

# SIEPR

## *policy brief*

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## The Fatal Toll of Driving to Drink

By Michael Lovenheim and Joel Slemrod

*“Many towns along the state’s borders have been inundated by drinkers driving in from neighboring states. Brattleboro (VT) Chief of Police Bruce Campbell says that more than 1,000 youths have been converging each weekend on the town’s bars and nightclubs. They create problems involving drunken driving, drug abuse, burglary, and vandalism...”*

*Christian Science Monitor  
(2/7/1986)*

Automobile accidents are the leading cause of teen deaths in the United States – while 13 percent of all traffic fatalities are alcohol related, 40 percent of alcohol-related fatalities involve teenage drivers. In order to help combat teenage drunk driving, in 1984 Congress passed the National Minimum Drinking Age Act, which mandated that states

increase their minimum legal drinking age (MLDA) to 21 or forfeit federal highway funds.

Prior to passage of this law, states could determine their own minimum drinking age and as a result there were many differences between neighboring states in drinking ages. The law change reduced traffic fatalities for two reasons – an increase in the drinking age and an equalization of the drinking age across states.

Most will find it unsurprising that increasing the drinking age reduces teenage drunk driving, although studies have come to differing conclusions about the success of the Minimum Legal Drinking Age Act. What has received little attention from

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### About The Authors

**Michael Lovenheim** is the Searle Freedom Trust Post-doctoral Fellow at SIEPR. He is also a visiting lecturer in Economics at Stanford University. Lovenheim’s research is in public finance and labor economics, particularly focusing on the economics of education and issues in local taxation. His recent papers consider the lengthening of the time it takes students to obtain an undergraduate degree, the role of housing wealth in the college enrollment decision, and the effect of teachers’ unions on K-12 educational resources. He received his PhD in Economics from the University of Michigan in 2007 and has since been a post-doctoral fellow at SIEPR.



**Joel Slemrod** is the Paul W. McCracken Collegiate Professor of Business Economics and Public Policy at the Stephen M. Ross School of Business at the University of Michigan, and Professor of Economics in the Department of Economics. He also serves as Director of the Office of Tax Policy Research, an interdisciplinary research center housed at the Business School. Professor Slemrod received the A.B. degree from Princeton University in 1973 and the Ph.D. in economics from Harvard University in 1980. Professor Slemrod has been a consultant to the U.S. Department of the Treasury, the Canadian Department of Finance, the New Zealand Department of Treasury, the South Africa Ministry of Finance, the World Bank, and the OECD. From 1992 to 1998 Professor Slemrod was editor of the *National Tax Journal* and currently serves as co-editor of the *Journal of Public Economics*. He is the co-author with Jon Bakija of *Taxing Ourselves: A Citizen’s Guide to the Debate over Taxes*, whose 4th edition was published in 2008.



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policy makers is that removing differential drinking ages across states also can reduce accidents, as it makes it less likely that young drivers will go to neighboring states with lower drinking ages.

While the move to a 21-year-old MLDA occurred more than 20 years ago, it is becoming policy relevant again today as some states are considering reducing the drinking age. Recently, 100 college presidents in the United States called on lawmakers to reduce the national MLDA to 18. One of the critical components of the debate over whether to reduce the legal drinking age is whether to enact a national reduction or whether to leave it up to individual states. Analysis of the reduction in traffic fatalities due to increasing and equalizing the drinking age can help us to understand the expected increase in traffic fatalities when all states reduce their drinking age as opposed to when a state reduces its own drinking age while neighboring states do not.

## Minimum Legal Drinking Age Laws

Figure 1 presents the distribution of minimum legal

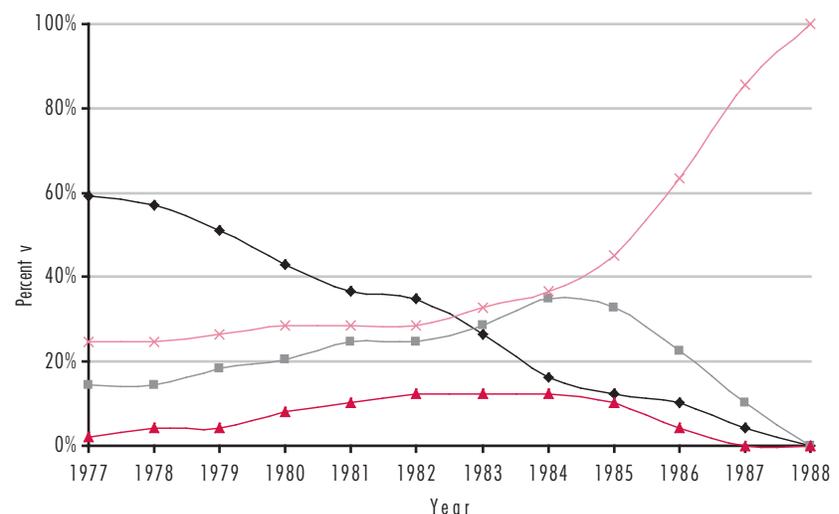
drinking ages as of January 1 in each year between 1977 and 1988 and shows that there were large differences across states and over time in minimum drinking ages during the late 1970s and the 1980s. For example, in 1977, almost 60 percent of states had an MLDA of 18 and less than 20 percent had an MLDA of 21. Between 1977 and 1984, many states increased their MLDA.

Previous studies have focused on the fact that the National Minimum Drinking Age Act *increased* minimum

legal drinking ages but paid no attention to the fact that this act also *equalized* drinking ages across states. For example, in 1980, the MLDA in Ohio was 18 but was 21 in the neighboring states of Michigan, Indiana, Pennsylvania, and Kentucky. These differences were reduced when Ohio raised its MLDA to 19 in 1983 and were eliminated completely in 1987 when Ohio raised its MLDA to 21.

If the presence of nearby lower-MLDA localities induces teenagers to avoid local restrictions by cross-border

**Figure 1.**  
**MLDA Distribution as of January 1 of Each Year, 1977-1988**



Source: State-specific minimum legal drinking age laws. After 1988, all states had MLDA laws of 21.



shopping, alcohol-related accidents may be more likely since teenagers may drive to get the alcohol (and, more importantly, may drive back under the influence). The act of cross-border evasion of the local MLDA itself therefore can undermine the main objective of state alcohol policies – the prevention of alcohol-related automobile accidents, especially among young drivers.

Cross-border evasion, which can reduce the effectiveness of state policies, has been studied largely in the context of taxation, where inter-jurisdictional tax differences induce consumers to purchase goods such as cigarettes and alcohol in nearby localities. Without exception, the literature concludes that this phenomenon is widespread and varies with the potential monetary savings. What makes the variation in MDLA laws most striking is that part of the cost of avoiding the local law can be measured in terms of lives, not only of the youthful drivers but also others involved in the fatal crashes of drunk drivers returning from a night on the town.

### **Minimum Legal Drinking Age Evasion and Teen Involvement in Fatal Accidents**

We analyze empirically the existence and cost, in lives, of minimum legal drinking age evasion. Using Geographic Information System (GIS) mapping software, we calculate the distance between the population center of each county in the United States and the closest locality in which an 18-, 19-, or 20-year-old legally could purchase alcohol. This locality can be another state, Canada, or Mexico. We use these data to examine how the likelihood of an 18-, 19-, or 20-year-old driver being involved in a fatal accident changes with respect to the distance such individuals need to travel to purchase alcohol legally.

Our results indicate that, for counties within 25 miles of a lower-MLDA border, the effect of restricting alcohol locally increases the likelihood that an 18- or 19-year-old driver is involved in a fatal accident (relative to all drivers over 25 years of age). In contrast, raising the drinking age within a state has a negative effect on the likelihood that an 18-, 19-, or 20-year-old driver is

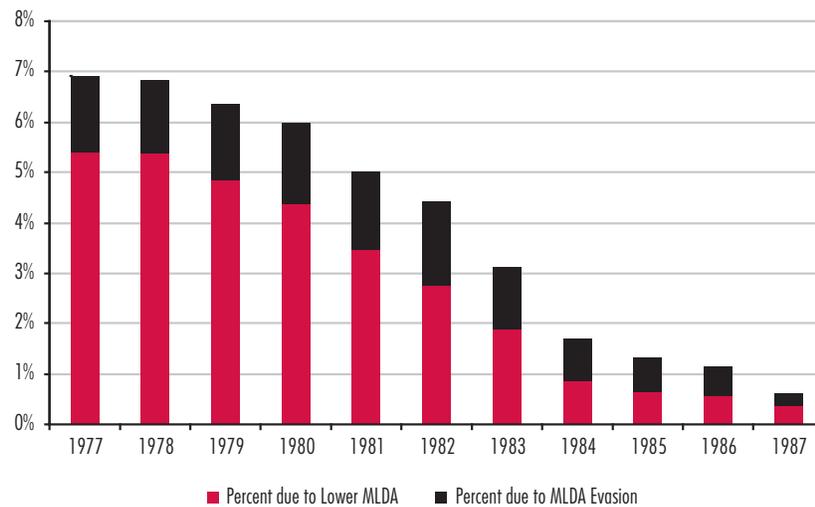
involved in a fatal accident within counties more than 25 miles from a lower-MLDA border. These results suggest that increasing the MLDA decreases teen-involved traffic fatalities in counties more than 25 miles from a lower-MLDA border, but for counties within 25 miles the existence of an MLDA differential actually causes more teen involvement in traffic fatalities. These effects are due solely to accidents occurring at night, which is consistent with alcohol use.

The main question we want to answer is how much of the teenage drunk driving reductions from states raising their MLDA in the 1970s and 1980s were due to equalizing MLDA and how much were due to raising MLDA. Understanding these differences will tell policymakers how important having a high drinking age is as opposed to having an equal drinking age across states.

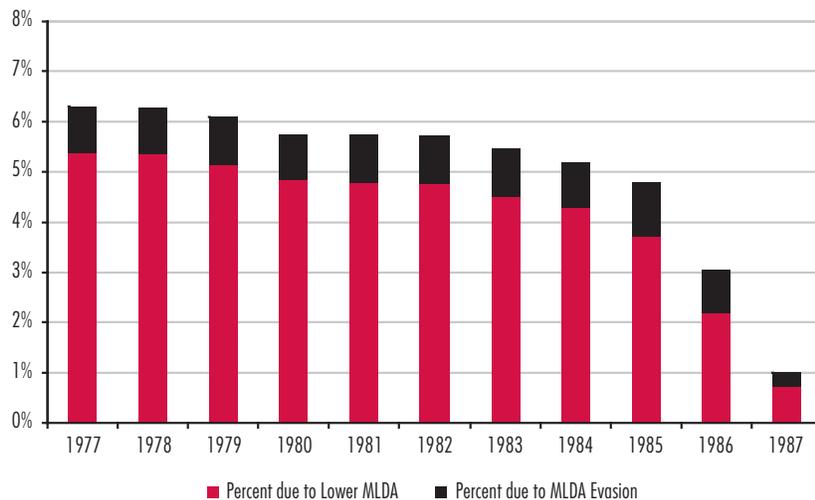
Using our estimates, we calculate what teenage traffic fatalities would look like in 2002 if states changed their MLDA to be the same as they were in the 1970s or 1980s. Figure 2 shows the percent increase in teen traffic fatality involvement if all states set their MLDA at the

**Figure 2.**  
**Percent Changes Relative to 2002 in the Proportion of Fatal Accidents with a Teen Driver of a Given Age from All States Setting their MLDA to What They Had Been in Each Year**

Panel A: 18-Year-Olds



Panel B: 19-Year-Olds



Source: Authors' calculations as described in the text. The height of each bar represents the total percent increase in fatal accident involvement of drivers of a given age due to implementing the historical MLDA distribution from each year in 2002. The upper and lower sections of each bar decompose the total increase into the part due to MLDA evasion and the part due to lowering the MLDA, respectively.

previous levels. Panel A contains results for 18-year-old drivers and Panel B contains results for 19-year-old drivers. In each year, we are able to separate the percent increase due to raising the MLDA and the percent increase due to equalizing the MLDA. The top section of each bar represents the percent change in teen-involved traffic fatalities due to the fact that in previous years the MLDA was unequal across states. The bottom portion of each bar shows the percent change due to the fact that in previous years the MLDA was higher in many states. The height of each bar is the total percent change in fatal accident involvement that can be attributed to MLDA changes.

If all states set their drinking ages to their 1977 levels, it would cause a 7 percent increase in 18-year-old involvement in traffic fatalities. Most of this increase (80%) would be due to the fact that most states had a lower MLDA in 1977, but a considerable part of the increase (20%) would be due to introducing unequal MLDA across states that induce teen drunk driving close to

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border areas. If states set MLDA at their 1984 levels, which is the year in which Congress mandated that all states increase their MLDA to 21, there would be less than a 2 percent increase in traffic fatalities involving 18-year-old drivers. This smaller effect is due to the fact that most states already had increased their MLDA to over 18 by 1984. In each year, between 20% and 50% of the increase in fatalities is due to the introduction of unequal drinking ages across states.

Panel B shows similar results for 19-year-olds. Going back to prevailing 1977 MLDA levels would increase 19-year-old involvement in traffic fatalities by 6.5 percent, most of which is due to the fact that MLDA were lower in 1977. We estimate that between 15 and 30 percent of the estimated increase in fatalities from states instituting previous MLDA laws is due to cross-state differences in drinking laws.

These estimates imply MLDA evasion by teenagers due to unequal minimum drinking age laws across states substantially increases traffic fatalities. Despite the fact that the effect of evasion on traffic fatalities is localized to counties within 25 miles of lower-MLDA borders, a significant portion of the national fatality reduction attributable to MLDA changes was due to the equalization of MLDA across states in the late 1970s and early 1980s. In addition, previous studies that have ignored MLDA evasion have understated the reduction in teenage drunk driving due to completely restricting teenagers' access to alcohol, because local restrictions are partly evaded.

### **Policy Implications**

Due to the high enforcement and lost economic activity costs of the national 21-year-old MLDA as well as the questionable

success of these regulations in curbing teenage drinking, many states, such as Vermont, South Dakota, and Missouri, are now discussing whether to lower their minimum drinking age. The recent initiative by 100 college presidents calling on states to lower their MLDA likely will increase the number of states considering such changes. While determining the full costs and benefits of a given minimum legal drinking age are outside of the scope of our analysis, our results imply that there are significant costs in terms of lives lost to having unequal drinking age restrictions across states in the United States. These results argue for setting a standard minimum legal drinking age across all states, but this standard age need not necessarily be 21.

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A publication of the  
Stanford Institute for Economic Policy Research  
Stanford University  
579 Serra Mall at Galvez Street  
Stanford, CA 94305  
MC 6015

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