

ALASKA LEGISLATURE COMMITTEE FILES 1902

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would appear to be greatly under-represented in treatment facilities. Considering that there were about 145,000 alcoholics in Ontario in 1974 and about 4% are 21 or under, there should have been approximately 5,800 in treatment. So far, no survey has been made of how many young alcoholics are actually in treatment for their alcoholism either in Ontario or elsewhere.

From the studies made to date it seems that youthful alcoholics would rarely fit Jellinek's *beta* type, which is characterized by polyneuropathy, gastritis, and liver cirrhosis. The most common type seems to be *alpha*—continual dependence on alcohol with undisciplined drinking—or the *gamma* type, with physical dependence and loss of control. Cases of liver cirrhosis and polyneuropathy are apparently rare or nonexistent among young alcoholics seen in clinics or hospitals.

### Summary

Drinking problems among young people include drunkenness, alcohol-related accidents, antisocial behavior, and alcoholism. Of these, the first two are the most common and least important. Drunkenness is increasing in some youthful populations as drinking frequencies have increased. Drinking and driving accidents are also increasing in Ontario. However, the majority of serious accidents among young people do not involve alcohol. Whether alcohol contributes directly to such antisocial behavior as delinquency is uncertain. These are some signs that it does not and that the heaviest drinkers among delinquents commit fewer crimes than light drinkers.

The extent of alcoholism or problem drinking among young people is difficult to determine. Most studies have been made of drinking symptoms and complications among college students. The complications include failure to meet obligations, loss of friends, accident or injury, and formal punishment. Signs of problem drinking include blackouts, amnesia, heavy frequent drinking, morning drinking, surreptitious drinking, seeking advice about drinking, etc. Several scales and a variety of methods for counting "problem drinkers" have been used. Estimates of the proportions of problem drinkers in youthful populations vary from 6% to more than 40%. Problem drinking is more common among males, heavy drinkers, Protestants, those who drank before age 12, and those who have a variety of personality problems, e.g., low self-esteem, dependency conflicts, etc. It

should be remembered however, that about half of the males defined as "problem" drinkers in college were not so defined in follow-up studies during adulthood. Females more often keep this designation.

Young alcoholics in treatment facilities have never been very common. They represent only about 4% of all alcoholics. Only a few isolated cases have been described in the literature up until the last few years, although data from several countries suggest that alcoholics coming to treatment facilities are now more often 21 or under than formerly. At present in Ontario, about 4% are 21 or under, whereas in 1964 there was none. Alcoholism in young people is most often the *alpha* or *gamma* type, e.g., continual dependence on alcohol with or without loss of control but few physical symptoms, such as liver cirrhosis.



## VII

What is the effect of the new drinking age laws and why were they changed in Ontario and elsewhere?

*There are two times when you can never tell what is going to happen. One is when a man takes his first drink and the other is when a woman takes her last.*

*O. Henry*

*I was born below par to the extent of two whiskies.*

*C. E. Montague*

In many areas of North America laws were changed in the 1970s to allow persons under 21 to buy and consume alcoholic beverages. All Canadian provinces changed laws to allow 18- or 19-year-olds to drink legally between 1970 and 1974. Also, 27 states in the U.S. have reduced their drinking ages (see Table 10 for recent changes). At the time of the changes most people seemed to be very much in favor of them. Now that the new drinking laws have been in existence for a few years many of their effects appear to have been negative. Young people seem to be drinking more and to be having more problems from

**TABLE 10** *Legal Drinking Age in Canada and the United States*

LEGAL DRINKING AGE BY PROVINCE			
Province	Present legal age	Former legal age	Date of change
Newfoundland	19	21	July 25, 1972
Nova Scotia	19	21	April 13, 1971
Prince Edward Island	18	21	May 15, 1972
New Brunswick	19	21	August 1, 1972
Quebec	18	20	July, 1971
Ontario	19	18	January 1, 1979
Manitoba	18	21	August 1, 1970
Saskatchewan	19	18	September 1, 1976
Alberta	18	21	April 1, 1971
British Columbia	19	21	April 15, 1970
North-West Terr.	19	21	July 15, 1970
Yukon	19	21	February, 1970

STATES THAT HAVE LOWERED THE DRINKING AGE

State	Present legal age	Former legal age	Date of change
Alaska	19	20	Sept. 25, 1970
Arizona	19	21	Aug. 13, 1972
Connecticut	18	21	October 1, 1972
Delaware	20	21	July 12, 1972
Florida	18	21	July 1, 1973
Georgia	18	21	July 1, 1972
Hawaii	18	20	March 28, 1972

**TABLE 10** (Cont'd.)

STATES THAT HAVE LOWERED THE DRINKING AGE (cont'd.)

State	Present legal age	Former legal age	Date of change
Idaho	19	21	July 1, 1972
Iowa	18	21	July 1, 1973
Louisiana	18	21	Nov. 22, 1948
Maine	18	21	June 9, 1972
Maryland	18	21	July 1, 1975
Massachusetts	18	21	March 1, 1973
Michigan	18	21	Jan. 1, 1972
Minnesota	18	19	June 1, 1973
Montana	18	19	July 1, 1973
Nebraska	19	20	June 6, 1972
New Hampshire	18	21	June 3, 1973
New Jersey	18	21	July 1, 1973
New York	18	21	May 10, 1934
Rhode Island	18	21	March 29, 1972
Tennessee	18	21	May 11, 1971
Texas	18	21	Aug. 27, 1973
Vermont	18	21	Nov. 29, 1971
West Virginia	18	21	June 9, 1972
Wisconsin	18	21	March 23, 1972
Wyoming	19	21	May 25, 1973

drinking, especially problems of drunkenness and traffic accidents. A number of studies has been made of the effects of these laws both in Canada and elsewhere and it is worth examining what these studies show us about youthful drinking. Partly as a result of these negative effects and the growth of public opinion against them, several states and provinces have raised drinking ages again.

### *The Age Law in Ontario: a Social Experiment*

The law in Ontario was changed on July 28, 1971, to allow people 18, 19, and 20 to drink and buy alcohol for the first time. What is not always recalled is that this change was part of a trend towards defining the age of majority as 18. The drinking law was not changed in isolation but it was only one of 37 statutes changed at the time. Some people speculated that young people were given drinking rights as a vote-getting technique. Indeed, an election did follow by only a few months (October, 1971), the first in which 18-year-olds could vote. Others speculated that young people were being allowed to drink because marijuana and speed use was very prevalent. Complaints were often made that 18-year-olds could more easily buy marijuana than beer and that this situation was unacceptable. Legalizing drinking, it was said, would only make beer (and other beverages) available to compete with some of the illicit drugs.

The debate in the legislature on the age bills didn't reflect any great concern with illicit drugs or vote getting. Most of the debate put the issue on the age of majority. Persons 18 and over had been allowed to vote in federal elections for some time and were allowed to vote in some other provinces (e.g., Quebec, Saskatchewan, Manitoba). Concern was also expressed in parliament about the extra responsibilities given to young people. At about the same time, some 37 statutes were changed to define the age of majority as 18. These statutes made young people responsible for their debts and allowed them to sign contracts. Since young people paid taxes and could join the military, drive cars, and vote federally, it did not seem unreasonable that they should want and be allowed to drink. The new drinking age law received the support of all three political parties in Ontario. Naturally, it was heavily supported by young people themselves.

There appeared to be no rush for young people to buy drinks after the new law. Newspaper reports at the time sug-

gested that bar and tavern owners braced themselves for an onslaught of heavy drinking youth. It never came. Concern was also expressed about how those 14 to 17 would be kept out of bars, since they often appear to be 18 years and could use borrowed identity cards. Although no great increase in drinking immediately followed the new law, more young people seemed to be drinking. Several newspaper articles carried stories about 21- to 25-year-olds being unwilling to drink with the younger crowd. The clientele in many bars and taverns gradually changed so that a large number became youth oriented. Over the last months of 1971, many bars shifted their entertainment acts to please a younger audience: more rock groups, go-go clubs, and discotheques appeared. Disgruntled "older" patrons felt the generation gap between themselves and the new drinking crowd too great and gave up their regular drinking places. Waiters complained of lower tips from the "high schoolers." Some bar owners suggested that it was better to have a room full of heavy drinkers than the new group, which would occupy space but not drink very much. Clearly, not everyone was happy with the new drinking law. As time passed, more evidence accumulated about the adverse results of the new law. Smart and Goodstadt (1977) have summarized the empirical evidence on its effects.

### *Effects of New Age Law on Drinking in Ontario*

It was by no means certain that the new law would have any influence on drinking. Other provinces and states had changed their laws but no study of their effects had been made. No remarkable effects were obvious in those places.

Many people argued that changing the law would only legalize the status quo and bring young drinkers under the watchful eyes of parents. People under 21 were already known to drink and making it legal might have no effect. Another possibility was that lowering the age would encourage parents to drink with their children. Because drinking was illegal for 18-year-olds, some parents were reluctant to train their children in safe drinking practices. Before parents got around to it, the argument went, their children would be drinking outside the home in an uncontrolled way.

It was with all of these considerations in mind that Smart and Schmidt (1975) made some studies of drinking both before and after the new law. In all, four studies were made:

- (1) a study of alcohol shipments for 1970 and 1971;
- (2) a comparison of reported alcohol use among high school students in Toronto in 1970 and 1972;
- (3) a study of attitudes and buying behavior of college students;
- (4) a study of attitudes of vice principals to the effects of the new laws.

### *Effects on Young People's Alcohol Purchases*

In the first study, data were collected from the Ontario Liquor Control Board on monthly shipments for 1970 and 1971. Data were obtained for beverages consumed in bars, taverns, and beer parlors (on-premise) and bought from package stores (off-premise).

Average expenditures of 18- to 21-year-olds for on-premise consumption exceeded the expenditures of those over 21 in the case of beer, wine, and spirits. The changes in off-premise proportions were comparatively small. On the basis of the data available, it is not possible to attribute the latter changes to the young drinkers. But the more substantial changes in on-premise expenditures were probably the result of lowering the drinking age. These estimates represent consumption in addition to the level of alcohol use that prevailed prior to the lowering of the legal drinking age. According to an Ontario survey of 1968, 68% in this age group used alcoholic beverages and their reported average consumption was slightly less than one-half of the average for Ontario drinkers as a whole. Our estimates of the sales to 18- to 21-year-olds subsequent to the change in drinking age indicate that this earlier consumption level increased considerably after the new age law was introduced. Apparently, lowering the drinking age not only legalized the status quo, but it also resulted in a considerable increase in consumption among those affected.

### *Effects of Drinking on High School Students*

As part of a larger study of drug use among Toronto high school students, questions were asked about the frequency of alcohol use. In 1972, students were asked whether their drinking increased, decreased, or stayed the same after the new law (Smart and Fejer, 1974). A 1970 sample included some 6,882 students in grades 7 to 13. In 1972, some 6,627 students were interviewed. The sample included about one-fifth of the high

school districts in Metropolitan Toronto. From each district 120 students were selected at random from each of grades 7, 9, 11, and 13. The same sampling system was used in 1970 and 1972 in that the same schools and grades were used.

The frequency of use of alcohol in 1970 and 1972 is shown in Table 11 for students in grades 7, 9, 11, and 13. It can be seen that the proportion of users went from about 60% in 1970 to 70% in 1972. The largest increases are in the "most frequent use" categories—nearly twice as many in 1972 as in 1970 drank four or more times a month. The less frequent use categories decreased, or increased only slightly.

When students were asked about changes in their own drinking since the new law, the results were as follows: 40.5% no change; 26.7% no drinking; 20.1% more drinking; 3.7% less drinking; and 9% who started after the new law. There was a close association between changes in drinking and frequency of consumption, with the most frequent drinkers more often reporting increases in drinking and less often reporting decreases in drinking.

### *Effects on College Students' Drinking*

A total of 448 first-year students between the ages of 17 and 21 years completed a questionnaire during February, 1972. Students at a variety of community colleges (60%) and at a university in Toronto (40%) participated in the study.

When asked whether the new law made a difference in how often they drank, the majority (57%) claimed they drank the same before and after the new law; exactly the same percentage of males and females made this reply. However, females were twice as likely as males—10% compared to 5%—to report no change because they didn't drink before the new law and still didn't afterward. Slightly more males than females—25% compared to 21%—reported an increase in drinking. As age increased, so did the percentage of students reporting no change in their drinking behavior, and the percentage reporting they used less since the change in the law.

Regular drinkers appeared to have increased their drinking more than casual drinkers. About 25% of the regular drinkers, those drinking four or more times a week, and 32% of those who drank once or twice a week, drank no more often than

**TABLE 11** *Frequency of Alcohol Use by Students in Grades 7, 9, 11, and 13 in Toronto High Schools in 1970 and 1972*

	1970		1972	
	%	f	%	f
None	39.8	2,742	29.4	1,949
Once per month	28.7	1,977	24.5	1,622
Twice per month	11.8	813	13.1	872
Three times per month	6.9	475	9.7	640
Four or more times per month	12.7	875	23.3	1,544
Totals		6,882		6,627

$\chi^2 = 375.89$   $p < .001, 4d.f.$

before the change. Only 5% of those who drank only once a month or less frequently reported they drank more frequently.

The students claimed the new laws had very little effect on the amount they usually drank on each occasion. Slightly more students (6%) claimed that they drank less on each occasion than reported drinking more (5%). Eighty-nine percent reported no change.

Several questions were asked about visits to bars, taverns, and pubs. About 55% of students reported that they attended bars, taverns, and pubs more frequently than before the laws were changed. Only 4% attended less frequently and 41% claimed their attendance had not changed. Fifty-eight percent of the men reported going out more often and 6% less often to bars and pubs. Comparable figures for women were 52% and 3% respectively. The increase in attendance at licensed outlets occurred more frequently among 18- and 19-year-olds and among the more frequent drinkers. The percentage of students who attended bars and pubs three or more times per week doubled from 3% to 6%; those going once or twice a week doubled from 12% to 24%; those going two or three times a month increased from 16% to 24% and the percentage never going to these establishments decreased from 29% to 10%.

Students were asked whether there had been a change in how frequently they drank at home with their parents' consent and how often they drank at home before and after the new laws. The new laws appeared to have very little impact on drinking at home compared to drinking at licensed outlets. While 54% of the students reported an increase in attendance at bars, taverns, and pubs, only 19% reported more frequent drinking with their parents. Slightly more females than males indicated an increase in drinking at home.

The new law led to more frequent purchases by 43% of the male and 35% of the female students. Three percent of the males reported fewer purchases and 2% of the females gave this answer. Approximately 40% of the students under 21 reported they had increased their frequency of purchases since the changes in the liquor laws. This compared to 25% of those 21 years old. The percentage of students reporting that they never made purchases at stores before the new laws was directly related to age. Eighty-one percent of those 18, 64% of those 19, 61% of those 20, and 45% of those students 21 years of age had previously never made purchases.

The students were asked whether the new law changed how often they were too affected by drinking to drive safely. Half the respondents claimed they never get too high from drinking to drive safely. One-third claimed no change, 4% said they were affected more, 3% said they were affected less, 6% didn't drive, and 5% did not reply. Almost equal numbers of males reported an increase as reported a decrease in the frequency with which they drank too much to drive safely. Seven percent reported they drank more often and 6% less often.

### *Opinions from Vice Principals on New Age Laws*

Six months after the new law was passed, all vice principals of Toronto high schools and junior schools were asked for their opinions. Their views are particularly important because vice principals are usually responsible for discipline in schools. In all, 183, or 86% of those asked, replied.

Slightly more vice principals were not in favor of the law than were. The attitudes of the vice principals toward lowering the drinking age were closely related to how they answered the other questions. Those who were highly favorable toward the change tended to report little negative change in student behavior. The reverse was true for those with a highly unfavorable attitude. It is impossible to determine whether the vice principals' attitudes toward the law affected their perceptions of student behavior, or whether actual student behavior produced the attitudes toward the change.

The vice principals were asked whether they thought the new law had made any difference in "how young people drink." Two-thirds felt that young people drank more, 28% claimed no change, and 4% did not reply. None believed young people drank less than before the law was changed. While there was consensus that the amount of drinking had not decreased there was little consensus as to whether it had increased. About 70% of those who were highly favorable believed that no change had occurred in amounts drunk by young people. Of those unfavorable to the new law, 93% claimed no change had occurred in the amount drunk by young people.

About 50% of the vice principals reported no increase in drinking on school property, one-third said there had been an increase, and the remainder did not reply. The more favorable the respondents were to the new law, the more likely they were

to report no increase and vice versa. Eighty percent of those who were highly favorable to the new law reported no increase, compared to 31% of those who were highly unfavorable.

Those favorable to the law reported little drinking at noon and few disciplinary problems, while those unfavorable to the law did report problems. Overall, 40% reported more drinking at noon, 40% reported no increase, and 20% were uncertain or didn't reply. Thirty-four percent reported more alcohol-related disciplinary problems, 60% reported no increase, and 6% were uncertain.

About one-fifth of the respondents reported more absenteeism, which they suspected to be related to student drinking. Sixty percent claimed no increase and 18% were uncertain or did not reply.

Results concerning signs of hangovers among students were almost identical to those for absenteeism. Twenty-three percent reported more signs of hangovers, 57% reported no increase, and 20% were uncertain or did not reply.

While one-quarter of the vice principals were uncertain as to whether there was more discussion of drinking among students, 43% reported more and 29% no increase. Two-thirds of those highly favorably disposed to the new law reported an increase in discussion, compared to only one-fifth of those highly unfavorable.

Three related questions were asked regarding changes in student drinking at high school functions. More than 50% of the respondents believed that more students drank before and during school functions. Between one-quarter and one-third reported no increase. Approximately the same proportion of respondents reported that more students appeared "high" at school dances as reported no change. Forty-three percent noticed more "high" students, 39% did not notice more, and 18% were undecided or did not reply. "High" was defined in the questionnaire as "too high to drive a car safely."

In summary, more vice principals agreed than disagreed that there were more students discussing alcohol, arriving at school functions after drinking, and appearing "high" at school functions. The proportion agreeing and disagreeing about drinking during lunch hours was about equal. For all other behavior, those who disagreed outnumbered those who agreed.

### *A Study of Drinking-Age Changes in the United States*

Only one study has been made of the effects of the age changes on drinking in the United States (Smart, 1977). In this study, comparisons were made in per capita consumption for the states that changed and did not change their age laws. Data were gathered for the year before and the year after the change for beer, wine, and spirits separately. It was found that per capita consumption on the average went up for states that lowered drinking ages. The largest changes were for beer and wine, with none for spirits. This would be expected as most young people consume beer when they first start drinking. Some states experienced very large changes and some no changes at all in per capita consumption.

### *The Effects on Alcoholism among Young People*

A great deal of evidence shows that when per capita alcohol consumption is high, problems such as alcoholism and liver cirrhosis are also high. Countries with the highest rates of consumption, such as France, also have the highest rates of problems from alcohol, e.g., hospital admissions, liver cirrhosis-related deaths, and alcoholism. This would lead us to expect that where drinking increases significantly eventually more chronic alcohol problems result. Since drinking has increased among young people, they probably will begin to have more alcohol problems that necessitate some treatment.

Increases in numbers of young alcoholics in treatment facilities have been assumed by a number of clinicians. In 1974, data on the ages of first admissions were collected from ARI alcoholism facilities and from a large detoxification centre (Smart and Finley, 1975). There were no alcoholic admissions for people under 21 in 1964 but by 1974 those under 21 were 4.4% of all first admissions. Almost all of the change occurred since the new law was passed in 1971.

Very few admissions to the detoxification facility were under 21 in 1971—only 1.1%, with 6.8% under age 30. By 1974, however, 3.5% were under 21 and 10.4% were under 30. Again these are remarkable differences.

The changes in admissions at both types of facilities show more young people are having serious drinking problems, serious enough to come to treatment and drying-out centres. Of course, it is important to continue these studies to see how

young people are affected over a long time period. If the current increases were to continue, the next generation could see 10% to 15% of the clinic alcoholics under 21 years of age. This would mean a drastic increase in all types of problems for young people—social, school, and employment.

### *Effects on Drunkenness Arrests*

It would be expected that arrests for public drunkenness would increase markedly after the new law. Table 12 shows the data for drunkenness and other Liquor Control Act violations in Toronto (chiefly drinking under age). On the average, more young people have been involved in drunk arrests since 1971. Unfortunately, the proportions show some fluctuation and are difficult to interpret for that reason. However, by 1976 the proportion had fallen to a low level similar to that before the new law. It would appear that the effects of the new law on youthful public drunkenness were temporary.

### *The Effects of the New Age Law on Traffic Accidents among Young People*

Probably increases in alcohol-related accidents were the least anticipated effects of the new law. With young people drinking more, more traffic accidents involving alcohol and more impaired driving can be expected. About 75% of people aged 18 to 21 have a driver's license and many young people drink and drive on some occasions (Casper and Mozersky, 1968). If there are more drinking occasions, especially at bars and taverns, then more drinking-driving offenses will occur.

Several studies of changes in alcohol-related accidents have been made in different provinces and states. An interesting study for Ontario was conducted by Schmidt and Kornaczewski (1973). They examined how drinking accidents in Ontario between 1967 and 1971 had changed in different age groups. Some of their data is shown in Figure 2. Even cursory examination shows that young people (i.e., aged 15 to 19) made a far greater change in representation among drinking drivers in 1971 than in any previous year. Changes in all other age groups were much smaller and most of them actually decreased their representation in drinking accident statistics. Only the group aged 20 to 24 also showed an increase and it was much smaller than that for those 15 to 19.

**TABLE 12** Percent of Persons Charged With Drunkenness and Other Breaches of the Liquor Control Act (LCA) in Toronto, 1968-1977—Under 18 Years of Age

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
LCA—Drunk	6.32	1.98	.26	2.65	6.78	7.60	8.97	0.64	1.40	1.40
LCA—Other <sup>a</sup>	52.95	45.94	39.87	50.09	39.58	39.50	39.19	23.56	21.82	28.95

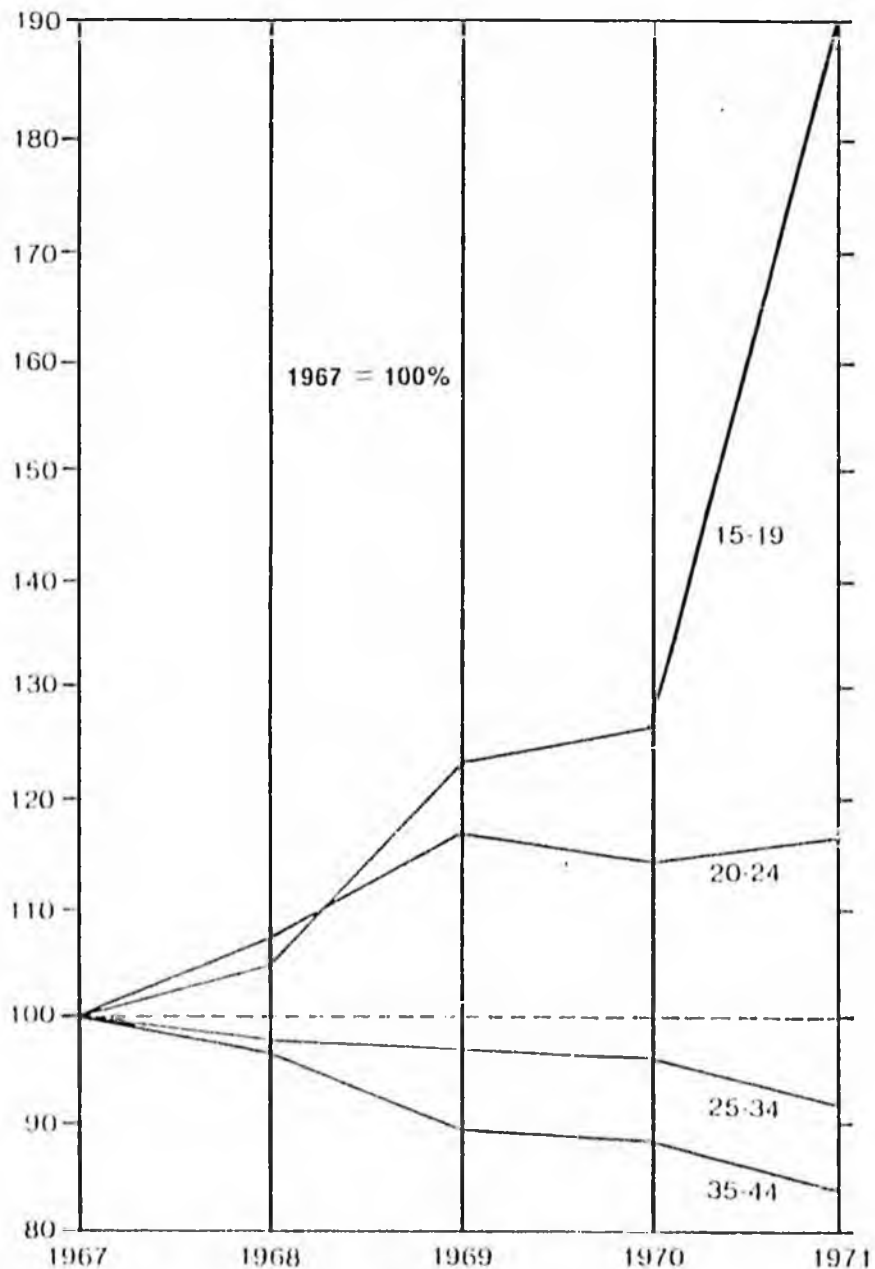
<sup>a</sup>A category including chiefly drinking under age, drinking in cars and other public places.

An important study by Whitehead (1977) was done in Ontario soon after the law was changed. This study examined records of male drivers in London, Ontario. After the reduction in the drinking age there was a 33% increase in alcohol-related accidents among 18-year-olds and a 34% increase among 19-year-olds. Increases were far lower among 24-year-olds (only 20%), who were not affected by the new law. There has been some debate about whether the changes would have occurred even without the law (e.g., Zy'zman 1974). However, this study was enlarged and extended in 1977 (Whitehead, 1977) and the final conclusion was that "the change in the law is associated with an increased rate of alcohol-related collisions among 18- to 20-year-old drivers and among 16- to 17-year-old drivers." It should be noted that alcohol-related accidents increased among 16- and 17-year-olds who were supposedly too young to be drinking. No doubt, lowering the age from 21 to 18 made it easier for them to drink.

Two studies in the United States have also examined changes after drinking age decreases. They are valuable because they include comparisons of states in which there has been no change. A study done at the Insurance Institute for Highway Safety (Williams et al., 1974) compared three states that had kept their drinking age at 21 (Indiana, Illinois, Minnesota) with Michigan, Wisconsin, and Ontario, which did not. This study showed that both single-vehicle fatal crashes and night-time crashes occurred more often in young people (under 21) after the law was changed. There was no comparable increase in areas that did not change the law. Unfortunately, this study also found increased accidents among those aged 15 to 18, who ought not to have been affected by the new law. This data suggests, as do other studies, that decreasing the drinking age probably allows increased access to alcohol by those who are younger than 18. The IIHS study showed that in the first year the new law probably lead to 29 excess deaths in Michigan, 28 in Ontario, and 13 in Wisconsin.

A similar study by Douglass and Filkins (1974) used data from Michigan, Vermont, and Maine, which lowered drinking ages. These states were compared with two that did not change (Pennsylvania and Texas). Increased accidents due to alcohol were found in Michigan and Maine but not Vermont. It may be that Vermont failed to change because it is relatively small and surrounded by areas with lower age laws. Recently this study

**FIGURE 2** *Change in the Proportional Representation of Various Age Groups of Drinking Drivers in Accidents Ontario 1967-1971*  
1967 = 100%



was extended and data up to 1976 was included (Flora, 1978). The conclusion was further supported that reducing the drinking age had cost lives in drinking accidents in Michigan.

#### *The Reversal of Drinking Age Laws in Ontario and Elsewhere*

In several areas of North America, public debate about the beneficial and harmful effects of the new age laws began shortly after their passage. The public in Ontario and elsewhere became aware of higher rates of alcohol-related accidents, and more drunkenness on the part of young people. School officials and teachers complained of students being able to drink at noon hour and return to school too intoxicated to learn. Certain types of school events, such as dances and football games, often became occasions for heavy drinking. There was also some awareness of increased absenteeism and disciplinary problems for high school students. On the positive side, it was argued that drinking was a natural civil right owed to all adults. The problems experienced might be only temporary and young people would eventually take responsibility for their own drinking. In general, young persons seemed in favor of a low drinking age and older persons did not.

The outcome of the debate in several areas was to partially reverse decisions to lower drinking age laws. In Saskatchewan it was decided to raise the drinking age to 19 again in 1976. Similar decisions were taken in Minnesota and Maine. Unfortunately, no studies have been made of the effects of raising the drinking age in Saskatchewan or Minnesota. Such studies take considerable time to do, particularly if they involve the use of such government records as traffic accident data, which may be as much as a year late in appearing.

In Ontario, the government raised the drinking age from 18 to 19 on December 31st, 1978. (It should be noted that in Ontario the age was not returned to 21, as it had been in 1971.) This change came as a result of several kinds of influence. Public opinion and debate as reflected in newspaper stories and the like seemed to favor a change—concern was often expressed in 1975 and 1976 about the large increase in youthful drinking and alcohol-related accidents. A study of public opinion done in 1976 in London, Ontario, indicated that almost 48% of adults were in favor of increasing the drinking age, most of them to

age 20 (Ennis et al., 1977). A larger study (Ogborne and Smart, 1978) done all over Ontario in 1977 indicated that 68% of adults wanted the drinking age set at 19 or above. Probably when the law was first changed in 1971 adults were mostly neutral or in favor of it but as experience with the law's effects increased, opinion shifted in a negative direction.

A significant event in the Ontario debate was the appointment of the Jones Commission, established by the government to elicit public reaction, examine the evidence, and recommend measures for dealing with youthful drinking problems. This commission conducted public meetings with both adults and youths across the province, and reviewed expert opinion from such government agencies as the Addiction Research Foundation and the Ministry of Health. The report of this commission made a large number of recommendations, including decreasing lifestyle alcohol advertisements, increasing educational efforts, making nonalcoholic beverages more available in bars, and increasing the drinking age to 19. The report became available in 1976. Another government committee was concerned with highway safety and it held deliberations in 1977. This was an all-party committee of the legislature termed "The Select Committee on Highway Safety." Although not concerned solely with youthful driving problems, this select committee recommended an increase in the drinking age to 19. The report became available in mid-1977.

The decision to reverse the age law was announced by the government in May of 1978 after a private member's bill had been sponsored by the opposition in the Ontario Legislature. It seemed to have broad public and political support and it was recommended by the Addiction Research Foundation as well as others such as home and teacher's associations and headmasters' groups.

At present, we cannot be positive whether the decision has substantially affected young people's drinking. It is a logical expectation that it should but empirical evidence is not available yet. It will probably have its greatest effect in combination with other measures, rather than solely on its own. Fortunately, the government raised the drinking age at the same time as it created new measures for better identification cards with the bearer's picture, provided higher penalties for serving alcohol to minors, severely restricted lifestyle advertisements, and im-

proved alcohol education in schools. If the new alcohol control measures in Ontario have a major effect on drinking and driving problems among young people it will be difficult to decide exactly which measure has been most significant.

As of January 1, 1979, 19-year-olds and those who turned 18 in 1978 were allowed to drink in Ontario. As of January 1, 1980, all new drinkers had to be aged 19 or older and the last 18-year-olds became 19. The insertion of this "grandfather" clause into the law meant that its effects will not be felt for some time and that efforts to evaluate those effects will be delayed for several years.

### *Summary*

The data relevant to the age change are consistent except for those for public drunkenness. Areas that lowered drinking ages have experienced far more drinking and alcohol-related traffic accidents than those that did not. In Toronto, however, drunkenness convictions did not increase after the new age law. No data are yet available from areas that raised drinking ages after initially lowering them, so it is still too early to judge the effects of this move. It seems most unlikely that any area would raise drinking ages to former levels. One problem, of course, is that the drinking age is frequently tied to age of majority. To change one without changing the other would likely be unpopular. It should be remembered, too, that persons 18 and over vote and form an important constituency. They might punish any government at the polls that decided to remove their rights piecemeal. Probably age changes ought to have been introduced more slowly (only beer) and in conjunction with a careful education campaign. In all provinces and most states, changes have already been made, but some areas can still benefit from the mistakes made by others. We know, too, that it is possible to change drinking age laws back to their earlier levels or at least to higher levels than 18. Public opinion in several areas seems to favor this more and logical arguments suggest it would be beneficial. Probably the greatest impact of such an increase would occur when combined with other measures such as penalties for serving underage drinkers and reductions in alcohol advertising.

Recently the age for drinking has been increased to 19 in Ontario. This change may have an important beneficial effect

by largely removing drinking from high schools. Also, it indicates that the government is serious about drinking problems among young people and intends to do something about them. Whether changing the age by only one year can have a large impact is debatable. Many studies will be needed to examine the effects of this change and they will take some time to complete as the law contains a "grandfather" clause.

Dear Representative Terry Martin,

Because of a very tragic experience my family has suffered and will continue to suffer for many years to come, I'm finding myself writing to all of the representatives in my district to find out why the laws are so soft on drunk drivers, and what I can do to see that they are changed.

On Halloween night, I lost my 15 year old sister Robin. She was out that evening with her boyfriend Mike, his brother Randy, and his girlfriend Pam. At approximately 11:00 p.m. that evening when they were on their way home, stopped in the center lane waiting to turn left on to Baxter Road off of Tudor Road, another pick-up, without any headlights on (it was pitch black out, a few days before the street lights were turned on at that intersection), came speeding down the turning lane only, being driven by a 23 year old drunk boy and smashed head on into the truck Robin was in. She was killed instantly from head and chest impact. Mike and Randy suffered many gashes, bruises, sprains and some broken bones. Pam suffered a broken jaw, a severed hand, a very damaged lower, a foot broken in 6 places, an ear cut in two, and many

other cuts and bruises. Also, she now suffers from partial face paralysis. His brother was with him. We were told it was touch and go for him too.

I'm sure this situation has happened to many families. Now, it has happened to someone my family loves dearly. It creates so many feelings and questions.

No action has been taken against this boy yet. It will probably be a long time before anything does happen. I just feel by past cases in the newspaper, etc., this boy won't be punished rightfully for the crime he committed. It comes as a terrific shock to me to learn in reality that the laws are made to protect the criminals, not the ones they kill or maim for life. Look in the newspapers.

The sentences handed out to D.W.I. people are so petty, it's like saying go ahead and do it again and they do it over and over again. The sentences and fines are so light it doesn't teach them anything. Why can't the laws be made tough for them? What gives them the power to make a choice and then deprive an absolutely innocent person of his life? Why can't she be allowed to continue living, dating, graduate from high

School, no doubt get married someday and have a family? She was a beautiful girl inside and out, so much to give, so much to live. Why, why did it have to happen to my baby sister, to the baby of our family?

I really don't care if people want to drink. They can drink until they drown in it for all I care, but why can't they let somebody who is sober and alert and has the ability of good judgment, drive them home? This would save so many innocent people their lives. It could have saved my sister's life.

I don't know where to start, or what to do, but I want very much to see strong action being taken in the legislature to replace the soft laws for the crime, of driving while intoxicated.

Sincerely,  
Becky Lawson

Dept of HSS  
POSITION PAPER  
ON  
SENATE BILL NO. 406  
*State Stat*

"An Act relating to age limits under Title 4, Alcoholic Beverages."

Senate Bill 406 would amend sections AS 04.10.040(b), AS 04.10.310, AS 04.10.44, AS 04.15.020(d), AS 04.15.060(a)-(e) of Title 4 by raising the minimum age limit in each section, for participation in the consumption, sale, dispensing, and other activities relating to alcoholic beverages, from 19 years to 21 years.

Overview

Passage in 1971 of the 26th Amendment to the United States Constitution not only allowed 18 year olds to vote but this action assisted in extending certain other priveleges to this age group. During the period of 1970 to 1975, 27 states including Alaska, lowered their minimum drinking age for all alcoholic beverage, and another 11 states lowered the drinking age for wine and/or beer. However, 1976 saw a reversal of this trend when Minnesota raised it minimum drinking age and since then, eight (8) other states have also raised their drinking age. A key factor in states decisions to raise drinking ages has been their experience of sharp increases in alcohol-related highway accidents and fatalities that have coincided with the reduction in drinking age. Massachusetts for example, found that traffic fatalities involving drinking teenagers nearly tripled in the years following lowering the legal drinking age.

Alaska Experience

Alcohol abuse and alcoholism are generally recognized as Alaska's number one health and social problems. Alcohol has also been linked with the state's high accidental death rate and other manifestations of social ills, such as homicide, suicide, crime, violence, child and spouse abuse and neglect, etc.

EXCERPT FROM DEPT OF HSS

Youth of Alaska are not immune from the ill effects of alcoholism and alcohol abuse. For example, the State Alcoholism Plan estimates that over 7,000 of Alaska's youth are problem drinkers, defined as drinking alcohol to an extent, or in a manner that an alcohol-related disability is displayed. Also, our state-funded alcoholism treatment programs report that youth make up 4-5% of all persons seen for treatment and counselling. The alcoholism plan, also, reports that during 1976, four (4) deaths occurred to Alaskan youth, ages 15-24 - due to alcoholism (including alcohol intoxication and/or dependence). Our Department finds 16-17% of all juvenile arrests are for driving under the influence, liquor law violators and public drunkenness, ranging to as high as 52% in Bethel and 45% in Juneau. (See attached chart.)

(Continued)

These statistics appear to indicate that alcoholism and alcohol abuse continues to be a serious health and social problem in the State and to which our youth are vulnerable. ~~still~~

Department's Position:

The Department offers ~~no~~ ~~advice~~ ~~in~~ ~~looking~~ ~~at~~ ~~the~~ ~~social~~ ~~and~~ ~~health~~ ~~aspects~~ ~~of~~ ~~the~~ ~~problem~~. ~~Our~~ ~~experience~~ ~~must~~ ~~be~~ ~~considered~~ ~~in~~ ~~combination~~ ~~with~~ ~~expert~~ ~~advice~~ ~~from~~ ~~the~~ ~~other~~ ~~agencies~~ ~~and~~ ~~groups~~ ~~impacted~~ ~~by~~ ~~the~~ ~~problem~~, ~~such~~ ~~as~~ ~~the~~ ~~Department~~ ~~of~~ ~~Public~~ ~~Safety~~ ~~and~~ ~~Department~~ ~~of~~ ~~Law~~. We wish to note that the raising of the legal drinking age, although not a panacea for alcohol abuse, may decrease the availability of alcohol to a population that is at risk from this major health and social service problem.

Approved by:

*Helen D. Beirne*

Helen D. Beirne, Commissioner  
Department of Health and Social  
Services

3-3-80  
(DATE)

POSITION PAPER/Department of Health & Social Services



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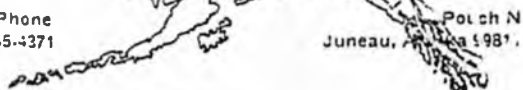


Figure 5

MOTOR VEHICLE TRAFFIC  
FATALITY ACCIDENTS

	1976	1977	1978	1979
Total Accidents	111	130	112	80
Accidents With Indicated Alcohol Involvement				
Number...	67	64(11)*	54(7)*	56
% of Total...	60.4	49.2	48.2	70.0
Total Motor Vehicle Traffic Fatalities	127	138	127	90

\* Numbers in parentheses represent "unknown" alcohol involvement.

While the number of total fatalities declined sharply in 1979 the number of alcohol related fatalities appears to have remained fairly constant. The result is an increase in the percentage of alcohol related fatalities.

Figure 6

ALCOHOL PRESENT IN DRIVERS ALL ACCIDENTS

Age Group	Number	Percentage	% Licensed Drivers
15-18	220	11.3%	3.4%
19-29	922	47.2	36.5
30-39	407	20.9	27.8
40-49	238	12.2	15.2
50-59	134	6.9	10.3
60+	<u>31</u>	1.6	5.3
	1952		
Not Specified	164		

Figure 7

ALCOHOL & DRIVERS BY AGE  
IN FATAL ACCIDENTS

Age Group	Alcohol	Percentage Total Drivers	All Drivers
15-18	10	9.3%	19
19-25	10	9.3%	28
26-30	11	10.2%	23
31-35	4	3.7%	10
36-40	3	2.8%	9
41-45	2	1.9%	4
46-50	2	1.9%	4
51-55	2	1.9%	5
56-60	2	1.9%	3
61-65	0		1
66+	0		2
<b>Total</b>	<b>46</b>	<b>42.6%</b>	<b>108</b>

*10/19 had been drinking  
19/108 = 17.6% inv.  
in fatal accidents  
all between 15-18:  
and they represent  
only 3.4% of  
the licensed drivers.*

YOUNG DRIVERS

Review of the distribution of accidents by age of the driver shows that the age groups 15-19 and 20-24 are involved in 38.8% of fatal accidents and 34.5% of injury accidents. The age groups 25-29 and 30-34 and 35-39 respectively are involved in 15.7%, 9.9% and 11.6% of the fatal accidents for a combined 37.2%. Of the injury accidents they respectively contribute 17.4%, 12.2% and 7.7% for a combined 37.3% of injury accidents.

Figure 8

ACCIDENT BY AGE GROUP

Age Group	% Inj. Accidents	% Fat. Accidents	% Licensed Drivers
15-19	13.8	16.5	6.9
20-24	21.0	22.3	15.7
25-29	17.4	15.7	18.7
30-34	12.2	9.9	16.0
35-39	7.7	11.6	11.8

Drivers in the age groups 15-19 and 20-24 make up 22.6% of licensed drivers. Drivers in the age group 25-29 make up 18.7% of the licensed drivers. The age groups 30-34 and 35-39 comprise 16% and 11.8% of licensed drivers respectively.

The Effect of Raising the Legal Minimum  
Drinking Age on Fatal Crash Involvement

HB112

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June 1981

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The Effect of Raising the Legal Minimum  
Drinking Age on Fatal Crash Involvement

ABSTRACT

In the early 1970's, many states in the U.S. lowered their legal minimum drinking ages, resulting in increased fatal crash involvement among young drivers. Beginning in 1976 and continuing into the 1980's, some of these states raised their drinking ages. The present study, conducted in nine states in which the drinking ages were raised, found that this resulted in reductions in fatal crash involvement among drivers the law changes applied to, especially in types of fatal crashes in which alcohol is most often involved. The reductions in the nighttime fatal crash involvement of such drivers, that occurred in eight of the nine states, ranged from 6 to 75 percent. On average, a state that raises its drinking age can expect about a 28 percent reduction in nighttime fatal crash involvement among drivers the law change applies to. It was estimated that in the 14 states that had raised their drinking ages as of January 1981, the result each year is about 380 fewer young drivers involved in nighttime fatal crashes. In the 31 states that still had a legal minimum drinking age less than 21 as of that date, it is estimated that each year there could be about 730 fewer young drivers in nighttime fatal crashes if the legal drinking age were raised to 21.

In the early 1970's, more than half of the states in the U.S. lowered their legal minimum drinking ages -- in most cases from 21 to 18 -- for the purchase of some or all alcoholic beverages. Research indicated that this legislation resulted in increased crash involvement among young drivers.<sup>1,2</sup> In a study of various states and Canadian provinces that reduced their drinking ages from 21 to 18, there were significant increases in fatal crash involvement -- particularly in nighttime and single vehicle crashes in which alcohol is most often involved -- of drivers under 21 in these areas, compared with adjacent areas that did not reduce their drinking ages. These increases occurred not only among 18-20 year olds, who were directly affected by the law change, but also among 15-17 year olds.<sup>1</sup>

As a result of these findings and other reports of growing teenage alcohol-related problems, many states that had lowered their legal minimum drinking ages in the early 1970's raised them beginning in 1976. By the end of 1980, 14 of the 30 states that had lowered their drinking ages for the purchase of some or all alcoholic beverages had raised them, although not necessarily back to the original ages. In this paper, a study of the effect of raising the drinking age on fatal crash involvement of teenage drivers is reported.

## METHODS

### Research Design

Nine states, all of which raised their legal minimum drinking ages between September 1, 1976 and January 1, 1980, were studied. Four states that raised their drinking ages during 1980 were excluded, because the law changes were too recent for their effects to be measured using data available when the

study was conducted. New Jersey, which raised its drinking age from 18 to 19 on January 2, 1980, but included a "grandfather" clause permitting those already 18 before that date to drink, was also excluded.

Each of the nine states was paired with a comparison state in which the legal minimum drinking age remained unchanged during the study period. Comparison states were chosen on the basis of geographic proximity to law-change states and comparability with law-change states with respect to numbers of crash fatalities. Table 1 shows the law-change and comparison state pairs, and drinking age regulations in each state.

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Table 1 goes here

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Data on driver involvement in fatal crashes from January 1975 through September 1980 were obtained from the Fatal Accident Reporting System (FARS).<sup>\*</sup> Only drivers of motor vehicles -- automobiles, light trucks, vans, on-off road vehicles -- were included.

Alcohol is a major factor in fatal motor vehicle crashes in general, but is particularly likely to be involved in nighttime fatal crashes (9:00 p.m. - 5:59 a.m.), especially single vehicle nighttime fatal crashes.<sup>3-5</sup> This subset of crashes therefore received special attention during the study.

The duration of post-law periods studied ranged from nine months (Illinois) to three years (Minnesota). In two states that raised their drinking ages from 18 to 19 but had a "grandfather" clause that permitted those already 18 years

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<sup>\*</sup> FARS is a computerized data base containing information on motor vehicle fatalities in the 50 states, the District of Columbia, and Puerto Rico. The data are collected by the state governments under contract to the National Highway Traffic Safety Administration. Police accident reports are the primary source of data, supplemented by data from medical examiners and other sources.

old to drink, the 12-month period following the law change dates was excluded. Pre-law and post-law periods for the nine states are shown in Figure 1. The ages to which the law changes apply are also given for each state in Figure 1.

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Figure 1 goes here

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Fatal crash involvement of drivers younger than those covered by the laws (starting with age 15) was also studied because of the possibility of spillover effects in these ages when alcoholic beverages could no longer be obtained legally by older teenagers. As a control, drivers older than those to whom the law changes applied (through age 21) who could drink legally in law change states throughout the study period were also included.

When a state changes its drinking age, there are possible effects on fatal crash involvement in adjacent states, both in the age groups the law changes apply to, and among their younger and older associates. These effects can be positive or negative. For example, if a state raises its drinking age from 18 to 21 and a neighboring state has an 18-year-old drinking age, then 18-20 year olds in the law-change state may travel to the neighboring state in order to drink legally, and may crash there. On the other hand, if a neighboring state has a 21 year old drinking age, 18-20 year olds in that state may no longer travel to the law-change state to drink, and consequently may crash less in both states.

These and other possible effects have a bearing on the research design used in the present study, which involved comparing law-change states with neighboring (although not necessarily contiguous) states, and also must be considered in assessing the net effect of states raising their legal minimum drinking age. It was found, however, that the number of drivers of the age

groups studied with out-of-state licenses in fatal crashes in law-change and comparison states in the pre- and post-law periods was small (less than 10 percent of the total). More importantly, the number of drivers in fatal crashes in law change states that were licensed in the comparison states (and fatal crash involved drivers in comparison states that were licensed in the law-change states) was less than one percent of the total.

Analyses based only on drivers licensed in the state in which the crash occurred produced the same results as analyses based on all drivers; the latter measure was therefore used.

### Statistical Analysis

If raising the drinking age reduces driver involvement in alcohol-related fatal crashes, nighttime fatal crashes would be expected to be reduced more than daytime crashes (and single vehicle nighttime fatal crashes more than multiple vehicle daytime fatal crashes). In other words, the ratio of night-to-day fatal crashes in a law-change state would be greater before the law change than after it. This can be shown in a 2 x 2 table as follows:

<u>Time of Crash</u>	<u>Time Period</u>	
	<u>Before Law Change</u>	<u>After Law Change</u>
<u>Night</u>	$n_{11}$	$n_{12}$
<u>Day</u>	$n_{21}$	$n_{22}$

and 
$$\frac{n_{11}}{n_{21}} > \frac{n_{12}}{n_{22}} \quad (1)$$

A statistical measure that compares such ratios is the log odds ratio,<sup>6</sup> defined as:

$$\beta = \ln \frac{n_{12}/n_{22}}{n_{11}/n_{21}} \quad (2)$$

Positive values of  $\beta$  correspond to increases in the night/day ratio, negative values to decreases, and  $\beta = 0$  whenever the ratio is unchanged. Except for small samples ( $n \leq 5$ ) the distribution of  $\beta$  is asymptotically normal and its variance is approximately:

$$\sigma_{\beta}^2 = \frac{1}{n_{11}} + \frac{1}{n_{12}} + \frac{1}{n_{21}} + \frac{1}{n_{22}} \quad (3)$$

The hypothesis of no change in the night/day ratio subsequent to the law could therefore be tested in terms of the approximately standard normal test statistic  $Z = \beta/\sigma_{\beta}$ . Large negative values of  $Z$  would indicate a reduction in this ratio; large positive values an increase.

To rule out the possibility that changes in the ratios in law-change states were part of a regional trend, the log odds ratio for a law-change state ( $\beta_l$ ) was compared with the log odds ratio of the non-law change (comparison) state with which it was paired ( $\beta_c$ ). To calculate  $\beta_c$  data for the comparison state were split into before and after periods that coincided with these periods in the law-change state. Positive, zero or negative values of the difference  $\Delta\beta = \beta_l - \beta_c$  are indicative of greater, equal or smaller increases in the law-change state than in the comparison state. The variance of this test statistic is  $\sigma_{\Delta\beta}^2 = \sigma_{\beta_l}^2 + \sigma_{\beta_c}^2$  and  $\Delta\beta/\sigma_{\Delta\beta}$  is again standard normal if the change in the night/day ratio was the same in both states.

To rule out the possibility that changes observed in age groups covered by the law (and younger ages) were part of a trend in the night/day ratio that occurred in other age groups in law change states, log odds ratios in law-change and comparison states were compared for older drivers through age 21, to whom the law change did not apply. This was done by comparing  $\Delta\beta_a$  for the law-affected group to a similarly calculated  $\Delta\beta_o$  for the older age group. As before, the variance of  $\Delta\beta_a - \Delta\beta_o$  is equal to  $\sigma_{\Delta\beta_o}^2 + \sigma_{\Delta\beta_a}^2$  and the test statistic is  $(\Delta\beta_a - \Delta\beta_o) / (\sigma_{\Delta\beta_a}^2 + \sigma_{\Delta\beta_o}^2)^{1/2}$  which is standard normal in the absence of a difference between the  $\Delta\beta$ 's.

The log odds ratios were also used to estimate changes in the number and percentage of drivers in nighttime fatal crashes resulting from the law. Consider now the 2 x 2 x 2 contingency table for a given age group:

		State			
		Comparison		Law-Change	
		Before	After	Before	After
Time of Crash	Night	a	b	e	x
	Day	c	d	g	h

If the two odds ratios are the same then,

$$\frac{xg}{en} = \frac{bc}{ad} = e^{\beta_c} \quad \text{and } x = bceh/adg.$$

Now if, instead of x, the cell frequency is actually n, then the difference

$$\Delta n = n - x = n [1 - e^{\beta_c - \beta_d}] \quad (4)$$

is the change in drivers involved in nighttime fatal crashes in the law-change state after the law went into force. This change can be expressed as a percentage:

$$\Delta P = 100 \frac{\Delta n}{x} = 100 [e^{\Delta \beta} - 1] \quad (5)$$

Estimates of net changes in fatal crash involvement due to the laws were obtained by comparing the estimated changes for the age group covered by the law ( $\Delta P_a$ ) with the estimated change ( $\Delta P_o$ ) for the older group. Applying formula (5) for both age groups leads to the estimated net change due to the law for the law-affected group:

$$\Delta P_k = \text{Net change in state k} = \frac{\Delta P_a - \Delta P_o}{1 + \Delta P_o} \quad (6)$$

These methods were also used to determine what changes occurred in driver involvement in single vehicle nighttime fatal crashes and in all fatal crashes.

Data from the matched state pairs were analyzed by means of these methods in three different ways. The simplest analysis was based on data pooled across the nine law change and nine comparison states. In this analysis the pooled data were treated as if all of it had come from one change and one comparison state. This analysis disregards the variation between the states.

In the second method the "typical" change attributable to the laws was estimated as the average of the nine separate state estimates:

$$(\Delta P)_{av} = 1/9 (\Delta P_1 + \dots + \Delta P_9) \quad (7)$$

The corresponding estimate for the variance of  $\Delta P_k$  is

$$\sigma^2 = 1/8 \sum_1^9 (\Delta P_k - (\Delta P)_{av})^2 \quad (8)$$

and so a 95 percent confidence interval for the average is  $(\Delta P)_{av} \pm 1.96 \sigma/\sqrt{9}$ .

National projections for the estimated impact of already existing laws and the impact of further law changes were estimated on the basis of  $(\Delta P)_{av}$ .

Finally, to estimate the percentage change in driver fatal crash involvement that occurred in law-change states during the study period, the estimated changes were summed across the law-change states and divided by the estimated sum of the number of drivers that would have been in fatal crashes without the law change. This estimate corresponds to the "aggregate" change due to the laws. The aggregate change is a weighted average of the changes, whereas the typical change is an unweighted average. Statistical significance of the aggregate change was assessed in terms of the test statistic:

$$Z = \frac{1}{\sqrt{9}} \sum_1^9 \frac{\Delta \beta_{ak} - \Delta \beta_{ok}}{(\sigma_{\Delta \beta_{ak}}^2 + \sigma_{\Delta \beta_{ok}}^2)^{1/2}} \quad (9)$$

In the absence of a law effect Z would have a standard normal distribution.

## RESULTS

Table 2 shows the results of comparisons between the nine law-change and comparison state pairs on driver involvement in fatal crashes before and after the laws went into force. In the age groups the laws applied to, there was a greater decrease in driver involvement in nighttime than in daytime fatal crashes in law-change states than in comparison states subsequent to the laws ( $Z = -3.29$ ,  $p = 0.001$ ). There was also a greater decrease in single vehicle nighttime fatal crash involvement than in multiple vehicle daytime fatal crash involvement for these ages ( $Z = -2.85$ ,  $p < 0.01$ ). There were an estimated 30 percent fewer drivers in the law-affected age groups in fatal nighttime crashes in law-change states during the post-law periods studied, and 41 percent fewer drivers in single vehicle nighttime fatal crashes. There was a decrease in driver involvement in all fatal crashes in law-change states in the age groups that the law applied to, but it was not statistically significant ( $Z = -1.20$ ,  $p > 0.10$ ).

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Table 2 goes here

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There was some indication of decreased fatal crash involvement of drivers in law-change states who were younger than drivers the law changes applied to, but the changes were not statistically significant. This was also the case when comparisons were based only on drivers one year younger. There were also small, non-significant changes for older drivers in law-change states.

The three sets of estimates of the percent net reductions in fatal crash involvement of drivers in law-change states to whom the law changes applied are given in Table 3. The three estimation methods yielded reasonably consistent results. Estimated reductions in driver involvement in nighttime fatal crashes

ranged from 18 to 28 percent; all three estimates were statistically significant. Estimated reductions in driver involvement in single vehicle nighttime crashes ranged from 23 to 35 percent. Although these reductions were higher than the nighttime reductions, only the aggregate estimate was statistically significant, in part because of the smaller number of drivers in nighttime single vehicle crashes. There were smaller estimated reductions in all fatal crashes (12 to 20 percent); the pooled estimate was statistically significant.

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Table 3 goes here

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Table 4 shows, for each of the nine law-change states, the estimated post-law changes in nighttime fatal crash involvement for law-affected and older drivers, and the net effects. The net effects of the laws on drivers the law changes applied to are also displayed in Figure 2. There were estimated net reductions in driver involvement in nighttime fatal crashes in eight of the nine states, ranging from 6 to 75 percent. Montana was the lone state in which there was not a net reduction. The average reduction in the nine states was 23 percent ( $\pm 17$  percent for a 95 percent confidence interval).

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Table 4 goes here

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Figure 2 goes here

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Figure 3 displays the estimated effects of driver involvement in nighttime fatal crashes as deseasonalized monthly time series from 1975 into 1980 as the

nine states studied raised their legal minimum drinking ages.\*

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Figure 3 goes here

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## DISCUSSION

When states lowered their legal minimum drinking ages in the early 1970's, the result was an increase, among both law-affected and younger drivers, in involvement in fatal crashes, especially those crashes in which alcohol is most often involved. The results of the present study indicate that when states raise their drinking age, there is a corresponding decrease in fatal crash involvement among law-affected drivers. There is some evidence that raising the drinking age also affects younger drivers, but the reductions in the involvement of younger drivers in fatal crashes were not statistically significant:

For the 14 states (including the nine studied plus five others) that as of January 1981 had raised their legal minimum drinking ages in recent years, it is estimated that these law changes result each year in about 330 fewer young drivers involved in nighttime fatal crashes.\*\* For the 31 states (including seven of the nine studied) that as of January 1981 had a drinking age for

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\* The estimated monthly series was obtained in three steps. First, for each month the data in the 2 x 2 table representing day/night and law change/no law change splits were pooled among states that had already raised the drinking age, and the frequency of nighttime crash involvement in the change state was estimated so that the odds ratio of the modified table then equalled the odds ratio for a similar table obtained by pooling all pre-law change counts across all months and all states. Second, these estimated counts for the post-law periods in the change states were added to the sum of the observed counts in the states that still did not change their laws. Third, this sum was smoothed using X-11. The estimated monthly reduction in fatal crash involvement was subdivided between law effect and other factors using a constant factor (40 percent). This factor represents the estimated reduction in the involvement of older drivers.

\*\* This annual estimate was based on data from 1979, the last full year for which FARS data were available when the present study was conducted.

some or all alcoholic beverages that was less than 21,\* it is estimated that each year there could be about 730 fewer young drivers involved in nighttime fatal crashes if in all states the drinking age for all alcoholic beverages was raised to 21. Any single state that raises its drinking age can expect the involvement in nighttime fatal crashes of drivers of the age groups to which the change in the law applies to drop by about 28 percent.

The societal benefits achieved in states that have raised their drinking ages are substantial; the benefits achievable by additional states raising their drinking ages would be even more substantial. Raising the legal minimum drinking age to 21 in all states would have an important impact in reducing the annual toll of motor vehicle deaths in the United States, particularly the deaths of young people and of others with whom they are involved in crashes.

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\* If persons less than age 21 were allowed to purchase only beer containing not more than 3.2% alcohol by weight, the state was classified as having a 21-year-old drinking age.

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TABLE 1

Legal Minimum Drinking Ages in Law-Change and Comparison States<sup>1</sup>

<u>Law-Change State</u>	<u>Drinking Age From</u>	<u>Age Change To</u>	<u>Effective Date</u>	<u>Comparison State</u>	<u>Legal Minimum Drinking Age</u>
Illinois <sup>2</sup>	19	21	1/1/80	Indiana	21
Iowa <sup>3</sup>	18	19	7/1/78	Kansas <sup>4</sup>	21
Maine	18	20	10/24/77	Vermont	18
Massachusetts	18	20	4/1/79	Connecticut	18
Michigan	18	21	12/23/78	Ohio <sup>4</sup>	21
Minnesota <sup>3</sup>	18	19	9/1/76	Wisconsin	18
Montana	18	19	1/1/79	Idaho	19
New Hampshire	13	20	5/24/79	Part of New York <sup>5</sup>	18
Tennessee	18	19	6/1/79	Kentucky	21

<sup>1</sup> The laws apply to all alcoholic beverages except where noted.

<sup>2</sup> The age change applied to beer and wine; the legal minimum drinking age for distilled spirits was 21 throughout the study period. Prior to the 1980 change, home rule units in Illinois had the authority to promulgate different laws for drinking ages. Some raised the drinking age from 19 to 21 for beer and wine before the statewide change in 1980, although in some cases, beer and wine purchase by 19-20 year olds was permitted under some conditions.

<sup>3</sup> A "grandfather" clause permitted 18 year olds to drink if they were 18 before the law went into effect.

<sup>4</sup> The legal minimum drinking age was 18 for beer with not over 3.2% alcohol content, and 21 for other alcoholic beverages.

<sup>5</sup> The following counties in central and northern New York were included: Clinton, Essex, Franklin, Fulton, Hamilton, Herkimer, Jefferson, Lewis, Madison, Montgomery, Oneida, Oswego, St. Lawrence, Saratoga, Warren, and Washington.

TABLE 2

Statistical Tests Comparing Changes in Driver Involvement  
in Fatal Crashes Before and After Changes in  
Legal Minimum Drinking Ages

Fatal Crash Ratios Compared	Driver Categories					
	Drivers the Law Change Applied to		Younger Drivers		Older Drivers	
	Z statistic <sup>1</sup>	Estimated change(%)	Z statistic <sup>1</sup>	Estimated change(%)	Z statistic <sup>1</sup>	Estimated change(%)
Nighttime : Daytime	-3.29**	-30	-0.29	-6	-0.53	-15
Single Vehicle Nighttime : Multiple Vehicle Daytime	-2.85*	-41	-0.32	-12	-0.20	-9
All Types	-1.20	-11	-0.91	-7	+1.03	+11

<sup>1</sup> Z is standard normal under the null hypothesis. See text.

\*\* p = 0.001, two-tailed

\* p < 0.01, two-tailed

TABLE 3

Estimated Percent Net Reductions in Fatal Crash Involvement of Drivers  
to Whom Changes in the Legal Minimum Drinking Ages Applied

Fatal Crash Type	Method of Estimation <sup>1</sup>		
	Aggregate	Typical	Pooled
Nighttime	-18%*	-28%**	-23%#
Single vehicle nighttime	-35%*	-23%	-25%
All types	-20%	-12%	-14%#

<sup>1</sup> See text.

\*\* p < 0.001, two-tailed

\* p < 0.05, two tailed

TABLE 4

Estimated Changes in Nighttime Fatal Crash Involvement  
After Changes in the Legal Minimum Drinking Ages  
in Nine States, and Net Reductions in the Age Group  
the Law Change Applied To

Law-Change State	Change in Nighttime Fatal Crash Involvement		Net Reduction Among Drivers the Law Change Applied to
	Drivers the Law Change Applied to	Older Drivers	
Illinois	-30%	-9%	-23%
Wisconsin	-60%	-29%	-45%
Maine	-14%	-3%	-11%
Massachusetts	-10%	-5%	-6%
Michigan	-17%	+40%	-41%
Minnesota	-56%	-32%	-34%
Montana	+17%	+3%	+14%
New Hampshire	-55%	+80%	-75%
Tennessee	-43%	-14%	-33%
Average Reduction			-28%*

\* ± 17% for a 95% confidence interval.

FIGURE 1

PRE-LAW AND POST-LAW PERIODS STUDIED, AND AGES THE LAW CHANGES APPLY TO

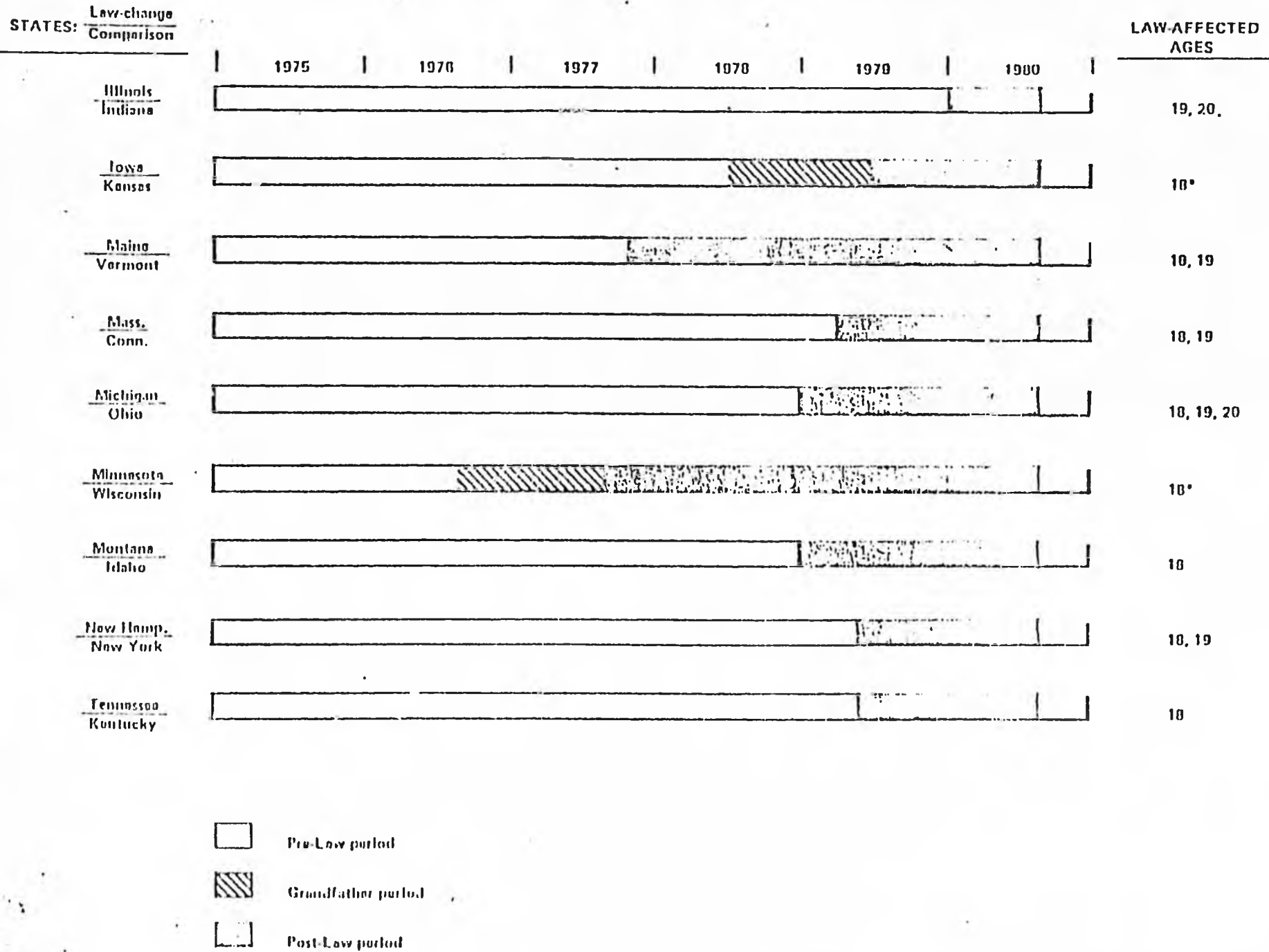


FIGURE 2

NET CHANGES IN DRIVER INVOLVEMENT IN NIGHTTIME FATAL CRASHES  
AFTER CHANGES IN THE LEGAL MINIMUM DRINKING AGES

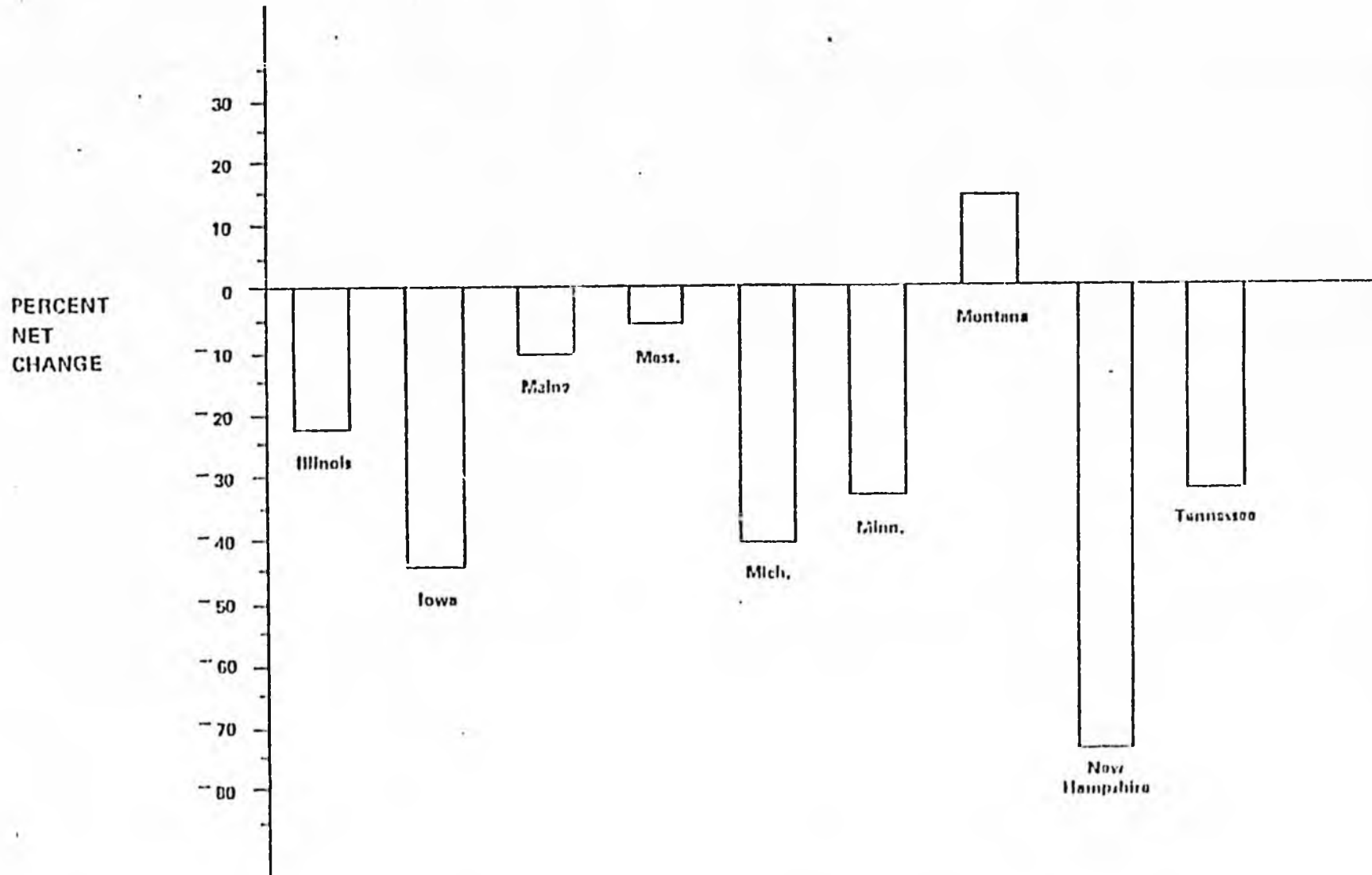
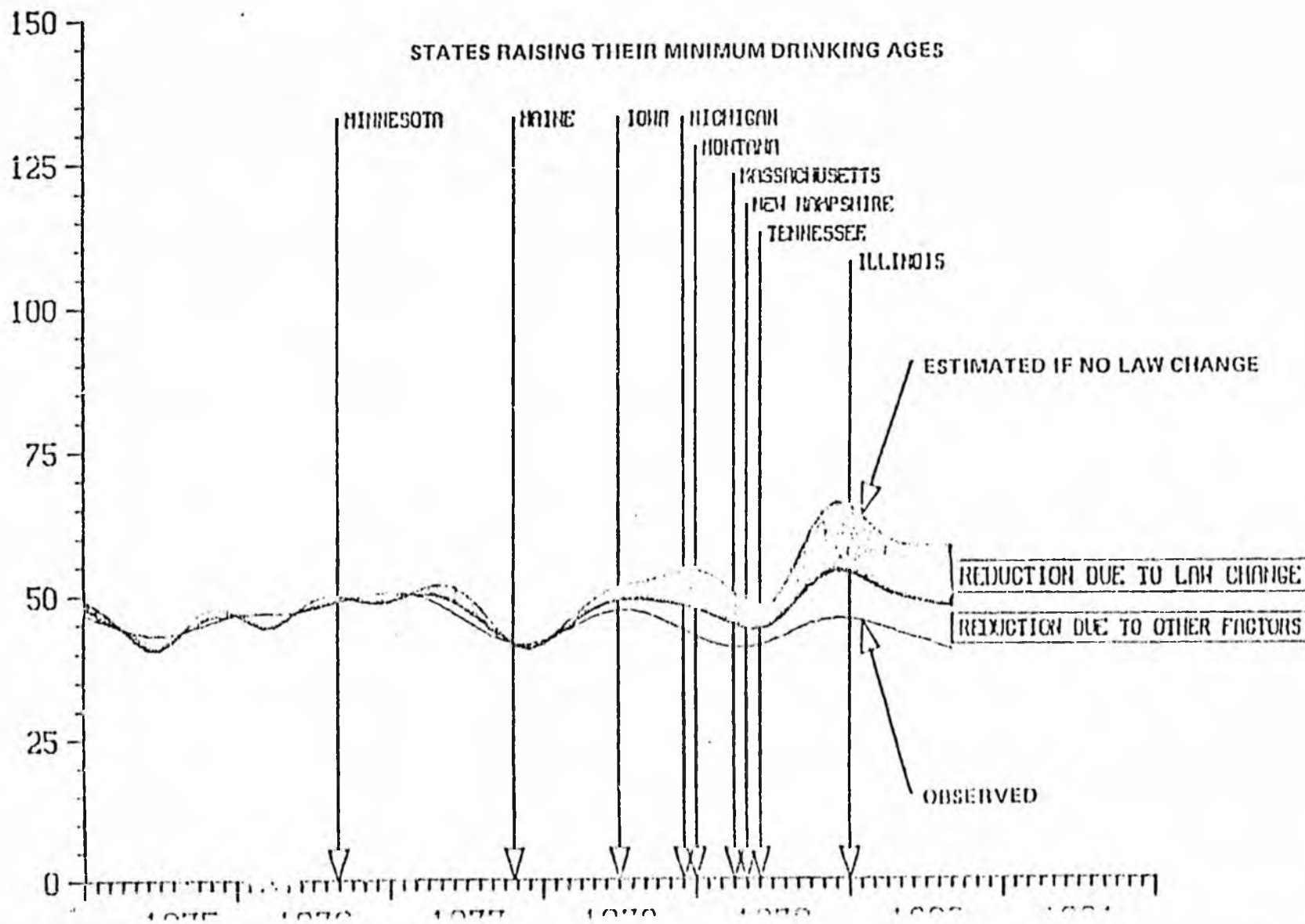


FIGURE 3

ESTIMATED NET REDUCTION IN NIGHTTIME FATAL CRASH INVOLVEMENT  
IN NINE STATES THAT RAISED THEIR LEGAL MINIMUM DRINKING AGES

NUMBER OF  
DRIVERS  
(Deseasonalized)



# STATE OF ALASKA

**DEPARTMENT OF PUBLIC SAFETY**  
**OFFICE OF THE COMMISSIONER**

JAY S. HAMMOND, GOVERNOR

POUCH N  
JUNEAU, ALASKA 99811  
PHONE:

October 28, 1981

Len Danis  
c/o Terry Martin  
921 W 6th Avenue, Suite 250  
Anchorage, Alaska 99501

Dear Ms. Danis:

Enclosed are the statistics regarding traffic accidents and fatalities that you requested. The alcohol-related accidents are somewhat incomplete, but I hope what is available will be of some help to you.

Please feel free to contact me if I can be of any further assistance concerning highway safety-related matters.

Sincerely yours,



Karen VanDusseldorp  
Research Analyst  
Alaska Highway Safety Planning  
Agency

KV/sn  
Encl:

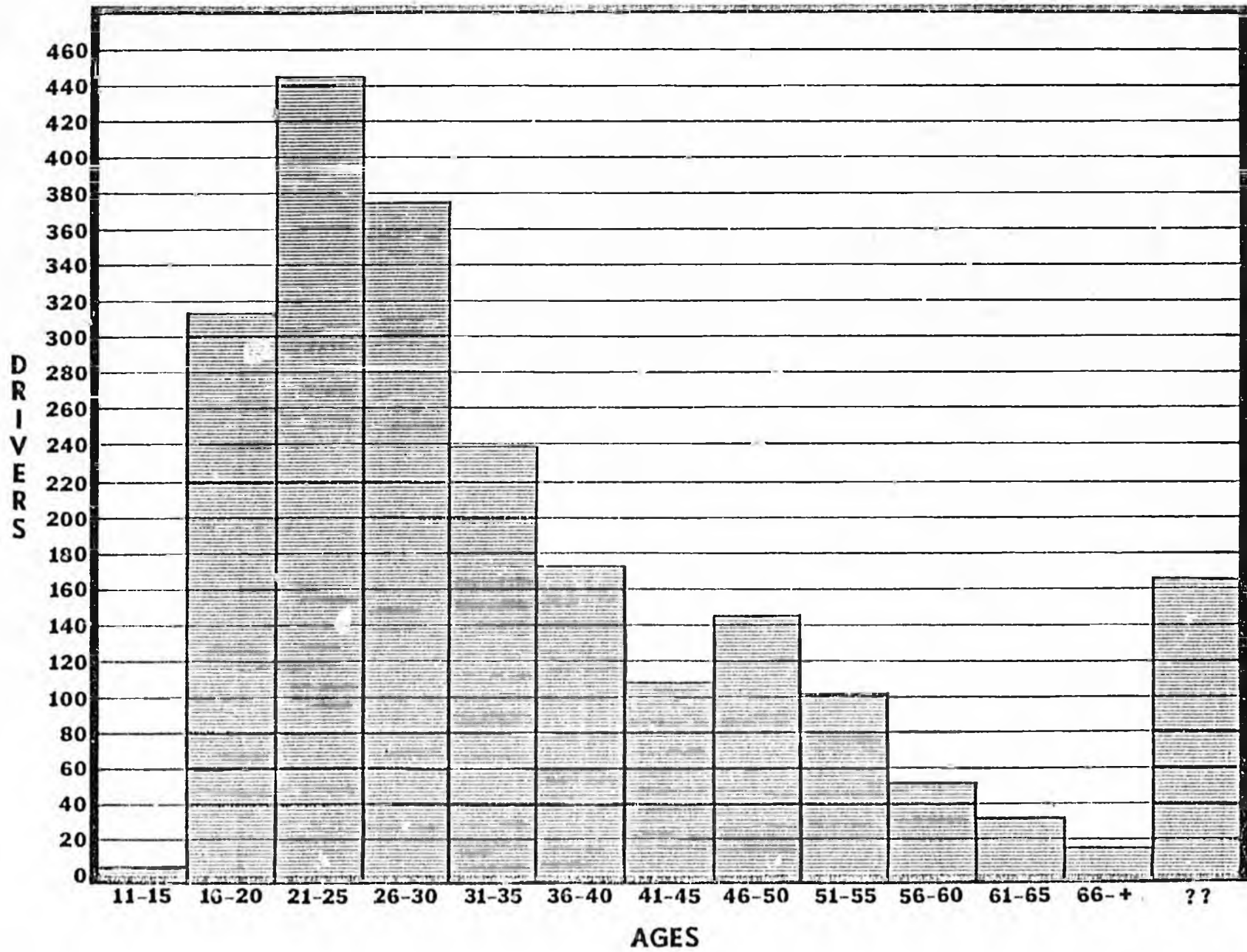
<u>YEAR</u>	<u>FATALITIES</u>	<u>TOTAL # ACCIDENTS</u>	<u>MDR</u> <sup>*</sup>
1970	101	11,641	7.3
1971	65	10,828	4.1
1972	61	11,753	3.9
1973	74	11,837	4.6
1974	99	17,101	4.1
1975	127	22,590	4.6
1976	124	21,408	4.1
1977	136	15,174	4.5
1978	127	12,962	4.5
1979	90	13,521	3.2
1980	80	13,165	3.3

\* Mileage Death Rate

ALCOHOL-RELATED 1979

<u>AGE</u>	<u># OF ALCOHOL ACCIDENTS</u>	<u>PERCENT INVOLVEMENT</u>	<u>PERCENTAGE OF LICENSED DRIVERS</u>
15-18	220	11.3	3.4
19-29	922	47.2	36.5
30-39	407	20.9	27.8
40-49	238	12.2	15.2
50-59	134	6.9	10.3
60+	31	1.6	2.5

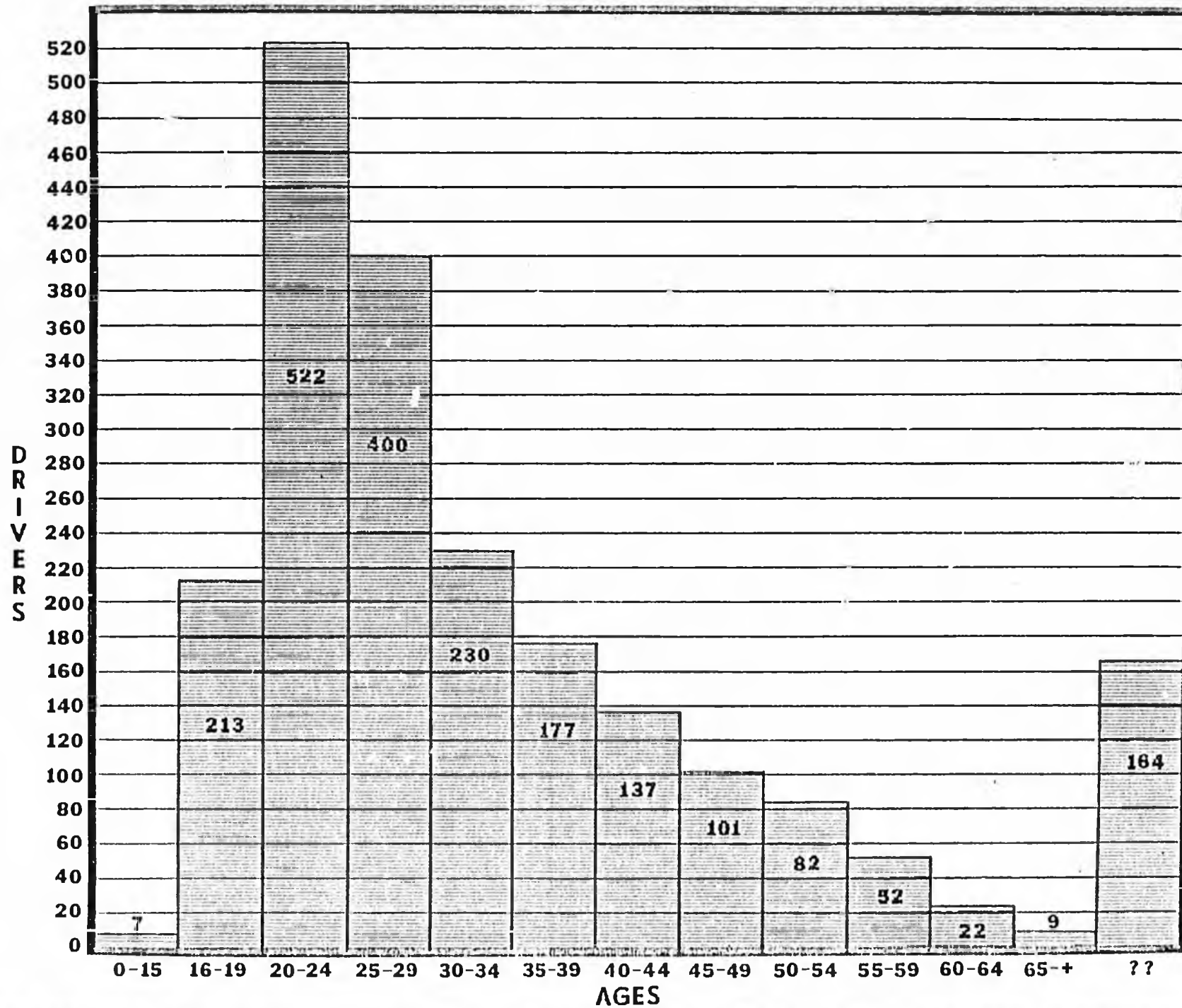
# ALCOHOL PRESENCE BY AGE GROUP



35

1976

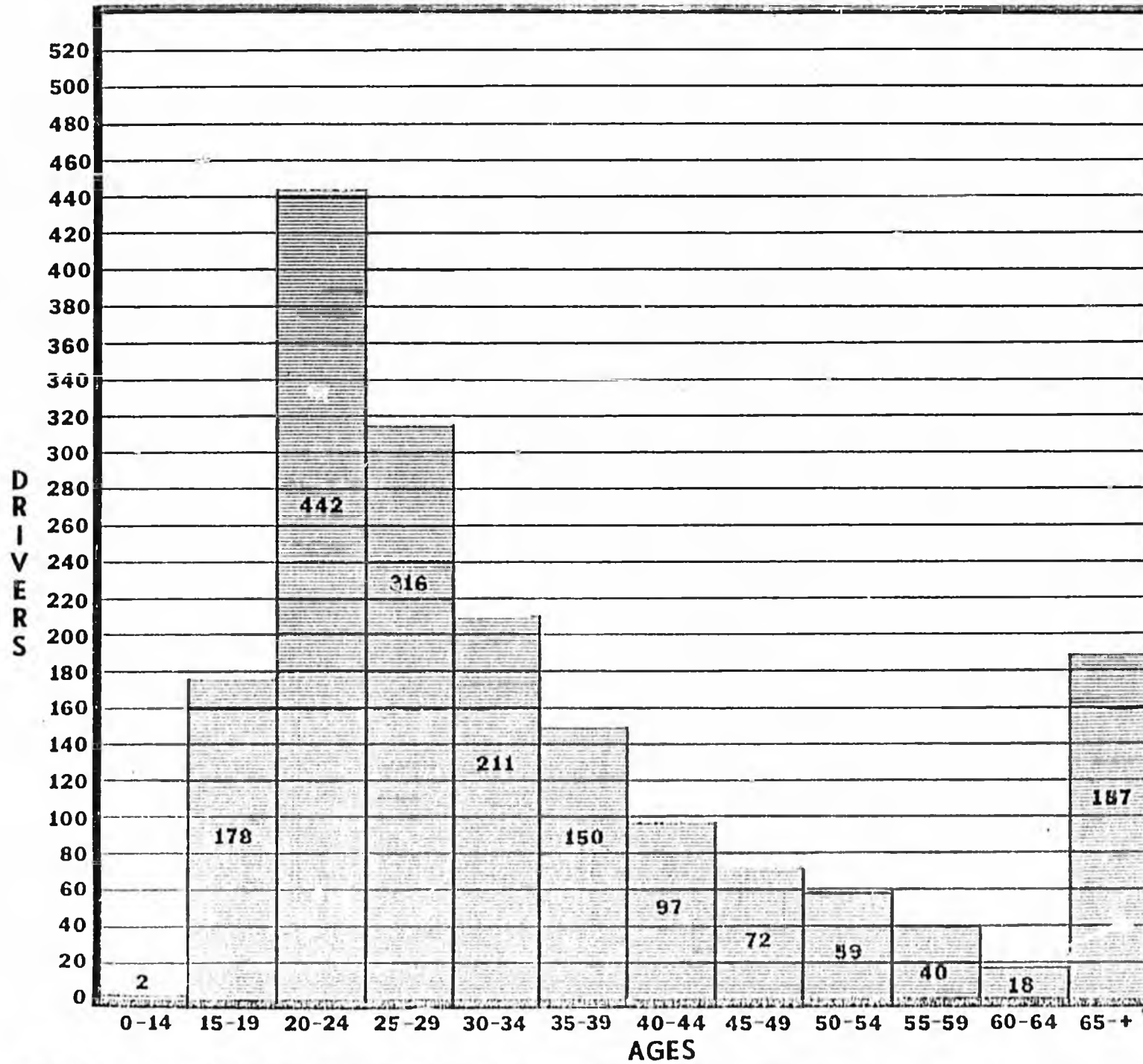
•••DRIVER ALCOHOL PRESENCE BY AGE GROUP•••



35

1977

••• DRIVER ALCOHOL PRESENCE BY AGE GROUP •••



35

1978

1981

The Effect of Raising the Legal Minimum  
Drinking Age on Fatal Crash Involvement

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June 1981

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The Effect of Raising the Legal Minimum  
Drinking Age on Fatal Crash Involvement

ABSTRACT

In the early 1970's, many states in the U.S. lowered their legal minimum drinking ages, resulting in increased fatal crash involvement among young drivers. Beginning in 1976 and continuing into the 1980's, some of these states raised their drinking ages. The present study, conducted in nine states in which the drinking ages were raised, found that this resulted in reductions in fatal crash involvement among drivers the law changes applied to, especially in types of fatal crashes in which alcohol is most often involved. The reductions in the nighttime fatal crash involvement of such drivers, that occurred in eight of the nine states, ranged from 6 to 75 percent. On average, a state that raises its drinking age can expect about a 28 percent reduction in nighttime fatal crash involvement among drivers the law change applies to. It was estimated that in the 14 states that had raised their drinking ages as of January 1981, the result each year is about 380 fewer young drivers involved in nighttime fatal crashes. In the 31 states that still had a legal minimum drinking age less than 21 as of that date, it is estimated that each year there could be about 730 fewer young drivers in nighttime fatal crashes if the legal drinking age were raised to 21.

In the early 1970's, more than half of the states in the U.S. lowered their legal minimum drinking ages -- in most cases from 21 to 18 -- for the purchase of some or all alcoholic beverages. Research indicated that this legislation resulted in increased crash involvement among young drivers.<sup>1,2</sup> In a study of various states and Canadian provinces that reduced their drinking ages from 21 to 18, there were significant increases in fatal crash involvement -- particularly in nighttime and single vehicle crashes in which alcohol is most often involved -- of drivers under 21 in these areas, compared with adjacent areas that did not reduce their drinking ages. These increases occurred not only among 18-20 year olds, who were directly affected by the law change, but also among 15-17 year olds.<sup>1</sup>

As a result of these findings and other reports of growing teenage alcohol-related problems, many states that had lowered their legal minimum drinking ages in the early 1970's raised them beginning in 1976. By the end of 1980, 14 of the 30 states that had lowered their drinking ages for the purchase of some or all alcoholic beverages had raised them, although not necessarily back to the original ages. In this paper, a study of the effect of raising the drinking age on fatal crash involvement of teenage drivers is reported.

## METHODS

### Research Design

Nine states, all of which raised their legal minimum drinking ages between September 1, 1976 and January 1, 1980, were studied. Four states that raised their drinking ages during 1980 were excluded, because the law changes were too recent for their effects to be measured using data available when the

study was conducted. New Jersey, which raised its drinking age from 18 to 19 on January 2, 1980, but included a "grandfather" clause permitting those already 18 before that date to drink, was also excluded.

Each of the nine states was paired with a comparison state in which the legal minimum drinking age remained unchanged during the study period. Comparison states were chosen on the basis of geographic proximity to law-change states and comparability with law-change states with respect to numbers of crash fatalities. Table 1 shows the law-change and comparison state pairs, and drinking age regulations in each state.

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Table 1 goes here

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Data on driver involvement in fatal crashes from January 1975 through September 1980 were obtained from the Fatal Accident Reporting System (FARS).<sup>\*</sup> Only drivers of motor vehicles -- automobiles, light trucks, vans, on-off road vehicles -- were included.

Alcohol is a major factor in fatal motor vehicle crashes in general, but is particularly likely to be involved in nighttime fatal crashes (9:00 p.m. - 5:59 a.m.), especially single vehicle nighttime fatal crashes.<sup>3-5</sup> This subset of crashes therefore received special attention during the study.

The duration of post-law periods studied ranged from nine months (Illinois) to three years (Minnesota). In two states that raised their drinking ages from 18 to 19 but had a "grandfather" clause that permitted those already 18 years

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<sup>\*</sup> FARS is a computerized data base containing information on motor vehicle fatalities in the 50 states, the District of Columbia, and Puerto Rico. The data are collected by the state governments under contract to the National Highway Traffic Safety Administration. Police accident reports are the primary source of data, supplemented by data from medical examiners and other sources.

old to drink, the 12-month period following the law change dates was excluded. Pre-law and post-law periods for the nine states are shown in Figure 1. The ages to which the law changes apply are also given for each state in Figure 1.

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Figure 1 goes here

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Fatal crash involvement of drivers younger than those covered by the laws (starting with age 15) was also studied because of the possibility of spillover effects in these ages when alcoholic beverages could no longer be obtained legally by older teenagers. As a control, drivers older than those to whom the law changes applied (through age 21) who could drink legally in law change states throughout the study period were also included.

When a state changes its drinking age, there are possible effects on fatal crash involvement in adjacent states, both in the age groups the law changes apply to, and among their younger and older associates. These effects can be positive or negative. For example, if a state raises its drinking age from 18 to 21 and a neighboring state has an 18-year-old drinking age, then 18-20 year olds in the law-change state may travel to the neighboring state in order to drink legally, and may crash there. On the other hand, if a neighboring state has a 21 year old drinking age, 18-20 year olds in that state may no longer travel to the law-change state to drink, and consequently may crash less in both states.

These and other possible effects have a bearing on the research design used in the present study, which involved comparing law-change states with neighboring (although not necessarily contiguous) states, and also must be considered in assessing the net effect of states raising their legal minimum drinking age. It was found, however, that the number of drivers of the age

groups studied with out-of-state licenses in fatal crashes in law-change and comparison states in the pre- and post-law periods was small (less than 10 percent of the total). More importantly, the number of drivers in fatal crashes in law change states that were licensed in the comparison states (and fatal crash involved drivers in comparison states that were licensed in the law-change states) was less than one percent of the total.

Analyses based only on drivers licensed in the state in which the crash occurred produced the same results as analyses based on all drivers; the latter measure was therefore used.

#### Statistical Analysis

If raising the drinking age reduces driver involvement in alcohol-related fatal crashes, nighttime fatal crashes would be expected to be reduced more than daytime crashes (and single vehicle nighttime fatal crashes more than multiple vehicle daytime fatal crashes). In other words, the ratio of night-to-day fatal crashes in a law-change state would be greater before the law change than after it. This can be shown in a 2 x 2 table as follows:

<u>Time of Crash</u>	<u>Time Period</u>	
	<u>Before Law Change</u>	<u>After Law Change</u>
<u>Night</u>	$n_{11}$	$n_{12}$
<u>Day</u>	$n_{21}$	$n_{22}$

and 
$$\frac{n_{11}}{n_{21}} > \frac{n_{12}}{n_{22}} \quad (1)$$

A statistical measure that compares such ratios is the log odds ratio,<sup>6</sup> defined as:

$$\beta = \ln \frac{n_{12}/n_{22}}{n_{11}/n_{21}} \quad (2)$$

Positive values of  $\beta$  correspond to increases in the night/day ratio, negative values to decreases, and  $\beta = 0$  whenever the ratio is unchanged. Except for small samples ( $n \leq 5$ ) the distribution of  $\beta$  is asymptotically normal and its variance is approximately:

$$\sigma_{\beta}^2 = \frac{1}{n_{11}} + \frac{1}{n_{12}} + \frac{1}{n_{21}} + \frac{1}{n_{22}} \quad (3)$$

The hypothesis of no change in the night/day ratio subsequent to the law could therefore be tested in terms of the approximately standard normal test statistic  $Z = \beta/\sigma_{\beta}$ . Large negative values of  $Z$  would indicate a reduction in this ratio; large positive values an increase.

To rule out the possibility that changes in the ratios in law-change states were part of a regional trend, the log odds ratio for a law-change state ( $\beta_l$ ) was compared with the log odds ratio of the non-law change (comparison) state with which it was paired ( $\beta_c$ ). To calculate  $\beta_c$  data for the comparison state were split into before and after periods that coincided with these periods in the law-change state. Positive, zero or negative values of the difference  $\Delta\beta = \beta_l - \beta_c$  are indicative of greater, equal or smaller increases in the law-change state than in the comparison state. The variance of this test statistic is  $\sigma_{\Delta\beta}^2 = \sigma_{\beta_l}^2 + \sigma_{\beta_c}^2$  and  $\Delta\beta/\sigma_{\Delta\beta}$  is again standard normal if the change in the night/day ratio was the same in both states.

To rule out the possibility that changes observed in age groups covered by the law (and younger ages) were part of a trend in the night/day ratio that occurred in other age groups in law change states, log odds ratios in law-change and comparison states were compared for older drivers through age 21, to whom the law change did not apply. This was done by comparing  $\Delta\beta_a$  for the law-affected group to a similarly calculated  $\Delta\beta_o$  for the older age group. As before, the variance of  $\Delta\beta_a - \Delta\beta_o$  is equal to  $\sigma_{\Delta\beta_o}^2 + \sigma_{\Delta\beta_a}^2$  and the test statistic is  $(\Delta\beta_a - \Delta\beta_o) / (\sigma_{\Delta\beta_a}^2 + \sigma_{\Delta\beta_o}^2)^{1/2}$  which is standard normal in the absence of a difference between the  $\Delta\beta$ 's.

The log odds ratios were also used to estimate changes in the number and percentage of drivers in nighttime fatal crashes resulting from the law. Consider now the 2 x 2 x 2 contingency table for a given age group:

		State			
		Comparison		Law-Change	
		Before	After	Before	After
Time of Crash	Night	a	b	e	x
	Day	c	d	g	h

If the two odds ratios are the same then,

$$\frac{xg}{eh} = \frac{bc}{ad} = e^{\beta_c} \quad \text{and } x = bceh/adg.$$

Now if, instead of x, the cell frequency is actually n, then the difference

$$\Delta n = n - x = n [1 - e^{\beta_c - \beta_d}] \quad (4)$$

is the change in drivers involved in nighttime fatal crashes in the law-change state after the law went into force. This change can be expressed as a percentage:

$$\Delta P = 100 \frac{\Delta n}{x} = 100 [e^{\Delta \beta} - 1] \quad (5)$$

Estimates of net changes in fatal crash involvement due to the laws were obtained by comparing the estimated changes for the age group covered by the law ( $\Delta P_a$ ) with the estimated change ( $\Delta P_o$ ) for the older group. Applying formula (5) for both age groups leads to the estimated net change due to the law for the law-affected group:

$$\Delta P_k = \text{Net change in state k} = \frac{\Delta P_a - \Delta P_o}{1 + \Delta P_o} \quad (6)$$

These methods were also used to determine what changes occurred in driver involvement in single vehicle nighttime fatal crashes and in all fatal crashes.

Data from the matched state pairs were analyzed by means of these methods in three different ways. The simplest analysis was based on data pooled across the nine law change and nine comparison states. In this analysis the pooled data were treated as if all of it had come from one change and one comparison state. This analysis disregards the variation between the states.

In the second method the "typical" change attributable to the laws was estimated as the average of the nine separate state estimates:

$$(\Delta P)_{av} = 1/9 (\Delta P_1 + \dots + \Delta P_9) \quad (7)$$

The corresponding estimate for the variance of  $\Delta P_k$  is

$$\sigma^2 = 1/8 \sum_1^9 (\Delta P_k - (\Delta P)_{av})^2 \quad (8)$$

and so the 95 percent confidence interval for the average is  $(\Delta P)_{av} \pm 1.96 \sigma/\sqrt{9}$ .

National projections for the estimated impact of already existing laws and the impact of further law changes were estimated on the basis of  $(\Delta P)_{av}$ .

Finally, to estimate the percentage change in driver fatal crash involvement that occurred in law-change states during the study period, the estimated changes were summed across the law-change states and divided by the estimated sum of the number of drivers that would have been in fatal crashes without the law change. This estimate corresponds to the "aggregate" change due to the laws. The aggregate change is a weighted average of the changes, whereas the typical change is an unweighted average. Statistical significance of the aggregate change was assessed in terms of the test statistic:

$$Z = \frac{1}{\sqrt{9}} \sum_1^9 \frac{\Delta\beta_{ak} - \Delta\beta_{ok}}{(\sigma_{\Delta\beta_{ak}}^2 + \sigma_{\Delta\beta_{ok}}^2)^{1/2}} \quad (9)$$

In the absence of a law effect Z would have a standard normal distribution.

## RESULTS

Table 2 shows the results of comparisons between the nine law-change and comparison state pairs on driver involvement in fatal crashes before and after the laws went into force. In the age groups the laws applied to, there was a greater decrease in driver involvement in nighttime than in daytime fatal crashes in law-change states than in comparison states subsequent to the laws ( $Z = -3.29$ ,  $p = 0.001$ ). There was also a greater decrease in single vehicle nighttime fatal crash involvement than in multiple vehicle daytime fatal crash involvement for these ages ( $Z = -2.85$ ,  $p < 0.01$ ). There were an estimated 30 percent fewer drivers in the law-affected age groups in fatal nighttime crashes in law-change states during the post-law periods studied, and 41 percent fewer drivers in single vehicle nighttime fatal crashes. There was a decrease in driver involvement in all fatal crashes in law-change states in the age groups that the law applied to, but it was not statistically significant ( $Z = -1.20$ ,  $p > 0.10$ ).

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Table 2 goes here

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There was some indication of decreased fatal crash involvement of drivers in law-change states who were younger than drivers the law changes applied to, but the changes were not statistically significant. This was also the case when comparisons were based only on drivers one year younger. There were also small, non-significant changes for older drivers in law-change states.

The three sets of estimates of the percent net reductions in fatal crash involvement of drivers in law-change states to whom the law changes applied are given in Table 3. The three estimation methods yielded reasonably consistent results. Estimated reductions in driver involvement in nighttime fatal crashes

10

ranged from 18 to 28 percent; all three estimates were statistically significant. Estimated reductions in driver involvement in single vehicle nighttime crashes ranged from 23 to 35 percent. Although these reductions were higher than the nighttime reductions, only the aggregate estimate was statistically significant, in part because of the smaller number of drivers in nighttime single vehicle crashes. There were smaller estimated reductions in all fatal crashes (12 to 20 percent); the pooled estimate was statistically significant.

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Table 3 goes here

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Table 4 shows, for each of the nine law-change states, the estimated post-law changes in nighttime fatal crash involvement for law-affected and older drivers, and the net effects. The net effects of the laws on drivers the law changes applied to are also displayed in Figure 2. There were estimated net reductions in driver involvement in nighttime fatal crashes in eight of the nine states, ranging from 6 to 75 percent. Montana was the lone state in which there was not a net reduction. The average reduction in the nine states was 28 percent ( $\pm 17$  percent for a 95 percent confidence interval).

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Table 4 goes here

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Figure 2 goes here

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Figure 3 displays the estimated effects of driver involvement in nighttime fatal crashes as deseasonalized monthly time series from 1975 into 1980 as the

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nine states studied raised their legal minimum drinking ages.\*

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Figure 3 goes here

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## DISCUSSION

When states lowered their legal minimum drinking ages in the early 1970's, the result was an increase, among both law-affected and younger drivers, in involvement in fatal crashes, especially those crashes in which alcohol is most often involved. The results of the present study indicate that when states raise their drinking age, there is a corresponding decrease in fatal crash involvement among law-affected drivers. There is some evidence that raising the drinking age also affects younger drivers, but the reductions in the involvement of younger drivers in fatal crashes were not statistically significant.

For the 14 states (including the nine studied plus five others) that as of January 1981 had raised their legal minimum drinking ages in recent years, it is estimated that these law changes result each year in about 380 fewer young drivers involved in nighttime fatal crashes.\*\* For the 31 states (including seven of the nine studied) that as of January 1981 had a drinking age for

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\* The estimated monthly series was obtained in three steps. First, for each month the data in the 2 x 2 table representing day/night and law change/no law change splits were pooled among states that had already raised the drinking age, and the frequency of nighttime crash involvement in the change state was estimated so that the odds ratio of the modified table then equalled the odds ratio for a similar table obtained by pooling all pre-law change counts across all months and all states. Second, these estimated counts for the post-law periods in the change states were added to the sum of the observed counts in the states that still did not change their laws. Third, this sum was smoothed using X-11. The estimated monthly reduction in fatal crash involvement was subdivided between law effect and other factors using a constant factor (40 percent). This factor represents the estimated reduction in the involvement of older drivers.

\*\* This annual estimate was based on data from 1979, the last full year for which FARS data were available when the present study was conducted.

some or all alcoholic beverages that was less than 21,\* it is estimated that each year there could be about 730 fewer young drivers involved in nighttime fatal crashes if in all states the drinking age for all alcoholic beverages was raised to 21. Any single state that raises its drinking age can expect the involvement in nighttime fatal crashes of drivers of the age groups to which the change in the law applies to drop by about 28 percent.

The societal benefits achieved in states that have raised their drinking ages are substantial; the benefits achievable by additional states raising their drinking ages would be even more substantial. Raising the legal minimum drinking age to 21 in all states would have an important impact in reducing the annual toll of motor vehicle deaths in the United States, particularly the deaths of young people and of others with whom they are involved in crashes.

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\* If persons less than age 21 were allowed to purchase only beer containing not more than 3.2% alcohol by weight, the state was classified as having a 21-year-old drinking age.

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Illinois <sup>2</sup>	19	21	1/1/80	Indiana	21
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Minnesota <sup>3</sup>	18	19	9/1/76	Wisconsin	18
Montana	18	19	1/1/79	Idaho	19
New Hampshire	18	20	5/24/79	Part of New York <sup>5</sup>	18
Tennessee	18	19	6/1/79	Kentucky	21

<sup>1</sup> The laws apply to all alcoholic beverages except where noted.

<sup>2</sup> The age change applied to beer and wine; the legal minimum drinking age for distilled spirits was 21 throughout the study period. Prior to the 1980 change, home rule units in Illinois had the authority to promulgate different laws for drinking ages. Some raised the drinking age from 19 to 21 for beer and wine before the statewide change in 1980, although in some cases, beer and wine purchase by 19-20 year olds was permitted under some conditions.

<sup>3</sup> A "grandfather" clause permitted 18 year olds to drink if they were 18 before the law went into effect.

<sup>4</sup> The legal minimum drinking age was 18 for beer with not over 3.2% alcohol content, and 21 for other alcoholic beverages.

<sup>5</sup> The following counties in central and northern New York were included: Clinton, Essex, Franklin, Fulton, Hamilton, Herkimer, Jefferson, Lewis, Madison, Montgomery, Oneida, Oswego, St. Lawrence, Saratoga, Warren, and Washington.

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Fatal Crash Ratios Compared	Driver Categories					
	Drivers the Law Change Applied to		Younger Drivers		Older Drivers	
	Z statistic <sup>1</sup>	Estimated change(%)	Z statistic <sup>1</sup>	Estimated change(%)	Z statistic <sup>1</sup>	Estimated change(%)
Nighttime : Daytime	-3.29**	-30	-0.29	-6	-0.53	-15
Single Vehicle Nighttime : Multiple Vehicle Daytime	-2.85*	-41	-0.32	-12	-0.20	-9
All Types	-1.20	-11	-0.91	-7	+1.03	+11

<sup>1</sup> Z is standard normal under the null hypothesis. See text.

\*\* p = 0.001, two-tailed

\* p < 0.01, two-tailed

TABLE 3

Estimated Percent Net Reductions in Fatal Crash Involvement of Drivers  
to Whom Changes in the Legal Minimum Drinking Ages Applied

Fatal Crash Type	Method of Estimation <sup>1</sup>		
	Aggregate	Typical	Pooled
Nighttime	-18%*	-28%**	-23%*
Single vehicle nighttime	-35%*	-23%	-25%
All types	-20%	-12%	-14%*

<sup>1</sup> See text.

\*\* p < 0.001, two-tailed

\* p < 0.05, two tailed

TABLE 4

Estimated Changes in Nighttime Fatal Crash Involvement  
 After Changes in the Legal Minimum Drinking Ages  
 in Nine States, and Net Reductions in the Age Group  
 the Law Change Applied To

Law-Change State	Change in Nighttime Fatal Crash Involvement		Net Reduction Among Drivers the Law Change Applied to
	Drivers the Law Change Applied to	Older Drivers	
Illinois	-30%	-9%	-23%
Iowa	-60%	-29%	-45%
Maine	-14%	-3%	-11%
Massachusetts	-10%	-5%	-6%
Michigan	-17%	+40%	-41%
Minnesota	-56%	-32%	-34%
Montana	+17%	+3%	+14%
New Hampshire	-55%	+80%	-75%
Tennessee	-43%	-14%	-33%
Average Reduction			-28%*

\*  $\pm 17\%$  for a 95% confidence interval.

FIGURE 1

PRE-LAW AND POST-LAW PERIODS STUDIED, AND AGES THE LAW CHANGES APPLY TO

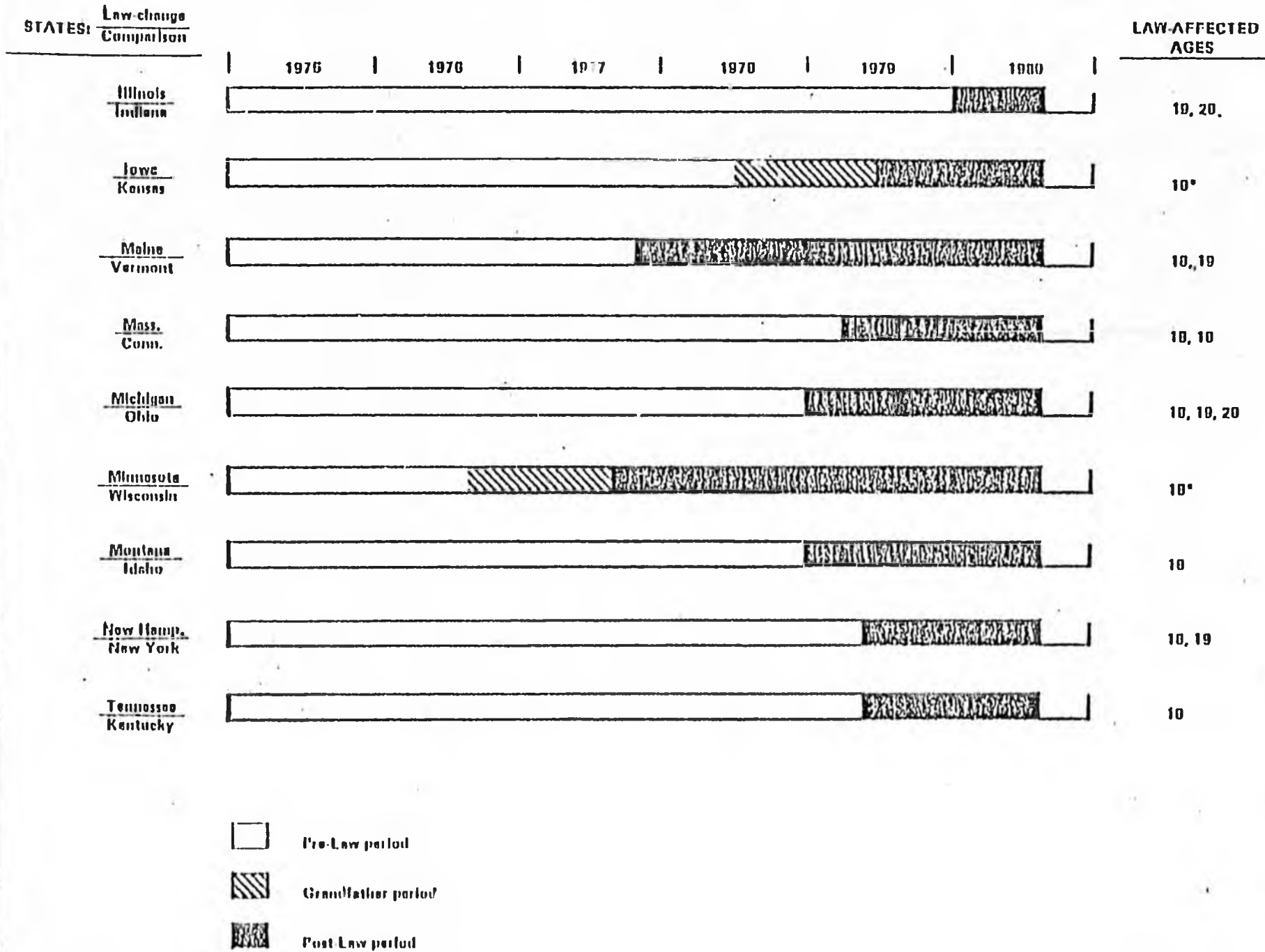


FIGURE 2

NET CHANGES IN DRIVER INVOLVEMENT IN NIGHTTIME FATAL CRASHES  
AFTER CHANGES IN THE LEGAL MINIMUM DRINKING AGES

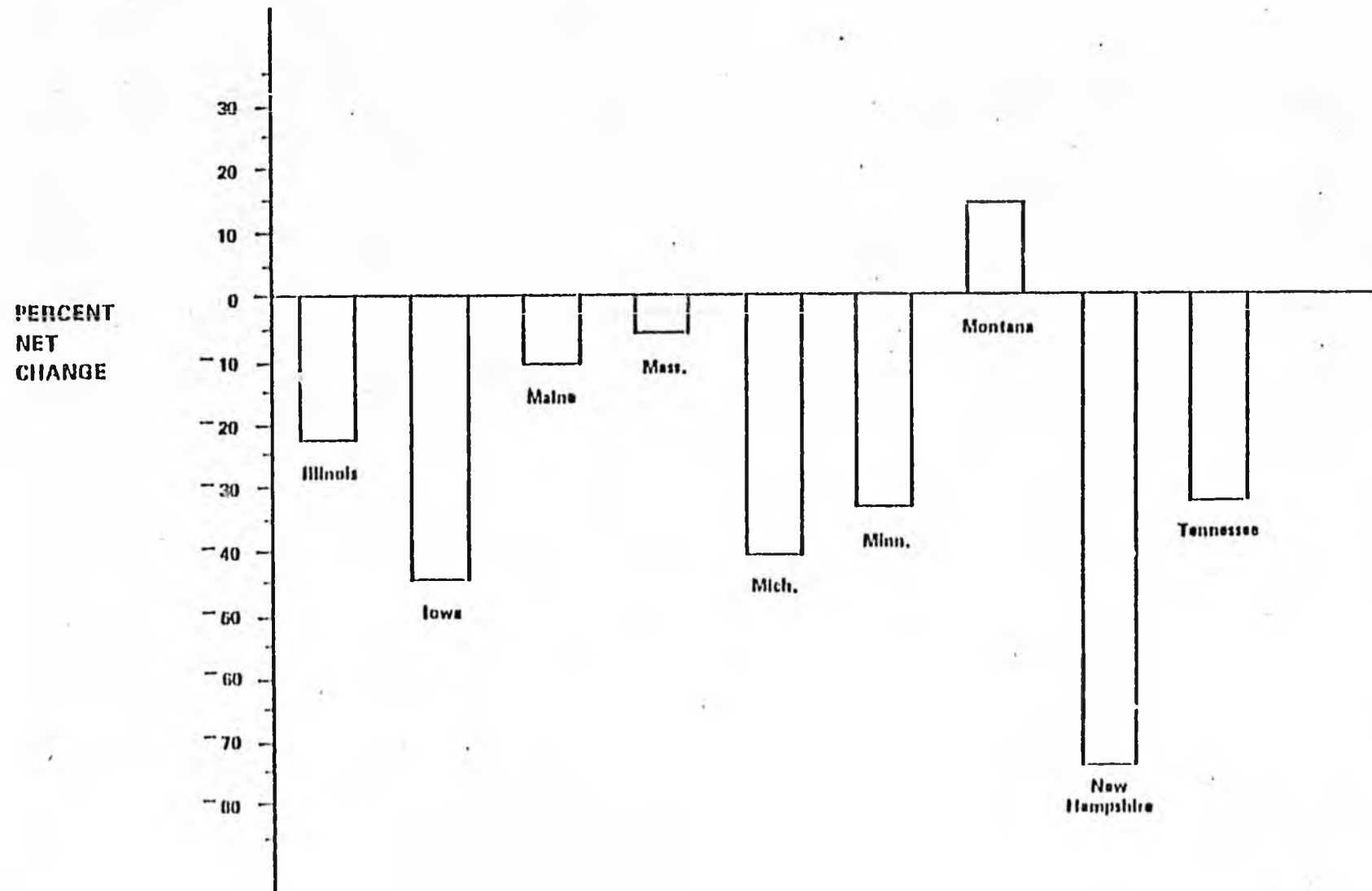
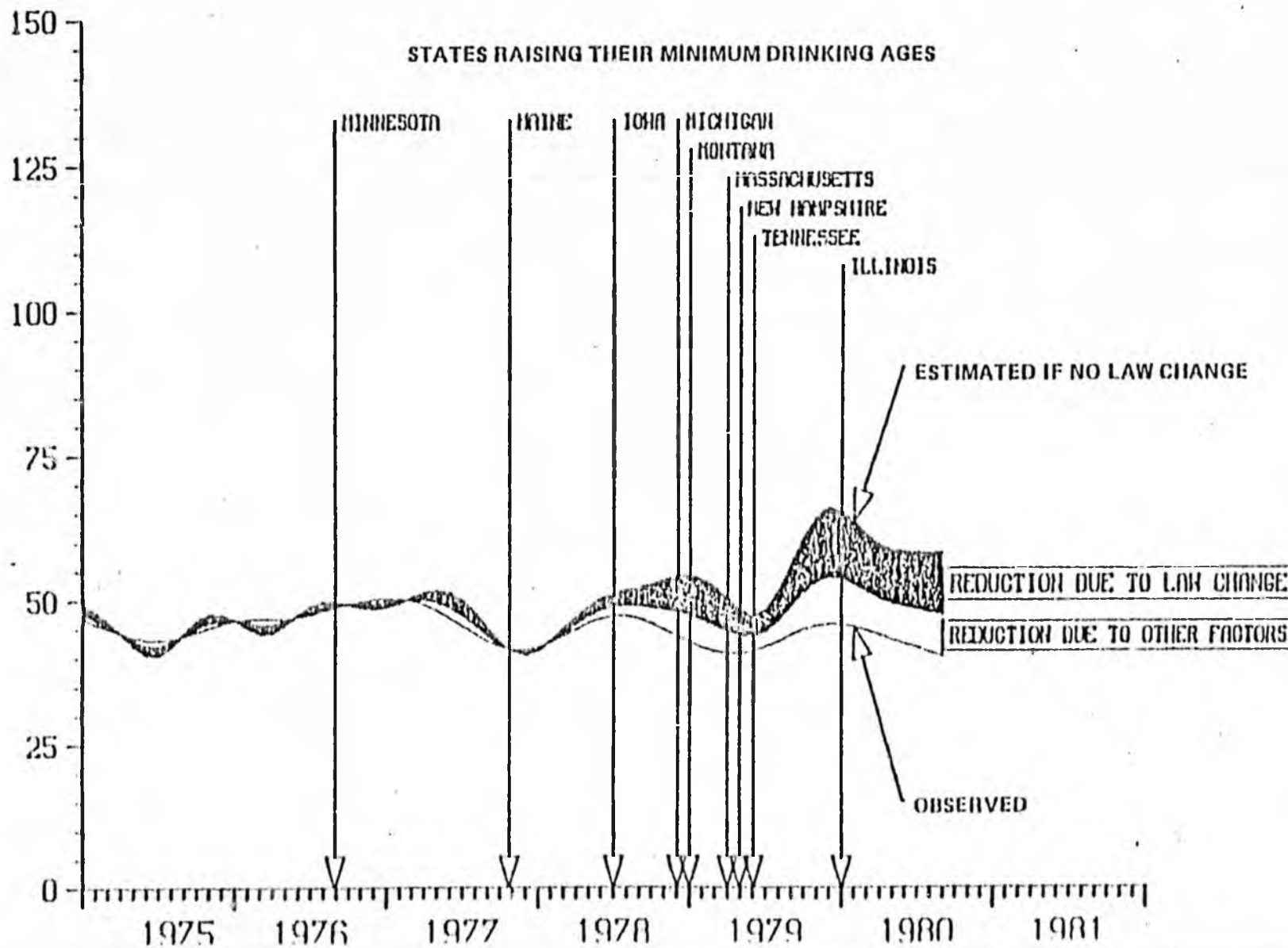


FIGURE 3

ESTIMATED NET REDUCTION IN NIGHTTIME FATAL CRASH INVOLVEMENT  
IN NINE STATES THAT RAISED THEIR LEGAL MINIMUM DRINKING AGES

NUMBER OF  
DRIVERS  
(De-seasonalized)



# House rejects higher drinking age...

The Associated Press

**JUNEAU** — House lawmakers on Monday soundly defeated a move to raise the legal drinking age in Alaska from 19 to 21.

Rep. Terry Martin, R-Anchorage, pushed the change in the form of an amendment to a bill revamping state liquor laws. After defeating Martin's amendment, and voting on several others, the House approved the 73-page revision of Alaska's alcohol laws on a 33-2 vote.

The bill passed the Senate earlier, but the House amended it so the legislation (HCSCSSSSB239 Finance) now returns to the Senate. It may end up in a House-Senate free conference committee.

Martin said the number of persons who die in auto accidents involving intoxicated drivers is on the increase. He said the combination of liquor and driving is "snuffing out the lives of many promising

youths."

But opponents argued that persons who are old enough to go to war for their country are old enough to decide if they want to drink.

"I think it's ludicrous that we stand here trying to take away freedom," said Rep. Ray Metcalfe, R-Anchorage. "Pretty soon someone is going to propose that we lock ourselves in a rubber room to protect ourselves."

Reps. Nels Anderson, Ramona Barnes, Vern Hurlbert, Mike Miller and Martin voted in favor of raising the drinking age.

Another amendment, which was adopted on a 21-13 vote, would allow the Alcoholic Beverage Control Board, in certain situations, to approve a liquor license that exceeds the quota set for an area.

Rep. Joyce Munson, D-Anchorage, said there's a problem in Anchorage, especially in the Gridwood area. She said the

value of liquor licenses has risen to the point where the natural location is downtown.

The legislation, which is the outgrowth of a special committee headed by Sen. Bill Ray, D-Juneau, makes numerous other changes in Alaska's liquor laws.

One change would expand the ABC Board to include one person who is knowledgeable about alcoholism and alcohol abuse.

Another would allow a bartender or liquor store owner to refuse to sell liquor to a person who has a serious drinking problem.

A major provision in the bill would allow communities to declare themselves "damp" rather than wet or dry. The bill provides for a local vote on several options beyond whether the community should be wet or dry.

The bill establishes seven options for first and second class cities and 6 options for

unincorporated villages. The options range from a total ban on liquor sales to a ban on importation and possession, allowing sales and possession just on holidays to community liquor licenses (for cities) complete freedom in sales and possession.

The bill sets out penalties for violation of liquor laws in a community:

- Selling liquor without license would be a felony punishable by a \$50,000 fine and five years in jail for a second conviction, sale to a minor, or large sale. A first conviction would be a misdemeanor punishable by a year in jail and \$5,000 fine.

- Possession would be a misdemeanor punishable by days in jail and a \$1,000 fine.

- Importation would be felony punishable by five years in jail and a \$50,000 fine for second conviction or a case involving a large quantity alcohol. Other importation offenses would be misdemeanor

## ...But survey shows support for 21

By JEANNE ABBOTT  
Daily News reporter

More Anchorage residents than not say the state's drinking age should be raised from 19 to 21, according to a telephone survey taken last week by the Daily News. But the difference of opinion between those who approve a change and those who don't is slight.

In a sample of 100 residents taken randomly from the telephone book, the newspaper found that 49 percent wanted the legal age of liquor consumption raised to 21 years while 43 percent thought it should remain at 19. Eight percent registered no opinion.

The state Senate voted last week to ask voters whether the drinking age should be raised. The Senate voted 12-5 to put the question to voters on the November general election ballot in the form of an advisory vote. However, the vote would not be binding but simply would be a recommendation to the legislature. The bill passed without debate and went to the House, where lawmakers amended the bill and sent it back to the Senate.

Of those surveyed, a number applauded any measure that would keep liquor from the hands of teenagers.

Said one: "I don't think people can handle it at 50, let alone when they're kids."

And another: "Kids at that age are incompe-

tent to make such judgments. I know I was."

And another: "The way teenagers drive and drink, I don't think anybody should be drinking before they're 21."

Many who approved the change were parents who viewed it as a positive move for their own children. "I have a few teenage daughters, and I'd like to see them wait a few years," said a mother.

And several were non-drinkers who disapprove of any drinking, at any age, although one teetotaler said he didn't want to be in a position to dictate to those who drank.

Of those who thought the age should remain at 19, opinions fell into two basic patterns.

Many agreed with one man who said: "If they're old enough to be drafted and fight, they're old enough to buy a beer."

But more voted from this perspective: "I don't think it's going to make any difference. It just means more hassles for law enforcement, and I don't see the need."

Or, as this resident said: "They'll violate the law anyway. It's hard to give something, and then take it away. This will just make kids criminals."

Likewise, said another: "Liquor is readily available no matter what age you are. I just don't think raising the age limit would do any good."

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# Higher drinking age is proposed

By The Associated Press

Raising Alaska's legal drinking age to 21 could make the state's highways safer, the director of the Alaska Council on Prevention of Alcohol and Drug Abuse told a House panel Thursday.

Drivers from 18 to 20 years old are "extraordinarily prone" to automobile accidents and "more apt to lose control" when they drink, Barbara Hoffman told the House Judiciary Committee.

The committee is considering a bill calling for an advisory vote on the issue. Voters would express their opinions at the first general election after passage of the bill.

Consultants on alcoholism testified both for and against the legislation. An expert hired by the alcohol council said figures show a variety of social problems involving youths are declining in states where the drinking age has been raised. An expert hired by bar and restaurant owners said the figures are inconclusive.

Frank Lee, who last year supported the bill but this year testified in opposition to it for an Anchorage bar and restaurant association, said data can be interpreted in many ways.

Bar and restaurant owners don't think the proposed advisory ballot offers the right question, he added, suggesting the Legislature consider a vote on raising the age of majority from 18 to 21.

The bill before the Judiciary Committee restricts the change in the legal age to "the purpose of regulation of the sale, consumption, service, furnishing, barter, purchase, gift or delivery of intoxicating liquor."

Rep. Charles Anderson, R-Anchorage, said he is bothered by the idea of "legislating against" 19 to 21 year olds.

Committee Chairwoman Ramona Barnes, R-Anchorage, and Rep. Randy Phillips said they have been getting cards on the issue saying "I'm 18. I vote."

Bill sponsor Rep. Terry Martin, R-Anchorage, admitted the bill has "political ramifications" that make some politicians nervous, but he argued polls show Alaskans strongly in favor of changing the drinking age.

## 99-year jail term upheld

ANCHORAGE (AP) — The maximum 99-year prison term handed out to a Fairbanks man convicted of the contract killing of a young woman on Nov. 9, 1980, has been approved by the state Court of Appeals.

Lawrence Hoover was convicted of first-degree murder in the death of 25-year-old Nancy Williams, who was killed when a shotgun was fired point-blank into her face during a hunting trip.

In approving the 99-year sentence, the Court of Appeals said it was justified.

## Sheffield: hike drinking age

FAIRBANKS (AP) — Democratic gubernatorial candidate Bill Sheffield told a group of high school students Thursday that Alaska should raise its legal drinking age from 19 to 21.

The Anchorage businessman said the change would be a first step toward reducing alcohol abuse in the state.

"Other states in the Lower 48 have been increasing the legal drinking age — and with impressive results," Sheffield said in remarks prepared for an American government class at Lathrop High School, "the automobile accident rate has declined, thousands of lives have been saved and young people are leading more productive lives."

He said there were almost 2,900 fewer traffic fatalities in Michigan the first year after it raised its drinking age from 18 to 21, Sheffield said.

To illustrate the severity of the problem in Alaska, Sheffield said alcohol was a factor in:

- 64 percent of the criminal homicides in 1980;
- 80 percent of the suicides;
- 70 percent of the traffic fatalities;
- 48 percent of the violent crimes.

Juveniles account for about 52 percent of the arrests of liquor law violators and 64 percent of the arrests for non-aggravated assaults, he said.

Opposing Sheffield for the Democratic nomination are state Rep. Oral Freeman of Ketchikan, Fairbanks attorney Steve Cowper former Lt. Gov. H.A. "Red" Boucher, and political newcomers Bruce Lemke of Anchorage and Edward Vincent of Fairbanks.

Running as Republicans in Alaska's open primary in August will be Lt. Gov. Terry Miller Anchorage businessman Tom Fink and Rich Reakoff of Wiseman.

State Rep. Dick Randolph of Fairbanks says he will run in the November general election as a Libertarian.

Original sponsor: Martin

1 IN THE HOUSE

BY THE JUDICIARY COMMITTEE

2 CS FOR HOUSE BILL NO. 112 (Judiciary)

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 TWELFTH LEGISLATURE - SECOND SESSION

5 A BILL

6 For an Act entitled: "An Act authorizing an advisory vote by the qualified  
7 voters of the state on raising the age of majority to  
8 21 for the purposes of regulation of alcoholic beverages  
9 and providing for an effective date."

10 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

11 \* Section 1. The lieutenant governor shall place before the qualified  
12 voters of the state at the next general election a question advisory to the  
13 legislature as to whether the legislature should enact laws that would raise  
14 the age of majority from <sup>and</sup> 19 to 21 years for the purpose of regulation of the  
15 sale, consumption, possession, furnishing, barter, purchase, gift, and  
16 delivery of alcoholic beverages. The question shall appear on the ballot in  
17 the following form:

18 Q U E S T I O N

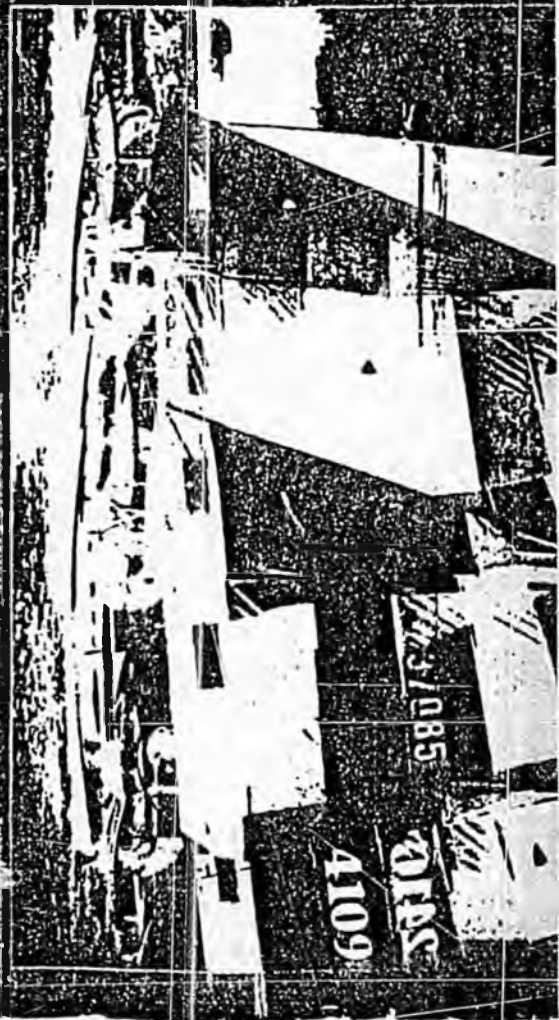
19 Shall the Legislature of the State of Alaska enact laws raising  
20 the minimum legal age for the (sale,) consumption, possession,  
21 (furnishing, barter, purchase, gift, and delivery) of alcoholic  
22 beverages from <sup>all years to age</sup> 19 to 21 years? <sup>or</sup> ~~to 21 years?~~

23 No, leave at <sup>age</sup> 19 [ ]

Yes, raise to <sup>age</sup> 21 [ ]

24 \* Sec. 2. This Act takes effect immediately in accordance with AS 01.10.-  
25 070(c).

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FACE TO THE FINISH

The organizers slimmered the water Sunday as they set for a victory in the last course of the race. The race was held in the city of Anchorage.

# Drinking age should go up, say Alaskans

## may be election issue

A majority of Alaskans support the proposed raising the minimum drinking age from 21 to 21, according to a survey by the Alaska Poll. The survey, conducted by the University of Alaska, Anchorage, shows that 70 percent of respondents favor raising the drinking age from 21 to 21. The survey also shows that 65 percent of respondents favor raising the drinking age from 21 to 21.

### THE ALASKA POLL

The poll shows that 70 percent of respondents favor raising the drinking age from 21 to 21. The survey also shows that 65 percent of respondents favor raising the drinking age from 21 to 21. The survey was conducted by the University of Alaska, Anchorage.

## Organizers say Barbee benefit a success

Organizers of the Barbee benefit concert in Anchorage last night said the event was a success. The concert, held at the Alaska Center for the Performing Arts, raised over \$10,000 for the Barbee Foundation. The event was attended by over 1,000 people.

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*Legal Age—Does It Matter?*

...ded that if you know the drinking habits of teen-agers young adults, "you can make a pretty fair distinction the problem drinking among them when they reach mid-age," according to *Brewer's Digest* magazine. In an article stating the results of the study, the magazine said Ms. Fillmore's study began "with data collected by two other researchers in 1949-52 on 17,000 students and in 27 colleges and universities. It continued in 1971-72 with her interviews 20 afterward on about 200 of the same people."

Trouble is, Ms. Fillmore classified as "drinkers" anyone who had had one or more drinks over the past twelve months, which would discourage most casual and many serious investigators from giving credibility to the study, inasmuch as under normal circumstances every member of practically every family in America could be construed as a drinker. In any event, the support of the survey erds with the strong implication that Ms. Fillmore wants more money for follow-up studies. What a pity that 17,000 students at 27 colleges had been contacted and nothing more startling than the need for more follow-up studies resulted!

Nevertheless, the important thing in the continuing argument about whether the lowering of the drinking age contributes to traffic deaths is to realize that teen-age drivers are telling us that they are drinking more. Not traffic records, not the reports of insurance companies or accident-investigation policemen, but the kids behind the wheels are revealing that more and more they had been drinking at the time of the accident. No amount of including the children under 10 years of age in the overall traffic survey can change that fact. Not even if everyone ever involved in a crash were surveyed and the actual percentage of driver-drinking was shown to drop drastically to only 10 percent, could the significance of the fact that more teen-agers are driving while drunk be ignored any longer.

A good example is a survey taken by the Los Angeles

4

### Are Teen-agers Drinking?

County Alcohol Safety Action Project (A.S.A.P.), conducted in 1973 as an extensive roadside survey, in which more than 1,000 drivers were asked to volunteer information about their drinking habits. The results are quite interesting, as a California teen-ager can drive at 16, but cannot drink until he's 21.

4 The Los Angeles A.S.A.P. survey showed that 76.9 percent of the driving 15-20 age group said they drink. The largest percentage of drinking respondents was between 21 and 39 years of age (84.6 percent and 82.8 percent, respectively). Drinking increased between 16 and 39, then tapered off.

The survey also showed the greatest percentage (25 percent) of the respondents consuming five or more drinks at a single sitting was the 15-20 age group. And that group, the teen-agers, showed by far the greatest percentage of in-home drinkers—85.2 percent—probably because of the illegality of getting booze anywhere else.

Teen-agers in general saw themselves as very light-to-fairly light drinkers (79.5 percent, the highest). Given the idea that 99 out of 100 problem drinkers do not think they are problem drinkers, and that 99 out of 100 heavy drinkers do not think they are heavy drinkers; this statistic is interesting.

Emanda Miller of the Los Angeles A.S.A.P. reported.

Our findings were pretty much as expected, because we'd run the study before and it doesn't appear the drinking/driving problem among young people is going down. We were surprised to see no ethnic differences, however. The sad thing is that we run these surveys and nobody listens to us. We seem to be the only group following through to try and do something about it, but it's like whistling in the wind. If there are no bucks in it, public officials won't wake up.



## Kids Their

Without attempting answers in depth, hundreds of teen-agers about their own. "Where did you react to your drink brief lexicon of the We present these those parents who are millions of kids alcohol. And we their comments be tion as significant

I wouldn't say I parents don't mind anyway. The reason

APM

ability to make decisions has been highly developed at the end of the six weeks. Increased group involvement in activities and a confidence in overall scholastic and social achievement have been noted by evaluators of the course, and Aycok states that educators "are sharing in the learning experience along with the children," and that each new class develops new techniques and ideas that are usable in subsequent classes. A concerted program with a specific structure seems to work far better than a vague, mysterious recitation of facts and horror stories about traffic accidents.

If there is a Jaycees chapter in your home town, you might give them a call to see whether they have a program on teen-age drinking, or at least to get some literature. The Jaycees' newly conceived Operation THRESHOLD is an alcohol education program that is doing exceptional work in responsible drinking/youth action programs. The chief mission of Operation THRESHOLD is to prevent alcohol abuse. "Treating only the casualties of alcoholism will never eradicate the disease," said Joseph S. Dolan, Operation THRESHOLD's program manager, in a recent speech. "We want to focus this nation's attention on prevention, to stop having to put out forest fires and get back to the tinderbox." The organization will provide interested parents with very good material on responsible drinking guidelines and other action information without coming on like a temperance group. Contact Operation THRESHOLD, U.S. Jaycees, Box 7, Tulsa, Oklahoma 74102.

The state of Illinois made an elaborate study of the status of alcohol abuse education in the school system and came up with some interesting conclusions. Directed by Walter H. Gregg, Ed.D., and Dorothy J. Clapper, Ph.D., the 4,000 teacher-and-principal study concluded:



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### *Some Programs That Seem to Be Working*

—that no school or school system alone should assume responsibility for developing a comprehensive program, but that a school-community coordinated effort is essential if a program is to embrace not only instructional components but also assistive measures for counseling, health services and rehabilitation.

—involvement of parents in any program strengthens it and enables it to meet students' needs more easily; this involvement by parents needn't be a stumbling block to getting a program off the ground, either, because opposition to alcohol abuse programs is practically nonexistent. P.T.A. groups are the logical choice for coordinated involvement.

—alcohol abuse education should be integrated into the total curriculum, with opportunities available in social studies, science, language arts and physical education. It is "doubtful" whether alcohol-abuse education can or should be carried out as a separate or special subject in the curriculum of elementary, junior or senior high schools.

—instructional approaches should focus on affective education; teachers at all grade levels agreed that the most useful methods involve students in the study of real-life problems through decision-making experiences.

—teachers should be specifically trained, during their own education, for alcohol-abuse instruction, and the means most commonly reported by the teachers in the survey was through a portion of a college health course. As always, credibility is heightened by knowledgeable ability, and in alcohol abuse education, credibility is 99 percent of effectiveness.

—schools should utilize community resources to the fullest, taking advantage of service groups, lecturers, local planning groups and committees, etc.

—informal small-group activities, self-directed, are effective in the personal problem-solving educational process;

⑤

peer groups and storefront agencies are highly efficacious in getting teen-agers to involve themselves in constructive endeavors.

The University of Massachusetts, long recognized as a "hotbed" of student drinking activities throughout the western portion of the state, several years ago instituted a Room to Move program to deal with rising alcoholism on campus. Room to Move is a drug drop-in type of center which offers counseling for U-Mass. students and works closely with health officials in trying to put together a national model for other schools with similar campus drinking problems. According to E.T. Mellor, who coordinates the Room to Move education team, the operation takes a "collaboration approach" to pull together various viewpoints from all segments of the campus community to formulate twenty-four-hour hotlines, workshops and seminars, and one-on-one group counseling and spiritual alternatives. Largely as a result of this group's work, and from a conference hosted by the school's Health Services Department, a three-year proposal for a comprehensive U-Mass community alcohol action program has been devised. The program intends not only to meet the needs of students on campus, according to Dr. David Kraft, staff psychiatrist, but also to reach out to the surrounding community. He feels it is imperative to go into the elementary school level so that "some youngsters will be able to figure out why Daddy comes home one night and beats up Mommy and then brings her roses the next night." One panel session reported that an intensive six-week one-on-one counseling program at Rutland Heights Hospital had a 25 percent success rate in rehabilitating alcoholics, and that a similar technique perhaps could be instituted as part of campus service.

Similarly, the Massachusetts State Division of Alcoholism and the Massachusetts Council on Alcoholism (re-

member, Massachusetts combined to conduct one of which was on alcoholism as

And in State organization of "Hold the Line" the proper way to help kids learn to teach them ordered from

A young Facility in State approach to drug the 11-16 at Michael Ba workshops for sailors write while the kids which included aimed at preventing kids draw the name tag, before, and himself—a the kids to

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### *Are Teen-agers Drinking?*

Teen-agers in that state used to drive to New York to buy their liquor before Connecticut lowered its own drinking age to 18 in October 1972.

The first and most common criticism of these surveys and statistical analyses is that statistics can prove anything. Very few statisticians will argue this point. In fact, most of us have heard the story about the statistician who drowned in a river whose average depth was only three feet!

In the interests of objectivity, it should be noted that many of the legal-drinking-age vs. drunk-driving traffic accidents and fatalities are somewhat skewed by certain facts and probabilities:

1. That such-and-such a statistic for teen-agers involved in alcohol-related traffic deaths in 1970, when the legal age for drinking was 21, may not account for (a) more drivers, and (b) more automobiles on the road, in a similar survey in 1974.

2. That a teen-age drunk-driving survey in 1974 cannot reflect in its tabular results the fact the policemen and other official recorders may not have recorded blood alcohol concentrations four years ago, nor might they have had the means to measure it accurately.

3. That terminology, semantics, and downright tricky phrasing can prove anything the surveyor wants to prove. In the words of Richard Zylman, a prominent and outspoken research specialist at the Center of Alcohol Studies at Rutgers University, "There is real danger that if we look for evil we will find it—even if it does not exist."

In a report presented at the National Alcoholism Forum of the Annual Conference of the National Council on Alcoholism in Denver in mid-1974, Mr. Zylman questions the validity of a Michigan report citing a 164 percent increase in "alcohol-involved fatal crashes" in the first quarter of 1973, immediately after the legal drinking age was lowered to 18, than

### *Legal Ag*

in a similar period in 1972. Interestingly that the Michigan police reporting, rather than Zylman does note, however, *Safety Research* of June

In spite of the less than expected safety crashes involving youthful collision victims, Zylman differentiates the young age group from age 69. This concern is not about alcohol. *Among teenagers, age groups such as 16-17 are an important factor in the significance at all.*

In other words, Zylman handles their booze in driving. Thus they are more likely to handle it than a parent—and as a result, whether a state survey of the rate.

Finally, to give Zylman's "Over Emphasis on Alcohol" published in *Police Chief* magazine, inaccurate figures in reports may be making research the major cause of fatal

If we continue the cause of crashes, the numbers of traffic deaths around 30 percent, possibility that the

### *Legal Age—Does It Matter?*

in a similar period in 1971. Zylman suggests quite convincingly that the Michigan report actually showed a change in police reporting, rather than a change in drinking behavior. Zylman does note, however, in a report to the *Journal of Safety Research* of June 1973;

In spite of the less significant role of alcohol in highway safety crashes involving youth, alcohol is related to youthful collision involvement in a way that sharply differentiates the young from the other age categories up to age 69. This concerns the impact of small amounts of alcohol. *Among teenagers, low concentrations of alcohol are an important factor in crashes whereas in the 25-69 age groups such concentrations are of no statistical significance at all.*

In other words, Zylman states that teen-age drinkers can't handle their booze in driving situations as well as older groups, thus are more likely to have a crash. This is far more important to a parent—and as a nationally crucial problem—than whether a state survey of "alcohol-involved crashes" is accurate.

Finally, to give Zylman his due, in an article entitled "Over Emphasis on Alcohol May Be Costing Lives," published in *Police Chief* magazine in January 1974, he states that inaccurate figures in reporting "alcohol-related" traffic deaths may be making researchers too complacent about identifying *the major cause of fatal car crashes:*

If we continue the obsession with alcohol as *the* major cause of crashes, trying to attribute ever-increasing numbers of traffic deaths to alcohol when the actual figure is around 30 percent, we may be blinding ourselves to the possibility that there are other major causes of traffic