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DISTRICT OF
COLUMBIA

Taxes and Other
Strategies to Reduce
Alcohol Abuse



General Government Division

B-279037

May 19, 1998

The Honorable Robert Byrd
Ranking Minority Member
Committee on Appropriations
United States Senate

The Honorable Lauch Faircloth
Chairman
The Honorable Barbara Boxer
Ranking Minority Member
Subcommittee on the District of Columbia
Committee on Appropriations
United States Senate

The Honorable Charles H. Taylor
Chairman
The Honorable James P. Moran
Ranking Minority Member
Subcommittee on the District of Columbia
Committee on Appropriations
House of Representatives

Alcohol abuse and alcohol dependence create major health problems and social and economic consequences in the United States. They not only cost the nation billions of dollars annually in health care costs and reduced or lost productivity, they also contribute to homicides, rapes, and other violent crimes; risky sexual behavior; traffic crashes; injuries; and premature deaths. From 1986 to 1990, the District of Columbia's average annual rate of alcohol-related deaths was almost twice as high as the national rate. Alcohol use by adolescents is of particular concern, because in addition to causing immediate problems, it can lead to a lifelong pattern of alcohol misuse. Over one-third of District of Columbia high school students surveyed in 1995 reported they had drunk alcohol in the last 30 days, and 13 percent reported episodic heavy drinking.

The Fiscal Year 1998 District of Columbia Appropriations Act mandated us to study issues relating to the taxation and regulation of alcoholic beverages in the District. Accordingly, in this report, our objectives were to

(1) compare the District's taxes on alcoholic beverages with those of surrounding jurisdictions and other states;

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- (2) determine whether the District's alcoholic beverage tax structure can be brought into closer conformity with those in surrounding jurisdictions;
 - (3) determine how much higher the District's alcohol excise tax rates would be if they had been indexed for inflation;
 - (4) determine whether existing empirical research indicates that raising the District's alcohol taxes is likely to reduce alcohol abuse, particularly among youths, and related health problems;
 - (5) identify which states earmark their alcohol taxes for specific purposes; and
 - (6) describe characteristics of effective alcohol prevention programs and regulatory policies, especially with regard to youth, that the District government could consider adopting.

Background

Although about 60 percent of the U.S. population drinks alcoholic beverages without serious consequences, the misuse of alcohol by another 10 percent of the population has significant negative effects on the social, economic, and health status of both those who abuse it and society at large. According to the National Institute on Alcoholism and Alcohol Abuse (NIAAA), about 14 million Americans meet the medical diagnostic criteria for alcohol abuse or alcoholism, and an estimated 100,000 alcohol-related deaths occur each year. About half of the nation's high school students report current alcohol use, a significant minority drink heavily, and few have difficulty obtaining alcohol. The younger the age of drinking onset, the greater the chance that an individual will develop a clinically defined alcohol disorder at some point in life.

All states heavily regulate the sale of alcoholic beverages. Some states take a more direct approach to controlling sales than others. Eighteen states, including Virginia, are generally referred to as "control" states, because the final sale to consumers of, typically, liquor and in some cases wine and beer as well can occur only in state-operated stores at prices established by state beverage control boards.¹ State-operated stores are the exclusive retailers of all legal liquor sold for off-premises consumption throughout

¹This classification of states as either "control" or "license" states is made by the Distilled Spirits Council of the United States in its publication, "Summary of State Laws and Regulations Relating to Distilled Spirits," 29th edition, 1996. The main categories of alcoholic beverages are beer, wine, and distilled spirits. The term "liquor" is used in this report to mean distilled spirits.

Virginia. Final prices are set by Virginia’s Department of Alcohol Beverage Control (ABC).²

The District of Columbia and the remaining 32 states, including Maryland, are referred to as “license” states, because the distribution and sale of alcoholic beverages is carried out by private license holders. Maryland, however, is not completely a license state, because 1 of its 22 counties—Montgomery County, which borders the District—is a control jurisdiction. The county Department of Liquor Control is the exclusive wholesaler of all alcoholic beverages sold within its boundaries. The Department is also the exclusive retailer of liquor sold for off-premises consumption.

To raise revenue and to help prevent alcohol misuse, most states and the District of Columbia levy both excise taxes and retail sales taxes on alcoholic beverages. Some county and city governments also impose their own alcohol taxes. In order to determine whether the District’s taxes on alcohol are greater or less than those in surrounding jurisdictions and other states, one needs to compare the District’s combined—sales and excise—tax structure with the tax structures in the other jurisdictions. Such a comparison is complicated by the fact that alcohol excise tax rates are generally stated as fixed amounts per unit of volume, but sales tax rates are almost always ad valorem (stated as percentages of product prices). The combined tax burden within a given jurisdiction will vary by type, size, and value of beverage and, in some cases, by type of retail establishment.³

It is also difficult to compare the alcohol tax systems in license jurisdictions with those in control jurisdictions. In a license state, private sector wholesalers determine wholesale prices, taking into account their costs, including the excise taxes that they pay to the state. Private sector retailers charge their own mark-ups on top of those wholesale prices. For these states, one can readily determine what share of the final price of the alcoholic beverage is attributable to the excise tax.

In a control state such as Virginia, where the government acts as a monopoly wholesaler and retailer of liquor, the government collects revenue from the sale of alcohol in two ways: (1) by earning the profits

²Beer and wine for off-premises consumption are sold by licensed private stores. Private establishments that serve alcoholic beverages for on-premises consumption must buy their liquor, but not their beer or wine, from a state store. Appendix I provides details on Virginia’s and Montgomery County’s pricing practices.

³We use the term “tax burden” to mean the share of tax in the final cost of the beverage.

that private sector wholesalers and retailers would otherwise have earned and (2) by imposing an excise tax on the alcohol. One cannot easily determine how much of the combined revenue that the state collects should be considered the profits of the state's alcohol sales operations and how much should be considered an excise tax. The state may make a distinction between the price mark-up that it charges and the excise tax that it levies, but this distinction has little meaning to consumers or taxpayers. There is a wide range of mark-up/excise tax rate combinations that the state could have set to yield the same amount of revenue and impose the same costs on consumers.

One way to define an "effective" excise tax rate on alcohol in a control state is to say that it equals the statutory excise tax rate, plus any cost that the state control system imposes on consumers above what those consumers would have borne if that system were not in place.⁴ For example, if a state-run store imposes a higher mark-up than a private dealer would have, then this additional cost to consumers can be considered part of the effective tax. The effective tax rate defined in this manner provides a better basis for comparison with the excise tax rates imposed in license states.

Results in Brief

Compared to the taxes levied in nearby Virginia jurisdictions, the District's combined tax rates are higher for almost all beers and for relatively high-priced wines, but the opposite is true for relatively low-priced wines. Compared to the taxes levied in all Maryland counties except Montgomery County, the District's combined sales and excise tax rates are higher for all types of alcoholic beverages. Effective tax rates on controlled beverages sold exclusively through government-run stores in Virginia and Montgomery County, Maryland, may differ from statutory tax rates, so it is not possible to make precise comparisons with the District's statutory tax rates for these items. Although the District's excise taxes on alcoholic beverages are lower than those in most of the 50 states, the District's combined tax rates on beer and wine are higher than those in most states, because its sales tax is among the highest. The District's combined taxes on liquor are higher, for at least some items, than in most of the states for which we could make comparisons readily.

The District cannot conform its alcohol tax structure to those in all surrounding jurisdictions at the same time, because the tax structures

⁴By an "effective" tax rate we mean one that takes into account other provisions of the law or other government policies, which are not reflected in the statutory tax rates, that (1) impose an additional cost on taxpayers and (2) raise revenue for the government.

among those neighboring jurisdictions differ significantly. Moreover, the District would not be able to impose exactly the same effective tax rates as those in either Virginia or Montgomery County, because those rates are difficult to estimate precisely, might change frequently, and are likely to vary across beverage items.⁵ The District also would have difficulty enforcing an ad valorem liquor excise tax like Virginia's, which it would have to collect from private retailers. Virginia does not face enforcement problems, because it collects the tax from its state-run stores.

Although the District's per-unit excise tax rates have declined in inflation-adjusted terms since they were last changed, increases in the District's ad valorem special sales tax rates on all alcoholic beverages have, to date, more than compensated for the lack of indexation of the excise tax rates. The District's alcohol excise taxes will continue to decline gradually in inflation-adjusted terms as long as inflation continues and excise taxes remain unchanged. In order to keep the real value of its combined tax rates on alcohol close to what they are currently, the District would have to increase its excise or sales tax rates periodically, in step with inflation.

Taxes on alcohol are a means of reducing alcohol misuse while at the same time raising revenue. Economic theory and empirical evidence indicate that (1) higher alcohol taxes lead to higher consumer prices for alcoholic beverages, and (2) higher prices reduce alcohol consumption. Furthermore, higher alcohol taxes and prices have been associated with declines in drunken driving, motor vehicle fatalities, rapes, and robberies. Increases in the District's alcohol taxes are thus likely to reduce alcohol use, particularly among youths, but the special geographic circumstances of the District—where all of its suburbs are in other jurisdictions—could weaken these effects. As of 1993, 24 states earmarked at least a portion of their alcohol excise tax revenues for specific purposes, 15 of them directing their use to alcohol treatment, substance abuse, and/or mental health programs.

Research on other alcohol prevention strategies has not adequately demonstrated the effectiveness of many common techniques and programs. Most programs to educate individuals and build their resistance skills have not been evaluated rigorously or over a sufficient length of time to determine their effectiveness. Although evaluations have shown that some recent efforts to combine those programs with strategies that focus

⁵By a "beverage item" we mean a specific beverage type (beer, wine, Scotch, gin, etc.); brand; and container size.

on legal and regulatory controls have been effective, evaluations of other similar studies are still under way. More rigorous evaluations of prevention strategies and programs could provide better information about which approaches are most likely to succeed.

The best current evidence suggests that several legal and regulatory strategies, when enforced, can reduce illegal drinking and alcohol-related problems. According to researchers and local government officials, visible enforcement coupled with education about these laws and regulations should create a stronger deterrent effect. Officials in the District of Columbia and other local jurisdictions have tried innovative enforcement techniques they believe were successful, although formal evaluations have not been done. Budget and staffing constraints have stymied full implementation of these strategies. The District also funds and operates a variety of alcohol abuse prevention and treatment programs.

Objectives, Scope, and Methodology

To meet our first two objectives of (1) comparing the District's taxes on alcoholic beverages with those of surrounding jurisdictions and other states and (2) determining whether the District's tax structure can be brought into closer conformity with the tax structures in surrounding jurisdictions, we reviewed the relevant laws and regulations of the various jurisdictions. We also interviewed officials from the District's Office of Tax and Revenue and from the alcohol beverage control commissions in the District; Montgomery County, Maryland; and Virginia. We also obtained alcohol tax information for the 50 states from the Federation of Tax Administrators and the Distilled Spirits Council of the United States (DISCUS). In an effort to determine whether the pricing policies of Montgomery County and Virginia result in effective tax rates that are higher than the statutory tax rates for certain alcoholic beverages, we obtained lists of the wholesale prices that Montgomery County charges on all of the alcoholic beverages that it sells to retailers in the county and lists of the wholesale prices for wine and liquor that private sector wholesalers charge retailers in the remainder of Maryland. The latter prices are published in the *Maryland Beverage Journal*. We compared Montgomery County's prices (effective during January 1998) to those of the private wholesalers for (1) 14 liquor items identified by the Virginia ABC Commission or DISCUS as top sellers, (2) a random sample of an additional 28 liquor items from Montgomery County's price list, and (3) a random sample of 29 wine items from the county's price list. We could not make a comparison of beer wholesale prices, because the state of Maryland

requires publication of only liquor and wine wholesale prices, not beer prices.

As one possible way to determine whether Virginia's controlled prices for liquor are, on average, higher than the competitive market prices in the same region, we considered doing a survey comparing prices in Virginia with those in the District and its Maryland suburbs for the top-selling liquor items. However, representatives of the District's Alcohol Retailers Association told us that a common retail pricing practice is to sell selected popular items at a large discount, possibly even at a loss, in order to attract customers who will then also buy items that have higher price mark-ups. For this reason, a survey limited to just the best-selling items would probably be misleading. The retailers' representatives also indicated that it would be very difficult to obtain good estimates of the average prices in each jurisdiction, because there are so many different brands and bottle sizes, and the prices for each item are likely to vary considerably across different types of retail outlets in each jurisdiction. It was beyond the scope of this study to undertake the extensive retail price survey and analysis needed to make such estimates.

To determine how much higher the District's alcohol excise tax rates would be if they had been indexed for inflation, we raised these rates by the same percentage increase as the average increase in alcoholic beverage prices since the last time each rate was changed. To compute the average price increases, we used the U.S. Department of Labor's quarterly Consumer Price Index alcoholic beverage component for the Washington metropolitan area. We also compared the combined—excise and sales—tax burdens on typical alcoholic beverages over time.

To determine whether existing empirical research indicates that raising the District's alcohol taxes is likely to reduce alcohol abuse, particularly among youths, and related health problems, we reviewed and summarized several surveys of the relevant academic literature that have been published in recent years. We then obtained comments on our summary from five academic and government experts in this field of research and modified our summary to reflect those comments.

To identify which states earmarked their alcoholic taxes for specific purposes, we used the latest summarization of state tax earmarking prepared by the National Conference of State Legislatures. The latest available earmarking information is for fiscal year 1993. We did not independently verify the accuracy of this information.

To describe the characteristics of alcohol prevention programs and legal and regulatory strategies that researchers have deemed effective, we identified and reviewed selected literature on alcohol prevention research and evaluated syntheses of research literature. Given the vast literature on this subject and the time available to us, we relied heavily on information presented in NIAAA's 1997 publication, Alcohol and Health.⁶ We also interviewed key officials responsible for overseeing alcohol prevention research for youth and other populations at NIAAA. To obtain information on the District of Columbia's alcohol laws and regulations, we interviewed the Executive Director of the D.C. Alcoholic Beverages Control Board, reviewed relevant provisions of the District of Columbia's codes and municipal regulations, and examined reports provided by the Board. To obtain information on how the District's alcohol laws are being enforced, we interviewed responsible officials of the D.C. Metropolitan Police Department. We obtained similar information from officials responsible for managing and enforcing alcoholic beverage programs in Montgomery and Prince George's Counties in Maryland and the City of Alexandria and Arlington County in Virginia. To obtain information on the District's health and education prevention programs, we interviewed officials at the Department of Health's Addiction Prevention and Recovery Administration and the District of Columbia Public Schools and reviewed key agency documents.

We conducted our review in Washington, D.C.; Virginia; and Maryland between December 1997 and April 1998 in accordance with generally accepted government auditing standards. We requested comments on a draft of this report from the District of Columbia's Office of Tax and Revenue, Department of Consumer and Regulatory Affairs, and Department of Health; the District of Columbia Financial Responsibility and Management Assistance Authority; the Virginia Department of Alcohol Beverage Control; NIAAA; the Substance Abuse and Mental Health Services Administration (SAMHSA); and the Prevention Research Center (PRC). These comments are summarized and discussed near the end of this letter. We also requested comments from the Montgomery County Department of Liquor Control but did not receive any in time to include them in this report.

⁶NIAAA, "Prevention of Alcohol Problems," Chapter 9 of Alcohol and Health: Ninth Special Report to the U.S. Congress, U.S. Department of Health and Human Services, June 1997, pp. 301-327.

The District's Combined Tax Rates Are Higher Than Its Neighbors' Rates for Some Beverages but Not for Others

The interaction of the sales taxes and the excise taxes within each jurisdiction results in combined tax burdens that vary by type, size, and value of beverage and, in some cases, by type of retail establishment. We computed the combined statutory taxes paid in each jurisdiction on a range of different beverage items. In comparison to the taxes levied in all but one Maryland county, the District's combined statutory tax rates are higher for all types of alcoholic beverages. In comparison to the taxes levied in adjacent Virginia jurisdictions, the District's combined statutory tax rates are higher for almost all beers and for relatively high-priced wines, but the opposite is true for relatively low-priced wines. The effective tax rates on liquor in Virginia and on all alcoholic beverages in Montgomery County may differ from the statutory tax rates as a result of government controls over prices. Consequently, precise comparisons of the taxes on those controlled items cannot be made.

The District's Combined Statutory Tax Rates on Beer and Some Wines Are the Highest in the Area

The statutory alcohol excise tax rates levied by the District and the state of Maryland are very similar, as shown in table 1.⁷ Virginia's excise taxes on beer and wine are significantly higher than those in the District and Maryland. Virginia's liquor tax is not directly comparable to taxes in the other two jurisdictions—both because it has an ad valorem rate and because the state sets the price upon which the tax is computed. There are no local government alcohol excise taxes in either Maryland or Virginia.⁸

⁷The statutory tax rates in table 1 and the combined tax burdens in tables 2 and 3 do not reflect any effects that the alcohol control systems in Montgomery County or Virginia may have on the final prices of alcoholic beverages.

⁸The Maryland Code allows one exception for Garrett County to tax beer.

Table 1: Statutory Taxes on Alcoholic Beverages Imposed by the District of Columbia, Maryland, and Virginia

Jurisdictions	Beer excise rates	Wine excise rates	Liquor excise rates	Sales tax (off-site)	Sales tax (on-site)
District of Columbia	\$.09/gal.	\$.30/gal. (alcohol 14% or less) \$.40/gal. (alcohol over 14%) \$.45/gal. (sparkling wine)	\$1.50/gal.	8%	10%
Maryland	\$.09/gal.	\$.40/gal.	\$1.50/gal. ^a	5%	5%
Virginia	\$.283/gal. (in 12 oz. bottles) ^b	\$1.51/gal	20% tax on the sum of supplier price, including a handling charge, plus a mark-up	4.5% ^c	4.5% ^d

^aFor liquor over 100 proof, \$.015 is added for each proof point over 100.

^bVirginia tax rate varies by container size. For example, the rate per gallon for beer in barrels is \$.2565.

^cThe statewide rate is 3.5 percent, but local governments can choose to have the state collect an additional 1 percent, which is to be returned to those local governments. Arlington and Fairfax Counties and the City of Alexandria have all chosen this option.

^dDoes not include local "meal taxes" (on alcoholic beverage served separately or with meals) of 4 percent in Arlington County and 3 percent in the City of Alexandria. Fairfax County has no such tax.

Sources: Excise and sales taxes from District of Columbia and state tax codes. "Meal tax" rates from telephone communications with Treasurers' offices of the several jurisdictions.

The District imposes an 8 percent sales tax on alcoholic beverages sold for off-premises consumption; it levies a 10-percent tax on alcoholic beverages and food sold for on-premises consumption. These rates are higher than the 5.75-percent rate the District imposes on the sales of most goods. They are also significantly higher than Maryland's and Virginia's sales taxes.⁹

The interaction of the sales taxes and the excise taxes within each jurisdiction results in combined tax burdens that vary by type, size, and value of beverage and, in some cases, by type of retail establishment. In order to compare the combined statutory tax burdens on alcohol across jurisdictions, we have computed the taxes that would be paid on three beverage items sold for off-premises consumption and on three items sold

⁹Alcoholic beverages in those two states are subject to the basic sales tax rates. Some Virginia jurisdictions neighboring the District levy their own "meal taxes," which cover alcoholic beverages consumed on-premises. Arlington County's meal tax is 4 percent and the City of Alexandria's tax is 3 percent, so the total on-premises sales tax rates in those two jurisdictions are 8.5 percent and 7.5 percent.

for on-premises consumption. In order to demonstrate the importance of prices in the calculation of combined tax burdens, we used a wide range of prices for each beverage item. (See tables 2 and 3.)

Table 2: Combined Taxes Paid on Selected Alcoholic Beverage Items in the District and Surrounding Jurisdictions for Off-Premises Consumption

Pre-sales tax price (a low-price and a high-price example for each beverage)	Beer (six-pack)		Wine (750-ml bottle)		Liquor (1-liter bottle)	
	\$4.00	\$7.00	\$4.00	\$12.00	\$8.00	\$30.00
District of Columbia						
excise tax	.05	.05	.06	.06	.40	.40
sales tax	.32	.56	.32	.96	.64	2.40
Combined tax	.37	.61	.38	1.02	1.04	2.80
Maryland						
excise tax	.05	.05	.08	.08	.39	.39
sales tax	.20	.35	.20	.60	.40	1.50
Combined tax	.25	.40	.28	.68	.79	1.89
Virginia						
excise tax	.16	.16	.30	.30	1.33	5.00
sales tax	.18	.32	.18	.54	.36	1.35
Combined tax	.34	.48	.48	.84	1.69	6.35

Note: The price shown at the top of each column is the pre-sales tax, or "shelf," price for the item. This price already reflects federal and state or District excise taxes. The first price for each beverage item is meant to represent the price for a relatively inexpensive brand; the second price represents that of a relatively expensive brand. These prices are not meant to represent the absolute lowest and highest prices likely to be found in the Washington metropolitan area.

Source: GAO computations based on information from the state and District of Columbia tax codes.

Table 3: Combined Taxes Paid on Selected Alcoholic Beverage Items in the District and Surrounding Jurisdictions for On-Premises Consumption

Pre-sales tax price (a low-price and a high-price example for each beverage)	Beer (12-oz bottle)		Wine (6-oz glass)		Liquor (2-oz shot)	
	\$2.00	\$4.00	\$2.00	\$4.00	\$2.00	\$7.50
District of Columbia						
Excise tax	.01	.01	.01	.01	.02	.02
Sales tax	.20	.40	.20	.40	.20	.75
Combined tax	.21	.41	.21	.41	.22	.77
Maryland						
Excise tax	.01	.01	.02	.02	.02	.02
Sales tax	.10	.20	.10	.20	.10	.38
Combined tax	.11	.21	.12	.22	.12	.40
Virginia						
Excise tax	.03	.03	.07	.07	.08	.30
Sales tax ^a	.17	.34	.17	.34	.17	.64
Combined tax	.20	.37	.24	.41	.25	.94

Note: The price shown at the top of each column is the pre-sales tax, or "shelf," price for the item. This price already reflects federal and state or District excise taxes. The first price for each beverage item is meant to represent the price for a relatively inexpensive brand; the second price represents that of a relatively expensive brand. These prices are not meant to represent the absolute lowest and highest prices likely to be found in the Washington metropolitan area.

^aThe Virginia sales tax rate that we use in this table is 8.5 percent, which includes the 4.5 percent state tax plus the 4 percent meals tax in Arlington County. In the City of Alexandria the total sales tax rate is 7.5 percent, and in Fairfax County it is 4.5 percent.

Sources: GAO computations based on data from the state and District of Columbia tax codes and Treasurers' offices of surrounding jurisdictions. The District's combined statutory taxes on alcohol are higher than those levied in adjacent Maryland counties for all types of beverages and across all the price ranges that we examined.

The District's combined taxes on beer are also higher than those in adjacent Virginia jurisdictions. In contrast, Virginia's combined statutory taxes on liquor are higher than those in the District across the full range of prices we examined. For wine, Virginia's combined taxes are higher than the District's, except at the high end of the price range.¹⁰

¹⁰In table 3, the combined taxes that we show for Virginia are those in effect in Arlington County, the jurisdiction having the longest border with the District. The combined taxes in the City of Alexandria and in Fairfax County are lower than those in Arlington County.

Government Price Mark-Ups May Alter the “Effective” Tax Rates on Alcohol

The monopoly power that the governments of Virginia and Montgomery County have over the sale of some alcoholic beverages within their boundaries provides them with an opportunity to set prices for those beverages to achieve objectives, such as discouraging alcohol consumption or maximizing the government’s monopoly profits, that either would not be considered by private sector businesses, or would not be achievable in a competitive market.¹¹ If the government’s pricing policy results in final prices to consumers that are higher than those that private sector businesses would charge, then the effective tax rates on those beverage items exceed the statutory tax rates. Conversely, if the government’s pricing policy results in lower final prices, then the effective tax rates are lower than the statutory tax rates.

The explanations of Virginia’s and Montgomery County’s pricing practices given to us by government officials did not provide a sufficient basis to allow us to say whether the controlled prices in those jurisdictions are likely to be higher or lower than those that would have existed without government controls. Officials from the Virginia Department of Alcohol Beverage Control told us that the goal of their pricing policy is to generate a reasonable rate of return for the state. The prices for liquor items sold in state stores are standard across the state. The officials told us that these statewide prices are not greatly influenced by price competition from the District. An official from Montgomery County’s Department of Liquor Control told us that it was his understanding that the county’s wholesale price mark-ups for alcoholic beverages are intended to reflect the prevailing mark-up practices in the industry.

Information provided by Virginia and Montgomery County officials and by representatives of the District’s Alcohol Retailers Association, whom we interviewed, suggests that the relationship between controlled and free market prices is likely to vary across beverage items. Our limited comparison of liquor and wine wholesale prices in Montgomery County and the remainder of Maryland supports this idea. We do not have sufficient data to determine whether the controlled prices in Virginia and Montgomery County are, on average, higher or lower than those that would have existed without the controls. Consequently, we are not able to say whether Virginia’s effective tax rates on liquor are higher or lower than the statutory rates, or whether the effective tax rates on all alcoholic

¹¹Virginia sets the retail prices for all liquor items sold in the state for off-premises consumption. Bars and restaurants in the state must also purchase their liquor from the state at these same prices. Montgomery County sets the wholesale prices for all alcoholic beverages sold in the county.

beverages in Montgomery County are higher or lower than the statutory rates.¹²

The District's Combined Taxes on Beer and Wine Are Higher Than Those in Most States

Although the District's excise taxes on alcoholic beverages are lower than those in most of the 50 states, the District's combined tax rates on beer and wine are higher than those in most states because its sales tax is among the highest. The District's combined taxes on liquor are higher, for at least some items, than in most of the states for which we could readily make comparisons.

Our analysis of data published by the Federation of Tax Administrators indicates that the District's excise tax rate on beer is lower than the rates in 40 states; its excise tax rate on liquor is tied with that of Maryland as the lowest among the 32 states that do not control the sale of liquor; and its excise tax rate on wine is lower than the rates in 38 out of the 46 states that do not control the sale of wine (see app. II). It was beyond the scope of this study to estimate effective excise tax rates for those states that control the sales of liquor and/or wine.

In contrast to the excise taxes, the District's sales taxes on alcoholic beverages are higher than those in 45 states and equal to those in another state. For the remaining four states, the comparison is mixed—depending on whether the sales are for on-premises or off-premises consumption. The tax rates shown in appendix II do not include any taxes that may be levied by governments below the state level.

We computed combined alcohol tax burdens for most of the states in a manner similar to our computations for the District, Maryland, and Virginia in tables 2 and 3. We did not have sufficient time to incorporate all of the complexities of the alcohol taxes of some states into our computations, so we left those states out of our comparison. Consequently, although we can say that the District's combined taxes on beer and wine are higher than those in most states (for the price ranges we examined), we cannot say exactly where the District ranks. We could not make adequate comparisons with enough states to say whether or not the District's combined taxes on liquor are higher than those in most states. However, for the states with which we could make comparisons, the

¹²Appendix I provides information on Virginia's and Montgomery County's pricing practices and the results of our wholesale price comparison.

District's combined taxes on liquor were higher than most of them, for at least part of the price range we examined.¹³

The District Would Have Some Difficulty Conforming Its Alcohol Taxes to Those in Maryland or Virginia

There are significant differences among the alcohol tax structures of the various jurisdictions surrounding the District. The District cannot conform to all of those tax structures at the same time. Moreover, the District would not be able to impose exactly the same effective tax rates that exist in either Virginia or Montgomery County, because those effective rates are difficult to estimate precisely; might change frequently; and are likely to vary by beverage type, brand, and container size. In order to conform its combined statutory tax rates to those in Maryland, the District would have to lower its taxes on all alcoholic beverages. The only way for the District to make its statutory taxes similar to those in Virginia, across the entire range of alcoholic beverages, would be to adopt a single sales tax rate for alcoholic beverages that is close to Virginia's and to adopt excise tax rates that are all very close to Virginia's. This change would lower taxes on beer and high-priced wine in the District while raising the tax on liquor and low-priced wine.

The District would face a difficult enforcement task if it adopted the ad valorem excise tax rate on liquor that Virginia currently levies. Virginia's liquor excise tax is computed as 20 percent of the liquor price after the state has taken its combined wholesale and retail price mark-up. To levy an equivalent tax, the District would have to impose the 20-percent rate on the final prices that retail stores charge their customers before applying the sales tax. This tax would be more difficult to enforce than the District's current liquor excise tax, because (1) it would have to be collected from a much greater number of taxpayers; (2) taxpayers would have more of an incentive to understate their liquor sales, because the tax rate paid by each taxpayer would be higher than it currently is; and (3) to verify compliance, District auditors would have to examine a taxpayer's detailed sales receipts. Virginia does not face these enforcement difficulties, because it collects the tax from its own stores. No license state levies an ad valorem alcohol excise tax.

It would be difficult for the District to devise an ad valorem liquor tax that closely approximates the tax that Virginia imposes on liquor sold for on-premises consumption. Restaurants and bars in Virginia buy their liquor from state-run stores at retail prices that already reflect the

¹³We were able to make comparisons with the tax rates on sales for off-premises consumption in 30 states and the tax rates on sales for on-premises consumption in 28 states.

20 percent excise tax. Those prices are not equivalent to either the wholesale prices that restaurants and bars in the District pay for their liquor or to the prices that District restaurants and bars charge their final customers. Consequently, the District could not replicate Virginia's tax simply by imposing a tax rate on either the wholesale or final prices. The District would have to define a new tax base that approximates the state-determined prices on which Virginia's excise tax is imposed.

We are unable to say whether average alcohol prices and revenues from alcohol taxes would increase or decrease if the District conformed its statutory alcohol tax rates to those in Virginia. In order to estimate the effects on average prices and revenues, we would need to know the distribution of alcohol sales in the District, by beverage type and by price range. However, this information does not exist. The total value of alcohol sales in the District each year is unknown.¹⁴ Without knowing how average prices would be affected, it is not possible to predict how total alcohol consumption in the District would be affected by this specific change in the District's tax structure. The decrease in the combined tax on beer likely would cause beer consumption to increase, and the increase in the combined tax on liquor likely would cause liquor consumption to decline. In order to determine whether such a trade-off would be desirable, we would have to be able to estimate the relative sizes of the changes in beer and liquor consumption. The data needed to make such estimates do not exist. National surveys indicate that beer is the alcoholic beverage of choice among youths who drink alcoholic beverages. There is also some evidence that beer is disproportionately preferred by those who drink a lot during a typical session and that drinkers who prefer beer are more likely to drive while intoxicated than those who prefer wine or liquor.¹⁵

¹⁴Although it is possible to determine the total value of alcohol sales in the District taxed at the 8-percent rate, which applies only to sales of alcohol for off-premises consumption, according to District officials, it is not possible to determine the total value of alcohol sales taxed at the 10-percent rate. That latter rate applies not only to sales of alcohol for on-premises consumption; it also applies to sales of food in restaurants, bars, and other establishments, as well as to car rental agreements and prepaid phone cards.

¹⁵See Coate, Douglas and Michael Grossman, "Effects of Alcoholic Beverage Prices and Legal Drinking Ages on Youth Alcohol Use," Cambridge, MA: National Bureau of Economic Research, Working Paper No. 1852, 1986; and Berger, Dale and John Snortum, "Alcoholic Beverage Preferences of Drinking-Driving Violators," *Journal of Studies on Alcohol*, 46(3), 1985, pp. 232-239.

Sales Tax Increases Have More Than Offset the Effect of Inflation on Excise Tax Rates for Most Alcoholic Beverages

All of the District's per-unit excise tax rates have declined in inflation-adjusted terms since they were last changed. During this time, however, the District increased its ad valorem special sales tax rates on all alcoholic beverages. For most of the beverage items we examined, the increases in the sales tax rates have, to date, more than compensated for the lack of indexation of the excise tax rates.

The District's excise tax rates for beer, wine, and liquor were last changed in 1989, 1990, and 1978, respectively. Each has declined in inflation-adjusted terms since those last changes. Table 4 shows what the rates would have been at the time we did our review if they had been increased to keep pace with inflation. The differences between the current tax rates and the inflation-adjusted rates for beer and wine are relatively small, because the last changes were relatively recent and price inflation has been very moderate. In contrast, the inflation-adjusted excise tax rate on liquor would be more than twice as high as the current rate.

Since the time that all of these excise tax rates were last increased, two changes have been made to the special sales tax rates for alcoholic beverages. In 1992 the sales tax rate for alcoholic beverages sold for off-premises consumption was increased from 6 percent to 8 percent. In 1994 the rate for on-premises consumption was increased from 9 to 10 percent. There was one additional change in the on-premises sales tax rate—from 8 to 9 percent in 1989—since 1978, when the liquor excise tax rate was last changed.¹⁶

Table 4: Current and Inflation-Adjusted Excise Tax Rates

Beverage	Fiscal year current rate was introduced	Current tax rate	Tax rate adjusted for inflation
Beer	1989	\$.09 per gallon	\$.11 per gallon
Wine	1990	\$.30 per gallon	\$.34 per gallon
Liquor	1978	\$1.50 per gallon	\$3.14 per gallon

Source: GAO computations based on tax rates provided by the District of Columbia's Office of Tax and Revenue and the U.S. Department of Labor's Consumer Price Index's alcoholic beverage component for the Washington metropolitan area.

The increases in the sales tax rates have more than compensated for the lack of indexation of the excise tax rates for most of the beverage items we examined. For each alcoholic beverage item included in tables 2 and 3,

¹⁶Dates of sales tax rate changes were provided by the District of Columbia's Office of Tax and Revenue.

we computed the tax burdens at two points in time—now and the date at which the excise tax on that item was last changed. We also computed each tax burden as a percentage of the final price of the item. (See table 5.) Only for the lowest-priced liquor item sold for off-premises consumption has the tax burden declined noticeably since the earlier date. Currently, the District’s combined taxes on liquor account for 13.0 percent of the final price that consumers pay for an \$8.00, 1-liter bottle of liquor. In 1978, the District’s combined taxes on that same bottle accounted for 15.7 percent of its final price.¹⁷

Table 5: Current Combined Tax Burdens Compared to Those When Current Excise Tax Rates Were First Introduced

Beverage item	Retail price in 1998	Current combined tax on alcohol as a percentage of final price	Combined tax on alcohol as a percentage of final price, at the time that current excise tax rates were first introduced
Off-site consumption			
Six-pack of beer	\$4.00	9.3%	7.2%
Six-pack of beer	7.00	8.7	6.5
750-ml bottle of wine	4.00	9.5	7.4
750-ml bottle of wine	12.00	8.5	6.2
1-liter bottle of liquor	8.00	13.0	15.7
1-liter bottle of liquor	30.00	9.3	8.5
On-site consumption			
12-ounce bottle of beer	2.00	10.4	7.9
12-ounce bottle of beer	4.00	10.2	7.7
6-ounce glass of wine	2.00	10.7	8.2
6-ounce glass of wine	4.00	10.4	7.8
2-ounce shot	2.00	11.2	9.9
2-ounce shot	7.50	10.3	8.1

Sources: GAO computations based on tax rates provided by the District of Columbia’s Office of Tax and Revenue and the U.S. Department of Labor’s Consumer Price Index’s alcoholic beverage component for the Washington metropolitan area.

The District’s alcohol excise taxes will continue to decline gradually in inflation-adjusted terms. In order to keep the real value of its combined

¹⁷The final price equals the retail price plus the sales tax paid. Thus, the final price for the \$8.00 bottle is currently \$8.64. To compute the final prices for the earlier dates, we deflated the retail price for each item (after subtracting out the excise tax) so that it would represent the pretax price that existed at the time that the applicable excise tax rate was last changed. We then added the appropriate excise and sales taxes to obtain the final price.

tax rates on alcohol close to what they are currently, the District would have to increase its excise tax rates periodically, in step with inflation.

An Increase in the District's Alcohol Taxes Would Likely Reduce Alcohol Consumption and Some Related Problems

Taxes on alcohol are a means of reducing alcohol misuse while at the same time raising revenue. Economic theory and empirical evidence indicate that higher alcohol taxes increase the prices for alcoholic beverages, and higher prices affect alcohol consumption. However, there is some uncertainty regarding the extent to which the taxes are passed through to consumers as higher prices, and empirical research estimates vary on the degree to which changes in prices affect alcohol consumption.

Researchers have found that changes in alcohol prices affect most categories of drinkers, but to different degrees. Youths and young adults appear to be more sensitive to price than older adults. Some recent studies have found that higher alcohol taxes and prices are associated with declines in drunken driving, motor vehicle fatalities, rapes, and robberies. The special geographic circumstances of the District—where all of its suburbs are in other jurisdictions—may serve to weaken the effect that an increase in the District's taxes would have on local alcohol consumption.

Alcohol Taxes Increase Alcohol Prices, but the Relationship Varies With Circumstances

Economists have suggested that the extent to which any excise tax increase is passed along to consumers varies, depending on the characteristics of the markets where consumers purchase their beverages. Such characteristics would include how much competition among sellers exists in the markets. There is a clear presumption in the economic literature that in the long run, under perfectly competitive market conditions, tax increases on consumer goods are completely passed along by producers, wholesalers, and retailers to the final consumers in the form of higher prices for the taxed goods. The alcohol industry, however, does not operate under purely competitive conditions. Researchers have concluded that the alcohol industry is oligopolistic, meaning that it is dominated by a few large suppliers.¹⁸ There is no generally accepted theory of how prices are determined in an oligopolistic industry; therefore, the exact extent to which alcohol excise taxes will affect the prices of alcoholic beverages is uncertain. Nor is there clear empirical evidence to indicate what portion of a tax increase will be passed along to alcoholic beverage consumers in the form of increased prices. Some researchers have estimated that past alcohol excise tax increases have caused prices to increase by more than the full amount of the tax increase. Other

¹⁸For example, in 1990 two producers supplied over 50 percent of the domestic beer market.

economists have suggested that the extent to which excise tax increases are passed along to consumers varies depending on the characteristics of the markets where consumers purchase their beverages. Such characteristics include how responsive market demand is to price changes and how much competition among sellers exists in the markets. In the absence of more conclusive evidence, most researchers trying to model the effects of taxes and prices on alcohol consumption assume that an excise tax increase will cause sellers to raise their prices to consumers by at least the full amount of the tax.

Empirical Estimates Indicate That Prices Affect Alcohol Consumption and Some of Its Harmful Consequences

Numerous empirical studies confirm the conclusion of economic theory that the higher prices that result from tax increases will have a negative effect on alcohol consumption. However, precise estimates of the degree to which consumption is affected are difficult to obtain given the limitations of available data on alcohol prices and consumption.¹⁹

Researchers have found that light, moderate, and heavy drinkers in the general population cut back on consumption when alcohol prices are increased. However, study results vary concerning the relative price sensitivity of light, moderate, and heavy drinkers. The preponderance of the evidence on youth drinking indicates that youths and young adults are more sensitive to price than older adults, particularly those adults who have developed a long-term lifestyle that includes heavy drinking. Researchers also found that beer is the beverage of choice among youth who drink alcoholic beverages and that youth seem to be more responsive to changes in alcohol prices than the population in general.

Researchers also have found negative relationships between alcohol prices or tax rates and the adverse consequences associated with alcohol misuse, especially between alcohol use and auto crashes and fatalities. For example, a recent study demonstrated that higher state beer excise tax rates had a significant impact on lowering total driver fatalities, night driver fatalities, and alcohol-related fatalities for drivers of all ages and for drivers 18 to 20 years old. Another study found that alcohol prices had a negative effect on binge drinking—a 9-percent reduction in the number of binge episodes per month resulted from a 10-percent increase in price. Other research indicates that higher alcohol taxes (or prices) have a negative and statistically significant effect on suicide rates; possibly on the liver cirrhosis death rate; on mortality rates from other cancers to which

¹⁹See appendix III for a review of the specific empirical findings of researchers who studied the effects of price increases on alcohol consumption and a discussion of some of the data limitations that the researchers have faced.

alcohol contributes; and on violent crimes, such as rape and robbery. Some authors observe that the bulk of evidence supports the conclusion that increasing alcohol taxes would extend life expectancy.

Competition From Maryland and Virginia May Weaken the Effects of a District Tax Increase

If the District raises its alcohol taxes while Maryland and Virginia do not, then some consumers who currently purchase their alcohol in the District may shift the location of some of their purchases to neighboring jurisdictions. The actual public health benefits of an increase in alcohol taxes would be reduced to the extent that the tax increase merely shifted the location of purchases rather than reducing consumption.

Prior research indicates that the rates of local sales and/or excise taxes across jurisdictions within a region can influence where the consumers of that region shop. The importance of these so-called “border effects” of tax rate differences depends on the specific border situation in question, but several characteristics of the District’s metropolitan area imply that policymakers should not ignore these effects when considering changes in the District’s alcohol taxes. First, most of the District’s residents live within a relatively short distance of alcoholic beverage retail outlets in Maryland or Virginia. Second, every work day the District has a large influx of commuters, who might shop in the District with relative ease if they had a sufficient incentive. Finally, residents in the immediate metropolitan area have a wide range of choices of bars and restaurants in all three jurisdictions. If the District were the only jurisdiction in the region that raised its taxes on alcohol, then the after-tax prices of alcoholic beverages sold in the District would increase relative to prices in the surrounding jurisdictions, and retailers operating in the District could lose some business to competitors in the surrounding jurisdictions.²⁰

In comparison to, say, a 10-cents-per-gallon increase in the federal beer tax, a 10-cents-per-gallon increase in the District’s beer tax would have less of an effect on alcohol consumption (and associated problems) of individuals who currently buy alcohol in the District. Those individuals could avoid a District tax increase that was passed on to consumers by making their purchases in Maryland or Virginia. If the cost of shifting the location of their purchases is less than the cost imposed by the District tax increase, then their cost of consumption would not have risen by the full

²⁰Local laws that prohibit or limit the transportation of alcoholic beverages from one jurisdiction to another may reduce cross-border shopping, but to an unknown degree. For example, Virginia limits the importation of alcoholic beverages, not for resale, to no more than 1 gallon or 4 liters in any one trip. Maryland limits personal importation to 1 quart per person per trip and no more than 2 quarts in any one calendar month.

10 cents per gallon.²¹ In contrast, these individuals could not avoid a full increase in the federal excise tax that was passed on to consumers by shifting their purchases. Because the District tax would increase the cost of consumption for some consumers by less than a similar federal tax increase would, it would produce smaller aggregate behavioral changes.²² In addition to reducing the beneficial behavioral effects of an alcohol tax increase, the shifting of sales would reduce the potential revenue gains for the District. It would be difficult to accurately estimate the size of the shift in sales that would occur from any given increase in the District's alcohol taxes because of the many factors involved.

Many States Earmark Portions of Their Alcohol Tax Revenues for Specific Purposes

As of 1993, 24 states earmarked at least a portion of their alcohol excise tax revenues for specific purposes. The percentage of the alcohol tax revenue that was earmarked in each of these states ranged from 4.5 percent in Colorado to 100 percent in West Virginia. The purposes for which the alcohol revenue were earmarked also varied substantially across these states—from public schools, to local governments, to convention promotion. Appendix IV shows how much revenue was earmarked for each purpose in each state in fiscal year 1993. In 15 of the states some of the revenue was specifically earmarked for alcohol treatment, substance abuse, and/or mental health programs. Since 1994, the District has earmarked 10 percent of its sales tax on alcoholic beverages sold for on-premises consumption to the Washington Convention Center Authority Fund.

²¹The cost of shifting locations of purchase will vary across individuals. Individuals who commute between the District and the surrounding jurisdictions every day are likely to have lower costs of shifting their purchase locations than those who would have to make a special trip into or out of the District just to purchase alcohol. Individuals living close to the border of Maryland and the District may experience no difference in transportation costs, whether they shop in one jurisdiction or the other. The number of individuals who would find it less costly to shift their purchases than to pay the increased tax in the District would depend on the size of the tax increase.

²²A District tax increase could conceivably increase drunk driving if it leads some District residents to drive farther away from home to consume alcohol and then drive back. However, the increase could have an opposite effect if it leads Maryland and Virginia residents to drink locally, rather than drive into the District.

Studies Have Shown That Some Alcohol Prevention Approaches Are Effective, but Many Need More Rigorous Evaluation

Communities have opted to use alcohol prevention approaches that fall into three general categories. The first approach emphasizes education and skill-building programs directed toward individuals in schools, families, colleges, and specific population groups (e.g., women and minorities). The second approach is more population-based, using legal and regulatory strategies to influence the physical and social environments in which drinking occurs or is promoted. For example, state and local governments seek to control the availability of alcohol by regulating the location, hours of operation, and number of establishments that sell alcoholic beverages. A third approach combines these two by creating multiple communitywide strategies, such as using education and skill-building programs to support new laws and regulations. When programs directed toward individuals have shown success, their effects have been small. Many of these programs need to be evaluated more rigorously and over time to determine their effectiveness. Research has shown that several laws and regulations that control the physical availability of alcohol or the social environment in which drinking occurs have resulted in lowered consumption and fewer alcohol-related problems. However, research on other preventive approaches influencing children's social environment, such as controlling advertising, has been less definitive. Studies have shown that combining the use of individual and population-based legal and regulatory strategies can be successful; additional studies of this approach are still under way.

Approaches That Focus on Education and Skill Building Have Shown Modest Success

Alcohol prevention approaches that are directed toward the individual generally use education, information, and skill-building activities to change attitudes and beliefs that influence drinking behavior and enhance people's ability to resist underage and abusive drinking. These approaches, although directed toward the individual, are most often presented in group settings, such as schools, families, and colleges and universities; or may focus on specific population groups, such as minorities and women. Table 6 describes different types of education and skill-building programs that are commonly used to combat alcohol abuse and prevent drinking among youth.

Table 6: Education and Skill-Building Programs

Type of program	Prevention strategy used
School-based	<p>Life skills training focuses on enhancing an individual's social interaction, interpersonal conflict resolution, and assertiveness.</p> <p>Resistance education strategies teach young people to identify and resist specific situations that could create pressure for them to drink alcohol.</p> <p>Normative education strategies try to correct erroneous beliefs that young people have about the prevalence and acceptability of alcohol use among their peers and to promote conservative attitudes about its use.</p>
Parent and family	Programs range from providing education about alcohol use and abuse to strengthening the family's ability to socialize the children in a positive manner.
College or university	Strategies focus on the early detection of alcohol abuse, particularly binge or heavy drinking, and intervention.
Specific population groups	Strategies address the specific needs of groups, such as minorities and women, and the communities in which they live.

Source: NIAAA.

Since the 1960s, school-based programs have played a key role in the prevention efforts of many states and communities, primarily because they give easy access to a young audience. Research shows that although these programs are one of the most popular alcohol prevention approaches and continue to target thousands of today's young drinkers and potential drinkers, experts still debate their effectiveness. The main goals of school-based programs are to decrease the overall prevalence and level of drinking among youth; reduce the progression of alcohol consumption to problem levels; and, ideally, prevent young persons from starting to drink. One of their major strategies is to influence knowledge, beliefs, or attitudes about alcohol and its effects. Participants in one life skills program reported lower alcohol use than nonparticipants after 5 years.²³ The prevention literature suggests, however, that the success of most school-based programs in preventing the onset of drinking and reducing the use of alcohol has been small.

Communities also use education and skill-building programs directed to individuals in family units, colleges, and specific groups, such as women

²³Gilbert J. Botvin et al., "Long-term Follow-up Results of a Randomized Drug Abuse Prevention Trial in a White Middle-Class Population," *Journal of the American Medical Association*, 273:14 (1995), pp. 1106-12.

and minorities. Research results have suggested that parent participation in alcohol prevention programs could be effective in reducing alcohol use, but such programs generally have a difficult time getting large numbers of parents to participate on a regular basis. Research has also shown that a prevention program for freshman students at one university succeeded in reducing alcohol consumption and problems associated with excessive drinking.²⁴ Researchers are exploring whether minorities, women, and other special populations could benefit from prevention programs tailored to their needs.

Approaches That Influence Physical and Social Environments in Which Drinking Occurs

The research literature suggests that certain legal and regulatory strategies that influence the physical and social environments in which alcohol is consumed are effective in reducing consumption and alcohol-related problems. Prevention approaches that use these strategies generally fall into two categories: (1) those intended to influence individual drinking practices, such as enforcement of impaired driving laws; and (2) those aimed at regulating the availability of alcoholic beverages, such as restricting the number and location of establishments selling alcohol. Prevention research has produced evidence demonstrating the effectiveness of several legal and regulatory strategies, such as laws prohibiting the sale of alcohol to minors, server training programs, and various measures to deter drinking and driving. Research has not been conclusive, however, regarding the effectiveness of laws and regulations that, for example, control the hours and days of alcohol sales, restrict or ban alcohol advertisements, or require warning labels on alcoholic beverages. Table 7 shows various types of legal and regulatory strategies and their success in reducing alcohol consumption and problems associated with excessive drinking.

²⁴The High Risk Drinkers Project targeted freshman students at the University of Washington and resulted in participants having levels of both drinking and alcohol-related problems significantly lower than those of a randomly assigned control group after 2 years. NIAAA, "Prevention of Alcohol Problems," Chapter 9 of *Alcohol and Health: Ninth Special Report to the U.S. Congress*, U.S. Department of Health and Human Services, pp. 305-306, 1997.

Table 7: Selected Legal and Regulatory Prevention Strategies

Type of approach	Prevention strategy used	Research results on effectiveness of strategy
Availability of alcohol	Limiting the number of alcohol outlets in a given geographical area or community.	Research suggests that restricting the density of alcohol outlets may be effective in reducing alcohol consumption and motor vehicle crashes.
	Limiting the hours and days alcohol can be sold.	Extended hours of sale do not necessarily increase alcohol consumption or related problems.
	Establishing 21 as the minimum legal age for the purchase and consumption of alcohol.	Restrictions on days when sales are permitted appear to reduce traffic crashes.
Server intervention, control laws, and legal liability	Training programs to enhance the skills of servers and managers to identify intoxicated and underage individuals and discourage them from drinking.	Server training can modify servers' and managers' knowledge and beliefs about alcohol service and change serving practices.
	State and local laws and regulations define who may serve or be served alcohol, the type of alcohol sold, and the time during which alcohol can be sold.	Liability laws can affect the behavior of persons who serve alcohol, resulting in patrons consuming less alcohol.
Alcohol advertisements	Restrictions or bans on advertising, counteradvertising efforts or warnings, and health promotion campaigns.	The effects of advertising restrictions or bans are unclear. Limited evidence suggests that counteradvertising and health promotion may be effective.
	Containers for alcoholic beverages must have a clear, nonconfusing label warning of alcohol-related hazards. ^a	Warning labels do not appear to influence drinking behavior.
Drinking and driving	Drinking and driving laws that set blood alcohol concentration levels for young and adult drivers and use deterrence measures, such as interlock devices. ^b	Evidence suggests that drinking and driving laws have significantly decreased alcohol-related traffic crashes and problems.

^aIn 1989, Public Law 100-690 required that containers for alcoholic beverages be labeled to warn women about the risk of birth defects from drinking during pregnancy and to warn the public about the dangers associated with drinking and driving a car or operating machinery.

^bJudges can order that an interlock device be installed in the cars of people convicted of alcohol-impaired driving. This device requires that the driver pass a dexterity or an alcohol-free test before the vehicle will start.

Source: NIAAA.

Visible Enforcement of Legal and Regulatory Strategies Can Enhance Their Effectiveness

The literature suggests that visible enforcement programs and education can enhance the beneficial effects of certain legal and regulatory strategies. The deterrent effect of a law depends, at least in part, on the public's belief that violations are likely to be detected and violators punished. The District of Columbia and the states of Maryland and Virginia use a number of enforcement techniques to ensure compliance with state and local laws covering, among other things, who may serve or be served alcohol, the type of alcohol that can be sold, and the time during which alcohol can be sold. Appendix V describes selected provisions of alcohol control laws, along with related penalties, for the District, Maryland, and Virginia.²⁵

Alcohol beverage control (ABC) boards establish conditions for issuing licenses to sell alcohol and rely on a cadre of enforcement officials²⁶ to monitor compliance with these regulations and impose penalties for violations. Owners of licensed drinking establishments and alcohol servers can be punished by fines and short jail terms if they violate alcohol-related laws and regulations. The District and neighboring jurisdictions in Maryland and Virginia devote different levels of resources to enforcement. For example, the ratio of enforcement officials to licensees in the District is about 1 to 400; the ratio in the City of Alexandria is about 1 to 150.²⁷ In Virginia, unlike Maryland and the District, ABC enforcement officials have enhanced authority, which, among other things, allows them not only to fine the establishment that sells alcohol to underage purchasers, but also to fine the employee and the youth attempting to purchase alcohol. ABC officials in the District and Maryland would like similar enforcement authority granted to their staff, because they believe that this authority is a highly effective deterrent to underage drinking. Following is a description of several legal and regulatory strategies whose effectiveness has been demonstrated by research.

²⁵Some counties have enacted restrictions on various forms of advertising of alcoholic beverages, such as bans on advertising prices or restrictions on how and where alcoholic beverages may be publicly displayed. In *44 Liquormart v. Rhode Island*, 517 U.S. 484 (1996), however, the Supreme Court found that a Rhode Island law that banned advertisement of retail liquor prices (except at the place of sale) violated the First Amendment guarantee of freedom of speech. Therefore, some current restrictions on advertising of alcoholic beverages may present constitutional problems.

²⁶In the District, these officials are called investigators; in Virginia, enforcement agents; and in Montgomery and Prince George's Counties, inspectors.

²⁷The District's Fiscal Year 1998 Appropriations Act directs the District to hire 12 new investigators, with half focusing on prohibiting sales to minors. The District of Columbia Financial Responsibility and Management Assistance Authority Board has not yet authorized the D.C. ABC Board to hire the investigators and continues to study how it can find the money for the new hires. In addition, the D.C. budget has not been augmented to cover the 12 additional hires.

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- Studies of server training programs reveal that they can modify servers' and managers' knowledge and beliefs about alcohol service and bring about changes in serving practices that help reduce the rate and amount of alcohol consumed by patrons. Such training increased staff intervention with intoxicated patrons and increased servers' willingness to suggest alternative beverages and forms of transportation. Research also shows that server intervention can be greatly enhanced through increased enforcement of alcohol control laws and server liability laws.
 - Several researchers have explored the effectiveness of increasing the visibility of enforcement and the rigorousness of prosecution of alcohol control laws. They found declines in both the number of arrests for driving under the influence of alcohol obtained at bars and restaurants and incidents of alcohol service to researchers posing as intoxicated patrons. Research also shows that liability laws have affected the behavior of persons who serve alcohol, which in turn affects the drinking practices of patrons. Server liability laws place the server at risk of committing a violation for serving alcohol to underage drinkers or highly intoxicated patrons. Further, under civil liability, or dram shop laws, an alcohol server has potential legal responsibility for damage that intoxicated patrons and underage drinkers inflict on themselves or others. The financial loss that bar and restaurant servers and managers may incur is expected to deter serving practices that could increase a patron's risk of a motor vehicle accident and other liabilities.
 - The minimum legal drinking age (MLDA) policy has been heavily studied, with numerous research findings demonstrating the effectiveness of a higher MLDA in preventing injuries and deaths among youth. For example, the MLDA of 21 is estimated to save more than 1,000 young lives each year. A recent review of 50 studies provided evidence that raising the legal drinking age to 21 reduced youth drinking and related problems, such as traffic crashes. In response to many concerns about people under the age of 21 easily obtaining alcohol, research has also suggested that the MLDA could become even more effective with increased enforcement, including deterrents for adults who might sell or provide alcohol to minors.
 - Lower legal blood alcohol concentration (BAC) limits for youth and adults have been found to decrease alcohol-related traffic fatalities. Many states have lowered legally allowable BAC limits for young drivers in an effort to reduce their involvement in alcohol-related crashes; for these states, BACS range from .00 to .05. An analysis of the first four states to lower BAC levels found that these states experienced a decline in teenage nighttime fatal crashes 30 percent greater than declines in nearby comparison states that

did not lower the BAC limit.²⁸ A number of states have also lowered the legal BAC for adults from .10 to .08 percent. Studies of a subset of these states project that if all states adopted a .08 percent BAC law for adults, at least 500 to 600 fewer deaths would occur annually.²⁹

Efforts Combining Multiple Approaches Are Gaining Popularity, but Evaluations Are Still Under Way

Lately, communitywide prevention efforts that combine multiple strategies have become a more popular response to problems related to alcohol misuse. These communitywide programs incorporate strategies to both regulate the physical and social conditions in which drinking occurs and educate individuals about alcohol use and enhance their ability to reduce or resist drinking. Early research indicated that using multiple approaches produced only temporary changes in drinking behavior and the prevalence of alcohol-related problems. Programs were redesigned in response to these findings, and preliminary data suggest that these newer multifaceted strategies may be more successful in reducing alcohol consumption than either individual or environmental approaches alone. For example, in several states implementation of a strong educational program, along with lowering the legal BAC limit for teen drivers, was reported to significantly reduce nighttime fatal automobile crashes. A 5 year community prevention trial that combined several strategies, including mobilizing the community, increasing enforcement of drinking and driving laws, and enforcing underage sales laws, resulted in a reduction in alcohol-involved traffic crashes of about 10 percent a year and significant reductions in alcohol sales to minors.³⁰ Evaluations of several major studies of communitywide approaches are still under way and no final outcome data are available. One of the studies, Project Northland-Phase II, focuses on reducing drinking and alcohol-related problems among 15- to 17-year-olds and includes a combination of school and media curricula; youth social action programs; parent involvement and education; and community task forces for numerous policy and social interventions (e.g., enforcing existing laws

²⁸Ralph Hingson, "Prevention of Alcohol-Impaired Driving," *Alcohol Health and Research World*, Vol. 17, No. 1(1993), pp. 28-34.

²⁹The District of Columbia lowered its BAC to .00 percent for minors in 1994 and currently has a BAC of .10 percent for adults. A provision that would reduce states' highway construction dollars if the states fail to lower the legal blood alcohol limit for adults to .08 percent by 2001 is currently under consideration by Congress as part of the Intermodal Surface Transportation Efficiency Act of 1998.

³⁰*Addiction: A Community Prevention Trial to Reduce Alcohol-Involved Trauma*, Vol. 92, Supplement 2, June 1997.

prohibiting alcohol sales to minors and restricting alcohol sales at sporting, music, and other public events).³¹

Limited Evidence to Determine What Works

Based on the current research literature, only a few alcohol prevention approaches have been adequately evaluated and proven effective. With the exception of several well-designed studies, such as Project Northland and research on the MLDA, most published evaluations of the effectiveness of alcohol prevention programs and strategies were shown to be methodologically weak. Detailed reviews of the alcohol prevention literature by NIAAA, the Institute of Medicine, and other experts found limitations in the study designs that affect the evaluation of outcomes and may compromise conclusions. Common problems include questions about the validity of self-reported data, the selection of inappropriate research designs and statistical analyses, lack of comparable experimental and control groups, and the potential impact of high attrition rates. Evaluations of early school-based programs, for example, relied heavily on self-reported data to measure alcohol use, which raises concerns about possible underreporting or overreporting by program participants. Although recent studies have attempted to address many methodological challenges that commonly face researchers of prevention programs, concerns continue to surface. For example, although research has shown that some legal and regulatory approaches are effective, the inability to control factors beyond the study interventions makes it difficult to determine the exact nature of the relationship between the prevention strategy and changes in drinking behavior.

Enforcement Strategies in District of Columbia Metropolitan Area

The District of Columbia, Maryland, and Virginia support a number of enforcement strategies to enforce laws intended to prevent underage drinking and the misuse of alcohol by adults. Some of these strategies are directed at sales outlets, while others are aimed at preventing underage access to alcohol and promoting responsible drinking. ABC Boards, ABC enforcement officials, and local police departments are responsible for implementing these strategies. Although the following strategies have not been formally evaluated, officials we interviewed cite them as successful.

- A reverse sting operation, commonly referred to as cops in shops, was an effort in which police officers, posing as store clerks, apprehended minors

³¹Kelli A. Komro et al., "Project Northland - Phase II: Research and Evaluation Design of a Community-Wide Program to Reduce Adolescent Alcohol Use." Proceedings published from a Kettil Bruun Society Thematic Meeting, Fourth Symposium on Community Action Research and the Prevention of Alcohol and Other Drug Problems, February 8-13, 1998, New Zealand, forthcoming.

using false identification to purchase alcoholic beverages while ABC officials and/or police officers waited outside in cars. Some of the officials we interviewed ranked this program as the most successful enforcement program in their jurisdictions, claiming numerous citations issued to youth and subsequent decreases in underage attempts to purchase alcohol. Officials said that establishment owners welcomed this program, because only underage violators were fined, not the establishment. Additionally, the establishments did not have to pay the police officer, who worked as a clerk for several hours in the liquor outlet. This program, funded through a federal grant with the assistance of the Washington Regional Alcohol Program of Northern Virginia, was implemented for 1 year in the District and several Maryland and Virginia counties.

- Maryland requires an alcohol awareness training course for every licensed establishment. Alcohol beverage control officials in the District and Virginia support efforts to offer such training, and the District requires training for establishment owners who have violated liquor laws. Officials we interviewed believe that statewide laws should require that a trained person be on the premises of an establishment at all times, or else the training has little effect on consumption. Although Maryland law does not require this, Montgomery County supplemented Maryland law to require a trained person on the premises at all times.
- Beer keg registration, a strategy in use in the District, Maryland, and Virginia, requires that every keg sold must be registered, with information on a label as to who bought it, what kind of identification was shown, and where the keg came from. This is to discourage adults from purchasing kegs for youth; if the label is removed, legal responsibility rests with the person hosting the party. Officials told us this has resulted in a decline in adult beer keg purchases for underage drinkers and has cut down on the number of youth drinking parties.
- Montgomery County, Maryland, and Virginia use sting operations involving underage decoys who accompany ABC enforcement officials to establishments to attempt to purchase alcohol. If an establishment sells alcohol to a decoy, it can be penalized. Montgomery County also uses these underage volunteers in a program to monitor hotel and motel room service operations. In this sting operation, the ABC official rents a room and the underage volunteer calls for room service, ordering an alcoholic beverage. The official waits unseen to observe if the youth is illegally allowed to purchase alcohol. According to Montgomery County officials, this program has been highly effective; hotels had 100 percent compliance rates with underage drinking laws following 2 consecutive years in which they had a 66 percent violation rate. Prince George's County officials

disagree with the concept of a sting operation; they believe it inappropriately entraps establishments.

The District of Columbia Funds Various Alcohol Abuse Prevention and Treatment Programs

In addition to its enforcement efforts, the District funds a variety of health and education programs to prevent and treat alcoholism, most of which are components of overall substance abuse programs. In fiscal year 1997, District agencies spent about \$66 million providing substance abuse services to its residents.³² Most of these dollars were used for treatment services. The District Department of Health's Addiction Prevention and Recovery Administration (APRA) is one of the major providers of substance abuse treatment and prevention services, with total spending of about \$24 million in fiscal year 1997. The District of Columbia Public Schools are a source of funding for prevention activities for school-aged youth.

APRA funds alcohol prevention programs and offers counseling and treatment services to residents, either directly or through contractors. Alcohol prevention activities directed to youth who have not begun to use alcohol range from disseminating information and educating targeted populations, such as school-aged and college youth, to helping community groups develop programs. During fiscal year 1997, APRA spent about \$1.2 million of its federal block grant on alcohol prevention activities and treatment services, most of it spent on treatment.³³ Major prevention activities included a telephone hotline and neighborhood outreach centers. APRA worked with other government agencies and community groups to provide prevention activities to youth and adults.

The District also offers school children a systemwide drug prevention education program, using funding under the Safe and Drug Free Schools and Communities Act of 1994. Administered by the District of Columbia Public Schools, the Substance Abuse Prevention Education (SAPE) Program spent about \$1.7 million during fiscal year 1997, providing a variety of prevention activities to public, parochial, and private school students; teachers and other school staff; parents; and community groups. The SAPE Program provides education, training, program development, and

³²Overall substance abuse programs include alcohol and other drug prevention and treatment services. For fiscal year 1997, the District's total expenditures for substance abuse services fell into four categories: Medicaid (about \$27 million), APRA services (about \$24 million), criminal justice programs (about \$7 million), and other agency programs, such as in the District's public schools (about \$8 million).

³³Under the Substance Abuse Prevention and Treatment Block Grant, which is awarded to the District by the U.S. Department of Health and Human Services, a minimum of 37 percent of the total amount of the grant must be spent on alcohol treatment and prevention initiatives.

information dissemination to teach its participants about the use and abuse of alcohol and other drugs.

Conclusions

Although the District's alcohol tax structure differs from the tax structures of most states, its combined taxes on alcohol are generally higher. The District cannot conform its alcohol tax structure to those in all surrounding jurisdictions at the same time, because the tax structures among those neighboring jurisdictions differ significantly. Moreover, the District would not be able to impose exactly the same effective tax rates as those in either Virginia or Montgomery County, because those effective rates are difficult to estimate precisely. The District's taxes on beer are currently the highest in the region. Increasing taxes on alcoholic beverages has been associated with reductions in alcohol consumption and related health and social problems. The special geographic circumstances of the District—where all of its suburbs are in other jurisdictions—could weaken the effect that an increase in the District's taxes would have on local alcohol consumption.

Strategies to prevent youth from using alcohol and adults from drinking excessively generally either try to educate individuals and build their resistance skills or use legal and regulatory controls to affect the availability and consumption of alcohol. Although communities across the nation have invested significant resources in these efforts, there is mixed evidence about which prevention approaches are most effective. The best current evidence suggests, however, that some legal and regulatory strategies, when enforced, can help reduce illegal drinking and alcohol-related problems. If District officials are interested in investing in new alcohol prevention initiatives, it appears that greater efforts to enforce existing laws and regulations might produce the best short-term results. At the same time, however, more rigorous evaluations of prevention strategies and programs would be needed in order to provide better information about the effectiveness of the full range of prevention approaches.

Agency Comments and Our Evaluation

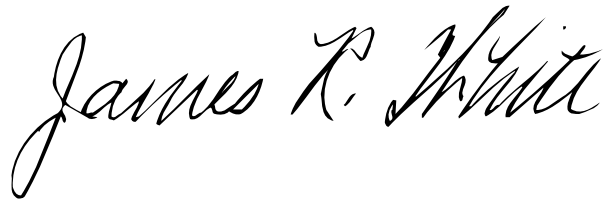
We obtained written comments on a draft of this report from NIAAA, PRC, and SAMHSA; and oral comments from the District of Columbia's Office of Tax and Revenue, Department of Consumer and Regulatory Affairs, and Department of Health; the District of Columbia Financial Responsibility and Management Assistance Authority; and the Virginia Department of Alcohol Beverage Control. NIAAA commented that in general, the report

makes a good start in identifying the complex issues involved in designing programs and policies to reduce alcohol abuse in a specific jurisdiction, particularly one with the unique characteristics of the District. It also provided detailed comments and suggestions for improving our presentation, which we incorporated where appropriate. SAMHSA and the Department of Consumer and Regulatory Affairs said they generally agreed with the findings of the report. The other oral comments involved minor wording clarifications, which we made where appropriate.

Officials from PRC suggested several technical changes to the report that we incorporated where appropriate. In response to their comment that our review of the literature did not sufficiently acknowledge the success of prevention strategies that combine educational and environmental interventions, we added the results of a major study that combined several strategies. They also said that our review gave inadequate recognition to some limitations of the economic literature on the effects of alcohol taxes. Their conclusion is that because of these limitations, no evidence exists regarding the effects of local alcohol taxes. Our report makes clear that there is much uncertainty regarding the size of the effect that an increase in the District's alcohol taxes would have on consumption. However, we believe that economic theory and the weight of the available empirical evidence suggest that a District tax increase likely would have some effect on alcohol consumption. We made changes to address PRC's other concerns about our presentation of the alcohol prevention literature when the concerns were supported by the evidence we reviewed, including additional studies PRC provided.

We are sending copies of this report to other appropriate congressional committees and other interested parties. Copies will also be made available to others upon request.

Major contributors to this report are listed in appendix VI. If you have any questions, please contact Mr. White on (202) 512-9110 or Ms. Lillie-Blanton on (202) 512-7119.



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Abbreviations

ABC	Alcohol Beverage Control
APRA	Addiction Prevention and Recovery Administration
BAC	blood alcohol concentration
DISCUS	Distilled Spirits Council of the United States
MLDA	minimum legal drinking age
NIAAA	National Institute on Alcohol Abuse and Alcoholism
PRC	Prevention Research Center
SAMHSA	Substance Abuse and Mental Health Services Administration
SAPE	Substance Abuse Prevention Education

Alcoholic Beverage Pricing by the Governments of Virginia and Montgomery County

State of Virginia

The Virginia Department of Alcoholic Beverage Control operates state stores that have the exclusive authority to sell liquor both to final consumers for their own off-premises use; and to resellers, such as hotels, restaurants, and taverns, that serve liquor on-premises. The retail “shelf” prices in the state stores are uniform across the state. Private sector resellers pay the same state shelf prices that final consumers do. Final consumers pay the state sales tax on top of the shelf price. Resellers add their own mark-ups on top of the state’s shelf price and then add the sales tax to the prices they charge their customers.

The shelf prices are computed by formula. The department takes the delivered case cost (what it pays to its supplier); adds a mark-up (which is a percentage of the case cost, plus a \$1 handling fee); and then adds its 20 percent ad valorem excise tax to arrive at the shelf price for the case. The department’s mark-up percentages vary by proof content and container size as follows:

Table I.1: Virginia’s Mark-Up Percentages for Liquor

Container size (in liters)	Mark-up percentages	
	Less than 125 proof	Equal to or greater than 125 proof
1.750	45%	60%
1.000	50	60
.750	50	60
.375	55	67
.200	60	74
.050	30	74

Source: State of Virginia, Department of Alcohol Beverage Control.

In the mid-1980s the department experimented by lowering prices on popular liquor items in selected northern Virginia stores to be more competitive with the District. The revenues for these stores declined, because the lower prices did not attract enough business away from the District to make up for the revenue that the stores lost from customers who had already been patronizing the stores. The last price survey that the department conducted in the early 1990s showed that prices in the District were generally lower than in Virginia for popular liquor brands in 1.75 liter size bottles. The survey also showed that prices on liquor sold in bottle sizes of 750 ml or less were generally lower in Virginia. Representatives from the District’s Alcohol Retailers Association indicated that this varied

relationship between liquor prices in the District and Virginia likely still existed.

Montgomery County, Maryland

Montgomery County’s Department of Liquor Control operates 22 stores that offer the full array of alcoholic beverage types. These are the only stores in the county permitted to sell liquor for off-premises use. Licensed private sector stores may sell beer and wine. Hotels, restaurants, and clubs can serve all types of alcoholic beverages, but only for on-premises consumption. Taverns are licensed to serve beer and wine but not liquor. All of the licensed private sector sellers of alcohol are required to purchase all of their alcoholic beverages from dispensaries operated by the Department of Liquor Control.

Montgomery County’s Department of Liquor Control sets the wholesale prices that its dispensaries charge to both private sector licensees and to its own stores. The board also sets the retail shelf prices that all of its own stores charge. The county’s price mark-ups vary by type of beverage. In the case of liquor, the county begins with the delivered case cost that it pays to its suppliers, adds the state excise tax, and then adds a percentage mark-up to arrive at its wholesale price for the case. These wholesale mark-ups vary by container size as follows:

**Table I.2: Montgomery County’s
Mark-Up Percentages for Liquor**

Container size (in liters)	Mark-up percentages
1.750	27.0%
1.000	27.0
.500	51.2
.375	51.2
.200	60.0
.110	60.0
.050	60.0

Source: Distilled Spirits Council of the United States.

For its own stores, the county adds a further mark-up of 18 percent to the wholesale case price to arrive at the retail shelf price. Consumers pay the 5 percent state sale tax on this price. The same procedure is used for wine, except that a different state excise tax rate applies, and the county uses different wholesale and retail mark-ups: 35 percent and 28 percent.

Appendix I
Alcoholic Beverage Pricing by the
Governments of Virginia and Montgomery
County

Beer wholesale and retail prices are not established by formal mark-up rules. The county relies on price surveys of wholesale and retail prices in nearby jurisdictions for guidance in setting beer prices.

In the limited time available to us, we could not complete a retail price survey of sufficient quality that would enable us to make a useful comparison of retail liquor prices in Montgomery County with retail prices in the private sector. However, because Maryland requires all wholesalers operating in the state to (1) publish the prices that they charge retailers for liquor and wine and (2) charge the same price to all retailers in the state (excluding Montgomery County), we were able to compare the wholesale prices that the county charges for those beverages with the wholesale prices that would have been charged in the county if the control system did not exist.¹

Our comparison of prices in effect during January 1998 indicates that Montgomery County's wholesale prices for some alcoholic beverage items are higher than those of private sector wholesalers operating in the rest of Maryland, but for other items the county's prices are lower.² The county's prices were higher than those of the private sector wholesalers for 9 of the 14 liquor items that either the Virginia ABC Commission or DISCUS identified as top sellers. The county's wholesale prices also were higher for 15 out of the 28 liquor items and 15 out of the 29 wine items that we randomly selected from the county's price lists.³ In the absence of information on sales volumes for each beverage item, we were not able to determine whether Montgomery County's average prices for liquor and wine are higher or lower than they would be if the county did not control prices. Consequently, we were not able to determine whether the average effective tax rate on alcohol in the county is above or below the average statutory tax rate applicable in the county. The fact that the relationship between the county's prices and the private sector prices varies across beverage items means that the relationship between effective and

¹Each alcoholic beverage item sold in Maryland is carried by only one private sector wholesaler. Therefore, there was only one private sector price that we needed to compare against the Montgomery County price.

²Both Montgomery County and the private sector wholesalers offer various discounted and special prices. We compared nondiscounted, nonspecial prices only.

³For 17 of the 42 liquor items in our comparison, Montgomery County's prices were more than 5 percent greater than those of the private sector wholesalers, and for 8 liquor items the county's prices were more than 5 percent lower than the private sector prices. For 11 of the 29 wine items, Montgomery County's prices were more than 5 percent greater than those of the private sector wholesalers, and for 10 wine items the county's prices were more than 5 percent lower than the private sector prices.

Appendix I
Alcoholic Beverage Pricing by the
Governments of Virginia and Montgomery
County

statutory tax rates on alcohol sold in Montgomery County is likely to vary across beverage items also.

State Alcoholic Beverage Excise Tax Rates and State Sales Tax Rates Applied to Alcohol

State	Excise tax rates (\$ per gallon)			State sales tax on alcohol (percent)	Other tax rates
	Beer	Liquor	Wine		
Alabama	\$0.53	^a	\$1.70	4.000	Wine: over 14% alcohol content sold through state stores
Alaska	0.35	\$5.60	0.85	None	Liquor: under 21% alcohol content, \$0.85 per gallon
Arizona	0.16	3.00	0.84	5.000	
Arkansas	0.23	2.50	0.75	4.625	Beer: under 3.2% alcohol content, \$0.16 per gallon; over 3.2% and under 5% alcohol content, \$0.23 per gallon; \$0.008 per gallon enforcement tax; malt liquor, \$0.20 per gallon; 10% on-premises gross receipts tax (for clubs). Wine: under 5% alcohol content, \$0.25 per gallon; over 5% alcohol content, \$0.75 per gallon; \$0.05 per case tax; 3% off-premises and 10% on-premises gross receipts tax (for clubs). Liquor: under 5% alcohol content, \$0.50 per gallon; over 5% but under 21% alcohol content, \$1.00 per gallon; 3% off-premises and 14% on-premises gross receipts tax.
California	0.20	3.30	0.20	6.000	Liquor: over 50% alcohol content, \$6.60 per gallon Wine: sparkling wine, \$0.30 per gallon
Colorado	0.08	2.28	0.32	3.000	
Connecticut	0.19	4.50	0.60	6.000	Liquor: under 7% alcohol content, \$2.05 per gallon Wine: over 21% alcohol content and sparkling wine, \$1.50 per gallon
Delaware	0.16	3.75	0.97	None	Liquor: under 25% alcohol content, \$2.50 per gallon

(continued)

**Appendix II
State Alcoholic Beverage Excise Tax Rates
and State Sales Tax Rates Applied to
Alcohol**

State	Excise tax rates (\$ per gallon)			State sales tax on alcohol (percent)	Other tax rates
	Beer	Liquor	Wine		
Florida	0.48	6.50	2.25	6.000	Liquor: alcohol content under 17.259%, \$2.25 per gallon; alcohol content over 55.78%, \$9.53 per gallon Liquor: retail tax \$0.10 per ounce for on-premises consumption Wine: alcohol content over 17.259%, \$3.00 per gallon; sparkling wine, \$3.50 per gallon Wine: retail tax \$0.10 per 4 ounce on-premises consumption Beer: retail tax \$0.04 per 12 ounce on-premises consumption
Georgia	0.48	3.79	1.51	4.000	Liquor: \$0.83 per gallon local tax Wine: alcohol content over 14%, \$2.54 per gallon, \$0.83 per gallon local tax Beer: \$0.53 per gallon local tax
Hawaii	0.92	5.92	1.36	4.000	Wine: sparkling wine, \$2.09 per gallon and wine coolers, \$0.84 per gallon Beer: \$0.53 per gallon for draft beer
Idaho	0.15	^a	0.45	5.000	Beer: alcohol content over 4%-\$0.45 per gallon
Illinois	0.07	2.00	0.23	6.250	Liquor: alcohol content under 14%, \$0.23 per gallon Wine: alcohol content over 14%, \$0.60 per gallon
Indiana	0.12	2.68	0.47	5.000	Liquor: alcohol content under 15%, \$0.47 per gallon Wine: alcohol content over 21%, \$2.68 per gallon
Iowa	0.19	^a	1.75	5.000	Wine: alcohol content under 5%, \$0.19 per gallon
Kansas	0.18	2.50	0.30	8.0/10.0 ^b	Wine: alcohol content over 14%, \$0.75 per gallon Beer: alcohol content under 3.2%, a sales tax of 4.25%
Kentucky	0.08	1.92	0.50	6.000	Liquor: alcohol content under 6%, \$0.25 per gallon; \$0.05 per case Liquor, beer, and wine: 9% wholesale tax

(continued)

**Appendix II
State Alcoholic Beverage Excise Tax Rates
and State Sales Tax Rates Applied to
Alcohol**

State	Excise tax rates (\$ per gallon)			State sales tax on alcohol (percent)	Other tax rates
	Beer	Liquor	Wine		
Louisiana	0.32	2.50	0.11	4.000	Liquor: alcohol content under 6%, \$0.32 per gallon Wine: alcohol content from 14% to 24%, \$0.23 per gallon, over 24% and sparkling wine, \$1.59 per gallon Beer: \$0.048 per gallon local sales tax
Maine	0.35	^a	0.60	6.0/7.0 ^b	Wine: alcohol content over 15.5% , sold through state stores; sparkling wine, \$1.25 per gallon Liquor: Sold only through state stores if alcohol content is over 4% Beer: Sold through private outlets
Maryland	0.09	1.50	0.40	5.000	
Massachusetts	0.11	4.05	0.55	5.000	Liquor: alcohol content under 15%, \$1.10 per gallon, over 50%, \$4.05 per proof gallon; 0.57% gross receipts tax on private club sales Wine: sparkling wine, \$0.70 per gallon Beer: 0.57% gross receipts tax on private club sales
Michigan	0.20	^a	0.51	6.000	Wine: alcohol content over 16%, \$0.76 per gallon
Minnesota	0.15	5.03	0.30	8.500	Liquor: \$0.01 per bottle (except miniatures) Wine: alcohol content 14% to 21%, \$0.95 per gallon; under 24% and sparkling wine, \$1.82 per gallon; \$0.01 per bottle (except miniatures) Beer: alcohol content under 3.2%, \$0.077 per gallon
Mississippi	0.43	^a	0.35	7.000	
Missouri	0.06	2.00	0.36	4.225	
Montana	0.14	^a	1.06	None	Wine: alcohol content over 16%, sold through state stores; 7% surtax Beer: 7% surtax
Nebraska	0.23	3.00	0.75	5.000	Wine: alcohol content over 14%, \$1.35 per gallon

(continued)

**Appendix II
State Alcoholic Beverage Excise Tax Rates
and State Sales Tax Rates Applied to
Alcohol**

State	Excise tax rates (\$ per gallon)			State sales tax on alcohol (percent)	Other tax rates
	Beer	Liquor	Wine		
Nevada	0.09	2.05	0.40	6.500	Liquor: alcohol content under 14%, \$0.40 per gallon and under 21%, \$0.75 per gallon Wine: alcohol content 14% to 22%, \$0.75 per gallon; over 22%-\$2.05 per gallon
New Hampshire	0.30	a	a	None	Liquor and wine: all sales are through state stores
New Jersey	0.12	4.40	0.70	6.000	
New Mexico	0.41	6.06	1.70	5.000	Wine: alcohol content over 14%, \$6.06 per gallon
New York	0.16	6.44	0.19	4.000	Liquor: alcohol content under 24%, \$2.54 per gallon
North Carolina	0.48	a	0.79	4.000	Liquor: sales tax applies to on-premises consumption only Wine: alcohol content over 17%, \$0.91 per gallon
North Dakota	0.16	2.50	0.50	7.000	Wine: alcohol content over 17%, \$0.60 per gallon; sparkling wine, \$1 per gallon
Ohio	0.18	a	0.32	5.000	Wine: alcohol content over 14%, \$1 per gallon; vermouth, \$1.10 per gallon; sparkling wine, \$1.50 per gallon
Oklahoma	0.40	5.56	0.72	4.5/12.0 ^b	Liquor: \$1 per bottle on-premises tax Wine: alcohol content over 14%, \$1.44 per gallon; sparkling wine \$2.08 per gallon; \$1 per bottle on-premises Beer: alcohol content under 3.2%, \$0.36 per gallon; \$1 per case on-premises
Oregon	0.08	a	0.67	None	Wine: alcohol content over 14%, \$0.77 per gallon
Pennsylvania	0.08	a	a	6.000	Liquor and wine: all sold through state stores
Rhode Island	0.10	3.75	0.60	7.000	Wine: sparkling wine, \$0.75 per gallon
South Carolina	0.77	2.72	0.90	5.000	Liquor: \$5.36 per case charge and 9% surtax on retail "shelf" price Wine: \$0.18 per gallon additional tax
South Dakota	0.27	3.93	0.93	4.000	Liquor: alcohol content under 14%, \$0.93 per gallon and 2% wholesale tax Wine: alcohol content 14% to 20%, \$1.45 per gallon, over 21% and sparkling wine, \$2.07 per gallon and 2% wholesale tax

(continued)

**Appendix II
State Alcoholic Beverage Excise Tax Rates
and State Sales Tax Rates Applied to
Alcohol**

State	Excise tax rates (\$ per gallon)			State sales tax on alcohol (percent)	Other tax rates
	Beer	Liquor	Wine		
Tennessee	0.13	4.00	1.10	6.0/15.0 ^{b,c}	Liquor and wine: \$0.15 per case charge; alcohol content under 7%, \$1.10 per gallon Beer: 17% wholesale tax
Texas	0.19	2.40	0.20	6.25/14.0 ^b	Wine: alcohol content over 14%, \$0.408 per gallon Beer: alcohol content under 4%, \$0.198 per gallon
Utah	0.35	a	a	4.750	Liquor and wine: sold through state stores only Beer: alcohol content over 3.2%, sold only in state stores
Vermont	0.27	a	0.55	5.000	Wine: alcohol content over 16%, sold through state stores Beer: alcohol content 6% to 8% - \$0.55; 10% on-premise sales tax
Virginia	0.26	a	1.51	4.500	Wine: alcohol content under 4%, \$0.2565 per gallon and over 14%, sold through state stores
Washington	0.15	a	0.87	6.500	Wine: alcohol content over 14%, \$1.72 per gallon Beer: state excise tax plus \$4.78 per barrel additional tax
West Virginia	0.18	a	1.00	6.000	Wine: alcohol content over 14%, sold through state stores
Wisconsin	0.06	3.25	0.25	5.000	Wine: alcohol content over 14%, \$0.45 per gallon
Wyoming	0.02	a	a	4.0	Liquor and wine: all sales through state stores
District of Columbia	0.09	1.50	0.30	8.0/10.0 ^b	Wine: alcohol content over 14%, \$0.40 per gallon and sparkling wine, \$0.45 per gallon

^aIn 18 states, the government directly controls the sales of liquor and, in some cases, beer and wine. Revenue in these states is generated from various taxes, fees, and alcohol beverage receipts.

^bThe first rate is on sales for off-premises consumption; the second rate is on sales for on-premises consumption.

^cThe on-premises sales tax rate does not apply to beer.

Source: Federation of Tax Administrators, "State Alcoholic Beverage Excise Tax Rates as of January 1, 1998"; and "Tax Briefs" prepared by the Distilled Spirits Council of the United States, December 1996.

Empirical Evidence Relating to the Effects of Alcohol Tax Increases on Alcohol Consumption and Associated Behavior

Empirical research conducted since the early 1980s generally concludes that increases in the prices of alcoholic beverages reduce drinking; heavy drinking; and related outcomes, such as motor vehicle and other accidents; liver cirrhosis mortality; “crime”; and reduced education, employment, and labor productivity.⁴ According to a review of recent research, price-induced reductions in alcohol consumption “are not limited to infrequent, light, or moderate drinkers, but also occur among frequent and heavy drinkers.” The review also finds “youth and young adults, the age groups where alcohol-related problems are disproportionately high, are generally more responsive to increases in price than are adults.”⁵

Researchers Agree That Alcohol Taxes Affect Consumption, but Empirical Estimates Vary

Higher prices for alcoholic beverages could be achieved by higher taxation. There is a clear presumption that higher taxes on alcoholic beverages are correlated with higher prices for those beverages. In general, however, the link between alcohol taxes and alcohol prices requires further study. Economists believe that the extent to which any excise tax increase is passed along to consumers varies depending on the characteristics of the markets in which consumers purchase their beverages.⁶ Such characteristics would include how responsive market demand is to price changes and how much competition among sellers exists in the market. Most researchers studying the economics of alcohol consumption assume that the full amount of the excise tax increase is passed along to consumers in the form of higher prices. In the absence of more complete evidence, researchers believe these are the best assumptions that can be made. Many researchers have used the variation in state-level excise tax rates across states as a proxy for the variation of alcohol prices across states.

Researchers have estimated a range of values for the degree to which consumption of beer, wine, or liquor responds to changes in the prices of these beverages. A comprehensive survey of empirical research conducted between 1983 and 1992 on the effect of price increases on alcohol consumption found that in response to a 10 percent beer price increase,

⁴Chaloupka et al., “The Effects of Price on the Consequences of Alcohol Use and Abuse,” in M. Galanter, ed. *Recent Developments in Alcoholism*, vol. 14: *The Consequences of Alcoholism: Medical, Neuropsychiatric, Economic, Cross-Cultural*, New York: Plenum Publishing Corp. forthcoming; Chaloupka et al., “The Effects of Price on Alcohol Consumption,” *Alcohol Health and Research World*, forthcoming.

⁵Chaloupka et al., *Alcohol Health and Research World*, forthcoming.

⁶Kenkel, Donald and Willard Manning, “Perspectives on Alcohol Taxation,” *Alcohol Health and Research World*, 20(4), 1996, pp. 233-234.

**Appendix III
Empirical Evidence Relating to the Effects
of Alcohol Tax Increases on Alcohol
Consumption and Associated Behavior**

beer consumption would decline by between 1.2 percent and 10.7 percent, with most studies estimating that the change in consumption would be less than 5 percent.^{7,8}

Generally, studies have tended to show that liquor and wine consumption is somewhat more responsive to price changes than is beer consumption. Experts estimated that liquor consumption would decline by between 5 percent and 10 percent in response to a 10 percent liquor price increase, but most of the estimates for wine were in the range of 5 to 20 percent.⁹

Other, generally more recent, studies have used data from surveys of individual alcohol consumption. These studies have found higher estimates for the consumption response to an increase in the price of alcohol.¹⁰ NIAAA's 1997 report to Congress reviewed and summarized the post-1992 studies of the effect of alcohol price increases on consumption.¹¹ According to this report, there continues to be substantial variation in estimates of the responsiveness of alcohol consumption to changes in alcohol prices.

One reason why the effects of price increases on alcohol consumption remain uncertain is the quality of the data that researchers have to work with. To make more precise estimates of the effects of price increases on alcohol consumption, one would need to use accurate measures of the prices that individual consumers pay for various types of alcohol rather than consumption data aggregated to a state or national level. However, collecting price data for a large sample of consumers is difficult and

⁷Leung, Siu Fai and Charles Phelps, "My Kingdom for a Drink. . . ? A Review of Estimates of the Price Sensitivity of Demand for Alcoholic Beverages," in Hilton, Michael and Gregory Bloss, eds. Economics and the Prevention of Alcohol-Related Problems, National Institute on Alcohol Abuse and Alcoholism Research Monograph No. 25, NIH Pub. No. 93-3513, U.S. Department of Health and Human Services, 1993.

⁸Nine of these studies estimated the sensitivity of beer consumption to beer prices and got a statistically significant result. All but one used consumption data aggregated to the state or national level, rather than individual consumption data.

⁹National Institute on Alcohol Abuse and Alcoholism, "Economic Aspects of Alcohol Use and Alcohol-Related Problems," Chapter 8 of Alcohol and Health: Ninth Special Report to the U.S. Congress, U.S. Dept. of Health and Human Services, June 1997, pp. 282, 284-285.

¹⁰Grossman, Michael, "The Economic Analysis of Addictive Behavior," in Hilton, Michael and Gregory Bloss, eds. Economics and the Prevention of Alcohol-Related Problems, NIAAA Research Monograph No. 25, National Institutes of Health Pub. No. 93-3513, U.S. Department of Health and Human Services, 1993, pp. 91, 114; Chaloupka, Frank, "The Effects of Price on Alcohol Consumption," forthcoming, 1997, p. 5.

¹¹NIAAA, "Economic Aspects of Alcohol Use and Alcohol-Related Problems," Chapter 8 of Alcohol and Health: Ninth Special Report to the U.S. Congress, U.S. Dept. of Health and Human Services, June 1997.

costly.¹² There may also be problems with the data on alcohol consumption that have been used in the empirical literature—self-reported consumption data—which tend to understate actual consumption.¹³ The use of alternatives to self-reported consumption data, such as expenditures on alcoholic beverages, may introduce a different set of errors and biases.¹⁴

Evidence Indicates That Both Light and Heavy Drinkers Are Responsive to Alcohol Prices, Although Some of the Heaviest Drinkers May Be Less Responsive

Light, moderate, and fairly heavy drinkers respond to alcohol price increases by cutting back on consumption. However, among a relatively small number of the very heaviest drinkers—those often considered to be addicted to alcohol—some researchers have found very little, if any, response to changes in price, while others have found some price responsiveness. One study found that consumers in the middle of the distribution of drinkers were the most sensitive to price changes, and very light and very heavy drinkers were less sensitive. This study also found that the higher the price of alcohol, the less likely consumers were to have any days of heavy drinking.¹⁵ Another study that examined the effects of alcohol prices on the frequency of heavy drinking and drunk driving found that a higher price of alcohol was associated with significant reductions in the frequency of heavy drinking for males of all ages, for females of all ages, and for females aged 21 and younger, but not for males aged 21 and younger.¹⁶

In another study, the same researcher has found that reported familiarity with the health consequences of drinking was important in determining

¹²In the absence of suitable data on alcohol prices, many researchers have used the variation in state-level excise tax rates as a proxy for the variation of alcohol prices across states. When using tax variables as proxies for price variables in studies of alcohol consumption, one needs to control for all state-specific factors that might affect both alcohol tax rates and alcohol consumption. For example, religious or cultural factors might cause certain states to have both lower than average alcohol consumption and higher than average tax rates on alcohol. The alternative, computing alcohol price indices from expenditure and quantity data, is also subject to problems. For example, see Johnson et al., “Alternative Approaches to the Measurement of Consumption and Price of Alcoholic Beverages, Canada, 1957-1983,” *Journal of Studies on Alcohol*, 51(1), 1990, p. 82.

¹³Comparisons of representative survey data with aggregate alcohol sales data indicate that self-reported alcohol consumption levels tend to underestimate actual consumption. If the reporting errors in drinking levels are correlated with drinking levels and other relevant variables, statistical estimates based on these data may be biased. Because the relationships between reporting errors and other variables are not well understood, it is not clear how large the resulting biases may be or how they might be mitigated.

¹⁴A consumer’s high overall expenditure on alcohol may result from larger levels of consumption of lower priced beverages or from smaller levels of consumption of relatively higher priced beverages.

¹⁵Manning, Willard et al., “The Demand For Alcohol: The Differential Response to Price,” *Journal of Health Economics*, 14(2), 1995, pp. 137-139.

¹⁶Kenkel, Donald, “Drinking, Driving, and Deterrence: The Effectiveness and Social Costs of Alternative Policies,” *Journal of Law and Economics*, XXXVI, October 1993, pp. 889-890.

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the extent to which the heaviest drinkers responded to price changes. The least-informed heavy drinkers did not appear to be sensitive to price changes, but the best-informed heavy drinkers appeared to be very sensitive. The author notes that the heaviest-drinking, least-informed consumers might be alcoholics who are in denial over the adverse consequences of drinking.¹⁷ He and a colleague also note that his finding is consistent with results of the Manning et al. study that found that very light and very heavy drinkers were less sensitive to price than others. The least well-informed consumers in his study were, on average, also very heavy drinkers.

Youth and Young
Adult Alcohol
Consumption May Be
More Responsive to
Price Than That of
Older Drinkers

Most researchers have found that youth and young adults exhibit more responsiveness to changes in alcohol prices than do older drinkers. One explanation of the greater price sensitivity of younger drinkers is that younger drinkers may have less income to spend than their older counterparts. Whatever the reason for the greater price sensitivity of younger drinkers, there may be public policy implications. If older drinkers—those with a long-term lifestyle that includes heavy drinking—are less sensitive to price while younger drinkers are more sensitive to price, higher alcohol taxes may have a two-fold effect. Higher alcohol prices may be an effective policy for reducing youth alcohol consumption and its related problems, as well as in reducing the likelihood of developing a long-term lifestyle that includes heavy drinking.¹⁸

Most researchers have found that beer is the beverage of choice among youths who drink alcoholic beverages.¹⁹ Some researchers have concluded that beer is disproportionately preferred by higher risk groups—for example, by those who drink a lot during a typical session far more than by those who drink moderately. It also has been noted that beer drinkers are more likely to drive while intoxicated than drinkers of other alcoholic

¹⁷Kenkel, Donald, "New Estimates of the Optimal Tax on Alcohol, *Economic Inquiry*, XXXIV, April 1996, p. 307.

¹⁸Chaloupka, Frank and Henry Wechsler, "Binge Drinking in College: The Impact of Price, Availability, and Alcohol Control Policies," *Contemporary Economic Policy*, 14(4), October 1996, pp. 112-124; Kenkel, Donald, personal communication, 1998, p. 4.

¹⁹Coate, Douglas and Michael Grossman, "Effects of Alcoholic Beverage Prices and Legal Drinking Ages on Youth Alcohol Use," *Journal of Law and Economics*, XXXI, April 1988, p. 152; Berger, Dale and John Snortum, "Alcoholic Beverage Preferences of Drinking-Driving Violators," *Journal of Studies on Alcohol*, 46(3), 1985, p. 232; Grossman et al., 1998, p. 40; Saffer, Henry and Michael Grossman, "Beer Taxes, the Legal Drinking Age, and Youth Motor Vehicle Fatalities," *The Journal of Legal Studies*, XVI, June 1987, pp. 353-354; Chaloupka and Wechsler, 1996, p. 116.

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beverages.²⁰ Additionally (as noted above) researchers believe that the responsiveness of alcohol consumption to changes in its price is greater for youth than for adults.²¹ One study estimated that a 10-percent increase in the price of beer could cause youths' consumption to decline by 23 percent.²² For those 17 to 29, another study found that on average, a 10-percent increase in the price of beer would lead to about a 7-percent decrease in consumption in the long run.²³ Yet another study found that after the states increased their legal drinking ages to 21 in the late 1980s, the price sensitivity of youth alcohol use fell.²⁴

Recent studies show that the drinking behavior of youths who are frequent, heavy, or binge drinkers is especially sensitive to alcohol price changes.²⁵ One study found that a 10-percent decline in the price of beer would increase the number of youths (aged 16 to 21) who drink beer 4 to 7 times per week by about 10 percent. The same 10-percent decline in price would cause the number of youths (aged 16 to 21) who consumed no beer per week to fall by about 7 percent.²⁶ Another study by some of the same experts found that the number of youths who drink six or more cans of beer on a typical drinking day would decline by about 31 percent in response to a price increase of 10 percent; the number of youths who drink only 1 to 2 cans of beer on a typical drinking day would decline by about 12 percent in response to a price increase of 10 percent.²⁷ In contrast, another recent study suggests that prices would have little impact on drinking and binge drinking among male college students.²⁸ The effects of alcohol taxation on heavy and binge drinking are of special

²⁰Berger and Snortum, pp. 232-239.

²¹Kenkel 1993, p. 895; Leung and Phelps, p. 23; Chaloupka, Frank, personal communication, 1998, p. 1.

²²Phelps, Charles, "Death and Taxes: An Opportunity for Substitution," *Journal of Health Economics*, 7, 1988, p. 10.

²³Grossman, Michael et al., "An Empirical Analysis of Alcohol Addiction: Results from the Monitoring the Future Panels," *Economic Inquiry*, XXXVI, January 1998, pp. 40, 45.

²⁴Laixuthai, Adit and Frank Chaloupka, *Youth Alcohol Use and Public Policy*, Cambridge, MA: National Bureau of Economic Research, Working Paper No. 4278, February 1993, pp. 1, 14-16.

²⁵Coate, Douglas and Michael Grossman, "Effects of Alcoholic Beverage Prices and Legal Drinking Ages on Youth Alcohol Use," *Journal of Law and Economics*, XXXI, April 1988, pp. 145, 151, 164.; Grossman, Michael, "The Economic Analysis of Addictive Behavior," in Hilton, Michael and Gregory Bloss, eds. *Economics and the Prevention of Alcohol-Related Problems*, NIAAA Research Monograph No. 25, NIH Pub. No. 93-3513, U.S. Department of Health and Human Services, 1993, pp. 109, 111, 114-115; Leung and Phelps, pp. 19-20; NIAAA, p. 282; Phelps, pp. 9-10.

²⁶Coate and Grossman, 1988, pp. 145, 151, 164.

²⁷Leung and Phelps, pp. 18-20.

²⁸Chaloupka and Wechsler, 1996, p. 120.

interest because of the high fatality rates from drunken driving that are associated with it. Alcohol involvement in motor vehicle accidents is estimated to be three times higher in the 18- to 20-year-old group than it is in the general population.²⁹ Results from other studies indicate binge drinking and heavy drinking are inversely related to price among adults as well.³⁰

Evidence Suggests That Increasing Taxes May Reduce Some Harmful Consequences of Drinking

A number of studies have examined the relationship between alcohol prices or tax rates and adverse consequences associated with alcohol misuse. According to a summary of the most recent research, it has been clearly demonstrated that increases in alcohol prices “can significantly reduce many of the problems associated with alcohol abuse, as well as improve educational attainment.”³¹ Problems associated with alcohol use and abuse include drinking and driving and motor vehicle accidents, liver cirrhosis and other health effects, decreased educational attainment and employment, and violence and other crime.³²

One of the most studied relationships is the relation between alcohol use and auto accidents and fatalities. There is a consensus in the empirical literature that an increase in the price of alcoholic beverages would reduce the number of lives lost in vehicle fatalities.³³ According to one study, the occurrence of drunk driving declines as its full price increases.³⁴ The study also found the risk of death or injury from an auto accident rises precipitously with the intensity of drinking; i.e., binge drinking.³⁵ Another study found that higher state beer excise tax rates were associated with reductions in motor vehicle fatalities for youths aged 15 through 24.³⁶ Likewise, in another study the state beer excise tax rate exhibited large

²⁹Chaloupka et al., “Alcohol Control Policies and Motor-Vehicle Fatalities,” *Journal of Legal Studies*, XXII, January 1993, pp. 165, 181.

³⁰Manning, Willard et al., p. 139; Kenkel, pp. 889-890.

³¹Chaloupka, Frank et al., in *Recent Developments in Alcoholism*, forthcoming, pp. 21-22.

³²Chaloupka, Frank et al., in *Recent Developments in Alcoholism*, forthcoming, pp. 9-10, 15-21.

³³Phelps, 1988; Kenkel, 1993.

³⁴Mullahy, John and Jody Sindelar, “Do Drinkers Know When to Say When? An Empirical Analysis of Drunk Driving,” *Economic Inquiry*, XXXII, July 1994, pp. 383-394. The full price of drunk driving includes not only the cost of purchasing alcoholic beverages, but also the costs of driving while intoxicated. The latter costs can include license revocation, fines, imprisonment, and social stigma.

³⁵The study found that youths who have consumed 6 or more drinks and then drive face a 100-fold increase in risk of death, compared with nondrinkers.

³⁶Saffer, Henry and Michael Grossman, “Beer Taxes, the Legal Drinking Age, and Youth Motor Vehicle Fatalities,” *Journal of Legal Studies*, June 1987, pp. 351-353, 373-374.

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negative and statistically significant associations with total driver fatalities, night driver fatalities, and alcohol-involved fatalities for both drivers of all ages and drivers 18 to 20 years old.³⁷ Other researchers found higher state beer tax rates to be weakly associated with a reduced propensity to drive drunk.³⁸

A recent study of the relation between beer prices and drunken driving included a relatively comprehensive set of explanatory variables and examined a variety of different model specifications. This study found that a 10-percent increase in the price of beer would result in an almost 10-percent decrease in the fatality rate from drunken driving, a 14-percent decrease in the fatality rate from nighttime drunken driving, and a 14-percent decrease in the fatality rate from drunken driving for those aged 18 to 20.³⁹ Another recent study estimated that alcohol prices have a negative and significant effect on binge drinking—the behavior that leads to drunken driving—with a 10-percent increase in the price of alcohol leading to a 9-percent decrease in the expected number of binge episodes per month.⁴⁰

Two studies have found that the excise tax rate on liquor has a negative and significant effect on the liver cirrhosis death rate.⁴¹ In contrast, other researchers found higher alcohol prices were not significantly related to lower death rates from liver cirrhosis. These studies did find a significant negative relationship between alcohol prices and suicide rates and mortality rates from other cancers to which alcohol contributes. They also found weak or insignificant effects of alcohol price on death rates from homicide and from falls, fires, and other accidents.⁴²

³⁷Chaloupka et al., 1993. Drinkers who prefer beer are more likely to drive while intoxicated than those who prefer wine or liquor.

³⁸Mullahy and Sindelar, pp. 383-394.

³⁹Ruhm, C.J., "Alcohol Policies and Highway Vehicle Fatalities," *Journal of Health Economics*, 15(4), 1996, pp. 435-454.

⁴⁰Sloan, F. et al., "Effects of Tort Liability and Insurance on Heavy Drinking and Drinking and Driving," *Journal of Law and Economics*, 38(1), 1995, pp. 49-78.

⁴¹Chaloupka et al., "Alcohol Addiction: An Econometric Analysis," presented at the annual meeting of the Allied Social Science Associations, Anaheim, CA, December 1992; Cook, Philip and George Tauchen, "The Effect of Liquor Taxes on Heavy Drinking," *Bell Journal of Economics*, 12, 1982, p. 379.

⁴²Sloan, F. et al., "Effects of Prices, Civil and Criminal Sanctions, and Law Enforcement on Alcohol-Related Mortality," *Journal of Studies on Alcohol*, 55, 1994, pp. 454-465.

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Two recent studies investigated the relationship between alcohol use and crime.⁴³ These researchers found significant relations between the real tax rate on beer and the incidence of rape and robbery. Other recent studies examined the impact of alcohol use and heavy use on the level of education attained.⁴⁴ These researchers note that there is evidence that heavy drinking is associated with reductions in the average number of years of schooling completed and reduction in employment as well as a tendency toward alcohol abuse in later life. They observe that the bulk of evidence supports the conclusion that increasing alcohol taxes would extend life expectancy.⁴⁵ Several other experts have suggested that people who misuse alcohol are less likely to be employed and tend to have lower incomes than people who do not.⁴⁶

⁴³Chaloupka, Frank and Henry Saffer, "Alcohol, Illegal Drugs, Public Policy and Crime," presented at the annual meeting of the Western Economic Association, San Francisco, CA, July 1992; Cook, Philip and Michael Moore, "Economic Perspectives on Reducing Alcohol-Related Violence," in Martin, S. E. ed., *Alcohol and Interpersonal Violence: Fostering Multidisciplinary Perspectives*, Washington, DC: U. S. GPO, 1993, p. 193.

⁴⁴Cook, Philip and Michael Moore, "Drinking and Schooling," *Journal of Health Economics*, 12, 1993, p. 411; Yamada, T. et al., "The Impact of Alcohol Consumption and Marijuana Use on High School Graduation," *Health Economics*, 5, 1996, p. 77.

⁴⁵Cook, Philip and Michael Moore, "Taxation of Alcoholic Beverages," in Hilton, Michael and Gregory Bloss, eds., *Economics and the Prevention of Alcohol-Related Problems*, NIAAA Research Monograph No. 25, NIH Pub. No. 93-3513, U. S. Department of Health and Human Services, 1993, pp. 33, 50.

⁴⁶Kenkel, Don and D. Ribar, "Alcohol Consumption and Young Adults' Socioeconomic Status," *Brookings Papers on Economic Activity*, 1, 1994, p. 119; Mullahy, J. and Jody Sindelar, "Alcoholism, Work, and Income," *Journal of Labor Economics*, 11(3), 1993, p. 494; Harwood, H. J. et al., "Economic Costs to Society of Alcohol, Drug Abuse and Mental Illness," Research Triangle Institute, 1984.

How States Earmarked Alcoholic Beverage Excise Tax Revenues, as of Fiscal Year 1993

Dollars in millions

State	Total collections	Earmarked		
		Amount	Percent	Purpose
Alabama	\$122.4	\$9.4	7.7	Mental health
		30.8	25.2	Human resources
		17.8	14.5	Education
		6.1	4.9	Counties and cities
Arizona	40.9	15.2	37.2	Correction fund
Arkansas	4.2	1.1	26.2	University of Arkansas Medical Center
Colorado	23.2	1.0	4.5	Old-age pension fund
Florida	539.2	8.8	1.6	Child and adolescent substance abuse services
		19.9	3.7	Alcoholic beverage and tobacco trust fund
Idaho	12.8	4.5	35.2	Counties and cities
		1.2	9.4	Alcohol programs
		1.2	9.4	K-12 education
		0.3	2.3	Community colleges
		0.7	5.5	Welfare
Indiana	33.2	15.6	47.0	Prison construction, enforcement, and administration
		2.3	6.9	Local police pension
		2.8	8.4	Addiction services
		8.3	25.0	Cities and towns
Kansas	57.7	12.2	21.2	County or city where sold
		1.5	2.6	Alcoholism treatment and prevention
Michigan	74.5	21.9	29.4	School aid fund
		21.9	29.4	Convention promotion
		8.0	10.7	Liquor purchasing revolving fund
Mississippi	38.1	3.1	8.1	Department of Mental Health
		1.0	2.6	Municipalities
Montana	15.4	3.7	24.0	Alcohol treatment and rehabilitation
		2.6	16.9	Local government
Nevada	14.6	2.0	13.7	Counties and cities
		0.6	4.1	Alcohol and drug abuse programs
New Jersey	88.0	11.0	12.5	Alcohol education, rehabilitation, and enforcement
New Mexico	17.6	9.1	52.0	Community alcoholism and detoxification fund
North Carolina	156.1	2.1	1.3	County rehabilitation contribution
		3.4	2.2	Law enforcement

(continued)

Appendix IV
How States Earmarked Alcoholic Beverage
Excise Tax Revenues, as of Fiscal Year 1993

Dollars in millions

State	Total collections	Earmarked		
		Amount	Percent	Purpose
		2.9	1.9	Alcohol education
		27.1	17.4	County and city districts
		21.0	13.5	Local-state tax sharing
Ohio	83.5	0.3	0.4	State grape industries
		2.0	2.4	Alcohol treatment and prevention
		18.1	21.7	Debt service on state economic development bonds
Oklahoma	23.6	6.8	29.0	Cities and towns
Oregon	71.4	29.0	40.6	Counties and cities
		5.2	7.3	Alcoholism programs
		0.1	0.2	Wine industry
South Dakota	21.0	5.3	25.2	Municipalities and local governments
Tennessee	64.2	1.7	2.6	Highway fund
		18.8	29.3	Counties and cities
		11.2	17.4	Education
Texas	392.5	24.9	6.3	Law enforcement
		29.8	7.6	Public education (K-12)
		51.2	13.0	Counties and cities
Virginia	26.8	17.9	66.8	Local government
Washington	154.4	10.0	6.5	Drug enforcement and education
		20.7	13.4	Counties and cities
		0.1	0.1	Washington Wine Commission
		0.1	0.1	Wine grape research
West Virginia	4.4	4.4	100.0	Counties and municipalities' state police drunk driving prevention funds

Source: National Conference of State Legislatures, Earmarking State Taxes (April 1995).

Selected Provisions of Alcohol Control Laws in the District of Columbia, Maryland, and Virginia

District of Columbia— District of Columbia Code		Maryland Statutes		Virginia—Code of Virginia	
Violation	Penalty	Violation	Penalty	Violation	Penalty
Prohibit sale and/or possession of alcoholic beverage					
Prohibits sale to minors (under age 21) or intoxicated persons on licensed premises.	Violation may result in a fine of from \$1,000 to \$10,000, license suspension of from 20 consecutive days up to revocation of license.	Prohibits sale to minors (under age 21) or intoxicated persons on licensed premises.	Violation may result in suspension or revocation of license or a fine of not more than \$1,000, or imprisonment of not more than 2 years, or both. Counties may impose a fine and/or suspension or revocation of license.	Prohibits sale to minors (under age 21) or interdicted or intoxicated persons on licensed premises.	Violation may result in a fine of up to \$2,500 and/or up to 12 months in jail.
Drinking of alcoholic beverage in public place prohibited.	Violation may result in a fine of not more than \$100 or imprisonment for not more than 90 days, or both.	Prohibits consumption of alcoholic beverage on public property.	Violation may result in a fine of not more than \$500; or, if a repeat offense, an amount of not more than \$1,000; or may be prosecuted as a criminal offense.	Drinking or possessing alcoholic beverages in or on public school grounds.	Violation may result in a fine of up to \$2,500 and/or up to 12 months in jail.
Intoxicated person in public as danger to himself, property, or others.	Treatment in detoxification center.			Drinking alcoholic beverages, or offering to another, in public place.	Violation may result in a fine of not more than \$100.
Purchase, possession, or consumption by minor or misrepresentation of age.	(i)Violation may result in fine of not more than \$300 and, if not paid, imprisonment for not more than 30 days; (ii)a civil fine may be imposed as an alternative sanction for any infraction of this provision.	(i)No person under age 21 may possess or control any alcoholic beverage; (ii)no person under age 21 may possess a document that falsifies the age of the individual.	Violation may result in a fine of not more than \$500; or, if a repeat offense, an amount of not more than \$1,000; or may be prosecuted as a criminal offense.	No person to whom an alcoholic beverage may not be lawfully sold shall purchase or possess such beverage.	Violation may result in a fine of up to \$1,000, and/or up to 6 months in jail.
Delivery, offer, or otherwise making available alcohol to minors.	Violation may result in a fine of not more than \$1,000 or imprisonment for not more than 180 days, or both.	(i)Unlawful for a person to knowingly obtain alcoholic beverage for consumption for person under age 21; (ii)may not knowingly furnish alcoholic beverage to person under age 21.	Violation may result in a fine of not more than \$500; or, if a repeat offense, an amount of not more than \$1,000; or may be prosecuted as a criminal offense.		

**Appendix V
Selected Provisions of Alcohol Control Laws
in the District of Columbia, Maryland, and
Virginia**

District of Columbia– District of Columbia Code		Maryland Statutes		Virginia–Code of Virginia	
Violation	Penalty	Violation	Penalty	Violation	Penalty
Driving while intoxicated–alcohol blood levels					
Driving under the influence of liquor or drugs. No individual shall drive when the blood alcohol level reaches .10% by weight of alcohol.	Violation may result in, for the first offense, a fine of \$300 and imprisonment for not more than 90 days through, for subsequent offenses within a 15-year period, an amount of not less than \$2,000 nor more than \$10,000 and imprisonment for not more than 1 year.	Driving while intoxicated, while intoxicated per se, under the influence of alcohol and/or a drug or a controlled, dangerous substance. Alcohol concentration may not exceed .10% or more.	Violation may result in, for the first offense, a fine of not more than \$1,000 or imprisonment for not more than 1 year, or both; and for subsequent offenses shall be subject to a fine of not more than \$3,000, or imprisonment for not more than 3 years, or both. A violation within 5 years of such conviction shall be considered another conviction of this provision.	Driving a motor vehicle while intoxicated. Alcohol concentration may not exceed .08% or more.	Violation may result in confinement in jail for not more than 12 months and a fine of not more than \$2,500, either or both; and subsequent offenses within less than 5 years shall be subject to a fine of up to \$2,500 and confinement in jail for not more than 1 year.
Consumption or possession of alcohol on school premises					
		Drinking or possessing alcoholic beverages in or on public school grounds.	Violation may result in (i) if under 18 years of age, disposition through juvenile court and (ii) if 18 years or older, subject to a \$500 fine or confined in jail for a period of not more than 60 days, or both.	Drinking or possessing alcoholic beverages in or on public school grounds.	Violation may result in confinement in jail for not more than 6 months and a fine of not more than \$1,000, either or both.

**Appendix V
Selected Provisions of Alcohol Control Laws
in the District of Columbia, Maryland, and
Virginia**

District of Columbia— District of Columbia Code	Maryland Statutes	Virginia—Code of Virginia
Hours of sale and location		
Retail license class A through G may sell or serve alcoholic beverages at any time except between the hours of (i) 2:00 a.m. and 8:00 a.m. Monday through Friday; (ii) 3:00 a.m. and 8:00 a.m. on Saturday; and (iii) 3:00 a.m. and 10:00 a.m. on Sunday.	<p>P.G. County: Generally, all licensee classes may operate between 6:00 a.m. to 2:00 a.m. 6 or 7 days a week.</p> <p>Montgomery County, generally, for off-premises sale of beer and wine 6:00 a.m. to 1:00 a.m.; for on-premises sale of beer and wine 9:00 a.m. to 1:00 a.m.; for beer, wine and liquor on-premises 9:00 a.m. to 1:00 a.m. For on-premises sale of beer, wine, and liquor there is a 1/2-hour grace period, and other rules apply for weekend sales and holidays.</p>	On-premises sales and consumption are not permitted between 2:00 a.m. and 6:00 a.m. Off-premises sales are not permitted between 12:00 a.m. and 6:00 a.m.
School and location of licensee		
No license shall be issued for any establishment within 400 feet of any public, private, or parochial primary, elementary, or high school; college or university; church; or recreation area operated by the D.C. Department of Recreation.	Generally, no licenses shall be issued for any establishment within 300 feet of any elementary or secondary school building, library, church, or government-sponsored youth center. Other restrictions may apply based upon further distances from these institutions.	

Note: Maryland and Virginia counties may enact local laws that supplement state laws affecting penalties, hours of operations, or other requirements.

Source: The statutes of the District of Columbia, Maryland, and Virginia.

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Related GAO Products

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