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Crossing a Border for a Low-Cost, High-Risk Environment: Smoking Status and Excessive Drinking among Young Adults in Tijuana

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Abstract

This study examines the drinking and smoking behavior of 2,311 college-age adults traveling from San Diego, California to Tijuana, Mexico (December 2006 to December 2008). We describe this Border sample's drinking history and smoking status and estimate multivariate models of evening drinking participation and, conditional on drinking, blood alcohol concentration (BAC). Noting limitations, we present implications for identifying young adults at high risk of alcohol and tobacco use, particularly females, and lay the foundation for further research examining young adults' alcohol and tobacco use in reduced price scenarios.

Keywords

risky drinking; alcohol; smoking; tobacco; epidemiology; young adults

INTRODUCTION

A principal attraction of Tijuana, Mexico, for young San Diego residents and tourists is the nightlife. The legal drinking age in Tijuana is 18 compared to California's mandatory age of 21. Individuals perceive Tijuana as a "timeout" from their regular San Diego lives, with low prices and poorly enforced alcohol regulations contributing to heavy drinking patterns (Voas et al., 2006). Thus, border studies of youth crossing on weekend evenings capture sample populations that are at particularly high risk for alcohol use and related problems. Given the price differentials between cigarettes purchased in California compared to cigarettes purchased over the border (Shafey, Dolwick, & Guindon, 2003; Lindblom, 2008), Tijuana

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AUTHOR DISCLOSURES Radha Vishnuvajjala made these analyses possible by merging and cleaning the monthly collections of Border Girls data, and Alma Lopez assisted with the preparation and proofreading of the manuscript. Dr. James Collier of SAMHSA provided the California state estimates of drinking and smoking by gender for the specified age groups. Additionally, we would like to thank two anonymous reviewers who contributed substantive comments to an earlier version of this paper.

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may attract heavy smokers as much as drinkers. Likewise, the costs of initiating smoking or of ex-smokers relapsing are reduced in Tijuana. Further, the tobacco industry has targeted youth and young adults in clubs and other drinking environments (Katz & Lavack, 2002). In this report, we begin to assess the risk of cigarette smoking for this population.

Smoking is commonly related to alcohol use in behavioral studies. Focusing on American samples, the prevalence of alcohol use and of smoking among youth are higher than that of the general population (Centers for Disease Control, 2007; Substance Abuse and Mental Health Services Administration, 2006a; 2006b). The convergence of high smoking and drinking rates in youth and young adults leads to elevated concurrent use of cigarettes and alcohol. Among college students, the prevalence of drinking behavior among current smokers is close to 100%, although at most three of five drinkers also smoke cigarettes, and smoking is consistently related to drinking frequency and intensity (Weitzman & Chen, 2005). A third of adolescent smokers also reported binge-drinking episodes (Duhig, Cavallo, McKee, George, & Krishnan-Sarin, 2005). Notably, the association between drinking and smoking is not necessarily linear with smoking quantity (McKee, Falba, O'Malley, Sindelar, & O'Connor, 2007), nor with the correlation between less-than-daily smoking and binge drinking also found among adolescents (Duhig et al., 2005). Recently, Harrison et al. (2009) have shown in a college-age sample increased smoking and pleasure from smoking while drinking among experimenters compared to regular smokers. Concurrent use of both cigarettes and alcohol is associated with increased risk of either substance use disorder (Grant, Hasin, Choou, Stinson, & Dawson, 2004; Grucza & Bierut, 2006; Schmid et al., 2007; Dawson, Li, & Grant, 2008; SAMHSA 2008).

Relative costs of smoking and drinking may be an additional incentive for young adults' choosing to cross the U.S.-Mexican border. Examining consumer behavior within the United States, Chiou and Meuhlegger (2008) find that individuals are willing to travel 3 miles to save \$1 per pack of cigarettes, and that heavier smokers, with the goal of stockpiling, have greater incentives to travel for deals on cigarettes, such as Tijuana offers for border crossers from San Diego. Studies have consistently found that price elasticity tends to be higher for younger smokers (Franz, 2008), contributing to the incentive to find low-cost cigarettes.

Increasingly, studies of smoking are documenting the compounded effects of alcohol in health-outcome studies (e.g., Sakata et al., 2005; Sjödaahl et al., 2007; Khaw et al., 2008). The deleterious compounding effect of smoking on health should be particularly recognized since smoking behavior among alcohol-dependent individuals is more often the cause of mortality than their drinking behavior (Hurt et al., 1996).

Although recent work has expanded the study of alcohol consumption in natural drinking environments (Clapp et al., 2007; Clapp et al., 2009; Thombs et al., 2009; O'Mara et al., 2009; Voas et al., 2006), most studies of the relationship between smoking and drinking in college-age populations draw on random samples from college populations with data collection removed from a specific event or location. Two of these studies examine alcohol pricing and promotions (Thombs et al., 2009; O'Mara et al., 2009). The proximity of the Tijuana bar scene for San Diego residents provides a natural environment offering lower prices for both alcohol and tobacco. There are multiple questions regarding the impact of low prices across the border on a young adult population. These include the need to verify and characterize alcohol-tobacco comorbidity in the border area; investigate differences between someday and everyday smokers; investigate if going to Tijuana induces relapses among ex-smokers; investigate if going to Tijuana induces initiation among nonsmokers; and identify factors present in that special population that could be protective for nonsmokers. Although data to investigate most of these topics are currently very limited, in this study we take advantage of data currently available to address the preliminary questions.

More specifically, the goal of this effort is to verify and characterize alcohol-tobacco behavioral patterns in the border area including differences between someday and everyday smokers, paving the way for the design of future studies addressing the remaining questions. Use of this Border data allows for a real-time measure of smoking status and concurrent drinking outcomes among college-age Americans *en route* to and from a heavy drinking environment that is known to entail lower smoking and drinking costs.

METHODS

Data

The data used in these analyses are taken from a project investigating the relationship between female drinking and female victimization among young women crossing the U.S.-Mexico border. The Border data used for this analysis were collected between November 2006 and December 2008 and incorporate both male and female respondents. Groups of two to eight individuals crossing the U.S.-Mexico border on foot to visit Tijuana (southbound [SB]) were randomly approached by interviewers. To participate, at least one group member had to be a female aged 25 or younger, and the group members' intent had to be patronization of the bars/clubs in Tijuana. Southbound data were collected between 9 p.m. and midnight. Northbound (NB) data were collected between midnight and 5 a.m. See Kelley-Baker et al. (2008, December 1) for a more comprehensive description of the project. The sample for this study is limited to the 18- to 25-year-old age group, who constitute most of the southbound participants (94.3%). Southbound, 2,311 individuals in the 18- to 25-year-old age group participated in the Border survey, comprising our base "Border sample". Northbound, 1,866 individuals of this age group were interviewed, for a return rate of 81%.

Measures

Alcohol Use—Respondents were interviewed southbound regarding their past month's drinking. Current drinkers have had at least one alcoholic beverage in the past month and are coded 1; all others are coded 0. The National Institute on Alcohol Abuse and Alcoholism (2007) defines binge drinking as "a pattern of drinking alcohol that brings blood alcohol concentration (BAC) to 0.08 gram-percent or higher. For a typical adult, this pattern corresponds to consuming 5 or more drinks (male), or 4 or more drinks (female), in about 2 hours." A handheld SD400 Intoxilyzer manufactured by MPI/CMI was used to measure BACs. This device was programmed to withhold the BAC reading until the data were downloaded at a later time, which ensures the privacy of the participant. The past month's binge drinking was examined as a dichotomous variable (1=yes). Greater detail about past month drinking (how many days of the past month was one alcoholic drink consumed) and binge drinking (defined for females as at least one episode of 4 or more drinks in the past month) was also collected and is reported. Southbound BAC measures ranged from zero to 0.265, and northbound BAC measures ranged from zero to 0.296.

Northbound BAC is the primary outcome measure for this study. Some respondents were measured with very low BACs or BACs equal to zero on their return northbound. Thus, one set of analyses focuses on the probability of drinking at all during the evening in Tijuana (individuals with a BAC<.009 coded 0; individuals with a BAC of .01 or greater coded 1) and is applied to all respondents in the northbound sample. This is referred to as the *participation* sample. Distinguishing drinking participation based on northbound BAC is an imperfect indicator given the possibility that some individuals drank more than a drink early in the evening but metabolized the alcohol to a greater degree before returning northbound. Thus, it is important to remember that respondents with a northbound BAC<0.01 are not necessarily nondrinkers.

A second sample is defined as the *conditional intensity* sample. Conditional on drinking at all in Tijuana (registering a northbound BAC of .01 or greater), this sample is used to examine the continuous outcome of northbound BACs.

Smoking—As part of the southbound survey, respondents were asked about their current smoking status. Responses recorded whether respondents currently smoked daily, on some days, or not at all. Someday and everyday smokers are aggregated in some analyses as current smokers (coded 1, nonsmokers coded 0).

Demographics—As a result of the study design, the Border sample is biased toward females (66.5%). By definition, all members of our sample were of legal drinking age in Tijuana, but 73.8% of the sample was aged 18 to 20 (i.e., younger than the legal drinking age of 21 in California). More than half of the sample self-described as Hispanic (59.2%); 17.1% of the sample was White, non-Hispanic; and 12.1% was Black, non-Hispanic. An additional 11.6% of the sample self-reported in other racial/ethnic categories (Asian-American, Native Hawaiian/Pacific Islander, American Indian/Alaskan native, other).

Controlling for Concurrent Brief Intervention—Because these analyses use data originally collected for other purposes, it was also necessary to control for the implementation of a brief intervention delivered to randomly selected groups as the study participants crossed southbound into Mexico. This brief intervention discouraged overconsumption of alcohol, the outcome measure of this study.

Analysis

To assess whether the drinking and smoking behavior of our sample was representative of the California population, self-reported smoking and drinking behavior in the Border sample were compared to California data from the 2005-2007 NSDUH (SAMHSA, 2006a). Bivariate chi-square tests were used to compare demographic characteristics by current smoking and recent drinking behavior in the full southbound sample (ages 18-25, $N=2,311$).

Analyses involving evening drinking are provided only for participants in the southbound sample who also completed northbound measures ($N=1,866$). In sensitivity analyses, respondents who did not participate in the northbound interviews did not significantly differ from northbound participants on smoking status, binge-drinking history, or southbound BAC status. Logistic regression was used to predict the probability of respondents' drinking in Tijuana, as measured by their northbound BACs. Participants' intensity of drinking, conditional on their participation in drinking at all, was modeled as a linear outcome. The conditional intensity sample thus excludes individuals who measured with low or no BAC upon their return northbound, leaving $N=1,200$ for analysis. All multivariate models account for the nonindependence of individual respondents based on their recruitment in groups at the border. To avoid inflating the risk of a Type I error occasioned by the nonindependence of observations, all tests of hypotheses were conducted using generalized estimation equations in STATA 9.0, with "peer-group" included as a random variable.

RESULTS

Distinguishing the Southbound Border Sample from Its Source Population

Overall, 86.3% of the Border sample had had at least one alcoholic drink in the past month. The drinking prevalence in the Border sample exceeded normative drinking levels in the California population (Table 1) by an estimated 49%. This excess is distinctively higher for those crossers who could not legally drink in California but are of legal drinking age in Tijuana. For the age group of 18 to 20 years, the past month's alcohol use was 80% higher

(85.7% versus 47.6%) and binge drinking was 94% higher (60.7% versus 31.3%) in the Border sample than in the California population of the same age. For individuals aged 21 to 25 years, the prevalence of past month drinking and binge drinking in the Border sample also exceeded that of the California population aged 21 to 25 but to a lesser degree (by 35% and 38%, respectively).

The total results also mask an important difference in substance use patterns by gender. Specifically, the rate of current alcohol use was 24% higher among males than females in California but differed by less than 4 percentage points in the Border sample. Past month binge drinking shows the same shift in the gender ratio: the male prevalence of binge drinking in the California population aged 18 to 25 was 65% higher than the female prevalence, but only 25% higher than the Border sample. In other words, although both males and females crossing the border drank (and binge drank) at a higher rate than their peers in California, the female border crossers are proportionately at a greater risk for these behaviors than male border crossers.

Overall, the Border sample smoking rates, like the alcohol use rates, were higher than in the California population. Total current smoking in the Border sample was 36% higher than in the California population. As with alcohol use, the total results mask a gender ratio that differed from the California population. The male smoking prevalence in California (aged 18 to 25) was 62% higher than the female smoking prevalence (36.3% male versus 22.4% female), whereas the male smoking prevalence in the Border sample was only 29% higher (47.2% male versus 36.5% female). Among 18- to 20-year-olds, current smoking prevalence was 53% higher among males than females in California, but 32% higher among males than females in the Border sample. Among the 21- to 25-year-olds, current smoking was 67% higher among males than females in the California population, but only 21% higher in the Border sample. Thus, the male smoking prevalence (aged 18 to 25) in the Border sample was 30% higher than the male smoking prevalence in the California population, whereas the female smoking prevalence in the Border sample was 63% higher than in the California population.

Bivariate Descriptions

Although the smoking and drinking prevalences are higher in the Border sample than in the California population of the same age range, the demographic distribution of current smoking status and recent drinking behavior in the Border sample was as expected and is summarized in Table 2.

Respondents' recent frequency of drinking and of binge drinking (here defined as at least one episode of 4 or more drinks in the past month) varied significantly across current smoking status (Table 3). Smoking frequency was related to drinking frequency as well. Notably, over half of all respondents, regardless of smoking behavior, had experienced one to three binge-drinking episodes in the past month. However, the rate of daily smokers who reported three or more binge-drinking episodes *per week* in the past month (17.9%) was nearly triple the rate among nonsmokers (6.6%). Smoking frequency was also significantly related to the frequency of binge drinking, with fewer someday smokers (12.6%) reporting three or more weekly binge-drinking episodes than everyday smokers.

Concerning drinking behavior at the outset of their evening, everyday smokers were more than twice as likely as someday and nonsmokers to have been binge drinking at the outset of the evening (7.7%), before crossing the border into Mexico. At the end of the evening, northbound BAC levels increased significantly across smoking status. Nearly twice as many everyday smokers (47%) returned to California having binged on alcohol (BAC 0.08) than nonsmokers (25%).

Predicting Evening Alcohol Use

Because evening alcohol use was collected as respondents returned to California, the following results pertain to the northbound sample only.

Drinking Participation—Not all respondents consumed alcohol during their evening in Tijuana, at least to the degree of providing a measurable BAC upon their return to the border. Adjusting for demographic characteristics, drinking history, and southbound BAC upon entry to Mexico, the logistic model of drinking participation in Tijuana (northbound BAC ≥ 0.1) indicates that smokers were more likely to record a BAC level ≥ 0.1 upon their northbound return to California (see Table 4). The model indicates a significantly higher likelihood (OR=1.84, $p<0.001$) of smokers drinking in Tijuana relative to nonsmokers' odds of drinking that evening. In separate models (results not shown), we examined the interaction between gender and smoking status; although not significant, in stratified models, the odds ratio of drinking in Tijuana for female smokers was 2.16 ($p<0.001$) but for male smokers was 1.37 ($p=.185$).

Whether respondents were of legal drinking age by California law was not associated with whether they drank in Tijuana, where the legal drinking age is 18. These results hold for models drawing a distinction between everyday (OR= 2.36, $p<0.001$) and someday (OR= 1.68, $p=0.001$) smoking (model results not shown), but everyday smokers were no more likely to drink in Tijuana than someday smokers.

Conditional Intensity of Drinking—The second model shown in Table 4 examines the intensity of drinking (northbound BAC as a continuous variable), conditional on drinking at all in Tijuana. Among respondents with a northbound BAC level ≥ 0.1 , smokers drink more than nonsmokers ($\beta=0.01$, $p=0.042$), adjusting for demographic characteristics, drinking history, and southbound BAC. The greater intensity of evening drinking in Tijuana among smokers in this sample is mostly attributable to drinking intensity among everyday smokers. Distinguishing current smokers as someday or everyday smokers (model results not shown), everyday smokers drank significantly more than nonsmokers ($\beta=0.01$, $p=0.005$) and, marginally, than someday smokers ($\beta=0.01$, $p=0.05$). Drinking intensity among someday smokers with a northbound BAC level ≥ 0.1 did not differ significantly from that of their nonsmoking counterparts.

DISCUSSION

This study verifies that the relationship between smoking and drinking remains significant in a border environment with substantially lower prices for these behaviors. Confirming the literature generalizable to college-age populations, border-crossing smokers, particularly everyday smokers, are likely to have higher BACs at the end of an evening than nonsmokers. Further, there is no apparent “ceiling effect” for the role of smoking among young drinkers who go to the effort of crossing the border to be able to drink freely; smoking is related to drinking even when drinking prevalence is much higher than normal. Although smokers may be relying on the potential immediate benefits of smoking to performance (Meyerhoff et al., 2006), their concurrent use may be masking signals to curb their alcohol consumption, putting them at increased risk to drink to excess.

Consistent with the literature (Weitzman & Chen, 2005; SAMHSA, 2006b), the Border sample of smokers were more likely to be drinkers than the drinkers were to be smokers. Smoking quantity was also related to how much these young people had already drunk when they approached Tijuana for the evening. We found that everyday smokers were more likely than someday or nonsmokers to have already been binge drinking when entering Mexico to visit Tijuana and to measure as binge drinkers when returning to California. Everyday

smokers face a twofold risk compared to nonsmokers of returning to California drunk. Similarly, Cunningham, Selby, and van Mierlo (2006) found that a third of the everyday smokers were problem drinkers, compared to a quarter of the occasional smokers. The converse relationship has also been shown to be true, with increasing frequency of binge drinking positively associated with risk of tobacco use and dependence (Dawson et al., 2008). Although McKee et al. (2007) found that occasional smokers may be at higher risk of binge drinking overall, our findings point to a coincidence of high risks on the extreme of each behavioral continuum.

Not only does the current sample of young adults traveling to Tijuana present a high drinking risk, but they also smoke at rates at least a third higher than peers in California. Because the Border sample is disproportionately female, the total prevalence of smoking in a gender-balanced sample of border crossers would almost certainly be higher. Although the California Tobacco Control Program (CTCP) has successfully lowered smoking rates in that state (Warner, Mendez, & Alshangeety, 2008), youth traveling across the border to Tijuana are clearly a higher risk group that may require a targeted smoking prevention and cessation approach. Although there is some evidence that an effect of the CTCP is already being felt in Tijuana (Martínez-Donate et al., 2008), the population of American youth crossing the border, who are only visitors in the Tijuana community, likely perceived the diminished constraints on smoking relative to bars in California. Smoking in Tijuana is more socially permissible than in San Diego (Martínez-Donate et al., 2008), but local interventions that contribute to changes in norms in the bars and nightclubs may contribute to more progress in reducing social acceptability (Alamar & Glantz, 2006). In private college-age party environments in other states, social constraints on smoking may also be less rigid than in California bars.

Preliminary evidence indicates possible gender differences in drinking behavior given individual smoking status. Other researchers have found gender differences, such as stronger associations between current smoking and drinking categories for females than for males (Weitzman & Chen, 2005). Female border crossers appear to be more likely than their stay-at-home counterparts to smoke and drink than male border crossers compared to California males at home, suggesting that females crossing the border are more inclined toward risky behaviors. Essentially, in this Border sample of college-age individuals at high risk for drinking, female tobacco and alcohol use is much closer to that of males.

Limitations

Although studies have generally found self-reports of smoking status to be valid (Patrick et al., 1994), situational self-reports when the respondents have already consumed alcohol may introduce additional bias. Because the smoking questions were asked as the participants traveled southbound at the outset of their evening, the potential bias is minimized compared to a northbound query. Further, this research was not intended to identify a causal relationship between smoking and drinking. The self-reported smoking behavior refers to respondents generalized behavior patterns ("How often do you smoke cigarettes?") and thus do not reflect the amount smoked on the given evening, in contrast to the BAC measures that capture the relative intoxication of participants on the specific evening. Although individual participants in this sample were interviewed as members of peer groups of two to eight members, other than controlling for peer-group correlations in our statistical analyses, we did not include group-level measures of substance use or other group characteristics (e.g., size, gender composition, or self-reported closeness) to maintain our focus on individual behavior and because related research has not indicated any relationship between group characteristics and individual drinking behavior. Finally, interviewers at the border who randomly approached peer groups for participation in the study did not gather data on refusal, leaving us unable to calculate a refusal rate for our sample.

Conclusions

In sum, these analyses present novel findings on a young adult population headed to a bar environment with substantially lower costs. Young adults may be more closely identified for their evening drinking risk according to their self-reported current smoking status. This study lays the groundwork for the study of locales with reduced cost inputs to smoking initiation, quantity and maintenance, and relapse.

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Table 1

Prevalence of Smoking and Drinking Behaviors by Gender (ages 18-25): Comparison of Border data with California NSDUH data, 2005-2007^a

% (s.e.)	Past Month Alcohol Use		Past Month Binge Alcohol Use ^b		Current Cigarette Use ^c	
	Border	NSDUH	Border	NSDUH	Border	NSDUH
Ages 18-25 (Total)	86.3 (0.7)	58.1 (1.1)	60.3 (1.0)	38.2 (1.1)	40.1 (1.0)	29.5 (1.0)
Females	85.1 (0.9)	51.9 (1.5)	55.6 (1.3)	28.8 (1.4)	36.5 (1.2)	22.4 (1.1)
Males	88.6 (1.1)	64.1 (1.4)	69.6 (1.7)	47.4 (1.4)	47.2 (1.8)	36.3 (1.4)
Ages 18-20	85.7 (0.8)	47.6 (1.7)	60.7 (1.2)	31.3 (1.6)	39.6 (1.2)	27.5 (1.4)
Females	84.0 (1.1)	43.4 (2.4)	56.1 (1.5)	23.8 (2.0)	36.0 (1.4)	21.6 (1.7)
Males	89.6 (1.3)	51.8 (2.3)	71.1 (2.0)	38.5 (2.2)	47.6 (2.2)	33.1 (2.3)
Ages 21-25	87.9 (1.3)	65.2 (1.3)	59.1 (2.0)	42.8 (1.2)	41.6 (2.0)	30.9 (1.1)
Females	88.7 (1.7)	57.6 (1.8)	54.1 (2.6)	32.1 (1.6)	38.2 (2.6)	23.0 (1.4)
Males	86.6 (2.2)	72.2 (1.6)	66.3 (3.0)	53.2 (1.7)	46.3 (3.2)	38.4 (1.6)

^aEstimates of past month alcohol use, cigarette use, and binge drinking in California were provided by the Office of Applied Studies, Substance Abuse and Mental Health Services Administration based on combined data from the 2005, 2006, and 2007 National Surveys on Drug Use and Health.

^bAdopted NSDUH definition of past month binge alcohol use (5 drinks/session regardless of gender) for sake of comparison.

^cCurrent cigarette use is defined as "past month cigarette use" in NSDUH data and the query "how often do you smoke cigarettes?" in the Border data.

Table 2

Prevalence of Current Smoking and Drinking Behavior Among Southbound Border Crossers, by Demographic Group

	N=2,311	Current Smoking Status				Drinking History			
		Non-Smokers	Current Smokers	Someday Smokers	Everyday Smokers	Non-Drinker	Current Drinker	No Recent Binge	Binge Drinker ^b
	n	1,374	921	620	301	315	1,981	697	1,600
	%	59.9	40.1	27.0	13.1	13.7	86.3	30.3	69.7
Gender									
Male	775	407	364 ***	232 **	132 ***	88	685 *	235	537
	33.5	52.8	47.2	30.1	17.1	11.4	88.6	30.4	69.6
Female	1536	967	557	388	169	227	1296	462	1063
	66.5	63.5	36.6	25.5	11.1	14.9	85.1	30.3	69.7
Age Group									
18 to 20	1,705	1,024	672	465	207 **aa	242	1,453	509	1,188
	73.8	60.4	39.6	27.4	12.2	14.3	85.7	30.0	70.0
21 to 25	606	350	249	155	94	73	528	188	412
	26.2	58.4	41.6	25.9	15.7	12.2	87.9	31.3	68.7
Race/Ethnicity									
Hispanic	1368	840	518 **	399 *	119 ***,aaa	207	1151 ***	410	949 ***
	59.2	61.9	38.1	29.4	8.8	15.2	84.8	30.2	69.8
White, Non-Hispanic	396	214	180	96	84	20	374	84	310
	17.1	54.3	45.7	24.4	21.3	5.1	94.9	21.3	78.7
Black, Non-Hispanic	280	176	101	53	48	50	229	105	173
	12.1	63.5	36.5	19.1	17.3	17.9	82.1	37.8	62.2
Other ^c	267	144	122	72	50	38	227	98	168
	11.6	54.1	45.9	27.1	18.8	14.3	85.7	36.8	63.2

c² tests of significance separately compare the mutually exclusive groups of someday smokers and everyday smokers to each other [aaa p<.001, aa p<.01] and to nonsmokers as the reference category. Current smokers (aggregate of someday and everyday smokers) also compared to nonsmokers.

p<.001

**
p<.01.

Reference groups for alcohol use specified separately.

^aCurrent drinkers report having at least one alcoholic drink in the past month.

^bBinge drinkers report at least one episode of binge drinking in past month (4+ drinks/female; 5+ drinks/male) compared to those who have not binged on alcohol in the past month.

Table 3

Drinking History (past month) by Smoking Status, Ages 18-25

	n	Non-Smokers (n=1,374) n (%)	Someday Smokers (n=620) n (%)	Everyday Smokers (n=301) n (%)
Drinking Frequency (past month)				
Nondrinker	315	260 (19.0)	46 (7.5) ***	9 (3.0) ***,aaa
1-3 days all month	998	639 (16.6)	254 (41.2)	103 (34.3)
1-2 days per week	497	253 (18.4)	166 (27.0)	77 (25.7)
3+ days per week	486	220 (16.0)	151 (24.5)	111 (37.0)
Binge Drinking History (past month)				
No binge drinking episodes	697	521 (38.0)	137 (22.2) ***	37 (12.3) ***,aa
1-3 episodes all month	1,057	609 (44.4)	296 (48.0)	151 (50.2)
1-2 episodes per week	320	152 (11.1)	107 (17.3)	59 (19.6)
3+ episodes per week	223	90 (6.6)	78 (12.6)	54 (17.9)
Evening Southbound BAC				
BAC 0 - 0.009	1,936	1186 (87.0)	514 (83.3) *	229 (76.8) ***,aa
BAC 0.1 -0.079	280	142 (10.4)	88 (14.3)	46 (15.6)
BAC 0.08+	71	35 (2.6)	14 (2.3)	20 (6.8)
Evening Northbound BAC				
BAC 0 - 0.009	666	480 (43.6)	138 (28.4) ***	45 (18.9) ***,aa
BAC 0.1 -0.079	618	345 (31.4)	189 (38.9)	82 (34.4)
BAC 0.08+	551	275 (25.0)	159 (32.7)	111 (47.0)
mean northbound BAC (sd)		0.046 (.056)	0.060 (.069)	0.081 (.065)

χ^2 tests of significance separately compare the mutually exclusive groups of someday smokers and everyday smokers to nonsmokers as the reference category (**p<.001, *p<.01). In the far righthand column, χ^2 tests of significance compare everyday to someday smokers (aaa p<.001, aa p<.01).

Table 4

Multivariate Models of Tijuana Drinking: Participation! and Conditional Intensity

	Drinking Participation (n=1,799)				Drinking Intensity (n=1,140)			
	β	(95% C. I.)			β	(95% C. I.)		
Current smoker (<i>ref: nonsmoker</i>)	0.61	0.32	0.90	***	0.01	0.00	0.01	*
Southbound BAC ^a	52.10	37.72	66.47	***	0.63	0.52	0.74	***
Drinking History								
Current drinker (<i>ref: nondrinker</i>)	0.97	0.54	1.41	***	0.00	-0.01	0.02	
Binge drinker (<i>ref: no recent binges</i>)	0.86	0.54	1.19	***	0.01	0.01	0.02	**
Female (<i>ref: male</i>)	-0.33	-0.62	-0.04	*	0.00	-0.01	0.00	
Age 21 to 25 (<i>ref: age 18-20</i>)	-0.26	-0.58	0.05		-0.01	-0.02	0.00	**
Race/Ethnicity (<i>ref: Hispanic</i>)								
White, Non-Hispanic	0.38	-0.02	0.79		0.01	0.00	0.02	*
Black, Non-Hispanic	-0.65	-1.11	-0.19	**	-0.01	-0.02	0.00	
Other ^b	-0.09	-0.53	0.36		-0.01	-0.02	0.00	
Brief Intervention (<i>ref: control group</i>)	0.20	-0.14	0.54		0.00	-0.02	0.01	
constant	-0.70	-1.32	-0.07		0.08	0.06	0.09	

^aBecause BAC typically is scaled in small units (i.e., one one-thousandths), the coefficient on southbound BAC can be large.

^bOther race/ethnicity includes respondents self-identifying as Asian-American, Native Hawaiian/Pacific Islander, American Indian/Alaskan native, or other.