

# 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 <sup>1</sup>	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 <sup>2</sup>	252	50	99	41	88	57	73	54	512	50
Married/ partner Committed <sup>3</sup>	200	20	77	32	24	16	27	20	228	22
Committed <sup>3</sup>	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 <sup>4</sup>	18	4	14	6	18	11	17	12	67	6
Off campus <sup>5</sup>	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

<sup>1</sup>Numbers 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.

<sup>2</sup>Single, separated, divorced, widowed

<sup>3</sup>Engaged or committed dating relationship

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

<sup>5</sup>Live 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 <sup>1</sup>	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 <sup>2</sup>	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 <sup>3</sup>									
Yes	182	36%	103	43%	35	23%	39	28%	<0.01
No	222	45%	91	38%	58	38%	52	38%	
Not applicable <sup>4</sup>	94	19%	46	19%	60	39%	46	34%	
Drove after heavy drinking <sup>5</sup>									
Yes	48	10%	38	16%	9	6%	11	8%	<0.01
No	355	71%	153	63%	81	53%	81	60%	
Not applicable <sup>4</sup>	96	19%	50	21%	62	41%	44	32%	
Protective behaviors when students partied/socialized among who drinks <sup>6</sup>									
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 <sup>6</sup>									
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

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

<sup>2</sup> Had 5 or more drinks at a sitting within 2 weeks

<sup>3</sup> within 30 days

<sup>4</sup> Either “don’t drink” or “don’t drive”

<sup>5</sup> within 30 days, drove a car after having 5 or more drinks at a sitting

<sup>6</sup> 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 <sup>2</sup>	P-value
Total n=829		(%) <sup>1</sup>						
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 <sup>4</sup>	41.5	1.0	.99	1.1	.85	1.0	0.99
	Off campus <sup>5</sup>	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 <sup>6</sup>	48.4	ref				ref	
	Married	37.9	0.7	0.03			0.4	<.01
	Committed <sup>7</sup>	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

<sup>1</sup>Percentage 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.

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

<sup>3</sup>Wald test, p-values when compared to the reference group

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

<sup>5</sup>Live independently off-campus

<sup>6</sup>Single, separated, divorced, widowed

<sup>7</sup>Engaged 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 (%) <sup>1</sup>	Univariate model		Two predictors in the model		Final model	
			Odds Ratio	P-value	Odds Ratio	P-value	Odds ratio <sup>2</sup>	P-value
Total n=829								
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 <sup>4</sup>	13.5	1.1	.87	1.0	.95	0.8	.74
	Off campus <sup>5</sup>	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 <sup>6</sup>	17.7	ref				ref	
	Married	6.3	0.3	<0.01			0.3	<.01
	Committed <sup>7</sup>	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				

<sup>1</sup>Percentage 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.

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

<sup>3</sup>Wald test, p-values when compared to the reference group

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

<sup>5</sup>Live independently off-campus

<sup>6</sup>Single, separated, divorced, widowed

<sup>7</sup>Engaged 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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