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Open Container Laws & Alcohol Involved Crashes

Some Preliminary Data

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16. Abstract <p>This report presents the results of a study conducted for the National Highway Traffic Safety Administration (NHTSA) to assess the highway safety effects of laws that prohibit open containers of alcoholic beverages to be located in the passenger compartment of motor vehicles operated on public roadways. These laws are commonly referred to as "Open Container Laws." The Transportation Equity Act for the 21st Century (TEA-21), H.R. 2400, P.L. 105-178, was passed by the Senate and the House of Representatives on 22 May 1998, signed into law on 9 June 1998, and amended by a technical corrections bill, entitled the TEA-21 Restoration Act, P.L. 105-206, on 22 July 1998. The TEA-21 Restoration Act established a program to encourage states to enact and enforce open container laws that conform to a Federal Standard. States without conforming Open Container laws are subject to a transfer of highway construction funds.</p> <p>Four states passed legislation in 1999 in response to the TEA-21 Restoration Act (Iowa, Maine, Rhode Island, and South Dakota). Analyses indicated that three of the four states appeared to decline in their proportions of alcohol-involved fatal crashes during the first six months after enforcement of the conforming laws; however, the declines were not statistically significant.</p> <p>In addition to the before and after analyses, crash data (from 1999) were compared among states that have had fully-conforming laws since the enactment of the TEA-21 Restoration Act on July 22, 1998; states that enacted fully-conforming laws as of October 1, 2000, the date on which the first transfer of funds took effect; states that had partially-conforming laws as of October 1, 2000; and, states that had no Open Container laws at all, as of October 1, 2000. This analysis showed that states without Open Container Laws experienced significantly greater proportions of alcohol-involved fatal crashes than states with partially-conforming or fully-conforming laws. Also, it was noted that survey data show support for Open Container laws by a substantial majority of the general public, even in states without such laws.</p>			
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OPEN CONTAINER LAWS AND ALCOHOL INVOLVED CRASHES

SOME PRELIMINARY DATA

EXECUTIVE SUMMARY

This report presents the results of a study conducted for the National Highway Traffic Safety Administration (NHTSA) to assess the highway safety effects of laws that prohibit open containers of alcoholic beverages to be located in the passenger compartment of motor vehicles operated on public roadways. These laws are commonly referred to as "Open Container laws." The Transportation Equity Act for the 21st Century (TEA-21), H.R. 2400, P.L. 105-178, was passed by the Senate and the House of Representatives on 22 May 1998, signed into law on 9 June 1998, and amended by a technical corrections bill, entitled the TEA-21 Restoration Act, P.L. 105-206, on 22 July 1998. The TEA-21 Restoration Act established a program to encourage states to enact and enforce open container laws that conform to a Federal standard. A percentage of a state's Federal-aid highway construction funds will be transferred for use in drinking and driving countermeasures programs, law enforcement, and hazard elimination if the state fails to enact and enforce a conforming "Open Container law." To avoid the transfer of funds, a state must enact and enforce a law that prohibits the possession of any open alcoholic beverage container, and the consumption of any alcoholic beverage, in the passenger area of any motor vehicle located on a public highway, or the right-of-way of a public highway, in the state.

Four states passed legislation in 1999 following enactment of the TEA-21 Restoration Act (Iowa, Maine, Rhode Island, and South Dakota). Analyses of data obtained from the states found that three of the four states appeared to decline in the proportions of all fatal crashes that were alcohol-involved during the first six months following the beginning of enforcement of the compliant laws. The changes were in the direction expected; however, the differences were not statistically significant.

In addition to the before and after analyses, crash data (from 1999) were compared among states that had fully-conforming laws (as of the enactment of the TEA-21 Restoration Act on July 22, 1998), states that enacted fully-conforming laws as of October 1, 2000, the date on which the first transfer of funds took place; states that had partially-conforming laws, as of October 1, 2000 and states that had no Open Container laws at all, as of October 1, 2000. This analysis showed that states without Open Container laws experienced significantly greater proportions of alcohol-involved fatal crashes than states with partially conforming or fully conforming laws.

It is also noted that NHTSA's 1999 national survey on drinking and driving revealed that a substantial majority of the general public supports Open Container laws, even in states without such laws.

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OPEN CONTAINER LAWS AND ALCOHOL INVOLVED CRASHES

SOME PRELIMINARY DATA

This report presents the results of a study conducted for the National Highway Traffic Safety Administration (NHTSA) to assess the highway safety effects of laws that prohibit open containers of alcoholic beverages to be located in the passenger compartment of motor vehicles operated on public roadways. These laws are commonly referred to as Open Container laws.

BACKGROUND

The Transportation Equity Act for the 21st Century (TEA-21), H.R. 2400, P.L. 105-178, was passed by the Senate and the House of Representatives on 22 May 1998 and signed into law on 9 June 1998. On 22 July 1998, a technical corrections bill, entitled the TEA-21 Restoration Act, P.L. 105-206, was enacted to restore provisions that were agreed to by the conferees to H.R. 2400, but were not included in the TEA-21 conference report.¹ Section 1405 of the Act amended chapter 1 of title 23, United States Code (U.S.C.), by adding Section 154, which established a transfer program under which a percentage of a state's Federal-aid highway construction funds will be transferred to the state's apportionment under Section 402 of Title 23 of the United States Code, if the state fails to enact and enforce a conforming Open Container law. The transferred funds are to be used for alcohol-impaired driving countermeasures or the enforcement of drinking and driving laws, or states may elect to use all or a portion of the funds for hazard elimination activities, under 23 U.S.C. Section 152.

To avoid the transfer of funds, Section 154 requires that a state must enact and enforce a law that prohibits the possession of any open alcoholic beverage container, and the consumption of any alcoholic beverage, in the passenger area of any motor vehicle (including possession or consumption by the driver of the vehicle) located on a public highway, or the right-of-way of a public highway, in the state.

PURPOSE OF SECTION 154

The TEA-21 Restoration Act added Section 154 to Chapter 1 of Title 23, United States Code (U.S.C.), to reduce alcohol-impaired driving, a serious national public safety problem. Nearly 14 million people have died in traffic crashes in the United States since 1966, the year the National Traffic and Motor Vehicle Safety Act was passed. During the late 1960s and early 1970s more than 50,000 people lost their lives each year on our

¹ Prior to TEA-21, Congress had enacted 23 U.S.C. Section 410 (the Section 410 program) to encourage states to enact and enforce effective impaired driving measures (including open container laws). Under this program, states could qualify for supplemental grant funds if they were eligible for a basic Section 410 grant, and they had an open container law that met certain requirements. TEA-21 changed the Section 410 program and removed the open container incentive grant criterion. The conferees to that legislation had intended to create a new open container transfer program to encourage states to enact open container laws, but the new program was inadvertently omitted from the TEA-21 conference report; the program was included instead in the TEA-21 Restoration Act. (Information presented in this report about TEA-21 and the open container regulations, was obtained from the TEA-21 website, maintained by the U.S. Department of Transportation, www.fhwa.dot.gov/tea21.)

nation's public roads and more than half of the motorists killed had been drinking. Traffic safety has improved considerably since that time: the annual death toll has declined to about 40,000, even though the numbers of drivers, vehicles, and miles driven all have greatly increased. The improvements in traffic safety are reflected in the change in fatality rate per 100 million vehicle miles traveled: The rate fell from 5.5 in 1966 to 1.5 in 1998 (FARS-Fatality Analysis Reporting System-98), a 73 percent improvement. When miles traveled are considered, the likelihood of being killed in traffic in 1966 was more than three times what it is today.

Despite the significant improvements in traffic safety during the past two decades, an average of more than 115 people still die each day from motor vehicle crashes in the United States. In addition to the human costs, the economic losses from crashes are estimated to be more than \$150 billion annually, including \$19 billion in medical and emergency expenses, \$42 billion in lost productivity, \$52 billion in property damage, and \$37 billion in other crash-related costs (FARS-98). It is estimated that approximately 40 percent of fatal crashes involve a drinking driver and 29 percent of the drivers who die in crashes have blood alcohol concentrations (BACs) of 0.10 percent or greater.

Drinking and driving laws and the efforts of law enforcement personnel have contributed to the substantial decline in the incidence of alcohol-involved crashes (Stuster & Burns, 1998). The enactment and enforcement of uniformly strong Open Container laws provides another potential means to help reduce drinking and driving, and could lead to further reductions in the numbers of alcohol-involved crashes. Previous research on the relationship between Open Container laws and traffic safety is limited; however, there is evidence that, from a traffic safety perspective, the most dangerous form of alcohol-consumption is drinking in a vehicle (Ross, 1992). For example, a study of drivers who were arrested for DWI in San Diego, California, found that more than half of the violators had consumed alcohol in their vehicles soon after purchasing it from liquor stores, convenience stores, or gasoline minimarts.² The study found that the incidence of alcohol drinking in cars was nearly three times greater when the beverages were purchased at gas stations, compared to all other outlets (Segars & Ryan, 1986; Wittman, 1986). Similarly, a study of DWI offenders in Santa Fe County, New Mexico found that 37 percent of the offenders who bought package liquor prior to arrest bought their alcohol at a drive-up window, compared to 14 percent at a convenience/drug store. Further, the offenders who bought at a drive-up window were 67 percent more likely to have been drinking in their vehicle prior to arrest, and 67 percent more likely to be problem drinkers, than those who bought package liquor elsewhere (Lewis, Lapham, & Skipper, 1998).

In addition to problem drinkers, officers report that underage youth exhibit a preference for drinking in vehicles. The danger associated with underage drinking and driving is compounded by a tendency to consume all of the alcoholic beverage available (because usually it cannot be stored). Other factors, including a lack of driving experience and skill, exacerbate this problem.

² Various terms are used throughout the United States for offenses involving drinking and driving. In this report, Driving While Impaired (DWI) is used to refer to all occurrences of driving at or above the legal blood alcohol concentration (BAC) of a jurisdiction.

OPEN CONTAINER LAW INCENTIVES

According to Section 154, if a state does not meet the statutory requirements by October 1, 2000 or October 1, 2001, an amount equal to one and one-half percent of the funds apportioned to the state on those dates under each of Sections 104(b)(1), (3) and (4) of title 23 of the United States Code will be transferred to the state's apportionment under Section 402 of that title to be used for alcohol-impaired driving countermeasures or enforcement, hazard elimination, or related administration and planning.³ If a state does not meet the statutory requirements by October 1, 2002, an amount equal to three percent of the funds apportioned to the state on that date under Sections 104(b)(1), (3) and (4) will be transferred. An amount equal to three percent will continue to be transferred on October 1 of each subsequent fiscal year, if the state does not meet the requirements on those dates.⁴

OPEN CONTAINER LAW CONFORMANCE CRITERIA

The regulations resulting from the TEA-21 Restoration Act specify six elements that state Open Container laws must include to conform to the Federal Standard and to enable a state to avoid the transfer of Federal-aid highway construction funds. The required elements are described in the following paragraphs.

To fully conform to the federal requirements, an Open Container law must...

1. Prohibit possession of any open alcoholic beverage container and the consumption of any alcoholic beverage in a motor vehicle.

A state's open container law must prohibit the possession of any open alcoholic beverage container and the consumption of any alcoholic beverage in the passenger area of any motor vehicle that is located on a public highway or right-of-way. However, state laws and proposed legislation that prohibit possession without prohibiting consumption also have been found to be in conformance with the

³ The Act also provides that states may elect to use all or a portion of the transferred funds for hazard elimination activities under 23 U.S.C. 152.

⁴ The amount of the apportionment to be transferred may be derived from one or more of the apportionments under Sections 104(b)(1), (3) and (4). In other words, the total amount to be transferred from a non-conforming state will be calculated based on a percentage of the funds apportioned to the state under each of Sections 104(b)(1), (3) and (4). However, the actual transfers need not be evenly distributed among these three sources. The transferred funds may come from any one or a combination of the apportionments under Sections 104(b)(1), (3) or (4), as long as the appropriate total amount is transferred from one or more of these three sections. The rule specifies that all of the affected state agencies should participate in deciding how transferred funds should be directed.

⁵ Section 154 provides that nonconforming states will be subject to the transfer of funds beginning in fiscal year 2001. To avoid the transfer, each state must submit a certification demonstrating conformance. The certifications submitted by the states under this Part will provide the National Highway Traffic Safety Administration and the Federal Highway Administration with the basis for finding states in conformance with the Open Container requirements. Until a state has been determined to be in conformance with these requirements, it must submit a certification by an appropriate state official that the state has enacted and is enforcing a conforming open container law. Once a state has been determined to be in conformance with the requirements, the state would not be required to submit certifications in subsequent fiscal years, unless the state's law had changed or the state had ceased to enforce the open container law. States are required only to submit a certification that they are enforcing their laws to demonstrate enforcement under the regulation.

possession and consumption criterion because in order to consume an alcoholic beverage, an individual must first have that beverage in their possession.

2. *Specify the passenger area of any motor vehicle.*

The open container law must apply to the passenger area of any motor vehicle. "Passenger area" is defined as the area designed to seat the driver and passengers while the motor vehicle is in operation and any area that is readily accessible to the driver or a passenger while in their seating positions, including the glove compartment. Vehicles without trunks may have an open alcoholic beverage container behind the last upright seat or in an area not normally occupied by the driver or passengers. A law that permits the possession of open alcoholic beverage containers in an unlocked glove compartment, however, will not conform to the requirements. "Motor vehicle" is defined in the regulation to mean a vehicle driven or drawn by mechanical power and manufactured primarily for use on public highways. The term does not include a vehicle operated exclusively on a rail or rails.

3. *Apply to all alcoholic beverages.*

The open container law must apply to all alcoholic beverages. "Alcoholic beverage" is defined in the regulation to include all types of alcoholic beverages, including beer, wine and distilled spirits. Beer, wine, and distilled spirits are covered by the definition if they contain one-half of one percent or more of alcohol by volume. An "open alcoholic beverage container" is any bottle, can, or other receptacle that contains any amount of alcoholic beverage, and that is open or has a broken seal, or the contents of which are partially removed.

4. *Apply to all occupants.*

The open container law must apply to all occupants of the motor vehicle, including the driver and all passengers. The statute provides for two exceptions, however, to the all-occupant requirement. A law will be deemed to apply to all occupants if the law prohibits the possession of any open alcoholic beverage container by the driver, but permits possession of alcohol by passengers in "the passenger area of a motor vehicle designed, maintained or used primarily for the transportation of persons for compensation" (e.g., buses, taxis, limousines) and passengers "in the living quarters of a house coach or house trailer."

5. *Specify on a public highway or the right-of-way of a public highway.*

The open container law must apply to a motor vehicle while it is located anywhere on a public highway or the right-of-way of a public highway. The agencies have defined "public highway or the right-of-way of a public highway" to include a roadway and the shoulder alongside of it.

6. *Specify primary enforcement t.*

A state must provide for primary enforcement of its open container law. Under a primary enforcement law, officers have the authority to enforce the law without the need to show that they had probable cause to believe that another violation had been committed. An open container law that provides for secondary enforcement does not conform to the requirements of the regulation.

STATUS OF CONFORMANCE: OCTOBER 2000

The overall status of states' conformity to the Federal Standard is constantly changing. However, the status of conformance as of October 2000 is presented below.⁶

Fully Conforming States Before Enactment of the TEA 21 Restoration Act

The following States had in effect open container laws that conformed fully with the Federal open container requirements contained in 23 U.S.C. § 154 and the agency's implementing regulations, 23 CFR Part 1270, as of October 1, 2000. Accordingly, these States were not subject to a transfer of funds under the Section 154 program on that date. The laws were in effect in these states and the District of Columbia before July 22, 1998, when the Section 154 program was established by the Transportation Equity Act for the 21st Century (TEA 21) Restoration Act, and have not been amended since.

California	Michigan	Ohio	Washington
District of Columbia	Nevada	Oklahoma	Wisconsin
Illinois	New Hampshire	Oregon	
Kansas	North Dakota	Utah	

States that Became Fully Conforming Since Enactment of the TEA-21 Restoration Act

The following States had open container laws in effect that conformed fully with the Federal open container requirements contained in 23 U.S.C. § 154 and the agency's implementing regulations, 23 CFR Part 1270, as of October 1, 2000. Accordingly, these States were not subject to a transfer of funds under the Section 154 program on that date. The laws in these states were amended since July 22, 1998, when the Section 154 program was established by the Transportation Equity Act for the 21st Century (TEA 21) Restoration Act.

Alabama	Iowa	Nebraska	Pennsylvania
Arizona	Kentucky	New Jersey	Rhode Island
Florida	Maine	New York	South Carolina
Hawaii	Minnesota	North Carolina	South Dakota
Idaho			

States with Open Container Laws that Did Not Fully Conform as of October 1, 2000

The following States did not have open container laws in effect that complied fully with the Federal open container requirements contained in 23 U.S.C. § 154 and the agency's implementing regulations, 23 CFR Part 1270, as of October 1, 2000. Accordingly, these States were subject to a transfer of funds under the Section 154 program on that date.

Alaska	Indiana	Missouri	Texas
Arkansas	Louisiana	Montana	Vermont
Colorado	Maryland	New Mexico	Virginia
Delaware	Massachusetts	Tennessee	West Virginia
Georgia			

States With No Open Container Laws as of October 1, 2000

The following States and the Commonwealth of Puerto Rico did not have any open container laws in effect, as of October 1, 2000. Accordingly, these States were subject to a transfer of funds under the Section 154 program on that date.

Connecticut	Mississippi	Puerto Rico	Wyoming
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⁶ This information was provided by NHTSA's Office of the Chief Counsel.

EVALUATION OF THE EFFECTS OF OPEN CONTAINER LAWS

Two methods were used to assess the effects of Open Container laws on traffic safety: 1) A before and after comparison of data from the four states that enacted legislation in 1999 to modify their Open Container laws to be in conformance with the Federal Standard; and 2) A comparison of data from states that had conforming laws when the TEA-21 Restoration Act was enacted; adopted fully conforming laws by October 1, 2000; had partially-conforming laws by October 1, 2000; and had no Open Container laws at all as of October 1, 2000.

BEFORE AND AFTER COMPARISON OF THE FOUR STATES

Four states (IA, ME, RI, SD) modified existing Open Container laws in 1999 to be in conformance with the Federal requirements established in Section 154 of Chapter 1 of Title 23, United States Code (U.S.C.), and the Act's implementing regulations, 23 CFR Part 1270. As of January 2000, only these four states had enacted Open Container legislation in response to the TEA-21 Restoration Act. One of the states enacted its legislation in May of 1999 and the other three states enacted their legislation in July of 1999. All four states had Open Container laws when the TEA-21 Restoration Act was enacted, but each of those laws contained deficiencies that prevented them from fully conforming with the new Federal requirement. Table 1 summarizes the extent to which those states' previous open container laws complied with the six elements of the Federal requirements. South Dakota had not demonstrated that its law covered all alcoholic beverages and all public highways and rights-of-way; Iowa, Rhode Island, and Maine had not demonstrated that their laws prohibited both possession and consumption, and that they covered the entire passenger area and all occupants of a vehicle. Maine, in addition, had not demonstrated that its law covered all public highways.

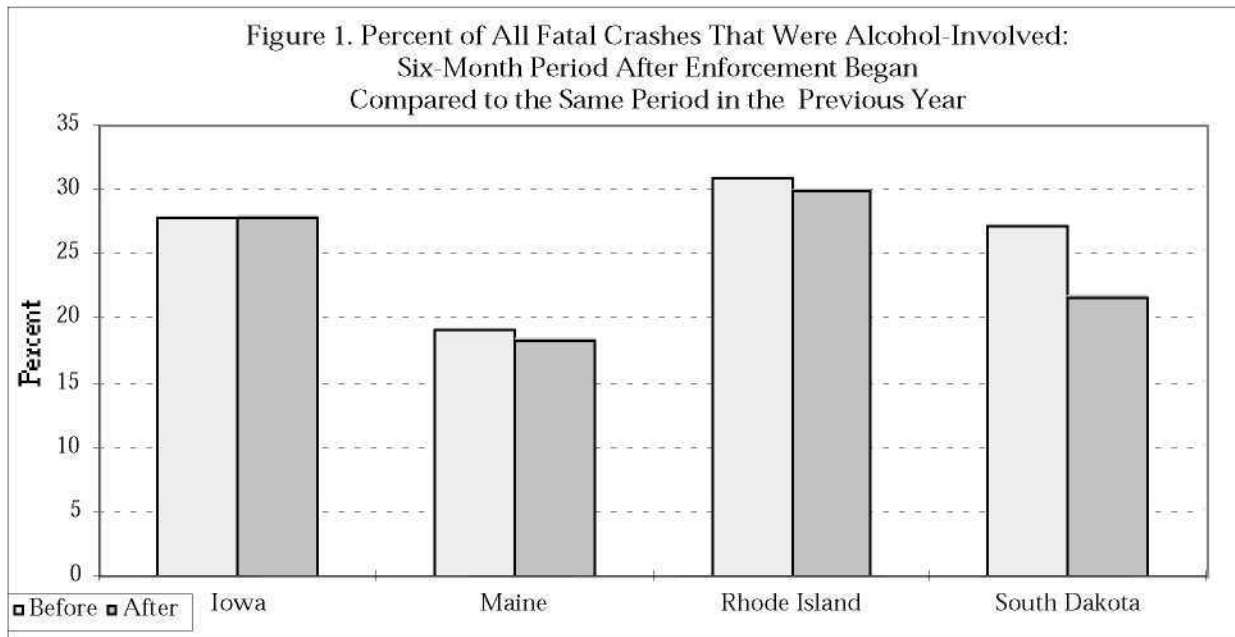
TABLE 1
SUMMARY OF PREVIOUS OPEN CONTAINER LAWS IN THE FIRST FOUR STATES
TO ENACT LAWS TO CONFORM WITH TEA-21 REQUIREMENTS

State	Element Required by TEA-21					
	Possession & Consumption	Passenger Area	All Alcoholic Beverages	All Occupants	All Public Highways	Primary Enforcement
Iowa	no	no	yes	no	yes	yes
Maine	no	no	yes	no	no	yes
Rhode Island	no	no	yes	no	yes	yes
South Dakota	yes	yes	no	yes	no	yes

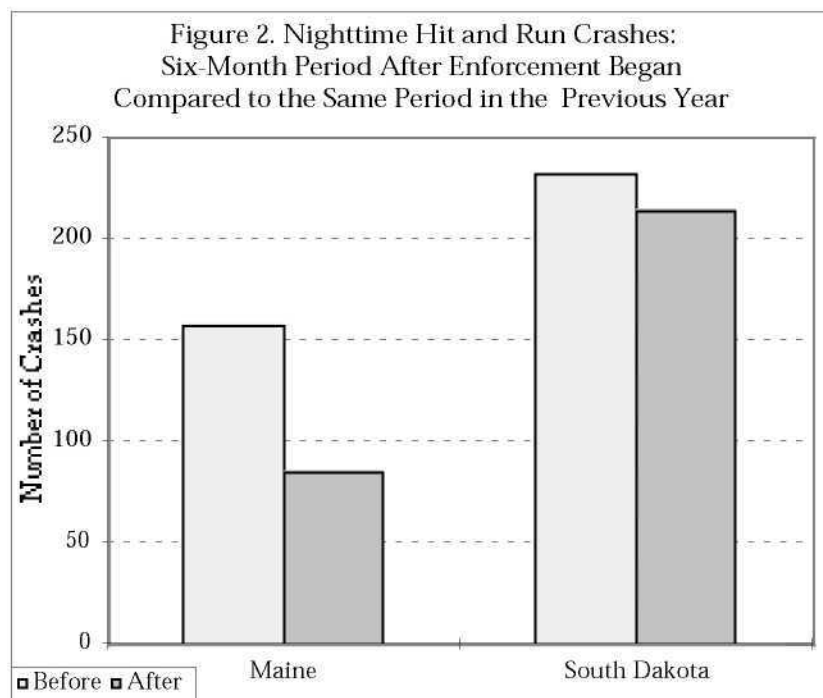
Enforcement of the new conforming laws began on 1 July 1999 in Iowa and South Dakota, on 1 October in Maine, and on 1 January 2000 in Rhode Island. Data were obtained from agencies of the four states to identify effects on traffic safety that might be attributable to changes in the states' Open Container laws. The hypothesis of the evaluation is that conformance with the Federal requirements is associated with a lower incidence of alcohol-involved crashes.

Figure 1 presents the proportions of all fatal crashes that were alcohol-involved in the four states during the six-month periods following the beginning of enforcement of the states' conforming laws, compared to data from the same six-month periods in

the previous year. The figure suggests that the alcohol-involved proportion of fatal crashes in three of the four states was lower during the first six months following enforcement of conforming Open Container laws.⁷ Iowa had no apparent change; however, the apparent change observed in the other three states is in the direction expected if the laws had an impact; however, the declines were not statistically significant (ztest at 0.05).



Hit-and-run crashes, particularly during nighttime hours, provide an indirect measure of the incidence of drinking and driving; it is well-known to law enforcement that many drivers flee the scene of a nighttime crash to conceal their alcohol-impairment. Figure 2 presents the numbers of nighttime hit and run crashes (in the two states for which data are available) during the six-month periods following the beginning of enforcement of the states' conforming laws, compared to data from the same six-month



⁷ Data illustrated in all figures are presented in Appendix A.

periods in the previous year.⁸ The figure shows that the numbers of hit-and-run crashes declined in both states during the first six months after enforcement of their conforming laws began, compared to the same six-month periods one year earlier. Chi Square tests found the difference to be statistically significant for Maine, but not for South Dakota ($p=0.05$).

COMPARISONS AMONG STATES THAT HAD CONFORMING LAWS PRIOR TO TEA-21, STATES THAT ENACTED CONFORMING LAWS BY OCTOBER 1, 2000, STATES WITH PARTIALLY-CONFORMING LAWS BY OCTOBER 1, 2000, AND STATES WITH NO OPEN CONTAINER LAWS BY OCTOBER 1, 2000

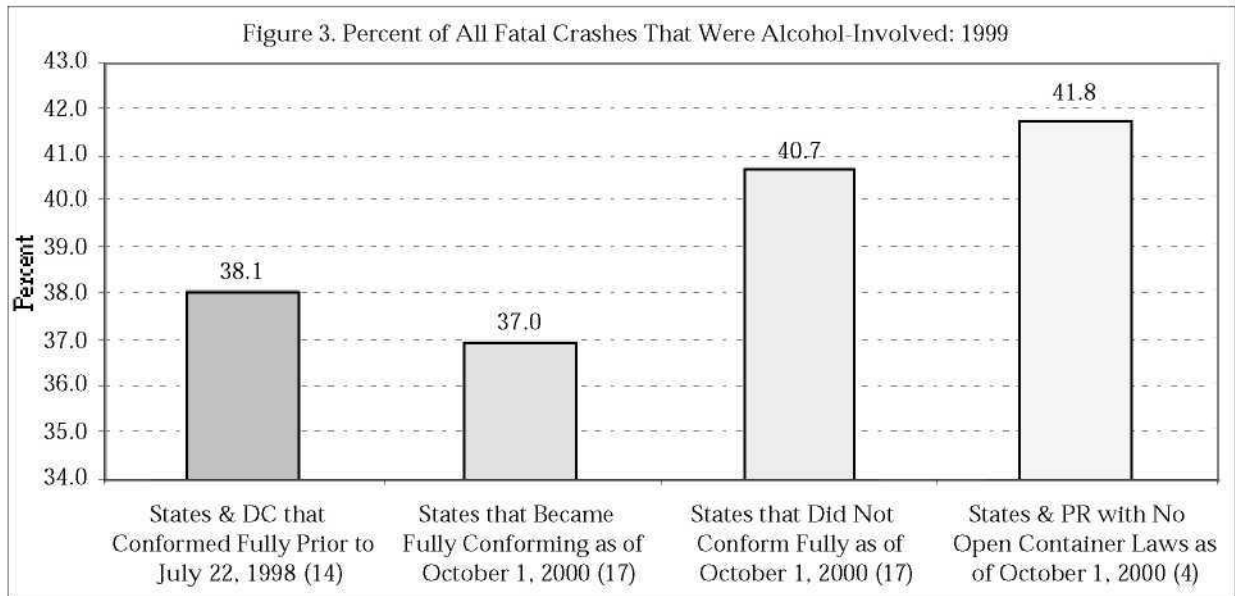
The previous section compared measures of traffic safety before and after changes to Open Container laws took effect in the four states that enacted TEA-21 conforming legislation in 1999. Another method for assessing the effects of Open Container laws is to compare traffic safety data from states that had conforming laws prior to the amendment of the TEA-21 Restoration Act to data from other states, including states that adopted fully conforming laws, states with only partially-conforming laws, and states with no Open Container laws at all, as of October 1, 2000.

Thirteen states and the District of Columbia had laws that conformed fully with the Federal Standard prior to July 22, 1998, when the Section 154 program was established by the TEA-21 Restoration Act. Seventeen states amended their laws to become fully conforming between July 1998 and October 2000; the first four of those states to amend their laws were the subjects of the previous analysis. Twenty states and the Commonwealth of Puerto Rico had not amended their laws to conform to the Federal Standard by October 2000. Seventeen of those states had partially-conforming laws; three of those states (CT, MS, WY) and Puerto Rico had no Open Container laws at all.

Figure 3 shows the percentages of alcohol-involved fatal crashes during 1999 in the four categories: 1) States with Open Container laws that conformed fully to the Federal requirements prior to July 22, 1998 (13 states and the District of Columbia); 2) States that became fully-conforming by October 1, 2000 (17 states); 3) States with laws that did not fully conform by October 2000 (17 states); and 4) States with no Open Container laws at all as of October 1, 2000 (three states and Puerto Rico).

Figure 3 shows that states without laws prohibiting the possession and consumption of alcoholic beverages in a motor vehicle have higher proportions of alcohol-involved fatal crashes than states with either partially-conforming or fully-conforming laws. The differences illustrated in the figure amount to ten percent more alcohol-involved fatal crashes in states without Open Container laws, compared to states with either partially or fully-conforming laws. The differences between the No Law states and the other states, combined, are statistically significant (ztest at 0.05). The figure also shows that states that became fully-conforming in response to the TEA-21 Restoration Act (i.e., between July 22, 1998 and October 1, 2000) experienced alcohol involvement rates in fatal crashes in 1999 that were comparable to the states that had fully-conforming laws in effect prior to July 22, 1998. The results of the analysis illustrated in Figure 3 are consistent with the expectation that conformity to the Federal requirements has an effect on the incidence of alcohol-involved crashes.

⁸ Data for Iowa and Rhode Island are not available; the states' crash investigation forms lack data fields for hit and run crashes.



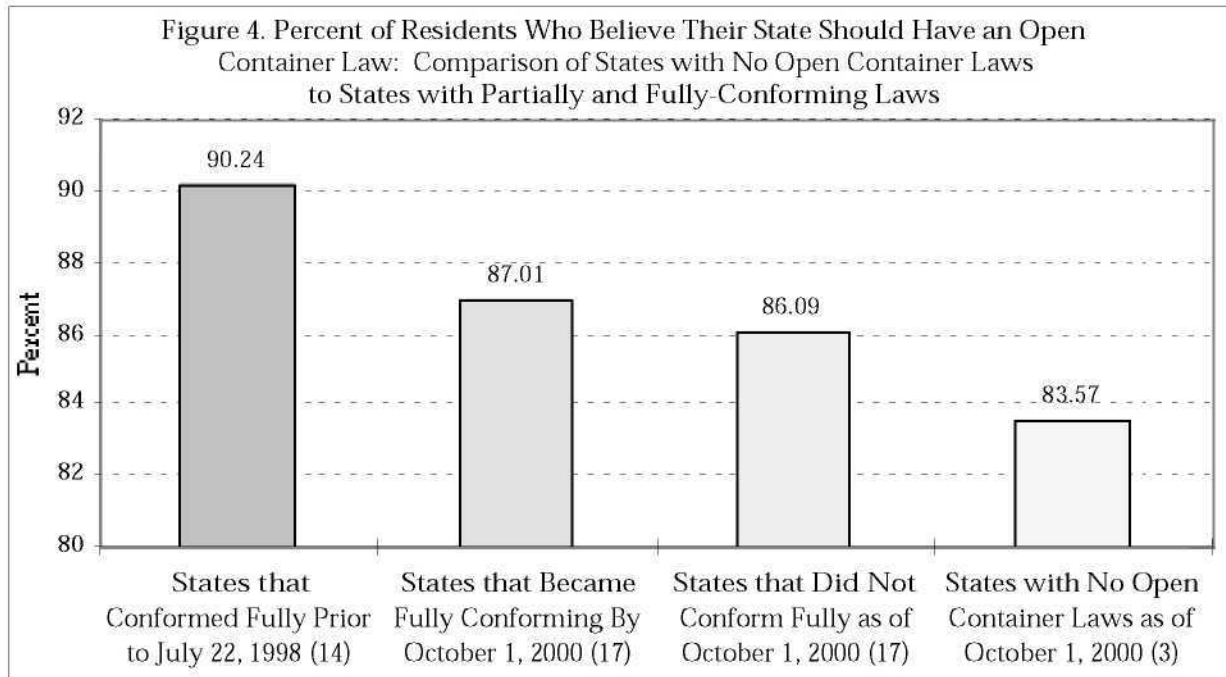
Of course, focusing exclusively on the presence or absence of Open Container laws does not permit a complete understanding of the many issues that contribute to drinking while driving. In particular, many of the states that lacked fully-conforming Open Container laws in 1999 had laws that contained many elements of a law that met the Federal requirements. In addition, some cities and counties in states that lack Open Container laws have their own regulations prohibiting open containers, which contribute to public perceptions that open containers of alcoholic beverages are prohibited on all roads and highways in the state, despite the absence of state Open Container laws. Other factors that may contribute include other state laws currently in effect and the level of enforcement and publicity dedicated to state and local laws.

PUBLIC OPINION CONCERNING OPEN CONTAINER LAWS

NHTSA's most recent biennial National Survey of Drinking and Driving, conducted in 1999 by The Gallup Organization (Royal, 2000) included two questions concerning Open Container laws. The first question asked, "To the best of your knowledge, does your state have any law that makes it illegal to have an open container of alcohol inside a car while someone is driving?" The percentage of respondents who believed that their states had such laws ranged from a high of 95 percent to a low of 56 percent. Overall, 86 percent of the people surveyed believed their states to have Open Container laws, including a majority of those surveyed in states that did not have Open Container Laws at the time (i.e., 82% in CT, 76% in MS, 73% in LA, and 56% in WY).

The second survey question asked, "Do you think your state should have this type of open container law?" The responses to this question are presented in Figure 4 according to the categories of states used in the previous analyses. The figure shows that more than 90 percent of respondents from states that had fully-conforming Open Container laws prior to the enactment of the TEA-21 Restoration Act, believed their states should have those laws. Similarly, 87 percent of the respondents from states that had enacted fully conforming laws between 22 July 1998 and 1 October 2000 and 86

percent of the respondents from states with partially-conforming laws as of 1 October 2000 agreed that Open Container laws are appropriate. Perhaps most important, more than 83 percent of the people surveyed in states without Open Container laws reported that their states should have Open Container laws. The data presented in the figure show support for Open Container laws by a vast majority of citizens, including the residents of states that lack Open Container laws.



(Note: Data from Puerto Rico were not available to include in this analysis, therefore, n=3 in the No Open Container law category in Figure 4.)

CONCLUSIONS

The analysis of data from the first four states that enacted Open Container laws in 1999 in response to the TEA-21 Restoration Act, found that measures of alcohol-involvement in crashes appeared to decline during the six-month periods following the beginning of enforcement, compared to the same six-month periods one year earlier. The changes were in the direction expected if the laws have an impact; however, the differences were not statistically significant.

Comparisons of crash data showed that states that lacked Open Container laws had significantly greater percentages of alcohol-involved fatal and single-vehicle crashes than the states with partially or fully-conforming laws. Although the differences cannot be attributed with certainty to the presence or absence of Open Container laws, the results of the analyses suggest that conformance with some or all of the six elements of the Federal requirements contributes measurably to traffic safety.

Further, states that enacted conforming laws in 1999 and 2000 experienced the lowest proportion of alcohol-involved fatal crashes of the four categories of states, suggesting that public consideration and subsequent adoption of proposed laws may increase awareness of the issues and lead to safety benefits. Perhaps equally important

when considering whether such laws should be enacted, the national survey found that a substantial majority of the driving-age public support Open Container laws, and thus, appears to recognize their value in contributing to traffic safety.

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REFERENCES

Lewis, N.O., Lapham, S.C., and Skipper, B.J. Drive-up liquor windows and convicted drunk drivers: A comparative analysis of place of purchase. *Accident Analysis and Prevention* (30) 6, pp. 763-772, 1998.

National Highway Traffic Safety Administration. *Multiple Imputation of Missing Blood Alcohol Concentration (BAC) Values in FARS*. Research Note: U.S Department of Transportation (NHTSA), October 1998.

Ross, H.L. *Confronting Drunk Driving: Social Policy for Saving Lives*. Yale University Press: New Haven, CT, 1992.

Royal, D. *National Survey of Drinking and Driving, Attitudes and Behavior: 1999*, U.S Department of Transportation (NHTSA), December 2000.

Segars, L. and Ryan, M. Survey of off-site purchase and consumption locations of convicted drinking drivers. Unpublished report. San Diego County Department of Health Services, 1986.

Stuster, J. and Burns, M. *Validation of the Standardized Field Sobriety Test Battery at BACs Below 0.10 Percent*. U.S. Department of Transportation, National Highway Traffic Safety Administration, Report DOT HS 809 839, August 1998.

U.S. Department of Transportation, Federal Highway Administration, Transportation Equity Act for the 21st Century (TEA-21) Web Site, www.fhwa.dot.gov/tea21, March 2000 update. [Note: Some material from this source is used in this report with only minor modification to ensure accuracy when discussing legal issues.]

Wittman, F. Local control of alcohol availability to prevent alcohol problems: Challenges for city and county planners. Unpublished paper. Prevention Research Center: Berkeley, CA, 1986.

APPENDIX A

DATA TABLES

FIGURE 1 DATA
 PERCENT OF ALL FATAL CRASHES THAT WERE ALCOHOL-INVOLVED:
 SIX-MONTH PERIOD AFTER ENFORCEMENT BEGAN
 COMPARED TO THE SAME PERIOD IN THE PREVIOUS YEAR

State	Before Enforcement			After Enforcement			Percent Change
	Fatal Crashes	Alcohol-Involved	Percent Alcohol-Involved	Fatal Crashes	Alcohol-Involved	Percent Alcohol-Involved	
Iowa	263	74	28.1	277	78	28.2	0
Maine	73	14	19.2	49	9	18.4	-4.0
Rhode Island	45	14	31.1	43	13	30.2	-2.8
South Dakota	121	33	27.3	115	25	21.7	-20.5

Source: State agencies/FARS

FIGURE 2 DATA
 NIGHTTIME HIT-AND-RUN CRASHES:
 SIX-MONTH PERIOD AFTER ENFORCEMENT BEGAN
 COMPARED TO THE SAME PERIOD IN THE PREVIOUS YEAR

State	Crashes		Percent Change
	Before Enforcement	After Enforcement	
Iowa	n/a	n/a	n/a
Maine	158	85	-46.2
Rhode Island	n/a	n/a	n/a
South Dakota	233	215	-7.7

Source: State agencies

FIGURE 3 DATA
PERCENT OF ALL FATAL CRASHES THAT WERE ALCOHOL-INVOLVED:
COMPARISON OF STATES WITH FULLY-CONFORMING LAWS ON 22 JULY 1998,
STATES THAT BECAME FULLY-CONFORMING BETWEEN 22 JULY 1998 AND 1 OCTOBER 2000,
STATES WITH PARTIALLY-CONFORMING LAWS ON 1 OCTOBER 2000, AND
STATES WITH NO OPEN CONTAINER AND NO ALCOHOL CONSUMPTION LAWS
AS OF 1 OCTOBER 2000

Category	Total Crashes	1999 Alcohol- Involved	Percent Al Involved
Full Law on July 22, 1998 (13 states & DC)	11907	4542	38.1
Became Fully Conforming Since TEA-21 (17 states)	14393	5321	37.0
Partial Law on October 1, 2000 (17 states)	13794	5619	40.7
No Law on October 1, 2000 (3 states & PR)	1975	825	41.8

Source: FARS

FIGURE 4 DATA
PERCENT OF RESIDENTS WHO BELIEVE THEIR STATE SHOULD HAVE AN OPEN CONTAINER LAW:
COMPARISON OF STATES WITH FULLY-CONFORMING LAWS ON 22 JULY 1998,
STATES THAT BECAME FULLY-CONFORMING BETWEEN 22 JULY 1998 AND 1 OCTOBER 2000,
STATES WITH PARTIALLY-CONFORMING LAWS ON 1 OCTOBER 2000, AND
STATES WITH NO OPEN CONTAINER AND NO ALCOHOL CONSUMPTION LAWS
AS OF 1 OCTOBER 2000

Category	Percent Responding "Yes"
Full Law on July 22, 1998 (13 states & DC)	90.24
Became Fully Conforming Since TEA-21 (17 states)	87.01
Partial Law on October 1, 2000 (17 states)	86.09
No Law on October 1, 2000 (3 states)	83.57

Source: NHTSA's National Survey of Drinking and Driving, 1999

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