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## Enforcement of alcohol-impaired driving laws in the United States: A national survey of state and local agencies

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### Abstract

**Objectives**—Enforcement of alcohol-impaired driving laws is an important component of efforts to prevent alcohol-involved motor-vehicle fatalities. Little is known about the use of drinking-driving enforcement strategies by state and local law enforcement agencies or whether the use of strategies differs by agency and jurisdiction characteristics.

**Methods**—We conducted two national surveys, with state patrol agencies (n=48) and with a sample of local law enforcement agencies (n=1,082) selected according to state and jurisdiction population size. We examined three primary enforcement strategies (sobriety checkpoints, saturation patrols, and enforcement of open container laws), and tested whether use of these strategies differed by jurisdiction and agency characteristics across state and local law enforcement agencies

**Results**—Most state patrol agencies reported conducting sobriety checkpoints (72.9%) and saturation patrols (95.8%), while less than half (43.8%) reported enforcing open container laws. In contrast, a lower proportion of local law enforcement agencies reported using these alcohol-impaired driving enforcement strategies (41.5%; 62.7%; 41.1% respectively). Sobriety checkpoint enforcement was more common in states in the dry South region (vs. wet and moderate regions). Among local law enforcement agencies, agencies with a full-time alcohol enforcement officer and agencies located in areas where drinking-driving was perceived to be very common (vs. not/somewhat common) were more likely to conduct multiple types of impaired driving enforcement.

**Conclusions**—Recommended enforcement strategies to detect and prevent alcohol-impaired driving are employed in some jurisdictions and underutilized in others. Future research should explore the relationship of enforcement with drinking and driving behavior and alcohol-involved motor-vehicle fatalities.

### Keywords

drink-driving; impaired driving; enforcement; alcohol; sobriety checkpoints; saturation patrols

## INTRODUCTION

The public health burden of operating a motor vehicle under the influence of alcohol is substantial. In 2012 over 10,000 people in the United States died in motor vehicle crashes where at least one of the drivers had a blood alcohol concentration (BAC)  $\geq 0.08$  g/dL, a level above the legal limit per se in the United States (NHTSA, 2013). In 2010, the social cost of alcohol-related motor vehicles crashes in the United States was estimated to be \$125 billion (Zaloshnja et al., 2013).

The number and proportion of traffic fatalities that involve alcohol has declined dramatically over the past three decades. In 1982 more than 20,000 fatalities occurred in crashes where a driver had a BAC of  $\geq 0.08$  g/dL or higher and more than half of all motor vehicle fatalities involved alcohol. By 2010 the proportion dropped to one in three (Dang, 2008). The reduction in deaths attributable to impaired driving is a major public health success that resulted from many factors. Changing demographics in the United States leading to a smaller proportion of the population that is at highest risk for impaired driving (i.e., young males) and a decline in the per capita consumption of alcohol were important factors in this shift, but major pieces of legislation designed to reduce impaired driving were also passed during this timeframe (Dang, 2008; Voas & Lacey, 2011). These included laws that made it illegal per se to operate a motor vehicle above a specified BAC (currently  $\geq 0.08$  g/dL), a minimum legal drinking age of 21 years, administrative driver's license revocation, and zero tolerance for impaired driving for individuals under age 21 (per se BAC of  $\geq 0.00$  or  $\geq 0.02$  g/dL or greater). Most states in the US enacted these laws by the late 1990s and these changes were important contributors to the reductions in impaired driving that occurred in the last two decades of the 20<sup>th</sup> century (Dang, 2008).

Enforcement is key to whether impaired driving laws achieve their goals, i.e., reducing impaired driving (Ross, 1984). However, enforcement strategies may be underutilized by state and local agencies (Voas & Lacey, 2011). Recommended enforcement operations for impaired driving laws include sobriety checkpoints, saturation patrols, and systematic enforcement of open container laws (Elder et al., 2002; Goodwin et al., 2013; Shults et al., 2009, 2001; Voas & Lacey, 2011). Sobriety checkpoints allow local law enforcement to establish temporary checkpoints or roadblocks to identify drivers who are under the influence of alcohol. However, sobriety checkpoints are explicitly permitted by statutory or case law in only 36 states (NHTSA, 2011). Saturation patrols consist of a large number of law enforcement officers patrolling a defined geographic area for a set time to detect and arrest impaired drivers. Enforcement efforts can also be used to detect violations of open container laws, which prohibit the possession of open containers of alcohol in vehicles on roadways and in parking lots. Possession of an open container of alcohol in a motor vehicle is prohibited by statutory or case law in 43 states (<http://alcoholpolicy.niaaa.nih.gov/>). Individually or in combination these law enforcement actions may provide an opportunity for further reductions in the public health burden of impaired driving (Ferguson, 2012; Shults et al., 2009; Voas & Lacey, 2011). It is not known the extent to which state and local enforcement agencies use these recommended enforcement strategies, or whether the use of these strategies varies by agency and jurisdiction characteristics.

The purpose of this study was to describe: (1) the use of enforcement activities specifically targeting alcohol-impaired driving, and (2) whether enforcement patterns differ by agency and jurisdiction characteristics across state highway patrol agencies and local law enforcement agencies.

## METHODS

### Data Sources

We conducted surveys in a random sample of local law enforcement agencies and a census of state patrol agencies in 2010–2011. We excluded the District of Columbia. Data on the demographic characteristics for the jurisdiction associated with each agency were obtained from the 2010 U.S. Census. This study was reviewed and approved by the Institutional Review Board at the University of Minnesota.

**State patrol agencies**—Each state has a state patrol agency, with the exception of Hawaii. We identified and contacted each agency using the Official Directory of State Patrol and State Police (available online at [www.statetroopersdirectory.com](http://www.statetroopersdirectory.com)).

**Local law enforcement agencies**—We used a multi-stage sampling strategy to select local law enforcement agencies using a list of 15,838 municipal and county law enforcement agencies from the U.S. Department of Justice, Bureau of Justice Statistics. We sampled proportionately based on the number of agencies in each state, the size of agencies, and the proportion of agencies in each state that were county sheriff versus municipal police. This sampling strategy did not necessarily capture agencies in the largest cities (which tend to account for a high percentage of a state's population), so we added the municipal police agency from the three largest cities in each state if they were not already included in our sample ( $n=127$ ). Our final sample consisted of 1,631 local law enforcement agencies (see Lenk et al., 2014 for a complete description of the sampling strategy)

### Survey Administration

We sought to contact the agent/officer at each agency who was most knowledgeable about their alcohol-related law enforcement activities to complete a telephone survey. If requested by the respondent, we provided the option of completing the survey online using an invitation with a survey link sent via email. Less than half of all agencies (47% of local agencies and 19% of state patrol agencies) completed the survey online. In addition, ten local agencies and two state patrol agencies completed the survey by regular mail or fax. All survey data were housed on a university server using secure sockets layer protocol to ensure that respondent data were safely transmitted. Data were maintained according to industry standards for Internet security and standards for research protection established by the University of Minnesota's Institutional Review Board.

### Response Rates

**State highway patrol agencies**—We received responses to our survey from 48 of 49 state patrol agencies (response rate = 98%).

**Local law enforcement agencies**—We received responses from 1,082 local agencies of the 1,631 identified in our sample (response rate = 66.3%, ranging from 50–86% by state). Local agencies that did not respond to our survey were not significantly different (Chi-square tests;  $\alpha = 0.05$ ) from agencies that did respond by agency type (sheriff vs. police), number of agencies in the state, number of officers per 1000 residents, proportion of residents living in poverty, or the proportion of Black residents in the jurisdiction. However, agencies in smaller jurisdictions (population < 10,000) and agencies in jurisdictions with a lower proportion of Hispanic residents (< 3%) were less likely to respond.

For our analyses, we excluded the 39 agencies that did not respond to any of the three questions on impaired driving enforcement (sobriety checkpoints, saturation patrols, enforcement of open container laws); our final sample was 1,043.

### Enforcement Variables

We assessed the use of sobriety checkpoints, saturation patrols and enforcement of open container laws as outcome measures. In the local law enforcement agency survey, we used the question: “Which of the following enforcement efforts has your agency used to target drinking-driving violations?”; sobriety checkpoints and saturation patrols were two types of these efforts (response categories: yes, once in the last year; yes, 2–3 times in the last year; yes, 4–5 times in the last year; yes, 6 or more times in the last year, and no; these were dichotomized to yes vs. no based on the distribution). Similarly, in the state patrol survey we assessed these two types of enforcement using questions: “Has your agency conducted sobriety checks in the past year?” and “Has your agency conducted saturation patrols in the past year?” (response options: yes/no). For open container law enforcement the question in both surveys was: “Has your agency conducted enforcement efforts regarding open containers of alcohol in vehicles?” (response options: yes, no, and “We don’t have an open container law”; the last two categories were collapsed for analyses). We also constructed a dichotomous enforcement index for bivariate and multivariate analyses by coding those who reported conducting two or more of the three enforcement activities versus one or none.

In addition to the four enforcement outcome measures we measured several independent variables. We asked respondents to report on: (1) how common drinking and driving was in their jurisdiction (response categories were: not common, somewhat common, and very common; dichotomized to not/somewhat common vs. very common for both surveys based on the distribution); and (2) the percentage of total annual resources in their agency devoted to enforcing drinking and driving laws. For state patrol agencies the response categories for the second item were: “We don’t work on this issue”; 1–10%; 11–25%; 26–50%; 51–75%; and over 75% (dichotomized to don’t work on issue or 1–10% vs. >10%). Local agencies are tasked with enforcing a broader range of laws than state patrol agencies and so our response categories differed as follows: “We don’t work on this issue”; 1–4%; 5–10%; 11–25%; and over 25% (dichotomized to  $\leq 25\%$  vs. >25%). We also asked how many full time officers were employed in the agency (for analyses expressed as ratio of officers per population—per 1 million for state, per 1000 for local; dichotomized for analyses to <200 vs.  $\geq 200$  for state, and to <1.9 vs.  $\geq 1.9$  for local based on median splits).

Additional independent measures were demographic characteristics for each agency jurisdiction drawn from the 2010 U.S. Census. These included total population of jurisdiction (used for creating the number of officers per population), percent Black, percent living in poverty, and percent aged 15–30. We created two-level variables for these measures (approximate median splits) to address skewed distributions and to promote ease of interpretation of the findings. In addition, we included a variable that characterized alcohol consumption levels by region of the country (dry, moderate, or wet) as defined by Kerr (2010).

## Data Analysis

We first calculated basic descriptive statistics for all variables for state and local agencies; local agency survey data were weighted to account for sampling and non-response. For state patrol agencies, we calculated bivariate associations between each outcome measure and each independent measure (Chi-square; we did not conduct multivariate analyses due to the small sample size,  $n=48$ ). For local agencies, we used logistic regression for both bivariate and multivariate analyses with state included as a random effect to account for correlated data at the state level. Independent measures that were significant in bivariate analyses were included in multivariate models. For local agency models, we also included an independent variable indicating whether the strategy or strategies (sobriety checkpoints, saturation patrols, open container enforcement, multiple strategies) were implemented by the state patrol in that state (to explore possible coordination of enforcement efforts between local and state agencies). In addition, we conducted bivariate and multivariate analysis for the sobriety checkpoints and open container enforcement outcomes for only those states that allowed sobriety checkpoints and for only the states that had a law prohibiting open containers in motor vehicles. We used  $\alpha = 0.05$  to determine statistical significance, and all analyses were conducted using SAS version 9.3 statistical software (SAS Institute Inc., Cary, NC).

## RESULTS

Descriptive statistics are presented in Table 1. Among state patrol agencies, 72.9% conduct sobriety checkpoints, 95.8% conduct saturation patrols, 43.8% conduct enforcement of open container violations, and 29.2% agencies used all three strategies. Most state agencies (85.4%) report alcohol-impaired driving is at least somewhat common in their jurisdiction and most (66.7%) report they devote at least 25% their resources toward enforcement of laws to prevent alcohol-impaired driving. For the 12 states that reported they did not conduct sobriety checkpoints, all but one prohibit them by statutory or case law (not reported in table). Similarly, in the 42 states in our sample that prohibit open containers in motor vehicles, less than half (19) of state patrol agencies report that they conduct enforcement efforts related to open containers.

Among local law enforcement agencies, 41.5% reported that they conduct sobriety checkpoints, 62.7% conduct saturation patrols, 41.1% conduct open container enforcement, and 16.5% reported conducting all three enforcement efforts (Table 1). As with state patrol agencies, most local agencies (93%) report alcohol-impaired driving is at least somewhat

common in their jurisdiction; almost half (43.8%) report they devote at least 10% their resources toward enforcement of laws to prevent alcohol-impaired driving. In the 36 states where sobriety checkpoints are permitted, 55.4% of local agencies conduct sobriety checkpoints (not reported in table). Similarly, among agencies that are in states that prohibit open containers, less than half (43.9%) conducted open container enforcement efforts.

Bivariate and multivariate analyses reveal that use of alcohol impaired driving enforcement strategies varied by agency and jurisdiction characteristics. Among state patrol agencies, bivariate analyses (Table 2) show that agencies reporting drinking-driving to be very common were less likely to conduct sobriety checkpoints and to implement at least two of the three enforcement strategies. Agencies located in the dry South and in states where at least 7% of the population is black were more likely to conduct sobriety checkpoints (note: we do not include saturation patrols in Table 2 because 96% of agencies conduct these and, hence chi-square analyses were not valid). Among local agencies, several characteristics were significant in bivariate and multivariate analyses (Table 3). Agencies that had a full-time officer assigned to alcohol enforcement and agencies that had an alcohol division were more likely to conduct all strategies. Agencies that reported drinking-driving was very common (vs. not/somewhat common) were more likely to conduct open container enforcement, saturation patrols, and at least two of the three of the strategies. Being in a state where the state patrol conducted the enforcement strategy was significant for sobriety checkpoints and the enforcement index, with local agencies more likely to conduct the strategy or strategies if the state patrol also did so.

In models limited to local agencies that are in states that allow sobriety checkpoints we found results consistent with the full sample models with the exception that whether the state patrol conducted sobriety checkpoints was not significant. Similarly, for models limited to states that prohibit open containers of alcohol in motor vehicles we found consisted results with the full sample models with the exception that the region variable was not significant (results not shown in table).

## DISCUSSION

Most state patrol and local law enforcement agencies report alcohol-impaired driving is at least somewhat common in their jurisdiction and they devote a portion of their resources toward enforcement of laws to prevent alcohol-impaired driving. However, the extent of the specific law enforcement strategies these agencies use and the resources devoted to impaired-driving enforcement vary widely across the United States. For example, some local law agencies used none of the strategies examined in this study whereas others used all three strategies (sobriety checkpoints, saturation patrols, and enforcement of open container laws). Many local and state law enforcement agencies have room for improvement in their use of law enforcement strategies that are effective for identifying violations of state impaired driving laws, and more broadly, preventing alcohol-impaired driving. For certain strategies we found that if the state patrol conducted the strategy the local agencies in that state were more likely to conduct that same strategy; perhaps indicating these states have a statewide agenda to prioritize drinking-driving enforcement.



There were several indicators of greater use of the recommended enforcement strategies among local agencies. Agencies that assigned a dedicated full-time officer specifically to alcohol enforcement was an indicator of greater law enforcement efforts. Providing resources for an officer dedicated to impaired driving enforcement may facilitate agency use of these strategies. National organizations dedicated to reducing morbidity and mortality associated with alcohol-impaired driving can increase their efforts to encourage law enforcement agencies to take steps to prioritize impaired driving enforcement through avenues such as increased advocacy and media campaigns and training opportunities. In addition, legislators and advocacy organizations can help identify public resources, monetary incentives, and regulatory requirements to ensure these strategies are implemented.

We did not collect information on barriers to implementing these strategies. Law enforcement agencies might prefer to conduct more enforcement efforts to identify and prevent alcohol impaired driving but are limited in their ability to do so given constraints on their resources. More information about whether impaired driving enforcement is a good investment of resources may help law enforcement agencies prioritize their enforcement efforts. Public health burden of the targeted violations and potential for prevention should be important factors in those calculations.

Although we did not collect information about barriers, a significant barrier can be noted for sobriety checkpoints. Sobriety checkpoints are among the most effective countermeasures available to prevent and reduce impaired driving (Elder et al., 2002). However, a significant barrier to implementing this recommended strategy is the lack of legislation to expressly allow their use. Fell and colleagues (2003) noted a number of additional characteristics associated with using checkpoints, including having task forces supportive of these programs, adequate resources, and strong support of community groups and the general public. Interestingly, sobriety checkpoints were less common in the states located in the region with the heaviest levels of alcohol consumption. While this finding is not evidence that sobriety checkpoints reduce consumption, the failure to use this important enforcement tool may be a factor in states with higher consumption rates and presents an opportunity for intervention that can be adopted by state legislatures and state law enforcement agencies.

The results of this study should be considered in light of some important limitations. Our data are provided by survey respondents who may have not been aware of all efforts conducted by their agency or may have provided responses that they thought were socially desirable. The survey response rate, particularly for the state patrol survey, was strong; however, it is possible that the enforcement efforts at local agencies that did not respond to the survey are different from those that did respond

Future research should monitor the use of recommended enforcement strategies by state and local agencies over time. Varying levels of financial, political, and public support over time may coincide with more or less use of enforcement strategies and these factors should be studied in future research to determine how to promote use of effective strategies. While our survey was an initial attempt to examine use of impaired driving enforcement strategies in a broad cross-section of agencies, our measures can be improved, refined and validated using

other methods. Future research should pursue development of greater measurement precision and linking information gathered from survey data with objective data. Research linking the use of recommended enforcement strategies with occurrence of impaired driving and negative consequences of impaired driving (e.g., crashes and fatalities), in combination with assessments over multiple time points, would also provide useful information for policymakers and practitioners. For example, agencies can adopt the Data-Driven Approaches to Crime and Traffic Safety (DDACTS) model, which encourages collaboration with key stakeholders in their communities to identify and target law enforcement activity by location and occurrence of other types of crime. There may also be other existing or emerging strategies employed by state or local agencies, beyond the strategies we measured, that should be tracked and evaluated to determine whether they are effective.

Our data demonstrate varied use by state and local law enforcement agencies of recommended strategies to address impaired driving, a major cause of morbidity and mortality in the United States. Many agencies have room for improvement in their efforts to protect and serve their communities from the threat of impaired driving. Agencies can prioritize these enforcement strategies using their available resources. State and local legislative bodies can also act to encourage agencies to prioritize impaired driving enforcement and provide adequate resources for them to engage in effective enforcement. State legislatures can act to prohibit open containers of alcohol in motor vehicles or allow enforcement agencies to conduct sobriety checkpoints.

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## References

- Blincoe, L.; Seay, A.; Zaloshnja, E., et al. The Economic Impact of Motor Vehicle Crashes, 2000. Washington, D.C: National Highway Traffic Safety Administration Technical Report; 2002.
- Dang, JN. Statistical Analysis of Alcohol-Related Driving Trends, 1982–2005 DOT HS 810 942. Washington, DC: US Department of Transportation, National Highway Traffic Safety Administration; 2008.
- Elder RW, Shults RA, Sleet DA, Nichols JL, Zaza S, Thompson R. Effectiveness of sobriety checkpoints for reducing alcohol-involved crashes. *Traffic Inj Prev.* 2002; 3:266–374.
- Fell JC, Ferguson SA, Williams AF, Fields M. Why are sobriety checkpoints not widely adopted as an enforcement strategy in the united states? *Accid Anal Prev.* 2003; 35(6):897–902. [PubMed: 12971924]
- Ferguson SA. Alcohol-impaired driving in the United States: contributors to the problem and effective countermeasures. *Traffic Inj Prev.* Sep; 2012 13(5):427–441. [PubMed: 22931172]
- Goodwin, A.; Kirley, B.; Sandt, L.; Hal, W.; Thomas, L.; O'Brien, N.; Summerlin, D. Countermeasures That Work: A Highway Safety Countermeasures Guide for State Highway Safety



Offices. 7. Washington, DC: National Highway Traffic Safety; Apr. 2013 (Report No. DOT HS 811 727)

Kerr WC. Categorizing U.S. state drinking practices and consumption trends. *Int J Environ Res Public Health*. 2010; 7(1):269–283. [PubMed: 20195444]

Lenk KM, Toomey TL, Nelson TF, Jones-Webb R, Erickson DJ. State and local law enforcement agency efforts to prevent sales to obviously intoxicated patrons. *J Community Health*. 2014; 39(2): 339–48. [PubMed: 24068596]

National Highway Traffic Safety Administration (NHTSA). *Traffic Safety Facts 2012. A Compilation of Motor Vehicle Crash Data from the Fatality Analysis Reporting System*. Washington, DC: U.S. Department of Transportation; 2013.

National Highway Traffic Safety Administration (NHTSA). *Digest of Impaired Driving Laws*. 25. Apr. 2011

Ross HL. Social-control through deterrence - drinking-and-driving laws. *Annu Rev Sociol*. 1984; 10:21–35.

Shults RA, Elder RW, Nichols JL, Sleet DA, Compton R, Chattopadhyay SK. Effectiveness of multicomponent programs with community mobilization for reducing alcohol-impaired driving. *Am J Prev Med*. Oct; 2009 37(4):360–371. [PubMed: 19765509]

Shults RA, Elder RW, Sleet DA, et al. Reviews of evidence regarding interventions to reduce alcohol-impaired driving. *Am J Prev Med*. Nov; 2001 21(4 Suppl):66–88. [PubMed: 11691562]

Voas, RB.; Lacey, JC. *Alcohol and Highway Safety 2006: A Review of the State of Knowledge*. Calverton, MD: National Highway Traffic Safety Administration; 2011.

Zaloshnja E, Miller TR, Blincoe LJ. Costs of alcohol-involved crashes, United States, 2010. *Ann Adv Automot Mede*. 2013; 57:3–12.

Table 1

## Descriptive statistics

Jurisdiction/Agency characteristics	State Patrol (n=48)	Local Agencies (n=1043)
	mean (SD)	mean (SD)
Population	6,329,505 (6,939,570)	67,521 (313,979)
Black proportion	10.0 (8.9)	8.7 (15.3)
Age 15–30 proportion	22.2 (1.2)	21.0 (6.0)
Poverty proportion	13.3 (2.7)	15.0 (8.9)
Number of officers	1227.6 (1418.3)	88.8 (326.7)
Number of officers per 1 mil. (state) or 1000 (local) population	258.4 (332.8)	2.7 (4.8)
	Percent <sup>1</sup>	Percent <sup>2</sup>
Has 1 officer assigned to alcohol-related enforcement	--	25.3
Has alcohol-related division	--	7.0
Conducted sobriety checkpoints (in last year)		
No	25.0	58.5
Once	0	9.5
Few times (state)/2–3 times (local)	16.7	13.5
Monthly (state)/4–5 times (local)	25.0	7.1
Weekly (state)/6+ times (local)	20.8	11.3
Daily (state)	4.2	--
Conducted saturation patrols (in last year)		
No	4.2	37.3
Once	0	8.5
Few times (state)/2–3 times (local)	12.5	15.5
Monthly (state)/4–5 times (local)	41.7	10.8
Weekly (state)/6+ times (local)	27.1	27.9
Daily (state)	8.3	--
Conducted open container enforcement (in last year)	43.8	41.1
Drink-driving enforcement index (sobriety checkpoints, saturation patrols, open container)		
None	2.1	27.7
One of three	12.5	27.3
Two of three	56.3	28.5
All three	29.2	16.5
How common is drinking and driving		
Not common	8.3	6.9
Somewhat common	52.1	66.5
Very common	33.3	26.5
Resources devoted to drinking & driving enforcement		
Do not work on the issue	0	6.8
State: 1–10%; Local 1–4%	4.2	18.9

Jurisdiction/Agency characteristics	State Patrol (n=48)	Local Agencies (n=1043)
	mean (SD)	mean (SD)
State: 11–25%; Local: 5–10%	32.6	30.5
State: 26–50%; Local: 11–25%	25.0	28.1
State: 51–75%; Local: Over 25%	22.9	15.7
State: Over 75%	18.8	--
Region		
Wet (North Central/New England)	41.7	37.5
Moderate (Mid-Atlantic, Pacific, South Coast)	35.4	36.8
Dry (South)	22.9	25.7

<sup>1</sup>Not all items sum to 100% due to missing data

<sup>2</sup>Local agency survey data weighted to account for sampling and non-response -- item not included on survey

Bivariate association of alcohol-impaired driving enforcement strategies by agency/jurisdiction characteristics among state patrol agencies (n=48)

Table 2

	Sobriety checkpoints		Open container enforcement		Enforcement index	
	% (n)	p	% (n)	p	% (n)	p <sup>1</sup>
State population						
< 5 million	76.0 (19)	0.80	50.0 (13)	0.34	92.2 (24)	0.14
5 million	72.7 (16)		36.4 (8)		77.3 (17)	
Number of fulltime agents per 1,000,000 population						
< 200	68.0 (17)	0.28	42.3 (11)	0.83	80.8 (21)	0.32
200	81.8 (18)		45.5 (10)		90.9 (20)	
Proportion black						
< 7%	56.5 (13)	0.006*	50.0 (12)	0.38	79.2 (19)	0.22
7%	91.7 (22)		37.5 (9)		91.7 (22)	
Proportion in poverty						
< 13%	66.7 (16)	0.21	45.8 (11)	0.77	79.2 (19)	0.22
13%	82.6 (19)		41.7 (10)		91.7 (22)	
Proportion of population aged 15–30 years						
<22.1%	77.3 (17)	0.68	34.8 (8)	0.23	91.3 (21)	0.27
22.1%	72.0 (18)		52.0 (13)		80.0 (20)	
How common is drinking & driving in the state						
Not/somewhat common	85.7 (24)	0.03*	55.2 (16)	0.12	96.6 (28)	0.009*
Very common	56.3 (9)		31.3 (5)		68.8 (11)	
Resources devoted to drinking & driving enforcement						
25%	85.7 (12)	0.13	50.0 (7)	0.83	92.9 (13)	0.24
>25%	63.0 (17)		46.4 (13)		78.6 (22)	
Region						
Wet (North Central/New England)	55.0 (11)	0.02*	45.0 (9)	0.60	80.0 (16)	0.29
Moderate (Mid-Atlantic, Pacific, South Coast)	81.3 (13)		35.3 (6)		82.4 (14)	
Dry (South)	100.0 (11)		54.6 (6)		100.0 (11)	

\* p&lt;.05

Note: we do not include saturation patrols in table because 96% of agencies conduct these and hence, chi-square analyses were not valid.

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**Table 3**

Bivariate and multivariable association of alcohol-impaired driving enforcement strategies by agency/jurisdiction characteristics among local law enforcement agencies (n=1,043)

	Sobriety Checkpoints		Saturation Patrols		Open Container Enforcement		Enforcement Index	
	% (n) <sup>I</sup>	Odds Ratio (95% CI) <sup>2</sup>	% (n) <sup>I</sup>	Odds Ratio (95% CI) <sup>2</sup>	% (n) <sup>I</sup>	Odds Ratio (95% CI) <sup>2</sup>	% (n) <sup>I</sup>	Odds Ratio (95% CI) <sup>2</sup>
Population of jurisdiction								
< 8500	34.5 (154) <sup>*</sup>	Referent	59.3 (275) <sup>*</sup>	Referent	43.5 (225)		42.2 (219) <sup>*</sup>	Referent
8500	53.3 (245)	2.0 (1.4–2.9) <sup>*</sup>	72.4 (346)	1.3 (0.9–1.8)	42.4 (221)		54.4 (524)	1.2 (0.9–1.6)
Number of full-time officers per 1000 population								
< 1.9	41.5 (189)		66.8 (320)		39.9 (208) <sup>*</sup>	Referent	46.5 (243)	
1.9	46.6 (210)		65.0 (301)		46.0 (238)	1.3 (1.0–1.7)	50.2 (261)	
Has division specifically to enforce alcohol laws								
No	42.0 (344) <sup>*</sup>	Referent	64.1 (547) <sup>*</sup>	Referent	41.4 (389) <sup>*</sup>	Referent	67.3 (64) <sup>*</sup>	Referent
Yes	63.9 (53)	1.4 (0.7–2.7)	83.5 (71)	0.9 (0.5–1.9)	59.1 (55)	1.2 (0.7–2.0)	46.5 (438)	1.1 (0.6–1.8)
Has officer assigned to alcohol enforcement								
No	39.4 (264) <sup>*</sup>	Referent	59.5 (410) <sup>*</sup>	Referent	36.8 (280) <sup>*</sup>	Referent	64.5 (180) <sup>*</sup>	Referent
Yes	57.2 (135)	2.2 (1.4–3.4) <sup>*</sup>	83.4 (211)	3.4 (2.2–5.3) <sup>*</sup>	59.7 (166)	2.5 (1.8–3.5) <sup>*</sup>	42.4 (324)	2.7 (1.9–3.9) <sup>*</sup>
Proportion black								
< 1.6%	33.9 (144) <sup>*</sup>	Referent	62.1 (288) <sup>*</sup>	Referent	42.7 (220)		40.6 (210) <sup>*</sup>	Referent
1.6%	54.5 (255)	1.3 (0.8–1.9)	69.8 (333)	1.3 (0.9–1.9)	43.2 (226)		55.9 (526)	1.4 (1.0–2.0)
Proportion in poverty								
< 14%	40.7 (183)		66.1 (318)		40.5 (214)		44.9 (239) <sup>*</sup>	Referent
14%	47.4 (216)		65.7 (303)		45.6 (232)		51.9 (265)	1.1 (0.8–1.5)
Proportion aged 15–30								
< 20.3%	37.9 (168) <sup>*</sup>	Referent	61.2 (286) <sup>*</sup>	Referent	43.2 (223)		44.1 (229) <sup>*</sup>	Referent
20.3%	49.9 (231)	1.2 (0.9–1.8)	70.5 (335)	1.3 (0.9–1.8)	42.7 (223)		52.5 (275)	1.1 (0.8–1.5)



	Sobriety Checkpoints		Saturation Patrols		Open Container Enforcement		Enforcement Index	
	% (n) <sup>1</sup>	Odds Ratio (95% CI) <sup>2</sup>	% (n) <sup>1</sup>	Odds Ratio (95% CI) <sup>2</sup>	% (n) <sup>1</sup>	Odds Ratio (95% CI) <sup>2</sup>	% (n) <sup>1</sup>	Odds Ratio (95% CI) <sup>2</sup>
How common is drinking & driving in the jurisdiction								
Not/somewhat common	41.6 (261)*	Referent	61.5 (403)*	Referent	39.8 (290)*	Referent	43.5 (319)*	Referent
Very common	48.9 (131)	1.3 (0.8-1.9)	75.4 (209)	2.0 (1.3-2.9)*	49.5 (148)	1.4 (1.1-1.9)*	58.9 (176)	2.0 (1.5-2.8)*
Resources devoted to drinking & driving enforcement								
Don't work on this/1-10%	40.3 (199)*	Referent	60.4 (311)*	Referent	40.8 (225)		46.0 (254)	
Over 10%	48.3 (185)	1.5 (1.1-2.2)*	71.2 (282)	1.4 (1.0-2.0)*	45.1 (204)		50.4 (230)	
Region								
Wet (North Central/New England)	25.8 (90)*	0.3 (0.1-0.7)*	61.1 (231)*	0.5 (0.2-1.0)	42.1 (176)*	0.7 (0.5-1.1)	37.3 (156)*	0.4 (0.2-0.7)
Moderate (Mid-Atlantic, Pacific, South Coast)	46.9 (149)	0.5 (0.2-1.1)	66.6 (215)	0.7 (0.3-1.6)	38.5 (135)	0.6 (0.4-0.9)*	49.3 (175)	0.6 (0.3-1.1)
Dry (South)	67.0 (160)	Referent	72.6 (175)	Referent	50.2 (135)	Referent	64.1 (173)	Referent
Strategy used at the state level								
Yes	56.9 (361)*	11.2 (4.8-26.0)*	66.3 (575)		44.9 (183)		52.3 (430)*	2.3 (1.2-4.4)*
No	9.6 (23)	Referent	60.8 (31)		40.8 (247)		29.1 (57)	Referent

\* p<.05

<sup>1</sup>Data indicate the percentage (n) of agencies at each level of the variable that conduct the particular enforcement strategy

<sup>2</sup>Odds ratio and confidence intervals (CI) are from multivariate logistic regression models that included all variables significant in bivariate analyses (p<.05)