

P
HE
5614.3
.18
I57b
1973

ALCOHOL RELATED FATAL MOTOR VEHICLE

ACCIDENT STUDY: IOWA, 1973

IOWA DEPARTMENT OF PUBLIC SAFETY

CHARLES W. LARSON, COMMISSIONER



Report Prepared by:

Aurora P. Berenguel

Statistical Research Analyst

Dept. of Public Safety

June 20, 1974

TABLE OF CONTENTS

	<u>Page Number</u>
Summary	i-iii
1.0 Objectives	1
2.0 Source of Data	1
3.0 Number of Alcohol Related Fatal Accidents and Fatalities: 1973	1
4.0 Drinking Pedestrians	2
5.0 Fatal Crashes Involving Drinking Drivers by Type of Crash: 1973	3
6.0 Number of Drinking Drivers Tested by Degree of Drinking: Iowa, 1973	5
7.0 Number of Drinking Drivers Tested by Degree of Drinking by Blood Alcohol Content: 1973, Iowa	5
8.0 Drinking Drivers in Fatal Accidents by Age	6
9.0 Drinking Drivers by Age and By Day of Week	9
10.0 Relationship Between Age of Drinking Drivers and Mean Blood Alcohol Content in Fatal Accidents: Iowa, 1973	9
11.0 Alcohol Related Fatal Accidents and Fatalities by Month: 1973, Iowa	11
12.0 Ranked Violations Committed by Drinking Drivers Involved in Fatal Accidents: Iowa, 1973	12
13.0 Alcohol Related Fatal Accidents by County: Iowa, 1973	13
14.0 Comparison Between 1970-1972 Average and 1973 Alcohol Related Fatal Accidents: Iowa	14
15.0 Drinking Drivers History Records: 1973, Iowa	15
16.0 Discussion and Summary	16
<u>Statistical Tables</u>	
Table 1: Number and Percentage Distribution of Alcohol Related Fatal Accidents by Degree of Drinking: Iowa, 1973	2
Table 2: Alcohol Related Pedestrian Fatalities	3
Table 3: Alcohol Related Fatal Accidents by Number of Vehicles Involved: Iowa, 1973	4

<u>Charts</u>	<u>Page Number</u>
Chart 5: Percent Distribution of Alcohol Related Fatal Accidents by Time of Day by Type of Accident: Iowa, 1973	33
Chart 6: Mean BAC Level of Drinking Drivers by Age Group: Iowa, 1973	34
Chart 7: Violations Committed by Drinking Drivers by Type of Accident: Iowa, 1973	35
Chart 8: Percent Distribution of Drinking Drivers Involved in Fatal Accidents by BAC: Iowa, 1973	

SUMMARY AND TABLE OF CONTENTS

1. There were 217 alcohol related fatal accidents out of 682 fatal traffic accidents or 31.8 % in 1973. These claimed a total of 263 fatalities or 32.8 % of total highway fatalities.
2. Eleven pedestrians were killed as a result of alcohol involvement, 8 cases involved drinking pedestrians and 3 involved drinking drivers.
3. Two-thirds of the intoxicated pedestrians were of ages 25 and under and were killed during early morning hours.
4. There is an equal distribution of single and multi-vehicle alcohol related fatal crashes.
5. Out of 235 drinking drivers, 147 or 62.6 % had blood alcohol tests. Mean or average BAC of drivers tested was 0.184 and 84.3 % had BAC of 0.100 percent by weight and more. Data also showed 64.7 % had BAC of 0.150 and above which may be indicative of being "problem drinkers".
6. Drinking drivers of single motor vehicle fatal crashes showed a significantly higher concentration of alcohol in their blood than drinking drivers involved in multi-vehicle fatal accidents.
7. About half of the drinking drivers in fatal crashes in 1973 were young drivers, 24 years old and under, which is a little more than the already over represented young drivers in fatal accidents.
8. The high crash involvement of younger drivers corresponds to a high degree of night driving. Peak time for younger drinking drivers in fatal accidents was during early morning hours suggesting that this group probably drives more for recreational purposes.
9. On the other hand, peak time for older drinking drivers in fatal accidents was during early evening hours (6:00 P.M. - 8:59 P.M.).
10. Both younger and older groups of drinking drivers are involved in fatal

accidents heavily during weekends. However, further analysis shows the younger group is involved in significantly more crashes than the older drivers.

11. Results showed that the younger drinking drivers had lower levels of alcohol in their blood yet they had higher involvement in fatal accidents. This strongly suggests that young drivers have their vulnerability to traffic accidents increased when drinking is involved.
12. On the other hand, level of alcohol among the middle age drinking drivers was higher, yet involvement in traffic accidents was lower.
13. December was a peak month for alcohol related fatal accidents in 1973. This month chalked up 50.0 % followed by March (42.9 %), November (40.4 %), September (40.0 %), February (35.0 %), May (34.8 %), July (32.1 %), June (28.8 %), April (27.3 %), August (24.4 %), January (23.3 %), and October (16.9 %).
14. Two-thirds of alcohol related single vehicle fatal accidents were caused by a drinking driver not able to hold his vehicle under control. Driving left of center or in wrong lane, speed too fast, and failure to yield right of way account for three fourths of violations in multi-vehicle fatal crashes.
15. There were 53 counties in 1973 above the state average of 31.8 % of total fatal accidents being alcohol related. Included were four counties of 50,000 or more population which were Dubuque, Story, Pottawattamie, and Linn.
16. A total of 20 counties in 1973 did not have alcohol related fatal accidents.
17. Although there was a reduction of fatalities in 1973 by 61 or 7.0 %, comparison between 1973 percentage alcohol related fatal accidents with average of 1970-1972 showed a statistically non-significant difference. This suggests that alcohol involvement in fatal accidents continues to be a leading contributing factor in fatal accidents.

18. A study of drinking drivers' records 3 years prior to the fatal accident, indicated that only 22.6 % had clear records (no accidents nor convictions).
19. Comparison of records of these drinking drivers involved in fatal accidents with records of all drivers in fatal accidents ^{1/} showed drinking drivers' records have three times more accidents and convictions than all drivers involved in fatal accidents.

^{1/} 1972 study of driving history of drivers involved in fatal accidents.
" Preliminary Study on the Relationship Between Traffic Violation Conviction and Traffic Accidents of Drivers Involved in Fatal Accidents, Iowa, 1972"

ALCOHOL RELATED FATAL MOTOR VEHICLE ACCIDENT STUDY: IOWA, 1973

1.0 Objectives:

This report is a continuing study of alcohol related fatal accidents in the state of Iowa from year to year.

The main objective is to ascertain and evaluate the proportion of alcohol related fatal accidents. Secondary objectives of the study are to present information on the characteristics of alcohol related fatal accidents, and to examine the extent of involvement of drinking pedestrians and other relevant information necessary in planning countermeasure programs.

2.0 Source of Data:

Data were collected from investigated fatal motor vehicle accident reports. A fatal accident is classified to be alcohol related if the investigating officer reports the driver or pedestrian had been drinking and the degree of drinking classified under the following categories and possibly verified by a blood test:

- (1) Obviously Drunk
- (2) Ability Impaired
- (3) Ability Not Impaired

3.0 Number of Alcohol Related Fatal Accidents and Fatalities: 1973

In 1973, there were 217 alcohol related out of 682 fatal accidents representing 31.8 %. These claimed a total of 263 fatalities or 32.8 % of total highway fatalities. Inspection of the data in Table 1

showed 122 out of 217 or 56.2 % were cases wherein drivers were obviously drunk, 31.8 % were drivers who had been drinking and ability impaired, and 8.3 % were drivers who had been drinking and ability not impaired.

TABLE 1: NUMBER AND PERCENTAGE DISTRIBUTION OF ALCOHOL RELATED FATAL ACCIDENTS BY DEGREE OF DRINKING: IOWA, 1973

Degree of Drinking	Fatal Accidents			Fatalities		
	Number	% of Subgroup	% of Total	Number	% of Subgroup	% of Total
Obviously Drunk	122	56.2	17.9	142	54.0	17.5
Driver Ability Impaired	69	31.8	10.1	91	34.6	11.2
Driver Ability Not Impaired	18	8.3	2.6	22	8.4	2.7
Pedestrian Drinking	8	3.7	1.2	8	3.0	1.0
Subtotal	217	100.0	31.8	263	100.0	32.4
Total Not Drinking or Unknown if Drinking	465	-	68.2	550	-	67.6
Grand Total	682	-	100.0	813	-	100.0

4.0 Drinking Pedestrians:

In 1973, a total of 11 pedestrians were killed as a result of alcohol involvement. Out of these, 8 cases involved intoxicated pedestrians and 3 cases involved drinking drivers. Table 2 was prepared to picture in detail pedestrian fatalities attributable to alcohol consumption.

TABLE 2: ALCOHOL RELATED PEDESTRIAN FATALITIES: IOWA, 1973

Fatality Group		1973	
		Number	Percent
Pedestrian Fatalities	Related to Drinking Pedestrians	8	3.0
	Related to Drinking Drivers	3	1.1
Driver and Passenger Fatalities	Related to Drinking Drivers	252	95.8
Total Alcohol Related Fatalities		263	100.0%

A check of the blood alcohol concentration yielded a mean BAC of 0.223 ranging from 0.162 to 0.290 which is probably symptomatic of a drinking problem.(1)

Analysis of age shows two thirds of the intoxicated pedestrians were of ages 25 and under. These age groups were also found to be correlated with the time. Younger drinking pedestrians were killed during early morning hours 12:00 A.M. through 5:59 A.M. This data is shown in Chart 1.

5.0 Fatal Crashes Involving Drinking Drivers by Type of Crash: 1973, Iowa

The number of alcohol related fatal accidents by type of crash and by degree of drinking is shown in Table 3. A close examination of Table 3 shows the equal distribution of single and multi-vehicle alcohol related fatal crashes. The tabulation also reflects a mean or average BAC $\frac{1}{100}$ (blood alcohol concentration) of those drivers

1/ BAC means milligrams per 100 ml. or 0.184 percent by weight.

involved in fatal motor vehicle crashes. Results showed an average BAC of 0.184 for drivers positive for alcohol in their blood.

Drinking drivers of single motor vehicle fatal crashes showed a significantly higher concentration of alcohol in their blood, mean BAC = 0.201, than drinking drivers involved in multi-vehicle fatal accidents, mean BAC = 0.166.

TABLE 3: ALCOHOL RELATED FATAL ACCIDENTS BY NUMBER OF VEHICLES INVOLVED:
IOWA, 1973

Type of crash	Fatal Crashes			Mean BAC	Fatalities		
	Number	% of Total	% of Subgroup		Number	% of Total	% of Subgroup
1. Single Motor Vehicle	109	50.2	100.0	0.201	122	46.4	100.0
(a) Ran off road	80	36.9	73.4	0.197	90	34.2	73.8
(b) Collision w/ fixed object	20	9.2	18.3	0.215	23	8.7	18.8
(c) Collision w/ drinking ped.	8	3.7	7.3	0.209	8	3.0	6.6
(d) Collision w/ non-drinking pedestrian	1	0.5	0.9	n.a.	1	0.4	0.8
2. Multiple Motor Vehicle	108	49.8	100.0	0.166	141	53.6	100.0
Collision w/:							
(a) M.V. in traffic	100	46.1	92.6	0.166	136	51.7	96.4
(b) M.V. in traffic and pedestrian	2	0.9	1.8	n.a.	2	0.8	1.4
(c) Parked M.V.	4	1.8	3.7	n.a.	1	0.4	0.7
(d) Train	2	0.9	1.8	0.135	2	0.8	1.4
Total Alcohol Related	217	100.0	100.0	0.184	263	100.0	100.0

1/ Difference between mean BAC of single and multiple motor vehicle accidents is statistically significant at $p = .05$, $t = 2.03$, $n = 145$.

6.0 Number of Drinking Drivers Tested by Degree of Drinking: Iowa, 1973.

In 1973, there were 235 drinking drivers and out of these, 147 or 62.6 % had blood alcohol tests. Of the "obviously drunk" category 81.2 % were tested for blood alcohol content. The distribution of number of drinking drivers tested and not tested is shown in Table 4 which is shown below.

Table 4: NUMBER AND PERCENT DISTRIBUTION OF DRINKING DRIVERS TESTED FOR BLOOD ALCOHOL CONTENT: IOWA, 1973

Degree of Drinking	Total		Obviously Drunk		Ability Impaired		Ability not Impaired	
	No.	%	No.	%	No.	%	No.	%
Drinking Driver								
Tested	147	62.6	112	81.2	29	40.8	6	23.1
Not Tested	88	37.4	26	18.8	42	59.2	20	76.9
Total	235	100.0	138	100.0	71	100.0	26	100.0

7.0 Number of Drinking Drivers Tested by Degree of Drinking By Blood Alcohol Content : Iowa, 1973

Total number of drivers tested for blood alcohol content ^{1/} revealed an average of 0.184 (184 mg. per 100 ml. or 0.184 percent by weight.) Table 5 shows the frequency of drinking drivers by BAC level. Out of 147 drivers tested, 124 or 84.3 % had blood alcohol content of 0.100 percent and more. This blood concentration of 0.100 shall be prima facie evidence of being under the influence of alcohol while driving a motor vehicle in the state of Iowa. Data also shows 64.7% had BAC of 0.150 and above, symptomatic of being problem drinkers. (1)

^{1/} Blood alcohol content (BAC) is the number of mg. of alcohol per 100 ml. of blood.

Table 5: Frequency of Drinking Drivers By Blood Alcohol Content:

Iowa, 1973

BAC Level	Number of Drinking Drivers	Relative Frequency
Below .050	8	5.4 %
.050 - .099	15	10.2
.100 - .149	29	19.7
.150 - .199	30	20.4
.200 - .249	30	20.4
.250 - .299	18	12.2
.300 - .349	12	8.2
.350 - .399	1	0.7
.400 - .449	3	2.0
.450 - .499	1	0.7
Total	147	100.0

8.0 Drinking Drivers in Fatal Accidents By Age: Iowa, 1973

Age distribution of drinking drivers involved in fatal accidents in 1973 was studied in detail to find out the role and characteristics of age in alcohol related fatal accidents. Table 6 reflects the number of drinking drivers and the number of all drivers involved in fatal accidents. The table indicates that about half of the drinking drivers in fatal motor vehicle accidents are young drivers, 24 years old and under. This proportion is a little more than the already over represented young drivers in fatal accidents.

TABLE 6: DRINKING DRIVERS AND ALL DRIVERS INVOLVED IN FATAL MOTOR VEHICLE ACCIDENTS BY AGE GROUP: IOWA, 1973

Age Group	Drinking Drivers in Fatal Accidents		All Drivers In Fatal Accidents	
	Number	Percent	Number	Percent
16 & below	1	0.4	68	6.2
17	6	2.6	60	5.5
18 - 19	34	14.4	120	10.9
20-24	75	31.9	233	21.2
25-34	58	24.7	200	18.2
35-44	20	8.5	129	11.8
45-54	22	9.4	114	10.8
55-64	13	5.5	84	7.6
65-74	4	1.7	52	4.7
75 & up	2	0.9	35	3.2
Not Stated	-	-	2	0.2
Total	235	100.0	1097	100.0

Another way of analyzing the role of age especially of youthful drinking drivers in fatal accidents is to compare the number of fatal collision involvement of drinking drivers in fatal accidents with the population and the number of licensed drivers in the state and this is shown in Table 7. Table 7 presents the distributions by age for drinking drivers involved in fatal accidents, estimated population and licensed drivers in 1973. From the distribution, one will observe the similarity in age distribution for population and for licensed drivers in 1973. There are two observed differences however. The 25-34 age group makes

up 15.6 % of the population and 19.9 % of the licensed drivers. This may result from a large number of students in some parts of the state who are non- resident students, or could also be attributed to those who are back from the military or college and are seeking employment.

TABLE 7: COMPARISON OF DRINKING DRIVERS INVOLVED IN FATAL ACCIDENTS WITH ESTIMATED POPULATION AND NUMBER OF LICENSED DRIVERS BY AGE GROUP: IOWA, 1973

Age Group	Drinking Drivers in Fatal Accidents, 1973		Estimated Population 1973		Licensed Drivers 1973	
	Number	Percent	Number	Percent	Number	Percent
15& 16	1	0.4	113,714	5.6	44,689	2.5
17	6	2.6	54,827	2.7	49,738	2.8
18	15	6.4	56,857	2.8	50,628	2.8
19	19	8.1	50,765	2.5	50,349	2.8
20	12	5.1	44,674	2.2	49,187	2.8
21-24	63	26.8	160,419	7.9	190,768	10.7
25-34	58	24.7	316,776	15.6	355,354	19.9
35-44	20	8.5	298,501	14.7	270,761	15.2
45-54	22	9.4	412,715	15.4	277,650	15.5
55-64	13	5.5	270,072	13.3	234,956	13.1
65-74	4	1.7	201,030	9.9	149,960	8.4
75 & up	2	0.8	150,266	7.4	63,129	3.5
Total	235	100.0%	2,030,616	100.0%	1,787,169	100.0%

One will note from the above tabulation that there is a high crash involvement of drinking drivers in the 18-24 age groups. The high crash

involvement of young drivers probably could be due to inexperience, these young drivers are learning how to drive and learning how to drink. It was also noted that this high crash involvement of younger drivers corresponds to a high degree of night driving as shown in Chart 3. It is apparent from the chart that the younger group have a time pattern distinct from the older group 25 years of age and older. Peak time for younger drivers involved in fatal accidents is during the early morning hours (12:00 A.M.-2:59 A.M.) while peak time for the older group is the early evening hours (6:00P.M.-8:59P.M.). This time pattern probably suggest the younger group drives more for recreational purposes, thus indicating different life styles between the younger group and the older group.

9.0 Drinking Drivers By Age and By Day of Week:

Chart 4 which compares the day of week of drinking drivers involved in fatal accidents suggests that both the younger and older group are drinking and driving heavily during the weekends. However, further analysis shows that the group 24 years and younger are over represented compared with the older group 25 years and older. When analyzed for statistical significance, younger drinking drivers are involved in fatal accidents significantly more during the weekends than the older drivers.

10.0 Relationship Beteen Age of Drinking Drivers and Mean Blood Alcohol Content in Fatal Accidents: Iowa, 1973

One interesting question was whether age and level of blood alcohol content follows a distinct pattern. In order to do this, the age and mean blood alcohol content was charted with age group as shown in Chart 6.

It is noteworthy that drinking drivers who are 19 years and under have lower BACs than that of those 5 years, 10 years or more their senior. It was established from information mentioned previously in this study that young drivers have higher involvement in fatal accidents and their vulnerability to traffic accidents is increased when drinking is involved. One feature which differentiates young drivers from their older counterparts is that young drivers are particularly vulnerable to small amounts of alcohol.

On the other hand, data shows that level of blood alcohol content is highest among middle age drinking drivers. Chart 6 reflects that the highest BACs are concentrated among the middle age drivers as shown with mean of 0.222.^{1/}

From the chart, it is also noticeable that the oldest group of drinking drivers (65 years and up) have the lowest frequency and smallest amounts of alcohol in their blood. This probably could be explained by gerontological changes among the old. The following shows the data.

Age Group	Average or Mean BAC
19 & younger	0.161
20-24	0.181
25-34	0.191
35-44	0.200
45-54	0.222
55-64	0.178
65 & up	0.053
All Ages	0.184

^{1/} Difference between 19 years and younger and 45-54 years BAC level is highly significant at .001 probability level, $t=11.127$, $n=44$, $p=.001$.

11.0 Alcohol Related Fatal Accidents and Fatalities by Month: 1973, Iowa

Variation by month of year in 1973 is shown in Table 8. The month of December chalked up one half of total fatal accidents to be alcohol related. This is followed by the month of March, November and September which chalked up 42.9 %, 40.4 % and 40 % of total.

TABLE 8: NUMBER AND PERCENT ALCOHOL RELATED FATAL TRAFFIC ACCIDENTS AND FATALITIES BY MONTH: 1973, IOWA

Month	Alcohol Related Fatal Accidents	All Fatal Traffic Accidents	% Alcohol Related	Alcohol Related Fatalities	All Traffic Fatalities	% Alcohol Related Fatalities
January	10	43	23.3	11	50	22.0
February	14	40	35.0	17	48	35.4
March	21	49	42.9	25	60	41.7
April	15	55	27.3	17	67	25.4
May	23	66	34.8	29	79	36.7
June	21	73	28.8	22	83	26.5
July	18	56	32.1	26	67	38.8
August	22	90	24.4	24	104	23.1
September	22	55	40.0	28	63	44.4
October	11	65	16.9	11	77	14.3
November	21	52	40.4	29	67	43.3
December	19	38	50.0	24	48	50.0
Total	217	682	31.8	263	813	32.2

12.0 Ranked Violations Committed by Drinking Drivers Involved in Fatal Accidents: Iowa, 1973

Violations frequently committed by drinking drivers were investigated and ranked by type of accident (multiple vehicle fatal accidents or single vehicle fatal accidents). This is reflected in Table 9 and Chart 7.

TABLE 9: VIOLATIONS COMMITTED BY DRINKING DRIVERS BY TYPE OF ACCIDENT: IOWA, 1973

Violations \ Accident Type	Multiple Vehicle		Single Vehicle	
	No.	%	No.	%
(1) Drove left of center or in wrong lane	61	46.9	4	3.3
(2) Speed Too Fast	20	15.4	31	25.8
(3) Failed To Yield	16	12.3	-	-
(4) Ran Stop Sign	6	4.6	1	0.8
(5) Not Under Control	10	7.7	80	66.7
(6) Ran Traffic Signal	1	0.8	-	-
(7) Unknown	6	4.6	1	0.8
(8) Others, n.e.c.	10	7.7	3	2.5
Total	130	100.0	120	100.0

Two-thirds of single vehicle and alcohol related fatal accidents were caused by a drinking driver not able to hold his vehicle under control and about one fourth were due to speeding.

On the other hand, violations of drinking drivers in multi-vehicle fatal accidents in order of magnitude are driving left of

center or in wrong lane, speed too fast, and failure to yield right of way. All three violations account for three fourths of violations in alcohol related multi-vehicle fatal crashes.

The aforementioned facts indicated significantly different violations committed by drinking drivers in single and multi-vehicle types of fatal accidents.

13.0 Alcohol Related Fatal Accidents by County: Iowa, 1973

Counties in the state with corresponding number and percent alcohol related fatal accidents are tabulated in Tables 10 and 11, alphabetically arranged and in order of alcohol related fatal accidents in percent.

A total of 20 counties did not have alcohol related fatal accidents in 1973. These counties are Adams, Appanoose, Cedar, Clarke, Dickinson, Emmet, Fremont, Guthrie, Hardin, Harrison, Jefferson, Mahaska, Mitchell, Montgomery, Osceola, Pocahontas, Ringgold, Taylor, Van Buren, and Wright.

There were 53 counties in 1973 above the state average of 31.8 % alcohol related fatal accidents. These counties accounted for 68.7 % of total alcohol related fatal accidents in the state during the year under review.

It is interesting to note that of counties with 50,000 or more population in the 1970 census, 6 counties fared below the state average of 31.8%. Four counties, which are Dubuque (38.5 %), Story (66.7 %), Pottawattamie (36.8 %) and Linn (50.0 %), were above the state average.

The following lists down the counties with 50,000 or more population and fared below the state average. They are:

County	Alcohol Related Fatal Accidents	Total Fatal Accidents	% Alcohol Related
Black Hawk	5	21	23.8
Clinton	3	10	30.0
Scott	9	30	30.0
Johnson	2	15	13.3
Polk	6	43	14.0
Woodbury	4	13	30.8

14.0 Comparison Between 1970, 1971, 1972, and 1973 Alcohol Related Fatal Accidents:

A comparison between 1970, 1971, 1972, and 1973 alcohol related fatal accidents is shown in Table 12.

Table 12 shows the different proportion of alcohol related fatal accidents in 1970 through 1973. Average proportion in 1970-1972 was calculated to be 30.9 %. A statistical significance test for 1970, 1971, and 1972 proportion at $p=.05$ showed the proportions are not significantly different from the past years.

TABLE 12: ALCOHOL RELATED FATAL TRAFFIC ACCIDENTS: 1970-1973

Year	Alcohol Related	Total Fatal Accidents	% Alcohol Related
1970	222	751	29.6
1971	233	680	34.3
1972	210	721	29.1
1973	217	682	31.8

15.0 Drinking Drivers History Records: Iowa, 1973

Driving records of drinking drivers involved in fatal accidents in 1973 were searched for convictions and accidents for a period of three years prior to the fatal accident.

A total of 199 had records readily available and from these, the following table was prepared reflecting the number of drinking drivers with 0, 1, 2, 3, 4 or more accidents 3 years prior to the fatal accident.

<u>Number of Accidents (3 years prior)</u>	<u>Number of Drinking Drivers</u>	<u>% Distribution</u>
0	104	52.3
1	62	31.2
2	24	12.1
3	7	3.5
<u>4 or more</u>	<u>2</u>	<u>1.0</u>
Total	199	100.0

Apparently approximately half of the drinking drivers being studied had at least 1 accident.

Similarly, number of drinking drivers with 0, 1, 2, 3, 4, 5 or more convictions 3 years prior record are as follows:

<u>Convictions</u>	<u>Number of Drinking Drivers</u>	<u>% Distribution</u>
0	69	34.7
1	51	25.6
2	38	19.1
3	25	12.6
4	8	4.0
<u>5 or more</u>	<u>8</u>	<u>4.0</u>
Total	199	100.0

Data shows approximately two-thirds of the drinking drivers had at least 1 conviction. Hence, only one-third had no convictions on their record.

On the other hand, only 22.6 % of drinking drivers had clear records, i.e., no accidents nor convictions on their records 3 years prior to the fatal accident. A percentage distribution of drinking drivers with 0 accidents and 0 convictions, 0 accidents and 1 conviction, etc. is shown in Table 13.

A comparison of records of the aforementioned group of drinking drivers in 1973 with that of all drivers involved in fatal accidents during the same year will show how bad this group of drivers was. A 1973 study of records of all drivers involved in fatal accidents is not available, however a 1972 study will provide a preliminary comparison.

Comparison shows that 77.4 % of drinking drivers had at least 1 accident or 1 conviction on their record while 26.3 % of all drivers involved in fatal accidents had at least 1 accident or 1 conviction on their record. This implies that drinking drivers have three times as many convictions and accidents as all drivers involved in fatal accidents.

16.0 Discussion and Summary:

Results of the study showed that in 1973, 217 out of 682 fatal accidents or 31.8% were alcohol related. This took the toll of 263 lives. Although total motor vehicle deaths were down in 1973 by 7.0% compared in 1972, in 1973 the number of alcohol related fatal accidents was not significantly different from previous three years average percentage of 30.9%.

Blood alcohol content tests conducted on 147 or 62.6% of drinking drivers showed that 84.3% had BAC of 0.100 and more or 64.7% had BAC of 0.150 or more. This compares with the 1972 data wherein 88.0% had BAC of 0.100 and up and 71.8% had BAC of 0.150 or more. This strongly

suggests that about two-thirds of total drinking drivers were probably problem drinkers considering that blood alcohol content of 0.150 percent is an indication of the driver being a problem drinker. (1) At this level, probability of the driver causing a traffic accident has been found to be 25 times greater than if he were not drinking (2).

This study showed that inexperienced drinking drivers are an important factor in alcohol related crashes. The data indicated younger drivers drink less than their older counterparts but are much more likely to be involved in crashes when they do drink. Young drivers unfortunately undertake the learning processes of drinking and driving at about the same time.

Another result of this study indicated young drinking drivers to be involved in fatal accidents mostly late at night and most of their driving is probably done for recreational purposes.

William L. Carlson (3) suggested that any "countermeasures designed to reduce young drivers' crash involvement must therefore include changing automobile use patterns." In order to do this, it will probably be necessary to reduce nighttime driving, which limits individual freedom. On the other hand, education concerning the crash "societal costs" of such driving activity may be a reasonable approach and might result in a modification of automobile use.

References:

- (1) "Evaluation Report" - Alcohol Safety Action Project, 1971
- (2) "Drinking Patterns of 100 Million American Drivers", 1970 Highway Safety and the Traffic And Motor Vehicle Safety Annual Reports for 1970.
- (3) Carlson, "Alcohol Usage of the Nighttime Driver", Journal of Safety Research, (March 1972, Vol. 4, No. 1).
- (4) "The Vermont Symposium on Alcohol, Drugs, and Driving", Journal of Safety Research, (September 1973, Vol. 5, No. 3).
- (5) "Alcohol and Safety", U.S. Department of Transportation (August 1968).
- (6) "Traffic Safety 1972", U.S. Department of Transportation, National Highway Traffic Safety Administration.
- (7) A. Berenguel, "Preliminary Study on the Relationship Between Traffic Violation Conviction and Traffic Accidents of Drivers Involved in Fatal Accidents, Iowa, 1972".

TABLE 10: NUMBER OF ALCOHOL RELATED FATAL TRAFFIC ACCIDENTS AND FATALITIES BY
COUNTY: IOWA, 1973

County	Number of Alcohol Related	Alcohol Fatalities	Total Fatal Accidents	Total Fatalities	Percent Alcohol Related Accidents	Percent Alcohol Related Fatalities
Adair	1	1	1	1	100.0%	100.0%
Adams	-	-	-	-	-	-
Allamakee	1	1	4	4	25.0%	25.0%
Appanoose	-	-	4	5	-	-
Audubon	1	1	3	3	33.3%	33.3%
Benton	2	2	9	11	22.2%	18.2%
Black Hawk	5	5	21	22	23.8%	22.7%
Boone	2	2	4	4	50.0%	50.0%
Bremer	5	7	11	16	45.4%	43.8%
Buchanan	4	4	5	5	80.0%	80.0%
Buena Vista	2	2	5	5	40.0%	40.0%
Butler	2	2	4	5	50.0%	40.0%
Calhoun	3	3	7	7	42.8%	42.8%
Carrol	1	1	8	9	12.5%	11.1%
Cass	1	1	6	9	16.7%	11.1%
Cedar	-	-	2	2	-	-
Cerro Gordo	7	8	15	16	46.7%	50.0%
Cherokee	2	2	8	8	25.0%	37.5%
Chickasaw	1	1	8	10	12.5%	10.0%
Clarke	-	-	3	3	-	-
Clay	1	1	6	7	16.7%	14.3%
Clayton	2	3	7	8	28.6%	37.5%
Clinton	3	3	10	11	30.0%	27.3%
Crawford	1	1	5	5	20.0%	20.0%

County	Number of Alcohol Related	Alcohol Total Fatal Fatalities Accidents	Total Fatalities	Percent Alcohol Related Accidents Fatalities		
Dallas	4	5	10	13	40.0%	38.5%
Davis	1	4	2	5	50.0%	80.0%
Decatur	1	2	1	2	100.0%	100.0%
Delaware	1	1	4	5	25.0%	20.0%
Des Moines	3	5	7	9	42.8%	55.6%
Dickinson	-	-	5	7	-	-
Dubuque	5	7	13	15	38.5%	46.7%
Emmet	-	-	2	2	-	-
Fayette	3	3	7	7	42.8%	42.9%
Floyd	3	7	9	14	33.3%	50.0%
Franklin	1	1	2	2	50.0%	50.0%
Fremont	-	-	2	2	-	-
Green	2	2	6	8	33.3%	35.0%
Grundy	1	1	4	4	25.0%	25.0%
Guthrie	-	-	5	5	-	-
Hamilton	1	1	8	8	12.5%	12.5%
Hancock	5	5	8	8	62.5%	62.5%
Hardin	-	-	3	3	-	-
Harrison	-	-	5	5	-	-
Henry	1	1	2	2	50.0%	50.0%
Howard	2	2	3	4	66.7%	50.0%
Humboldt	1	1	4	4	25.0%	25.0%
Ida	1	1	3	3	33.3%	53.3%
Iowa	1	1	7	7	14.2%	14.3%
Jackson	5	6	9	10	55.6%	60.0%
Jasper	5	6	9	11	55.6%	54.5%
Jefferson	-	-	3	4	-	-

County	Number of Alcohol Related	Alcohol Fatalities	Total Fatal Accidents	Total Fatalities	Percent Alcohol Related Accidents	Alcohol Related Fatalities
Johnson	2	2	15	15	13.3%	13.3%
Jones	2	2	4	4	50.0%	50.0%
Keokuk	3	3	11	13	27.3%	23.1%
Kossuth	1	1	3	3	33.3	33.3%
Lee	3	6	11	16	27.3%	37.5%
Linn	16	19	32	43	50.0%	44.2%
Louisa	1	1	4	4	25.0%	25.0%
Lucas	1	2	5	8	20.0%	25.0%
Lyon	1	2	5	8	20.0%	25.0%
Madison	1	2	2	3	50.0%	66.7%
Mahaska	-	-	4	7	-	-
Marion	6	11	10	16	60.0	68.8%
Marshall	3	4	10	11	30.0%	36.4%
Mills	1	1	3	3	33.3%	33.3%
Mitchell	-	-	-	-	-	-
Monona	1	1	3	3	33.3%	33.3%
Monroe	2	2	6	6	33.3%	33.3%
Montgomery	-	-	5	6	-	-
Muscatine	5	8	9	13	55.6%	61.5%
O'Brien	3	4	5	6	60.0%	66.7%
Osceola	-	-	4	4	-	-
Page	1	1	2	4	50.0%	25.0%
Palo Alto	1	2	4	5	25.0%	80.0%
Plymouth	3	3	5	6	60.0%	50.0%
Pocahontas	-	-	1	1	-	-
Polk	6	6	43	48	14.0%	12.5%
Pottawatomie	7	7	19	22	36.8%	31.8%

County	Number of Alcohol Related	Alcohol Fatalities	Total Fatal Accidents	Total Fatalities	Percent Alcohol Related Accidents	Percent Alcohol Related Fatalities
Poweshiek	5	5	9	9	55.6%	12.5%
Ringgold	-	-	1	1	-	-
Sac	1	1	3	3	33.3%	33.3%
Scott	9	11	30	39	30.0%	28.2%
Shelby	3	3	4	4	75.0%	75.0%
Sioux	1	1	9	15	11.1%	6.7%
Story	8	9	12	14	66.7%	64.3%
Tama	3	4	9	10	33.3%	40.0%
Taylor	-	-	1	1	-	-
Union	1	1	2	2	50.0%	50.0%
Van Buren	-	-	-	-	-	-
Wapello	1	1	7	10	14.2%	10.0%
Warren	2	2	14	18	14.2%	11.1%
Washington	1	1	9	10	11.1%	10.0%
Wayne	1	1	1	1	100.0%	100.0%
Webster	5	6	16	18	31.2%	33.3%
Winnebago	4	5	4	5	100.0%	100.0%
Winneshiek	3	3	8	8	37.5%	37.5%
Woodbury	4	5	13	16	30.8%	31.2%
Worth	1	1	4	4	25.0%	25.0%
Wright	-	-	2	2	-	-
Statewide	217	263	682	813	31.8%	32.3%

TABLE 11: ALCOHOL RELATED FATAL ACCIDENTS BY COUNTY IN ORDER OF PERCENT:
IOWA, 1973

<u>County</u>	<u>Number of Fatal Accidents</u>	<u>Number of Alcohol Related</u>	<u>% Alcohol Related</u>
Adair	1	1	100.0
Decatur	1	1	100.0
Wayne	1	1	100.0
Winnebago	4	4	100.0
Buchanan	5	4	80.0
Shelby	4	3	75.0
Howard	3	2	66.7
Story	12	8	66.7
Hancock	8	5	62.5
O'Brien	5	3	60.0
Marion	10	6	60.0
Plymouth	5	3	60.0
Jackson	9	5	55.6
Jasper	9	5	55.6
Muscatine	9	5	55.6
Poweshiek	9	5	55.6
Boone	4	2	50.0
Butler	4	2	50.0
Davis	2	1	50.0
Franklin	2	1	50.0
Henry	2	1	50.0
Jones	4	2	50.0
Linn	32	16	50.0
Madison	2	1	50.0

<u>County</u>	<u>Number of Fatal Accidents</u>	<u>Number of Alcohol Related</u>	<u>% Alcohol Related</u>
Page	2	1	50.0
Union	2	1	50.0
Cerro Gordo	15	7	46.7
Bremer	11	5	45.4
Fayette	7	3	42.8
Des Moines	7	3	42.8
Calhoun	7	3	42.8
Buena Vista	5	2	40.0
Dallas	10	4	40.0
Dubuque	13	5	38.5
Winneshiek	8	3	37.5
Pottawattamie	19	7	36.8
Audubon	3	1	33.3
Floyd	9	3	33.3
Green	6	2	33.3
Ida	3	1	33.3
Kossuth	3	1	33.3
Mills	3	1	33.3
Monona	3	1	33.3
Monroe	6	2	33.3
Sac	3	1	33.3
Tama	9	3	33.3
-----		Statewide	31.8
Webster	16	5	31.2
Woodbury	13	4	30.8
Scott	30	9	30.0
Marshall	10	3	30.0
Clinton	10	3	30.0

<u>County</u>	<u>Number of Fatal Accidents</u>	<u>Number of Alcohol Related</u>	<u>% Alcohol Related</u>
Clayton	7	2	28.6
Keokuk	11	3	27.3
Lee	11	3	27.3
Worth	4	1	25.0
Palo Alto	4	1	25.0
Louisa	4	1	25.0
Humboldt	4	1	25.0
Grundy	4	1	25.0
Delaware	4	1	25.0
Cherokee	8	2	25.0
Allamakee	4	1	25.0
Black Hawk	21	5	23.8
Benton	9	2	22.2
Crawford	5	1	20.0
Lucas	5	1	20.0
Lyon	5	1	20.0
Cass	6	1	16.7
Clay	6	1	16.7
Warren	14	2	14.2
Wapello	7	1	14.2
Iowa	7	1	14.2
Polk	43	6	14.0
Johnson	15	2	13.3
Carroll	8	1	12.5
Chickasaw	8	1	12.5
Hamilton	8	1	12.5
Sioux	9	1	11.1

<u>County</u>	<u>Number of Fatal Accidents</u>	<u>Number of Alcohol Related</u>	<u>% Alcohol Related</u>
Washington	9	1	11.1
Adams	-	-	-
Cedar	2	-	-
Clarke	3	-	-
Fremont	2	-	-
Appanose	4	-	-
Wright	2	-	-
Van Buren	-	-	-
Taylor	1	-	-
Ringgold	1	-	-
Pocahontas	1	-	-
Osceola	4	-	-
Montgomery	5	-	-
Mitchell	-	-	-
Mahaska	4	-	-
Hardin	3	-	-
Harrison	5	-	-
Jefferson	3	-	-
Dickinson	5	-	-
Emmet	2	-	-
Guthrie	5	-	-

TABLE 13: NUMBER AND PERCENT CONVICTION BY NUMBER OF ACCIDENTS OF DRINKING DRIVER INVOLVED IN FATAL ACCIDENTS: IOWA, 1973

Accidents	Conviction Count							Total
	0	1	2	3	4	5	6	
0	45 (22.6)	29 (14.6)	17 (8.5)	7 (3.5)	2 (1.0)	1 (0.5)	3 (1.5)	104
1	20 (10.1)	17 (8.5)	10 (5.0)	13 (6.5)	2 (1.0)	- (-)	- (-)	62
2	3 (1.5)	4 (2.0)	9 (4.5)	4 (2.0)	2 (1.0)	- (-)	2 (1.0)	24
3	1 (0.5)	- (-)	2 (1.0)	1 (0.5)	1 (0.5)	- (-)	2 (1.0)	7
4	- (-)	1 (0.5)	- (-)	- (-)	1 (0.5)	- (-)	- (-)	2
Total	69	51	38	25	8	1	7	199

Note: Numbers in () are the percentages.

TABLE 14:
ALCOHOL RELATED FATAL ACCIDENTS BY TIME OF DAY, BY DAY OF WEEK: IOWA, 1973

Time of Day	Total		Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	Number	% Dist.							
12:00-2:59 A.M.	56	25.8	17	1	2	8	1	7	20
3:00-5:59 A.M.	25	11.5	4	3	3	1	1	1	12
6:00-8:59 A.M.	3	1.4	-	1	-	-	-	-	2
9:00-11:59 A.M.	6	2.8	-	2	1	-	1	-	2
12:00-2:59 P.M.	7	3.2	1	1	-	-	1	3	1
3:00-5:59 P.M.	27	12.4	3	5	2	1	4	6	6
6:00-8:59 P.M.	48	22.1	6	12	5	2	4	8	11
9:00-11:59 P.M.	44	20.3	4	3	1	6	5	13	12
Not Stated	1	0.4	-	-	-	-	-	-	1
Total	217	100.0	35	28	14	18	17	38	67

* Details do not always add up to 100.0% due to rounding.

TABLE 15: % DISTRIBUTION OF DRINKING DRIVERS
BY TIME OF DAY: 18-24 YEARS OLD, IOWA, 1973

Time of Day	Number of Drinking Drivers	% Distribution
12:00-2:59 A.M.	40	35.7
3:00-5:59 A.M.	14	12.5
6:00-8:59 A.M.	1	0.9
9:00-11:59 A.M.	2	1.8
12:00-2:59 P.M.	3	2.7
3:00-5:59 P.M.	10	8.9
6:00-8:59 P.M.	18	16.1
9:00-11:59 P.M.	24	21.4
Total	112	100.0

TABLE 16: DISTRIBUTION OF DRINKING DRIVERS
BY TIME OF DAY: 25 YEARS OLD AND ABOVE, IOWA, 1973

Time of Day	Number of Drinking Drivers	% Distribution
12:00-2:59 A.M.	20	17.4
3:00-5:59 A.M.	10	9.2
6:00-8:59 A.M.	1	0.8
9:00-11:59 A.M.	6	5.0
12:00-2:59 P.M.	7	5.8
3:00-5:59 P.M.	23	20.0
6:00-8:59 P.M.	31	27.0
9:00-11:59 P.M.	17	14.2
Total	115	100.0

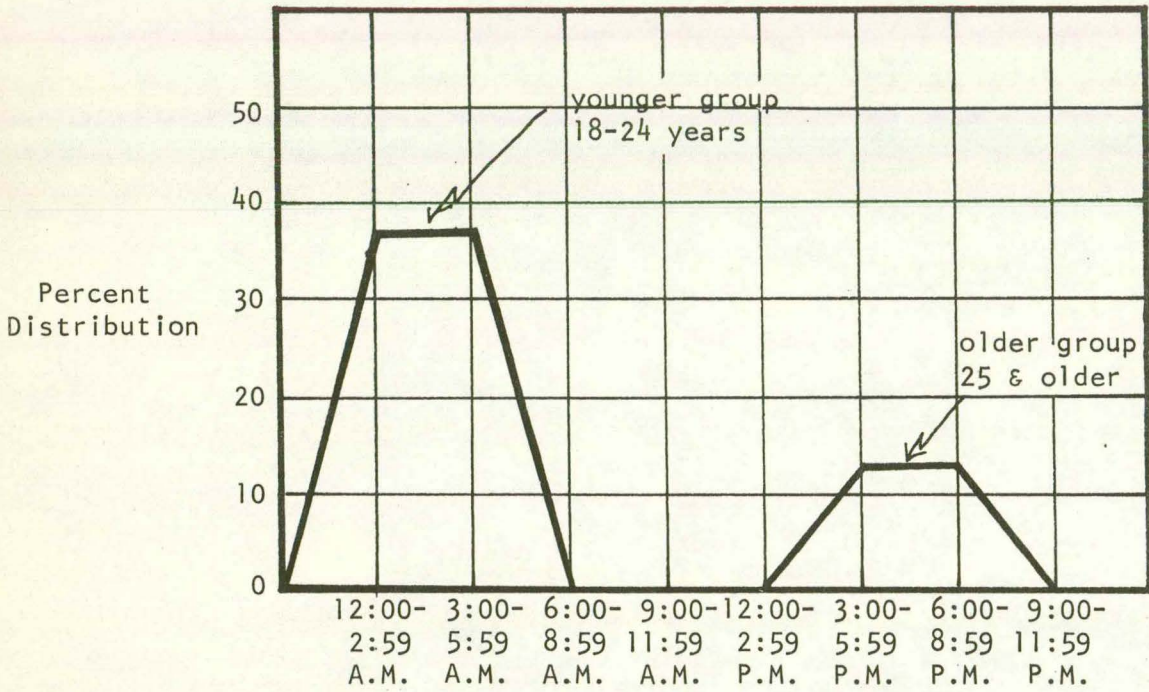


CHART 1: DRINKING PEDESTRIANS KILLED BY TIME OF DAY BY AGE GROUP:
IOWA, 1973

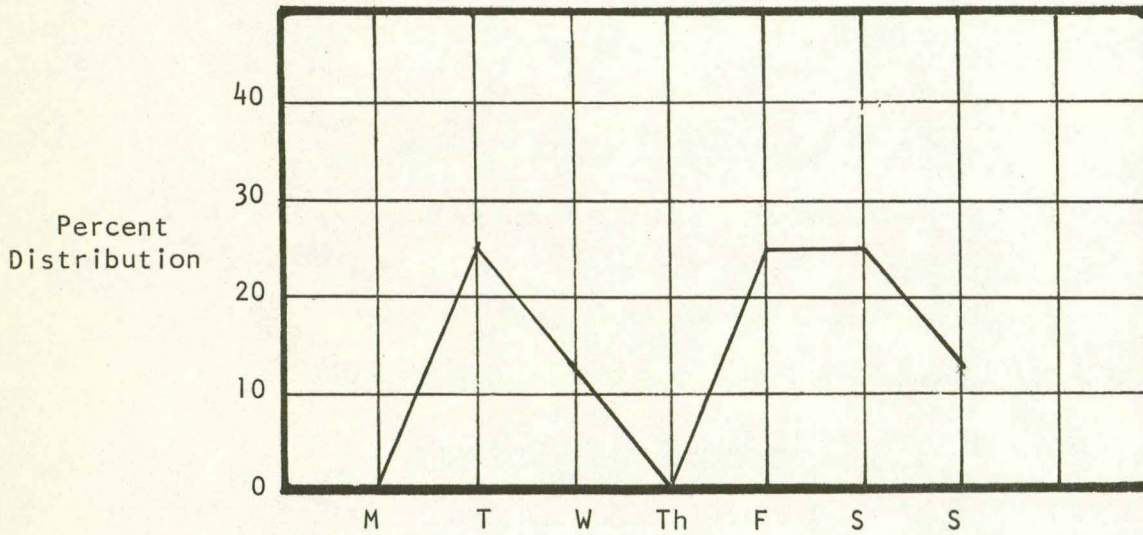


CHART 2: DRINKING PEDESTRIANS KILLED BY DAY OF WEEK: IOWA, 1973

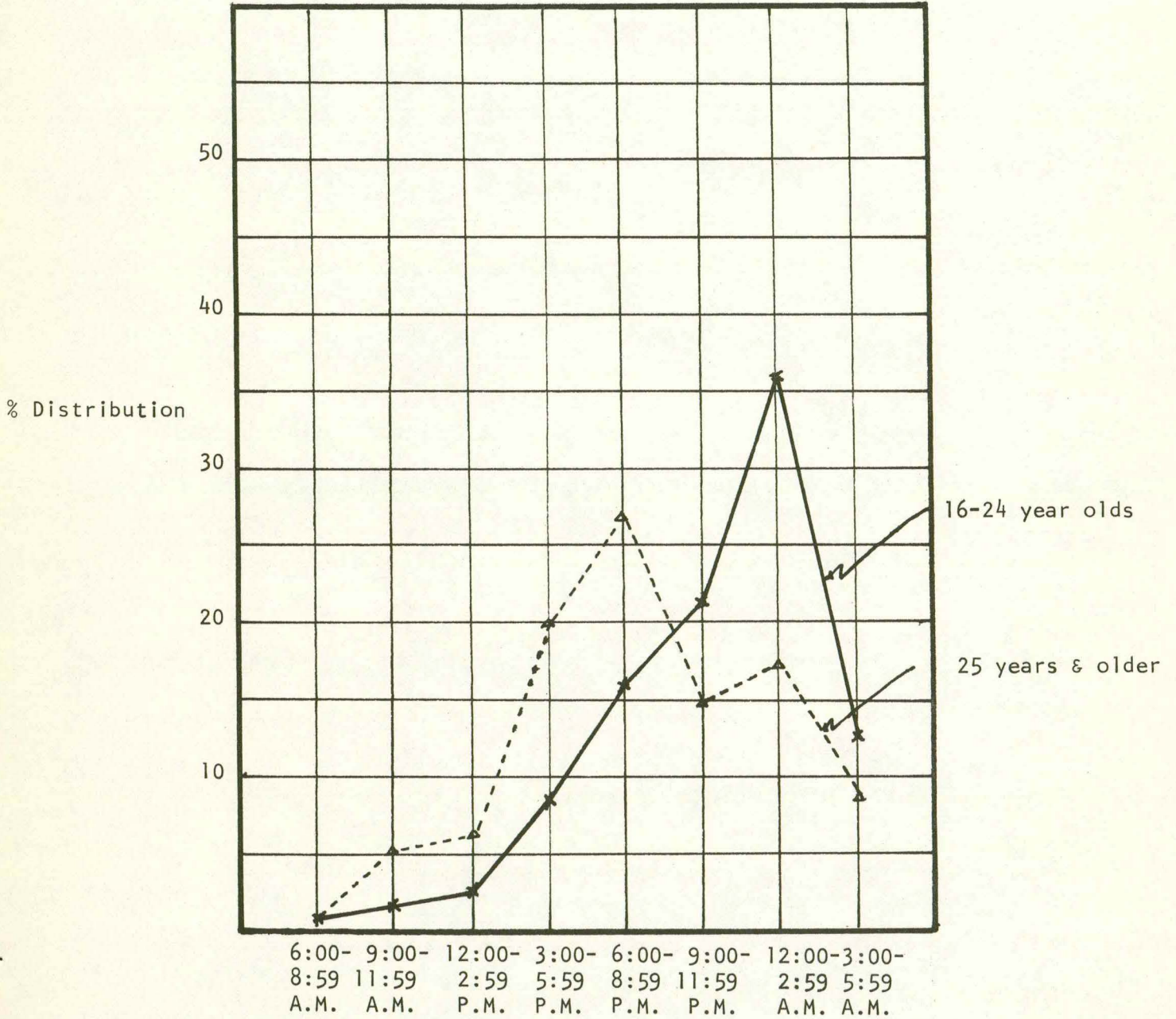


CHART 3: PERCENT DISTRIBUTION OF DRINKING DRIVERS BY TIME AND BY AGE GROUP; 16-24 YEARS AND 25 YEARS AND OLDER: IOWA, 1973

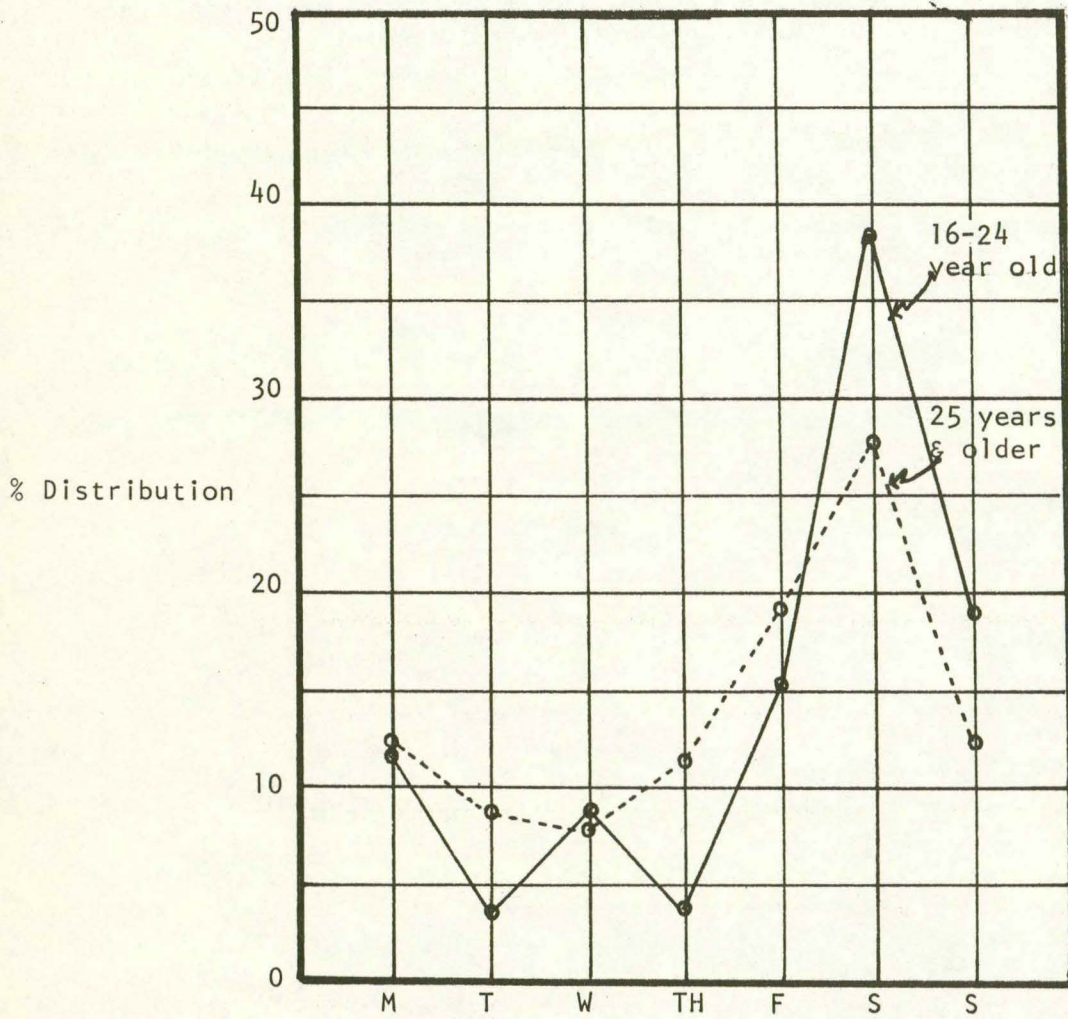


CHART 4: PERCENT DISTRIBUTION OF DRINKING DRIVERS INVOLVED IN FATAL ACCIDENTS BY DAY OF WEEK:

IOWA, 1973

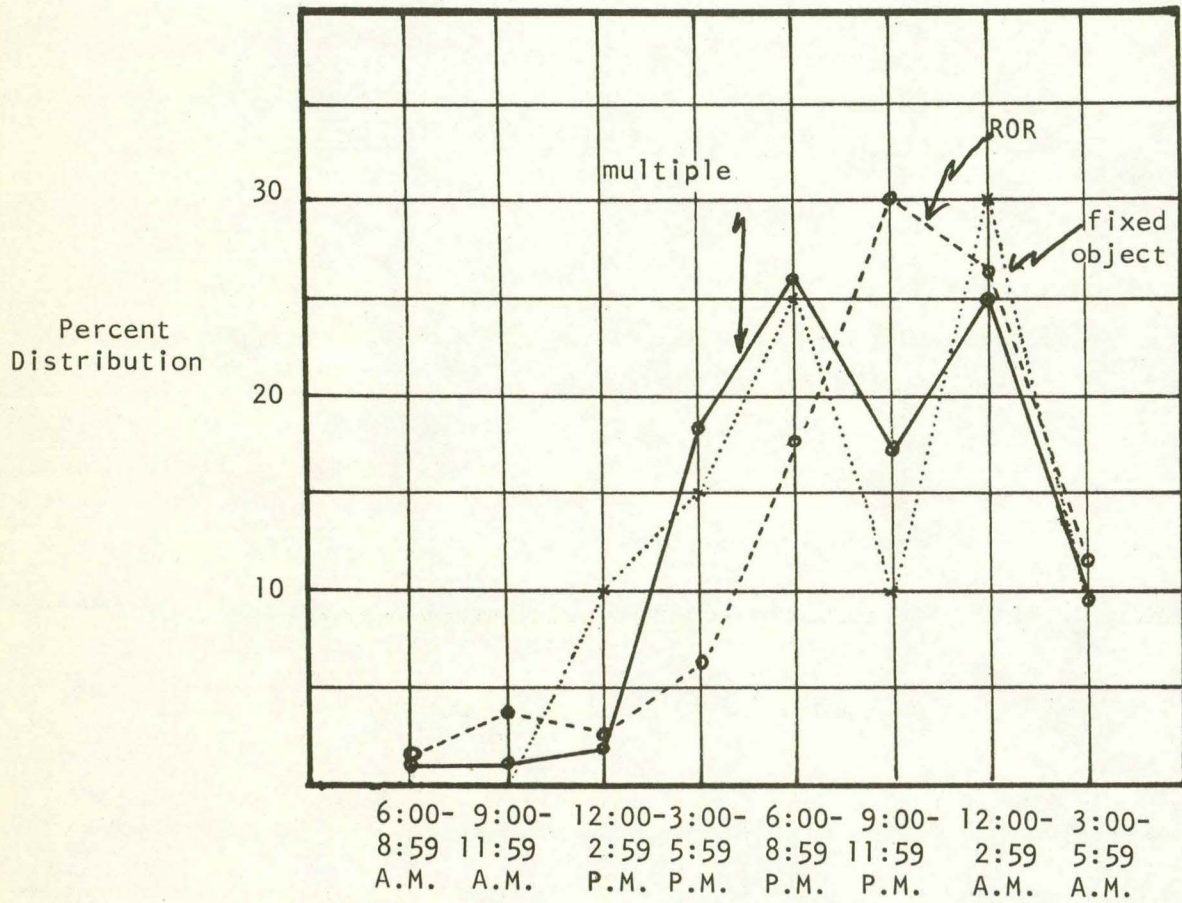


CHART 5: PERCENT DISTRIBUTION OF ALCOHOL RELATED FATAL ACCIDENTS
 BY TIME OF DAY BY TYPE OF ACCIDENT: IOWA, 1973

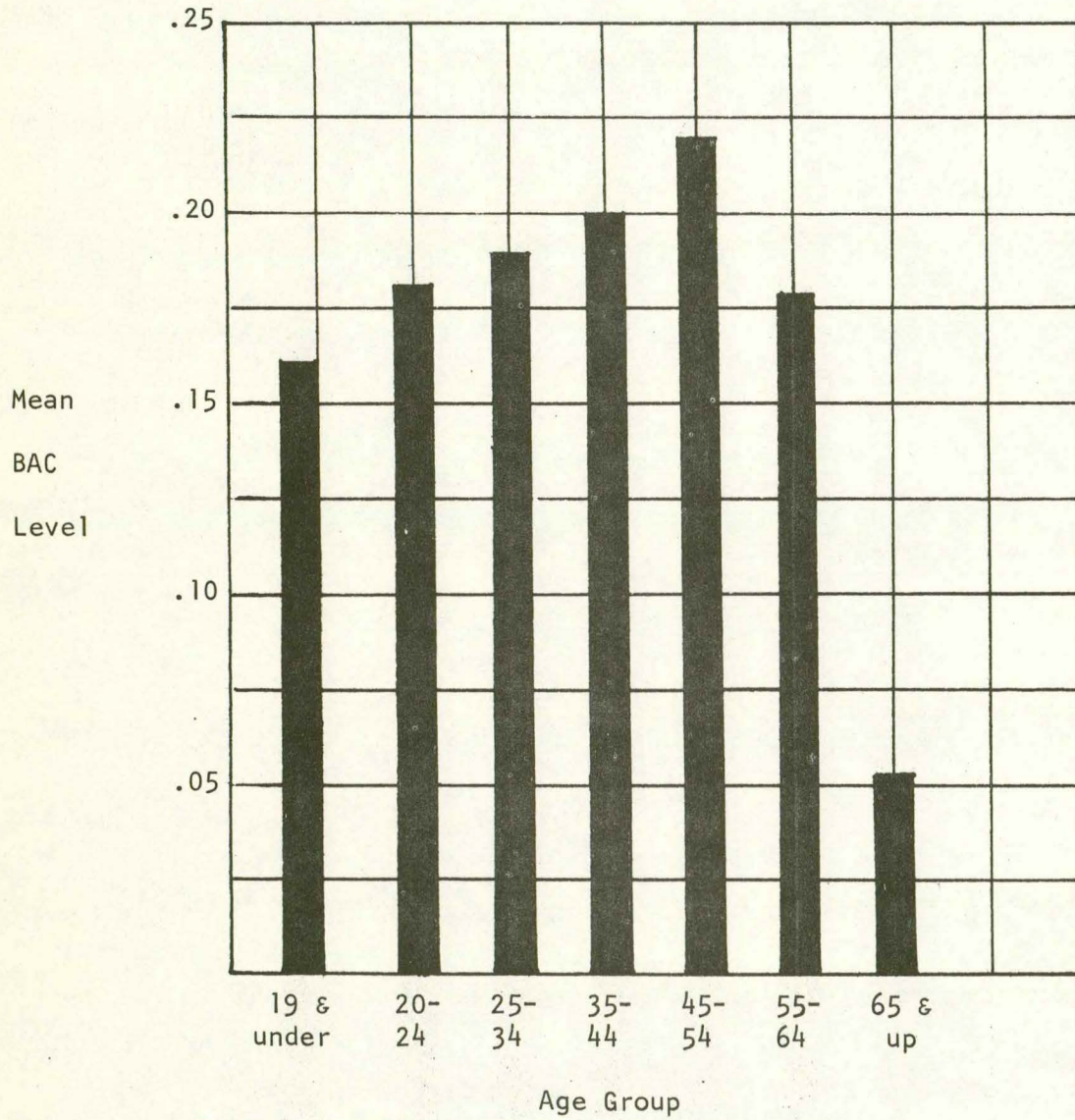
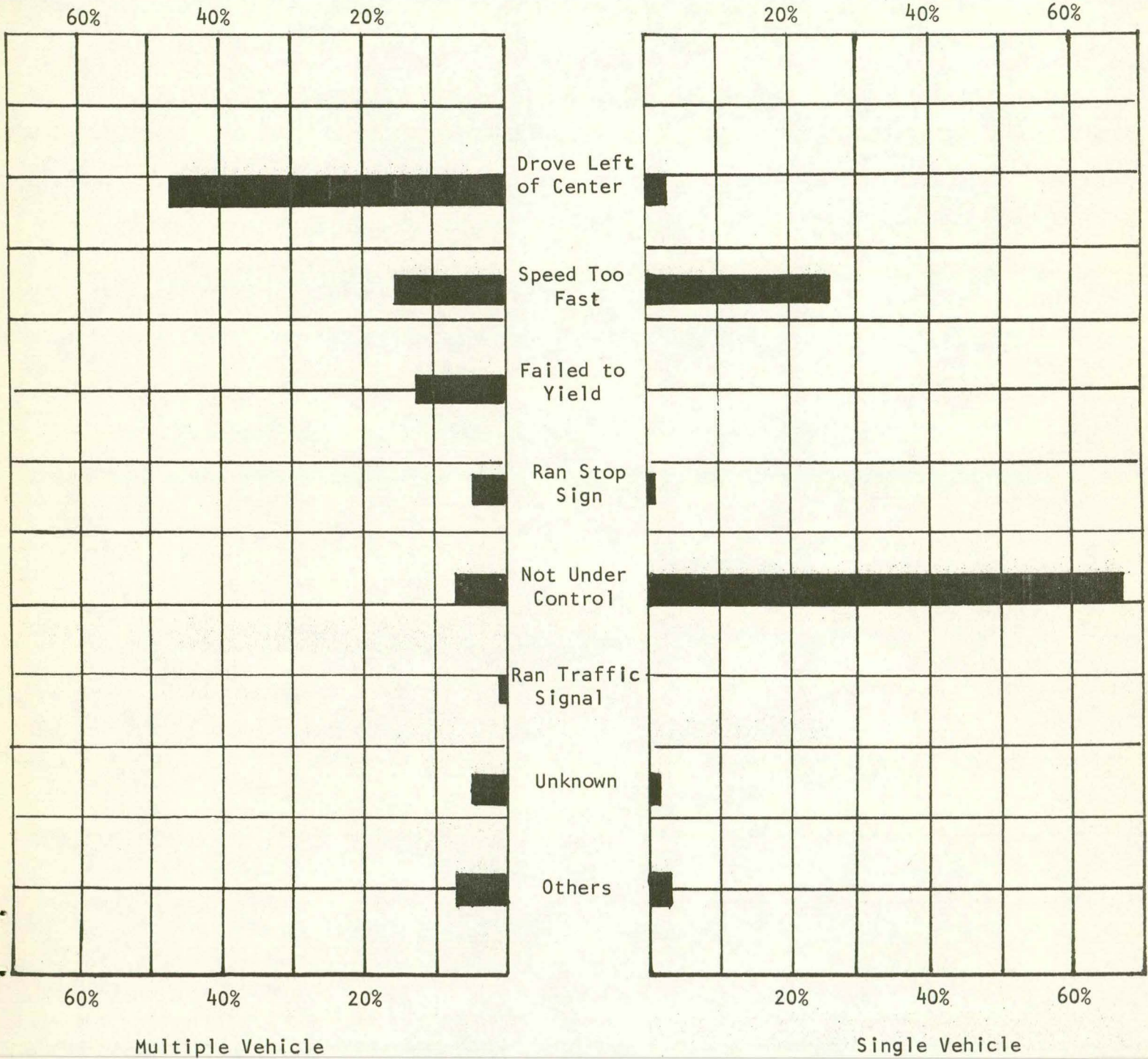


CHART 6: MEAN BAC LEVEL OF DRINKING DRIVERS BY AGE GROUP: IOWA, 1973

CHART 7: VIOLATIONS COMMITTED BY DRINKING DRIVERS
 'BY TYPE OF ACCIDENT: IOWA, 1973

Multiple Vehicle

Single Vehicle



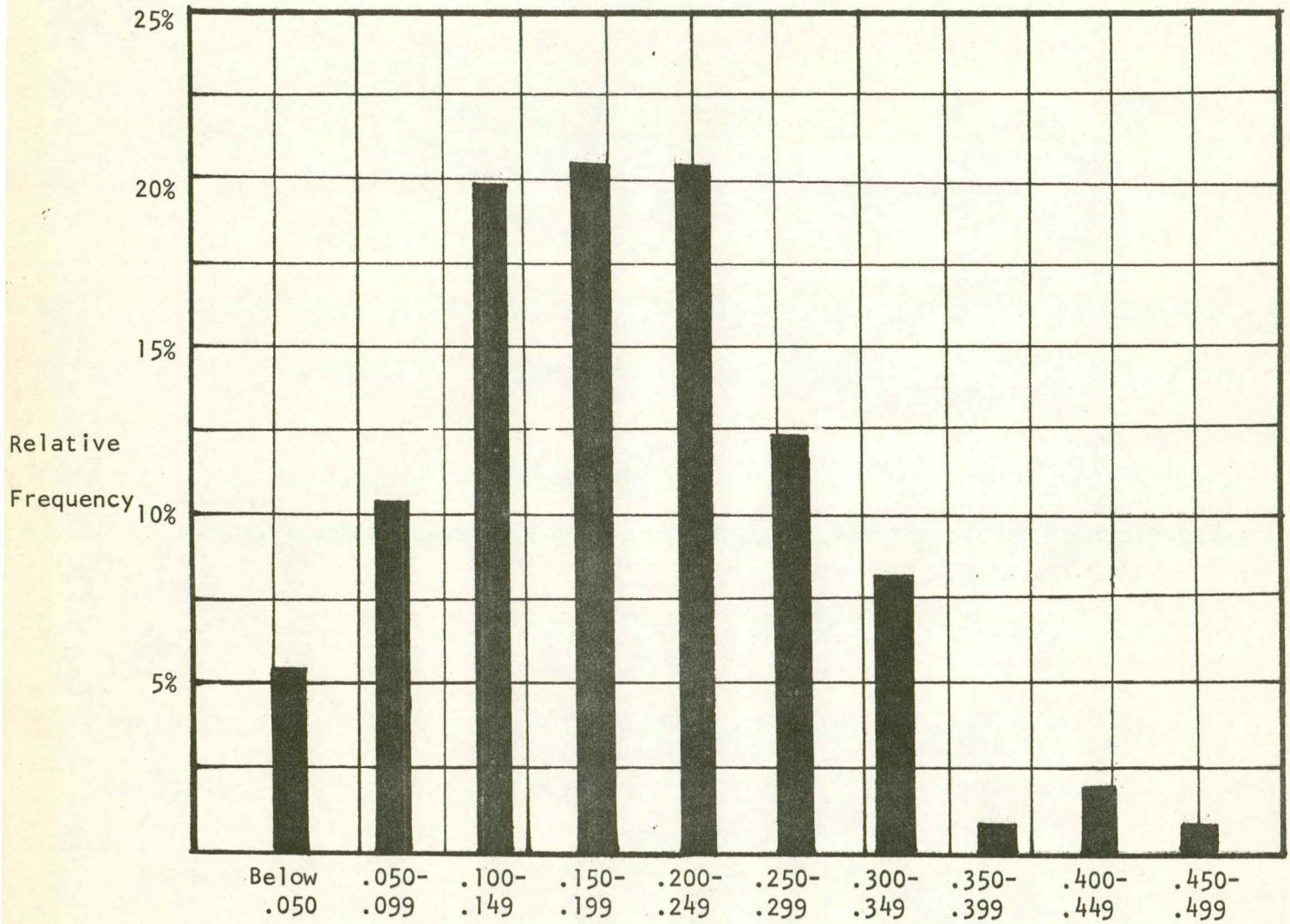


CHART 8: PERCENT DISTRIBUTION OF DRINKING DRIVERS
INVOLVED IN FATAL ACCIDENTS BY BAC: IOWA, 1973

STATE LIBRARY OF IOWA



3 1723 02057 1881