Summary. In 1987, Vermont introduced a 21-year-old drinking law which prohibited alcohol use by those born on or after July 1, 1969, but allowed those born before this date to drink legally. The present study was designed to compare drinking, driving, and drug use among 18 to 21-year-old individuals who were legal drinkers versus those who were not. Location of alcohol consumption shifted from public to private places for illegal drinkers. Relative to legal drinkers, a larger proportion of male illegals reported recent marihuana use and a greater number of female illegals reported heavier drinking. These changes suggest that future studies of transitory phenomena should monitor subsequent differences in drug and alcohol use among the 18 to 20-year age group as the 21-year-old drinking age becomes more thoroughly assimilated.

INTRODUCTION

During the early 1970s, the minimum legal drinking age was reduced in 29 states. Alcohol-related motor vehicle crash involvement among young drivers increased by approximately 25% after the drinking age was lowered (Smart & Goodstadt, 1977; Wagenaar, 1982; Whitehead, 1977). The over-representation of alcohol-related crashes among youth prompted the federal government to mandate raising the drinking age. An analysis of fatal crash involvement in nine states that raised the drinking age from 1975 to 1980 found that eight of the nine states experienced reductions from 6 to 75% in nighttime fatal crash involvement among youths (Williams, Zador, Harris, & Karpf, 1983). The
investigators estimated that nighttime fatal crashes among those affected by the law change would have been reduced by 28% nationwide as a result of raising the drinking age. The U.S. Department of Transportation (1989) reported that in the 18 to 20 age group, the proportion of intoxicated drivers (BAC of 0.10 or higher) involved in fatal crashes decreased 30% from 1982 to 1988. A study of the effect of raising the drinking age in Massachusetts reported lower rates of non-fatal crashes, but little change in drinking behavior (Smith, Hingson, Murelock, Heeren, Mucatel, Mangione, & Scotch, 1984). Lotterhos, Glover, Holbert, and Barnes (1988) suggested that drug use might increase following changes in the law.

On July 1, 1989, the minimum legal drinking age in Vermont was raised from 18 to 21. A grandfather clause was included in the new law so that those who were already 18 as of June 30 could continue to drink legally; however, those turning 18 after July 1 could not. The present study was designed to examine drinking practices, drug use, and driving among young adults who were "legal" and "illegal" in terms of alcohol purchase.

**METHOD**

**Subjects.** The names of potential participants were randomly selected from the student telephone directory of a northeastern university. Of the 381 names chosen, 122 were eliminated due to an incorrect or unlisted number, or to the age criterion not being met. Those eligible were told that the Vermont Alcohol Research Center was conducting a study on driving, driver health, and traffic safety and were invited to participate in a 90-minute interview. If interested, the student was sent a letter describing the survey, then telephoned again a short time later to schedule the interview. Of the 259 students who had expressed an interest initially, 60 either declined to schedule an interview, cancelled once it was made, or failed to appear for the
interview. Thus, 199 students actually participated (90 males and 109 females). Prior to each interview, consent forms were read and signed. The possibility of monetary reward provided incentive to participate; each student’s name was entered in a cash award drawing which was conducted after all interviews had been completed.

**Instrument and Procedure.** Each subject was administered the Survey of Health Attitudes and Practices (HAP) which consists of 323 questions concerning demographic variables, health practices, drinking practices, drinking patterns, parental drinking patterns and attitudes, opinions about drinking, driving history, drinking-and-driving history, drug use history, and driving after drug use. All questions were asked by an interviewer and entered in a computerized form of the HAP (Meyers, Fortini, Perrine, & Arce-Quinones, 1990). Following the interview, each respondent completed a self-administered questionnaire in the presence of the interviewer (Perrine, 1990).

**RESULTS**

**Alcohol Consumption Patterns.** Subjects were originally assigned to one of ten different categories based on the self-reported usual quantity of preferred beverage (beer, wine, or liquor) per sitting and the frequency of drinking. However, due to the small number of subjects in the present study, the data were collapsed across all three frequency categories (daily, weekly, and monthly). The non-drinker category was not used because only 2 males and no females reported being alcohol abstainers. Thus, drinkers were categorized by the quantity dimension only, i.e., light (1 or 2 drinks), medium (3 or 4 drinks), and heavy (5 or more drinks). Subjects were subdivided on the basis of legal drinking age: (1) those who could purchase alcohol legally ("legals"), and (2) those who could not ("illegals"). The number of drinkers per group were: 40 legal males, 48 illegal males, 31 legal females, and 78 illegal
females. On the basis of self-reported usual quantity of preferred alcoholic beverage consumed, the proportions of females who could drink legally in the three categories were: 32% light, 61% medium, and 7% heavy drinkers. The proportion of females who could not drink legally in the three categories were: 30% light, 47% medium, and 23% heavy drinkers. There was a statistically significant increase in heavy drinking among illegal females (Fisher's Exact Test, p < .03).

For males of legal drinking age, 20% were categorized as light, 40% as medium, and 40% as heavy drinkers. For illegal males, 21% were categorized as light, 21% as medium, and 58% as heavy drinkers. No significant differences were found among these male drinking patterns by legal status.

The greatest single difference was found in the type of location at which the subjects reported drinking most frequently. Among the underage/illegal males and females, a far greater proportion reported drinking most frequently at private locations (e.g., home, another person's home, clubs, etc.), whereas the greater proportion of legal males and females reported drinking at public bars and restaurants (Table 1).

**Drug Use Patterns.** A significantly larger proportion of illegal than legal males reported using marihuana in the previous 30 days: 42% vs 18%, respectively (Chi-square = 4.90, df = 1, p < .02). The difference between illegal and legal females who used marihuana in the last 30 days was not statistically significant: 37% vs. 26%, respectively.

**Alcohol, Drugs, and Driving.** No significant differences in frequency of driving home after drinking were found, although it was slightly lower among illegal than among legal drinkers. Very few subjects reported driving after the use of drugs so the data were not analyzed. Similarly, the co-use of
alcohol and drugs followed by driving was of such low incidence among these students that the data were not analyzed.

**DISCUSSION**

The present data support the view that increasing the legal age of alcohol purchase does little to alter drinking patterns, other than to shift the drinking location from public to private places and increase heavy drinking among illegal females. Driving after drinking does not seem to change following an increase in the legal drinking age. These results are consistent with those of Smith et al. (1984) who examined the effects on 16- and 17-year-olds of raising the legal drinking age in Massachusetts and found little change in drinking behavior. The fact that no significant change occurred in alcohol consumption is also consistent with a study of student intention expressed prior to the increase in legal drinking age. At a southeastern university, Lotterhos et al. (1988) examined the intentions of students relative to raising the legal drinking age to 21. The results indicated that 74% would not alter their drinking habits, would obtain alcohol through illicit means, and planned to change their drinking primary location.

Little research has been conducted on the effect of changes in legal drinking age on subsequent drug consumption. In the present study, marihuana use was higher among illegal males, but not among either group of females. Lotterhos et al. (1988) found that over 22% of the students reported they would increase use of illicit drugs and that about 10% reported they would increase drinking after the legal drinking age changed. The present data provide some support for the consequences of the intentions reported in the Lotterhos study, at least among marihuana-using males and alcohol-using females. In the present study, it is probable that the shift in drinking location from public to private for illegal males is also associated with the higher reported use of
marihuana by illegal males. Because they are not able to drink legally in
public bars which are typically monitored not only for proper age, but also for
open use of marihuana, they are consuming alcohol in private locations which
are more conducive to marihuana use.

The present results suggest that future research on transitory phenomena
should focus on alcohol alone and in combination with drug consumption in the
18 to 21-year-old cohort to determine whether patterns will continue to shift
or whether they will stabilize after the minimum legal drinking age of 21 has
been thoroughly assimilated into the youth culture.

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purchasing age on drinking and drinking problems: A review of empirical


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**TABLE 1**

Places at which students drink most frequently (percent)

<table>
<thead>
<tr>
<th>Location</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Legal</td>
<td>Illegal</td>
</tr>
<tr>
<td>Public</td>
<td>65</td>
<td>21</td>
</tr>
<tr>
<td>Private</td>
<td>35</td>
<td>79</td>
</tr>
</tbody>
</table>

Male: Public vs. Private (Chi-square = 17.5, df = 1, p <.0001)

Female: Public vs. private (Chi-square = 15.8, df = 1, p <.0001)