Original Investigation

Marijuana-Using Drivers, Alcohol-Using Drivers, and Their Passengers

Prevalence and Risk Factors Among Underage College Students

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IMPORTANCE Driving after marijuana use increases the risk of a motor vehicle crash. Understanding this behavior among young drivers and how it may differ from alcohol-related driving behaviors could inform prevention efforts.

OBJECTIVE To describe the prevalence, sex differences, and risk factors associated with underage college students' driving after using marijuana, driving after drinking alcohol, or riding with a driver using these substances.

DESIGN, SETTING, AND PARTICIPANTS Cross-sectional telephone survey of a random sample of 315 first-year college students (aged 18-20 years) from 2 large public universities, who were participating in an ongoing longitudinal study. At recruitment, 52.8% of eligible individuals consented to participate; retention was 93.2% one year later when data for this report were collected.

MAIN OUTCOMES AND MEASURES Self-reported past-28-day driving after marijuana use, riding with a marijuana-using driver, driving after alcohol use, and riding with an alcohol-using driver.

RESULTS In the prior month, 20.3% of students had used marijuana. Among marijuana-using students, 43.9% of male and 8.7% of female students drove after using marijuana ($P < .001$), and 51.2% of male and 34.8% of female students rode as a passenger with a marijuana-using driver ($P = .21$). Most students (65.1%) drank alcohol, and among this group 12.0% of male students and 2.7% of female students drove after drinking ($P = .01$), with 20.7% and 11.5% ($P = .07$), respectively, reporting riding with an alcohol-using driver. Controlling for demographics and substance use behaviors, driving after substance use was associated with at least a 2-fold increase in risk of being a passenger with another user; the reverse was also true. A 1% increase in the reported percentage of friends using marijuana was associated with a 2% increased risk of riding with a marijuana-using driver (95% CI, 1.01-1.03). Among students using any substances, past-28-day use of only marijuana was associated with a 6.24-fold increased risk of driving after substance use compared with using only alcohol (95% CI, 1.89-21.17).

CONCLUSIONS AND RELEVANCE Driving and riding after marijuana use is common among underage, marijuana-using college students. This is concerning given recent legislation that may increase marijuana availability.

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Concerns about drug-impaired driving are of increasing importance in the United States, where state laws that reduce or remove penalties for marijuana are becoming more common. Acute use of cannabis approximately doubles the risk of a motor vehicle crash,[1,2] so maintaining road traffic safety despite a potential increase in marijuana use is a critical challenge.[3,4] Marijuana possession has been decriminalized in 14 states, and 2 states have recently legalized marijuana possession and recreational use for those at least 21 years old.

The issue of marijuana-impaired driving is particularly salient for young drivers, for whom the combination of inexperience and substance use elevates crash risk.[5-7] Youth younger than 21 are at the highest risk of involvement in a fatal motor vehicle crash.[8] They are also the age group most likely to use marijuana.[9] Nationally, cannabis was involved in 12% of fatal crashes among 16- to 20-year-olds.[10]

College students are a population at increased risk of substance-related risk behaviors, such as impaired driving.[11] For the 66% of American youth that attend postsecondary education,[12] college often represents a time of increased exposure to[13] and experimentation with marijuana and other substances.[14] Marijuana use increases after high school for youth who attend 4-year colleges compared with those who do not.[15] Marijuana is second only to alcohol for substances most abused by this population.[16] Compared with female students, male students are more likely to use substances,[17-19] drive after drinking, and be killed in an alcohol-related motor vehicle crash.[20-22] Findings of previous studies suggest that male students are twice as likely as female students to drive while high on marijuana and 20% more likely to ride with a marijuana-using driver.[23]

Because public health measures have reduced alcohol-related motor vehicle crashes and reported episodes of drinking and driving,[20,21] understanding how marijuana-related driving behaviors are similar to or different from alcohol-related driving behaviors may help inform prevention efforts. The prevalence of driving or riding as a passenger after alcohol use has been established in other college studies,[24-26] but examination of how this compares with the prevalence of driving after marijuana use or riding with a marijuana-using driver has been limited to a single-institution study conducted before the surge in legislation that has increased availability of marijuana.[22] Accordingly, the purpose of our study was (1) to describe prevalence and sex differences in underage college students' driving after marijuana use and riding as a passenger with a marijuana-using driver, (2) to examine risk factors for marijuana-impaired driving or riding, and (3) to compare both prevalence and risk factors for marijuana-related driving behaviors with those for alcohol-related driving behaviors.

Methods

Setting and Recruitment

Data for this study were obtained from an ongoing longitudinal study of college students' substance use at 2 large state universities in Wisconsin and Washington State. Incoming first-year students were randomly selected and recruited via postcards, e-mails, and telephone calls. To be eligible, participants had to be 18 or 19 years old by the beginning of the 2011-2012 academic year. Students were excluded if they had been on the university's campus for early-enrollment programs. Oral consent was obtained by telephone for all students. All study procedures were approved by the institutional review boards at the University of Wisconsin-Madison and Seattle Children's Research Institute, Seattle, Washington.

Data Collection

Participants completed a telephone interview with a trained research assistant at least once a year, beginning with a baseline interview during the summer before starting college. All interviews included questions about substance use frequency and quantity. The follow-up interview was conducted 1 year later between May 15 and September 20, 2012. In this interview, questions were added to assess driving after substance use. This report focuses on cross-sectional data collected during the summer 2012 interview.

Measures

Demographic information for students, including sex and race, was obtained during the baseline interview. Exact ages were not ascertained because all participants were in the same first-year student cohort and a narrow age range (18 or 19 years old) was part of the inclusion criteria.

Substance Use

Participants reported past-28-day substance use in response to the question, "Have you used (marijuana or alcohol) in the past 28 days?" Individuals who reported using a substance within the past 28 days were interviewed using the Timeline Followback method[27] to ascertain the number of days each substance was used during this period. We used the responses to generate continuous variables for each participant, indicating the number of days the participant reported using marijuana only, alcohol only, or both.

Alcohol users were asked how many drinks they had on each day that they used alcohol, with 1 drink defined according to National Institute on Alcohol Abuse and Alcoholism (NIAAA) standards (12 oz of beer, 5 oz of wine, or 1.5 oz of hard liquor). Based on the responses, we generated counts of the number of days that female students had more than 4 drinks and male students had more than 5. We defined these days as heavy episodic (binge) drinking days and counted the number of binge and nonbinge drinking days. The Alcohol Use Disorders Identification Test (AUDIT)[28] was administered to students to screen for problematic alcohol use in the past year. We followed commonly used clinical scoring guidelines: scores of 8 to 12 for female students or 8 to 14 for male students were considered indicative of hazardous drinking, and scores of 13 or more for female students or 15 or more for male students signified potential alcohol dependence.[29]

Students who reported substance use were asked how old they were when they first tried the substance. All students were asked to report the percentages of their friends who use marijuana and use alcohol.

Driving or Riding After Substance Use

Outcomes were assessed by asking, "In the past 28 days, how many times have you ridden as a passenger in a vehicle

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driven by someone who had been using marijuana?" Two similar questions asked about being a passenger with an alcohol-using driver. Past-28-day use of alcohol or marijuana prompted the interviewer to ask, "In the past 28 days, how many times have you driven after using that substance?" Reponses to both the riding and driving questions were ordinal (0, 1, 2-3, 4-5, or ≥6 times) but were coded as binary (0 or ≥1) in this analysis.

To assess exposure to the risk of driving after substance use, we asked participants if they (1) held a driver's license and (2) kept a car at school. We also asked students about frequency of seat belt use (always, mostly, sometimes, rarely, or never) because seat belt wearing has a well-established relationship to motor vehicle-related risk taking.[20,30] The distribution was heavily skewed toward always wearing a seat belt, so this variable was dichotomized to measure whether or not participants always wear their seat belts.

Statistical Analysis

We first examined differences by sex and university in means and proportions for all variables using *t* tests for continuous data and χ^2 tests for categorical data. We examined the prevalence of driving after substance use and riding with a substance-using driver among all respondents and separately among those using substances in the past 28 days. We used χ^2 tests to examine differences in prevalence between alcohol- and marijuana-related driving behaviors.

We conducted regression analyses for 4 outcomes: driving after marijuana use, riding with a driver who used marijuana, driving after alcohol use, and riding with a driver who used alcohol. To assess which factors were associated with the outcomes of interest, we used Poisson regression with robust standard errors to estimate relative risk (RR).[31] We first examined bivariate associations, selecting predictors based on the literature about driving after drinking and substance use behavior, followed by multivariable regression. Factors that were nonsignificant in the initial multivariable model were not retained in the final model.

For the outcome of driving after marijuana use, we examined the following covariates: sex, seat belt use, university, age at first marijuana use, number of days using marijuana in the past 28 days, whether the respondent rode as a passenger with a marijuana-using driver, and whether the respondent drove after alcohol use. This same basic model was used to predict riding with a marijuana-using driver, with driving after marijuana use, and percentage of friends using marijuana entered as covariates. A similar approach was taken for alcohol-related outcomes, with an additional binary variable for positive AUDIT screen (≥8). We used a fifth regression model to compare how using marijuana, alcohol, or both substances in the past 28 days contributed to the risk of driving after any substance use. All analyses were conducted using Stata 12/SE software (Stata Corp).

Results

Of 640 incoming college freshman approached, 338 (52.8% response rate) consented to be in the study, and 315 participants (93.2% retention rate) completed the follow-up interview at the end of their first year. All participants were between the ages of 18 and 20 years. The sample was 56.2% female and 75.6% white (**Table 1**); 59.4% of the participants were from the University of Wisconsin–Madison. Differences between the study population and those who refused were not significant for sex (P = .32) or university (P = .16), the 2 items we could assess among refusers. There were more participants from minority groups in the Washington sample (44.5%) than in the Wisconsin sample (10.9%) (P < .001) but no differences in sex (P = .63). The past-28-day prevalence of alcohol use was higher for Wisconsin (79.0%) than for Washington (65.4%) participants (P = .01), but there was no significant difference in the prevalence of marijuana use or use of both substances. There were no significant differences in driving or riding after substance use by university.

A larger proportion of male than female students engaged in substance use (Table 1). The past-28-day prevalence of marijuana use was 29.7% for male and 13.0% for female students, and the past-28-day prevalence of alcohol use was 66.7% for male and 63.8% for female students. The prevalence of having used both marijuana and alcohol on the same day was 23.2% for male and 8.5% for female students.

Marijuana-Related Behavior

Driving After Marijuana Use

Among all students, the prevalence of driving after marijuana use was 6.3% (**Table 2**). Among current (past-28-day) marijuana users, 43.9% of male and 8.7% of female students drove after using marijuana. The risk of driving after marijuana use was highest for those who rode with a marijuana-using driver (RR, 5.72; 95% CI, 1.84-17.80) and for those who drove after drinking (RR, 2.45; 95% CI, 1.39-4.31), whereas an older age at first marijuana use was associated with a lower risk (RR, 0.78; 95% CI, 0.63-0.97) (**Table 3**). Each 1-year increase in the age at first marijuana use was associated with a 22% reduction in the risk of driving after marijuana use.

Riding With a Marijuana-Using Driver

Among all students the prevalence of riding with a driver who had used marijuana was 13.0%. The proportion of students who rode with a marijuana-using driver was higher for the subset of students who used marijuana in the past 28 days than for the sample as a whole. For marijuana-using students, a larger proportion of male than female students (51.2% vs 34.8%) rode with a driver who had used marijuana. The risk of riding with a marijuana-using driver was increased for those who drove after using marijuana (RR, 4.42; 95% CI, 2.40-8.14). For each 1% increase in the reported percentage of friends who use marijuana, students were 2% more likely to ride with a marijuana-using driver (95% CI, 1.01-1.03). This translates into a 3.2-fold increase in the risk of riding with a marijuana-using driver for a 50% increase in the estimated number of friends using marijuana. Report of always wearing a seat belt was associated with reduced risk (RR, 0.55; 95% CI, 0.33-0.91).

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Table 1. Demographic and Substance Use Characteristics of Underage College Students

Characteristic	Male Students (n = 138)	Female Students (n = 177)	All Students (N = 315)	P Value[a]
Race/ethnicity, No. (%)				
White	106 (76.8)	132 (74.6)	238 (75.6)	.98
Black	2 (1.4)	3 (1.7)	5 (1.6)	
Hispanic	5 (3.6)	5 (2.8)	10 (3.2)	
Asian	13 (9.4)	22 (12.4)	35 (11.1)	
Other	12 (8.7)	15 (8.5)	27 (8.6)	
University, No. (%)				
Washington	54 (39.1)	74 (41.8)	128 (40.6)	.63
Wisconsin	84 (60.9)	103 (58.2)	187 (59.4)	
Driving characteristics, No. (%)				
Have driver's license	130 (94.2)	164 (92.7)	294 (93.3)	.59
Reported always wearing seat belt	110 (79.7)	158 (89.3)	268 (85.1)	.02
Have car at school	14 (10.1)	18 (10.2)	32 (10.2)	.53
Use of alcohol or marijuana in past 28 days, No. (%)	96 (69.6)	114 (64.4)	210 (66.7)	.34
Marijuana				
Age at first marijuana use, mean (SD), y[b]	17 (1.4)	17 (1.3)	17 (1.3)	.99
Days of marijuana use in past 28 days				
0	97 (70.3)	154 (87.0)	251 (79.7)	<.001
1-4	16 (11.6)	19 (10.7)	35 (11.1)	
≥5	25 (18.1)	4 (2.3)	29 (9.2)	
Days of marijuana use in past 28 days, mean (SD)	10.5 (9.8)	3 (3.4)	7.8 (8.8)	.001
Proportion of friends using marijuana, mean (SD)	33.2 (24.8)	30 (23.4)	31.4 (24.0)	.25
Alcohol				
Age at first alcohol use, mean (SD), y[b]	16.1 (1.7)	16.5 (1.5)	16.3 (1.6)	.06
Days of alcohol use in past 28 days				
0	46 (33.3)	64 (36.2)	110 (34.9)	.10
1-4	47 (34.1)	74 (41.8)	121 (38.4)	
≥5	45 (32.6)	39 (22.0)	84 (26.7)	
Days of alcohol use in past 28 days, mean (SD)	5.3 (4.2)	4.2 (3.8)	4.7 (3.8)	.02
Days of binge drinking in past 28 days, mean (SD)	3.3 (3.5)	2.3 (3.3)	2.8 (3.4)	.02
AUDIT score, No. (%)				
<8	75 (54.3)	118 (66.7)	193 (61.3)	.01
8-14 (hazardous)	52 (37.7)	38 (21.5)	90 (28.6)	
>15 (dependence)	9 (6.5)	14 (7.9)	23 (7.3)	
Proportion of friends using alcohol, mean (SD), %	70.6 (23.6)	71.7 (24.8)	71 (24.2)	.66
Alcohol and marijuana use on same day, No. (%)[c]	32 (23.2)	15 (8.5)	47 (14.9)	<.001

Abbreviation: AUDIT, Alcohol Use Disorders Identification Test.

[a] *P* value from χ^2 test (differences in proportions) or *t* tests (differences in means).

[b] Among those who used the substance in the past 28 days.

[c] Alcohol and marijuana may not have been used at the same time.

Alcohol-Related Behaviors

Driving After Alcohol Use

The prevalence of driving after drinking was 4.4% among all students, 6.8% among the subpopulation of students who used alcohol in the past 28 days, and significantly higher for male than for female students (*P* = .01) (Table 2). Regression models showed 2 statistically significant risk factors for driving after drinking: riding with a drinking driver (RR, 7.24; 95% CI, 2.45-21.35) and the number of nonbinge drinking days (RR, 1.15; 95% CI , 1.09-1.22) (**Table 4**). Reporting always wearing a seat belt was associated with a much-reduced risk (RR, 0.20; 95% CI, 0.09-0.48).

Riding With an Alcohol-Using Driver

For riding with a drinking driver, driving after drinking was the strongest risk factor (RR, 4.73; 95% CI, 2.54-8.08). The number of binge drinking days increased the risk of riding with a drinking driver (RR, 1.12; 95% CI, 1.08-1.17) somewhat more than the number of nonbinge drinking days (RR, 1.07; 95% CI, 1.01-1.13).

Comparisons Between Marijuana-Related and Alcohol-Related Behaviors

The χ^2 tests comparing marijuana-related and alcohol-related behaviors (see proportions in Table 2) showed that among the full sample, there was no significant difference in the proportion who drive after marijuana use compared with after alcohol use (*P* = .29) or who ride with a driver using each substance (*P* = .63). However, among students who use substances, marijuana users have a higher prevalence of driving (*P* = .005) and riding (*P* < .001) after marijuana use than alcohol users have for driving or riding after alcohol use.

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Table 2. Past-28-Day Prevalence of Driving or Riding After Marijuana or Alcohol Use Among Underage College Students

Driving or Riding Behavior	No. (%)			P Value[a]
	Male Students	Female Students	All Students	
All students	138	177	315	
Drove after marijuana use	18 (13.0)	2 (1.1)	20 (6.3)	<.001
Rode with marijuana-using driver	29 (21.0)	12 (6.8)	41 (13.0)	<.001
Drove after drinking alcohol	11 (8.0)	3 (1.7)	14 (4.4)	.01
Rode with drinking driver	21 (15.2)	16 (9.0)	37 (11.7)	.09
Students who used marijuana in past 28 days	41	23	64	...
Drove after marijuana use	18 (43.9)	2 (8.7)	20 (31.3)	<.001
Rode with marijuana-using driver	21 (51.2)	8 (34.8)	29 (45.3)	.21
Students who used alcohol in past 28 days	92	113	205	...
Drove after drinking alcohol	11 (12.0)	3 (2.7)	14 (6.8)	.01
Rode with drinking driver	19 (20.7)	13 (11.5)	32 (15.6)	.07
Students who used either substance in past 28 days	96	114	210	...
Drove after substance use	24 (25.0)	5 (4.4)	29 (13.8)	<.001
Rode with substance-using driver	40 (42.0)	22 (19.3)	62 (29.5)	.00
Students who used no substances in past 28 days	42	63	105	...
Rode with substance-using driver	3 (7.1)	4 (6.4)	7 (6.7)	.83

[a] *P* values obtained from χ^2 tests.

Among students who reported past-28-day use of either substance, 29.5% reported riding with a substance-using driver compared with 6.7% who did not report substance use ($P < .001$). The multivariate model to assess contribution from each substance type or combination to the risk of driving after any substance use (**Table 5**) showed that compared with using alcohol alone in the past 28 days, using only marijuana showed a substantial increase in the risk of driving after substance use (RR, 6.24; 95% CI, 1.89-21.17) with controlling for sex, days of substance use, reported seat belt use, and AUDIT score. Use of marijuana and alcohol was not associated with a statistically significant difference in risk. In this model, an increase in the number of days on which any substance was used was associated with an increased risk of driving after substance use (RR, 1.06; 95% CI, 1.03-1.09), as was having a positive AUDIT score (RR, 2.86; 95% CI, 1.07-7.65).

Discussion

This study found that underage male college students who used marijuana in the past 28 days had a high prevalence of driving after marijuana use and riding with a marijuana-using driver. This was more than double the prevalence of driving or riding after alcohol use among current alcohol users. Our findings were consistent with those of other studies demonstrating that for alcohol, the behaviors of driving after substance use and riding with friends who have been using are strongly associated.[32] Driving after drinking also increased the risk of driving after marijuana use. An older age at first marijuana use was associated with a 20% reduction in the risk of driving after marijuana use for each year increment in the age at first use. As expected, a higher percentage of the respondent's friends reported to be using marijuana indicated an increased risk of riding with a marijuana-using driver.

Our finding that using only marijuana increased the risk of substance-impaired driving is logically consistent with other studies indicating that driving after marijuana use is perceived as safer than driving after alcohol use[23] and done more frequently.[33,34] Our data also suggest that, similar to many risk behaviors, peers have a strong role in influencing behavior related to driving after substance use; individuals who rode with a marijuana-using driver were more than 5 times more likely to drive after marijuana use.

It could be beneficial to have effective strategies to combat the myth that driving after marijuana use is safe and change social norms toward having a safe ride home not only for alcohol use but for any substance use episode. The CRAFFT screening tool, named for the first letters of key words in the 6 screening questions (*C*ar, *R*elax, *A*lone, *F*orget, *F*riends, *T*rouble), is a validated instrument that can help pediatric providers identify patients who might benefit from counseling about the risk of marijuana-impaired driving.[35] Further research will be needed to understand whether such counseling is effective. In the changing policy environment surrounding marijuana, it will be important to continue to follow the trends both in arrests and self-reports, particularly among adolescent populations whose driving skills are still being developed.

Our study had limitations. Study participants were not different from refusers for the variables we could measure, but unmeasured differences could bias the results. The response rate of 52.8% is not unusual for studies of college students. Although the sample is representative of the colleges from which the data were drawn, it is not representative of all colleges. The small number of nonwhite students in our sample may mean

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Table 3. Adjusted Relative Risk of Driving or Riding After Marijuana Use Among Underage College Students[a]

Variable	Relative Risk (95% CI)	
	Driving After Marijuana Use (64 Current Users Only)	Riding With a Marijuana-Using Driver (All 315 Students)
Rode with marijuana-using driver	5.72 (1.84-17.80)	...[b]
Drove after marijuana use	...[b]	4.42 (2.40-8.14)
Drove after drinking	2.45 (1.39-4.31)	...[c]
Reported always wearing seat belt	...[c]	0.55 (0.33-0.91)
Age at first marijuana use	0.78 (0.63-0.97)	...[c]
Proportion of friends using marijuana, %	...[c]	1.02 (1.01-1.03)

[a] Initial multivariable models were also adjusted for sex, university, riding with a drinking driver, and the number of days of marijuana use in the past 28 days. These covariates were nonsignificant and were excluded from the final models.

[b] Variable omitted because it is the outcome for this model.

[c] Variables that were not significant in the initial multivariable models were not retained in the final model.

Table 4. Adjusted Relative Risk of Driving or Riding After Drinking Alcohol Among Underage College Students[a]

Variable	Relative Risk (95% CI)	
	Driving After Drinking (205 Current Drinkers Only)	Riding With Drinking Driver (All 315 Students)
Rode with drinking driver	7.24 (2.45-21.35)	...[b]
Drove after drinking	...[b]	4.73 (2.54-8.08)
Reported always wearing seat belt	0.20 (0.09-0.48)	...[c]
Days of binge drinking in past 28 days	...[c]	1.12 (1.08-1.17)
Days of nonbinge drinking in past 28 days	1.15 (1.09-1.22)	1.07 (1.01-1.13)

[a] Initial multivariable models also included sex, university, riding with marijuana-using driver, driving after marijuana use, age at first alcohol use, positive Alcohol Use Disorders Identification Test (AUDIT) score, and percentage of friends who drink alcohol. These covariates were nonsignificant and were excluded from the final models.

[b] Variable omitted because it is the outcome for this model.

[c] Variables that were not significant in the initial multivariable models were not retained in the final model.

that the risks identified in this study may not be representative of all college populations.

Our ascertainment of all variables was limited to self-report, creating the possibility for recall and social desirability bias. The Timeline Followback method used in the study is well validated for helping avoid the bias that comes with the passing of time since the event in question.[36-38] Participants were informed that we obtained a federal certificate of confidentiality for the study, which we hope helped them feel comfortable disclosing behaviors related to alcohol and drug use. Prior work with college students suggests that self-reported substance-related risk behaviors are valid compared with other data sources.[39]

An additional limitation is that we did not assess the time between substance use and driving, the level of impairment, or the incidence of motor vehicle crashes. Because we did not ask about how many hours each episode of substance use lasted, we defined binge drinking as consuming 4 or 5 drinks in a day. This differs from the NIAAA definition of binge drinking as consuming 4 or 5 drinks in 2 hours, so we may have overestimated the number of days in which NIAAA-defined binge drinking occurred. We ascertained whether alcohol and marijuana were used on the same day but not whether they were used concurrently.

The number of marijuana-using individuals in our sample may have limited our ability to detect certain associations between risk factors and driving or riding after use of this substance. Although our results indicate that driving and riding after marijuana use varies by sex, our data did not permit us to examine how sex may modify the relationship between risk factors and driving or riding after marijuana use. These outcomes were relatively rare among female participants, and the number was too small to support investigating this interaction in the regression models.

Table 5. Relative Risk of Driving After Use of Any Substance Among 210 Underage College Students With Any Past-28-Day Use of Marijuana or Alcohol

Variable	Relative Risk (95% CI)
Substance used in past 28 days	
Alcohol only	1 [Reference]
Marijuana only	6.24 (1.89-21.17)
Alcohol and marijuana	2.46 (0.94-6.46)
Male sex	2.46 (0.97-6.28)
No. of days of marijuana or alcohol use in past 28 days	1.06 (1.03-1.09)
Reported always wearing seat belt	0.34 (0.18-0.64)
Positive AUDIT score[a]	2.86 (1.07-7.65)

Abbreviation: AUDIT, Alcohol Use Disorders Identification Test.

[a] A positive AUDIT score was defined as 8 or higher, indicating hazardous or dependent drinking.

Conclusions

Despite the limitations of our study, our findings are an important and timely contribution to the literature on older adolescents driving after drug use. They supplement our knowledge that marijuana use increases the risk of motor vehicle crashes by estimating how common it is for underage students to have taken this risk within the past 28 days.

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