

Predictors of driving under the influence (DUI) and non-DUI events among a multiethnic blue-collar cohort

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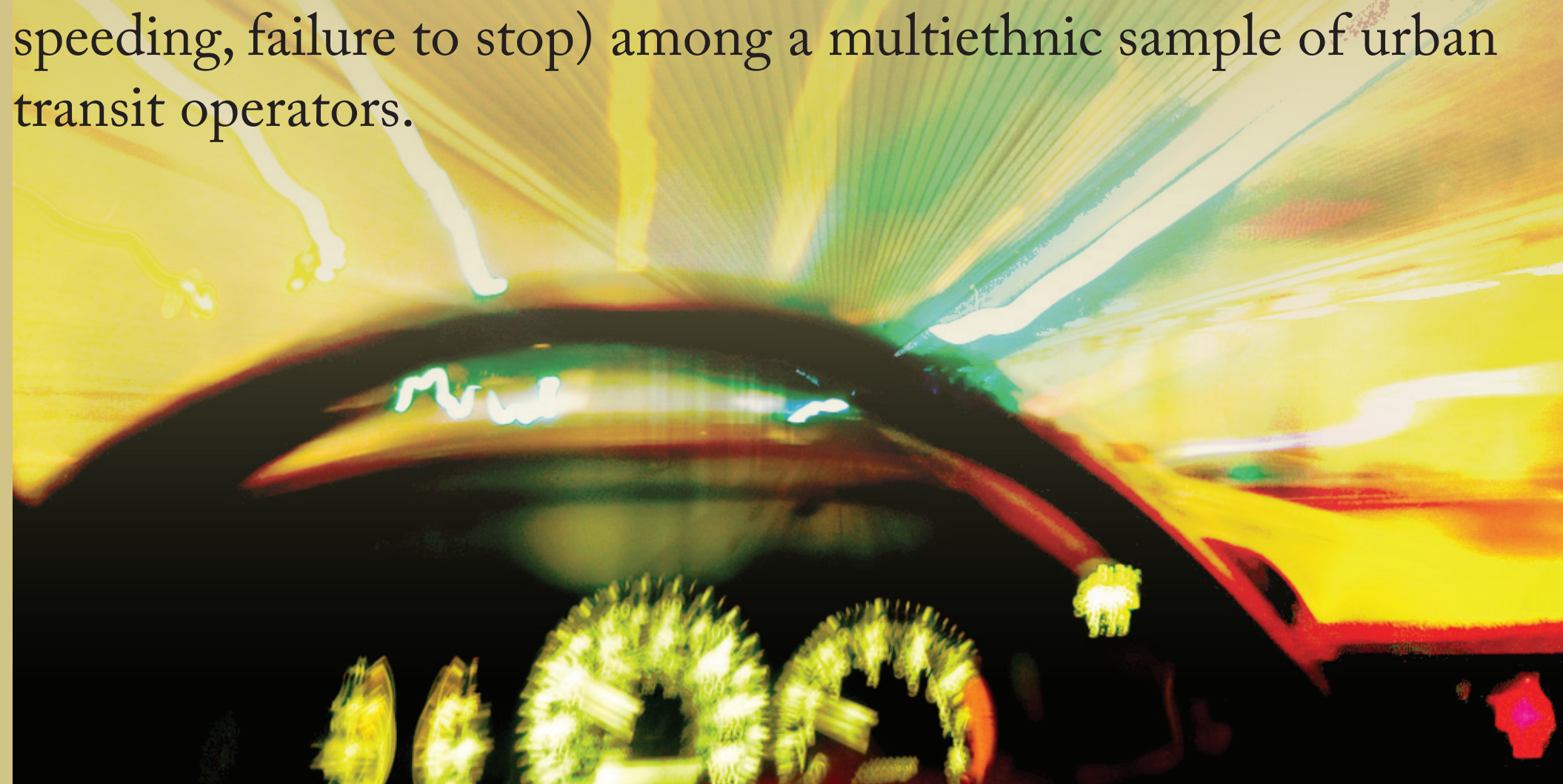
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Introduction

Most driving under the influence (DUI) events are alcohol-related (as opposed to driving under the influence of illicit drugs). In addition, previous research has shown that smokers have higher rates of adverse job outcomes, such as absenteeism, occupational accidents, and injuries, than non-smokers. This study assessed the contribution of smoking, alcohol use factors, and demographic and occupational factors to the likelihood of driving under the influence (DUI) and non-DUI events (e.g., speeding, failure to stop) among a multiethnic sample of urban transit operators.



Sample and Methods

The sample consisted of San Francisco urban transit operators who participated in the 1993-95 MUNI Health and Safety Study, which consisted of an occupational health survey and medical examination. A total of 1,974 workers underwent the medical exam, and 78% (n=1,553) also completed surveys about work-related stress, substance use, and other factors. Complete data for these analyses were available for 1,271 workers. Non-response analysis indicated that workers with missing data were more likely to be African American, and to be current smokers.



Covariates were demographic factors (age, race/ethnicity, marital status) and occupational factors (years driving as a transit operator; full or part-time work status). Substance use measures included tobacco and alcohol use. For tobacco, the smoking status of all respondents was coded as current, former, and never. For alcohol, a measure of quantity-frequency of alcohol consumption was calculated, and all respondents were categorized based on their CAGE score. The CAGE is a brief screener for alcohol dependence consisting of 4 questions: (1) Have you ever felt you ought to cut down on your drinking? (2) Have people annoyed you by criticizing your drinking? (3) Have you ever felt bad or guilty about your drinking? (4) Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover (eye opener)? Respondents who answered affirmatively to at least two questions were coded as having a positive CAGE score.

Using an historical prospective study design, survey and medical exam data obtained from workers who participated in the 1993-95 San Francisco MUNI Health and Safety Study were matched against California Department of Motor Vehicle records through the year 2000. Prevalence of DUI and non-DUI events by sample characteristics was assessed with chi-square tests of independence. Separate logistic regression models were developed for DUI and non-DUI events.

Results

Sample Characteristics (Table 1)

The majority of transit operators in the sample were African American (53.6%). Mean age was 46.7 years (SD 7.8), and mean years employed as a transit operator was 12.4 (SD 7.8). Most workers in the sample were male (84%), and nearly 90% worked full-time. Regarding smoking status, 26% were former smokers, 28% were current smokers, and nearly 46% had never smoked. About 8% of workers had a positive CAGE screener indicating risk for alcohol dependence.



During follow-up, 28 workers had a DUI, and 142 workers had a non-DUI event. Compared to workers who did not have a DUI, workers with a DUI had significantly higher mean alcohol consumption (1.126 vs. .685; $t=-4.455$, $df=28.625$, $p<0.001$), but there were no differences in age or number of years worked. Workers who had a non-DUI event had significantly higher alcohol consumption (0.834 vs. 0.677; $t=-2.967$, $df=1269$, $p<0.01$), were significantly younger (45.13 years vs. 46.94 years; $t=2.592$, $df=1269$, $p<0.05$), and had worked for significantly less years as a transit operator (10.99 years vs. 12.62 years; $t=2.337$, $df=1269$, $p<0.05$) compared to workers without a non-DUI event.

Chi-square tests of independence showed that, compared to transit operators of other race/ethnicities, a greater proportion of African American transit operators had a DUI (3.2% vs. 1.0%; $X^2 = 7.2$, 1 df, $p < .01$) or a non-DUI event (15.1% vs. 6.6%; $X^2 = 23.1$, 1 df, $p < 0.001$). Significant gender differences were seen for DUI (2.6% of males vs. 0% of females; $X^2 = 4.2$, 1 df, $p < .05$), but not for non-DUI events (11.6% vs. 8.9%, ns). No differences were observed for DUI based on smoking status, but significant differences were seen for non-DUI events ($X^2 = 11.7$, 3 df, $p < .01$); 16% of current smokers had a non-DUI event, compared to 9.9% of former smokers and 8.9% of never smokers.

Multivariate correlates of DUI & non-DUI events (Table 2)

Multivariate logistic regression results showed that mean daily alcohol consumption predicted DUI (Odds Ratio [OR] = 4.10; 95% Confidence Interval [CI] 1.82, 9.24) and non-DUI events (OR=1.43; 95% CI 1.04, 1.96). African American transit operators were more likely to have a DUI (OR=3.10; 95% CI 1.22, 7.89) or a non-DUI event (OR=2.56; 95% CI 1.72, 3.82) compared to transit operators of other racial/ethnic groups. Current smokers were more likely to have a non-DUI event than non-smokers (OR=1.59; 95% CI 1.05, 2.43), but smoking status did not predict DUI. Occupational factors did not predict DUI or non-DUI events. Males were significantly more likely than females to have a non-DUI event (OR=1.97; 95% CI 1.13, 3.43). Gender had to be dropped from the DUI model due to unstable estimates (no DUIs were reported by females).

Conclusions

This study explored the role of substance use, demographic, and occupational factors to DUI and non-DUI events among a sample of urban transit operators. The results showing African Americans to be at elevated risk for DUI compared to workers of other racial/ethnic groups is in contrast to the findings of Caetano and McGrath (2005). In their analysis of a large national data set, they found African Americans and Hispanics to be at significantly lower risk than whites for DUI.

Table 1 Sample Characteristics (N=1271)

Characteristic	Number (%)	% DUI	X^2	% Non-DUI	X^2
Mean Age (SD)	46.7 (7.8)				
African American	681 (53.6)	3.2	7.2**	15.1	23.1***
Other Race/ethnicity	590 (46.4)	1.0		6.6	
Male	1068 (84.0)	2.6	5.4*	11.6	1.3
Female	203 (16.0)	0		8.9	
Married	829 (65.2)	2.2	0.01	10.9	0.24
Non-Married	442 (34.8)	2.3		11.8	
Mean Years Employed (SD)	12.4 (7.8)				
Drive Full-Time	1138 (89.5)	2.3	0.34	10.9	0.84
Drive Part-Time	133 (10.5)	1.5		13.5	
Former Smoker	332 (26.1)	1.8	3.1	9.9	11.7**
Current Smoker	357 (28.1)	3.4		16.0	
Never Smoker	582 (45.8)	1.7		8.9	
Alcohol Quantity*Frequency (SD)	0.69 (0.59)				
+CAGE Screener	104 (8.2)	3.8	1.4	11.5	0.02
-CAGE Screener	1167 (91.8)	2.1		11.1	

Table 2 Correlates of DUI and Non-DUI Events

Category	DUI		Non-DUI	
	Odds Ratio	95% CI	Odds Ratio	95% CI
Age	0.99	0.93, 1.06	0.98	0.95, 1.01
African American (ref: other race/ethnicity)	3.12*	1.22, 7.93	2.61***	1.75, 3.91
Male (ref: female)	#		1.97*	1.13, 3.43
Married (ref: non-married)	1.32	0.59, 2.96	1.09	0.74, 1.60
Years Employed	0.96	0.90, 1.03	0.97	0.94, 1.00
Drive Full-Time (ref: drive part-time)	2.19	0.48, 10.08	1.03	0.57, 1.83
Smoking Status: (ref: never smoker)				
Former Smoker	0.89	0.31, 2.55	1.12	0.69, 1.80
Current Smoker	1.26	0.52, 3.04	1.60*	1.05, 2.45
Alcohol Quantity*Frequency	4.35**	1.87, 10.12	1.49*	1.07, 2.08
+CAGE Screener (ref: -CAGE screener)	0.75	0.24, 2.38	0.70	0.35, 1.38

#Dropped from DUI model due to unstable estimates. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Acknowledgments

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To our knowledge, this is one of the first studies to examine correlates of DUI and non-DUI events among an occupational cohort. Further research is needed to investigate the role of smoking in relation to non-DUI events, and if aspects of the work environment contribute to increased drinking, and thereafter risk of DUI and non-DUI events that occur off the job.