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Evaluation of Charlottesville Checkpoint Operations

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16. Abstract

Under a grant from the Virginia Office of Highway Safety, the Charlottesville Police Department implemented a Driver's License and Sobriety Checkpoint Program from December 30, 1983 to December 31, 1984. During this period, 94 checkpoint operations were conducted. All have operated smoothly with no major incidents at a checkpoint site. 91% of the drivers arrested who have come to trial have been convicted of DWI. Three cases were challenged on constitutional (Fourth Amendment) grounds. In all three, the constitutionality of the checkpoints was upheld. All told, over 23,615 vehicles were stopped. Just over 1% (290) of the drivers were arrested for driving under the influence, while an additional 1.6% (386) of the drivers were given safety advisories when it was found that their BACs were below .10% and they did not show serious signs of impairment. One hundred and forty-one drivers were cited for invalid or expired operator permits.

Random digit dialing phone surveys of Charlottesville drivers demonstrated that over 95% of the drivers at risk (those who drank and also drove at night) were aware of the checkpoint program. Half of these drivers had seen checkpoints in operation and one in four had been interviewed at a checkpoint. A 13% reduction in alcohol-related accidents provided evidence that the checkpoint program was effective in reducing accidents due to impaired driving.

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SECTION I - THE CHECKPOINT PROGRAM

BACKGROUND

Drunk driving laws in the United States have traditionally been enforced by police officers patrolling the roads watching for drivers who exhibit unusual or illegal driving (NHTSA, 1985). A typical set of drunk driving "symptoms" has been developed by Harris and his coworkers (1980). Based on such symptoms, police officers stop vehicles and interview the drivers. If, during the course of the interview, they detect confirming signs of drinking, the individual may be arrested and required to take an evidential breath test.

Recently, an alternative enforcement procedure involving "sobriety checkpoints" has received considerable attention (NTSB, 1984). In contrast to the traditional enforcement technique, the police stop all drivers using a particular roadway without regard to their driving. These motorists are interviewed to determine whether they have been drinking. If evidence of drinking is found, the drivers are requested to submit to a set of "sobriety tests" (Tharp, et al., 19810 and a preliminary breath test. If there is evidence that they are impaired, they are arrested.

Potentially, the checkpoint procedure offers advantages over the traditional enforcement procedure for increasing deterrence to drunk driving (Voas, 1982). Many drinking drivers may believe that they can avoid arrest when driving after drinking by driving "carefully" so as not to attract the attention of the police. The checkpoint procedure challenges that assumption because all drivers are stopped whether they show signs of impaired driving or not. Further, since many more drivers are stopped and interviewed at checkpoints than are normally contacted by the traditional roving patrols, a larger segment of the at-risk population is likely to be impacted by the enforcement operation.

The checkpoint procedure has been widely used in Scandinavia, France, and Australia. Evidence for the effectiveness of checkpoint programs in Australia has been provided by Cameron, Strang and Vulcan (1980). Ross, McCleary and Epperlein (1983) found some evidence for the effectiveness of law changes in France which included the use of checkpoints. Finally, Ross (1983) found evidence for a small decrease in drunk driving accidents in Sweden as a result of widespread use of roadblocks in that country. Vingilis and Salutin (1980) studied a checkpoint program in Canada and reported (based on a random telephone survey) that the perception of the risk of being arrested among drinking drivers had increased.

In the United States, localities within 21 of the 50 States have implemented checkpoint operations (NTSB, 1984). Few of these operations have been evaluated. The Maryland State Police (Field Operations Bureau, 1983) conducted an experiment in which checkpoints were held in one county and the number of accidents in that county compared with counties in which no check-

points had been conducted. They found a 15% decrease in total accidents and a 17% decrease in alcohol-related accidents. Williams and Lund (1984) conducted a random dial telephone survey to determine the public's perception of the risk of arrest for drunken driving in counties in three States in which checkpoints had been conducted and compared the results with counties in which no checkpoints had been undertaken. They found evidence that residents of counties in which checkpoints were conducted had a higher perceived risk of arrest than residents of those counties in which there were no checkpoints.

The Charlottesville Checkpoint Program

On December 30 and 31, 1983, the City of Charlottesville Police began an intensive checkpoint program. Throughout calendar year 1984, the Police Department ran checkpoints each Friday and Saturday evening except on those occasions in which there was rain. In all, 94 checkpoint operations were mounted between December 30, 1983 and December 31, 1984. Just under 24,000 drivers were stopped and interviewed. This program constituted the most concentrated use of checkpoints in any single area in the United States. Charlottesville has a population of 40,000 within an 11 square mile metropolitan boundary. The city lies in Albemarle County which has 60,000 inhabitants in an area of approximately 750 square miles. The University of Virginia lies within the city and has 16,000 full-time students about 80% of whom live off campus. The city is at least an hour's drive from any other large urban area and therefore provides an area for study that is relatively insulated from the activities of other Police Departments.

Because of the unique nature of the enforcement program and the general isolation of Charlottesville, the program appeared to offer an excellent opportunity to evaluate the impact of the checkpoint enforcement method. To take advantage of this opportunity, the National Highway Traffic Safety Administration provided funds (Contract No. DTNH22-83-C-05088) to the Charlottesville Police Department to document checkpoint operations, to measure the impact of these operations on the public's perception of the risk of arrest and, finally, to evaluate the resulting impact upon alcohol-related accidents.

The Charlottesville Police Department includes 48 uniformed patrol officers. On any given evening, 13 to 14 of these officers are on patrols covering beats within the City. Each officer on patrol has a responsibility for traffic enforcement and spends from 25 to 30% of his or her time in this activity. During calendar year 1983, the Charlottesville Police Department received a grant from the State which permitted the Department to have one vehicle manned by two officers on special drunk- driving patrol on Friday and Saturday nights. The number of drunk driving arrests made during the last four years is shown in Figure I-1.

Figure I-1
COMPARISON OF DUI ARRESTS
IN CHARLOTTESVILLE AND BLACKSBURG, VIRGINIA

	CHARLOTTESVILLE			BLACKSBURG[2]
	City Police	Univ Police	Total	
1981	240	121	361	N/A
1982	232	82	314	252
1983	368[1]	81	449	349
1984	551	74	625	170

[1]80 arrests made by two-man special drunk driver patrol on Friday and Saturday nights, January through October 1983

[2]University police not included because they make few DUI arrests

The University of Virginia also has a police force to protect students and University property. This force is comprised of 51 officers. These officers patrol campus property and have been active in DUI enforcement. During 1982, they were funded by the State to provide a four- to five-man DUI selective enforcement program in the campus area. The number of arrests made by the campus police is also shown in Figure I-1, together with the total of all DUI (Driving Under the Influence)* arrests made in Charlottesville during calendar years 1981 through 1984.

Evaluation of the impact of the checkpoints in Charlottesville on the public's perception of the risk of arrest for DUI and on accidents required a comparison site. Blacksburg, Virginia, an isolated university town similar to Charlotesville in which no special DUI enforcement effort was mounted by the police was selected for this study. Figure I-1 gives the numbers of DUI arrests in Blacksburg from 1982 through 1984.

DESCRIPTION OF CHECKPOINT OPERATIONS

The Charlottesville checkpoint program was carefully planned in advance. A detailed procedural manual was developed to ensure that operations would be in accord with Federal and State court decisions (Iffts, 1983) and the recommendations of the Department of Transportation (Compton and Engle, 1983). Checkpoint sites were selected on the basis of the occurrence of alcohol-related accidents. Sites were surveyed in advance to assure that

* DUI is used throughout this report to include all types of summonses for impaired or drunken driving.

vehicles could be stopped safely. Each of the 15 sites selected was adjacent to an off-road area to which drivers, suspected of being impaired, could be directed for further investigation.

Roadblock operations were implemented on Friday and Saturday nights of each week. The choice of site was made by the program administrator in advance of the actual operation. Initially, only one site per night was used. However, experience indicated that "word" was passed among the public as to where the checkpoint was located. Therefore, the decision was made to move the checkpoint once during the evening, generally around 2:00 a.m. when the bars closed. This prevented information on the new location getting to motorists before they left the drinking establishments.

The procedures manual established strict rules for the opening and closing of the checkpoint to assure that individual officer discretion was minimized as required by the courts (Ifft, 1983). The five-man checkpoint team was supervised at all times by a sergeant who alone could make the decision to close down a checkpoint when the line of cars waiting to pass reached a predetermined length. Sites were well-lit with signs indicating that the stop was a license and sobriety checkpoint.

Four-lane (two each direction) roadways were selected for the operation. All traffic in one direction was reduced to a single lane and five officers took positions along this lane to interview the oncoming vehicles. The vehicles were waved into the one open lane and brought to a safe stop. Contact with the motorist proceeded in three phases.

In the first phase of the contact, the officer approached the motorist, introduced himself and stated the purpose of the stop (to check licenses and drinking). He asked the driver to produce his or her driving license. The interview varied from 20 seconds to as much as a minute depending on the traffic flow, the questions asked by the driver, and the time it took the driver to produce his or her driving license. Following the interview, the driver was waved on unless the officer found that the driver did not have a valid license or, if the officer suspected that the individual had been drinking. In this case, the driver was invited to move his vehicle to a nearby off-road location where the second phase of the investigation was conducted.

At the off-road location, the officer would conduct a radio check of the individual's license status if the driver had been unable to produce a valid license. If the driver was suspected of being impaired, the officer would conduct a series of sobriety tests followed by a prearrest breath test using the Alcosensor™ device.

If the investigation in Phase 2 indicated that the driver was impaired, he or she would be sited for drunken driving. If the investigation indicated that the individual did not have a valid license, a citation for driving without a valid license would be issued. Drivers who were found to have been drinking but were not over the .10% limit were issued an "Advisory" regarding their alcohol level and allowed to depart the site if their BAC was not over .05%. If the BAC was above .05%, they were required to find other means of transportation from the checkpoint site or to obtain another driver for their vehicle.

The third phase of the checkpoint processing involved the issuing of the DUI summons. A van provided by the local Virginia Alcohol Safety Action Program was parked at the site of the checkpoint. A breath test operator and evidential breath test device were housed within the van so that evidential tests could be administered at the site of the checkpoint. Following the evidential breath test, the officer was required to transport the offender to the magistrate and then to the local police station for holding until such a time as provisions could be made for the offender's release.

SUMMARY OF CHECKPOINT ACTIVITIES

Figure I-2 summarizes the activity at the checkpoints. Between December 30, 1983 and December 31, 1984, there were 94 checkpoint operations at which 23,615 vehicles were stopped. The drivers in approximately 4 in each 100 vehicles passing through the checkpoint were detained for further investigation. Not included in Figure I-2 are the validly licensed drivers who were unable to produce a license at the checkpoint and were detained briefly while a check was made to ensure that they were licensed. Overall, the checkpoints yielded 290 drunk driving arrests or approximately 1.2% of all drivers examined. An additional 1-1/2% were given Advisories.

Figure I-2
CHECKPOINT ACTIVITY SUMMARY
December 30, 1983 - December 31, 1984

Activity	Number	Rate per 1000 Vehicles
Checkpoint operations	94	--
Vehicles stopped	23,615	--
DUI arrests	290	12.28
Advisories issued	386	16.35
Other violations	263	11.14

In addition to these alcohol-related actions, 263 citations were issued for other offenses. These are detailed in Figure I-3. Because revocation of the driving privilege is an important method for controlling the convicted drunk driver, an important objective of the checkpoint program was to apprehend violators who were driving on suspended or revoked permits. Overall, 141 operator license violations were detected including 49 suspended and revoked and 56 with no license at all.

Figure I-3
CITATIONS FOR OTHER TRAFFIC VIOLATIONS AT THE CHARLOTTESVILLE CHECKPOINTS

Operator's License Violations			Total
Revoked	5		
or Suspended	44	49	
No license		56	
Expired		34	
Outside hours permitted		1	
Altered		1	141
Vehicle Registration Violations			
No registration	4		
or Expired registration	29	33	
Defective equipment		6	
Expired inspection sticker		20	
Rejection sticker		4	
No Virginia plates		2	
No insurance		1	66
Other Violations			
BAC test refusal		10	
Reckless driving		7	
Wrong way		13	
Failed to stop		6	
No corrective lenses		5	
Interfering		2	
Miscellaneous		2	56
TOTAL ALL CITATIONS			263

Drivers were generally well-behaved at the checkpoints. Few incidents occurred. Among the 24,000 vehicles stopped, only 6 drivers were charged with failure to stop as directed. Seven more who attempted to escape arrest were charged with reckless driving. In addition to these more serious charges, a large number of tickets were issued for such other minor offenses as defective equipment, expired vehicle registration or inspection stickers.

Checkpoint Activity by Time of Night

Roll call for checkpoint operations occurred at approximately 10:30 in the evening and the first checkpoint interviews began generally around 11:30 p.m. The checkpoint activities were terminated at approximately 3:30 to 4:00 a.m. Times of operations varied depending upon traffic and weather conditions. Checkpoints were normally cancelled on rainy nights. Figure I-4 gives the numbers of vehicles stopped and the numbers of arrests and advisories made each hour of the night from 11 p.m. through 3 a.m. during the 94 checkpoint operations in Charlottesville during 1984.

The very low arrest rate shown for the 11 p.m. hour is partially due to the fact that the time listed on the summons was normally 20 to 30 minutes later than the time of the original stop. Therefore, a number of those stopped during the 11 p.m. hour were not recorded as arrested until after 12:00 midnight. Aside from this hour, there is a clear trend towards higher arrest rates later at night.

While the number of drivers arrested per vehicle stopped is two-and-one-half times greater from 2:00 a.m. to 3:00 a.m. compared to 12:00 midnight to 1:00 a.m. (25 per 1,000 compared to 10 per 1,000), only about half as many cars passed through the checkpoint during the 2:00 a.m. to 3:00 a.m. period compared to the 12 midnight to 1:00 a.m. period (3,938 vs. 7,621). Because there were fewer vehicles on the road later at night, the arrests per hour at the checkpoint increased only slightly as the evening progressed. Thus, the efficiency of the checkpont operation remained relatively constant.

Figure I-4
CHECKPOINT ACTIVITY BY HOUR OF THE NIGHT

Hour of Day	Stops	Arrests	Advisories	Rate per 1000 Vehicles Stopped: Arrests	Rate per 1000 Vehicles Stopped: Advisories
11 PM	6004	12	16	2.00	2.66
12 PM	7621	78	119	10.23	15.61
1 AM	5371	75	86	13.96	16.01
2 AM	3938	99	129	25.14	32.76
3 AM (or later)	681	25	34	36.71	52.80
	23,615	289*	384**	12.24	16.26

* One case time not recorded
** Two cases time not recorded

Checkpoint Productivity

One consideration in comparing checkpoint operations with the traditional DWI patrol system is the relative productivity of each of these techniques in apprehending drunken drivers. The DWI arrest rate at checkpoints varies considerably depending upon the procedures used in a particular community (National Transportation Safety Board, 1984). The arrest rate at a checkpoint will vary with the equipment and training of the officers, the length of the interview, and the extent to which the public can avoid the checkpoint. Many police departments which make use of checkpoints argue that they are effective in deterring the drinking driver because of the impact they have on the public's perception of risk even if they do not produce a lot of arrests.

Figure I-5 compares the arrest rate per officer hour for a traditional patrol program mounted in Charlottesville from January 1 through October 31, 1983 with the checkpoint program which was conducted between December 30, 1983 and December 31, 1984. As can be seen, the average number of hours per arrest for officers at the checkpoint is slightly lower than the number of hours required by the officers in the special DUI patrol. Obviously, many factors affect the arrest rate for both traditional patrols and checkpoint operations. Therefore, the efficiency of each procedure will undoubtedly vary from time to time and community to community. Nevertheless, it appears that checkpoints can be as productive as traditional patrols.

Figure I-5
COMPARISON OF THE ARREST PRODUCTIVITY OF TRADITIONAL DUI PATROLS AND CHECKPOINT OPERATIONS IN CHARLOTTESVILLE

	Traditional DUI Patrol	Checkpoints
Time Period	Jan 1, 1983 - Oct 31, 1983	Dec 30, 1983 - Dec 31, 1984
Number of Officers	2	5
Hours per Night	4	4
Total Nights	79	94
Total Hours	632	1,880
Total DUI Arrests	80	290
Officer Hours Per Arrest	7.9	6.5

Residence of Drivers Detained at Checkpoints

Half of the drivers arrested at checkpoints were residents of Charlottesville and another 25% lived in the surrounding county (Figure I-6). Many of the one-in-four drivers whose licenses were registered outside the area may have been students--temporary residents of Charlotesville. The small differences in the residence location of drivers arrested and given advisories is not statistically significant.

Figure I-6
PLACE OF RESIDENCE OF
DRIVERS DETAINED AT CHECKPOINTS

	Arrested Drivers	Drivers Given Advisories
Charlottesville	47.8%	42.7%
Albemarle County	24.2%	29.2%
Elsewhere in Virginia	23.5%	20.7%
Out of State	4.5%	7.4%
N	289*	377*

* Residence information not available in 10 cases.

EVALUATION OF DETECTION PROCEDURES AT THE CHECKPOINTS

Each officer who took part in the checkpoint operation had received special training in the detection of drinking drivers prior to the initiation of the program. A portion of that training related to the detection of drinking during the brief interview with each driver stopped. Emphasis was placed upon looking for items of appearance such as bloodshot eyes, or fumbling with the driver's license; listening to the driver's speech to detect slurring or incoherence; and smelling to detect the odor of alcohol.

Passive Sensor

From January through August 1984, the officers depended upon their own senses to detect the potentially impaired driver. Beginning in September, and running through October and November, they were provided, as a part of a separate experiment, with a passive sensor device which collects air from six inches in front of the driver's face and analyzes it for alcohol. This sensor was built into the police officer's flashlight. When the sensor detected alcohol, a reading was recorded on a three-digit display. A full report on this research has been provided by Jones and Lund (1985).

Evaluation of the sensor required setting up a downstream interview at which researchers requested checkpoint participants to volunteer a breath sample so the accuracy of the sensor in comparison to the normal checkpoint procedure could be determined. This interview system was in place for 8 nights, 4 on which the sensor was used and 4 in which the officers worked in the normal way without the sensor. The presence of the researchers had an effect upon the officer's judgment as shown in Figure I-7. Working in the normal way, without the sensor, the officers gave out two-and-a-half

times as many advisories and arrested a third more impaired drivers when their stops were being followed by research interviews. Despite this alerting effect of the research interview, the sensor clearly improved the capability of the officers to detect drinking drivers. Two-and-a-half times as many impaired drivers were arrested when the sensor was used.

Figure I-7
EFFECT OF PASSIVE SENSOR AT THE CHECKPOINTS

	With Sensor and Downstream Interview	Without Sensor but with Downstream Interview	Without Sensor and Without Downstream Interview
Number of Vehicles	1,028	1,402	20,343
Number of Arrests	33	19	213
Arrest Rate per 1,000 Vehicles	32.1	13.6	10.5
Number of Advisories	44	43	277
Advisory Rate per 1,000 Vehicles	42.8	30.7	13.6

Impairment Measures

Those individuals detained by the police because of suspicion that they might be impaired by alcohol, were examined by means of a set of three "sobriety tests" developed by the National Highway Traffic Safety Administration (Tharp, et al., 1981). The officers participating in the checkpoint program received special training in each of the three tests--"lateral gaze nystagmus," "walk and turn," and "one leg stand." Following the three sobriety tests, every individual detained for suspicion of drunk driving was also asked to take an Alcosensor™ pre-arrest breath test.

The results from these sobriety tests, and the Alcosensor™ test were recorded by the police officer on a special checkpoint data form. It was originally intended that this form would be carried by the police officer and data would be entered during the time of the tests. However, it proved to be impossible for the officers to carry the checkpoint data forms (even though they were small) along with the flashlights and other equipment required at the checkpoint. Therefore, these forms were placed in the van, and filled out following the test program. For that reason, it is possible that the officer's memory of performance on the three sobriety tests could have been affected by the result of the Alcosensor™ test. Figure I-8 shows the intercorrelation between the Alcosensor™ test and the three sobriety tests for the 526 detained drivers for whom data on all four test were available. The correlations are significant but they are somewhat smaller than might have been expected. This suggests that the officers memory of the sobriety test scores was not significantly influenced by the Alcosensor™ result.

Figure I-8
CORRELATIONS OF IMPAIRMENT MEASURES

		1	2	3	4
1	Alcosensor	--			
2	Nystagmus	.58	--		
3	Walk and Turn	.49	.57	--	
4	One-Leg Stand	.53	.47	.61	--

N = 526

All correlations are significant beyond the P=.001 level.

The critical factor in evaluating a sobriety test is the "false positive" versus "false negative" rate. By a "false negative" is meant an individual who the test estimates to be under the .10% level, but who later turns out to be above .10% BAC. Alternately, a "false positive" is a person who has a score above the diagnostic level for .10%, but actually turns out to have a BAC below .10%. The score at which the suspected driver is estimated to be above .10% is 4 for the Nystagmus test and 2 for the walk-and-turn and 1-leg-stand tests. Given these scores, the false positive and false negative rates are shown in Figure 1-9.

As can be seen, there are relatively few false negative results. Only 2% of the Nystagmus and walk-and-turn tests and 7% of the 1-leg stand test results were false negatives. In this connection, it should be noted that there is some evidence that some older drivers had higher 1-leg-stand scores. There was a small but significant correlation between age and the 1-leg-stand test. A larger number of false positives is shown in Figure I-10. This may be due in part to the tendency of the Alcosensor™ test to give a low result with respect to the evidential test.

Figure I-9
SOBRIETY TEST ERRORS*

	Cutting Score for Predicting Impaired Drivers (BAC=.10%)	% False Negative	% False Positive
Nystagmus	4	2.0	23.9
Walk and Turn	2	2.0	33.1
One-leg Stand	2	7.4	17.9

* Based on Alcosensor Results N = 526

Correlation of Alcosensor™ and Evidential Breath Tests

The correlation between the Alcosensor™ and the evidential breath test result was .50 (Figure I-10). This correlation is attenuated because of the restriction in range--evidential tests were made only on those drivers with BACs at or above .10%. The mean Alcosensor™ result was .157% while the mean evidential test result was 168%. The difference between these means is .011 which, with a standard error of .003, yields a t statistic of 3.25. With an N of 243, this t is significant at the $P < .001$ level. The Alcosensor™ unit has been found by tests* at the Transportation System Center to meet the requirements of an evidential tes. The sampling system, however, depends upon the accuracy with which the police officer draws the sample. The sampling button must be actuated at the correct point in the subject's expiration. If the officer collects the sample too soon or too late, a lower than correct result will be obtained.

Figure I-10
COMPARISON OF THE PRE-ARREST AND EVIDENTIAL TESTS

Pre-Arrest (Alco-Sensor)	Mean = .157%
Evidential test (Breathalyzer)	Mean = .168%
	Difference = .011%*
Correlation = .50	N = 243

* Difference significant of P<.001 level.

This appears to account for the fact that the Alcosensor™ results average about .01% below the evidential test results. The Alcosensor™ test, like the evidential test, was taken inside the van so that this difference should not be due to variation in the ambient temperature. The Alcosensor™ test normally preceded the evidential test by at least 15 to 30 minutes. Most of the drivers apprehended should have been on the declining phase of the blood alcohol absorption/elimination curve. Therefore, the evidential test result should have been lower rather than higher than the Alcosensor™ test.

COURT ACTION ON CHECKPOINT CASES

Important to the effectiveness of a checkpoint program is the success in prosecuting checkpoint cases in the local courts. Because at a checkpoint the officer observes no deviant driving, the case must be supported entirely by the observations of the police officer of the individual's behavior during the interview and his or her performance on the sobriety

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* Federal Register, Vol. 38, No. 212, Nov. 5, 1972.

test. The Commonwealth of Virginia has a .15% "illegal per-se" law which provides for the arrest of a driver in charge of a vehicle who has a BAC at or above that level. This law was of little use at the checkpoints since the objective was to arrest drivers at BACs as low as .10% using the statute prohibiting driving while impaired by alcohol. Prosecution under this standard required evidence of impairment. Initially, the Commonwealth Attorney was reluctant to prosecute drivers apprehended at the checkpoints who were at exactly the .10% level and a few cases brought from the checkpoint were nolle-prosed.

Experience with the checkpoint cases in the courts, however, demonstrated that they could be prosecuted effectively. The conviction rate was over 90%. One case was appealed to the Virginia Supreme Court where it was upheld. The U.S. Supreme Court in Lowe vs Virginia refused to review this decision. See Washington Post article in Appendix C. In no case was a prosecution overturned as a result of Fourth Amendment considerations.

Figure I-11 compares the court handling of checkpoint cases with a sample of DUI arrests made in the traditional fashion by the regular patrol during 1984. As can be seen, the conviction rate for both groups was over 90%. Considering that the regular patrol cases had higher BACs (they averaged .22 compared to .17 for checkpoint cases; see Figure I-13), the small difference in the percent convicted for the checkpoint cases as compared to the regular patrol cases is surprising. Apparently, there was little if any difference between the success with which these two types of cases were prosecuted. Since the officers at the checkpoints had no opportunity to present evidence on driving, this provides an indication of the effectiveness with which they could present their observations of the interview with the driver and the results of the sobriety tests. The officer's testimony regarding the offender's impairment is particularly important in trials involving drivers with BACs between .10 and .14 where the state per se law does not apply.

Figure I-11
COURT PROCESSING OF DWI CASES
COMPARISON OF CHECKPOINT CASES WITH A SAMPLE OF ARRESTS MADE BY THE REGULAR PATROLS IN 1984

	CHECKPOINT CASES	REGULAR PATROL CASES
DWI Cases Tracked Through Courts	280	170
Awaiting Trial	11	14
Convicted	244	147
Entered VASAP	181 of 244	88 of 147
Not Guilty	11	4
Nolle-prosed	14	5
% of Arrested Convicted	91%	94%
Not Guilty	4%	3%
Nolle-prosed	5%	3%

COMPARISON OF ACCIDENT-INVOLVED AND ARRESTED DRIVERS

Accident record forms covering all accidents in Charlottesville reported to the police during 1984 were reviewed to identify drivers in accidents between the hours of 10:00 p.m. and 4:00 a.m. in order to select a comparison group for the drivers arrested by regular patrols and at checkpoints. This accident-involved driver sample did not include drivers in hit-and-run accidents since they were rarely identified by the police. In multi-vehicle accidents, all drivers involved were included in the sample without regard to whom the police charged with being responsible for the crash. For accident-involved drivers, information was collected on the time of the accident, age and sex of the driver, and whether or not the driver was arrested for DWI or listed by the police as having been drinking.

Figure I-12
COMPARISON OF ACCIDENT-INVOLVED AND ARRESTED LATE NIGHT DRIVERS

TIME	ACCIDENT INVOLVED		REGULAR	CHECKPOINT
	NOT ARRESTED	ARRESTED	PATROL ARRESTS	ARRESTS
N	214	42	92	289*
10 PM	17.8	16.7	13.1	00.0
11 PM	23.8	19.0	18.5	4.2
12 AM	24.8	14.3	3.3	27.0
1 AM	16.4	28.6	12.0	26.0
2 AM	8.4	9.5	31.5	34.3
3 AM	2.3	11.9	15.2	8.7
4 AM	6.5	0.0	6.5	.7
Total	100.0	100.0	100.1	100.9

* One case, time not available.

Figure I-12 lists the proportion of cases in the accident-involved sample by hour of the night from 10:00 p.m. to 4:00 a.m.. Overall, 256 cases were collected of which 42 involved drivers arrested by the regular patrol and 214 were drivers in accidents but not arrested for DWI. The time of night recorded on the accident form is compared in Figure I-12 with the time of night recorded on the DWI summons for a sample of 92 regular patrol arrests and 289 checkpoint arrests.

Two-thirds of the accidents involving drivers not arrested occurred before 1:00 a.m. compared with about half of the accidents involving an arrested driver. Only about a third of the arrests made by regular patrol officers and officers at the checkpoints were made before 1:00 a.m. This reflects, in part at least, the higher proportion of high BAC drivers in the later portion of the night, as shown in Figure I-3. These results may also reflect operational policies. The checkpoints, for example, were not initiated until approximately 11:00 o'clock and, therefore, the bulk of the arrests were made late in the evening.

Comparison of BACs for Checkpoints and Regular Patrol Arrests

Since all drivers using the roadway are stopped at checkpoints, whether or not they are showing signs of impairment, it is to be expected that the average BACs of those arrested at the checkpoint will be lower than the BACs of individuals arrested by regular patrols who stop only those whose drinking has produced sufficiently impaired driving to attract the attention of the police. Figure I-13 compares the distribution of evidential BACs for drivers arrested at the checkpoints with the distribution of BACs for drivers arrested by the regular patrols. Mean BAC at the checkpoint for those drivers receiving summonses was approximately four points lower than for the regular patrol arrests. Lower BACs for individuals arrested at checkpoints have also been reported in other checkpoint operations (Voas, 1984).

Figure I-13
COMPARISON OF EVIDENTIAL BACs OF DRIVERS ARRESTED AT CHECKPOINTS AND BY REGULAR PATROLS

BAC	At Checkpoints	Regular Patrols
< .05	1.1	0.0
.05-.09	1.5	0.0
.10-.14	45.7	25.7
.15-.19	32.6	28.2
.20-.24	12.4	27.0
>.25	3.0	16.2
Refused	3.7	2.7
Mean	.166	.219
N	271*	80*

* BACs not available for 19 arrests (refusals)
**BACs not available for 12 cases (refusals)

Age

The age of drivers in accidents, drivers arrested by the regular patrol, and drivers arrested or given advisories at the checkpoints is shown in Figure I-14. A third of all the drivers in accidents between 10:00 p.m. and 4:00 a.m. are aged 21 or younger and half are under the age of 25. It is clear that a smaller proportion of DUI arrests are made among the 21 and younger age group. While 36% of all drivers in late-night accidents were 21 or younger, only 14% of those arrested in accidents were 21 and younger, and only 11% of the regular patrol arrests involved drivers aged 21 or younger. The proportion of young drivers arrested at the checkpoints (23%) is closer to the proportion of young drivers in the accident population.

The distribution of drivers in accidents, whom the police indicate have been drinking, is essentially the same as the age distribution of drivers who the police indicate have not been drinking. The police at the accident scene check the "had been drinking" category on the accident reports of 36% of the drivers aged 21 or less even though only 14% of their arrests come from this age group. Voas and Williams (1985) have found a similar tendency

to underarrest young drivers in relationship to their involvement in accidents in other jurisdictions.

Figure I-14
COMPARISON OF ACCIDENT-INVOLVED AND ARRESTED DRIVERS BY AGE AND SEX

AGE

	Accident Involved			Reg.Patrol	Checkpoint	
	1 Not Drinking	2 Drinking Not Arrested	3 Arrested	4 Arrests	5 Arrests	6 Advi-sories
Number	156	50	42	92	285	386
≤ 21	36.5%	36.0%	14.3%	10.9%	22.6%	28.2%
22-24	16.7	24.0	28.6	23.9	19.6	25.3
25-34	23.1	24.0	38.1	37.0	41.4	34.7
35-49	16.7	12.0	19.0	20.7	13.3	9.6
≥ 50	7.1	4.0	0.0	7.6	3.2	2.7
Total	100.1	100.0	100.0	100.1	100.1	100.5

SEX

Male	70.5%	76.0%	81.0%	87.0%	82.8%	78.0%
Female	29.5%	24.0%	19.0%	13.0%	17.2%	22.0%

It is interesting to compare the age distribution of the drivers in accidents whom the police indicate had been drinking but did not arrest, with the age distribution of the drivers who received advisories at checkpoint operations (Col. 2 versus Col. 6). These two groups should represent relatively equivalent instances of contact between the police officer and driver. In both cases, the officer was aware that the individuals were drinking, but came to the conclusion that they were below the .10 BAC limit. In the case of the police operating at the checkpoints, this conclusion was verified in the large majority of cases by the use of a pre-arrest test. It is not known whether the pre-arrest test was used on any of the drivers in Col. 2 who were recorded as drinking on the accident report but not arrested.

The higher involvement of young drivers in accidents is a consistent finding in accident research. Fell (1983) has analyzed FARS data to demonstrate that teenaged drivers are significantly overrepresented in alcohol-related accidents even when exposure is taken into account. Similar results have been reported by Williams (1984) and Carlson (1972). Young drivers have a higher accident rate when sober as well as when drinking. A portion of the higher rate shown in Figure I-14 may be due to factors not related to drinking. However, since the age distribution among the drivers judged to have been drinking by the police is similar to the distribution of those found not to have been drinking, it is probable that alcohol plays as significant a role in accident causation for these young drivers (who are underrepresented among the arrested driver population) as it does for their older cohorts.

This underrepresentation may be due in part to the tendency of young drivers to be involved in accidents at lower BACs than their older compatriots. The low BACs have a greater effect on inexperienced drinkers. Young drinking drivers are more likely to be inexperienced with alcohol than older vehicle operators. Young drivers who, because of their sensitivity to alcohol, become accident-involved at BAC levels below .10%, may not be arrested by the police because they are under the legal limit. However, Voas and Williams (1985) have shown that young drivers are underarrested at every BAC level.

The population of young drivers arrested at a checkpoint falls in between the frequency of arrests of such drivers by the regular patrol and the actual proportional representation of this age group in the accident population. It is possible, therefore, that checkpoints are a more effective way of apprehending these high-risk young drivers than is the traditional patrol system.

Driver Sex

Figure I-14 also provides the sex distribution of drivers arrested and in accidents. The highest proportion of females is found among drivers in accidents who are judged not to have been drinking. The lowest proportion is among drivers arrested by regular patrol officers. The sex distribution of drivers recorded as drinking, but not arrested in accidents (Col. 2) and the drivers given advisories at checkpoints (Col. 6) are similar, as are the sex distribution of drivers arrested at accident sites (Col. 3) and at checkpoints (Col. 5).

SECTION II - KNOWLEDGE AND ATTITUDE CHANGE

The first section of this report described checkpoint operations and the characteristics of the drivers interviewed, detained and arrested. This section moves beyond "process evaluation" to "impact evaluation"; the determination of whether these activities affected the knowledge and attitudes of nighttime drivers in Charlottesville. Drinking drivers must be deterred if alcohol-related accidents are to be reduced. But deterring such drivers requires convincing them that they face an increased risk of arrest if they drive after heavy drinking. This section summarizes the data available on Charlottesville's drivers' awareness of the checkpoint program and the attitude changes which resulted from their contact with the program.

RANDOM DIAL TELEPHONE POLLS

To determine driver awareness and attitude, telephone polls were conducted on three occasions. A baseline survey was conducted in November, 1983 prior to the initiation of the checkpoint program on December 31, 1983. A second survey was conducted in April 1984 approximately 3 months after the checkpoint program was initiated. The final poll was conducted in November 1984. As a basis for comparison, a control city, Blacksburg, Virginia, was selected. Like Charlottesville, Blacksburg is a university town isolated from other large urban areas. Five hundred drivers in Blacksburg were interviewed in each of the three polls.

The polling technique utilized was a random-digit dialing system which ensures that individuals with unlisted telephone numbers are as likely to be contacted as those with numbers listed in the telephone book. The sample was controlled to ensure that all those contacted had driver's licenses and that an equal number of men and women were interviewed. Other than the ratio of men to women which was controlled, the characteristics of the individuals should be a random sample of all drivers who live in homes with telephones in the Charlottesville and Blacksburg areas. The number of usable interviews made in the three polls are shown in Figure II-1.

Figure II-1
NUMBER OF TELEPHONE INTERVIEWS
CONDUCTED IN CHARLOTTESVILLE AND BLACKSBURG, VIRGINIA

	Charlottesville	Blacksburg
November 1983 (Baseline Survey)	499	501
April 1984 Three months after program initiation	499	500
November 1984 Ten months after program initiation	498	502

The questions used in the surveys were identical for Charlottesville and Blacksburg. In later surveys, additional questions were added to obtain more detailed information on driver awareness of the checkpoints. The November, 1983 questionnaire contained ten questions, the April 1984 questionnaire contained 19 questions and the November, 1984 contained 23 questions. These interviews were designed to cover five areas:

1. Information needed to categorize respondents. This included information on whether the respondent was a driver and whether he or she drove at night. Data were also collected on whether the individual used alcohol, and the age, occupation and sex of the respondent.

2. Information on the individual's awareness of special drunk driving enforcement efforts, particularly, awareness of the checkpoints.

3. The extent of the respondent's contact with the checkpoints. Whether they had seen a checkpoint in operation and whether they had been interviewed.

4. The respondent's perception of the probability of being arrested for drunk driving and whether he or she believed the risk of arrest had increased over the last year.

5. The respondents' attitude towards the checkpoints. Whether they approved or disapproved of the police use of this technique.

A copy of the interview form used in the November, 1984 survey is included in Appendix A. The interview conductor was identified as a member of the Virginia Highway Transportation Research Council, a state agency which avoided any direct association with either the police department or another local government agency in Charlottesville or in Blacksburg.

STUDY GROUPS

The information collected as part of the survey on drinking and driving habits permitted the division of the respondents into those who were exposed to the risk of being apprehended at a checkpoint and those who were not. The procedure by which the at-risk group was identified is shown in Figure II-2. On the survey question, "Do you drink alcohol?", individuals could be divided into those who responded "yes" and those who responded "no". This question was used in combination with the question, "How many times in the last two weeks have you driven between the hours of 10 at night and 4 in the morning?" (the period when checkpoints were used). Individuals who indicated that they drove one or more times in the last two weeks were classified as frequent nighttime drivers.

Frequent nighttime drivers who reported that they drank were defined as the "at-risk group." Those respondents who did not drink, or did not report driving in the last two weeks during the hours of the checkpoints were defined as "not-at-risk." Figure II-2 shows the breakdown of responses among the 499 Charlottesville drivers interviewed in November, 1983. One hundred and ninety-five or approximately 39% fell into the "at-risk" group,

while 304 or approximately 61% fell into the "not-at-risk" group. It is clear that those classified as "not-at-risk" could include a few drivers who both drink and occasionally drive at night, but happened not to drive during the last two weeks. It is believed, however, that this division of the respondents does identify the majority of individuals who frequently drink and drive at night.

Figure II-2
DETERMINING AT-RISK DRIVERS
DATA FROM CHARLOTTESVILLE NOVEMBER 1983

Do you drink alcohol?	How many times in the last two weeks have you driven between the hours of 10 at night and 4 in the morning? None	One or more	Total
Yes	144 not at risk	**195 At risk**	339
No	106 not at risk	54 Not at risk	160
Total	250	249	499

Total Not At Risk - 304 or 61%

Comparison of At-Risk and Not-At-Risk Respondents

Figures II-3, II-4 and II-5 compare age, sex, and occupation of the drivers at-risk and not-at-risk in the Charlottesville survey of November, 1983. The nighttime drivers who drink and, therefore, are at-risk for being arrested and crash-involved, tend to be younger as shown in Figure II-3. Thirty-seven percent of these drivers were below the age of 25 as compared to only 18% of the respondents who were not-at- risk. For comparison, the age distribution of the 92 Charlottesville drivers in 1984 accidents who were arrested (42) or listed as drinking (50) by the police is also shown in Figure II-3. Fifty-two percent of these drivers were under age 25.

In the telephone survey, six out of ten of the at-risk group were male as compared to 4 out of 10 in the not-at-risk group (Figure II-4). Seven out of 10 of the 92 accident-involved drivers who were arrested or listed as drinking were male. The differences in age and sex distribution of the at-risk and accident-involved drivers is not unexpected since young males have a higher risk per mile of exposure (Fell, 1983; Williams, 1984). The "at risk" survey group probably reflects the proportion of young male drivers present in the nighttime driving population, while the accident population reflects their greater involvement in crashes per mile driven.

There were also differences in the occupations of those at-risk and those not-at-risk, as shown in Figure II-4. Thirty percent of the at-risk drivers were students. Large numbers of the not-at-risk respondents were retired persons and housewives. There was some tendency for the at-risk group to include more professional, white-collar respondents while the not-at-risk group contained more clerical and blue-collar workers.

Comparison of Charlottesville and Blacksburg Respondents

The demographic data included in the questionnaire permitted a comparison of the respondents in Charlottesville and Blacksburg. While these two

Figure II-3
AGE DISTRIBUTION OF AT-RISK AND NOT-AT-RISK DRIVERS CHARLOTTESVILLE, NOVEMBER 1983

Age	At Risk N=195	Not At Risk N=304	Drinking Accident-Involved N=92
21 or less	16.9	11.6	26.1
22-24	20.0	6.6	26.1
25-34	32.8	23.4	30.4
35-49	18.5	28.4	15.2
50 or greater	11.8	30.0	2.2

Figure II-4
SEX DISTRIBUTION FOR AT-RISK AND NOT-AT-RISK DRIVERS CHARLOTTESVILLE, NOVEMBER 1983

Sex	At Risk N=195	Not At Risk N=304	Drinking Accident-Involved N=92
Males	63.1%	41.8%	73
Females	36.9	58.2	27

Figure II-5
OCCUPATIONAL DISTRIBUTION FOR AT-RISK AND NOT-AT-RISK DRIVERS CHARLOTTESVILLE, NOVEMBER 1983

Occupation	At Risk N=195	Not At Risk N=304
Student	29.7%	15.9%
Clerical	6.2	10.3
Professional	34.4	26.8
Blue Collar	9.7	11.9
Other White Collar	11.3	7.3
Housewife	3.6	15.9
Retired	4.1	10.9
Unemployed	1.0	1.0

cities were selected because they were both university towns, isolated from large urban areas, the respondents turned out to be significantly different in age as shown in Figure II-6. While 37% of the at-risk group in Charlottesville were under 25, 60% of those at-risk in Blacksburg were under 25. Similarily while 18% of those not-at-risk in Charlottesville were under 25, 30% of the same group in Blacksburg were under 25. Differences in the number of young drivers were also reflected in the occupational distribution in Charlottesville and Blacksburg. A higher percentage of the respondents were students and blue-collar workers in Blacksburg. Charlottesville had more professional, white-collar, and retired respondents.

Figure II-6
COMPARISON OF THE AGE OF RESPONDENTS IN CHARLOTTESVILLE AND BLACKSBURG NOVEMBER 1983

Age	At Risk		Not At Risk	
	C'ville N=195	Blacksburg N=179	C'ville N=304	Blacksburg N=322
21 or less	16.9	41.4	11.6	23.1
22-24	20.0	18.1	6.6	6.6
25-34	32.8	21.0	23.4	20.7
35-49	18.5	14.3	28.4	20.7
50 or greater	11.8	5.2	30.0	29.0

Awareness of Checkpoint Operations

In both Charlottesville and Blacksburg, driver awareness of checkpoints was tested by allowing respondents to volunteer information with regard to DUI enforcement programs. They were asked, "Are you aware of any programs in your area designed to detect drunk driving?" In November, 1984, 84% of

the nighttime drivers at-risk in Charlottesville reported that they were aware of such a program compared to only 35% of the drivers at-risk in Blacksburg (Figure II-7).

Figure II-7
AWARENESS OF CHECKPOINT PROGRAM
NOVEMBER 1984

Response	Drivers at Risk		Drivers Not at Risk	
	C'ville N=218	Blacksburg N=190	C'ville N=279	Blacksburg N=312
Aware of special program	84.4%	35.3%	70.0%	28.5%
Aware that special program was checkpoints	72.0	5.0	58.4	1.9

When asked to identify the nature of the program, 72% of the nighttime drivers in Charlottesville indicated that the special enforcement program involved sobriety checkpoints while only 5% of the drivers in Blacksburg mentioned checkpoints. This, of course, is not surprising, since in fact there were no checkpoints in the city of Blacksburg. Those few who reported seeing checkpoints may have come in contact with them in other cities. Drivers who indicated awareness of a special program but did not mention sobriety checkpoints, mentioned other alcohol programs including VASAP (Virginia Alcohol Safety Action Program) and MADD (the Mothers Against Drunk Driving). Some made generalized statements about drunk driving enforcement such as "more than the usual police patrols".

The two questions regarding a special DWI enforcement program were followed by a specific inquiry regarding checkpoints in which the word "checkpoint" was defined - "A sobriety checkpoint program is one which is designed to detect drunk driving by stopping all drivers on a given roadway during late evening hours. Have you heard about this type of program?" Prompted in this fashion, 93% of the drivers at-risk in Charlottesville and 62% of the drivers in Blacksburg agreed that they had "heard of checkpoints." When asked where these checkpoints were being conducted, the Charlottesville respondents all indicated that they were being used in their city. In Blacksburg, while 62% had heard of checkpoints, only 6% indicated that checkpoints had been used in their city.

Thus, it is clear that the Charlottesville drivers were aware that a special DUI enforcement program was being conducted in their city. They knew that that program involved checkpoints and they understood what a checkpoint was. They did not confuse checkpoints with other kinds of enforcement activities. In contrast, fewer of the drivers in Blacksburg were aware of any special DUI program and the programs that they mentioned rarely included checkpoints. Therefore, it is apparent that the Charlottesville drivers were responding to the police activities in their city, and not to some general perception of a Statewide or nationwide checkpoint program.

Of some interest is the difference between the responses of the drivers at-risk and the drivers not-at-risk in Charlottesville. The drivers at-risk were more likely to be aware of a special program and were more likely to identify the special program as checkpoints, than were the drivers not-at-risk. Clearly, the checkpoint program was most effective in catching the attention of the drivers most involved in drunk driving accidents. It is not surprising that those drivers who drive less frequently at night were less likely to be aware of the checkpoint program. Even so, 70% of the drivers not-at-risk were aware of the program. Moreover, when asked specifically about checkpoints, 91% of these not-at-risk drivers reported that they had heard of checkpoints.

Contact with Checkpoints

In order to determine the proportion of the drivers at-risk who had actually come in contact with a checkpoint operation, two questions were included in the telephone survey regarding checkpoint observations. The first question was, "Have you seen any of the checkpoints in operation?" while the second question asked was, "Have you been interviewed by a police officer at any of the checkpoints?". The results of the November 1984 survey for these two questions are shown in Figure II-8. Half of the drivers at-risk reported that they had seen a checkpoint in operation in Charlottesville. This is clearly different from Blacksburg where only 1.6% of the drivers at-risk reported seeing a checkpoint. Some of these drivers, of course, may have seen checkpoints in cities outside of Blacksburg.

One in four of the drivers not-at-risk in Charlottesville reported having seen checkpoints. This relatively high number is accounted for by non-drinkers who drive at night or by drinkers who rarely drive at night but may frequently be passengers in vehicles driven at night. Since, in a dating situation, the male most frequently drives, many women on the road at night are passengers rather than drivers. These passengers probably account for many of the reports of checkpoints among the drivers classified as not-at-risk.

In Charlottesville, almost 1 in 4 of the drivers at-risk reported being interviewed at a checkpoint. No one in Blacksburg reported being interviewed at a checkpoint. In Charlottesville, half as many of the drivers not-at-risk reported being interviewed at checkpoints. These would include individuals who don't drink but do drive at night, along with drinkers who drive rather infrequently in the evening.

Figure II-8
CONTACT WITH CHECKPOINTS
NOVEMBER 1984

	Drivers at Risk		Drivers Not at Risk	
	C'ville N=218	Blacksburg N=190	C'ville N=279	Blacksburg N=312
Have seen checkpoints	49.5%	1.6%	25.8%	.3%
Have been interviewed	22.9	0	10.8	0

It is clear from these interview results that the checkpoint operation has high visibility for the nighttime drinking driver. In November 1984, after 9 months of operation, nine out of ten of these drivers in Charlottesville were aware that the police were using checkpoints. Half had actually seen a check- point in operation while almost 1 in 4 had been stopped and questioned by the police.

Changes in Driver Awareness

Figure II-9 compares the awareness of drivers at-risk in Charlottesville after three months (April, 1984) and nine months (November, 1984) of checkpoint operations. There is some evidence that the knowledge of this special program was slightly higher in April than in November. This is to be expected in any novel, high visibility enforcement operation. Early in the program, because of their novelty, newspaper and electronic media coverage of checkpoint operations was at its peak. Therefore, awareness grew rapidly. In April 1984, the awareness of the program was so high that there was little room for further growth. Awareness remained reasonably constant as shown by the November figures. However, there is a suggestion that by November it was slightly less on the minds of drivers at-risk than it was in April.

Figure II-9
AWARENESS AND CONTACTS WITH CHECKPOINTS
COMPARISON OF APRIL 1984 AND NOVEMBER 1984

	Drivers At Risk	
Awareness	April N=195	November N=218
Aware of special program	86.7%	84.4%
That special program was checkpoints	83.3	72.0
Have heard of checkpoints	97.0	93.1
Checkpoints are used in Charlottesville	94.4	92.7
Contacts		
Seen checkpoints	34.0	49.5
Interviewed	12.3	22.9

With respect to contact with the checkpoints themselves, there is a growth in the total number of drivers who reported that they had been interviewed or that they had seen checkpoints from April through November. This is to be expected. Obviously, the longer the checkpoints were in place, the higher the proportion of nighttime drivers who came in contact with them. Between April and November, the percentage of those who had seen checkpoints grew from 34% to 50%. The percentage that reported being interviewed at a checkpoint almost doubled from 12% to 23%.

PERCEIVED RISK OF ARREST

To determine the affect of the checkpoint program on the perceived probability of being arrested, respondents were asked several different questions. In November, 1984, respondents were asked, "In which one of the following Virginia cities do you believe that an individual who drinks and drives is most likely to be arrested?" The respondent was then given five alternatives: Alexandria, Richmond, Newport News, Charlottesville and Blacksburg. Interestingly, in both Charlottesville and Blacksburg, the residents most frequently chose their own city as being the one in which the individual who drinks and drives is most likely to be arrested (Figure II-10). However, in Charlottesville, 60% of the respondents picked Charlottesville whereas in Blacksburg only 40% picked Blacksburg.

A second question designed to detect a change in the perceived probability of arrest was, "Compared to a year ago, do you feel that you have more or less likelihood of being arrested for drinking and driving?". The respondent was given five response options: "much more likely, somewhat more likely, about the same, somewhat less likely, much less likely". As shown

in Figure II-10, in Charlottesville, 79% of the drivers at-risk stated that the probability of being arrested was much more likely or somewhat more likely than in the previous year. The significance of this impressive figure, however, is somewhat diminished by the fact that in Blacksburg 64% of the drivers at-risk stated that it was much more likely or somewhat more likely that the would be arrested in Blacksburg than in the previous year.

Figure II-10
PERCEIVED RISK OF ARREST
NOVEMBER 1984

	Drivers at Risk		Drivers Not at Risk	
	C'ville N=218	Blacksburg N=190	C'ville N=279	Blacksburg N=312
% reporting own city is the one in which drinking driver most likely to be arrested	59.2%	40.0%	50.5%	41.0%
% reporting that it is somewhat, or much more, likely that they might be arrested for DUI than a year ago	79.3	64.4	72.4	63.1
% reporting checkpoints are the reason why arrest is more likely	40.0	1.6	28.0	1.3

In a second portion of this question, respondents were asked to indicate why they believed that the probability of being arrested had increased or decreased. Forty percent of the drivers at-risk in Charlottesville indicated that it was more likely because of the police use of checkpoints. Only 2% of the Blacksburg drivers at-risk picked this alternative. The data summarized in Figure II-10 show that the checkpoint program in Charlottesville did increase the perception of risk of a DWI arrest in comparison to a city like Blacksburg which had no special enforcement program. However, the extent of the increase is small in comparison to the large difference in awareness of the checkpoint program in Charlottesville compared to Blacksburg.

An indication that the difference in perceived risk between Charlottesville and Blacksburg was a real effect produced by the checkpoints is that at-risk and not-at-risk drivers gave different responses in Charlottesville but not in Blacksburg. As shown in Figure II-10, in Charlottesville not-at-risk drivers were less likely than at-risk drivers to report that the probability of arrest had increased in the last year. Not at-risk drivers were also less likely to report that Charlottesville was the city in which a drinking driver was most likely to be arrested. In contrast, in Blacksburg, there was no difference between the response to these questions by at-risk and not-at-risk drivers. This suggests that the nighttime drivers in Charlottesville, who were more likely to come in contact with the checkpoints, were also more likely to perceive an increase in the probability of arrest.

ESTIMATING THE ODDS OF BEING ARRESTED

A second method of measuring the perceived risk of arrest was taken from a procedure used by Cameron, Strang and Vulcan (1980) to measure the deterrence produced by checkpoints conducted in Melbourne, Australia. In this procedure, drivers were asked to estimate the odds of being arrested for drunken driving, for speeding, or finally, for parking illegally. Two questions were framed with respect to drunken driving. In the first question, the respondents were asked, "If you were driving while over the legal limit for alcohol but were not having trouble handling you vehicle, what do you think your chances of being arrested would be?". In a second question, they were asked, "If you were driving while over the legal limit for alcohol and were having trouble handling your vehicle, what do you think your chances of being arrested would be?".

The purpose of these two questions was to differentiate between symptomatic and non-symptomatic driving which should be a key factor in the checkpoint enforcement system. Without checkpoints, only drivers who drive illegally or irratically are likely to come to the attention of the police. In the checkpoint program, every driver is interviewed. Even those who are driving without any unusual symptoms can be stopped and examined for impairment. Thus, a significant difference between traditional enforcement procedures and checkpoint operations should be the threat to drivers who feel that their driving is unaffected by their drinking and that they can avoid attracting the attention of the police.

To provide a comparison with the two questions about drunken driving, the respondents were asked, "If you were driving 70 mph in a 55 mph zone, what do you think your chances of being arrested would be?" and "If you parked your car in a no parking zone, what do you think your chances of getting a ticket would be?". Six response categories were provided for all four of these questions running from greater than 1 in 10 to less than 1 in 10,000.

Figure II-11 summarizes the responses of 195 nighttime drivers who use alcohol in the November 1983 survey in Charlottesville. On the question about operating a vehicle when over the BAC limit but with no apparent effect on the driving, the most frequent response fell in the 1 in 100 category. As would be expected, when the individual was asked for the chance of being arrested when over the limit if his driving was affected, the perceived probability of arrest increased. Sixty percent of the respondents gave a probability in the 1 in 10 region. Thus, the public clearly believes that it is less likely that an over-the-limit driver will be detected if his driving is normal.

Figure II-11
THE PERCEIVED ODDS ON BEING ARRESTED FOR DRUNKEN DRIVING OR BEING CITED FOR A TRAFFIC OFFENSE 195 DRINKING, NIGHTTIME DRIVERS AT RISK CHARLOTTESVILLE, NOVEMBER 1983

	>1/10	1/10	1/100	1/1000	1/10,000	<1/10,000
Above BAC Limit but no trouble driving	0%	21.5%	45.6%	25.1%	7.7%	0%
Above BAC Limit with trouble driving	6.2	61.0	29.2	2.1	1.5	0
Speeding 70 in 55 mph zone	3.1	37.4	44.1	12.8	2.6	0
Parking in No Parking zone	14.9	57.9	20.0	6.2	1.0	0

The odds of being arrested for DWI are interesting when related to other traffic offenses. The odds of being arrested for DUI, when not having any trouble driving, appeared to be perceived by the public as about the same as the odds of receiving a ticket for speeding 70 mph in a 55 mph zone.

The actual odds of being arrested in Charlottesville for DWI if the driver shows no signs of impairment and for speeding, if travelling 70 mph in a 55 mph zone, are not known. Surveys in Kansas City and Stockton, California have indicated that the overall probability of being arrested for drunk driving if driving in an area heavily patrolled by the police is approximately 250 to 1 (Hause, et al., 1980; Beitel, et al., 1975). Other studies indicate that where no special enforcement effort is made, the probability of being arrested for DWI is about 1 in 2,000 (Borkenstein, 1975). Thus, these data suggest that the public is over estimating the probability of arrest. This is typical of such surveys. Nevertheless, it is quite possible that the public is accurate in its perception that the risk of a DUI arrest, when there are no significant driving symptoms, is not much different than the chance of being arrested for speeding if travelling 70 mph in a 55 mph zone.

For individuals having trouble driving, there is a perception that the probability of arrest increases significantly. Again, the probability of being arrested is greatly overestimated since 60% of the respondents indicated that the chance was 1 in 10. The same respondents indicated that the chances were about the same (58% said 1 in 10) of receiving a ticket when parking in a no-parking zone. Clearly the drivers in Charlottesville perceived that the individual who was driving erratically was calling attention to himself to about the same extent as a person who parks in a no-parking zone. The results of the 1983 survey in Blacksburg gave results corresponding to those in Charlottesville.

Trends in Arrest Probability Estimates

The same set of questions on the odds of being arrested for drunk driving, speeding and parking were repeated in both Charlottesville and Blacksburg in the April and November 1984 surveys. Figure II-12 gives the results for the at-risk drivers in Charlottesville for the two drunk driving questions. Section A gives the results for drivers over the limit who are not having trouble driving and Section B gives the results for the question regarding drivers over the limit who are having trouble. As can be seen, there is little or no change from November 1983 through November 1984 in the proportion of the telephone respondents who gave estimates at each level.

These results suggest that, despite the high visibility of the checkpoint program, the drivers at-risk in Charlottesville did not change their estimate of the probability of being arrested during the course of the checkpoint program. However, there is some indication that drivers in Charlottesville who were at-risk believed that there had been a change in the probability that they would be arrested for DUI over the last year as shown in Figure II-10. It is possible that individuals have considerable difficulty estimating risks through the use of odds and that the lack of change is due to the nature of the question rather than to the fact that nighttime drivers did not change their perception of the risk of arrest.

Figure II-12
ODDS ON BEING ARRESTED FOR DRUNKEN DRIVING REPORTED BY DRIVERS AT RISK IN CHARLOTTESVILLE ON THREE OCCASIONS, NOVEMBER 1983, APRIL 1984, AND NOVEMBER 1984

A - NOT HAVING TROUBLE

	>1/10	1/10	1/100	1/1000	1/10,000	<1/10,000
November 1983 (N=195)	0	21.5	45.6	25.1	7.7	0
April 1984 (N=195)	0	17.2	38.9	28.1	12.3	.5
November 1984 (N=218)	2.8	20.2	46.8	22.9	6.9	.5

B - WERE HAVING TROUBLE

November 1983 (N=195)	6.2	61.0	29.2	2.1	1.5	0
April 1984 (N=195)	6.9	53.2	31.5	6.4	0	0
November 1984 (N=218)	6.9	50.5	33.0	9.2	0	.2

If, in fact, no change in perceived risk of arrest occurred, it may be that, despite the widespread knowledge of the checkpoint program, the driver at-risk persuaded himself he could avoid arrest by avoiding the checkpoint or by being able to pass through the checkpoint without detection. Because the number of arrests increased when the police made use of passive detec-

tors, there is evidence that some impaired drivers did escape detection at the checkpoint. Additional evidence from telephone respondents on whether they thought the checkpoints were easy to avoid and/or whether they believed it was not difficult to escape detection as a drinker when passing through the checkpoint, would help to determine the reason for this apparent lack of change in the perceived probability of arrest.

ATTITUDE TOWARDS CHECKPOINTS

A final issue covered in the telephone surveys was the extent of the support for checkpoints by drivers in Charlottesville and Blacksburg. To obtain information on this issue, respondents were asked, "With regard to the use of sobriety checkpoints, do you - strongly approve (somewhat approve, somewhat disapprove, strongly disapprove) of their use?". The proportion selecting each alternative in the November 1984 survey in Charlottesville and Blacksburg is given in Figure II-13.

It is interesting to note that support for checkpoints was stronger in Charlottesville where checkpoints were operational than in Blacksburg where no checkpoints were conducted. It appears that the public is generally more negative on checkpoints when they lack familiarity and contact with them. In Charlottesville, the approval rating given by the drivers at-risk was slightly lower than for those drivers who were not-at-risk. However, 87% of the at-risk group and 80% of the not-at-risk group either strongly or somewhat approved the checkpoint system. It is interesting that 80% of the drivers in both Charlottesville and Blacksburg indicated approval of checkpoint operations.

The results in Figure II-13 suggest both that the public generally supports checkpoints and that they can be used regularly without reducing that approval rating. Rather, as the public becomes familiar with their operation there is, if anything, an increase in support for checkpoints.

Figure II-13
ATTITUDE TOWARD CHECKPOINTS
NOVEMBER 1984

	At Risk		Not At Risk	
	C'ville	Blacksburg	C'ville	Blacksburg
Strongly approve	54.6	33.9	72.7	59.9
Somewhat approve	32.6	44.4	17.3	27.8
Somewhat disapprove	8.7	11.6	6.5	7.4
Strongly disapprove	4.1	9.0	3.6	4.9

CHARACTERISTICS OF DRIVERS COMING IN CONTACT WITH CHECKPOINTS

In the first section of this report, the characteristics of drivers who were given advisories or arrested at checkpoints were presented. This was possible because of the operational documents filled out by the police at the checkpoint site. From the checkpoint forms, a minimum amount of information including age and sex was available on these drivers. Not recorded at the checkpoint were the characteristics of the individuals who passed through the checkpoint without being detained or those drivers who observed a checkpoint in action as they passed by but were not interviewed. Further, no information was available on the characteristics of the average driver on the road during checkpoint hours. The two random digit dialing telephone polls conducted after the initiation of the checkpoint program (in April and December of 1984) provided some information on these groups.

As noted earlier, one of the questions in the telephone poll was, "How many times in the last two weeks have you driven between the hours of 10:00 p.m. at night and 4:00 a.m. in the morning?" This question served to identify the "nighttime drivers" who were frequently on the roadway during the times of the checkpoint program. In the November 1984 telephone survey in Charlottesville, 259 respondents indicated they had driven one or more times between 10 p.m. and 2 a.m. in the last two weeks. These frequent nighttime drivers were divided into three groups based on their responses to questions regarding whether they had seen the checkpoints in operation or been interviewed. One hundred and twenty-seven reported no contact with the checkpoints. Sixty-seven reported seeing a checkpoint in operation, but not having an interview, while 65 reported having been interviewed. Figure II-14 provides age and sex distributions for these three groups along with their reported drinking status.

Driver Age

The age distributions for the three groups are significantly different. Younger drivers were more likely to report that they had been interviewed than were older drivers. Half of those who reported being interviewed were under 25, whereas only 20% of those drivers who had no contact with the checkpoints were under 25. In contrast, over half of the drivers who reported no contact with the checkpoints were over the age of 35 as compared to only about 12% who reported being interviewed. Nighttime drivers who report that they saw checkpoints but did not report being interviewed fell in between these two extremes.

It is interesting to note that the age distribution of the drivers interviewed at the checkpoints is much closer to the age distribution of drivers involved in accidents in Charlottesville (see Figure I-14) than to the age distribution of drivers arrested for DUI by regular patrols. The checkpoints obviously produce contact between the police and the younger segment of nighttime drivers to a greater extent than does the regular patrol process. This may account for the greater number of young drivers arrested and given advisories at checkpoints as shown in Figure I-14 (Columns 5 and 6). This contact with young drivers should make checkpoints more effective, providing they succeed in creating deterrence in this high risk group.

Driver Sex

The sex distribution of the nighttime drivers in the three contact groups shown in Figure II-14 is interesting. It is clear that males predominate among those reporting being interviewed. There is a much more even division between the sexes in the group of drivers who reported seeing checkpoints but did not report being interviewed and those nighttime drivers who had no contact with the checkpoints. Many of the females may have been in vehicles which were stopped and in which the driver was interviewed while they were a passenger. The telephone survey does not permit the determination as to whether the difference between the sex distribution of those interviewed and those who only saw checkpoints is due to the tendency of males rather than females to drive on social occasions. It should be remembered, in this connection, that checkpoints occurred almost entirely on weekend nights, when more recreational driving would be expected.

Driver Drinking

The telephone survey also asked respondents to indicate whether or not they drank alcohol. Figure II-14 breaks down the responses of the three contact groups on this question. The differences are small but statistically significant. It appears that a slightly smaller proportion of the drivers interviewed as compared to the drivers who saw checkpoints report that they are drinkers. This is probably related to the fact that those interviewed tended to be younger. There are probably more non-drinkers among teenagers than among older drivers. An alternative hypothesis, of course, is that some drinkers avoided the checkpoints by turning away before getting caught up in the interview process. In any case, the difference is so small that it does not appear to be likely to have been a major factor in the effectiveness of the checkpoint program.

The 127 nighttime drivers who reported no contact with the checkpoints clearly appear to report a lower proportion of drinking. Once again, this tends to indicate that the checkpoints had an impact upon the highest risk group, that is, the nighttime drivers who do the most drinking. A number of hypotheses could be suggested for the lower proportion drinking in this "no contact" group. Certainly, one of the significant factors is the larger portion of females in this group since there are more abstainers among females than among males.

The responses of the three groups of nighttime drivers were compared on the telephone survey questions relating to perceived risk of being arrested for DWI, in an effort to determine whether different levels of contact with the checkpoints would influence judgments regarding the probability of a DUI arrest. Unfortunately, the numbers in each of the groups was too small to provide adequate data for analysis. Moreover, since there were differences in the age and sex distributions of the respondents in each of the three groups which could also affect risk of arrest estimates, it was not possible to determine whether contact with the checkpoint had a significant impact on the perceived risk of arrest for DUI.

Overall, the comparison of these three groups indicates that the checkpoints are impacting the drivers with highest risk of being involved in

an alcohol-related accident. The extent to which this contact produces a perceived increased deterrence cannot be determined from the data at hand. However, the evidence that, in Charlottesville, drivers at risk were more likely to perceive a recent increase in risk of arrest, and that checkpoints are the reason for this increase (Figure II-10) suggests that they may have had an impact on the perceived risk of being arrested if driving while impaired.

Figure II-14
COMPARISON OF THREE GROUPS
OF NIGHTTIME DRIVERS IN CHARLOTTESVILLE
SURVEYED IN NOVEMBER 1984

	Nighttime Drivers Who Reported Being Interviewed	Nighttime Drivers Who Reported Seeing Checkpoints But Did Not Report Being Interviewed	Nighttime Drivers Who Did Not Report Seeing Checkpoints or Being Interviewed
N	65	67	127
≤ 21	30.7%	25.3%	14.2%
22-24	24.6	9.0	6.3
25-34	32.3	31.3	25.8
35-49	10.8	29.9	35.9
≥ 50	1.5	4.5	18.0
Total	99.9	100.0	100.2
Sex			
Male	72.3	55.2	52.3
Female	27.7	44.8	47.7
Drinker?			
Yes	80.3	87.9	72.4
No	19.7	12.1	27.6

Significance of differences: Age: $X^2 = 56.55$, df=14, P<.001

Sex: $X^2 = 7.35$, df= 2, P<.025

Drinker: $X^2 = 6.29$, df= 2, P<.043

SECTION III - DRINKING IN PUBLIC ESTABLISHMENTS

Americans drink alcohol in many different locations--at home, in the homes of friends, at athletic events, and in restaurants and bars. However, a study by Wolfe (1975) of the characteristics of alcohol-impaired nighttime drivers indicated that approximately half of the drivers with an impairing amount of alcohol (.05 or greater) were on their way to or were coming from, a public drinking establishment. Thus, in most localities, restaurants and bars are an important source of drivers at risk for alcohol-related accidents.

In the early days of the checkpoint program in Charlottesville, it became clear from word-of-mouth reports that the checkpoints were an important topic of conversation in public drinking establishments. There were reports, some published in the newspaper (Appendix C), that information on the location of checkpoints was being passed around the bar so that individuals could avoid the checkpoints on their way home. These reports gained currency with the police who felt that the arrest rate at the checkpoints fell off later at night because heavy drinkers were avoiding the roadblocks. As noted earlier, this resulted in the decision to move the checkpoint at approximately the time that most bars closed in Charlottesville.

In an effort to obtain more quantitative information on the behavior of patrons of public drinking establishments in Charlottesville during 1984 when the checkpoints were in operation, a small survey was undertaken of the managers and employees of a sample of drinking establishments. Limited funds prevented the mounting of a large survey which might have provided a statistically valid sample of all drinking establishments in Charlottesville. Instead, a small, carefully-selected set of 16 drinking establishments were contacted. These 16 establishments were selected to provide a cross-section of the on-premises beverage outlets in Charlottesville. Criteria for selection included such factors as whether food was served (restaurants) or no food served (bars), whether the establishment was primarily patronized by students or by local residents, and by the socioeconomic class of the clientele. In this way, an attempt was made to assure that all segments of the drinking population who patronize commercial establishments were represented in the sample.

For each of the 16 drinking establishments covered in the survey, three liquor servers were interviewed. In every case, the manager of the drinking establishment was interviewed, together with the bartender if the establishment had a bar and a waiter or waitress. Thus, a total of 48 servers who came in contact with the public were interviewed in this mini-survey. This number is too small to provide a statistically reliable estimate for the City as a whole. However, it does provide a somewhat more objective indication of the public response to the checkpoint program than do individual anecdotal reports.

ATTITUDE OF PATRONS TOWARD CHECKPOINTS

Forty-one out of the 48 servers interviewed, or 85%, reported that they had heard customers discussing the checkpoints. Topics of the discussion

included recent experiences with checkpoints, reports of seeing them in action or having been interviewed, together with information on where the checkpoints were operating and how to avoid being caught.

The servers interviewed indicated that their clients reported both negative and positive attitudes toward the checkpoints but, by a ratio of 2 to 1, they reported negative comments more frequently than positive comments. This is in contrast to the data presented earlier which showed that, when individuals were asked in the telephone survey whether they supported the checkpoints, the large majority indicated either strong approval or some approval for the checkpoints. It appears that the discussion at drinking establishments among nighttime drinkers had a somewhat more negative tone than the feelings that the same individuals expressed in the telephone surveys. This, in part, may be due to the fact that a good deal of the discussion at the bar was focused on how to avoid being arrested at the checkpoints.

CHANGES IN PATRONS' DRINKING

The 48 servers interviewed were asked whether or not they observed a change in patron drinking during the period of the checkpoint program. Only 1 in 5 (19%) stated that they noted no change. The other 80% mentioned one or another type of change in drinking behavior. Thirty-one respondents (65%) stated that they noticed at least some individuals drinking less. In a few cases, this report of lower consumption appeared to be based on lower business receipts or on regular customers who came less frequently to the bar. Some respondents noted they observed less drinking at specific times--late at night just before leaving the bar or less drinking on weekends.

Twenty-one of the server respondents reported that individuals changed the type of beverage that they consumed. Some respondents, for example, stated that patrons stopped drinking beer and "shooters" (whiskey) and drank beer alone. In other cases, patrons were reported to have switched to beer or wine from spirits or to non-alcoholic beverages such as coke and coffee. Increased food consumption by patrons was mentioned by nine respondents. It should be noted that a number of the drinking establishments did not serve food.

CHANGES IN PATRONS' DRIVING BEHAVIOR

Six of the servers interviewed indicated they heard of no change in the patrons' driving behavior. All the others reported one or more change in the apparent driving behavior of the patrons. Public transportation in Charlottesville is limited to taxicabs and buses. Eight of the servers reported hearing patrons indicate that they were making greater use of public transportation. Only one server reported that the patrons were making greater use of carpools. These reports were primarily based on overhearing patron conversations. More important, perhaps, are the six servers who reported that requests by patrons for the staff to call taxis increased.

The most frequent adjustment that patrons of drinking establishments appeared to make to the checkpoints was the designation of a driver who agreed to refrain from drinking or limit his drinking, in order to take the other members of the party home. Thirty-two of the servers interviewed, or 2 out of 3, reported that they saw an increase in the use of this designated driver system by the public. It should be emphasized that none of the managers of these drinking establishments reported the implementation of a formal designated driver system such as has been proposed by some elements of the beverage industry. In such a formal system, the drinking establishment provides free soft drinks to the individual who agrees to drive the party home. This increase in the informal use of the designated driver system came from the patrons themselves and was not, at least overtly, encouraged by the management.

MALADAPTIVE ACTIONS

The changes in drinking behavior and driving behavior described above are changes which, at least in theory, should reduce the number of drunk driving accidents and, therefore, are a desirable outcome for any enforcement program. In addition to these "constructive" actions, the 48 servers interviewed reported activities which were in response to the checkpoint but which would not be likely to reduce alcohol-related accidents. Twenty-nine (60%) of the servers interviewed reported that they knew of patrons who attempted to avoid the checkpoints by changing their route home after an evening out. Next to the use of the designated driver system, the rerouting of driving so as to avoid the checkpoints was the most frequently mentioned change in driving behavior. Several of the respondents indicated that some patrons made a game of determining where the checkpoints were and how to avoid them. One server reported that, early in the checkpoint period, the clients came in with maps of checkpoint locations. Patrons would ask the bartender, waiters, and server of other patrons where checkpoints were located.

A second type of patron behavior reported by respondents that would not be expected to reduce drunk driving was the exchange of information on how to avoid detection at the checkpoints. Twenty-one, or 44%, of the respondents reported hearing patrons discuss procedures for avoiding detection. Most popular were mints, tic-tacs, and chewing gum as a method of preventing detection of drinking. Recommendations for behavior at the checkpoint were also made running the gamut from being polite and cooperative to refusing to cooperate. It was also suggested that the driver's license should be ready for immediate inspection by the police in order to minimize the period of conversation with the officer.

It is interesting that most of the methods for avoiding detection focused upon the initial interview with the police officer. From the servers' reports, it appears that clients were principally concerned about covering up the odor of alcohol through the use of mints, onions, chewing gum, etc.

A final type of response which does not contribute to increased safety reported by the servers was the tendency for some clients to avoid weekend drinking but come in more frequently on weekdays. The shift in time of drinking would not be likely to reduce significantly the number of alcohol-related accidents.

Several of the reports by servers suggested that the checkpoints may have lost some of their initial impact upon the clients' perceived probability of arrest. A manager of one drinking establishment, for example, reported that "people went back to their old ways (of drinking and driving) after they got used to roadblocks." The manager of another drinking establishment indicated that, while at first there was an effect, later his patrons drank as much as they had before the checkpoint. If a fall in deterrent impact of the checkpoints occurred, it may have resulted in part from the experience of some drinking drivers that they could pass through the checkpoints without getting caught. Several of the server respondents mentioned that clients claim to have passed through the checkpoint when they believed they were over the legal limit, or that they had friends who had done so.

SECTION IV - PROGRAM IMPACT ON ACCIDENTS

ALCOHOL-RELATED ACCIDENTS

Alcohol plays a significant role in motor vehicle accidents. However, it is only one of several factors which produce accidents. Environmental factors, such as the weather and roadway engineering, along with the types and condition of vehicles in use, are known to have an important role in accident causation. Trends in fatal accidents in the United States have also been shown to be correlated with the economy. It is necessary then, in evaluating an alcohol countermeasure program, to tease out from the many factors which contribute to accident causation, the role played by the alcohol-impaired driver.

Chemical Tests

"Alcohol Involvement" is usually measured in three ways. The most reliable is to obtain a sample of body fluids from the accident involved drivers upon which a chemical test for alcohol can be made. Typically, such samples are only available in fatally injured drivers. Drivers who survive accidents are tested on occasion, but frequently they represent a biased sample of all crash-involved drivers, because such tests are only conducted where the police officer or the coroner has reason to suspect that the driver has been drinking. While some States test almost all fatally injured drivers, small communities such as Charlottesville have too few accidents involving a driver fatality to permit the use of this most reliable measure to evaluate alcohol countermeasure programs. As a result, it is necessary to fall back upon the use of less serious accidents (those involving injury and property damage only) which occur much more frequently, but for which chemical tests for alcohol are not routinely conducted.

Officer Judgment

In the absense of a chemical test, two other means have traditionally been used to identify "alcohol-related" accidents. The first of these is the report of the investigating officer. The accident report form traditionally contains a place for the investigating officer to indicate that the driver "had been drinking". Statistics from the Virginia Highway Department indicate that in 16-20 percent of all accidents in Virgina, the officer indicates that the driver had been drinking.

One strength of this use of a police report of drinking by an accident-involved driver is that it makes use of an on-the-scene, impartial, trained observer to determine whether alcohol played a role in the accident. There are a number of limitations, however. Even though most police are well trained to detect drinking, the extent to which they can use this training may vary, since the police officer frequently arrives after the accident or may not have close contact with all drivers involved. Studies indicate that while police are generally correct when they indicate that a driver "has been drinking" (Filkins, et al., 1970; Waller, 1972), they frequently fail to detect drinking. Therefore, the number of alcohol-related accidents based on their designations are generally underestimates of the true total.

Of greatest concern in using the investigating officers estimate of whether the driver was drinking in evaluating a countermeasure program is the possibility that the collection of these data will be affected by the special training in the detection of drunken drivers that is normally provided to the officers participating in the program. Special training and emphasis on impaired driving is likely to increase the sensitivity of police officers to the drinking driver in their accident reporting. This could produce a change in the reported alcohol involvement without a change in the actual numbers of drinking drivers in accidents. This might produce the anamolous result that a special enforcement effort by the police appears to produce an increase in accidents designated as alcohol-related.

Nighthour Accidents

A third common method of determining the trend in alcohol-related accidents is to use a "proxy" measure based on the well established principal that there are more alcohol-related accidents during nighttime hours than during the daytime. Because Americans typically drink more at night than during the day, the proportion of all accidents that are alcohol - related is much greater at night than during the day. Advantage can be taken of this difference by separating all accidents into nighthour and dayhour accidents, and comparing the relative change since if a alcohol countermeasure program is successful, it should produce a much larger change in nighthour accidents than in daytime accidents. Obviously, there are also limitations with this procedure. Since only 10-20 percent of all accidents are alcohol-related, the proportion of even nighttime accidents which are alcohol-related is small, certainly less than half of all nighttime accidents. Therefore, if non-alcohol related accidents are rising due to increased mileage or other economic factors, it is quite possible that this increase will cover up any reductions in alcohol-related accidents produced by the countermeasure program.

EVALUATION DESIGN

To evaluate the impact of the Charlottesville Checkpoint Program, accident data covering the calendar years 1981 - 1984 were obtained from the Virginia Motor Vehicle Department* record system for the city of Charlottesville, and for the State as a whole. Separate monthly accident data series for (1) total accidents, for (2) "had been drinking" accidents and (3) for nighthour (9 p.m. - 6 a.m.) were obtained. From these series, it was possible to create three types of accident series for the analysis of the impact of the Charlottesville program:

Alcohol-Related Accidents

Two time series were constructed to measure the change in absolute number of alcohol-related accidents in Charlottesville between the baseline period from 1981 to 1983, and the year of operations in 1984. The first of these was the monthly total of the accidents in which the investigating officer checked the box indicating that one or more of the crash involved drivers had been drinking. In Charlottesville, on the average for the 3 year baseline period 1981-1983, there were 16 such accidents each month (see Figure IV-1). A second time series was constructed using the absolute number of accidents occurring between 9 p.m. and 6 a.m. each month in Charlottesville. During the 3-year period from 1981 to 1983, there were approximately 30 such nighthour accidents each month in Charlottesville.

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* The assistance of the Virginia Highway Research Council in obtaining these data is gratefully acknowledged.

Percent of Accidents in Charlottesville that are Alcohol-Related

Because the absolute number of nighthour (NH) accidents or had-been-drinking (HBD) accidents could increase or decrease as the function of the total number of accidents in Charlottesville, it is desireable to have an index which relates the proportion of such accidents to all accidents occurring in the test area. Therefore, for each month from 1981 - 1984, the percent of accidents which occurred between 9 p.m. and 6 a.m., and the percent of accidents in which the investigating officer found a driver who had been drinking, was calculated. During the 3-year baseline period, approximately 16 percent of all accidents in Charlottesville were determined by the investigating officers to have a driver who had been drinking. While approximately 30 percent of all accidents in Charlottesville occurred during the nighthours (see Figure IV-1).

Percent of all Virginia Alcohol-Related Accidents Which Occurred in Charlottesville

It is possible that alcohol-related accidents in Charlottesville could decline, not because of the special checkpoint program mounted by the Charlottesville Police, but because of broader national or State programs such as public information directed at the drinking and driving problem, or simply a reduction in the amount of alcohol consumed. To determine whether the change in alcohol-related accidents observed in Charlottesville were likely to be related to local conditions rather than to a State-wide effect, it was desirable to develop a set of time-series that would reflect the changes taking place in the State as a whole. This was achieved by taking the total number of HBD accidents occurring State-wide and calculating the proportion of these that occurred in Charlottesville. Similarly, the total number of NH accidents occurring State-wide was divided into the number occurring in Charlottesville so that the percent of all such nighthour accidents that occurred in Charlottesville could be computed for each month from 1981 through 1984 as shown in Figure IV-1. Approximately one percent of the "had-been-drinking" accidents in the State of Virginia occurred in Charlottesville during the 1981 - 1983 period, while approximately 1 and 1/3 percent of the nighthour accidents in the State of Virginia occurred in Charlottesville during this period.

RESULTS

Figure IV-1 summarizes the data for the 3 baseline years in comparison to the operational year of 1984. Also shown is the percent change between the baseline years and the operational year for each of the six accident trends. All six trends show reductions from the '81-'83 baseline to the 1984 operational year. However, in 3 of the 6 cases the reductions have been large enough to produce a statistically significant result.

Figure IV-1
CHANGES IN ALCOHOL-RELATED ACCIDENTS
IN CHARLOTTESVILLE DURING 1984 CHECKPOINT PROGRAM

	Monthly Average 1981	1982	1983	81-83 Average	1984	% Change 1981 to 1984
Alcohol-related accidents in Charlottesville						
Had been drinking accidents	16.92	16.08	15.67	16.10	13.67	-15%*
Nighthour accidents	33.41	29.33	28.82	30.52	26.58	-8%
Percent accidents in Charlottesville that are alcohol-related						
Had been drinking accidents	15.60	16.85	15.80	16.10	13.79	-14%**
Nighthour accidents	31.02	30.82	29.37	30.40	26.33	-13%
Percent of all Virginia alcohol-related accidents which occurred in Charlottesville						
Had been drinking accidents	.91	.94	.99	.95	.88	-08%
Nighthour accidents	1.34	1.29	1.33	1.32	1.16	-12%*

* Significant at the $P < .05$ level
** Significant at the $P < .01$ level

Alcohol-Related Accidents

The upper section of Figure IV-1 provides the average monthly number of HBD crashes in Charlottesville. This monthly accident series is also plotted in Figure IV-2. This plot has been smoothed by using a 12- month running average. As can be seen, the HBD accidents fell during the early part of 1984 and rose again toward the end of the year. Overall, the number of these accidents fell 15% in 1984 when compared to the '81 to '83 period. To determine whether this reduction was statistically reliable, the Box and Tiao (1973) time series analysis procedure was employed to determine the accident trend from 1981 to 1983 and measured the change from that trend in 1984. This analysis indicated that HBD accidents had been reduced by an average of 2.56 crashes per month from the prevailing trend prior to the initiation of the checkpoint program. This average reduction or "Omega" value of -2.56 had a standard error of 1.40 which yielded "t" statistic of 1.83. This indicates that there is less than 5 chances in a hundred that this result could have occurred by chance.* There was also an 8% decline in nighthour accidents, but this reduction was not statistically significant.

Percent of Accidents Which Were Alcohol-Related

A drop in all accidents would be more likely to be attributed to weather or economic factors than to a program to combat drunken driving. To demonstrate that the downward trend in alcohol-related accidents was not produced by an overall reduction in crashes, the two time series shown in the center of Figure IV-2 were evaluated by the Box and Tiao (1975) technique. This analysis indicated that the proportion of "had-been-drinking" accidents was lower in 1984 than would have been expected from the trend in effect before the initiation of the checkpoint program. A "t" test of the significance of this change yielded a value of 2.54 which indicates that there is less than one chance in a hundred that this reduction could be due to chance factors. The nighthour accidents declined by 13%, but this change was not statistically significant.

Change From State Trend

A final question which might arise with regard to these results is the possibility that, while there was no general decline in all accidents which could account for the reduction in alcohol-related accidents in Charlottesville, there was a State-wide reduction in drinking and driving which produced this result. This might be due to some legislative change or State public information program not related to the Charlottesville checkpoints. In actuality, alcohol-related accidents did decline in the State of Virginia in 1984. The reason for this decline is not known. Some new, tougher drinking driver legislation was passed in the '83-'84 legislative session and became effective during 1984. Whether this or some other factor accounts for the State-wide decline remains to be determined.

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* The t value for P=.05 is 1.64 for a 1-tailed test. Use of a 1-tailed test is justified since increase in accidents would not be considered an outcome of the checkpoint intervention.

To determine whether the small reduction in Statewide alcohol-related accidents could account for the reduction in Charlottesville, the accident trends shown at the bottom of Figure IV-1 were analysed. About one percent of Virginia "had been drinking" accidents occurred in Charlotesville from 1981 to 1983. This proportion was reduced by 8% in 1984. Thus, the proportionate reduction in Charlottesville was greater than in the State as a whole. However, evaluation of this 8% change by the Box and Tiao (1975) method indicated that this reduction was not statistically significant. On the other hand, the proportion of nighthour accidents declined 12%. An evaluation of this change yielded a t statistic of 3.07. This indicates that there is less than one chance in a hundred that this reduction occurred by chance.

CONCLUSIONS

Overall, the data presented in Figures IV-1 are consistent with the hypothesis that the checkpoint program reduced crashes related to drunken driving approximately 10%. However, the limited data available from the first year of operations do not permit a final conclusion, because while all the series analysed demonstrated reductions in alcohol-related crashes, only three of the six were statistically significant. Continuation of the checkpoint program in Charlottesville should provide the data to resolve these issues.

SECTION V - SUMMARY AND RECOMMENDATIONS

OPERATIONS

The Charlottesville checkpoint program appears to have been an operational success. Public safety was ensured by careful site selection and good illumination and signing. There were no accidents reported at checkpoint sites. Intrusion on the public was minimal. Interviews were held to approximately 30 seconds and a procedure was established for avoiding extensive traffic delays by opening the checkpoint when backed up to a predetermined position.

The reaction of the drivers stopped was highly favorable as indicated both by their behavior at the checkpoint site where most motorists were pleasant and cooperative and by polling results which demonstrated that approximately 90% of the public favored checkpoints (Figure II-13). Moreover, the public was generally more favorable to checkpoints in Charlottesville where these operations were routinely carried out than in Blacksburg where no checkpoints were implemented. A further indication of the public cooperation with the checkpoint was the small number of individuals who attempted to run through the checkpoint. Out of approximately 24,000 stops, only 9 drivers were cited for failure to stop at the checkpoint.

The checkpoints proved to be an efficient method for apprehending drunken drivers. An average of 6.5 manhours were invested per DUI arrest at the checkpoints as compared to the 7.9 hours required for the traditional patrol to arrest one drunk driver. In addition, the officers at the checkpoint were successful in apprehending a significant number of individuals who were operating without a valid driving license.

A particularly impressive feature of the checkpoint operation was the success with which the drunk drivers apprehended at the checkpoints were prosecuted. The conviction rate for individuals apprehended at the checkpoint was 90%, only slightly below the conviction rate for those apprehended by traditional patrols, even though the average BAC for those apprehended at checkpoints was .05% less than the average BAC of regular patrol arrests. Despite the questions that some have raised regarding the constitutionality of the checkpoint process, all court challenges based on the Fourth Amendment of the Federal Constitution or on the Virginia Constitution were rejected by Charlottesville courts.

IMPACT ON PUBLIC

It is also clear that the checkpoints were highly effective in capturing public attention. Eighty-four percent of the drinking drivers who frequently drive at night in Charlottesville were aware that a special drunk driving enforcement program was in place in Charlottesville. Most of these could identify that program as checkpoint operations. Half had actually seen an operation in progress while 1 in 4 had been interviewed at a checkpoint.

Analysis of the characteristics of individuals stopped and interviewed at checkpoints demonstrated that this enforcement technique, more than traditional patrol operations, brings the police in contact with the younger male drivers who are most likely to be involved in accidents. Thirty-one percent of the drivers interviewed in checkpoints were in the high accident group at or below 21 years of age, whereas only 14% of the nighttime drivers who did not report seeing checkpoints were in this age group. Comparison of the characteristics of accident-involved drivers with drivers arrested by the regular patrols and at the checkpoints makes it clear that the checkpoints are successful in reaching the segment of the driving public most at risk for nighttime accidents.

PERCEIVED RISK OF ARREST

The extent to which the checkpoints were effective in increasing the perceived risk of being arrested for DWI was less clear. There was, however, an indication that more people in Charlottesville than in Blacksburg (which did not have checkpoints) felt that the probability of being arrested had grown in the last year and that their city (Charlottesville) was the area within the state with the highest probability of arrest.

CHANGES IN DRINKING AND DRIVING

Interviews with servers in 16 local drinking establishments provided evidence that some customers reduced the amount of alcohol they consumed or made arrangements for getting home which avoided the need to drive after drinking. On the other hand, evidence was presented that some clients were principally interested in methods for avoiding apprehension at a checkpoint rather than changing their drinking-driving habits. The two principal methods discussed by the customers in these establishments were (1) finding out the location of the checkpoints and taking another route home, or (2) covering up the smell of alcohol on their breath by the use of mints and other coverups such as onions. These changes in drinking or driving behavior and the interest in methods to avoid arrest provided further evidence of the potential of checkpoints to attract public attention. Several of the servers reported that the initial impact of the checkpoints on customers appeared to fall off later on.

ACCIDENT REDUCTION

There was evidence that the checkpoint activities had an impact on alcohol-related accidents. The number of alcohol-related accidents in Charlottesville was 8 to 15% lower during the year of checkpoint operations than in the previous three years. This reduction could not be accounted for by a change in the total number of accidents, since non alcohol-related accidents increased slightly in Charlottesville. Alcohol-related accidents decreased more in Charlottesville in 1984 than in the rest of the state.

These reductions in alcohol-related accidents appear small in comparison to the large impact on public knowledge and attitude which the check-

points produced. The exact reasons for this cannot be determined from the data available. Because in an area as small as Charlottesville, there are relatively few accidents and even fewer alcohol-related accidents in any given year, it is difficult to evaluate changes in driver behavior over the short term. Accidents are produced by many factors--the economy, weather, and the total amount of driving, among others--and the impact of any enforcement measure can only be reliably determined if applied for a relatively extended period so that sufficient accident data can be collected to provide a statistically reliable result.

FUTURE CHECKPOINT OPERATIONS

Extension of the checkpoint program in Charlottesville will provide an opportunity to collect additional accident data for use in determining the effectiveness of this enforcement procedure. It will also provide an opportunity to consider modifying checkpoint procedures to make them more effective. From the data analyzed in this report, two possibilities suggest themselves.

Move Checkpoints More Often

There is evidence that nighttime drivers believed that they could avoid the checkpoints. It was clear during the course of the checkpoint program that information was being passed at drinking establishments as to the checkpoint locations. Many motorists were avoiding the checkpoints either by taking different routes home or, in some cases, by turning off when they were approaching a checkpoint. To the extent that nighttime drinking drivers believe the checkpoints are easy to avoid, their effect upon the perception of the probability of DUI arrest will be reduced. During the course of the year, the Police Department changed its procedure so as to move the checkpoint at least once during the evening. This was done to make it more difficult for the public to avoid checkpoints. Even so, the checkpoints were established in one location for as long as two hours. It may be necessary to move checkpoints somewhat more frequently in order to make it so difficult for the public to avoid them that there is an increase in the perceived probability of arrest.

Use Passive Sensor

A second factor which may have affected the perceived probability of arrest is that some drivers who had been drinking heavily may have succeeded in passing through the checkpoint without detection. Such experience provided support for the belief that impaired drivers could avoid arrest even if stopped at a checkpoint. When the passive sensor was used during the latter part of the year, the arrest rate almost doubled. It was evident that fewer impaired drivers were being missed. Use of this aid in the coming year should discourage the belief that heavy drinkers can run the checkpoint successfully, and increase the deterrent value of this enforcement technique.

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APPENDIX A

QUESTIONNAIRE USED IN

NOVEMBER 1984

RANDOM DIGIT DIALING

TELEPHONE SURVEY

OF CHARLOTTESVILLE AND BLACKSBURG

VIRGINIA HIGHWAY RESEARCH FOUNDATION

INTERVIEWERS: DO NOT READ THE OPTIONS TO THESE QUESTIONS UNLESS YOU ARE SPECIFICALLY INSTRUCTED TO DO SO.

SURVEY QUESTIONNAIRE

SOBRIETY CHECKPOINT PROGRAM

1984

Good (afternoon/evening). My name is _____. I am conducting a brief survey for the Virginia Highway Research Council. May I speak with someone in your household (MALE/FEMALE AS NEED TO FILL QUOTA) who is 16 years of age or older?

CONFIRM AGE PRIOR TO PROCEEDING

I'd like to ask you a few questions concerning alcohol and driving. Your answers will be very valuable and will remain strictly confidential (GO RIGHT TO THE FIRST QUESTION, IF APPROPRIATE).

(1) First, do you drive?

1..... Yes
2..... No (Read checkpoint definition, skip to question 17)
3..... Refused

(2) If you were driving while over the legal limit for alcohol but were not having trouble handling your vehicle, what do you think your chances of being arrested would be? (Read responses 2-5, but take 1 and 6 as well). Would they be

1..... Greater than 1 in 10
2..... 1 in 10
3..... 1 in 100
4..... 1 in 1,000 or
5..... 1 in 10,000
6..... Less than 1 in 10,000
7..... Undecided
8..... No opinion
9..... Refused

(3) If you were driving while over the legal limit for alcohol and were having trouble handling your vehicle, what do you think your chances of being arrested would be? (Read responses 2-5, but take 1 and 6 as well). Would they be

1..... Greater than 1 in 10
2..... 1 in 10
3..... 1 in 100
4..... 1 in 1,000
5..... 1 in 10,000
6..... Less than 1 in 10,000
7..... Undecided
8..... No opinion
9..... Refused

(4) If you were driving 70 miles per hour in a 55 miles per hour zone, what do you think your chances of being arrested would be? (Read responses 2-5, but take 1 and 7 as well). Would they be

1..... Greater than 1 in 10
2..... 1 in 10
3..... 1 in 100
4..... 1 in 1,000 or
5..... 1 in 10,000
6..... Less than 1 in 10,000
7..... Undecided
8..... No opinion
9..... Refused

(5) If you parked your car in a no parking zone, what do you think your chances of getting a ticket would be? (Read responses 2-5, but take 1 and 6 as well). Would they be

1..... Greater than 1 in 10
2..... 1 in 10
3..... 1 in 100
4..... 1 in 1,000 or
5..... 1 in 10,000
6..... Less than 1 in 10,000
7..... Undecided
8..... No opinion
9..... Refused

(6) Do you drink alcohol?

1..... Yes
2..... No (Skip to question 8)
3..... Refused

(7) How many days in the last month did you drink alcohol. (actual number of days).

(8) How many times in the last two weeks have you driven between the hours of 10 at night and 4 in the morning? (Actual number of times)

(9) Are you aware of any programs in your area designed to detect drunk driving?

1..... Yes
2..... No (Skip to question 11)
3..... Don't know
4..... Refused

(10) Which program is that? (Probe for 3 responses).

1..... Sobriety checkpoint (verify with definition in question 11. If correct, mark question 11 - "1" and skip to question 12)
2..... VASAP
3..... Selective enforcement
4..... Other (specify) _____
_____
_____

(11) A sobriety checkpoint program is one which is designed to detect drunk driving by stopping all drivers on a given roadway during late evening hours. Have you heard about this type of program?

1..... Yes
2..... No (Skip to question 17)
3..... Don't remember
4..... Refused

(12) In what city or state was the program operating?

1..... Charlottesville
2..... Blacksburg
3..... Other (Specify) _____ (Skip to question 17)
4..... Don't remember
5..... Refused

(13) Have you seen any of the checkpoints in operation?

1..... Yes
2..... No (Skip to question 17)
3..... Don't remember
4..... Refused

(14) Where was the checkpoint? (Probe for up to 5 answers).

1..... Long Street - West and East Bound Traffic
2..... Route 250 By-Pass - West and East Bound Traffic in Front of McIntire Park Entrance
3..... Birdwood Road - East Bound Traffic Using Birdwood Road and McIntire Park
4..... Hydraulic Road - East Bound Traffic using Vepco Parking Lot
5..... Emmet Street at Wise Street Entrance to Barracks Road Shopping Center - South Bound Traffic
6..... Barracks Road at Cedars Court - West Bound Traffic
7..... Ivy Road at Ivy Square Shopping Center - West Bound Traffic
8..... East Bound Traffic near Ivy and Alderman Roads
9..... University Avenue at Madison Lane - West Bound Traffic
10..... Rugby Road at Burnley Avenue - North Bound Traffic
11..... Preston Avenue at Preston Plaza - West Bound Traffic
12..... West Main and 9th Street - East and West Bound Traffic
13..... Cherry Avenue Near Shopping Center - East and West Bound Traffic
14..... 5th Street at Old Fifth Street Entrance - South Bound Traffic
15..... Avon at Levy
16..... Meade at Meade Park - South Bound Traffic
17..... Monticello Avenue - North and South Bound Traffic
18..... Other(s) _____

_____

19..... Don't remember
20..... Refused

(14a) When was it operating? (Get both day and time if possible).

(15) Have you been interviewed by a police officer at any of the checkpoints?

1..... Yes
2..... No (Skip to question 17)
3..... Don't remember
4..... Refused

(16) At which checkpoints were you interviewed? (Probe for up to 3 answers).

1..... Long Street - West and East Bound Traffic
2..... Route 250 By-Pass - West and East Bound Traffic in Front of McIntire Park Entrance
3..... Birdwood Road - East Bound Traffic using Birdwood Road and McIntire Park
4..... Hydraulic Road - East Bound Traffic Using VEPCO Parking Lot
5..... Emmet Street at Wise Street Entrance to Barracks Road Shopping Center - South Bound Traffic
6..... Barracks Road at Cedars Court - West Bound Traffic
7..... Ivy Road at Ivy Square Shopping Center - West Bound Traffic
8..... East Bound Traffic near Ivy and Alderman Roads
9..... University Avenue at Madison Lane - West Bound Traffic
10..... Rugby Road at Burnley Avenue - North Bound Traffic
11..... Preston Avenue at Preston Plaza - West Bound Traffic
12..... West Main and 9th Street - East and West Bound Traffic
13..... Cherry Avenue near Shopping Center - East and West Bound Traffic
14..... 5th Street at Old Fifth Street Entrance - South Bound Traffic
15..... Avon at Levy
16..... Meade at Meade Park - South Bound Traffic
17..... Monticello Avenue - North and South Bound Traffic
18..... Other(s) _____
_____
_____
_____
_____
19..... Don't remember
20..... Refused

(16a) When were you interviewed (get both day and time, if possible).

(17) With regard to the use of sobriety checkpoints, do you (read responses).

1..... Strongly approve of their use
2..... Somewhat approve
3..... Somewhat disapprove, or
4..... Strongly disapprove
5..... Undecided
6..... No opinion
7..... Refused

Thank you for your answers. We have just a few more questions for demographic purposes.

(18) First, in what category does your age fall. It is (READ OPTIONS)

1..... 16-21

PROBE: 1 - 16-17
2 - 18
3 - 19
4 - 20-21

5..... 22-24
6..... 25-34
7..... 35-49
8..... 50 or over
9..... Refused

(19) What is your occupation?

1..... Student
2..... Clerical
3..... Professional
4..... Blue Collar
5..... Other White Collar
6..... Housewife
7..... Retired
8..... Unemployed
9..... Refused

This survey has been sponsored by the Transportation Safety Program and at the Division of Motor Vehicles. Thank you for your time and cooperation.

Sex

1..... Male
2..... Female

APPENDIX B

1981 to 1984 ACCIDENT DATA FOR CHARLOTTESVILLE AND THE STATE OF VIRGINIA USED TO EVALUATE CHECKPOINT EFFECTIVENESS

data provided from
Motor Vehicle Department records by the
Virginia Highway Research Foundation

1981 to 1984 ACCIDENT DATA FOR CHARLOTTESVILLE AND THE STATE OF VIRGINIA
USED TO EVALUATE CHECKPOINT EFFECTIVENESS

YEAR	MONTH	TOT. ACC. IN CHARLOTTESVILLE	A/R ACC. IN CHARLOTTESVILLE	NIGHTHOUR ACC. IN CHARLOTTESVILLE	A/R ACC. IN THE STATE OF VA.	NIGHTHOUR ACC. IN VA.	% A/R ACCI. IN CHARLOTTESVILLE	% NIGHTHOUR ACC. IN CHARLOTTESVILLE	% ALL A/R ACC. IN VA. THAT OCCURRED IN CHARLOTTESVILLE	% OF ALL NIGHTHOUR ACCI. IN VA. THAT OCCURRED IN CHARLOTTESVILLE
01	1	76	8	17	1676	2306	.1053	.2236	.0048	.0074
01	2	106	18	32	1649	2022	.1698	.3018	.0109	.0158
01	3	106	20	33	1700	2124	.1887	.3113	.0118	.0155
01	4	111	22	38	1776	2273	.1982	.3423	.0124	.0167
01	5	100	17	40	1989	2776	.1700	.4000	.0085	.0144
01	6	93	11	26	1689	2550	.1183	.2795	.0065	.0102
01	7	102	20	32	1740	2654	.1961	.3137	.0115	.0121
01	8	102	11	29	1932	2817	.1078	.2843	.0057	.0103
01	9	99	15	36	1795	2332	.1515	.3636	.0084	.0154
01	10	131	23	37	2233	2868	.1736	.2824	.0103	.0129
01	11	132	21	42	1877	2416	.1591	.3181	.0112	.0174
01	12	129	17	39	2244	2907	.1318	.3023	.0076	.0134
02	1	93	12	31	1368	2386	.1290	.3333	.0077	.0130
02	2	110	15	31	1591	2116	.1364	.2818	.0094	.0147
02	3	100	19	27	1721	2087	.1900	.2700	.0110	.0130
02	4	92	17	30	1805	2264	.1848	.3260	.0094	.0125
02	5	118	26	46	2013	2768	.2203	.3898	.0129	.0166
02	6	78	13	26	1670	2498	.1667	.3333	.0078	.0104
02	7	82	10	20	1768	2566	.1220	.2439	.0057	.0078
02	8	74	12	24	1494	2249	.1622	.3243	.0080	.0167
02	9	93	19	27	1440	2033	.2043	.2903	.0132	.0133
02	10	104	16	33	1819	2530	.1538	.3173	.0088	.0130
02	11	83	16	23	1641	2235	.1928	.2771	.0098	.0103
02	12	109	18	34	2002	2572	.1651	.3119	.0090	.0132
03	1	79	11	27	1437	1893	.1392	.3417	.0077	.0143
03	2	97	19	30	1288	1791	.1959	.3092	.0148	.0168
03	3	84	11	24	1481	1865	.1310	.2857	.0074	.0129
03	4	124	23	37	1720	2254	.1855	.2983	.0134	.0164
03	5	98	16	26	1602	2207	.1633	.2653	.0100	.0118
03	6	73	11	22	1511	2218	.1507	.3013	.0073	.0099
03	7	72	10	20	1576	2362	.1389	.2777	.0063	.0085
03	8	98	14	23	1438	2192	.1591	.2613	.0097	.0105
03	9	123	23	46	1587	2113	.1870	.3739	.0145	.0218
03	10	114	16	32	1865	2617	.1404	.2807	.0086	.0122
03	11	112	17	25	1560	2178	.1518	.2232	.0109	.0114
03	12	111	17	34	1920	2575	.1532	.3063	.0089	.0132
04	1	92	11	18	1289	2049	.1196	.1956	.0085	.0088
04	2	80	14	21	1415	1768	.1750	.2625	.0099	.0119
04	3	97	10	19	1448	1912	.1149	.2183	.0069	.0099
04	4	98	11	24	1552	2139	.1122	.2448	.0071	.0112
04	5	112	13	29	1613	2336	.1161	.2589	.0081	.0124
04	6	97	17	28	1530	2463	.1954	.3218	.0111	.0114
04	7	91	9	20	1546	2529	.0989	.2197	.0058	.0079
04	8	114	19	35	1528	2527	.1667	.3070	.0124	.0139
04	9	129	14	44	1656	2431	.1085	.3410	.0085	.0181
04	10	109	13	31	1625	2330	.1376	.2844	.0092	.0133
04	11	92	11	22	1708	2437	.1196	.2391	.0064	.0090
04	12	105	20	28	1799	2519	.1905	.2666	.0111	.0111

data provided from
Motor Vehicle Department records by the
Virginia Highway Research Foundation

APPENDIX C

articles from
CHARLOTTESVILLE NEWSPAPER
THE DAILY PROGRESS

commenting on roadblock program

article from
THE WASHINGTON POST

commenting on Supreme Court decision
in Lowe vs Virginia

The Daily Progress

Page A4 Charlottesville, Virginia Thursday, February 14, 1985

Starting next month, a specially designated police patrol car will be on the roads for several hours each Friday and Saturday night looking for drunken drivers. While officers won't have the advantage of seeing motorists face to face as they would at a roadblock, they'll be watching cars for familiar symptoms of drunken driving: weaving, erratic turns, excessively slow speed, sudden stops or failure to start up when the traffic light turns green.

Although the shift in emphasis from roadblocks to road patrols is dictated by finances, it could help the city in its war on drunken driving. Misguided tipsters will have no way of knowing where the patrol car will be at any given time, so people won't be able to drink their fill and drive knowing they can avoid it. And police won't have to temporarily detain hundreds of law-abiding motorists every weekend to catch a few drunks; this has been one of the chief objections to the roadblocks.

We have a feeling that the new road patrols and the random checkpoints will deter many drunken drivers who'll never encounter one of the special cars or a roadblock. Any program to combat drunken driving is more effective if the public is aware of it. Fear of arrest — or a simple awareness of the problem, created by publicity for a program — influences many besides those who are arrested.

Federal consultants will be studying the effects of the year of full-scale, every-weekend roadblocks for several more months, but one very good result is already obvious: They got people's attention.

Message Sent By Roadblocks

When the city began using roadblocks to spot and arrest drunken drivers more than a year ago, Charlottesville Police Chief John deK. Bowen said one of the checkpoints' chief values was as a warning: If you got drunk and drove in this city, there was a good chance you'd be caught and punished.

That message was heard and heeded. Since the roadblocks have been operating, accompanied by further warnings from police and frequent media coverage of arrests at the checkpoints, traffic accidents involving drunken drivers have dropped by about one-fourth in Charlottesville.

Some of the improvement was probably due to the program's success in getting drunken drivers off the road through direct action. During its first full year, 282 were arrested for driving under the influence of alcohol. Another 370 were warned because, although not legally drunk under state guidelines, they had been drinking enough for their reaction time and judgment to be affected.

Chief Bowen was correct, however, in predicting that the program would remove many drunks from the roads simply by scaring them away. There was a lot of talk around town about the roadblocks and how many people had been arrested or warned. We heard people making plans to be driven home by non-drinking drivers after parties so they wouldn't have to risk being caught by a roadblock.

Unfortunately, some missed the point. In drinking places all over town, grapevines grew up to spread the word whenever a roadblock was being set up. People used the tips to drink their fill before driving home by a "safe" route — safe from arrest, although perhaps not from a fatal accident.

This experience is being put to good use by the city now. Federal and state grants that supported the roadblocks have nearly dried up, and they will be staged only one-fourth as often in the coming year at random and unannounced times. But a stepped-up use of less expensive road patrols should largely offset the reduction in the formal checkpoints.

Court Lets Stand Virginia's Use of Sobriety Roadblock

Justices Decline to Hear Motorist's Appe

By Al Kamen
Washington Post Staff Writer

The Supreme Court, in its first response to increased state efforts to crack down on drunk driving, yesterday let stand Virginia's use of sobriety roadblocks to catch violators.

The justices declined without comment to hear the appeal of a motorist in Charlottesville who argued that use of such roadblocks violates constitutional prohibitions against unreasonable searches.

The court's action, which sets no precedent, comes as states are increasingly using such roadblocks and state courts are split on whether the checkpoints are constitutional.

At least 30 states and the District of Columbia have used roadblocks, according to Anne Russell, an official with Mothers Against Drunk Driving. At least 17 challenges have been made in various state courts, she said.

Most state courts have upheld use of checkpoints, three have ruled them unconstitutional and other courts have said state laws must be reworked to pass constitutional muster, she said.

Russell and Washington-area American Civil Liberties Union legal director Arthur Spitzer, whose organization opposes the roadblocks, said yesterday's action was the first time the court has had an oppportunity to address the issue.

The justices ruled in 1979 that certain random stops of motorists were unconstitutional but, in a footnote, said they were not ruling then on the constitutionality of roadblock-type stops. Yesterday's action does not preclude further court review of the issue.

Yesterday's case, *Lowe v. Virginia*, began two years ago when Jimmy Dale Lowe was stopped at a checkpoint in Charlottesville. Last November, the Virginia Supreme Court upheld his conviction for driving under the influence of alcohol, saying that the checkpoints were a "minimal inconvenience" when balanced against the state's "strong interest in protecting the public from the grave risk presented by drunk drivers."

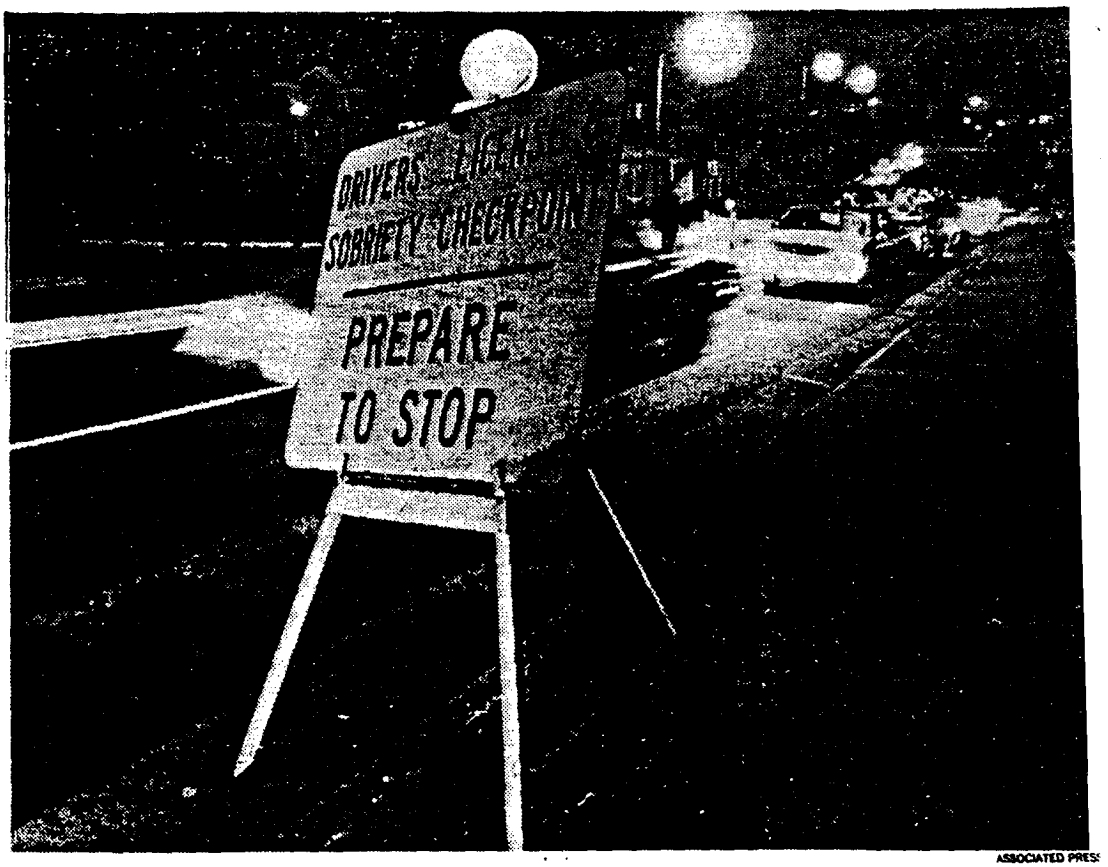
Maryland's highest court in 1984 upheld use of similar roadblocks but with strict qualifications. The D.C. Court of Appeals has not ruled on the issue.

WASHINGTON POST
March 31, 1986

Drunk Driver Roadblocks Held Effective

Court Challenge Fails in Virginia

By Jean McNair
Associated Press



ASSOCIATED PRESS

Charlottesville's police chief has called the roadblocks "the most effective deterrent to drunk driving" used to date.

In 1984, Charlottesville police arrested 511 people on drunk driving charges at weekend roadblocks supported by an $80,000 federal grant.

A year later, with federal funding gone and roadblocks cut to twice monthly; the arrest tally dropped to 360.

The numbers, police argue, support the technique, which opponents contend tramples on the constitutional rights of motorists.

"I think it's the most effective deterrent to drunk driving that I've seen yet," said Charlottesville Police Chief John Bowen.

"Prior to roadblocks, if you're a drunk driver, if you don't have an accident or have some kind of traffic violation and a police officer is nearby, you're not going to get caught," said Capt. A.E. Rhodenizer, commander of the patrol division.

The Supreme Court deemed the roadblocks legal last week by refusing to hear an appeal of a Virginia Supreme Court ruling that upheld the practice.

No one has figures on how many Virginia jurisdictions have used the tactic, and there are no statewide figures available on how well it works.

Opponents of roadblocks agree that they deter drunk driving but say the practice may be the first step toward unconstitutional searches and seizures of drivers for other suspected violations.

"I think the people that feel as I do feel that this is an encroachment. It's not a serious encroachment, but it's an inroad," said Robert H. Blodinger, a Charlottesville lawyer who represented the man who took his drunk driving conviction to the Supreme Court.

"You do it for this, why can't you do it for cocaine concealment? Why can't you do it for a million reasons? A car is pretty close to your home as far as being a private place," he said.

While state law allows police to stop all cars to check equipment and driver's licenses, no law specifically allows roadblocks to check for drunk driving, Blodinger said.

"The police I don't think are the ones who should be creating laws to prevent crime. I think that's a function of the legislature," he said.

Roadblocks have been upheld by state courts in Illinois, Florida and Massachusetts as well as Virginia, but they have been struck down by state courts in Washington and New Hampshire.

Blodinger said the Charlottesville roadblocks may have been upheld because police followed strict guidelines when they stopped each driver.

"It was probably the most perfect of all the roadblock cases that I've read," he said.

The guidelines followed by Charlottesville police include limiting roadblocks to safe areas, advance publicity about when the roadblocks would occur but not their location, and a standard procedure for handling every driver who approaches the roadblock, Rhodenizer said.

The local media announced each week how many had been arrested at the previous weekend's roadblock, he said. "I think it was more of a deterrent than anything else," he said.

Blodinger said he expects there will be more challenges to the roadblocks, but police said the public generally has been supportive.

"Surprisingly, we had more support than anything else," Police Chief Frank Johnstone said of his Albermarle County program. "There are always two or three that are going to ask you if you don't have anything better to do with your time. If getting drunk drivers off the road isn't a good use of time. I don't know what is."