Property Damage Only Accidents	Property Damage Only Rate
1976	500.81	1,029	2.05	255	24.8	0.509	120,713	241	146,489	292
1977	508.93	1,082	2.13	279	25.8	0.548	131,533	258	158,888	312
1978	518.05	1,124	2.17	318	28.3	0.614	133,362	257	172,785	333
1979	503.97	1,142	2.27	336	29.4	0.667	132,264	262	141,798	281
1980	518.92	1,120	2.16	371	33.1	0.715	122,887	237	136.253	263
1981	513.28	1,162	2.26	376	32.4	0.733	125,300	244	136,923	267
1982	518.02	1,061	2.05	325	30.6	0.627	121,513	235	138,995	268
1983	522.18	932	1.78	266	28.5	0.509	120,589	231	132,103	253
1984	523.12	922	1.76	213	23.1	0.407	128,926	246	136,022	260
1985	543.86	964	1.77	246	25.5	0.452	136,401	250	151,976	279
1986 *(projected)	571.25*	1,039	1.82	190	18.3	0.333	135,884*	238*	150,280*	263*
Total 1976–1986	**5,742.39**	**11,577**		**3,175**			**1,409,372**	**2,699**	**1,602,512**	**3.071**
Average 11-Year 1976–1986	**522.04**	**1,052**	**2.02**	**289**	**27.3**	**0.556**	**128,125**	**245.4**	**145,683**	**279**

Figure 2

**18–20 Year Old Drunk Driver Fatalities and Victims*
v.s.
**40–42 Year Old Drunk Driver Fatalities and Victims*
18–20 Drunk Driver Fatalities ____
40–42 Drunk Driver Fatalities ------
1965 to 1989

*Includes Drunk Driver With A B.A.C. of 0.10% or Higher, Involved in a Fatality - Only

Compiled by the New Jersey Office of Highway Safety Rev. 3/3/87

POLICY AND INTERIM RECOMMENDATIONS

Policy and Interim Recommendations

Although significant progress has been made in reducing both drunk driving and drunk driving accidents, much remains to be done. In an effort to develop a comprehensive program which will address the problem of drunk driving, the Commission has created sub-committees to deal with specific areas of concern, e.g. education, rehabilitation and treatment. Those sub-committees continue to meet and receive testimony from other organizations in order to develop recommendations for review by the Commission as a whole.

A model developed by the National Highway Traffic Safety Administration (NHTSA) in this regard has been helpful in providing a framework for the work of the Commission. The Commission has employed this nationally recognized model in the consideration of all its deliberations.

The components of that model include: *specific deterrence, general deterrence, education, prevention, program funding support,* and *community support*.

Specific deterrence is comprised of activities aimed at the individual drunk driver, such as arrest, trial, license action, fines, screening, education and rehabilitation.

General deterrence requires public information efforts regarding actual enforcement activities, penalties, and the effects of alcohol on driving and raises public perception of possible apprehension.

Education is provided through formal, systematic instruction from the earliest grades through adulthood on the effects of alcohol on driving, the legal sanctions and alternatives to drinking and drinking and driving.

Prevention is achieved when the population has adequate knowledge to make informed decisions regarding drinking and driving and utilizes that knowledge. Such alternatives can include low and no alcohol beverages, changes in social patterns and entertainment, alternative transportation options and the development of attitudes that reinforce decisions not to drive while under the influence of alcohol or drugs.

Program funding support is needed to provide financial resources for specific and general deterrence through education. Such prevention and rehabilitation programs would be supported through fines, surcharges and alcohol taxes.

Community support is provided by community organization policies and individual attitudes which reinforce disapproval of drunk driving.

Thus, the Commission has organized the content of this report consistent with the NHTSA model.

Specific Deterrence

INTRODUCTION

Drunk driving arrests by local and state police have increased over the past year. Police arrested 35,200 individuals for driving while intoxicated in 1986, as compared to 33,782 in 1985. The law enforcement community continues to perform a vital role in New Jersey's efforts to combat drunk driving. (Figures 3 & 4)

The Strike Force programs were established to provide a more credible deterrent effect statewide. The checkpoints are effective for three principal reasons. First, they are extremely visible and show the driving public that enforcement has been increased. Second, because of the increased visibility, the media reports on them more frequently thereby further increasing public awareness. Third, because they are moved from site to site, the caseload from checkpoint arrests is spread among a number of municipal courts rather than being concentrated in individual courts as is the case with individual municipal DWI enforcement programs.

RECOMMENDATIONS

The first six recommendations were included in the First Annual Report of the Commission, but have not been enacted. The Commission strongly encourages the enactment of these issues.

1. Roadside breath test units have been used in many jurisdictions to ascertain immediately if a driver has a blood alcohol level which would warrant arrest. The use of these devices would also prevent the release of drivers with illegal blood alcohol levels who appear sober. The Commission recommends that legislation be enacted to permit the use of roadside breath equipment. A bill (A-1556, Assemblyman Kern) to permit a pilot test of roadside breath equipment is pending in the legislature at this time.

2. New Jersey's Implied Consent Law should be amended to include blood and urine samples. Presently, the Implied Consent Law only requires submitting to a breathalyzer test following an arrest for a drunk driving offense. Previous legislation needs to be reintroduced, which would permit the implementation of a Drug Intoxication Training Program. The Federally funded course was developed by the National Highway Traffic Safety Administration and implemented by the Los Angeles Police Department with great success. Training would be provided to New Jersey's enforcement personnel on the techniques of detecting drugged drivers. Widespread use of these techniques by police officers would contribute to reducing the demand for drugs by increasing deterrence.

3. Studies indicate that the probability and severity of accidents increase in relation to the blood alcohol concentration of the driver responsible[1]. In late-night, single-car accidents, 60-70 percent of the drivers had been drinking. Approximately 50 percent of fatal and most serious injury accidents involve alcohol as well as 18 percent of less serious injury accidents. Based on this evidence, it is recommended that the involvement in a traffic accident resulting in death or serious injury should be considered probable cause for requesting a breath test or a blood urine sample if the responding officer suspects impairment contributed to the crash. Legislation is presently pending which addresses this subject. (S-1883, Senator Graves)

4. Current penalties for refusal to submit to a breathalyzer test do not specifically include referral to the Intoxicated Driver Resource Center (IDRC), although the statute refers to completion of an alcohol course approved by the Director of Motor Vehicles. The statute should be clarified using language identical to that in N.J.S.A. 39:4-50(b). The purpose of the IDRC program, which is approved by the Director of Motor Vehicles, is to make our highways safer by identifying convicted intoxicated drivers who need either treatment for an alcohol or drug problem or education about alcohol and drugs and driving safely.

5. In order to have an effective drunk driving system, sanctions must be invoked in a swift manner. In 1982, the average time from arrest to disposition in DWI cases was 42-43 days. As a result of increased arrests, changes in penalties, and the legal challenge to the reliability of the Breathalyzer, in 1984, court backlogs developed and the average time from arrest to disposition increased to 82-83 days.

Individual courts have attempted to deal with the problem by conducting special sessions, which have proved helpful but expensive. Among the techniques employed to eliminate the backlogs and implement speedy trial procedures were, early first ap-

Specific Deterrence (Con't)

pearance and conferencing, limited continuances, and special sessions heard by Presiding Municipal Court Judges. As a result, the municipal courts have reduced the average time from arrest to conviction by almost 25 days in the past year and a half. The last sampling indicated that the time had dropped to 58 days. However, the perception that the system is not working properly remains a concern throughout the enforcement and judicial systems.

In addition, the entire municipal court system in New Jersey was reviewed by the Municipal Court Improvement Task Force, and has undergone a significant transition. As a result of its deliberations, the Task Force developed a large number of recommendations for improvement of the courts. Many of the recommendations centered around the need for better information regarding caseloads and dispositions and the need for better coordination and management of the courts.

Consideration should be given to the implementation of administrative license suspensions. At present, more than a dozen states employ an administrative suspension system. The system sets up two tracks: (a) The first is a suspension by the licensing authority for BAC at or exceeding 0.10 percent or for a driver who refuses to submit to a breathalyzer test. That driver has the right to an administrative hearing, within 15 days of arrest. (b) The second track in this process is the normal trial before a judge. Because a license has already been suspended, most defendants will plead guilty, thereby reducing trials and trial backlogs.

The Division of Motor Vehicles is concerned that such a two track system would create a duplicative system of judicial and administrative hearings in alcohol offender cases without significantly contributing to a reduction in the time from arrest to license suspension. This issue needs to be reviewed by the Division of Motor Vehicles and the Administrative Office of the Courts.

6. There remains a need to provide transportation for intoxicated individuals in a public place. The Alcohol Treatment and Rehabilitation Act of 1976 (ATRA) established procedures by which intoxicated persons would be transported, by the Service Forces, to a hospital, a treatment facility, or home. The loss of C.E.T.A. funding resulted in the termination of this program. Service Forces had removed the burden from the local police departments of transporting publicly intoxicated persons. Furthermore, they relieved the transporting and manpower expenses from local police departments. The Service Forces also enabled early intervention and referrals for problem drinkers. For the most part, they were operated by trained persons, primarily volunteers, many of whom were recovering alcoholics.

The Commission proposes that a review of potential funding sources be examined to revive the ATRA programs.

7. The United States Congress has enacted the Commercial Motor Vehicle Safety Act of 1986. The purpose of this Act is to enhance the safe operation of commercial motor vehicles on the Nation's highways by developing national uniform standards for the testing, licensing, and qualification of commercial vehicle operators, and by increasing inspections of commercial motor vehicle operators and the equipment they operate.

One provision made by the Act is that States are required to enact 0.04 BAC presumptive laws covering drivers of commercial vehicles. The Act also requires a one year suspension of the license of any operator determined to have a blood alcohol concentration of 0.04 percent or more while operating a commercial motor vehicle or who refuses to submit to a BAC test, and for the immediate revocation of the operator's license of any individual who has been twice determined to have a BAC of 0.04 percent or more while operating a commercial motor vehicle. The Commission recommends that legislation be enacted to conform with the legislation on the national level. Federal legislation requires a single license which would be suspended for any driving while intoxicated conviction.

8. The Commission also recommends that legislation be enacted to impose license suspensions on individuals under 21 years of age with a BAC of 0.04 percent or more. In 1986, the 17-20 year old age group represented 5.2 percent of the total driving population, but accounted for 14 percent of all drunk driving fatal crashes.

9. Scientific research has produced evidence showing a direct relationship between increased BAC in drivers and increasing risk of a motor vehicle crash. There is scientific consensus that alcohol causes deterioration

Specific Deterrence (Con't)

of driving skills beginning at 0.05 percent BAC or even lower, and progressively serious impairment at higher BAC's.

Since 1960, the American Medical Association (AMA) has recommended that a blood alcohol level of 0.10 percent be accepted as prima facie evidence of being under the influence. In 1985, a second study was conducted which concluded that significant alcohol involvement in injury causing road crashes begins at a driver BAC of 0.05 percent.

The Commission should review the possibility of amending N.J.S.A. 39:4-50.1 to make 0.05 percent BAC presumptive evidence of alcohol-impaired driving.

10. Currently, all third and subsequent offenders convicted of a driving while intoxicated offense must go to jail for 90-180 days or residential treatment in lieu of jail. After jail or residential treatment they must also comply with the Alcohol Countermeasure Program and the IDRC program. Third or subsequent offenders are not detained at the IDRC, but the IDRC's do have the responsibility to follow-up to ensure that these defendants complete alternative treatment programs required by the court, and that they have satisfied other IDRC program requirements before re-licensure. Additionally, a ten year license suspension is imposed on all third and subsequent offenders.

The Commission will study the possibility of relicensure of third time offenders before the ten year period is completed if they are participating in treatment and recovery programs, and are complying with the requirements of such programs. At the same time, the Commission must review strategies to remove the multiple DWI offender who has four or more DWI convictions from our roads. The possibility of additional incarceration and/or medical treatment programs will be reviewed.

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Figure 3

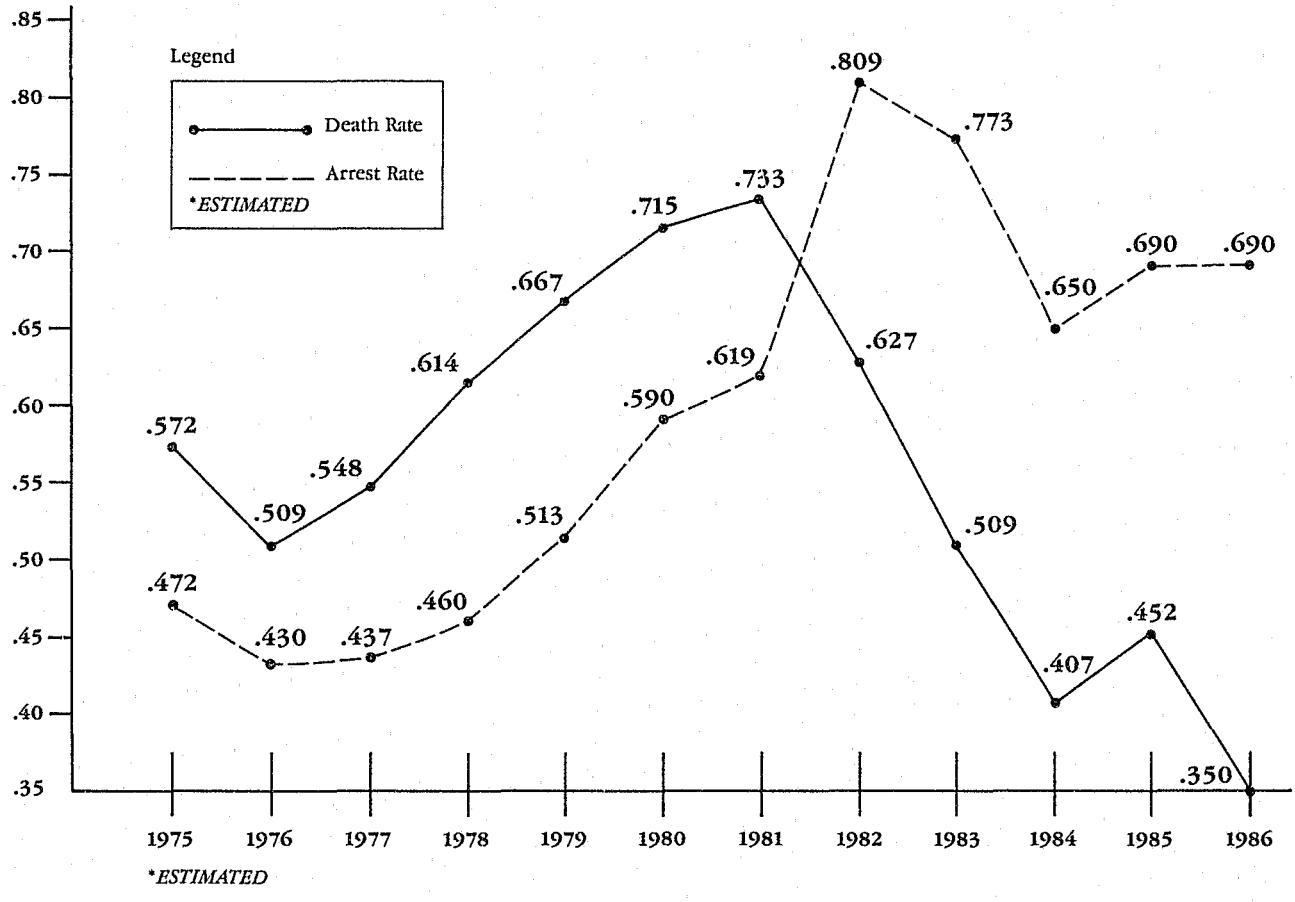
Alcohol
Arrest and Convictions
For 1967 Thru 1986

Arrest		*Convictions*	*Yearly Conviction Rate (%)*
1967 - 5,799	—	5,218	89.9%
1968 - 7,449	—	6,798	91.2%
1969 - 8,054	—	7,308	90.7%
1970 - 9,144	—	8,435	92.2%
1971 - 12,146	—	11,139	91.7%
1972 - 15,424	—	14,142	91.6%
1973 - 19,288	—	18,426	95.5%
1974 - 20,931	—	18,802	89.8%
1975 - 22,843	—	21,061	92.2%
1976 - 21,558	—	19,865	92.1%
1977 - 22,217	—	21,485	96.7%
1978 - 23,832	—	24,902	104.5%
1979 - 25,869	—	28,720	111.0%
1980 - 30,603	—	26,232	85.7%
1981 - 31,751	—	29,600	93.2%
1982 - 41,890	—	34,124	81.5%
1983 - 40,363	—	32,598	80.8%
1984 - 34,987	—	31,359	89.6%
1985 - 33,782	—	28,061	83.1%
1986 - 35,200*	—	27,752	*78.8%
Total for 20 Years 463,130		416,027	
Yearly Average 23,157		20,801 Yrly. Aver. Conv. Rate 89.8%	
*ESTIMATED			

Conviction rate was calculated as a ten year average because conviction figures for any given year are not accurate to the degree that they do not reflect the number of drunk drivers arrested and convicted during the same year (Some cases are carried over into the subsequent year). However, it is felt that multi-year arrests and multi-year conviction figures should have an accurate picture of an actual conviction rate for any given period of time.

Figure 4

Drunk Driving Death Rate v.s. Drunk Driving Arrest Rate (Per 100 Million Miles)



General Deterrence

INTRODUCTION

New Jersey's drunk driving public information campaign has been successful in informing the public about the dangers of drinking and driving. One of the reasons for its success and the impact it has upon the State is the great interest of both the electronic and print media on the subject. During the early stages of the campaign, it was unusual not to see warnings about the dangers of drunken driving in the news or hear Public Service Announcements on radio and television. The value of public service announcements continues to be an important component of our campaign. The participation of local cable stations and the state-wide Association of Cable TV Broadcasters has enabled New Jersey's public information campaign to reach a large audience. Although these activities have been successful, the public's interest in any given subject can be sustained only for a limited amount of time. As a result, the attention given to the DWI Campaign has diminished. The Commission recognizes this and realizes that short-term public information efforts alone will not solve the problem. Public information programs must be designed to include long-range efforts as well.

General Deterrence (Con't)

RECOMMENDATIONS

1. It is essential that the Commission develop a plan which will include specific short and long-range goals of the state's public information programs relative to drinking and driving. Furthermore, planning for a public information campaign must be viewed as an on-going process which will require both long term funding support and continued commitment.

In order for laws to provide a real deterrent, the driving public must have an understanding of the penalties and the increased likelihood of arrest. For instance, the New Jersey Legislature passed and the Governor signed the following pieces of legislation that have served helpful in limiting the consumption of alcoholic beverages by the underaged person:

a. Possession or Consumption of Alcohol in Public Places by the Underaged (N.J.S.A. 2C:33-15) - Any person under the legal age to purchase alcoholic beverages who knowingly possesses without legal authority or who knowingly consumes any alcoholic beverage in any school, public conveyance, public place, or place of public assembly, or motor vehicle is guilty of a disorderly persons offense and shall be fined not less than $100.
b. Purchase of Alcohol by/for the Underaged (N.J.S.A. 33:1-81) - An underaged person who purchases or attempts to purchase alcohol, or who misstates his/her age, or a person of legal age who purchases alcohol for an underaged person faces a conviction of a disorderly persons offense, which incurs a fine of not less than $100 and loss of license for 1 year. In addition, underaged persons may be required to participate in a state-sponsored alcohol education program.
c. Transfer of ID (N.J.S.A. 33:1-81.7) - Someone who is underaged and uses another person's ID card to obtain alcohol, or someone of legal age who gives his/her ID card to an underaged person so that s/he can obtain alcohol, faces a fine of up to $300 or up to 60 days in jail.
d. False ID (N.J.S.A. 2c:2102.1) - A person who knowingly sells, offers, or exposes for sale a document that simulates a driver's license or other document issued by a governmental agency and that could be used to verify a person's identity or age is guilty of a disorderly persons offense.

Information such as this must receive the widest possible distribution. The Commission, in conjunction with other state agencies, should develop a brochure to reach all audiences.

2. The adequacy of resources at the state, county and municipal levels devoted to the enforcement of Alcohol Beverage Control (A.B.C.) regulations prohibiting the serving of intoxicated or underaged persons must also be addressed. Also, there is a need to draft or amend current legislation which will impose penalties on *would be* purchasers of alcoholic beverages.

There are two courses of action against a tavern that serves an intoxicated patron. (1) A concerned citizen may contact the A.B.C. directly. The A.B.C. then brings the complaint against the licensee. Ultimately, the Director of the A.B.C. may impose a fine, suspend or revoke the licensee's license. (2) The citizen may contact the local police who then, upon the Police Chief's recommendations, submit a report to the local governing body. The governing body can sign a complaint against the licensee and hold an administrative hearing to determine whether an administrative violation has occurred.

The governing body has the power to revoke or suspend the licensee's license. Presently, the latter is the better procedure due to few A.B.C. agents and many violations. The Commission should examine the possibility of additional assistance which is needed to conduct undercover surveillance of licensees who have violated A.B.C. regulations. The Commission also suggests that training courses be developed for police to familiarize them with their powers and the relevant procedures leading to penalties and convictions.

3. There is some concern that those whose licenses have been suspended for alcohol related offenses continue to drive during the suspension period. The Office of Highway Safety is currently funding two pilot projects, one by the State Police and the other by a municipal police department, to determine the extent of driving by revoked/suspended drivers in the State.

The Commission will study the need for additional resources used for undercover surveillance.

Education

INTRODUCTION

Everyone recognizes the importance of education in the prevention of alcohol and drug abuse and the prevention of drunk driving. In many schools, there has been a total commitment on the part of administrators and staff personnel to develop and implement alcohol education curriculums. In other locations, the school and community have worked together to develop a complete program that includes prevention, intervention and treatment. Successful implementation of comprehensive alcohol and drug prevention, education and treatment programs is not easy. There are resource limitations and a reluctance in some communities to recognize that there is a problem.

In 1979, the Task Force on Juvenile Drug and Alcohol Use in New Jersey was established within the Department of Law and Public Safety to study on a statewide basis the nature and scope of drug and alcohol abuse among juveniles. In order to accomplish this, a survey instrument was developed which contained questions that would describe the extent of juvenile drug and alcohol abuse.

The first of three surveys was administered in 1980 to approximately two thousand high school sophmores, juniors and seniors throughout New Jersey. Two additional surveys were further conducted in 1983 and 1986. The data obtained from each survey was analyzed to identify the prevalence of substance abuse and student attitudes and patterns of substance use.

The following general observations were made following a review comparing the most recent survey to the surveys conducted in 1980 and 1983.

1. Alcohol remains the most abused drug in New Jersey high schools. However, overall use of alcohol has declined significantly over the past three years.
2. A dramatic change in the attitudes and perceptions of high school students regarding alcohol and drugs has been recognized.
   a. There has been a substantial increase in the number of student task forces on drinking and driving at both the high school and college level.
   b. Students who are not users of alcohol are better accepted by their peers.
3. High School students are more knowledgeable on the affects of alcohol on their bodies. This has been attributed to an improved quality of alcohol education training in the schools.

RECOMMENDATIONS

1. The Education Committee of the State Commission on Drunk Driving developed a series of recommendations last year which contained all the necessary steps in developing a comprehensive education program. In some instances, recommendations have been updated to include current information. The following steps have been recommended for implementation by the Commission:
   a. The statute requiring alcohol and drug education in secondary schools should be amended to include elementary schools so that 10 hours of alcohol and drug education each year will be provided in grades K-12. Legislation has been introduced to address this topic.
   b. A curriculum should be developed which defines the behavioral objectives appropriate to each grade level. Chemical Health Education Guidelines will be issued by the Department of Education in June, 1987.
   c. Appropriate alcohol and drug educational materials should be evaluated to determine which behavioral objectives they meet. Based on that review, a guide of recommended materials should be developed. The Department of Education will review curriculum materials available in relation to Chemical Health Education Guidelines. In addition, a Curriculum Research Guide will be published in September, 1987.
   d. Certification standards for teachers of alcohol and other drug courses should be developed. The Department of Education will be developing this for new teachers.
   e. Teacher in-service training resources should be expanded, so that standardized training can be provided to teachers in using the recommended materials.
   f. Each school should be required to send three teachers to in-service training as a condition for receiving educational material grants.
   g. Grants should be provided to acquire materials.

Education (Con't)

h. School boards should be required to adopt the Department of Education recommended guidelines for the identification and referral of students with alcohol and other drug problems as a condition of receiving grants. This has been established by regulation in October, 1986.

i. The need for student assistance counselors in the schools to provide services to those students with alcohol and other drug problems should be addressed through initial funding assistance from the State. A new certification endorsement for Substance Abuse Coordinators will be discussed by the State Board of Education at its August, 1987 meeting.

j. The Commission will assist schools and communities in developing programs which support no alcohol or drug use by students (e.g. Operation Graduation, Teen Institute, Peer Awareness Counseling, Student D.W.I. Task Forces, etc.)

k. All organizations concerned with education, prevention and intervention in alcohol and other drugs will be invited to cooperate with the Commission. The Commission applauds the development of Governor Kean's drug abuse program, "Blueprint For a Drug-Free New Jersey". This program will focus on mounting a statewide effort to combat drug abuse. The State will adopt a comprehensive approach to deal with this problem which involves education, health care services, law enforcement, community groups, and state and local business organizations.

2. Alcohol education and training for police officers, prosecutors and judges must be expanded.

Enforcement personnel presently obtain DWI training in the areas of detection, apprehension, processing and prosecution of DWI offenders. Drug recognition training may also be introduced.

Prosecutor training is conducted by the Division of Criminal Justice and is on-going.

Judicial training seminars on DWI laws have been conducted for municipal court judges. Recently completed seminars included topics on changes in court decisions, drunk driving laws, and information on alcohol and its affects including the problem of alcoholism.

For the most part, the courses being offered are funded by federal grants. An effort should be made to utilize regularly budgeted funds for this purpose.

Prevention

INTRODUCTION

There are few individuals who can deny the seriousness of the alcohol-crash problem. With the growing recognition that it is more than a traffic safety issue, attention must be placed on exploring a variety of approaches directed at impacting the problem. The Commission recognizes the need to include strategies in alcohol and traffic safety aimed at reducing the likelihood that an impaired driving situation can occur.

RECOMMENDATIONS

1. It was recommended by the Commission in the First Annual Report that the Beverage Service Industry take part in efforts targeted at reducing drunk driving. The New Jersey Restaurant Association has developed an Owner/Manager/Employee/Training Curriculum which has been used to conduct training seminars around the State. The content of the Curriculum includes training servers to identify and deal with people who have had too much to drink. Information is also provided on the legal and social responsibilities a liquor license entails. In addition, third party liability and how it pertains to the employee is also discussed.

This effort is commendable, however, the restaurant industry represents only a small proportion of services in New Jersey. Increased efforts aimed at developing industry standards, management policies and server personnel training programs for all licensees needs to be instituted.

Prevention (Con't)

2. Another recommendation made in the initial Commission Report was for the Insurance Industry to consider offering liability premium reductions to those beverage service individuals or corporations who take part in alcohol education programs or who pledge to implement alternative programs.

This recommendation needs to receive further review by the Commission for possible implementation.

An increase in the number of lawsuits filed against alcohol serving establishments by the victims of drunk drivers in the past few years has made it virtually impossible for these establishments to get liquor liability insurance. As a result, many have gone without such insurance, leaving themselves open to lawsuits.

In response to the desperate need for liquor liability insurance,the New Jersey License Beverage Association helped create the License Beverage Insurance Exchange. To date, approximately 350 liquor liability policies have been written.

Program Funding Support

INTRODUCTION

A package of legislation signed into law during 1984 provided for a significant increase in the funding earmarked for support of programs dealing with drunk driving.

The first piece of legislation increased the wholesale tax on alcohol beverages. This increase produced monies which were dedicated to Alcohol Education, Rehabilitation and Enforcement Programs. Of the funds established, 75 per cent was employed to establish county-based alcohol treatment programs throughout the State. Included in those programs were the establishment of Intoxicated Driver Resource Centers. These centers serve as the first statewide, mandatory, non-penal/evaluation facilities for those convicted of drunk driving. Individuals convicted of a first offense are required to attend the facility for two days. Those convicted for a second offense are required to spend 48 consecutive hours. While at the centers, the individuals are screened to determine the seriousness of their alcohol problems and a program of treatment or education is developed. The IDRC's have increase program attendance of offenders to nearly 80 percent. Approximately 50 percent of those screened are referred to alcohol treatment programs or self-help groups.

Legislation recommended by the Commission in their initial report was recently passed which increased the fees paid to the IDRC by persons convicted of DWI (P.L. 1986, Chapter 126). The fee for first offenders has increased from $25.00 a day to $50.00 a day. Second offenders are now required to pay a $75.00 fee. In addition, the Bureau of Alcohol Countermeasure fee was increased from $40.00 to $80.00.

The alcohol tax also devoted 10 per cent to education. The alcohol education and prevention programs are administered through the county alcoholism program.

The final 15 per cent is earmarked for enforcement and assistance to the municipal courts. The portion earmarked for enforcement is deposited into a Drunk Driving Enforcement Fund. An individual convicted of drunk driving currently pays a $100.00 surcharge to the Fund. That surcharge and a part of collected alcohol tax receipts are returned to the arresting police agency as an incentive grant to be used for increased drunk driving enforcement.

RECOMMENDATIONS

1. The Commission must study the effect of these grants on enforcement endeavors and determine whether the fund is accomplishing the desired results.

Community Support

INTRODUCTION

Ultimately, deterrence and education alone will not produce the change in social attitudes necessary to permanently decrease the incidence of drunk driving. In order to produce that change, individuals must know not only that drunk driving is unacceptable, but also that individuals have alternatives to drinking and driving. Producing this effect requires public information and education and also the personal involvement of individuals who will provide personal contact.

Community groups such as Mothers Against Drunk Driving (MADD), Remove Intoxicated Drivers (RID), and County Driving While Intoxicated Task Forces conduct their own programs, but they have also been involved in the State programs. Their activities have been critical to the passage of legislation.

RECOMMENDATIONS

1. The first drunk driving task force was begun as an ad hoc committee in Morris County. There are currently task forces operating in 16 of the State's 21 counties. If these county task forces are to obtain any long term success, they may require full-time paid support. The Commission will need to review the Task Force operations to see if this would be feasible.

Record Keeping and Evaluation

The Commission recommends the development of comprehensive record keeping systems in the areas of enforcement, adjudication, license and other sanctions, screening, referral, treatment and rehabilitation, education, alcohol involvement in traffic accidents and resultant societal costs. In the past, program evaluation has been difficult because all the necessary elements were not collected or were not in a format usable for analysis.

The data collected in these areas should provide the basis for evaluation of the impact of the various programs. The Commission will conduct such long-term impact studies related to the following areas:

a. The relative effectiveness of license suspension and other penalties.
b. The economic impact of license suspension on the convicted drunk driver.
c. The effectiveness of the IDRC and BAC programs in preventing repeat drunk driving.
d. The adequacy and effectiveness of alcohol education in the schools.
e. Strategies for increasing intervention and prevention techniques.

CONCLUSION

A *Special* Note

The Commission is most appreciative of the interest and commitment shown by the individuals and agencies in the enforcement, education and treatment and rehabilitation organizations who have helped to reduce drunk driving. We also recognize contributions of the drunk driving task forces and citizen action groups who have supported efforts at the local, state and national level. The sustained support of the media and the efforts made by the beverage service industry are also acknowledged. The Commission encourages the continued involvement of all those organizations and individuals who have helped to date.

Because of the work done to date, this report contains encouraging information, but in the final analysis serves notice that the drunk driving campaign is far from over and that the problem of drunken driving has not been eliminated. The laws that have made a difference in saving lives are in place, however, the most difficult need remains unfulfilled, that is to change behavior patterns and societal attitudes. During the next year, the commission will strive to accomplish that end by developing a statewide public information, education and enforcement program.

Appendix A

AN ASSESSMENT OF DWI PROGRAMS IN NEW JERSEY

Rutgers University

David Levy
Peter Asch
Dennis Shea

February 1987

A report prepared for the National Highway Traffic Safety Administration and the New Jersey Office of Highway Safety.

Introduction

New Jersey, like many other states in recent years, has attempted to reduce the number of alcohol-related fatalities and accidents on its roads through a variety of programs (see Wagenaar (1983)). These programs are locally administered with supervision and funding from the state and federal government.

In New Jersey, the programs implemented have been of two types:

(1) informational programs such as S.O.B.E.R. and DWI Task Force[1] which attempt to improve highway safety by means of pamphlets, public service announcements, seminars for students and other consciousness-raising efforts about the dangers of drinking and driving;

(2) preventive and punitive programs such as the Strike Force (STFRC), which provides overtime funding to police departments on a county-wide basis to set up roadside checkpoints to stop vehicles.

Table 1 shows the effective date for each program by county. The SOBER programs have been in effect for the longest period of time and most counties have implemented such a program. The DWI/TF and Strike Force Programs are more recent and have not been as widely implemented.

The purpose of this study is to evaluate the effectiveness of these programs and more generally to provide a methodology for evaluating local programs which vary across counties within a given state. The study assesses

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[1] S.O.B.E.R. stands for "Stay Off the Bottle, Enjoy the Road'. DWI is the acronym for "Driving While Intoxicated". In this study the Task Force program is abbreviated as DWITF.

Table 1

PROGRAM START DATES

	S.O.B.E.R	DWI/TF	STRIKE FORCE
ATLANTIC	10/82	10/85	
BERGEN	10/82	1/83	5/83
BURLINGTON	10/84		
CAMDEN	10/82		
CAPE MAY	10/84	1/85	
CUMBERLAND	10/82	9/16/84	
ESSEX	10/82	2/86	
GLOUCESTER	10/82		
HUDSON		5/86	5/85
HUNTERDON	10/81	3/86	
MERCER	10/82	3/84	8/84
MIDDLESEX	10/83	6/84	11/84
MONMOUTH	10/80	1/83	5/84
MORRIS	10/80	5/82	8/84
OCEAN	10/81	1/86	
PASSAIC	10/84	1/83	3/84
SALEM	10/83		
SOMERSET	10/84	5/85	
SUSSEX	10/82	8/83	
UNION	10/82	1/85	
WARREN	10/84	1/85	

the effects of these programs in reducing fatality rates and accident rates in participating New Jersey counties during 1979-1984. We examine trends in the county data using various population-based measures of fatality and accident rates, other county characteristics and program variables.

The study consists of three parts. The first part uses cross-sectional data on a year-by-year basis to explain fatalities or accidents at a point in time across counties. The second part employs a covariance model to examine the initial and delayed effects of the programs. Finally, using a more sophisticated form of time-series analysis, intervention analysis, we examine monthly data for Bergen County, one of the counties which actively participated in the three major programs.

The measurement of accidents and fatalities raises a number of issues. In our analysis, we have considered the following measures, employed as dependent variables in the regression equations reported below:

(1) "Alcohol-related" fatalities per capita--ARFAT

(2) "Alcohol-related" accidents per capita--ARCRASH

(3) Single-vehicle-nighttime fatalities per capita--SVPMFAT

(4) Single-vehicle-nighttime accidents per capita--SVPMACC

An "alcohol-related" accident or fatality is defined by the reporting police officer, and represents a subjective judgment by that officer. It does not imply that any test of blood alcohol content has been administered. The problems inherent in such measures are well known, and their use has been subject to criticism (see, for example, Levy et al. (1978)).

The second type of dependent variable is the "single-vehicle-nighttime" measure, an oft-used surrogate for alcohol-involved fatalities and accidents (see, e.g., Wagenaar (1983), Levy et al. (1978)). Nighttime is defined as the time

between 6 P.M. and 5:59 A.M. The major virtue of this type of measure is its objectivity--there is virtually no judgment involved in classifying a single-vehicle-nighttime event. The drawback of such measures lies in their broadness. Although a preponderance of single-vehicle-nighttime accidents and fatalities is believed to be alcohol related, the category includes some events that have nothing to do with alcohol consumption.

On balance, we believe that the objectivity of the single-vehicle-nighttime measures makes them preferable. Additionally, they have been widely employed in the empirical literature on alcohol-traffic safety relationships, and their use, although subject to known limitations, is relatively noncontroversial. For these reasons, the findings we report below utilize mostly single-vehicle-nighttime fatality and accident rates.

I. Cross-section Analysis

The first empirical approach postulates that fatalities or accidents within a county are a function of population and county characteristics, and DWI programs, i.e.,

$$FR_n = b_0 + \sum_{i=1}^{m} b_{1,i}X_{in} + \sum_{j=1}^{k} b_{2,j}P_{j,n} + e_n$$

where n designates the county, i stands for the i^{th} demographic variable, j for the j^{th} program, FR for the fatality or accident rate, X for the demographic variables or county characteristics of interest, and P for the DWI program. This method attempts to control for cross-county differences and thus to isolate the effect of programs on per-capita fatalities or accidents. The dependent fatality and accident rate variables have been discussed above. The independent variables we employ are those commonly identified in the traffic-safety literature as important determinants of alcohol involved accidents. They include population

density (POPDENS), county population as reported in the 1980 Census divided by county square miles; age distribution (AGE), the median age of county residents in 1980; mean income (MEANINC), the average income of county households in 1980; sex distribution (SEX), the ratio of males per 100 females in the county in 1980; per capita sales in drinking and eating establishments (SALESCAP), the nominal dollar sales of licensed restaurants, liquor stores, etc. in the county in 1983;[2] and, where fatalities were used, hospital density (HOSPDENS), the number of hospitals in the county in 1980 divided by county square miles.

We expect that the sign on the first three variables -- POPDENS, AGE, and MEANINC-- will be negative (i.e., higher values will imply lower accident and fatality rates). The reasoning is that rural, young, poor populations tend to drink and drive more frequently. The signs on the variables SEX and SALESCAP should be positive: females are known to drink and drive less than males; higher sales of alcoholic beverages may imply a higher incidence of drunk driving, thus higher fatality and accident rates. Proximity to medical facilities should increase the probability of survival for a given accident experience; thus we anticipate that the HOSPDENS measure will exert a negative effect on fatalities.[3]

Other county variables employed in some equations but dropped because they were not significant include dummy variables indicating counties that border on New York, Pennsylvania, or Delaware; the percentage of county residents who

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[2]This measure has been used in other studies as a substitute for actual sales of liquor stores and drinking establishments (bars, gin joints, speakeasies, etc.) which is available only for counties with over 500 establishments. In New Jersey, this data is unavailable for Salem County. Equations were run without Salem County using the actual sales of liquor in the other counties. The results differed very little from those reported below.

[3]As noted above, we expect the HOSPDENS variable to affect fatality, but not accident, rates.

are black or Hispanic; the percentage of residents below the poverty level; the percentage of residents who drive to work; the median education level of residents over age 25; and the number of alcohol outlets per capita.

The DWI programs were introduced into the equations in the form of dummy variables, where:

P_{jn} = 1 if the n^{th} county participated in the j^{th} program in the year examined;

= 0 if the county did not participate.

Summary of Findings

Equations were estimated separately for each of the years 1979-1984 using the various dependent and independent variables and including the program dummy variables singly, in pairs, and all together. The equations were estimated in both logarithmic and linear form and were checked (using a Glejser test) for heteroscedasticity. Table 2 summarizes the results for the two years--1983 and 1984--during which most of the programs were in effect. This table shows the results for the linear model using one of the "alcohol-related" variables and for the log model using one of the "single vehicle nighttime" variables.

The signs on the demographic variables are generally as expected (the sign on SALESCAP, per-capita sales in drinking and eating establishments, was "incorrect" in the single-vehicle-nighttime accident (SVPMACC) equations but the coefficients were not statistically significant). Counties displaying low income, rural, young, heavily male populations with high per capita sales in drinking and eating establishments, had generally higher rates of fatalities and accidents. The program variables were not significant in any equation estimated, and occasionally showed positive effects, contrary to expectations. Similar results were obtained using log and linear forms of the model and using different measures of fatality rates.

Table 2

Dependent Variables	1983		1984	
	Alcohol-related CRASHES	Single-vehicle PMACC	Alcohol-related CRASHES	Single-vehicle PMACC
Independent Variables				
MEANINC	-5.29E-08** (1.74)	-6.23E-07 (.03)	-4.16E-08 (-1.20)	-3.37E-07 (- .01)
POPDENS	-8.91E-08* (2.70)	-.000089* (-4.45)	-8.45E-08* (-2.23)	-.000092* (-3.54)
SALESCAP	.0012* (2.40)	-.23 (.68)	.0013* (2.10)	-.22 .52)
AGE	-.000011 (-.22)	.019 (-.48)	-.000047 (-.67)	.034 (.69)
SEX	.000031 (1.03)	.019 (.63)	.000059 (.13)	.026 (.84)
SOBER	.00019 (1.05)	-.037 (-.31)	.000083 (.40)	-.0061 (-.04)
DWITF	-.00010 (.45)	-.079 (-.56)	-.00028 (-1.03)	-.12 (-.63)
STFRC			.00018 (.36)	-.16 (-.47)
Constant	-.00049 (-.11)	-7.66* (-2.82)	.0027 (.54)	-8.78* (-2.53)
Adjusted R^2	.61	.58	.46	.51
Degrees of Freedom	13	13	12	12

(t-stats in parentheses)

* indicates significance at 5% level (one-tailed test)
** indicates significance at 10% level (one-tailed test)

These results, however, are not entirely surprising. The dummy variables do not reflect the "strength" or "magnitude" of the county DWI programs. Thus, if one county actively participates, while another does so casually, both are included as implicitly equal participants.

Similarly, some townships and counties were developing independent programs of their own. Thus, a county could be actively involved in combatting DWI, yet not show up as a participant in the dummy variables. In addition, the point-in-time regressions cannot reflect the trend of fatalities and crashes within counties. A county might succeed in slowing the growth of accidents through the use of DWI programs over a period of years, but this type of "success" might not be apparent in the cross-sectional equations.

Finally, efforts to measure program effects more precisely were inhibited by limited degrees of freedom in the cross-section analysis.

II. Pooled Cross-section Time-series Analysis

Given the lack of success in attempting to isolate the program effects using a cross sectional analysis, alternative methods were considered that would examine changes over time across the different counties. One method, used by Williams et al. (1983)) to examine the effects of changes in the minimum legal drinking age, was to estimate the change in fatalities after the new program was implemented relative to a control county in which the program was not implemented during the same period. However, we felt that there was an absence of adequate control counties and lack of observations to conduct meaningful statistical tests. A preferable alternative was a covariance model that combines county data for different years.

The model was estimated for the 21 New Jersey counties for the years, 1979-1984, and is of the form:

$$FR_{i,t} = b_0 + b_1 FR_{i,t-1} + \sum_{j=1} b_{2,j} P_j + \sum_{i=1} b_{3,i} C_i + \sum_{k=1} b_{4,k} T_k$$

where P_j: a set of program dummy variables

= 0 if the county did not have program j at time t
= 1 if the county did have program j at time t

C_i: a set of county dummy variables

= 1 for the i^{th} county
= 0 otherwise

T_k: a set of time dummy variables

= 1 for the k^{th} year
= 0 otherwise

$FR_{i,t}$ is a measure of the fatality or accident rate in county i and year t. The lagged rate, $FR_{i,t-1}$, is included as an explanatory variable in order to allow for the possibility of incomplete adjustment to past events. In this model, the county dummy variables are included to account for factors specific to the individual counties (factors which do not change or change slowly over time), such as the demographic variables discussed above; differences in enforcement efforts (other than the programs investigated); and any other county-specific idiosyncrasies. The time dummy variables are included to account for factors specific to each year (i.e., factors that are common to all counties, but change over time), such as the change in the State's legal drinking age, and enforcement efforts (other than the DWI programs).

The program variables should reflect the impact of each of the different DWI programs after controlling for the various factors noted above. In the years in which the programs were implemented, each program variable is defined

as m/12, where m is the number of months in which the particular program was in effect. The dependent and lagged dependent variables used in this model were the logarithm of "single-vehicle-nighttime" accidents or fatalities per capita. Equations also were estimated in linear form and yielded similar results.

Results. Because of the problems in the alcohol-related measures of fatalities and accidents (see above), single-vehicle-nighttime measures are used instead and are transformed into logarithmic form. The results for both the single-vehicle-nighttime accident and single-vehicle-nighttime fatality rate are shown in Table 3. The county and time dummy variables are not reported in these equations or in the equations below (these were statisticially significant at the 0.05 level in most cases, but are not our primary interest). Except for SOBER, the program variable coefficients are all negative, indicating that the programs reduce accidents and fatalities. However, the coefficients differ significantly from zero (at the 0.05 level) only for the DWITF and STRFC variables in the accident equation. Closer inspection revealed that a basic assumption of the statistical model was violated; the errors were heteroscedastic (i.e. nonuniform in size across observations). This problem is not unexpected because sizable disparities in population sizes exist across counties.

To deal with the heteroscedasticity problem, the equations were estimated using a correction suggested by Cook and Tauchen (1983). This estimation technique takes into account the presence of uneven populations. The results are reported in Table 4. Equations 1 and 2 correspond to the equations above. The DWITC and STRFC coefficients in the accident are now significant at the 0.05 levels; and the STFRC variable becomes almost significant in the fatality-rate equation.

Table 3

COVARIANCE MODEL
(County and time dummy variables not reported)
(Dependent variable in log form)

Equation	1	2
Variable	SVPM ACC	SVPM FAT
Lagged dep. var.	-11.40 (0.56)	-3362.14 (-2.54)***
SOBER	-0.01 (-0.34)	0.24 (1.52)*
DWITF	-0.048 (-1.57)*	0.013 (0.09)
STFRC	-0.096 (-1.88)**	-0.091 (-0.37)
R^2	0.98	0.73
DF	76	76

(t-stats in parentheses)

* indicates significance at 0.10 level (one-tailed test).
** indicates significance at 0.05 level (one-tailed test).
*** indicates significance at 0.01 level (one-tailed test).

Table 4

COVARIANCE MODEL WITH HETEROSCEDASTICITY CORRECTION
(log form - time and county dummy variables not reported)

Equation	1	2	3	4	5	6
Variable	SVPM ACC	SVPM FAT	SVPM ACC	SVPM FAT	SVPM ACC	SVPM FAT
LAGGED dep. var.	5.86	-3616.9**				
	(0.27)	(-2.29)				
SOBER	-0.015	-0.055	-0.015	-0.0004	-0.03	0.25
	(-0.79)	(-0.55)	(-0.84)	(-0.005)	(-1.17)	(1.81)
DWITF	-0.049**	0.046	-0.049**	0.082	-0.086**	-0.13
	(-2.00)	(0.36)	(-2.04)	(0.62)	(-2.32)	(-0.67)
Strike Force	-0.072**	-0.15	-0.073**	-0.20	-0.058	-0.052
	(-2.07)	(-1.27)	(-2.14)	(-1.02)	(-1.23)	(-0.20)
1st year SOBER					0.005	-0.30
					(0.30)	(-2.92)
1st year DWITF					0.031	0.2
					(1.23)	(0.89)
1st year Strike Force					0.026	0.094
					(1.02)	(0.62)
DF	76	76	77	77	74	74
R^2	.98	.78	.98	.78	.98	.80

Because the coefficient on the lagged dependent variable implied almost complete adjustment and was insignificant in the accident equation, the equations were reestimated without this variable. The results, in equations 3 and 4, are similar, although the effect of STRFC in the fatality equation (4) becomes less significant (its coefficient, however, is of higher magnitude than in equation 2).

A subject of interest is the pattern of influence of the programs on the fatality and accident rates. One possibility is that the programs would have a significant impact in their first year of operation, but then show declining effects over time. Alternatively, it is possible that the main impact of the program occurs only after a "start-up" period and a realization by drivers of the new efforts at DWI enforcement. An attempt was made to examine whether the effects in the first year in which the programs were implemented differ from those in later years. For measurement purposes, the first year of a program is considered to be the first year in which the program was in effect for more than six months. The results including these impact variables are reported in equations 6 and 7 in Table 4. The results for the regular program variables are not much affected, while the results for the first year impact variables display various signs, but are in all cases insignificant. This is not surprising given the high degree of collinearity among the variables.

In summary, the results show that the DWITF and the STFRC programs had a significant negative effect on single-vehicle-nighttime accidents across New Jersey counties. This remains true in each of the equations that were estimated. The results indicate that DWI task force reduced single vehicle night-time accident rates by about 5% and the strike force program reduced fatalites by about 7%. The SOBER program appears to have had insignificant effects on accidents and fatalities, but some of the effect attributed to the DWI task force

programs may be due to the SOBER program, since in many counties the two programs were introduced at virtually the same time. While the results indicate that the strike force program reduced single-vehicle night-time fatalities by 15-20%, the coefficients were not quite significant at the 0.10 level.

Generally, the results reveal that some programs had some significant effect in reducing accident rates. The exact pattern of influence remains problematic, however. For instance, the lack of significance of the STFRC program may be due to the fact that only Bergen County utilized this method for more than nine months prior to 1985. The paucity of cross-section data relevant to this program implies the need for a more focused, disaggregated study to reveal its effects. Furthermore, a model of one county which employed all three programs might better reveal the patterns and relationships between the programs and fatality and accident rates.

III. Time-series Analysis of Bergen County

The final part of this study focuses on the pattern of effects of local programs on accidents and fatalities for Bergen County. Bergen County implemented a SOBER program in October 1982, a DWI Task Force program in January 1983, and a Strike Force program in May 1983. The dependent variable in this analysis is a series of monthly observations. This series is likely to be influenced by trends from the DWI programs and other factors. To incorporate these trends, the analysis below follows the procedure outlined by Box and Tiao (1975) for analyzing interventions in a time-series quasi-experiment.

The methodology separates the effects of the interventions, i.e., the DWI programs, from other trends in the series, including seasonal patterns. Corrections are also made for autocorrelation in the series (which violates the

standard assumption of independence in the standard model). The general form of the model is spelled out in Appendix A. The estimation procedure consists of three steps:

(1) Identification of a parsimonious Autoregressive Integrated Moving Average (ARIMA) model for the dependent variable and the form of the relationship between the dependent and the intervention variable(s).

(2) Estimation of the parameters of the model by means of iterated nonlinear least squares by Marquardt's method.

(3) Diagnostic checking of the model and the residuals with respect to its parsimony, ability to account for the pattern of the original data, and white noise properties of the error term.

If the model is subsequently found inadequate by the diagnostic check, a new form is specified and estimated until a satisfactory model is found[4].

Figures 1a and 1b show the plot of raw data for SVPMACC and SVPMFAT. In identifying the model for Bergen County it was found that the SVPMFAT variable was mostly a white noise process, that is, the data showed no

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[4]In specifying an ARIMA model within the intervention model care must be taken since the interruption of the time series by the intervention may distort the autocorrelation function (acf) and partial autocorrelation function (pacf) which are used to identify the ARIMA model. This case proved to be no exception. The acf of SVPMACC for the entire time period shows all the usual features of a nonstationary series, and also appears to be autoregressive and seasonal. However, a look at the raw data reveals that the nonstationarity could be an effect of the intervention. After May 1983 only one month of the next twenty has an accident rate above the period mean. Similarly, 23 out of 24 months after January 1983 and 25 out of 27 months after October 1982 have accident rates below the mean. One method to deal with this problem is to first specify a tentative form of the intervention model, then to specify the ARIMA model using the preintervention data and/or the residuals from the estimation of the model including the intervention. It is not required that the tentative intervention model be correct a priori. Analyzing the residuals after estimating the complete model should reveal any inadequacies.

FIGURE 1a

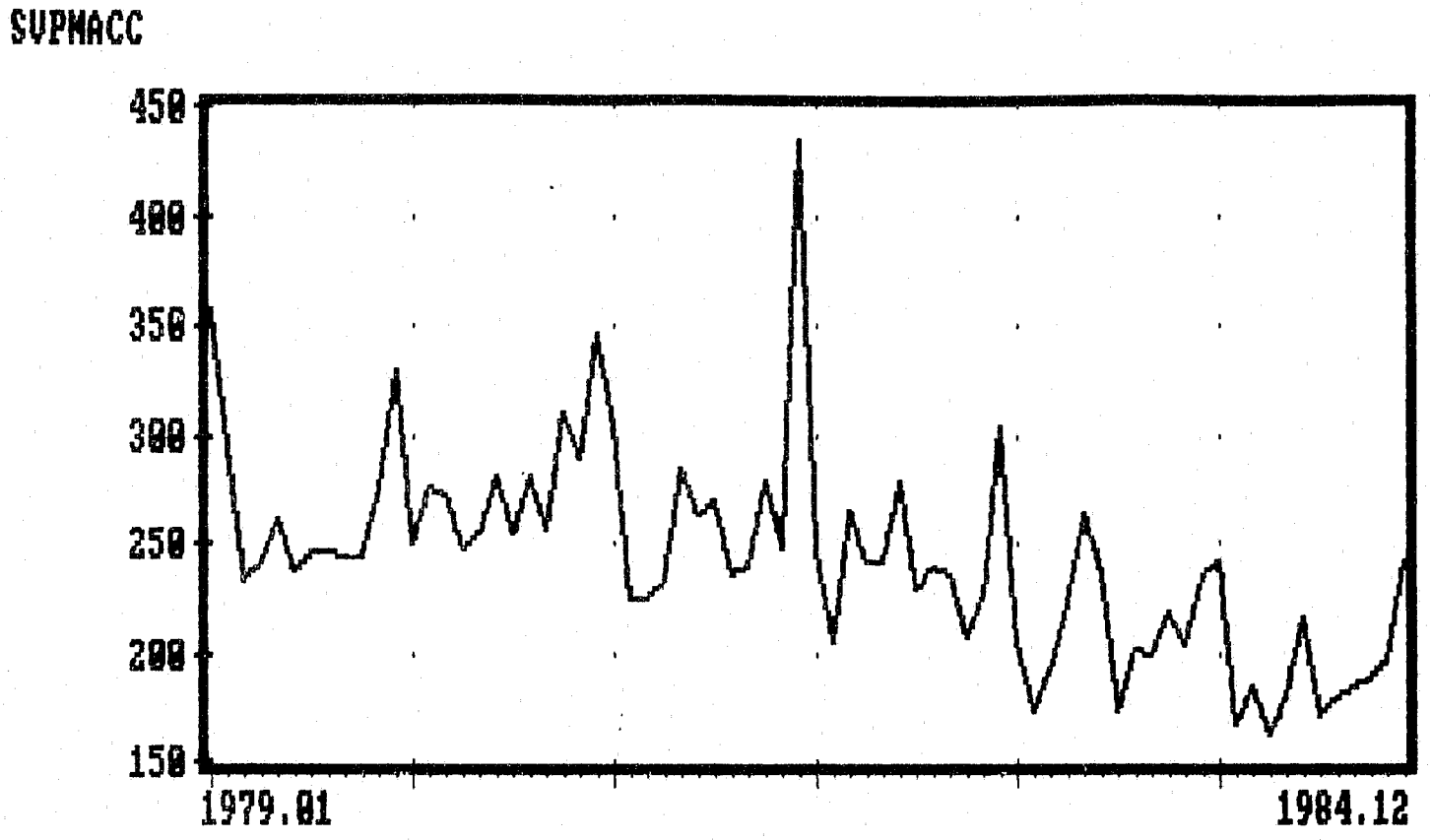
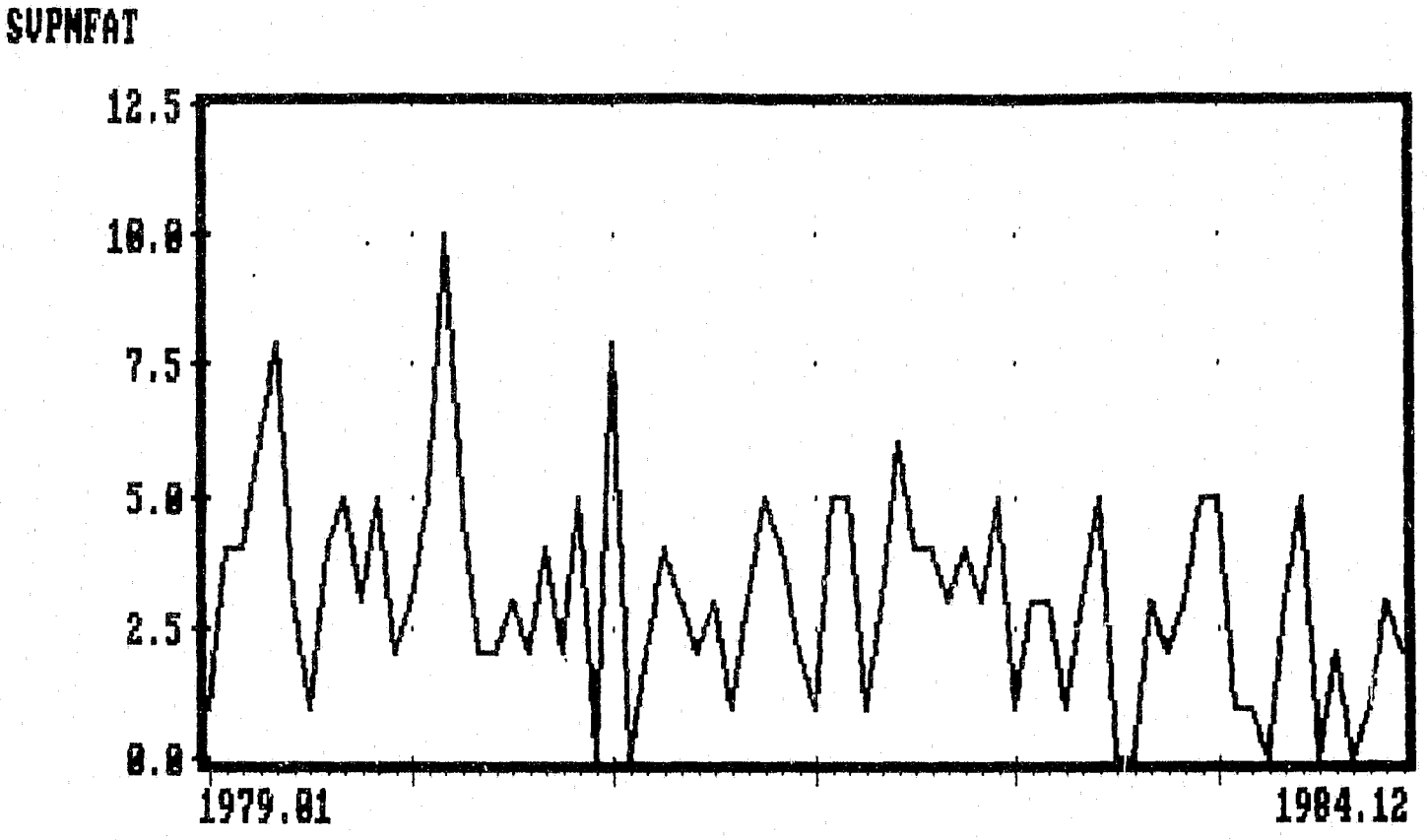


FIGURE 1b



systematic pattern, so that the model was estimated only for the effects of the programs on SVPMACC.

There are several standard forms for the shape of the intervention effect. One candidate is the simple abrupt effect model which implies that the effect is instantaneous and stays constant over time. Another is the temporary effect model, which implies an instantaneous effect which gradually tapers off. Finally, there is the "gradual start, permanent duration" model. This can be written in the form:

$$Y_t = \left\{ \frac{wB}{1-vB} \right\} S_{t-m}$$

A graph of this response and other typical responses, is shown in Figures 2a, 2b and 2c for hypothetical cases. There are two reasons why the last model seems a reasonable representation. First, the raw data on SVPMACC show a larger deviation from the mean in 1984 than in 1983, indicating a smaller initial program effect. Second, as noted above, there appears to be some delay in the effect of the educational programs.

In estimating the model, we attempt to examine whether estimated effects may in fact be due to some other factors that occur simultaneously. This determination is approached by employing a control county that has not adopted the program over the relevant time period (see e.g., Wagenaar (1983)). After estimating an ARIMA model for the control county, the intervention effect for Bergen county is inserted into the control county equations to check whether the same model explains accident and fatality experience in counties that do not adopt the program.

FIGURE 2a

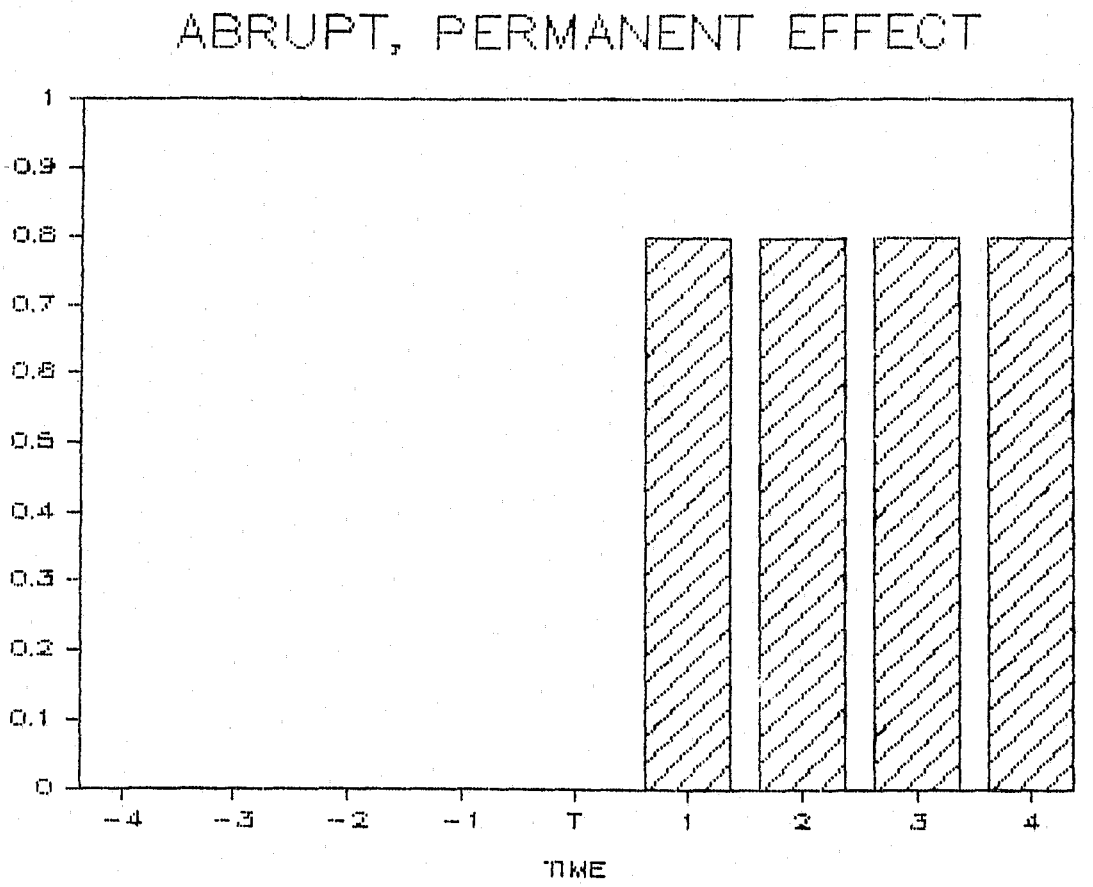

ABRUPT, PERMANENT EFFECT
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-4
-3
-2
-1
T
1
2
3
4
TIME

FIGURE 2b

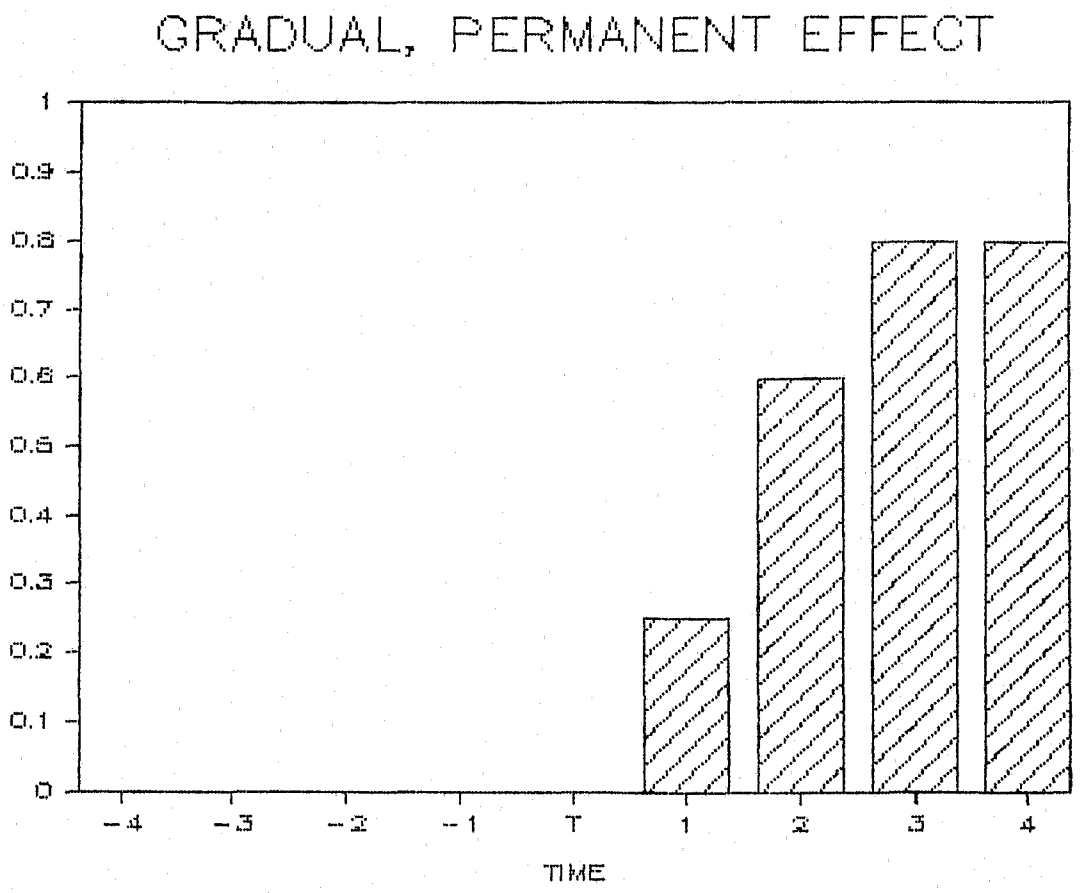
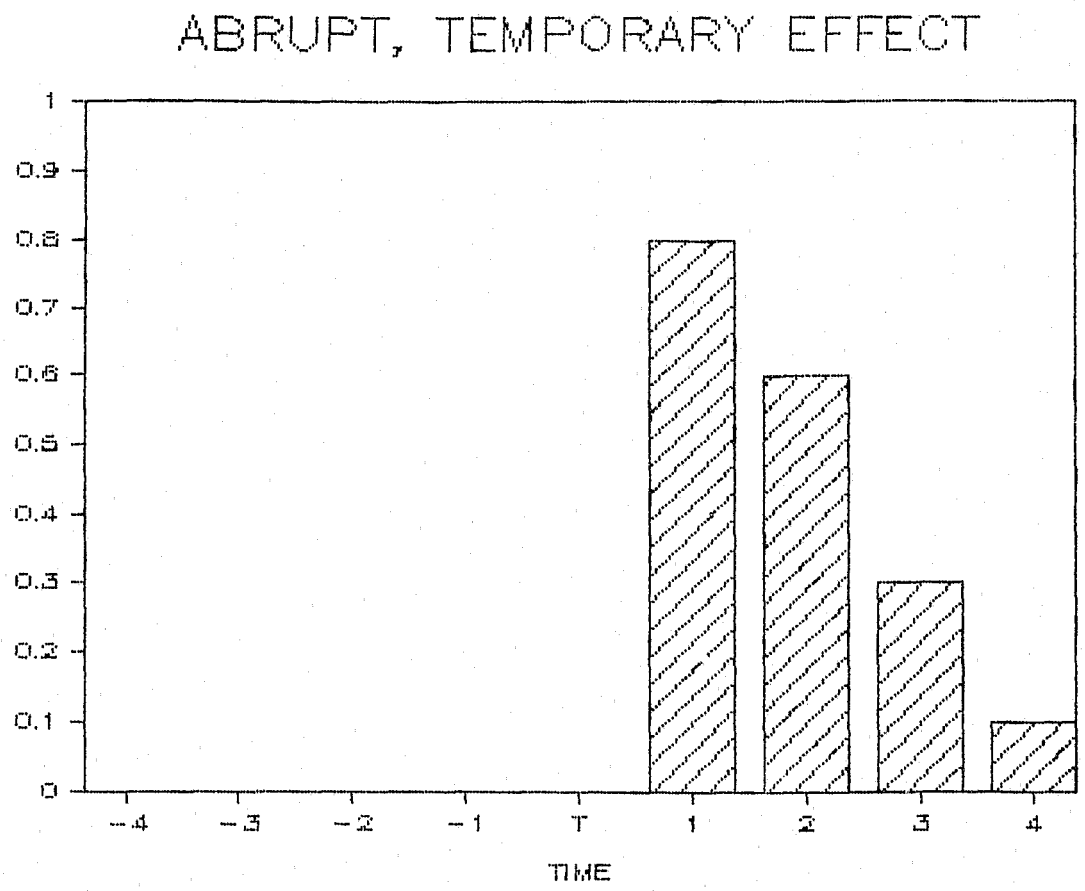

GRADUAL, PERMANENT EFFECT
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-4
-3
-2
-1
T
1
2
3
4
TIME

FIGURE 2c


ABRUPT, TEMPORARY EFFECT
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-4
-3
-2
-1
T
1
2
3
4
TIME

Results. For reasons of parsimony, the models were first estimated with the length of delay in the intervention impact equal to one. This estimation revealed that the initial specification was inadequate in three respects.

(1) The denominator term for the STFRC intervention was not statistically significant, indicating an overspecification. This term was therefore dropped.

(2) Neither the DWITF nor the SOBER intervention was significant. An alternative specification is to use a pulse function for these variables. Such a function implies that the effect of these interventions declines over time, the abrupt temporary model pictured above. This specification proved to be more adequate.

(3) Estimation of the parameters did not converge when all three functions were included in the model. Thus, for the remaining models, comparisons between combinations of two of the interventions were made.

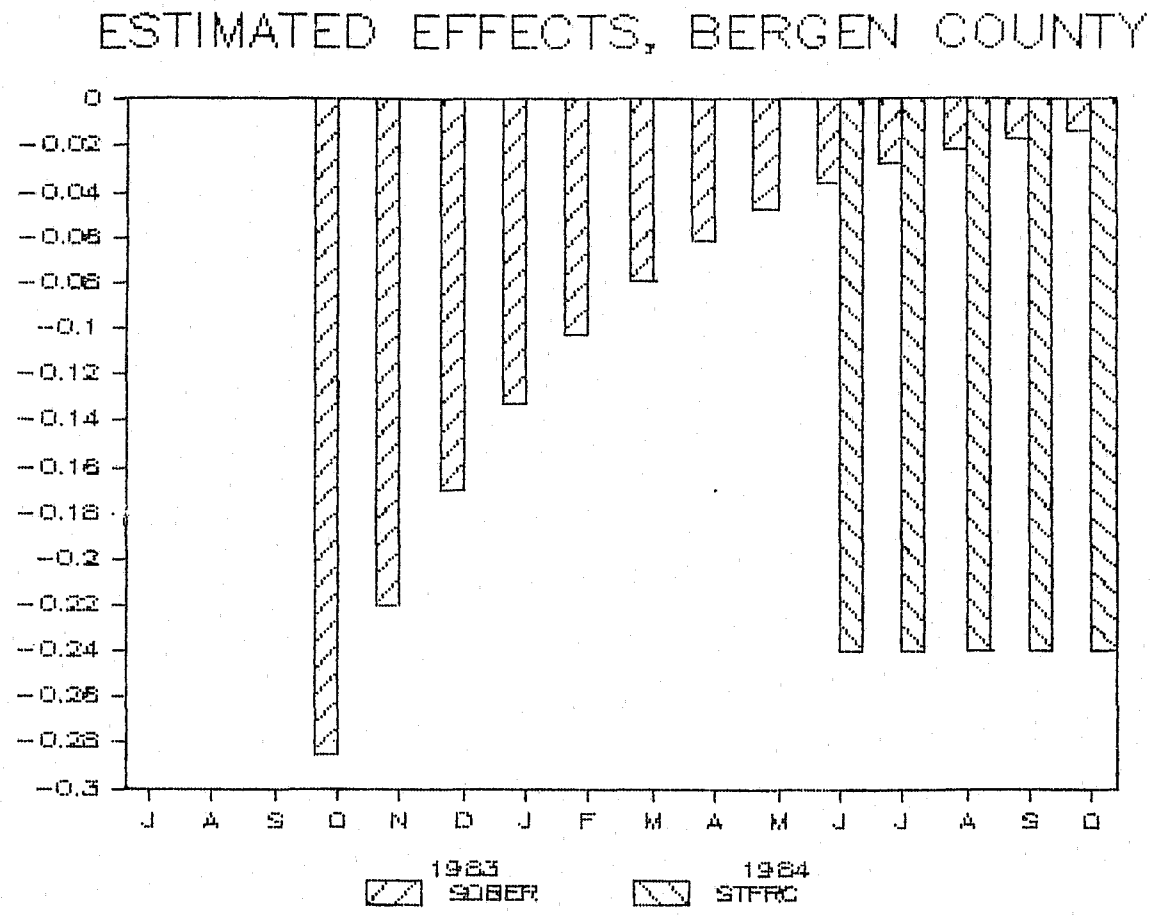
In all cases, both in the data before the intervention period, and in the analysis of the residuals from the intervention models, the dependent variable, SVPMACC, continued to show signs of one period autoregressive and seasonal autoregressive patterns. Thus, a comparison was made between three basic models, Model A, Model B, and Model C, containing AR(1),..., AR(12) terms and two dummy intervention variables. Estimation of these models showed that the parameter on the AR(1) term was not significant, so it was dropped and the model was reestimated. Diagnostic checks on these models showed that a model which included an AR(12) term, an abrupt permanent STFRC term lagged one period and an abrupt temporary SOBER term was superior to the other models. Because the SOBER program was implemented only five months before the DWITF program, it is not surprising that this model performed best. All the parameter estimates are significant and the Q-statistic, indicating the existence of some

Table 5

Box-Jenkins Analysis of Bergen County
Single-Vehicle-Nighttime Accidents

		MODEL A	MODEL B	MODEL C
Constant		5.554	5.543	5.537
		(183.0)	(182.0)	(180.0)
SVPMACC(-12)		0.572***	0.618***	0.532***
		(4.76)	(5.52)	(4.33)
STFRC(-1)			-0.239***	-0.230***
			(-6.46)	(-6.05)
DWITF				
numerator		-0.162**		-0.321***
		(-3.86)		(-3.09)
denominator		1.03***		0.559***
		(7.45)		(2.93)
SOBER				
numerator		-0.264***	-0.285***	
		(-2.64)	(-3.43)	
denominator		0.581***	0.773***	
		(2.50)	(8.31)	
Q Statistic				
TO lag				
	6	2.44	2.12	4.66
	12	6.56	5.47	9.39
	18	13.29	10.5	19.24
	24	18.64	15.02	23.63

FIGURE 3


ESTIMATED EFFECTS, BERGEN COUNTY
0
-0.02
-0.04
-0.06
-0.08
-0.1
-0.12
-0.14
-0.16
-0.18
-0.2
-0.22
-0.24
-0.26
-0.28
-0.3
J A S O N D J F M A M J J A S O
1983
SOBER
1984
STFRC

remaining pattern in the data, is insignificant.

The results for the different models are summarized in Table 5. More complex variants of this simple model were investigated, primarily by testing a "gradual start, temporary duration" intervention model, including the possibility of a residual effect for the SOBER and DWITF programs and allowing longer delay parameters. None of these models proved superior to the simpler model. Figure 3 below shows the time pattern of the actual estimated effect of the Bergen County programs. The results indicate that the strike force program reduced single-vehicle night-time accidents by 24% and the SOBER program (along with the DWI task force program) reduced single-vehicle night-time accidents by 29% in the first year and by about 7% in subsequent years.

Since the estimated effects may be due to some underlying phenomenon, an attempt was made to compare the Bergen County effect to those of a control county. This was done by estimating the intervention effects in the control county using the Bergen County model, as estimated above. As long as the accident rates are independent, the difference between the estimated parameters divided by the common residual variance has a t-distribution. Because most counties implemented a DWITF or SOBER program before June 1984, we focused on the STFRC variable. The ideal control county then would be one which does not share a border with Bergen County, has similar county demographics as Bergen, did not implement a strike force program before June of 1984, and has an accident rate which is not significantly correlated with that of Bergen County. Unfortunately, in New Jersey, no such county exists. We have compared all counties that met two of the first three criteria with Bergen County. The results are reported in table 6. The t-statistics for statistically significant differences between the STFRC effect in Bergen county and control counties

Table 6

Box-Jenkins Models for the Control Counties

	SOMERSET	PASSAIC	ESSEX	HUDSON	UNION
ACC_{-1}	.051 (.04)	-.015 (.12)	.172 (1.41)	.342 (2.87)	
ACC_{-12}	.484 (3.73)	.418 (3.33)	.596 (5.39)	.496 (3.82)	.507 (4.03)
BRGSTFRC	-.065 (.49)	-0.57 (.85)	-.120 (2.70)	-.075 (1.06)	-.111 (2.71)
BRGSOBER NUM	-.287 (3.46)	-.118 (2.48)	-.180 (1.90)	.197 (1.62)	.046 (.58)
DENOM	.983 (24.32)	1.029 (52.14)	-.599 (2.13)	-.580 (1.70)	-.853 (2.05)
CONSTANT	4.674 (100.83)	4.934 (177.73)	5.297 (153.35)	4.420 (86.38)	4.779 (165.80)

were 1.02 (Somerset County), 1.73 (Passaic), 1.46 (Essex), 1.56 (Hudson) and Union (1.64). With the exception of Somerset County, the accident reductions in Bergen County were significant at the 0.10 level in comparison with the trends in the other counties. The results imply that the estimate of the STFRC effect for Bergen county alone may have overestimated the true effects by between 5 and 10%. However, in each case the error terms in equations for Bergen county and the control counties were also significantly correlated. This may be due to neighboring county effects and may bias the test statistic. We expect that some of the effects of the programs in Bergen county was to reduce accidents in nearby counties, since cross county traffic is common.

The results indicate that the Bergen County strike force program achieved a significant reduction in single-vehicle-nighttime accidents during 1983 and 1984. It appears that a reduction in the single-vehicle accident rate between 14 and 24% has occurred. There was also a temporary reduction due to the educational programs.

Conclusions and Recommendations

The broadest conclusion of the analyses above is that the programs adopted to reduce alcohol-related traffic accidents and fatalities have had salutory effects in New Jersey. Collinearities among the three major programs, all of which were introduced in many counties during a relatively brief period, complicates assessments of their individual effects on traffic safety experience. Overall, however, our best estimates suggest that the strike force programs have reduced alcohol-related accident rates by 7%, but by 14 to 24% in Bergen County, the first county to implement the program. The overall effects of the educational programs appear to be smaller, and more temporary in nature.

These are impressive results, especially in view of the recent introduction and relatively short duration of the programs; and in light of various data and measurement problems that have been noted above. The results are in fact quite optimistic, and suggest the usefulness of applying similar empirical tests to DWI efforts in other states whose local or county programs show measurable variation. When data for recent years becomes available, more precise estimates are likely to be obtained.

It may in fact prove useful to conduct a benefit-cost analysis of DWI programs in New Jersey and elsewhere. Program costs should be readily, if not perfectly, measurable. Measuring the benefits of accident prevention and lifesaving activities is invariably controversial because the "valuation" of human life and limb presents exceptionally difficult problems.

Some efforts in this direction should prove highly illuminating, however. At the very least, the relevant comparisons of program costs and effects will yield some notion of the magnitude of the "DWI program expenditure" that is necessary to (a) prevent an accident, or (b) save a life. Even without direct reference to "value of life" questions, such estimated magnitudes would indicate whether DWI programs are likely to be more effective than alternative public safety activities. The usefulness of this kind of information to public policy officials hardly requires elaboration.

Appendix A

In its most general form, the seasonal ARIMA model can be written as:

$$Y_t = \frac{(1-a_1-a_2B^{s2}-...-a_QB^{sQ})(1-A_1B-A_2B^2-...-A_qB^q)u_t + b_0}{(1-c_1B^{1s}-c_2B^{2s}-...-c_pB^{sP})(1-C_1B^1-C_2B^2-...-C_pB^p)(1-B^s)^D(1-B)^d}$$

where the notation is as follows:

p: the order of the AR process

d: the degree of nonseasonal differencing

q: the order of the MA process

P: the order of the seasonal AR process

D: the degree of seasonal differencing

s: the seasonal span

u: a white noise error term

b_0: a constant term

B: a backshift operator,ie $BX_t = X_{t-1}$

c,C: the seasonal and nonseasonal AR parameters respectively

a,A: the seasonal and nonseasonal MA parameters respectively

A general form of the intervention process can be written:

$$Yt = \left\{\frac{(w_0-w_1B-w_2B^2-...-w_jB^j)}{(1-v_1B-v^2B^2-...-v_rB^r)}\right\} I_{t-m}$$

where

w,v: the manner in which the intervention affects the dependent variable

B: is a backshift operator

m: is a delay parameter

I: is a step or pulse function representing the intervention

Although the form of these models appears quite complicated, the actual structure is often quite simple because the ARIMA process is usually limited to only a few periods.

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Appendix B

CURRENT DWI LAWS AND PENALTIES

Current DWI Laws and Penalties

Penalties

Persons who are found guilty of driving while under the influence of alcohol and drugs (DWI) are subject to substantial penalties, including fines and imprisonment.

All persons convicted of these offenses are subject to the following penalties:

First Offense:

- a fine of $250-$400
- discretionary imprisonment up to 30 days
- 6 months to 1 year license suspension
- 12-48 hours detainment in an Intoxicated Driver Resource Center at a charge of $50 a day
- $100 surcharge to be deposited in a drunk driving enforcement fund.

Second Offense:

- a fine of $500-$1,000
- imprisonment of not less than 48 consecutive hours nor more than 90 days
- 2-year license suspension
- 30 days of community service
- $100 surcharge to be deposited in a drunk driving enforcement fund.

Third Offense:

- a fine of $1,000
- imprisonment of 180 days, up to 90 days of this penalty may be served performing community service
- 10-year license suspension
- $100 surcharge to be deposited in a drunk driving enforcement fund.

Other Costs:

- An automobile insurance surcharge of $1,000 a year for three years will be assessed on first and second offenses.
- An automobile insurance surcharge of $1,500 a year for three years will be assessed on a third offense occurring in any three-year period.
- All DWI offenses require the mandatory completion of the Intoxicated Driver Resource Center program of evaluation, education, and referral to appropriate treatment.

Refusal to Submit to Breath Test:

- first offense - $250-$500 fine and 6-month license suspension
- second and subsequent offenses - $250-$500 fine and a 2-year license suspension
- refusals also require an automobile insurance surcharge of $1,000 a year for three years, if not associated with a DWI conviction.

Driving While Suspended Due to DWI:

- a fine of $500
- 90 days possible imprisonment
- 1 to 2 years added license suspension
- if you have an accident and someone is hurt while your license is suspended, you face a mandatory 45 day jail sentence.

Drinking While an Operator or Passenger in a Motor Vehicle:

- first offense - $200
- second offense - $250 fine or 10 days of community service.