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Role of Place of Residence on Drinking and Driving among Students in a Hispanic Serving University

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ABSTRACT

This study describes the role of place of residence on drinking and driving among students in a large Hispanic-serving institution. The National College Health Assessment survey was administered during the fall of 2004. 1130 randomly selected students completed this anonymous questionnaire. Hispanic students were less likely to drive after drinking compared to non-Hispanic white students, but Hispanic students were more likely to live with parents (55%) compared with non-Hispanic white students (22%). After adjusting for the place of residence, there were no significant differences in drinking and driving between Hispanics and non-Hispanic white students. Therefore, in part, lower levels of driving after drinking among Hispanic students was mediated by current place of residence. However, the impact of living with parents was not significant among heavy alcohol users

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Introduction

Drinking on U.S. college and university campuses is a serious public health problem. Alcohol is the most pervasively misused substance on college campuses (O'Malley & Johnston, 2002) and threatens the quality of campus life (Perkins, 2002). For the user, alcohol misuse can impair academic performance and lead to sexual victimization and personal injuries. For others, alcohol use and misuse can lead to litter, noise, disturbances, fights, physical injuries, property damage, vandalism, and sexual violence. Daily in the U.S., an average of four college students die, 1370 are injured, and 192 are sexually assaulted as a direct result of heavy alcohol use (Hingson, et al., 2002). In 2001, nearly 599,000 (10.5%) college students were injured, and 464,000 (8%) students had unprotected sexual intercourse as a result of drinking (Hingson et al., 2005).

One of the most serious problems resulting from student drinking is driving while under the influence of alcohol. Compared with similar aged non-college students, a significantly greater percentage of college students drive under the influence of alcohol (Hingson et al., 2005). In 2001, more than half of traffic deaths (4216 out of 8242) among persons aged 18-24 were alcohol related. Based on the proportion of 18-24 year olds who are college students, at least one-third of alcohol-related traffic deaths would have been college students (Hingson et al., 2005). During 2001, another 368 college students are estimated to have fallen victim to an alcohol-related, non-traffic, unintentional death.

Previous studies have found that drinking behavior varies by student demographic characteristics (i.e. age and sex) and institution-level characteristics (Presley et al., 2002; Wechsler & Kuo, 2003). Especially, ethnic differences in drinking have

been supported by many studies. A study reported that non-Hispanic white students had the highest use of alcohol followed by Hispanic, black, and Asian students; black students reported less alcohol consumption and fewer negative consequences (Siebert et al., 2003). Another study reported that blacks (14.4%) and Hispanics (32.3%) were less likely to report heavy drinking compared with white students (46.6%) among four-year college students (Paschall et al., 2005). Although many studies have reported lower levels of alcohol problems among Hispanic students, the protective factors leading to lower levels of alcohol use among Hispanic students have been understudied. One study reported that students residing off campus with parents had lower levels of heavy drinking compared to those who lived separately from parents (Harford et al., 2002). Therefore, we hypothesized that the lower level of alcohol problems among Hispanic students is, in part, explained by the living with parents. The main objective of this study was to estimate the role of college student's place of residence on drinking and driving as well as to describe drinking behaviors among students.

Methods

Setting and Participants

The study was conducted at Florida International University where 54% of students are Hispanic, 20% are non-Hispanic white, 14% are non-Hispanic black, and the remaining 12% are of another or unknown race/ethnicity. The campus is located in an urban area and serves mainly commuting students from the surrounding metropolitan area. Study subjects were selected using a stratified cluster sampling design at the university. Students enrolled in the 2004 fall semester were stratified by two campus sites and

graduate and undergraduate status. The first sampling step involved randomly selecting classes within each stratum. In the second step we randomly selected classes based on the probability proportional to the class size (Levy & Lemeshow, 1999). Thus, classes with larger numbers of students had a larger probability of being selected. Classes with five or fewer students were excluded from the sampling frame to preserve the anonymity of students. All students attending a selected class, who agreed to participate, were surveyed. The university's institutional review board (IRB) reviewed and approved this study and classified it as 'exempt' for IRB purposes.

Survey instrument

The National College Health Assessment [NCHA] survey, which was designed by the American College Health Association, was administered during the fall of 2004. Details concerning the NCHA survey instrument and results are published elsewhere (The American College Health Association, 2005). Briefly, the anonymous, voluntary, self-administered questionnaire contained questions assessing mental and physical health, substance abuse, sexual behavior, nutrition, and exercise. The survey took approximately 30 minutes to complete, and no incentives were offered to participants.

Measures

In this survey, one drink or alcoholic beverage was defined as a 12 oz. beer, a 4 oz. glass of wine, a shot of liquor, or a mixed drink. Questions regarding the occurrence of drinking and driving, use of harm reduction strategies related to alcohol use, and experience of negative consequences of drinking were asked as follows.

Alcohol use: Alcohol use was assessed by asking respondents: "Within the last 30 days, on how many days did you use alcohol [beer, wine, liquor]?" A student was considered as a current alcohol user if she/he used alcohol for at least one day within the last 30 days. Heavy drinking was defined as consuming five or more alcoholic beverages at a single sitting. It was assessed by asking "Think back over the last two weeks. How many times, if any, have you had five or more alcoholic drinks at a sitting?" If respondents reported drinking 5 or more alcoholic drinks at one sitting at least once within the two weeks prior to the survey, they were classified in the "heavy drinking" group to be consistent with other published study (Paschall et al., 2005). Previously, the same drinking behavior was also referred to in the literature as "binge drinking" (U.S.

Dept of Health and Human Services, 2000) or "dangerous drinking" (Goodhart et al., 2003).

Drinking and driving: Under the introductory line "Within the last 30 days, did you:", two questions were asked; "drive after drinking any alcohol at all" and "drive after having 5 or more drinks." For each question, participants could choose from one of four options: [1] Not applicable/Don't drive, [2] Not applicable/Don't drink, [3] No, or [4] Yes. A "yes" response was considered as "driving after drinking" and "driving after heavy drinking". Only those who responded "no" or "yes" were considered in calculating the percentage of drinking and driving by removing those responding "not applicable" from the denominator.

Drinking behaviors when the student partied/socialized: The number of alcoholic drinks consumed the last time the student partied/socialized was asked as follows. "The last time you partied/socialized, how many alcoholic drinks did you have? State your best estimate." Protective behaviors when students partied/socialized among drinkers were considered by asking "During the last 12 months, if you partied/socialized, how often did you 'Alternate non-alcohol with alcoholic beverages,' 'Determine, in advance, not to exceed a set number of drinks,' 'Choose not to drink alcohol,' 'Use a designated driver', 'Eat before and/or during drinking,' 'Have a friend let you know when you've had enough,' 'Keep track of how many drinks you were having,' 'Pace your drinks to 1 or fewer per hour,' 'Avoid drinking games,' and 'Drink an alcohol look-alike(non-alcoholic beer, punch etc.)'."

Reported consequences of drinking alcohol: "If you drink alcohol, within the last 12 months, have you experienced any to the following as a consequence of your drinking?" Under this introductory line, these seven questions were asked: "physically injured yourself," "physically injured another person," "been involved in a fight," "did something you later regretted," "forgot where you were or what you did," "had someone use force or threat of force to have sex with you," and "had unprotected sex."

Statistical analysis

The analysis was carried out in four phases. First, demographics of students as well as their drinking behavior/consequences were described by race/ethnicity. Second, to find the risk factors, the odds ratios of driving after heavy drinking were calculated for each demographic factor along with the associated statistical significance. Third, to identify

the role of place of residence on the association between race/ethnicity and drinking and driving, the place of residence was adjusted in the model. Finally, to estimate other significant factors, a model was built by a backward variable selection procedure in the presence of race/ethnicity and current residence in the model. One variable was removed at a time to fit a reduced model, and a likelihood ratio test was performed against the full model to assess the significance of the variables removed. Because little research has been done in this area, we set our significance level at 0.1.

In reporting a model, the significance of the coefficient was calculated using a Wald test. The performance of the model was assessed using the Hosmer-Lemeshow goodness-of-fit test, (Hosmer & Lemeshow, 2000). The goodness-of-fit test is a measure of a model's calibration, evaluating the correspondence between an observed outcome (driving after heavy drinking) and the model estimate of an outcome. All of the analyses were conducted using STATA Statistical Software: Release 9.0 (Stata Corp, 2005).

Results

Respondents

Of the 2,056 students enrolled at the beginning of the semester in the participating classes, 1,449 (71%) were present in class on the day the survey was scheduled; of those, 1,160 (80%) completed the anonymous self-administered questionnaire. Approximately 8% were advised not to participate due to age or previous participation in the survey in another selected class, and 12% of those present in class refused to participate. Upon scanning, 1130 of the 1160 completed questionnaires were valid surveys because 30 (2.6%) of the 1160 completed questionnaires could not be read by the scanner. The demographic characteristics of the study participants by race/ethnicity are presented in Table 1. Among those who reported their race/ethnicity, approximately 48% of students were Hispanics, and 24% were non-Hispanic whites. Only a small proportion (6%) of students lived on-campus. Hispanic students were more likely to live with parents (55%) compared to non-Hispanic white students (22%) or non-Hispanic black students (39%).

Drinking patterns

About 61% of Hispanics and 70% of non-Hispanic white students reported current drinking (drinking within the 30 days prior to the survey), and 81% of Hispanics and 85% of non-Hispanic whites had ever drunk alcohol sometime in their lives (Table 2). In comparison only 59% of non-Hispanic, black

students had ever drunk alcohol sometime in their lives. Heavy drinking within the 2 weeks prior to the survey was widespread, reported by 35% of non-Hispanic whites, 31% Hispanics, and 14% of non-Hispanic black students. As with heavy drinking, a higher percentage of non-Hispanic whites reported drinking 5–6 drinks and 7 or more drinks than Hispanics (39% vs. 29%), driving after drinking (non-Hispanic white 43% vs. 36% Hispanic) and driving after heavy drinking (non-Hispanic white 16% vs. Hispanic 10%).

Harm reduction strategies

Only one third of students usually or always chose not to drink alcohol. Hispanic students were more likely to practice some harm reduction strategies when deciding to drink alcohol. For instance, 47% of Hispanics and 31% of non-Hispanic white students usually or always determined in advance not to exceed a set number of drinks; 65% of Hispanics and 59% of non-Hispanic white students used a designated driver; 39% of Hispanics and 28% of non-Hispanic white students had a friend let them know when they have had enough; 65% of Hispanics and 53% of non-Hispanic white students kept track of how many drinks they were having.

Negative consequences of drinking

Although students reported some protective drinking behaviors used when socializing, there was a relatively high percentage of students who reported having a dangerous experience during the 12 months prior to the survey as a result of drinking alcohol. The top three most common consequences reported were “did something they regretted” (36% of non-Hispanic whites and 23% of Hispanics), “forgot where they were or what they did” (26% of non-Hispanic whites and 21% of Hispanics), and “had unprotected sex” (22% of non-Hispanic whites and 18% of Hispanics). The next most common consequence of alcohol drinking was physical injury or fighting; physically injured themselves (16% of non-Hispanic whites and 7% of Hispanics), got involved in a fight (4% of non-Hispanic whites and 5% of Hispanics), or physically injured other individuals (4% of non-Hispanic whites and 3% of Hispanics).

Factors associated with driving after drinking

Table 3 shows the unadjusted odds ratios for driving after drinking for each demographic characteristic and excludes those participants who either do not drink alcohol or don't drive. Significant factors associated with drinking and driving were non-Hispanic white race/ethnicity, living off-campus without parents, older age, male sex, single marital status, and international students. After adjusting for

the current place of residence, there were no significant differences in drinking and driving between Hispanics and non-Hispanic students. When all variables were entered into the logistic model, graduate status as well as full/part time status was not significant and removed from the final model. After adjusting for the current place of residence, black students were still significantly less likely to drive after drinking compared to Hispanics. However, there were no significant difference in drinking and driving between Hispanics and non-Hispanic white students. Goodness of fit measures showed that the model fits the data well (Hosmer-Lemeshow test; $p=0.57$).

Driving after heavy drinking

Table 4 depicts the information for driving after heavy drinking. Significant factors associated with heavy drinking and driving were non-Hispanic white race/ethnicity, older age, male sex, and single marital status. As expected, white students drove a car after heavy drinking more often when compared with Hispanic students. However, the current residence was not a significant factor associated with driving after heavy drinking. Other factors with the highest odds of driving after heavy drinking were male sex and older age. When all other significant variables were entered into the logistic model with race/ethnicity and current residence, there were no longer significant differences in drinking and driving between Hispanics and non-Hispanic white students. However, black students were significantly less likely to drive after drinking compared to Hispanics. Goodness of fit measures showed that the model fits the data well (Hosmer-Lemeshow test; $p=0.17$).

Discussion

It is well documented that Hispanic students are less likely to drink alcohol than non-Hispanic white students, and our study is consistent with other published studies. The National College Health Risk Behavior Survey (NCHRBS) -1995 is a nationally representative college-based survey (Centers for Disease Control and Prevention, 1997). Compared with the result of the NCHRBS, within the last 30 days, episodes of alcohol use were lower (58.2% vs. % 68.2% nationwide). The current alcohol use remained lower when compared with results from all 50 schools that participated in the Fall 2004 NCHA survey (The American College Health Association, 2005). Heavy drinking was also lower among students in this population compared with that of the nation as found in the NCHRBS (Centers for Disease Control and Prevention, 1997) and the NCHA survey (The American College Health Association, 2005).

Despite the lower prevalence of current alcohol use, a significantly larger proportion of students had

operated a vehicle after drinking alcohol compared with that of the nation. The NCHRBS reported that, nationwide, 27.4% of students had driven a car after alcohol use (Centers for Disease Control and Prevention, 1997). In our study, nearly 45.4% of students had driven a car after alcohol use in the past 30 days. Given the lower prevalence of alcohol use among students in this institution compared with the national prevalence, the higher prevalence of drinking and driving was an unexpected finding. The excess of drunk driving among this student population may be explained by the fact that students have more opportunities to drive a car because they are largely commuting students. This study suggests that, although student characteristics are an important factor associated with drinking and driving, the college characteristic (i.e. commuter school) may be also an important factor that influences high-risk collegiate drinking. This finding needs to be studied further in larger number of institutions.

Living off campus with their parents was an independent protective factor associated with driving after drinking and this is consistent with another study (Harford et al., 2002). Our study showed that Hispanic students were more likely to live off-campus with their parents, and Hispanic students were less likely to drive after drinking (or heavy drinking) compared to non-Hispanic whites. However, after controlling for the current place of residence in the model, Hispanic and white students were not different in driving after drinking. Therefore, association between Hispanics/white students and driving after drinking is mediated, in part, by the current place of residence. Our study showed that the living on-campus and living with parents are equally protective factors associated driving after drinking. Drinking/driving has been suggested to be mediated by the frequency of driving (Harford et al., 2002) and policy environment (Wechsler et al., 2003). Therefore, for students who are not living with their parents, living on-campus appears to be a safer option compared with living off-campus. Current residence was not a significant factor associated with heavy drinking and driving. The findings from this research provide further evidence about the protective effect that familial factors may have on the substance use of Hispanic young adults not involved in heavy alcohol consumption (De La Rosa et al., 2005). Those students who engaged in heavy drinking may have a different profile of risk taking behaviors, and further study with larger samples may be needed to elucidate results for heavy drinkers.

There are several limitations with this study. This study is based on the cross-sectional design, and it may suffer to some degree from selection bias.

Research supports that alcohol use is positively associated with class absences (Shillington & Clapp, 2001), suicidal behavior (Kisch et al., 2005), and unintentional death. Thus, students suffering from serious consequences cannot be entered into the sampling frame because they are either absent, withdrawn from college, or other alcohol related destructive live events. Other students who had drunk alcohol the night before this survey may skip the class due to a hang-over. Thus, the prevalence and consequences of heavy drinking may be underestimated.

We selected a representative group of students from the campus in question, but it is not necessarily representative of all students in Hispanic Serving Institutions in the U.S. The respondents consisted mainly of Cubans and other Hispanics from South and Central America. Thus, the results may not be generalizable to other Hispanic college populations especially those with a high proportion of Mexican Americans. Another limitation of our study is that we relied on self-reported data. Students may have been reluctant to report drunk driving, and it is not possible to evaluate how truthful the reporting was.

We conclude that driving after drinking (and heavy drinking) was prevalent among college students in this Hispanic Serving university located in a large urban area. This large proportion of students reporting drunk driving is certainly alarming, and immediate campus-wide education, interventions, and policy changes should be implemented to address this problem. Hispanic students are less likely to drive after drinking compared with non-Hispanic white students. In part, lower levels of driving after drinking among Hispanic students was mediated by current residence with parents. Thus, the design of intervention programs should consider including families in its strategies even with young adults of all ethnicities; as has been the case with interventions that focus on Hispanic adolescents (De La Rosa et al., 2005). If students live without parents, living on-campus reduces the occurrence of drinking and driving compared with living off-campus.

Table 1. Distribution of Participant Characteristics by Ethnicity in an Urban Hispanic-Serving Institution.

| | Hispanics | | Non Hispanic Whites | | Non Hispanic Blacks | | Others | | Total | |
|---|-----------|----|---------------------|----|---------------------|----|--------|----|-------|-----|
| | size | % | size | % | size | % | Size | % | size | % |
| Total ¹ | 504 | 48 | 246 | 24 | 156 | 15 | 137 | 13 | 1043 | 100 |
| Age (years) | | | | | | | | | | |
| 18-20 | 161 | 34 | 38 | 16 | 29 | 20 | 22 | 17 | 250 | 25 |
| 21-24 | 130 | 27 | 75 | 32 | 57 | 39 | 44 | 33 | 306 | 31 |
| 25 or older | 189 | 39 | 121 | 52 | 60 | 41 | 65 | 50 | 435 | 44 |
| Graduate status | | | | | | | | | | |
| Undergraduate | 317 | 63 | 118 | 49 | 96 | 62 | 60 | 44 | 591 | 57 |
| Graduate | 186 | 34 | 124 | 51 | 60 | 38 | 76 | 56 | 446 | 43 |
| Sex | | | | | | | | | | |
| Female | 309 | 67 | 120 | 55 | 91 | 64 | 72 | 59 | 592 | 63 |
| Male | 151 | 33 | 98 | 45 | 51 | 36 | 51 | 41 | 351 | 37 |
| Current marital status | | | | | | | | | | |
| Currently single ² | 252 | 50 | 99 | 41 | 88 | 57 | 73 | 54 | 512 | 50 |
| Married/ partner Committed ³ | 200 | 20 | 77 | 32 | 24 | 16 | 27 | 20 | 228 | 22 |
| Committed ³ | 149 | 30 | 66 | 27 | 41 | 27 | 35 | 26 | 291 | 28 |
| Full/part time student | | | | | | | | | | |
| Full time | 378 | 76 | 187 | 77 | 128 | 83 | 111 | 82 | 804 | 78 |
| Part time | 122 | 24 | 55 | 23 | 27 | 17 | 24 | 18 | 228 | 22 |
| Current place of residence | | | | | | | | | | |
| Campus housing ⁴ | 18 | 4 | 14 | 6 | 18 | 11 | 17 | 12 | 67 | 6 |
| Off campus ⁵ | 142 | 28 | 127 | 52 | 58 | 37 | 62 | 45 | 389 | 38 |
| Parent/guardian's home | 276 | 55 | 54 | 22 | 61 | 39 | 33 | 24 | 424 | 41 |
| Others | 65 | 13 | 48 | 20 | 19 | 12 | 25 | 18 | 157 | 15 |
| International student | | | | | | | | | | |
| Yes | 27 | 5 | 28 | 11 | 23 | 15 | 92 | 68 | 905 | 88 |
| No | 467 | 95 | 216 | 89 | 130 | 85 | 43 | 32 | 121 | 12 |

¹Numbers in different categories do not add up to the total number of respondents (620 under graduate students and 510 for graduate students) due to missing values.

²Single, separated, divorced, widowed

³Engaged or committed dating relationship

⁴Campus residence hall, fraternity, sorority, other university/college housing

⁵Live independently off-campus

Table 2. Percentage Distribution of Participant Drinking Behaviors by Ethnicity in an Urban Hispanic-Serving Institution.

| | Hispanics | | Non-Hispanic Whites | | Non-Hispanic Blacks | | Others | | p-value |
|---|-----------|-----|---------------------|-----|---------------------|-----|--------|-----|---------|
| | size | % | size | % | size | % | size | % | |
| Total number of valid respondents ¹ | 504 | | 246 | | 156 | | 137 | | |
| Drank alcohol | | | | | | | | | |
| Never | 95 | 19% | 36 | 15% | 64 | 41% | 42 | 31% | <0.01 |
| Not within 30 days | 99 | 20% | 38 | 15% | 34 | 22% | 27 | 20% | |
| Current alcohol user | 302 | 61% | 171 | 70% | 57 | 37% | 68 | 50% | |
| Heavy drinking ² | 154 | 31% | 85 | 35% | 22 | 14% | 26 | 19% | <0.01 |
| Number of alcoholic drinks the last time socialized | | | | | | | | | |
| None | 89 | 18% | 52 | 22% | 65 | 42% | 45 | 34% | <0.01 |
| 1-2 | 119 | 24% | 42 | 17% | 41 | 27% | 27 | 20% | |
| 3-4 | 140 | 29% | 52 | 22% | 30 | 20% | 26 | 20% | |
| 5-6 | 77 | 16% | 48 | 20% | 7 | 5% | 12 | 9% | |
| 7 or more | 65 | 13% | 47 | 19% | 10 | 6% | 23 | 17% | |
| Drove after drinking alcohol ³ | | | | | | | | | |
| Yes | 182 | 36% | 103 | 43% | 35 | 23% | 39 | 28% | <0.01 |
| No | 222 | 45% | 91 | 38% | 58 | 38% | 52 | 38% | |
| Not applicable ⁴ | 94 | 19% | 46 | 19% | 60 | 39% | 46 | 34% | |
| Drove after heavy drinking ⁵ | | | | | | | | | |
| Yes | 48 | 10% | 38 | 16% | 9 | 6% | 11 | 8% | <0.01 |
| No | 355 | 71% | 153 | 63% | 81 | 53% | 81 | 60% | |
| Not applicable ⁴ | 96 | 19% | 50 | 21% | 62 | 41% | 44 | 32% | |
| Protective behaviors when students partied/socialized among who drinks ⁶ | | | | | | | | | |
| Alternate non-alcoholic with alcoholic beverages | | | | | | | | | |
| Always or usually | 146 | 37% | 65 | 33% | 33 | 35% | 40 | 44% | .37 |
| Sometimes, rarely, never | 251 | 63% | 130 | 67% | 61 | 65% | 51 | 56% | |
| Determine, in advance, not to exceed a set number of drinks | | | | | | | | | |
| Always or usually | 183 | 47% | 60 | 31% | 45 | 50% | 41 | 50% | <0.01 |
| Sometimes, rarely, never | 210 | 53% | 132 | 69% | 46 | 50% | 42 | 50% | |
| Choose not to drink alcohol | | | | | | | | | |
| Always or usually | 112 | 27% | 51 | 25% | 46 | 44% | 27 | 29% | <0.01 |
| Sometimes, rarely, never | 299 | 73% | 152 | 75% | 58 | 56% | 65 | 71% | |
| Use a designated driver | | | | | | | | | |
| Always or usually | 255 | 65% | 112 | 59% | 44 | 51% | 46 | 55% | 0.04 |
| Sometimes, rarely, never | 135 | 35% | 77 | 41% | 42 | 49% | 38 | 45% | |
| Eat before and/or during drinking | | | | | | | | | |
| Always or usually | 296 | 75% | 145 | 75% | 66 | 74% | 61 | 69% | 0.69 |
| Sometimes, rarely, never | 96 | 25% | 49 | 25% | 23 | 26% | 27 | 31% | |
| Have a friend let you know when you've had enough | | | | | | | | | |
| Always or usually | 149 | 39% | 52 | 28% | 23 | 27% | 35 | 41% | 0.02 |
| Sometimes, rarely, never | 233 | 61% | 134 | 72% | 62 | 73% | 51 | 59% | |

Table 2 Continued:

| | Hispanics | | Non-Hispanic Whites | | Non-Hispanic Blacks | | Others | | p-value |
|---|-----------|-----|---------------------|-----|---------------------|-----|--------|-----|---------|
| | size | % | size | % | size | % | size | % | |
| Keep track of how many drinks you were having | | | | | | | | | |
| Always or usually | 254 | 65% | 101 | 53% | 58 | 67% | 52 | 61% | 0.03 |
| Sometimes, rarely, never | 137 | 35% | 91 | 47% | 29 | 33% | 33 | 39% | |
| Pace your drinks to 1 or fewer per hour | | | | | | | | | |
| Always or usually | 149 | 38% | 58 | 31% | 40 | 46% | 31 | 36% | 0.10 |
| Sometimes, rarely, never | 242 | 62% | 130 | 69% | 47 | 54% | 54 | 64% | |
| Avoid drinking games | | | | | | | | | |
| Always or usually | 212 | 56% | 110 | 59% | 60 | 65% | 48 | 56% | 0.40 |
| Sometimes, rarely, never | 168 | 44% | 77 | 41% | 32 | 35% | 38 | 44% | |
| Negative consequences of drinking ⁶ | | | | | | | | | |
| Did something you later regretted | 94 | 23% | 70 | 36% | 15 | 16% | 20 | 22% | <0.01 |
| Forgot where you were or what you did | 85 | 21% | 52 | 26% | 12 | 13% | 24 | 26% | 0.06 |
| Had unprotected sex | 73 | 18% | 43 | 22% | 8 | 9% | 10 | 11% | 0.01 |
| Physically injured yourself | 30 | 7% | 31 | 16% | 4 | 4% | 12 | 13% | <0.01 |
| Been involved in a fight | 22 | 5% | 8 | 4% | 3 | 3% | 2 | 2% | 0.50 |
| Physically injured another person | 12 | 3% | 8 | 4% | 1 | 1% | 3 | 3% | 0.59 |
| Had someone use force or threat of force to have sex with you | 2 | <1% | 3 | 2% | 2 | 2% | 3 | 3% | 0.14 |

¹ Total number of students does not add up to the total number of respondents due to missing values in the sex of respondents variable

² Had 5 or more drinks at a sitting within 2 weeks

³ within 30 days

⁴ Either “don’t drink” or “don’t drive”

⁵ within 30 days, drove a car after having 5 or more drinks at a sitting

⁶ Excluded participants who never drink alcohol

Table 3. Driving after Drinking among College Students in an Urban Hispanic-Serving Institution.

| Characteristics | | Outcome | Univariate model | | Two predictors in the model | | Final model | |
|----------------------------|-----------------------------|------------------|------------------|---------|-----------------------------|---------|-------------------------|---------|
| | | | Odds Ratio | P-value | Odds Ratio | P-value | Odds ratio ² | P-value |
| Total n=829 | | (%) ¹ | | | | | | |
| Race/ethnicity | Hispanic | 45.1 | ref | | ref | | ref | |
| | White | 53.1 | 1.4 | 0.07 | 1.2 | .30 | 1.0 | 0.92 |
| | Black | 37.6 | 0.7 | 0.20 | 0.7 | .12 | 0.5 | <.01 |
| | Others | 42.9 | 0.9 | 0.70 | 0.8 | .46 | 0.8 | 0.34 |
| Current place of residence | Parent | 41.6 | ref | | ref | | ref | |
| | Campus housing ⁴ | 41.5 | 1.0 | .99 | 1.1 | .85 | 1.0 | 0.99 |
| | Off campus ⁵ | 52.8 | 1.6 | <.01 | 1.6 | .01 | 1.8 | <.01 |
| | Others | 42.6 | 1.0 | .85 | 1.0 | .89 | 1.2 | 0.45 |
| Age (years) | 18-20 | 30.6 | ref | | | | ref | |
| | 21-24 | 55.7 | 2.9 | <.01 | | | 3.4 | <.01 |
| | 25 or older | 48.9 | 2.2 | <.01 | | | 2.6 | <.01 |
| Sex | Female | 39.7 | ref | | | | ref | |
| | Male | 56.4 | 2.0 | <.01 | | | 2.1 | <.01 |
| Graduate status | Undergraduate | 41.0 | ref | | | | | |
| | Graduate | 50.5 | 1.5 | <.01 | | | | |
| Current marital status | Single ⁶ | 48.4 | ref | | | | ref | |
| | Married | 37.9 | 0.7 | 0.03 | | | 0.4 | <.01 |
| | Committed ⁷ | 46.9 | 0.9 | 0.71 | | | 0.8 | 0.39 |
| Full/part time student | Part time | 49.4 | ref | | | | | |
| | Full time | 44.7 | 0.8 | 0.27 | | | | |
| International students | No | 47.3 | ref | | | | ref | |
| | Yes | 36.7 | 0.6 | 0.07 | | | 0.5 | 0.02 |

¹Percentage of students who drove a car after heavy drinking in each category of the variables. For instance, 39.7% of female students and 56.4% of male students drove a car after drinking.

²Odds Ratio adjusted for other variables entered in the final model with p-value (likelihood ratio tests) less than equal to .1

³Wald test, p-values when compared to the reference group

⁴Campus residence hall, fraternity, sorority, other university/college housing

⁵Live independently off-campus

⁶Single, separated, divorced, widowed

⁷Engaged or committed dating relationship

Students who reported “not applicable” (either do not drive or do not drink) were excluded from this analysis.

Table 4. Driving after Heavy Drinking among College Students in an Urban Hispanic-Serving Institution.

| Characteristics | | Outcome | Univariate model | | Two predictors in the model | | Final model | |
|----------------------------|-----------------------------|------------------|------------------|---------|-----------------------------|---------|-------------------------|---------|
| | | | Odds Ratio | P-value | Odds Ratio | P-value | Odds ratio ² | P-value |
| Total n=829 | | (%) ¹ | | | | | | |
| Race/ethnicity | Hispanic | 11.9 | ref | | ref | | ref | |
| | White | 19.9 | 1.8 | .01 | 1.8 | .02 | 1.2 | .48 |
| | Black | 10.0 | 0.8 | .61 | 0.8 | .60 | 0.5 | .05 |
| | Others | 12.0 | 1.0 | .99 | 1.0 | .99 | 0.7 | .36 |
| Current place of residence | Parent | 12.7 | ref | | ref | | | |
| | Campus housing ⁴ | 13.5 | 1.1 | .87 | 1.0 | .95 | 0.8 | .74 |
| | Off campus ⁵ | 14.2 | 1.1 | .57 | 1.0 | .95 | 1.3 | .45 |
| | Others | 15.0 | 1.2 | .52 | 1.1 | .80 | 2.0 | .08 |
| Age (years) | 18-20 | 7.1 | ref | | | | ref | |
| | 21-24 | 21.3 | 3.5 | <.01 | | | 4.1 | <.01 |
| | 25 or older | 12.7 | 1.9 | .06 | | | 1.9 | .01 |
| Sex | Female | 7.3 | ref | | | | ref | |
| | Male | 24.6 | 4.1 | <.01 | | | 4.3 | <.01 |
| Graduate status | Undergraduate | 12.3 | ref | | | | | |
| | Graduate | 14.0 | 1.2 | .48 | | | | |
| Current marital status | Single ⁶ | 17.7 | ref | | | | ref | |
| | Married | 6.3 | 0.3 | <0.01 | | | 0.3 | <.01 |
| | Committed ⁷ | 12.3 | 0.7 | .08 | | | 0.7 | .17 |
| Full/part time student | Part time | 13.0 | ref | | | | | |
| | Full time | 14.0 | 1.1 | .49 | | | | |
| International students | No | 14.2 | ref | | | | | |
| | Yes | 10.0 | 0.7 | .30 | | | | |

¹Percentage of students who drove a car after heavy drinking in each category of the variables. For instance, 7.3% of female students and 24.4% of male students drove a car after heavy drinking.

²Odds Ratio adjusted for other variables entered in the final model with p-value (likelihood ratio tests) less than equal to .1

³Wald test, p-values when compared to the reference group

⁴Campus residence hall, fraternity, sorority, other university/college housing

⁵Live independently off-campus

⁶Single, separated, divorced, widowed

⁷Engaged or committed dating relationship

Students who reported “not applicable” (either do not drive or do not drink) were excluded from this analysis

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