Racial/Ethnic Disparities in the Self-Reported Number of Drinks in 2 Hours Before Driving Becomes Impaired

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Objectives. We used data on self-reported impaired driving and the number of drinks the person states he or she can have in 2 hours before impairment to evaluate predictors of individuals' impairment thresholds by race/ethnicity.

Methods. Data come from the 2000, 2005, and 2010 US National Alcohol Surveys, with oversamples of Black and Hispanic populations. We estimated negative binomial models overall, by gender, and for those who reported impaired driving. Analyses focused primarily on 8553 respondents who drank alcohol and drove a car in the past year.

Results. In models that controlled for relevant available measures including body weight, sociodemographics, and drinking patterns, we found perceived impairment thresholds to be 30.3% (95% confidence interval = 23%, 38%) higher for Black drinkers and 26.3% (95% confidence interval = 18%, 35%) higher for Hispanic drinkers compared with White drinkers.

Conclusions. The greater number of standard drinks before perceived impairment reported by Black and Hispanic drivers implies a likely relative underreport of impaired driving and potentially higher severity of impairment when driving relative to White drivers. (*Am J Public Health.* 2015;105:1409–1414. doi:10.2105/AJPH.2014.302276)

Many drivers in alcohol-involved fatal crashes have no previous driving under the influence (DUI) arrests and it is estimated that only about 1% of DUI incidents result in arrests each year, highlighting the need for research supporting primary prevention in the general population.[1] The proportion of drivers in fatal crashes with a 0.08 or higher blood alcohol content (BAC) has been stable in recent years at around 22%.[2] Rates of past-year DUI self-report in national surveys have been found to differ substantially by gender and across the 3 largest US race/ethnicity groupings. A study of rates in 2000 found the highest rates for White men (22%) compared with Black (16.5%) and Hispanic (16.8%) men. Rates for women were lower, with White women also the highest (11.8%) compared with Black (9.2%) and Hispanic (6.7%) women.[3] A review of disparities in alcohol-attributable crash injuries found higher rates among Whites in Fatality Accident Reporting System data, but lower rates for Whites in some studies of specific states and, in 1 case, for those in the group aged 55 years and older only, suggesting some inconsistency in disparity findings between self-report incidence and injury rates.[4]

The number of drinks that drinkers feel that they can consume in 2 hours before driving becomes impaired (here termed impairment threshold) is a measure that offers a unique window into drinkers' subjective views on impairment—one that has not been previously analyzed in a population sample. This measure is relevant both to the interpretation of self-reported DUI and to the potential severity of DUI episodes. In particular, one might expect that groups with a higher mean impairment threshold would also show a lower self-reported prevalence of DUI at any given level of drinking, thus biasing analyses of differences between these groups. A higher impairment threshold group mean would also suggest that the severity of reported DUI episodes might be higher for that group. Findings among college students have indicated that estimated BAC and reports of subjective intoxication interacted such that DUI was more likely when students had higher estimated BAC but perceived less intoxication, emphasizing the importance of subjective impairment for DUI risk.[5] Similarly, this risky situation would be more likely to occur among those with high impairment thresholds.

Studies using the US National Alcohol Surveys (NAS) have indicated the importance of heavy occasions,[6,7] for risk of self-reported DUI. The current study builds on previous analyses of subjective intoxication measures and drink alcohol content (drink strength) in which some evidence for differences between non-Hispanic Black (hereafter termed as Black), Hispanic, and non-Hispanic White (hereafter termed as White) persons in the United States has been found.[8,9] Analyses showed that Blacks reported needing fewer drinks to feel drunk, and male Hispanics reported more, compared with Whites.[8] Research on drink strength has found that Black male drinkers have higher-strength drinks on average than White males both at home[9] and in bars.[10] Larger than standard drinks have also been reported in a study of US Hispanic groups, particularly for spirits drinks.[11] Here, analyses focused on Black, Hispanic, and White drinkers, evaluating predictors of differences in impairment thresholds, defined with a drink strength-adjusted measure of the amount (in standard drink equivalents) that respondents believe they could consume in 2 hours before their driving would be impaired, including racial/ethnic group indicators representing differences not accounted for by other measured factors. Drink strength adjustments improve the comparability of this measure across gender and race/ethnicity groups by addressing this potential source of bias in survey self-report measures.

METHODS

We drew data from the 3 most recent NAS samples, nationally representative list–assisted random-digit–dialed telephone surveys of the United States with oversamples of Hispanics

and Blacks. The 2000 NAS included 7612 respondents, with a cooperation rate of 58%; the 2005 NAS had 6919 respondents and a cooperation rate of 56%. The 2010 NAS had 6855 cases in the landline sample and an overall cooperation rate of 52%. Nonresponse does not necessarily bias population estimates[12,13] and these rates are consistent with those from recent US telephone surveys.[14] Using census data,[15–17] we weighted all surveys to the general population of the United States at the time they were conducted, taking account of nonresponse, age, gender, racial/ethnic group, and geographic area. Analytic models focused on the drink-strength–adjusted number of drinks in 2 hours before driving becomes impaired (impairment threshold) and included 8553 eligible respondents aged 20 years and older who in the past year both drank and drove a car (impairment threshold was not asked of nondrinkers or nondrivers) and who had complete data for all measures. Measures involving additional missing values were past-year marijuana use (n = 323), body weight (n = 396), and reporting 5 or more drinks in a day on a monthly basis in questions on decades of heavy drinking during the 20s, excluding 18- and 19-year-olds (n = 394).

Measures

Questions on impaired driving assessed past-year incidence of having "driven a car when you had drunk enough to be in trouble if the police had stopped you?" We assessed subjective impairment threshold related to driving with "How many drinks do you think you can have, over a 2-hour period, before your ability to drive becomes impaired? By impaired we mean you had too much to drink to drive safely." These questions were asked of all drinkers who drove a car in the past year. We adjusted the reported number of US standard drinks (14 grams ethanol) by the respondent's estimated drink strength and capped it at 30 drinks.

We based past-year alcohol volume and maximum drinks in a day on responses to the graduated frequency series,[18,19] which, after asking the maximum[20] on any day in the previous 12 months,[20] asks separately about frequencies of each relevant quantity level: 12 or more, 8 to 11, 5 to 7, 3 to 4, and 1 to 2 drinks in a day over the past year. Responses to questions on the beverage-specific frequency of drinking are used to estimate the number of days each beverage type was drunk in the previous 12 months. For each beverage type, respondents then reported their relative frequency of 1 to 2, 3 to 4, or 5 or more drinks and we combined these responses to calculate beverage-specific alcohol volume. We adjusted reported drinks for estimated drink alcohol content by using estimates of beverage-specific drink alcohol content derived from 2 previous national studies of home drinks, and a separate study of bar and restaurant drinks in Northern California.[10,21]

We created race and ethnic group indicators for White (non-Hispanic), Black (non-Hispanic), Hispanic (of any race), and all others combined. We coded educational attainment as less than high school, high-school graduate only, some college, and college graduate or higher. We coded marital status as never married versus all other categories on the basis of preliminary analyses. We coded religion as Catholic versus all other categories on the basis of preliminary analyses, which showed that the Catholic group had higher number of drinks for impairment than other religious groups. We included employment status in preliminary models but dropped it because we found no significant effects. We converted income to 2005 dollars by using the midpoint of the categories asked in each survey year and then recategorized it into $0 to $19 999, $20 000 to $39 999, $40 000 to $69 999, $70 000 or more, and income missing. We created state groupings by "wetness" of drinking culture in a previous study based primarily on the estimates of heavy occasion drinking and per capita apparent consumption of alcohol.[22] Here we simplified a 6-level categorization that resulted in Pacific Coast versus all other regions on the basis of preliminary analyses indicating no significant differences between other regions. A 4-level family history of alcohol problems scale measures the degree of biological relatives' involvement with alcohol problems (none, second-degree, first-degree, both). We assessed lifetime heavy drinking through questions on the frequency of 5 or more drinking days in the respondents' teens, 20s, and 30s, and operationalized it with an indicator of monthly heavy drinking during their 20s on the basis of preliminary analyses. Indicators identified those reporting any marijuana use and any tobacco use in the past year. We included an indicator for those living in states where the per se BAC limit for driving was 0.10 in 2000 (note that by 2005 all states had a limit of 0.08). To capture body water and other size-related influences, we included self-reported measures of body weight in pounds and height in inches in each model.

Analyses

We estimated mean values for any past-year impaired driving among current drinkers and impairment threshold among current drinkers who drive using survey weights in Stata version 13 (StataCorp LP, College Station, TX). Confidence intervals are presented but differences were not tested as testing these influences was the focus of the controlled models. Among past-year drinkers who drove a car, the negative binomial models of impairment threshold included key predictor measures as described previously and we estimated them using survey weights with Stata version 13.[23] We used negative binomial models because the dependent variable was a count with a skewed distribution and likelihood-ratio tests indicated overdispersion.

We estimated models overall, for those who drove while impaired, and for each gender group separately. To evaluate relationships across regions of the dependent variable distribution, we estimated quantile regression models, reporting results for the 0.25 and 0.95 models. These models implemented weighted minimum absolute deviations estimation and used sample weights in Stata version 13.[24] The 0.5 quantile model evaluated deviations around the median of the distribution whereas we weighted other models to focus on other areas such as the 0.95 model in which the weighted median will be greater than 95% and less than 5% of the responses. This allowed us to evaluate differences in the size and significance of coefficients around differing impairment thresholds, say 3 versus 8, while still using all of the observations. Predictors for those reporting low impairment thresholds may be different from those who report higher thresholds. We evaluated significance in the quantile regression models by using bootstrapped standard errors with 20 repetitions.

RESULTS

Mean values and group percentages for the analytic sample are presented in Table 1 for gender and race/ethnicity subgroups. Group differences in potential predictors of self-reported impairment thresholds such as body weight, educational attainment, drinking patterns, and drinking histories highlight the importance of evaluating group differences in the multivariable models. The prevalence of self-reported impaired driving and the mean impairment threshold overall, by gender and by gender and race/ethnicity group, are presented in Tables 2 and 3. We found a higher prevalence of past-year impaired driving among White respondents for both men and women. We observed distributional differences by ethnicity in the mean impairment threshold (in standard drinks after adjusting for drink sizes) for both men and women, with Black and Hispanic drinkers reporting higher numbers than White drinkers in nearly all years. Compared with White drinkers, both Black and Hispanic drinkers had flatter distributions with more reports of higher numbers of drinks. Among Hispanics, 31.2% reported an impairment threshold of greater than 5 compared with 28.0% of Black and 12.3% of White respondents. An impairment threshold of greater than 10 was reported by only 1.3% of White respondents but 5.1% of Black and 7.7% of Hispanic respondents.

The estimated models, presented in Table 4, consistently show significant positive coefficients for Black and Hispanic indicator variables compared with the White reference group. Effect sizes in the negative binomial models indicated that Black drinkers and Hispanic males reported impairment thresholds about 30% higher than the White drinker reference group, and Hispanic female drinkers were 17.6% higher. Quantile regression results indicated that those in the 0.25 quantile model reported 0.33 more drinks among Black drinkers and 0.20 drinks among Hispanic drinkers whereas those in the 0.95 quantile model reported 2.12 additional drinks among Black drinkers and 2.79 additional drinks among Hispanic drinkers.

We found a number of predictors to be significant in the overall model, with some differences in significant coefficients across subgroup models. For example, men on average reported requiring more drinks to reach impairment than women. We included a number of alcohol measures in the models. The most consistent positive predictor was the past-year maximum number of adjusted drinks in a day, which was significant in all models. An indicator for having 5 or more drinks in a day on a monthly basis while in their 20s was significant overall and for men, but not among women or impaired drivers. Total alcohol volume was a positive predictor in the full sample, for women and in the quantile

TABLE 1—Mean Values and Indicator Percentages for Variables Included in Models for Current Drinkers and Relevant Subgroups, by Gender and Race/Ethnicity: National Alcohol Surveys, United States, 2000, 2005, and 2010

Characteristic	All Drinkers	Men	Women	Non-Hispanic Black	Non-Hispanic White	Hispanic
No.	8553	4463	4090	946	6207	1125
Male, %	53.7	100	0	54.4	52.4	64.6
Mean age, y	43.8	43.8	43.8	39.1	45.1	38.2
Race/ethnicity, %						
Non-Hispanic White	80.2	78.2	82.6	0	100	0
Non-Hispanic Black	6.6	6.7	6.5	100	0	0
Hispanic	8.8	10.6	6.7	0	0	100
Other	4.4	4.5	4.2	0	0	0
Participation, %						
2000 survey	37.3	38.4	36.0	40.7	37.8	35.4
2005 survey	39.9	39.2	40.6	41.0	39.3	40.0
2010 survey	22.8	22.4	23.4	18.3	22.9	24.6
Family Alcohol Problem Scale mean score	0.96	0.87	1.05	1.00	0.95	1.03
Marijuana use in previous y, %	9.7	11.3	7.9	16.0	9.1	8.6
Never married, %	15.6	15.9	15.3	29.7	13.6	17.9
Pacific region, %	16.6	17.1	16.0	8.9	14.7	31.7
BAC 0.10 state, %	25.5	26.8	24.1	28.3	26.7	17.6
5 or more drinks/d on monthly basis in 20s, %	51.7	63.2	38.3	44.6	52.1	53.9
Smoker in previous y, %	31.6	36.1	26.2	32.3	31.7	27.3
Income, %						
$0-$19 999	12.9	11.7	14.3	21.8	10.6	23.6
$20 000–$39 999	21.7	21.5	21.9	27.5	20.6	27.9
$40 000–$69 999	27.2	27.1	27.3	25.7	28.1	21.8
≥ $70 000	30.4	32.7	27.7	19.7	32.2	21.0
Education, %						
Not a high school graduate	6.7	7.0	5.0	9.1	4.6	20.5
High school graduate	25.6	26.5	24.2	28.9	25.4	25.9
Some college	28.7	26.2	31.6	33.0	28.2	29.1
College graduate or more	39.3	39.3	39.2	29.0	41.8	24.5
Catholic religion, %	28.5	27.9	29.3	8.8	26.4	64.7
Alcohol volume, mean drinks/y	346.8	464.7	209.9	346.1	342.0	390.1
Liquor volume, mean drinks/mo	9.7	13.2	5.6	13.1	9.6	7.9
Beer volume, mean drinks/mo	14.8	23.3	5.0	15.3	14.4	17.3
Maximum drinks/d, mean	4.9	6.0	3.6	4.1	4.9	5.6
Bodyweight in lbs, mean	175.7	193.8	154.6	187.7	175.4	172.8
Height in inches, mean	67.7	70.3	64.6	68.0	67.8	66.7
Drove drunk, %	9.5	12.9	5.6	8.9	9.8	8.5

Note. BAC = blood alcohol content.

TABLE 2—Drinkers' Self-Reported Prevalence of Alcohol-Impaired Driving in the Past Year for Gender and Race/Ethnicity Groups, by Survey Year: National Alcohol Surveys, United States, 2000, 2005, and 2010

Survey Participants Reporting Any Alcohol-Impaired Driving	Total, % (95% CI)	Non-Hispanic White, % (95% CI)	Non-Hispanic Black, % (95% CI)	Hispanic, % (95% CI)
All drinkers				
2000	8.8 (7.9, 9.8)	9.3 (8.2, 10.4)	6.1 (3.8, 9.6)	8.1 (5.6, 10.5)
2005	7.4 (6.4, 8.4)	8.1 (6.8, 9.2)	5.9 (3.0, 8.8)	5.7 (3.7, 7.8)
2010	7.2 (6.1, 8.3)	7.4 (6.2, 8.7)	3.8 (0.8, 6.7)	7.2 (3.5, 11.0)
Men				
2000	12.6 (11.0, 14.1)	13.1 (11.2, 14.9)	9.7 (5.8, 13.6)	12.0 (8.1, 15.9)
2005	10.6 (8.9, 12.2)	11.7 (9.7, 13.7)	9.7 (4.5, 14.8)	7.2 (4.5, 10.0)
2010	9.4 (7.6, 11.1)	10.3 (8.2, 12.3)	5.2 (0.6, 9.8)	9.2 (3.7, 14.7)
Women				
2000	4.8 (3.8, 5.8)	5.5 (4.2, 6.7)	2.7 (0.2, 5.3)	2.4 (3.2, 4.5)
2005	4.1 (3.1, 5.2)	4.6 (3.2, 5.9)	1.9 (0.0, 3.8)	3.2 (0.1, 6.2)
2010	4.7 (3.3, 6.1)	4.4 (2.9, 5.9)	2.3 (0.0, 6.0)	3.8 (0.2, 7.4)

Note. CI = confidence interval.

regression models, and the liquor volume coefficient was positive and significant in the full sample, for men and in the quantile regression models. Beer volume was generally not significant but was a significant negative predictor for women. Past-year marijuana use and the indicator for states with 0.10 per se BAC limit in 2000 were not significant in any models. Body weight was a significant positive predictor overall, for men and in the quantile models. Income and educational attainment were not significant predictors overall or in the gender-specific models; however, among impaired drivers and in the 0.95 quantile model, higher incomes were associated with lower numbers of drinks.

We saw an interesting contrast in the associations for educational attainment indicators in the quantile regression results. In the 0.25 model emphasizing the association for those reporting lower impairment thresholds, we saw a positive effect of education, whereas in the 0.95 model emphasizing associations for those reporting higher impairment thresholds, we saw a strong negative effect. Not surprisingly, having reported past-year impaired driving was a positive predictor and significant in all models.

TABLE 3—Drinkers' Self-Reported Mean, Median, and Interquartile Range for the Number of Drinks in 2 Hours Before Driving Becomes Impaired, by Gender: National Alcohol Surveys, United States, 2000, 2005, and 2010

	Total			Non-Hispanic White			Non-Hispanic Black			Hispanic		
Survey Participants	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR	Mean	Median	IQR
All drinkers												
2000	3.4	2.9	2.2	3.2	2.9	2.0	4.5	3.7	3.2	4.3	3.2	3.1
2005	3.1	2.7	2.0	3.0	2.6	1.9	3.8	3.3	2.7	3.9	3.4	2.8
2010	3.2	2.6	2.0	3.1	2.6	1.8	3.8	2.8	3.3	4.0	2.8	3.4
Men												
2000	4.0	3.3	2.5	3.7	3.2	2.4	5.2	4.1	3.5	4.9	3.9	3.9
2005	3.6	3.3	2.3	3.4	3.2	2.0	4.3	3.7	3.3	4.4	3.8	3.0
2010	3.7	3.0	2.2	3.5	3.0	2.1	4.3	2.9	2.8	4.5	3.1	4.1
Women												
2000	2.8	2.3	1.6	2.6	2.2	1.6	3.7	3.3	2.5	3.1	2.3	1.5
2005	2.7	2.4	2.0	2.6	2.3	1.9	3.1	2.9	2.6	2.9	2.5	2.7
2010	2.7	2.4	2.0	2.6	2.3	1.8	3.3	2.8	3.6	3.2	2.6	2.8

Note. IQR = interquartile range.

DISCUSSION

The broadly supported finding of higher self-reported thresholds for drunk driving among Hispanic and Black drinkers relative to White drinkers has important implications for DUI prevention and epidemiology. This difference is seen in both drinkers who reported past year DUI episodes and those who did not, in men and women, and in those reporting both lower and higher impairment thresholds in the quantile regression models, suggesting cultural differences in the meaning or understanding of impairment. These race/ethnicity effects persisted after we controlled for many relevant factors including demographic measures, body weight and height, current drinking patterns, drinking history, and family-based genetic factors. Importantly, these differences suggest that comparisons of self-reported DUI rates could be biased across these groups because of higher perceived drinks-to-impairment thresholds among Black and Hispanic drinkers. A related possible implication is that the severity

TABLE 4—Negative Binomial and Quantile Regression Models Predicting the Reported Number of Drinks in 2 Hours Before Driving Becomes Impaired: National Alcohol Surveys, United States, 2000, 2005, and 2010

Variable	All Drinkers, Negative Binomial, IRR (95% CI)	Men, Negative Binomial, IRR (95% CI)	Women, Negative Binomial, IRR (95% CI)	Q25, Adjusted Standard Drinks (95% CI)	Q95, Adjusted Standard Drinks (95% CI)	Drunk Drivers, Negative Binomial, IRR (95% CI)
Male	1.15* (1.09, 1.21)	NA	NA	0.35* (0.27, 0.43)	0.63* (0.42, 0.83)	1.13* (1.02, 1.25)
Race/ethnicity						
Non-Hispanic White (Ref)	1.00	1.00	1.00	1.00	1.00	1.00
Non-Hispanic Black	1.30* (1.23, 1.38)	1.31* (1.21, 1.41)	1.29* (1.20, 1.39)	0.33* (0.23, 0.42)	2.12* (1.56, 2.68)	1.31* (1.13, 1.51)
Hispanic	1.26* (1.18, 1.35)	1.30* (1.19, 1.42)	1.18* (1.08, 1.29)	0.20* (0.00, 0.40)	2.79* (1.56, 4.03)	1.23* (1.07, 1.41)
Other	1.15* (1.03, 1.29)	1.19* (1.03, 1.37)	1.09 (0.92, 1.29)	0.14 (–0.05, 0.34)	2.20* (1.33, 3.06)	1.45* (1.16, 1.83)
≥5 drinks/d on monthly basis in 20s	1.07* (1.04, 1.11)	1.09* (1.04, 1.13)	1.05 (0.99, 1.10)	0.16* (0.10, 0.21)	0.34* (0.17, 0.51)	1.06 (0.96, 1.17)
Catholic	1.04* (1.00, 1.08)	1.07* (1.01, 1.12)	1.00 (0.96, 1.05)	0.11* (0.04, 0.17)	0.29* (0.09, 0.50)	1.03 (0.94, 1.12)
Weight, per 10 lbs	1.01* (1.00, 1.01)	1.01* (1.00, 1.01)	1.00 (0.99, 1.00)	0.02* (0.01, 0.03)	0.03* (0.01, 0.05)	1.00 (0.99, 1.00)
Alcohol volume	1.02* (1.00, 1.03)	1.01 (0.99, 1.03)	1.04* (1.01, 1.06)	0.06* (0.04, 0.06)	0.09 (–0.09, 0.27)	1.00 (0.98, 1.04)
Liquor volume	1.03* (1.01, 1.04)	1.01* (1.00, 1.02)	1.00 (0.99, 1.01)	0.04* (0.02, 0.05)	0.13* (0.01, 0.22)	1.00 (0.99, 1.01)
Beer volume	1.01 (0.98, 1.03)	1.01 (0.98, 1.02)	0.98* (0.96, 0.99)	–0.02* (–0.03, 0.0)	0.13* (0.00, 0.26)	1.00 (0.99, 1.01)
Income						
$0–$19 999	1.02 (0.96, 1.09)	1.02 (0.94, 1.12)	1.03 (0.96, 1.11)	–0.01 (–0.10, 0.07)	0.58* (0.22, 0.95)	1.07 (0.92, 1.24)
$20 000–$39 999 (Ref)	1.00	1.00	1.00	1.00	1.00	1.00
$40 000–$69 999	0.98 (0.94, 1.03)	0.98 (0.92, 1.04)	0.99 (0.93, 1.05)	0.01 (–0.06, 0.08)	–0.22 (–0.48, 0.04)	0.90* (0.81, 0.99)
≥ $70 000	1.00 (0.96, 1.05)	0.98 (0.92, 1.05)	1.04 (0.97, 1.11)	0.10* (0.02, 0.19)	–0.12 (–0.38, 0.14)	0.86* (0.77, 0.96)
Education						
< high school (Ref)	1.00	1.00	1.00	1.00	1.00	1.00
High-school graduate	1.09 (0.99, 1.19)	1.10 (0.98, 1.23)	1.09 (0.96, 1.23)	0.33* (0.23, 0.43)	–0.28 (–0.98, 0.43)	1.30* (1.02, 1.64)
Some college	1.04 (0.96, 1.14)	1.05 (0.94, 1.18)	1.04 (0.92, 1.17)	0.34* (0.27, 0.42)	–0.60 (–1.40, 0.04)	1.13 (0.89, 1.44)
≥ college graduate	1.01 (0.92, 1.10)	1.03 (0.93, 1.15)	0.98 (0.87, 1.11)	0.31* (0.24, 0.38)	–1.05* (–1.69, –0.40)	1.15 (0.91, 1.45)
Maximum drinks/d	1.02* (1.01, 1.02)	1.02* (1.01, 1.02)	1.02* (1.01, 1.03)	0.03* (0.01, 0.04)	0.13* (0.06, 0.19)	1.02* (1.01, 1.03)
Drove drunk	1.20* (1.14, 1.26)	1.21* (1.13, 1.28)	1.20* (1.10, 1.31)	0.71* (0.61, 0.81)	0.45* (0.15, 0.74)	NA

Notes. CI = confidence interval; IRR = incidence rate ratio; NA = not applicable; Q25 = 0.25 quantile mode; Q95 = 0.95 quantile model. All models include control variables for age, survey year, marijuana use, Pacific region, Catholic religion, residence in a state with 0.10 blood alcohol content limit, cigarette smoker, and height.
*$P < .05$ at the 95% confidence level.

of the DUI episodes reported may be greater for Black and Hispanic than for White drinking drivers for the same reason.

Although effective policies preventing impaired driving such as per se laws, checkpoints, and random BAC testing, as well as the severity and certainty of penalties and the enforcement of these remain of primary importance, there is a role for public health information campaigns that publicize these policies so as to enhance deterrence.[25] The influence of social norms has also been found to help determine the effectiveness of these polices[26]; for example, an earlier study that used NAS data found that the passage of 0.08 per se laws reduced the reported mean number of drinks to feel drunk between 1979 and 2000.[8] The acceleration of crash risk as BAC rises above 0.06, and especially after 0.10,[25] and suggests the importance of marginal increases in intoxication at higher levels, again serving to emphasize the relevance of the number of standard drinks consumed to crash risk. However, an experiment on providing information to drivers going to Mexico for the night through a "Know Your Limit" card did not reduce BACs measured on their return to the United States; however, reminding drivers about the risks of DUI did lower returning BACs,[27] suggesting that avoidance of penalties was more important than errors in tracking intake. Conversely, a recent survey of drivers who drink conducted in 4 areas found that Black males overestimated the probability of being stopped and overestimated jail sentences for a DUI conviction,[28] suggesting the importance of alternative strategies for further reducing DUI events for this group.

Our results supporting cultural differences in perceived amounts of intake associated with driver impairment, together with previous findings of stronger drinks for Black and Hispanic drinkers,[29] highlight potential avenues for culturally informed norm-based education and intervention efforts regarding drink choices. They emphasize too the need to reconcile culturally determined perceptions of intoxication and impairment with more objective physiological impairment outcomes for a given gender and body weight. Further studies focused on race/ethnicity group differences in norms, attitudes, and expectations regarding alcohol impairment, particularly in relation to driving risks, are needed to

understand more fully the differences identified in this study that appear to be broadly applicable to Black and Hispanic drinkers at all levels of consumption. ■

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Contributors

W. C. Kerr was responsible for all aspects of the study including conceptualization, data coding and analyses, and article preparation. T. K. Greenfield was involved in the conceptualization and analyses as well as article preparation.

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Human Participant Protection

Study protocols were approved by the Public Health Institute institutional review board (IRB I11–019).

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