The Effect of Alcohol Taxes on the DUI Fatality Rate

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Introduction

Since the late 1970s economists have studied drinking and driving in an attempt to develop policies that might curb the fatal result of adding the two together. A minimum legal drinking age, aimed at restricting accident-prone, younger drivers from drinking, is one policy that most economists agree has a significant effect in reducing fatal drunk-driving accidents. Other policy suggestions which have not generated as much agreement include laws aimed at alcohol distributors, alcohol consumers, and drivers in general. Policies also include the endorsement of grass-roots organizations aimed at manipulating drinking sentiment such as Mothers Against Drunk Driving (MADD), Students Against Drunk Driving (SADD), and Drug Abuse Resistance Education (DARE). While most economists agree that these policies have some effect on reducing alcohol-related accidents, the degree of their effect is often disputed. Perhaps the most interesting policy debate involves the effect of alcohol taxes on drunk-driving fatalities (DUI fatalities). Early research used data from the mid 1970s to the early 1980s to find that beer taxes had a negative and significant relationship to DUI fatalities, while more recent research used data from the late 1980s and early 1990s to find the relationship to be insignificant.

These debates provide the motivation for this paper. Applying the most recent data available to this unsettled question, regression analysis is used to examine the effect of alcohol taxes on the DUI fatality rate. Additional variables are included in the

regressions in order to ascertain the strength of their influence. The results provide direction for policy prescriptions in the attempt to reduce such fatalities.

Literature Review

A striking aspect of the literature involving alcohol taxes and drunk-driving fatalities is the diversity of empirical results among different studies. Earlier studies found that alcohol consumption and DUI fatalities were heavily affected by alcohol taxes, while more recent studies found little or no effect. This change in findings was surprisingly fluid, with no major break from one article to the next; rather, each study took the assertions of established research a bit further than previous articles, and gradually, over a period of about 15 years, the conclusions were reversed.

Four well-known articles illustrate this evolution of findings regarding the effect of alcohol taxes on DUI fatalities. “Beer Taxes, the Legal Drinking Age, and Youth Motor Vehicle Fatalities” (Saffer and Grossman, 1987) was one of the first articles of this type and served as the basis for most subsequent work. Using data from 1975 to 1981, this study examines the effects of taxes and the Minimum Legal Drinking Age (MLDA) on youth motor vehicle mortality rates. It splits the targeted population into three different age ranges (ages 15-17, 18-20, and 21-24) and determines that in all three the real excise beer tax is negatively related to drunk-driving accidents. Saffer and Grossman also suggest that the death rate of the 18-20 group is inversely related to the MLDA. They conclude that tax policies have not only a significant effect on the motor vehicle death rate, but one that perhaps exceeds the effect of the MLDA.

Taking a somewhat different slant than the Saffer-Grossman study, "Youth Alcohol Use and Public Policy" (Laixuthai and Chaloupka, 1993) serves as a bridge between the early claims that alcohol taxes were highly effective in curbing fatal drunk-driving accidents and more recent claims that the effect is negligible. Using 1983 and 1987 survey data for high school seniors, this study examines the frequencies of youth drinking and also compares the effectiveness of MLDA and beer taxes on curbing underage drinking. The study focuses only on beer taxes (not wine and liquor taxes) for two reasons. First, beer is believed to be the most commonly consumed beverage of young drinkers. Furthermore, taxes on beer are more easily compared because the structure of beer taxation is similar among different states, while wine and liquor taxation tends to vary. Laixuthai and Chaloupka conclude that drinking is responsive to tax increases during the years tested, but also assert that the sensitivity of youth beer-drinking declines after the establishment of a uniform minimum legal drinking age of 21.

Finally, the two articles on which much of this thesis is based take the findings of Laixuthai and Chaloupka further and conclude exactly the opposite of earlier articles like Saffer and Grossman. In "Beer Taxation and Alcohol-Related Traffic Fatalities," Mast, Benson, and Rasmussen (1999) examine data from the period 1984 to 1992, using a reduced form model to show that the effect of alcohol taxes on alcohol-related traffic fatalities is minimal. The article claims that previous differences were the result of missing variable biases, specifically "the failure to include determinants of alcohol consumption other than drinking age and/or factors that simultaneously determine drinking behavior and political support for alcohol taxes"(Mast et al., 214). In "Alcohol Regulation and Auto Fatalities," Young and Likens (1998) come to a similar conclusion,

using data from 1982 through 1990. They find that a significant relationship exists between motor vehicle fatalities and government policies such as MLDA, seatbelt laws, and dram-shop liability, but not between fatalities and alcohol taxes and prices. Using both logistic and linear models to determine the fatality rate of highway drivers, as well as an extensive list of control variables (both socioeconomic and legal), Young and Likens suggest, like Mast et al., that overly-simplified models may have been the cause of previous error. They also suggest that the effects of taxes has diminished in recent years with the implementation of other policies aimed at curbing drunk driving.

Model

The initial model is based on the one developed in Mast et al.(1999) and primarily attempts to capture the relationship between DUI fatalities and alcohol taxes. DUI fatalities are a function of drunk-driving occurrences and general safety precautions taken for driving:

DUI Fatalities = f(Drunk-driving, Safety Precautions)

Safety precautions would include things such as the conditions of roadways, vehicle condition, and overall driving ability. Drunk-driving offenses are harder to define and measure. Mast et al. postulate that drunk-driving is a function of alcohol consumption, the probability of punishment for drinking and driving, the severity of punishment if

caught drinking and driving, and the general sentiment regarding drinking, whether driving or not:

Drunk-driving = f(Alcohol Consumption, Probability of Punishment, Severity of Punishment, Drinking Sentiment)

Alcohol consumption, Mast et al. continue, is based on the interaction of supply and demand. While variables such as income, price, and laws affecting availability determine the quantity demanded of alcohol, price, transportation costs, taxes, and level of competition affect the quantity supplied of alcohol. In equilibrium, price is determined, developing the following function of alcohol consumption:

Alcohol Consumption = f(Income, Availability Laws, Transportation Costs, Taxes, Competition)

Plugging this back into the original DUI Fatalities equation, Mast et al. arrive at this reduced form equation:

DUI Fatalities = f(Income, Availability Laws, Transportation Costs, Taxes, Competition, Probability of Punishment, Severity of Punishment, Drinking Sentiment, Safety Precautions).

Sass and Saurman (1993) have found that the money price of alcohol has a small impact on consumption decisions. If a change in price (brought about by a change in

taxes) has a small effect on the number of consumers buying alcohol, then it would have an even smaller impact on the number of DUI fatalities. After all, if only a fraction of those affected by these tax changes would actually drive after drinking, and only a fraction of those who drive drunk would get into an accident, and only a fraction of these accidents would lead to fatalities, then the resultant impact would be very small, if any. There is reason to be skeptical of early findings, which find this impact to be significant. Mast et al. claim that part of the discrepancies between the early conclusions and alcohol consumption-price studies is a result of missing variable biases. They claim that the beer tax coefficient of early studies picks up the effects of omitted regional and cultural variables, making it appear important when it is not. This study, therefore, uses a simple version of the model developed above in order to generate results comparable to earlier models (which focused primarily on age, incomes and alcohol taxes), and then adds regional and cultural variables in attempt to determine if missing variable bias caused the difference of conclusions.

Sample and Variables

Sample

This study will estimate a version of the above model using comparatively recent data for the years 1997 through 1999. Data for Alaska and Hawaii were not readily available for all of the variables, so these two states were omitted. Furthermore, wine taxation methods for eight states were too complicated to include.[1] Pooling forty states

[1] Colorado, Missouri, North Carolina, Pennsylvania, South Carolina, Utah, Washington, and Wyoming were not included due to complicated wine taxation methods.

across three years yields a total number of observations equal to 120. A complete list of the states used is available in *Table 1: Variable Definitions and Summary Statistics*.

DUI Fatality Rate

Two rates were considered in developing the dependent variable, the DUI Fatality Rate. The numerator, fatal accidents with highest Blood-Alcohol Content (BAC) in accident greater than .01, was the same in each. Dividing this by the total number of licensed drivers would capture the proportion of drivers killed overall. However, since not all licensed drivers actually drive, and a good portion of the drivers are not legally allowed to drink, this proportion would lead to an inaccurate representation of the DUI fatality rate. The total number of miles driven per state for each year is substituted in place of total number of licensed drivers. Therefore, the dependent variable measures the number of alcohol related fatal accidents per 10,000 miles driven.

Alcohol Taxes

Alcohol taxes were measured by adding real federal excise rates to the excise rates for each state. Unlike other studies, which only considered beer taxes, this study also included wine taxes. Liquor taxes were not included due to the inconsistency throughout states in the methods of taxing spirits. For wine, eight states had cumbersome methods of taxation and were omitted, as noted above.

Income

The real per capita income as reported from the U.S. Bureau of the Census was used to represent the income variable. The expected effect of income on the DUI fatality rate is ambiguous. On the one hand, a higher income leads to the greater affordability of

alcohol. If higher income leads to more alcohol consumption, income would have a positive relationship with the DUI Fatality Rate, since more drinking would lead to more drunk driving and ultimately more drunk driving accidents. On the other hand, a higher income would also lead to the greater affordability of safer cars, making one less likely to get into a fatal car accident. Also, if higher income is associated with higher social status, then there would be a higher cost to being caught for drinking and driving (in other words, public embarrassment may be more of a deterrent). Finally, the opportunity cost of forgone income of the injured would be higher as income increased. These factors would make the person less likely to drink and drive and therefore less likely to get in a drunk-driving accident. In this line of thinking, the income variable would have a negative relationship to the DUI fatality rate.

Probability of Punishment and Severity of Punishment

The best determinants of the probability and severity of punishment for driving under the influence, as pointed out by Mast et al.(1999), are the laws that states have aimed at preventing this offense. To represent the probability of punishment, this model uses the presence of Illegal Per Se Laws, which make it a crime to drive with a BAC over a certain limit. Attorneys can get a conviction under these laws by simply showing that the driver's BAC was over a predetermined limit. Since they do not have to show that the driver was actually impaired, conviction is more probable under these laws. To represent the severity of punishment, this model uses Anti Plea Bargaining Laws, which require a person to be tried for DUI if that is what he was arrested for, unless there is insufficient evidence of this crime. This would increase the severity of punishment

associated with drinking and driving by making it difficult to plea bargain a lesser charge. Since both of these variables are meant to deter individuals from driving drunk, their predicted effect on the DUI fatality rate is negative.

Laws Affecting Availability of Alcohol

The Dram Shop Law represents the laws affecting the availability of Alcohol. Under this law, suppliers of alcohol (restaurants and bars) can be held responsible for the actions of their customers after serving them. Suppliers are expected to pay more attention to the amount of alcohol served, perhaps cutting people off earlier or closing doors to the shop earlier. This, therefore, affects the availability of alcohol. Since under these laws people are less likely to be served past the point of intoxication, and therefore less likely to get in fatal drunk driving accidents, the predicted effect on the DUI fatalities is negative.

Safety Precautions

Although there is no actual way to measure how safe drivers are within a certain state, previous articles (Grossman and Saffer, 1987, and Laixuthai and Chaloupka, 1993) have shown that young drivers form a majority of the people killed in drunk driving accidents, leading them to conclude that older drivers tend to have better driving ability and take more precautions while on the road. Therefore, my proxy for this safety variable is the proportion of young drivers. As this proportion goes up, and the number of inexperienced, perhaps less cautious drivers, increases, the DUI fatality rate is

expected to go up as well. Furthermore, if young people, perhaps in college, are more inclined to binge drink (and perhaps mishandle alcohol), then they would be more likely to be in a fatal driving accident related to alcohol. Therefore, this variable is expected to display a positive relationship with the dependent variable.

Drinking Sentiment

The final part of the fatalities function covers a wide range of influences and hence requires a number of variables. Grassroots organizations have been founded throughout the country aimed at curbing DUI fatalities by supplying people with facts and numbers regarding the consequences of drunk-driving. The belief is that if people are better informed about the actual consequences of drinking and driving, they will be less likely to drive drunk and therefore less likely to get in a drunk-driving accident. If this information reduces the amount of DUI fatalities, then the more numerous these organizations are in a given area, the lower the DUI fatality rate will be. This variable is measured by the number of MADD chapters per 100 square miles.

Drinking sentiment might vary over different regions of the country. For example if vacationers are more likely to drink heavily, then vacation areas (for example warm beaches) are likely to show more DUI fatalities. Aside from picking up this tourist effect, regional variables may also pick up cultural and social norms and the effects of alcohol laws not included. To control for regional differences, this study adopts the Census Bureau's division of the United States into nine areas: Northeast(NE), Mid-Atlantic(MA), East North Central(ENC), West North Central(WNC), South Atlantic(SA), East South Central(ESC), West South Central(WSC), Mountain(MT), and Pacific(PA). The Western

regions(PA and MT, including places like California and Nevada) and Southern regions (SA, ESC, and WSC, including Florida and Louisiana) are expected to be the most popular regions for vacations and therefore to have a higher rate of drunk driving fatalities.

Religion is also likely to affect drinking sentiment. Three denominations were chosen that have heavy concentrations in certain states: Catholic, Baptist, and Mormon. Mormons and Baptists are two religions that forbid the use of alcohol, while Catholics allow its use in moderation. The model measures the strength of these religions by respective membership proportions. If the prevalence of a certain religion affects the drinking sentiment, then the amount of DUI fatalities would relate to whatever this sentiment is. It is expected, therefore, that areas that are predominantly Mormon (western states) and Baptist (southern states) would be negatively related to the DUI fatality rate. Because the Catholic teaching is open to different interpretations, it is hard to anticipate how areas that are predominantly Catholic would relate to the DUI fatality rate. This effect, therefore, is left unpredicted.

Interestingly, Mast et al. (1999) suggest that drinking sentiment also affects voting tendency. In an area where a heavy portion of the population is anti-drinking, voters would be likely to elect a representative supporting legislation against drinking (more severe DUI penalties). If increased legislation against drinking causes less DUI fatalities, then this reinforces the expectation that anti-drinking sentiments and fatalities will be negatively related.

The Results

Most of the results of the regression analysis (shown in *Table 2: DUI Fatality Equation Estimation*) are consistent with more recent conclusions regarding drunk-driving fatalities. Three different regressions were run in order to examine possible changes in the alcohol coefficients as more variables were added. The purpose of this was to try to expose any missing variable biases that might have been present in earlier studies.

The first regression included just the beer, income, and young driver variables. This was intended to imitate early studies that did not include legislative, religion, and regional variables. A test for heteroskedasticity indicates that the null hypothesis of homoskedasticity can not be rejected (W= 8.55, p= 0.480). The regression is estimated by OLS, and conventionally computed standard errors are used in T-tests for significance.

In this regression, income has a negative and significant relationship to the DUI Fatalities rate. Surprisingly, young drivers display a negative and significant effect. Finally, the beer coefficient has a negative but insignificant relationship to the DUI Fatality rate. The R-squared for this regression is comparatively low, explaining about 33% of the variation in fatality rates.

In the second regression, the wine and law variables are added. A test for heteroskedasticity indicates that the null hypothesis of homoskedasticity can be rejected (W=72.05, p=0.000). Therefore, White's standard errors are substituted.

The coefficient of income is still negative and significant, while the coefficient of young drivers is now positive but insignificant. Anti-plea bargaining laws are positive and significant, while the other two law variables are insignificant. A joint test of

significance indicates that the null hypothesis that the coefficients on laws are all zero cannot be rejected (F= 1.15, p= 0.331). Finally, the results of the second regression show beer and wine taxes to be positively but insignificantly related to the DUI fatality rate. Furthermore, a joint test of significance indicates that the null hypothesis that the coefficients of both are zero can not be

rejected (F=1.13, p=0.326). The R-squared coefficient for the second regression is higher than the first, explaining about 46% of the variation in the fatality rates.

The third regression adds the sentiment, region, and time variables and is the regression that will be used to interpret the full model. A test for heteroskedasticity indicates that the null hypothesis of homoskedasticity can be rejected (W=52.61, p=0.005), so White's standard errors are again substituted. The R-squared for the third regression is high, compared to the first two regressions, explaining about 78% of the variation in fatality rates.

The income coefficient is negative and significant, indicating that as income goes up, the DUI fatality rate goes down. The coefficient measuring the proportion of young drivers, on the other hand, has switched signs and is now positive and significant. This supports the claim that younger drivers tend to be more reckless and/or are more prone to drink carelessly than older drivers, and, therefore, more likely to be in fatal drunk-driving accidents.

The variables measuring drinking sentiment show mixed results. The coefficient of the variable measuring the proportion of Catholics in a given area is positive and significant. Perhaps many Catholics take the Catholic Church's call for moderate drinking as an implicit endorsement of alcohol. The coefficient of the variable measuring

the proportion of Mormons is negative and significant, indicating that the more anti-drinking sentiment, the less DUI fatalities. Both the coefficient of the proportion of Baptists and the coefficient of the variable measuring the strength of MADD organizations are negative but insignificant. However, a joint test of the null hypothesis that the MADD, Baptist, Mormon, and Catholic variables are all zero can be rejected ($F=12.29$, $p=0.00$). This suggests that sentiment matters in determining drunk-driving fatalities.

The regional coefficients vary in sign and significance. The Southern and Pacific regions have significantly larger coefficients than the Mid Atlantic control region. Since the Southern and Pacific regions include areas with warm beaches that attract many tourists, this supports the vacation destination conjecture. The Mountain region also has a significantly larger regional coefficient than the control region. Since the Mountain region has an abundance of ski resorts and also includes Las Vegas, this also supports the vacation destination conjecture. Furthermore, since parts of this region would get more snow than other regions, it may make the driving more difficult and accidents more likely. Finally, the other eastern regions appear insignificantly different from the Mid Atlantic region. This suggests that these regions have similar laws and cultural norms, which lead to similar DUI fatality rates.

The most surprising results of this regression analysis are the coefficients of the law variables. Similar to Mast et al.(1999), each law variable is insignificant by itself. A joint test, however, shows that the null hypothesis that the law coefficients are all zero cannot be rejected ($F=.579$, $p=.630$). Mast et al., on the other hand, rejected this null hypothesis. So, while Mast et al. indicated that the laws have a significant effect in

conjunction with each other, the results of this study indicate that they do not. However, Mast et al. also included more law variables than this study did, which may be the reason for the difference in findings.

Finally, the beer tax coefficient is positive but insignificant, while the wine coefficient is negative and insignificant. A joint test of significance indicates that the null hypothesis that the coefficients on beer and wine are both zero cannot be rejected ($F=1.171$, $p=0.314$). These findings cast further doubt upon earlier studies that claim alcohol taxes have a significant impact on DUI fatalities. Since the alcohol coefficients are insignificant regardless of the inclusion of law and sentiment variables, furthermore, these results also cast doubt upon more recent studies that suggest that earlier conclusions were different as a result of missing variable biases.

The difference between the findings of earlier studies and the findings of more recent studies might then be connected to the implementation the MLDA. Laixuthai and Chaloupka (1993) found that between 1982 and 1989, as the MLDA's were rising throughout the country, the effect of beer taxes diminished in their equations. Perhaps the early results, which found taxes to significantly effect drunk-driving fatalities, were largely dependent upon very young drinkers. If the MLDA eliminated these drinkers from the equation, by disallowing them to purchase alcohol, then it would also eliminate any significant effect that taxes had on DUI fatalities. Unfortunately, since this study deals with a period after the implementation of a uniform MLDA across all states, testing of this hypothesis must be left up to future research.

Conclusions and Policy Prescriptions

Similar to more recent studies on the determinants of DUI fatalities, the use of a new sample period gives further evidence that alcohol taxes and the DUI fatality rate are not significantly related. Also in line with recent studies, this study shows that drinking sentiment is significantly related to the DUI fatality rate. Unlike recent studies, this study indicates that anti-drinking laws do not significantly affect the DUI fatality rate. Similar to all studies, this study confirms that income and safety are both significantly related to DUI fatalities (although in opposite directions).

Most policy prescriptions for lowering the DUI fatality rate are related to taxation or legislation. Since neither taxation nor legislation have shown to be significantly related to the DUI fatality rate in this study, however, these prescriptions would not be constructive. Instead, it may be more beneficial to focus on the safety variable in this study, measured by the proportion of young drivers. Since the results indicate that the higher the proportion of young drivers, the higher the DUI fatality rate, perhaps it would be helpful to cut back the amount of driving by younger drivers. Curfew laws may be implemented, for instance, which prohibit drivers under a certain age from driving after a certain hour. If accidents are more likely to happen when there is less visibility (at night, for example), and young drivers are more reckless than older drivers, taking them out of the situations where they would be most likely to get in accidents would increase the overall safety of all drivers and consequently lower the DUI fatality rate.

Also, since drinking sentiment is shown through this analysis to have a significant effect on the DUI fatality rate, perhaps more federal money could be dedicated to manipulating this sentiment. Billboards on highways could be purchased for anti-

drinking adds and television commercials could be produced with drunk-driving information. Also, the study of drinking and driving could be a required part of health classes in high schools or in driver-education classes. The overall goal of these drinking sentiment prescriptions would be to spread information regarding the devastating realities of mixing drinking and driving, influencing sentiment regarding drinking and driving, and ultimately curbing the DUI fatality rate.

It may not be clear which particular program to approach in lowering DUI fatalities, but it is clear that something must be done. Across the nation people are losing their lives at an alarming rate as a result of drunk-driving accidents, most of which could have been prevented. While DUI fatalities may be more common to younger drivers, the effect of these accidents extends beyond those killed. It may take years for families of DUI fatality victims to piece their lives back together after the devastating incident, while many others will never fully recover. DUI fatalities are something with which every person in America should concern himself, for there is no telling when the next will occur and who will be affected.

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Table 1: Variable Definitions and Summary Statistics

	Mean	Standard Deviation
DUI Fatality Rate (fatal accidents with highest BAC>.01 per 10,000 miles driven) Source: Fatal Accident Reporting System (FARS) and Federal Highway Administration	0.597	0.180
Beer Tax (federal plus state excise tax rates per gallon of beer) Source: The Tax Foundation Facts and Figures on Government Finance	0.792	0.121
Wine Tax (federal plus state excise tax rates per gallon of wine) Source: The Tax Foundation Facts and Figures on Government Finance	0.265	0.504
Real Income (CPI deflated per capita income) Source: US Department of Commerce: Bureau of Economic Analysis	10699.80	1661.33
Young Drivers (drivers ages 16-24 divided by the total number of drivers) Source: Federal Highway Administration	0.141	0.019
Illegal Per Se (1 for states that require only a minimum BAC for prosecution of DUI offender) Source: www.MADD.org	0.800	0.402
Anti Plea Bargain (1 for states where people arrested for DUI are required to be tried for DUI) Source: www.MADD.org	0.225	0.419
Dram Shop (1 for states where suits can be brought against supplier of alcohol to DUI offender) Source: www.MADD.org	0.800	0.402
Strength of MADD Chapters (number of MADD chapters per 100 square miles) Sources: www.MADD.org, www.enchantedlearning.com, US States Area and Ranking	0.0296	0.0297
Catholic (proportion of state population that is Catholic) Source: Kosmin and Lochmin One Nation Under God	0.264	0.141
Baptist (proportion of state population that is Baptist) Source: Kosmin and Lochmin One Nation Under God	0.184	0.136
Mormon(proportion of state population that is Mormon) Source: Kosmin and Lochmin One Nation Under God	0.0218	0.0481
Northeast Region (1 for ME, NH, VT, MA, RI, and CT) Source: US Bureau of the Census	0.150	0.359
Mid Atlantic Region (1 for NY and NJ)→used as constant Source: US Bureau of the Census	0.050	0.219
East North Central (1 for OH, IN, IL, MI and WI) Source: US Bureau of the Census	0.125	0.332
West North Central (1 for MN, IA, ND, SD, NE and KS) Source: US Bureau of the Census	0.150	0.359
South Atlantic Region(1 for DE, MD, VA, WV, GA and FL) Source: US Bureau of the Census	0.150	0.359
East South Central Region (1 for KY, TN, AL and MS) Source: US Bureau of the Census	0.100	0.301
West South Central Region (1 for AR, LA, OK and TX) Source: US Bureau of the Census	0.100	0.301
Mountain Region (1 for MT, ID, NM, AZ, and NV) Source: US Bureau of the Census	0.125	0.332
Pacific Region (1 for OR and CA) Source: US Bureau of the Census	0.050	0.219
D1998 (1 for the year 1998) **D1999** (1 for the year 1999)	0.333 0.333	0.473 0.473

Table 2: DUI Fatality Equation Estimation

DUI Fatality Rate = β_1 + + β_2D1998 + β_3D1999 + β_4BEER + β_5WINE
+ β_6INCOME + β_7YOUNG + β_8APB + β_9DRAM + β_{10}PER_SE
+ β_{11}MADD + β_{12}CATHOLIC + β_{13}BAPTIST + β_{14}MORMON
+ β_{15}NE + β_{16}ENC + β_{17}WNC + β_{18}SA + β_{19}ESC + β_{20}WSC + β_{21}MT
+ β_{22}PA + ε

DUI FATALITY RATE ESTIMATES	COEFFICIENTS (T-STATISTICS)	COEFFICIENTS (T-STATISTICS)	COEFFICIENTS (T-STATISTICS)
	Regression 1	Regression 2	Regression 3
Constant (Mid Atlantic 1997 for Regression 3)	1.71 (7.27)	0.875 (2.80)	0.271 (1.23)
1998 Dummy Variable			-0.015 (-0.689)
1999 Dummy Variable			-0.027 (-1.26)
Beer	-0.077 (-0.671)	0.051 (0.334)	0.145 (1.21)
Wine		0.024 (0.656)	-0.035 (-1.29)
Income	-0.080* (-7.15)	-0.056* (-4.22)	-0.024* (-2.38)
Young	-1.42* (-1.90)	1.41 (1.49)	2.18* (2.57)
Illegal Per Se		0.005 (0.207)	-0.017 (-0.574)
Anti Plea Bargaining		0.061* (1.85)	0.031 (1.15)
Dram Shop		-0.005 (-0.142)	0.009 (0.272)
MADD			-0.148 (-0.405)
Catholic			0.406* (3.09)
Baptist			-0.098 (-0.602)
Mormon			-1.01* (-4.12)
Northeast Region			0.037 (0.926)
East North Central Region			0.104* (2.41)
West North Central Region			0.112* (2.35)
South Atlantic Region			0.248* (5.08)
East South Central Region			0.375* (5.45)
West South Central Region			0.273* (4.33)
Mountain Region			0.483* (8.31)
Pacific Region			0.112** (1.88)
R Squared N	.334 135***	.459 120	0.778 120

*significant at α= 0.05 for two-sided test

**significant at α= 0.10 for two-sided test

***CO, MO, PA, UT, and WY were included here, since only beer taxation methods were needed.