STATE CONTROL OF ALCOHOL SALES AS A MEANS OF REDUCING TRAFFIC FATALITIES: A PANEL ANALYSIS

John Pulito
Commonwealth Foundation Fellow
Duquesne University

Antony Davies
Associate Professor of Economics
Duquesne University

JEL classifications: H7, I18, K2, L5, R1

Key words: alcohol, regulation, policy, traffic fatalities, DUI, impaired, driving, underage, privatization

We thank Lyn Cianflocco of the National Highway Traffic Safety Administration and Bill Ponicki of the Prevention Research Center at UC Berkeley for help in obtaining data.

Today, nineteen states control alcohol sales at the wholesale and/or retail levels. Previous research has compared alcohol-related fatality rates to the National Alcohol Beverage Control Association's binary classification of states as controlled versus privatized. What has not been explored is the relationship between alcohol-related fatalities and the degree of control states exercise over wholesale and retail alcohol markets. This paper presents a panel study of alcohol-related fatality rates for 49 states from 1982 to 2002 that, after controlling for related alcohol control policies, compares four measures of fatality rates to the degree of state control versus privatization of alcohol markets. Whereas studies using binary classifications found no relationship between fatality rates and privatization, we find a significant relationship that varies based on the degree of privatization. We find that states with privatized alcohol markets experience significantly lower alcohol-related traffic fatality rates as compared to states that control alcohol markets, and that the magnitude of the difference varies according to the degree of privatization and the definition of alcohol-related fatality.

I. Alcohol-Control Policies and Alcohol-Related Traffic Fatalities

The 21st Amendment to the U.S. Constitution granted power to the individual states to regulate, sell, and distribute alcohol. To date, nineteen states have opted to regulate alcohol markets to varying degrees, some doing so as a means of generating revenue (Room 1987), and others as a reflection of the state's cultural values (Holder 1993).

Two states, West Virginia and Iowa, serve as case studies of the effect of privatizing liquor sales on alcohol-related traffic fatalities since these states moved from controlled retail and wholesale markets for alcohol to privatized markets. Macdonald (1986) compares Iowa's retail alcohol markets pre- and post-privatization and finds increased per-capita consumption of wine post-privatization, but no change in consumption of beer or spirits. Fitzgerald and Mulford (1988) look at state survey data and monthly alcohol sales for Iowa between July 1983 and August 1987 in an attempt to explain the increase in wine consumption. They find that, in the months following Iowa's decision to privatize, state stores began to liquidate their wine inventory at discount prices, creating a temporary surplus of wine and commensurately lower prices on retail markets. Holder and Wagenaar (1990) also examine Iowa's privatization and find no change in beer consumption, a 13.7 percent decrease in wine consumption, and a 9.5 percent increase in spirits consumption following privatization.

The National Alcohol Beverage Control Association (NABCA) classifies states that impose any regulation on alcohol sales, whether at the wholesale or retail level, as "control," and states that impose no regulations as "license" (i.e., privatized). Rees (1997) looks at traffic fatalities in Iowa, West Virginia, and Pennsylvania between 1985 and 1995, and finds no significant difference in alcohol-related traffic fatalities between control and license states.

In a study of alcohol-control policies and the driving under the influence (DUI) fatality rate, Kenkel (1993) hypothesized that the DUI fatality rate would be lower in control states than in license states. He fits data from the 1985 Health Interview Survey to a consumer behavior model but finds no evidence of a relationship between DUI fatality rates and whether a state is control or license. Kenkel's (1993) model is based on Becker's (1969) which assumes that an individual will only commit a DUI offense when the expected utility from the offense outweighs his utility from any other activity. Becker finds that the number of criminal offenses committed by any individual is a function of the probability of conviction, the punishment if convicted, and other personal factors such as a willingness to commit illegal acts. As does Becker, Kenkel finds that the discounted expected cost of drunk driving is predominantly a function of the probability of arrest and conviction rather than a function of alcohol availability.

This finding is consistent with Chaloupka and Saffer (1989) who compare DUI fatality rates before and after laws that allowed police to administer blood alcohol content (BAC) tests. Chaloupka and Saffer find a statistical decrease in the number of DUI fatalities in states with preliminary BAC test laws. Results from Chaloupka, Saffer, and Grossman (1993) suggest that, if every state had a preliminary breath test law, average annual DUI fatalities would decrease by approximately 3.4 percent, and that 18 to 20 year-olds would account for 20 percent of this reduction.

In October 2000, the U.S. Congress passed the Department of Transportation's 2001 Appropriations Act which mandated that states consider driving to be illegal if the driver's BAC is at least 0.08 g/dl (NHTSA, 2001b). By 2005, every state had enacted a 0.08 g/dl BAC law. Zador et al. (2000), Dee (2001), and Lund et al. (2007) found that setting a BAC of 0.08 g/dl resulted in a reduction in DUI fatality rates. Lund et al.'s (2007) results suggest that if all drivers had a BAC less than 0.08 g/dl in 2005, nearly 9,000 deaths could have been avoided. Similarly, Dee (2001) finds that 0.08 g/dl BAC laws have reduced traffic fatality rates by approximately 16.5 percent, and have reduced weekend and weekday fatality rates by 8.6 percent and 5.8 percent, respectively. Confounding this apparent effect, however, is the increasing prevalence of airbags and primary seatbelt laws (McCartt et al., 2008).

Cook and Tauchen (1984) find that states that reduced the minimum drinking age from 21 to 18 experienced an 11.1 percent increase in the traffic fatality rate among 18 to 21 year-olds. Dee and Evans (2001) hypothesized that this change in the minimum drinking age would only shift driving fatalities from teens to adult drivers. Instead, they find that the movement significantly decreased alcohol-related traffic fatalities for teen drivers. This finding is similar to Dee (1990) who finds that changing the minimum drinking age from 18 to 21 substantially reduced abusive teen drinking by 8 percent and teen driving fatalities by 9 percent. In a meta study, Wagenaar and Toomey (2002) reviewed 241 empirical analyses on the minimum legal drinking age and conclude that the body of research suggests an inverse relationship between the mandatory legal drinking age and both per-capita alcohol consumption and the rate of traffic accidents.

Kahane (2000) finds that seatbelt laws are 45 percent and 60 percent effective in reducing traffic fatalities in passenger cars and light trucks, respectively. Chaloupka et al. (1993) and Eisenberg (2003) find similar results. Sobel and Nesbit (2007) and Risa (1994) look at the relationship between seat belt laws and traffic fatality rates and find that the safety gain from wearing a seat belt is offset by the driver's willingness to drive faster and more recklessly.

Other factors that have been identified as being related to traffic fatalities include the price of unleaded gasoline (Sivak 2009; Grabowski and Morrisey 2004), speed limits and vehicle miles traveled (Park et al. 2008), and rainfall, temperature, and terrain (Yakovlev and Inden 2009).

What has not been explored is the relationship between alcohol-related fatalities and the *degree* of control states exercise over wholesale and retail alcohol markets. We perform this analysis in a panel data setting. Whereas studies using NABCA's binary classifications of control vs. license found no relationship between control and alcohol-related fatalities, we find a significant relationship that varies based on the degree of market control.

II. Data

We use a panel of the fifty U.S. States over the period 1982 through 2002. We divide alcohol control variables into two categories: *alcohol sales and use controls* and *alcohol market controls*. The former category includes laws that regulate the use of alcohol (e.g., DUI laws), the sales or purchase of alcohol (e.g., keg registration laws, dram shop laws), or are tangentially related to DUI fatality rates (e.g., seat belt laws). The latter category is the focus of our study and reflects whether wholesale and retail markets are state run or privatized. Variable definitions and summary statistics are shown in Table 1.

[Insert Table 1 here]

The Fatality Analysis Reporting System (FARS) defines an *alcohol-impaired* traffic fatality as one in which a person, who is either a driver or a vehicle occupant, is killed within 30 days of a motor vehicle accident in which at least one driver had a BAC of at least 0.08 g/dl. An *alcohol-involved* traffic fatality is one in which a person, who is either a driver, a vehicle occupant, or a non-motorist, is killed within 30 days of a motor vehicle accident in which at least one person (driver, passenger, or non-motorist) had a BAC of at least 0.01 g/dl (ANSI, 1996;

NHTSA, 2007). The definition of an alcohol-impaired fatality is narrower than the definition of an alcohol-involved fatality in that the former requires a minimum BAC of 0.08 g/dl (versus 0.01 g/dl) and requires that the person with the BAC be a driver.

Prior to the National Minimum Legal Drinking Age Act of 1984, drinking ages varied across states and by beverage type. Due to high multicollinearity among the minimum drinking ages for the various forms of alcoholic beverages (beer, wine, spirits), we create a variable that reflects the youngest age one can purchase and consume alcohol of any form. Due to high multicollinearity between primary and secondary seat belt laws (Yakovlev and Inden 2009), the mandatory seat belt variable reflects the first year in which any mandatory seat belt law (either primary *or* secondary) was adopted. The BAC limit variable reflects the year in which a state enacted a law making it illegal for an automobile operator to drive with a BAC greater than or equal to 0.08 g/dl. This zero tolerance law represents the year in which a state enacted a BAC limit of 0.02 g/dl or less for drivers under the age of 21. The tolerance of so called "zero tolerance" laws vary by state. For example, for underage drivers, Texas mandates a BAC limit of 0.00 g/dl, while Pennsylvania mandates a BAC limit of 0.02 g/dl (NHTSA, 1997).

Keg registration laws require retailers to record the serial numbers of kegs along with personal identifications of people who purchase the kegs. Preliminary breath test laws allow police officers to administer a BAC test if the driver is suspected of being intoxicated. Open container laws prohibit alcohol from being readily accessible by either the driver or passenger of a moving vehicle. Dram shop laws establish liability for any establishment that serves alcohol to an obviously intoxicated person who is subsequently involved in an alcohol-related traffic fatality.

We base our classifications according to degree of alcohol market control on Pulito and Davies (2009). These classifications are shown in Table 2.

[Insert Table 2 here]

In Maryland, only Montgomery County regulates alcohol sales. Due to the inability to differentiate between the sale of alcohol in Montgomery County and sales in the rest of the state, we drop Maryland from the data set. Table 3 shows the states according to their control classifications. With the exception of Maryland, states not appearing in Table 3 are classified as *No Control* (i.e., privatized) states.

[Insert Table 3 here]

III. Results and Discussion

For each of four dependent variables, we estimate the following model in a fixed-effect panel framework correcting for heteroskedasticity and first-order autocorrelation:[1]

$$Y_{it} = \alpha + \sum_{j=1}^{3} \gamma_j C_{it}^{j} + \sum_{j=1}^{8} \beta_j X_{it}^{j} + h_i + \varepsilon_{it} \tag{5}$$

where the h_i are state-specific fixed effects and ε_{it} is a normal disturbance. We estimate this model for each of four outcomes, Y_{it}: the alcohol-involved traffic fatality rate, the alcohol-impaired traffic fatality rate, the underage alcohol-involved traffic fatality rate, and the underage alcohol-impaired traffic fatality rate. The variables X_{it}^{j} represent the following alcohol sales and use control policies: the minimum legal drinking age, mandatory seat belt law, 0.08 g/dl BAC limit, zero tolerance law, keg registration law, preliminary breath test, open container law, and

[1] The Hausman and Breusch-Pagan random effects test supports the choice for a fixed effects model. The residuals from each of the regressions are stationary.

the dram shop law. The variables C_{it}^{j} are dummies representing the alcohol market control classification for state *i* in year *t*. Results are shown in Table 4.

[Insert Table 4 here]

In almost all cases, alcohol sales and use controls (minimum drinking age, mandatory seat belt laws, etc.) show the expected relationship with alcohol involved and impaired fatalities: more stringent policies are associated with reduced fatality rates. Whereas previous studies using NABCA classifications of "control" versus "license" states have found no relationship between alcohol market controls and DUI fatality rates, our results not only show a significant relationship, but one that is the opposite of the policy intent. In moderate control states, fatality rates are significantly greater than in states with privatized alcohol markets according to all measures: underage, legal age, alcohol involved, and alcohol impaired. For light control states versus no control states, fatality rates are significantly greater among those of legal age for alcohol involved fatalities but not for the narrower definition of alcohol impaired fatalities. For light control states, there is no significant difference in underage fatality rates regardless of the fatality definition. These results suggest that light controls are associated with either no effect on fatality rates or an increase in fatality rates, depending on the fatality definition. Meanwhile, moderate controls are associated with greater fatality rates according to all fatality definitions. One possible explanation (cf., Pulito and Davies 2009) is that controlling alcohol markets increases the fixed cost of alcohol purchases. For example, state controlled retailers will tend to keep less convenient hours and have fewer and less convenient retail locations. The inconvenience increases the fixed cost of purchasing alcohol and so encourages consumers to purchase more alcohol per trip than they would in the absence of the fixed cost. In purchasing more alcohol per trip, consumers would then tend to have more alcohol on hand and so tend to consume more.

These results contrast with those of heavy control states versus no control states. In heavy control states and among those of legal age, alcohol involved fatality rates are greater while alcohol impaired fatality rates are significantly lesser. One possible explanation is that policies in heavy control states end up shifting risk from the drivers to passengers and non-motorists. For example, "designated driver" campaigns may have the effect of encouraging people who accompany a designated driver to drink more by inadvertently framing the DUI risk as being solely a function of the driver's BAC. Once in the car, unruly drunk passengers could present a hazard to the driver's concentration thereby partially negating the effect of the driver's sobriety. A fatality resulting when the driver was sober but the passengers were not would be recorded as an alcohol *involved* fatality but not an alcohol *impaired* fatality. Similar, though weaker, results are found among underage fatality rates wherein heavy control states exhibit the same fatality rates as no control states for alcohol involved fatalities, but a significantly less rate for alcohol impaired fatalities. Perhaps most disturbing is the finding that underage fatality rates (both alcohol involved and alcohol impaired) are significantly higher among moderate control states than among privatized states.

IV. Conclusion

This study utilizes a panel of 49 states from 1982 to 2002 in an attempt to measure the relationship between privatization of alcohol sales and alcohol-related traffic fatalities. Controlling for other alcohol-control policies, our results demonstrate that states with privatized alcohol markets generally experience lower alcohol-related traffic fatalities. Whereas previous studies using classifications of states as "controlled" versus "privatized" found no relationship between fatality rates and privatization, we find a significant relationship that varies based on the degree of privatization and the definition of alcohol-related fatality. We find that states with privatized alcohol markets experience significantly lower alcohol-related traffic fatality rates among consumers of legal age, and weaker though directionally similar results among underage consumers. Our results suggest that concerns that privatization of state-controlled markets would lead to an increase in alcohol-related traffic fatalities may be unfounded, and that the state-control of alcohol markets itself may be a factor in increasing alcohol-related traffic fatalities.

V. References

American National Safety Council (ANSI). 1996. "Manual on Classification of Motor Vehicle Traffic Accidents." Sixth Edition (ANSI D16.1-1996).

Becker, G. 1969. "Crime and Punishment: An Economic Approach." *Journal of Political Economics*. 76(2): 169-217.

Chaloupka, F. and Saffer, H. 1989. "Breath Testing and Highway Fatality Rates." *Journal of Applied Economics*. 21(7): 901-912.

Chaloupka, F.; Saffer, H.; and Grossman, M. 1993. "Alcohol-Control Policies and Motor-Vehicle Fatalities." *The Journal of Legal Studies*. 22(1): 161-186.

Cook, P. and Tauchen, G. 1984. "The Effect of Minimum Drinking Age Legislation on Youthful Auto Fatalities." *The Journal of Legal Studies*. 13(1): 169-190.

Dee, T. 2001. "Does Setting Limits Save Lives? The Case of 0.08 BAC Laws." *Journal of Policy Analysis and Management*. 20(1): 111-128.

Dee, T. 1990. "State Alcohol Policies, Teen Drinking, and Traffic Fatalities." *Journal of Public Economics*. 72(2): 289-315.

Dee, T. and Evans, W. 2001. "Behavioral Policies and Teen Traffic Safety." *American Economic Review*. 91(2): 91-96.

Eisenberg, D. 2003. "Evaluating the Effectiveness of Policies Related to Drunk Driving." *Journal of Policy Analysis and Management*. 22(2): 249-274.

Fatality Analysis Reporting System (FARS). 2009. Fatalities and Fatality Rates by State, 1982 - 2006. Electronic Data. www-fars.nhtsa.dot.gov.

Fitzgerald, J.L. and Mulford, H.A. 1992. "Consequences of Increasing Alcohol Availability: the Iowa experience revisited." *British Journal of Addiction*. 87(2): 267-274.

Fitzgerald, J.L. and Mulford, H.A. 1988. "Consequences of Increasing Off-Premise Wine Outlets in Iowa." *British Journal of Addiction*. 83(11): 1271-1279.

Freeman, D. 2007. "Drunk Driving Legislation and Traffic Fatalities: New Evidence on BAC 08 Laws." *Contemporary Economic Policy*. 25(3): 293-308.

Grabowski, D. and Morrisey, M. 2004. "Gasoline Prices and Motor Vehicle Fatalities." *Journal of Policy Analysis and Management*. 23(3): 575-593.

National Highway Traffic Safety Administration (NHTSA). 2000. "On DWI Laws in Other Countries." DOT HS 809 037. Washington, DC.

National Highway Traffic Safety Administration (NHTSA). 1997. "National Drunk and Drugged Driving (3D) Prevention Program Planner." Washington, DC.

National Institute on Alcohol Abuse and Alcoholism (NIAAA). 2009. "Keg Registration." apis.niaaa.nih.gov/index.asp. (accessed November 11, 2009).

Park, K.; Myeong, K.; and Stapleton, H. 2008. "Determinants of Traffic Fatalities in the U.S." *Journal of Undergraduate Research*. Vol. 8.

Peltzman, S. 1975. "The Effects of Automobile Safety Regulation." *Journal of Political Economy*. 83(4): 667-725.

Plümper, T and Troger, V. 2007. "Efficient Estimation of Time-Invariant and Rarely Changing Variables in Finite Sample Panel Analyses with Unit Fixed Effects." *Political Analysis*. 15(2): 124-139.

Ponicki, W. R. 2004. Statewide Availability Data System II: 1933 - 2003. *National Institute on Alcohol Abuse and Alcoholism.* Research Center Grant P60-AA006282-23. Berkeley, CA: Pacific Institute for Research and Evaluation, Prevention Research Center.

Pulito, J. and Davies, A. 2009. "Government Run Liquor Stores: The Social Impact of Privatization." *The Commonwealth Foundation Policy Brief*. 21(3): 1-16.

Rees, R. 1997. Privatization of Liquor Stores: No Threat to Public Safety. *The Commonwealth Foundation.*

Risa, A. 1994. "Adverse Incentives from Improved Technology: Traffic Safety Regulation in Norway." *Southern Economic Journal*. 60(4): 844-857.

Room, R. 1987. "Alcohol Monopolies in the U.S.: Challenges and Opportunities." *Journal of Public Health Policy*. 8(4): 509-530.

Sivak, M. 2009. "Mechanisms Involved in the Recent Large Reduction in U.S. Road Fatalities." *Injury Prevention*. 15(3): 205-206.

Sobel, R. and Nesbit, T. 2007. "Automobile Safety Regulation and the Incentive to Drive Recklessly: Evidence from NASCAR." *Southern Economic Journal*. 74(1): 71-84.

U.S. Department of Health and Human Services. 2005. "Helping Patients Who Drink too Much." pubs.niaaa.nih.gov/publications/Practitioner/CliniciansGuide2005/guide.pdf (accessed September 16, 2009).

Wagenaar, A., and Toomey, T. 2002. "Effects of Minimum Drinking Age Laws: Review and Analyses of the Literature from 1960-2000." *Journal of Studies on Alcohol*. Supplement 14: 206-225.

Yakovlev, P. and Inden, M. 2009. "Life in the Fast Lane: A Panel Data Analysis of U.S. Traffic Fatalities." Working Paper.

Young, D. and Likens, T. 2000. "Alcohol Regulation and auto fatalities." *International Review of Law and Economics*. 20(1): 107-126.

Zador, P.; Krawchuk, S; and Voas, R. 2000. "Relative Risk of Fatal Crash Involvement by BAC, Age, and Gender," DOT HS 809 050. Washington, DC: National Highway Traffic Safety Administration.

Table 1. Variable Descriptions and Summary Statistics

Variable Description	*Mean (Stdev)*
Outcome Variables	
Alcohol-involved traffic fatalities per 1,000 people among 21+ year-olds	0.09 (0.04)
Alcohol-involved traffic fatalities per 1,000 people among 15 to 20 year-olds	0.04 (0.02)
Alcohol-impaired traffic fatalities per 1,000 people among 21+ year-olds	0.08 (0.03)
Alcohol-impaired traffic fatalities per 1,000 people among 15 to 20 year-olds	0.03 (0.02)
Alcohol Market Controls	
Dummy variable for the classification of a state as Heavy Control (1=State is classified as Heavy Control, 0=Otherwise)	0.11 (0.31)
Dummy variable for the classification of a state as Moderate Control (1=State is classified as Moderate Control, 0=Otherwise)	0.18 (0.39)
Dummy variable for the classification of a state as Light Control (1=State is classified as Light Control, 0=Otherwise)	0.07 (0.26)
Alcohol Sales and Use Controls	
Lowest minimum legal drinking age among all alcoholic beverage types	20.69 (0.79)
Dummy variable for Enforcement/Adoption of a mandatory seat belt law (1=Enforcement/Adoption, 0=Otherwise)	0.66 (0.48)
Dummy variable for Enforcement/Adoption of a 0.08 g/dl BAC limit for drivers (1=Enforcement/Adoption, 0=Otherwise)	0.19 (0.39)
Dummy variable for Enforcement/Adoption of a 0.02 g/dl BAC limit for drivers under the age of 21 (1=Enforcement/Adoption, 0=Otherwise)	0.37 (0.48)
Dummy variable for Enforcement/Adoption of a keg registration law (1=Enforcement/Adoption, 0=Otherwise)	0.17 (0.38)
Dummy variable for Enforcement/Adoption of a preliminary breath test law (1=Enforcement/Adoption, 0=Otherwise)	0.51 (0.50)
Dummy variable for Enforcement/Adoption of a open container law (1=Enforcement/Adoption, 0=Otherwise)	0.49 (0.50)
Dummy variable for Enforcement/Adoption of a dram shop law (1=Enforcement/Adoption, 0=Otherwise)	0.83 (0.38)

Outcome data come from the Fatality Analysis Reporting System (2009). Data on alcohol sales and use controls come from Ponicki (2009). Alcohol market control classifications come from Pulito and Davies (2009).

Table 2. Alcohol Market Control Classifications

Heavy Control	Sales of at least two types of alcohol (beer, wine, and liquor) are controlled at the retail level, and sales of at least one type of alcohol is controlled at the wholesale levels.
Moderate Control	Sales of one type of alcohol (beer, wine, or liquor) are controlled at the retail level, and sales of at least one type of alcohol are controlled at the wholesale level.*
Light Control	No sales are controlled at the retail level, and the sale of at least one type of alcohol is controlled at the wholesale level.
No Control	Alcohol sales are not controlled. This is NABCA's definition of "license".

* At the retail level, Idaho regulates all beverages that exceed 16 percent alcohol, and Ohio regulates all beverages that exceed 21 percent alcohol. Wine and Spirits have an average alcohol content of 12 percent and 40 percent, respectively (U.S. Department of Health and Human Services, 2005). Based on these content levels, we classify Ohio and Idaho as moderate control states.

Table 3. States According to Alcohol Market Control Classification

Heavy Control	Moderate Control	Light Control
Maine	Alabama	Iowa*
Pennsylvania	Idaho	Michigan
Montana	Iowa*	Mississippi
Utah	New Hampshire	West Virginia*
	North Carolina	Wyoming
	Ohio	
	Oregon	
	Vermont	
	Virginia	
	Washington	
	West Virginia*	

* Iowa was Moderate Control prior to 1987 and Light Control after. West Virginia was Moderate Control prior to 1990 and Light Control after.

Table 4. Alcohol Related Traffic Fatalities as a Function of Alcohol Policies

	Legal Age Traffic Fatality Rates		Underage Traffic Fatality Rates	
Factor	**Alcohol Involved**	**Alcohol Impaired**	**Alcohol Involved**	**Alcohol Impaired**
Alcohol Market Controls				
Heavy Control	0.026 ***	-0.057 ***	0.017	-0.028 ***
	(0.004)	(0.015)	(0.011)	(0.007)
Moderate Control	0.063 ***	0.049 ***	0.021 **	0.024 ***
	(0.011)	(0.015)	(0.009)	(0.007)
Light Control	0.024 ***	-0.004	0.018 *	0.000
	(0.006)	(0.003)	(0.010)	(0.002)
Alcohol Sales and Use Controls				
Minimum Drinking Age	-0.004 ***	-0.004 ***	-0.005 ***	-0.004 ***
	(0.001)	(0.001)	(0.001)	(0.001)
Mandatory Seat Belt	-0.012 ***	-0.008 ***	-0.009 ***	-0.007 ***
	(0.002)	(0.002)	(0.002)	(0.002)
BAC Limit	-0.007 ***	-0.006 **	-0.004 **	-0.003 **
	(0.002)	(0.002)	(0.001)	(0.001)
Zero Tolerance	-0.011 ***	-0.007 ***	-0.009 ***	-0.006 ***
	(0.003)	(0.002)	(0.002)	(0.002)
Keg Registration	-0.009 ***	-0.006 ***	-0.009 ***	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Preliminary Breath Test	-0.005 **	-0.010 ***	-0.001	-0.004 ***
	(0.002)	(0.002)	(0.002)	(0.001)
Open Container	-0.011 ***	-0.007 ***	-0.006 ***	-0.001
	(0.002)	(0.002)	(0.002)	(0.001)
Dram Shop	-0.010 ***	-0.005 **	-0.008 ***	-0.002
	(0.003)	(0.002)	(0.002)	(0.001)
Constant	0.165 ***	0.191 ***	0.131 ***	0.134 ***
	(0.022)	(0.022)	(0.017)	(0.017)
R^2	0.865	0.700	0.760	0.542

Dependent variables: Alcohol-involved/impaired traffic fatalities and underage alcohol-involved/impaired traffic fatalities per 1,000 people. Significant levels: *** at 1%, ** at 5%, and * at 10%. Standard errors are reported in parentheses. Each regression is estimated using 1,029 observations (49 states over 21 years).