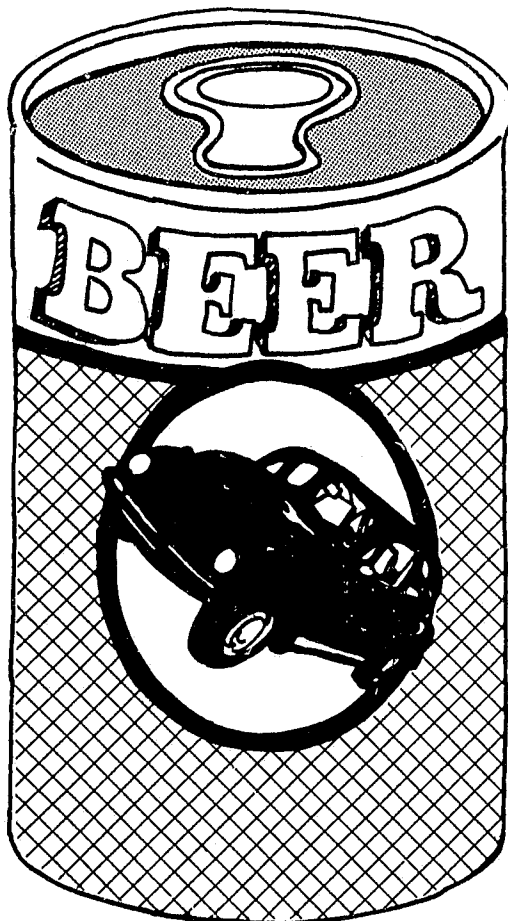


52081

**TRAFFIC LAW ENFORCEMENT:
DWI**

**PART 2
Preparing for
Alcohol Enforcement**



52081

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TRAFFIC LAW ENFORCEMENT PROCEDURES, DWI PART II: PREPARING FOR ALCOHOL ENFORCEMENT

ABSTRACT

This self-instructional unit describes the nature of drinking and driving incidents (offenses) in the total driving population; the characteristics of the driving patterns of impaired drivers; the probabilities of drivers who have been drinking being on the road; and the use of alcohol enforcement as a deterrence. This unit also includes location of DWI problem areas, time frames for drinker driver offenses, and identifying alcohol-related sites.

BEHAVIORAL OBJECTIVES

Upon completion of this self-instructional unit, the student will be able to identify:

- The nature of the drinking driver population and the numbers of drivers operating a vehicle while impaired
- The characteristics and driving patterns of impaired drivers
- The probabilities of impaired drivers on the road
- The use of alcohol as a deterrence
- Potential drinking driver problem areas and plan patrol procedures
- The appropriate time for DWI enforcement
- Alcohol related accident sites and plan patrol procedures.

DRINKING AND DRIVING INCIDENTS, CHARACTERISTICS
AND PATTERNS

Nature of Drinking and Driving Incidents in Total Driving Population

The nature of the relationship of the driving population to alcohol consumption provides an important general picture of the situation. Sixty-five percent (65%) of the adult population over 21 report they drink alcoholic beverages. Males consume 80% of the total amount. The national consumption is about 2 gallons per person per year for people over 15 years of age. This is equivalent to about one ounce of 80-proof whiskey per person per day.

Figure 1 sets forth the percentages of the population who drink various kinds of alcoholic beverages.

The information in Figure 2 is from the 1968 report to Congress from the Department of Transportation on Alcohol and Highway Safety. This gives the percentage of individuals of driving age who drive, who drink, and who do both separately or in combination. Key points here are: (1) a majority of persons of driving age do drink, but not necessarily in combination with driving; (2) a majority of drivers who drive and also drink, combine the two activities.

The relationship of consumption to impairment can be easily shown. Alcohol impairs sensory, perceptual, psychomotor, and mental functions.

Figure 1

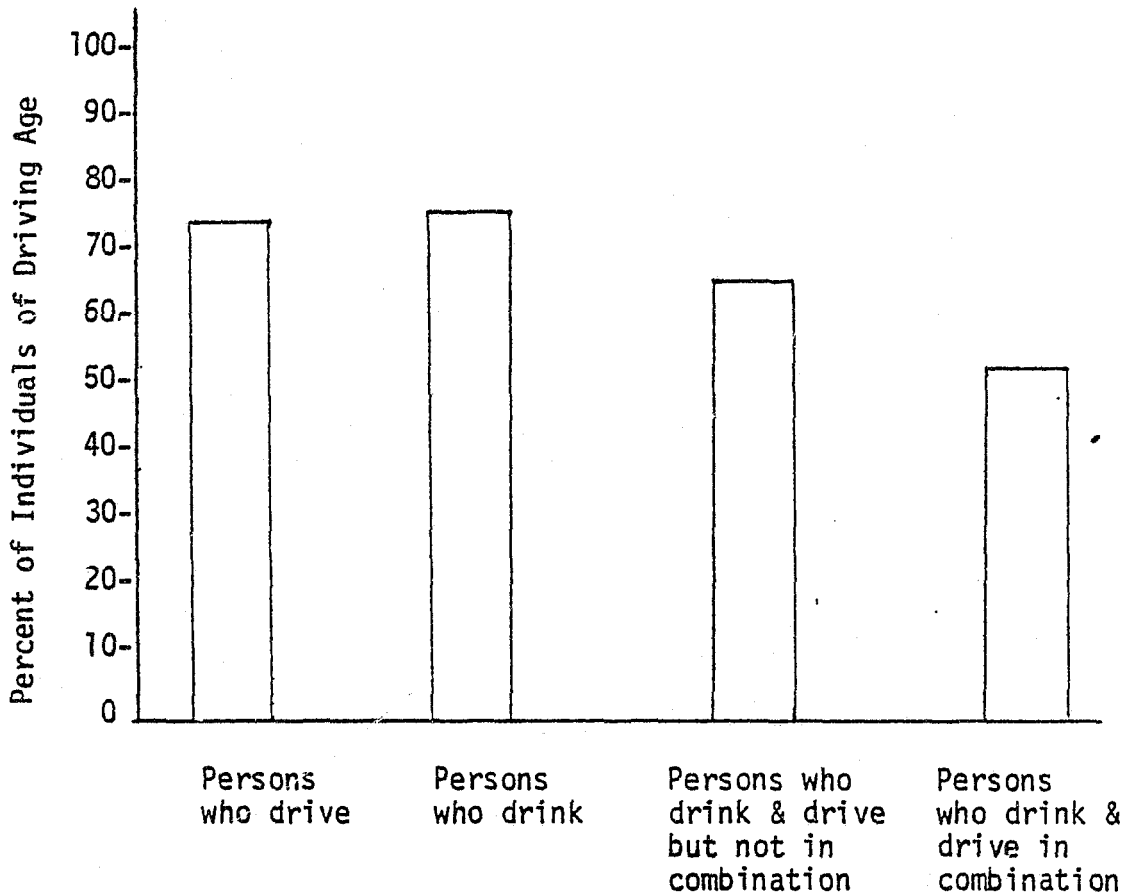
PERCENTAGE OF POPULATION DRINKING
VARIOUS KINDS OF BEVERAGES

<u>Type of Beverage</u>	<u>Percent of Total Population</u>
Wine only	4
Beer only	15
Wine & beer only	6
Liquor only	7
Wine & liquor	3
Beer & liquor	11
Wine, beer & liquor	16
Other (cordials, liqueurs, etc.)	<u>3</u>
Total	65

Source: Alcohol and the Impaired Driver. Chicago: American
Medical Association, 1968, p. 3.

Figure 2

PERCENTAGE OF INDIVIDUALS OF DRIVING AGE WHO DRIVE, WHO DRINK, WHO DO BOTH, BUT NOT NECESSARILY IN COMBINATION, AND WHO DO BOTH IN COMBINATION



Source: Alcohol and Highway Safety. Submitted by Secretary of Department of Transportation to 90th Congress, August 1968, p. 61.

Impairment becomes visible even at low BACs. Lab tests and operation of vehicles on experimental field courses show deterioration of driver performance at minimal BACs, around .03% to .04%.

According to lab experiments impairment gets worse with increased amounts of alcohol in the driver's blood. Levels of .05% created a tendency to drive toward the ditch in 82% of the test cases. A level of .10% and up caused deviation from the traffic lane and increased time used to return to correct lane. It is estimated that at .10% BAC, driving ability is reduced 15%. At .15% BAC, the driving performance deficit is 30%. Deterioration of judgment occurs at levels below .05%. Significantly, driving efficiency is actually reduced at the same time the driver's confidence in his own ability is increasing.

The relationship of Blood Alcohol Concentrations to amount consumed (intake) are shown in Figure 3. Note that amounts over 5 fluid ounces of 86-proof generally result in BACs of .10% or above.

During a Highway Safety Research Institute study conducted on 16 different nights in a one-month period, 746 drivers were given roadside breath tests. This study sought to obtain a measurement of the nature and extent of alcohol usage within the night time driving population.

Figure 3

COMPARISON OF BAC TO NUMBER OF DRINKS REQUIRED
TO ATTAIN THAT LEVEL

<u>BAC</u>	<u>Approx. No. of Drinks (1 fluid oz. of 86 proof)</u>
.01 - .04	up to 2
.05 - .09	3 - 5
.10 - .14	6 - 8
.15 - .19	9 - 11
.20 - .24	11 - 14
.25 - .29	14 - 16
.30 - .34	17 - 19
.35 - .39	20 - 21

Source: Task Force Report: Drunkenness, Washington, D.C.: President's Commission on Law Enforcement and Administration of Justice, 1967, p.37.

Drivers were selected at random by a research team member and then were stopped by police officers for the tests. Nineteen percent (19%) of the drivers tested had BAC at least .02%; 10% of these drivers measured BACs of .05%; 4% of the BACs reached .10%; and 1% had BACs of .15% or over. The highest proportion of drinking drivers were found during the early morning hours and on less travelled roads.

TO CHECK YOUR PROGRESS PLEASE ANSWER THE FOLLOWING QUESTIONS.

Directions: Using your response sheet, circle the letter of the item that most accurately completes the following:

1. The average national consumption for people over 15 years of age is equivalent to:

- a. Two ounces of 80-proof whiskey per person per day
- b. Three ounces of 80-proof whiskey per person per day
- c. One ounce of 80-proof whiskey per person per day
- d. One-half ounce of 80-proof whiskey per person per day

2. Alcohol impairs which of the following functions:

- a. Sensory and perceptual
- b. Psychomotor
- c. Mental
- d. All of the above

3. Amounts over 5 fluid ounces of 86-proof alcohol generally result in BAC's of what percent?

- a. .01%
- b. .09%
- c. .10%
- d. .15%

TO CHECK YOUR ANSWERS TURN TO THE KEY ON PAGE XXIX - 22. REVIEW ANY ITEMS YOU MISSED BEFORE CONTINUING.

Characteristics and Driving Patterns of Impaired Drivers

In considering the characteristics of the impaired driver, age distribution in drinking and driving is a factor of prime interest. Data is presented in Figure 4.

Exposure to night time driving for each age group is plotted in Figure 5. Distribution of drivers with BAC .05% is shown by age group. The graph also relates age group to fatalities with BAC .05% or higher. Since more persons under 25 are both drinking and driving, more will be killed in alcohol-related crashes. Note that all three distributions peak at age 21-25; this clearly suggests that drinking driver countermeasures should emphasize the 21-25 year old driver.

There is a positive association between annual mileage and distribution of alcohol level. Also, numerous other characteristics of the drinking driver have been identified in current research, including BACs related to sex distribution, occupation, race, income and education.

The drinking and driving patterns of impaired drivers have been analyzed in two studies. A survey of drinking patterns of 748 persons in Washtenaw County, Michigan, gave these results: 16% of the drivers stated they did not drink; 48% stated they did not have a drink on the day of the interview; while 36% stated they had a drink on the day of the interview.

Figure 4

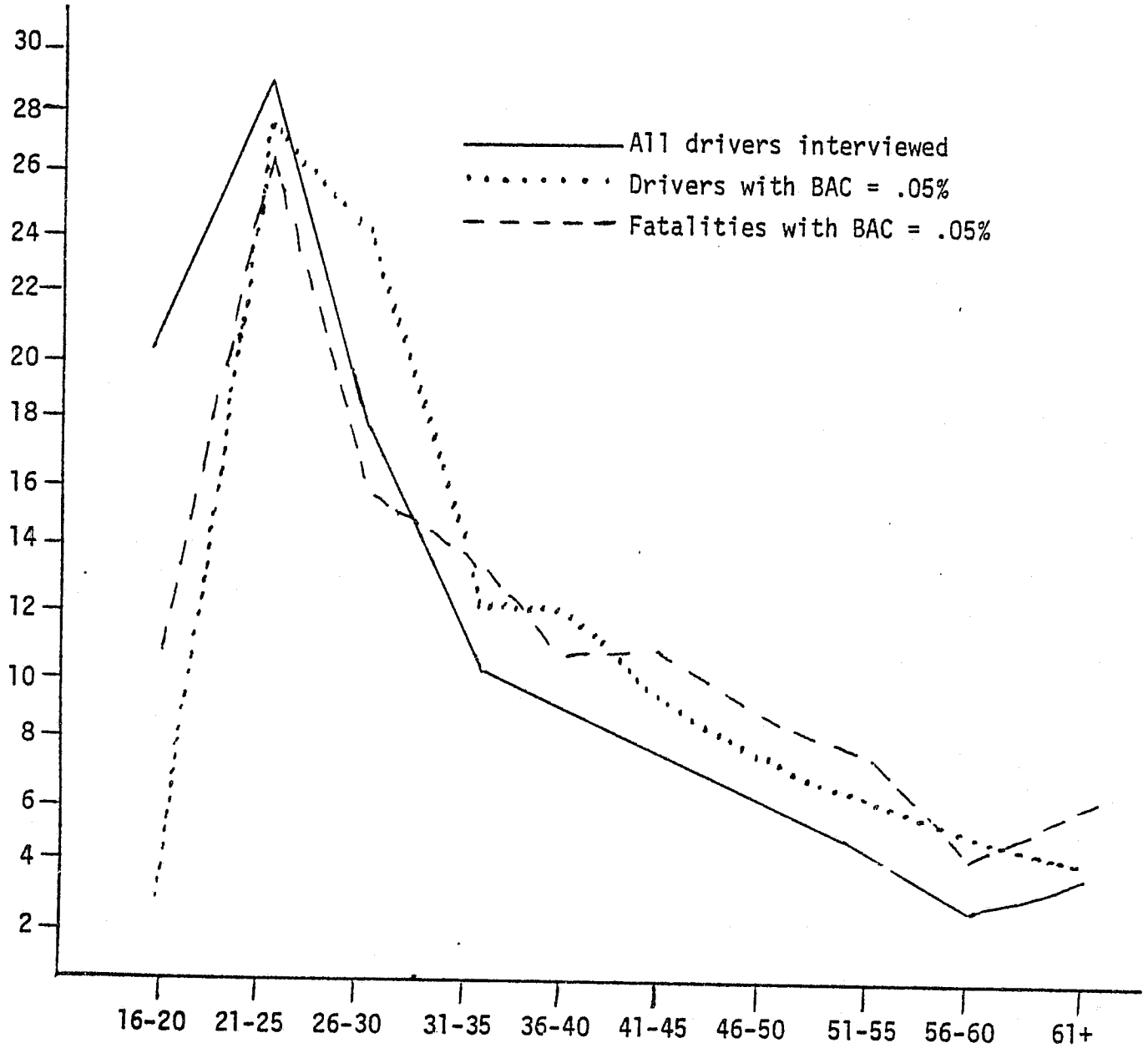
NUMBER AND PROPORTION OF DRIVERS AT OR ABOVE THE
INDICATED BAC BY AGE GROUP

<u>Age Group</u>	<u>.02%</u>	<u>.05%</u>	<u>.10%</u>	<u>Number Observed</u>
16-20	10 (7%)	2 (1%)	0 -	150
21-25	44 (21%)	22 (11%)	6 (3%)	210
26-30	27 (21%)	18 (14%)	8 (6%)	126
31-35	16 (23%)	9 (13%)	6 (9%)	69
36-40	12 (27%)	8 (18%)	2 (5%)	44
41-45	9 (23%)	5 (13%)	1 (3%)	39
46-50	9 (23%)	5 (13%)	3 (8%)	40
51-55	9 (30%)	4 (13%)	3 (10%)	30
56-60	2 (11%)	2 (11%)	1 (6%)	18
61+	2 (11%)	1 (5%)	0 -	19
Total	140 (19%)	76 (10%)	30 (4%)	745

Source: Carlson, W.L., and others. "Washtenaw County BAC Roadside Survey," Ann Arbor, Michigan: Highway Safety Research Institute, University of Michigan, Sept., 1971, p. 27.

Figure 5

DISTRIBUTION BY AGE OF DRIVER SUBGROUPS



Source: Carlson, W.L., and others. "Washtenaw County BAC Roadside Survey," Ann Arbor, Michigan: Highway Safety Research Institute, University of Michigan, September, 1971, p. 28.

In the Grand Rapids, Michigan, study, drinking patterns were analyzed for 7067 persons. According to the drivers' statements, 25.77% abstain; 14.93% drink once a year; 15.24% drink once a month; 22.71% drink once a week; 11.07% drink 3 times per week; and 10.29% drink daily.

There were about 4 times more lunch and afternoon drinkers than morning drinkers. There were 4 times as many before dinner drinkers than lunch and afternoon drinkers. Seventy percent (70%) of the drinking is done in the evening; 37% of the respondents felt they could drive safely after more than five drinks.

In the Washtenaw County, Michigan, study, trip destinations data indicated that 2/3 of the drivers with BAC .10% were going home; 2 of the 748 drivers were going to work.

Probabilities of Drivers on the Road Who Have Been Drinking

The foregoing research studies involving roadside surveys provide a basis for estimating the probability of drinking drivers on the road. From 1%-4% of all drivers during all hours have BACs of .10%; 12%-38% of those drivers who have been drinking have BACs of .10%.

The Grand Rapids study developed a formula for estimating numbers of violations involving DWI drivers. For every 100 drivers with BAC = .11%, there will be 8000 DWI violations a year. Thus, there is an average of 80 violations per DWI per year.

According to the Monthly Alcohol Arrest Reports of the Maryland State Police, chemical tests were administered to drivers to determine the BAC level. Figure 6 shows the results of the tests. In each of the three year periods surveyed, more than 77% of the population who received the test showed a BAC level of .15% or higher.

The incidence of alcohol in highway traffic fatalities in Baltimore County during a two-year period is shown in Figure 7. In 1972, 53% of the fatalities resulted from drivers with a BAC level of 0.10% or higher. In 1973, the percentage of drivers with a BAC level of 0.10% or higher decreased slightly to 51%. Figure 8 shows the results of the same time period for Baltimore City. In 1972, the percentage (51%) was similar to Baltimore County. In 1973, the percentage had decreased to 35% for fatalities resulting from drivers with a BAC level of 0.10% or higher.

Use of Alcohol Enforcement as a Deterrence - Prevention

There is very little evidence that increased patrol deters the drinking driver. According to a survey in Michigan, the relationship by BAC to whether or not the subject noticed the police and whether or not the subject was influenced by awareness of the police indicated that about 18% noticed police patrol and were influenced by it. Nearly 27% noticed police and were not influenced; 54% did not notice the police at all.

Figure 7

INCIDENCE OF ALCOHOL IN HIGHWAY TRAFFIC FATALITIES
(BALTIMORE COUNTY CASES)

PERCENT ALCOHOL CONTENT OF BRAIN, SPINAL FLUID OR BLOOD

Type of Accident	Total Cases Tested		Negative		0.01-0.04%		0.05-0.09%		0.10-0.14%		0.15-0.24%		0.25-0.39%		0.40-OVER	
	1972	1973	1972	1973	1972	1973	1972	1973	1972	1973	1972	1973	1972	1973	1972	1973
Driver-Motor Vehicle Other Motor Vehicle	75	77	34	30	1	9	10	7	10	8	16	18	4	3	0	2
Driver-Motor Vehicle Fixed Object	42	50	9	11	0	1	5	3	6	11	14	20	8	4	0	0
Driver-Motor Vehicle Ran off road, overturned	38	36	7	14	0	3	7	2	7	4	13	9	3	3	1	1

PEDESTRIAN/OTHER FATALITIES

Pedestrian Struck by Motor Vehicle	39	60	8	18	1	4	3	1	7	7	11	19	9	11	0	0
Pedestrian Struck by Train	1	4	0	2	0	0	0	0	1	0	0	1	0	1	0	0
Falls from Moving Motor Vehicle	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
TOTAL	196	227	58	75	3	17	25	13	31	30	54	67	24	22	1	3
PERCENT			29.6	33.0	01.5	07.5	12.8	05.7	15.8	13.2	27.6	29.5	12.2	09.7	00.5	01.4

SOURCE: Annual Reports, Department of Post-Mortem Examiners, Baltimore

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Figure 8

**INCIDENCE OF ALCOHOL IN HIGHWAY TRAFFIC FATALITIES
(BALTIMORE CITY CASES)**

PERCENT ALCOHOL CONTENT OF BRAIN, SPINAL FLUID OR BLOOD

Type of Accident	Total Cases Tested		Negative		0.01-0.04%		0.05-0.09%		0.10-0.14%		0.15-0.24%		0.25-0.39%		0.40-OVER	
	1972	1973	1972	1973	1972	1973	1972	1973	1972	1973	1972	1973	1972	1973	1972	1973
Driver-Motor Vehicle Other Motor Vehicle	21	32	10	21	0	3	2	2	6	2	3	4	0	0	0	0
Driver-Motor Vehicle Fixed Object	15	17	3	2	1	0	2	4	2	0	6	7	1	3	0	1
Driver-Motor Vehicle Ran off road, over- turned	3	2	0	1	0	0	1	0	1	0	1	1	0	0	0	0

PEDESTRIAN/OTHER FATALITIES

Pedestrian Struck by Motor Vehicle	36	37	18	21	1	1	2	3	6	1	5	7	4	4	0	0
Pedestrian Struck by Truck	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0
Driver-Motor Vehicle Train Collision	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	78	89	32	45	2	4	7	9	15	4	17	19	5	7	0	1
PERCENT	0	0	41.0	50.6	02.6	04.5	09.0	10.1	19.2	04.5	21.8	21.3	06.4	07.9	0	01.1

It may be concluded that research has not discovered any significant deterrence through DWI enforcement. Moreover, experience has shown that many drinking drivers continue drinking and driving after apprehension and conviction. Apparently, there is very little hope in deterrence as a solution to drinking driver problems.

TO CHECK YOUR PROGRESS PLEASE ANSWER THE FOLLOWING QUESTIONS.

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TO CHECK YOUR PROGRESS PLEASE ANSWER THE FOLLOWING QUESTIONS.

Directions: Using your response sheet, circle the letter of the item which most accurately completes the following statement.

4. In considering the characteristics of the impaired driver, which of the following is a factor of prime interest?

- a. Age
- b. Socio-economic background
- c. Physiological characteristics
- d. All of the above

5. According to a Michigan study, the percentage of drivers who felt they could drive safely after consuming five drinks is:

- a. 18%
- b. 26%
- c. 37%
- d. 54%

TO CHECK YOUR ANSWERS TURN TO THE KEY ON PAGE XXIX - 22. REVIEW ANY ITEMS YOU MISSED BEFORE CONTINUING.

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TO CHECK YOUR ANSWERS TURN TO THE KEY ON PAGE XXIX - 22. REVIEW ANY ITEMS YOU MISSED BEFORE CONTINUING.

SELECTING THE PATROL AREA

Location of DWI Problem Areas

Locations most frequently used for drinking is of prime importance in patrol planning. Most drinking is done in bars or at home. Drinking in bars results in much higher BACs, particularly when more than one drinking episode is involved.

Drinking drivers may be on any highway but are more likely to be found on less heavily travelled roads. These are routes that carry medium volumes of traffic during daylight and early evening hours. They do not include residential streets which contain little traffic during early morning hours.

Observation of patrol procedures and detection activities indicated several general trends. There was a high percentage of drinking drivers on primary streets with moderate to light traffic. There were numerous drinking drivers on industrial streets of light traffic load and on secondary streets serving alcohol dispensing establishments open to the public. There were also numerous drinking drivers arriving at and leaving social events that serve alcohol (dances, parties, etc.).

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Time Frames of Drinking Driver Offenses

Drinking offenses are closely related to locations and to time of night. There is a sharp increase of drinking offenses after midnight at all locations (rural, suburban, and urban) and for all traffic conditions. The time of night has relationship to BACs, with a slow increase in the percentage of drinking drivers until midnight, then a rapid upswing from midnight to 1 AM. The rapid increase of drinking drivers is combined with the dramatic decrease in traffic volumes.

TO CHECK YOUR PROGRESS PLEASE ANSWER THE FOLLOWING QUESTIONS.

Directions: Using your response sheet, circle the letter of the item which most accurately completes the following statements:

6. Of prime importance to patrol planning is the location most frequently used for drinking. A good location to patrol would be:

- a. Industrial sites
- b. Strips where bars are located
- c. Residential areas
- d. All of the above

7. The time that most drinking offenses occur is:

- a. 9:00 p.m. to midnight
- b. Midnight to 1 a.m.
- c. 1 a.m. to 4 a.m.
- d. 4 a.m. to 6 a.m.

TO CHECK YOUR ANSWERS TURN TO THE KEY ON PAGE XXIX - 22. REVIEW ANY ITEMS YOU MISSED BEFORE BEGINNING THE POSTTEST.

THIS COMPLETES SELF-INSTRUCTION UNIT XXIX.

XXIX

KEY TO EMBEDDED QUESTIONS

	Refer to Page XXIX -
1. c. One ounce of 80-proof whiskey per person per day	2
2. d. All of the above	2
3. c. .10%	5
4. a. Age	9
5. c. 37%	12
6. b. Strips where bars are located	19
7. b. Midnight to 1 a.m.	20

END